BEFORE THE TENNESSEE BOARD OF WATER QUALITY, OIL AND GAS

IN THE MATTER OF: HARPETH RIVER WATERSHED ASSOCIATION, d/b/a HARPETH CONSERVANCY, *Petitioner.*	Docket No.

PETITION FOR PERMIT APPEAL
(Franklin STP NPDES Permit No. TN0028827)

Harpeth River Watershed Association, d/b/a Harpeth Conservancy ("Petitioner" or "Harpeth Conservancy"), hereby files this Petition for Permit Appeal, pursuant to Tenn. Code Ann. § 69-3-105(i) and applicable regulations, to appeal and challenge the issuance of that National Pollutant Discharge Elimination System ("NPDES") Permit No. TN0028827 (the "Permit") to the City of Franklin, Tennessee ("Permittee" or "Franklin"), and requests that a hearing be conducted on this Petition as a contested case. In support of this Petition, Petitioner states as follows:

I. SUMMARY

1. For reasons explained in this Petition, the Permit (described in more detail below) violates state and federal law by, among other things, violating Tennessee water quality criteria for low dissolved oxygen and nutrients (nitrogen and phosphorus) for both fish and aquatic life and for recreation, **allowing the discharge of more than double the amount of a pollutant (*i.e.*, phosphorus) into a water that, at current discharge levels, already is impaired for that pollutant**, causes or contributes to a violation of water quality standards, fails to obligate the Permittee to perform anti-degradation analyses required by law, fails to obligate the Permittee to

perform anti-degradation analysis required by law when an Exceptional Tennessee Water such as the State Scenic Harpeth River is impacted, fails to consider or require the application of the best practicable waste treatment technology, fails to set weekly average and monthly average effluent or concentration limitations, violates Tennessee water quality criteria for, among other things, odor and dissolved oxygen ("DO"), fails to establish a site-specific water quality based effluent limit ("WQBEL") for total phosphorus, including, without limitation, by failing to include or require a reasonable potential analysis. For the reasons noted herein, the Permit is also arbitrary, capricious, and an abuse of discretion.

II. PARTIES

2. Petitioner is a nonprofit corporation organized under the laws of the State of Tennessee. Its principal office is located at 215 Jamestown Park, Brentwood, Tennessee.[1] Founded in 1999, Harpeth Conservancy's mission is to restore and protect the Harpeth River Watershed, clean water and healthy ecosystems for rivers in Tennessee, including the water quality and designated uses of the Harpeth River (the "River"), through education, research, policy, discussion, recreation, and advocacy. Harpeth Conservancy also encourages and promotes compliance with the existing laws and regulations relating to water quality in connection with the Harpeth River, and encourages and promotes collaborative relationships to develop, promote and support broad community stewardship and action. Harpeth Conservancy works with landowners, businesses, the community at large, local, state, and federal decision makers and others to maintain and improve the water quality in the Harpeth River. Harpeth Conservancy's members consist of residents and businesses that use the River, including landowners who own land along the River.

[1] Harpeth Conservancy's mailing address is P.O. Box 1127, Franklin, TN 37065.

3. Respondent is the Tennessee Department of Environment and Conservation ("TDEC") Division of Water Resources, which issued the Permit.

4. The Permit authorizes the Permittee to discharge treated municipal wastewater into the Harpeth River from its Sewage Treatment Plant ("STP") located at 135 Claude Yates Drive, Franklin, Williamson County, Tennessee. The STP is located at river mile 85.2 in Williamson County, Tennessee. A copy of the Permit is attached hereto as Exhibit 1.

III. JURISDICTION

5. Harpeth Conservancy appeals the Permit under Tenn. Code Ann. § 69-3-105(i). As described in the Tennessee Water Quality Control Act, Tenn. Code Ann. §§ 69-3-101, *et seq.* ("TWQCA"), a petition for permit appeal may be filed by any aggrieved person who participated in the public comment period and whose appeal is based upon any issues that were presented to TDEC during the comment period. Tenn. Code Ann. § 69-3-105(i). On November 21, 2016, Harpeth Conservancy submitted written comments on the draft permit during the public comment period. Harpeth Conservancy specifically addressed the issues of concern raised in this appeal. Harpeth Conservancy is also an aggrieved person with standing to pursue this appeal because it and its members are being injured by the improper issuance of the Permit. See *Pickard v. Tennessee Water Quality Control Bd.*, 424 S.W. 3d 511 (Tenn. 2013). The Permit, as issued, will contribute to the continued and increased impairment of the water quality of the River, and will jeopardize one or more of the designated uses of the River below the point of the discharge from Permittee's STP, which include domestic water supply, industrial water supply, fish and aquatic life, recreation, livestock watering and wildlife, and irrigation.

6. TDEC issued the Permit on June 1, 2017. Harpeth Conservancy received notice of the final issuance of the Permit *via* email on June 1, 2017. This Petition for Permit Appeal is timely filed pursuant to Tenn. Code Ann. § 69-3-105(i).

IV. STATUTORY AND REGULATORY BACKGROUND

Federal and State Clean Water Laws and Permitting Programs

7. Congress passed the Clean Water Act, 33 U.S.C. §§ 1251, *et seq.*, ("CWA") in 1972 "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The CWA protects all navigable waters of the United States, including surface waters that supply drinking water, support fish and wildlife, and provide aesthetic and recreational opportunities for current and future generations of Americans. The Harpeth River falls within the protections of the CWA.

8. Tennessee adopted the TWQCA in 1977 recognizing that waters of the state "are held in public trust for the use of the people of the state" and "the people of Tennessee, as beneficiaries of this trust, have a right to unpolluted waters." Tenn. Code Ann. § 69-3-102(a). Tennessee also enacted the TWQCA in order to comply with certain requirements of the CWA.

9. The CWA's goal is to eliminate all discharges of pollution into navigable waters. 33 U.S.C. § 1251(a)(1). To this end, the CWA established the NPDES permit program. The NPDES permit program is managed by the U.S. Environmental Protection Agency ("EPA") in partnership with state environmental agencies, including TDEC, which are authorized to issue NPDES permits. *See* 33 U.S.C. § 1342; *see also* Tenn. Code Ann. § 69-3-108; Tenn. Comp. R. & Regs. 0400-40-10-.03(1). Tennessee enacted the TWQCA in part to obtain and exercise this delegation of NPDES permitting authority. Tenn. Code Ann. § 69-3-102(c).

10. The CWA prohibits point sources, such as the Permittee's STP, from discharging pollutants to navigable waters except in compliance with a NPDES permit, which can only be issued if it prescribes conditions to assure that discharges will meet all applicable requirements contained in the CWA and related regulations, including effluent limitations. 33 U.S.C. §§ 1311, 1312 and 1342(a)(1). The TWQCA similarly prohibits "the discharge of sewage, industrial

wastes or other wastes into waters" except "in accordance with the conditions of a **valid** permit." Tenn. Code Ann. § 69-3-108(b)(6) (emphasis added).

11. When TDEC issues, renews or modifies NPDES permits pursuant to its delegated authority under the CWA, TDEC must comply with applicable federal and state statutes and regulations for the permit to be valid. Tenn. Code Ann. § 69-3-108(g)(1); Tenn. Comp. R. & Regs. 0400-40-05-.04(1)(f) ("no [NPDES] permits shall be issued ... [w]hen the conditions of the permit do not provide for the compliance with the applicable requirements of either the federal CWA, or the ... TWQCA."); *see also* 40 C.F.R. § 123.25 (listing specific federal regulations applicable to the states). Furthermore, "in no event may ... a [NPDES] permit ... be renewed, issued or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard." Tenn. Comp. R. & Regs. 0400-40-05-.08(1)(j)3.

12. Both the CWA and the TWQCA require NPDES permits to include effluent limits that are sufficiently stringent to protect water quality. 33 U.S.C. §§ 1342(b)(1)(A) and 1312; 40 C.F.R. §§ 122.44(d)(1) and 123.25; Tenn. Code Ann § 69-3-108(g); Tenn. Comp. R. & Regs. 0400-40-05-.04(1)(f). Such water quality-based effluent limits (*i.e.*, WQBELs) are necessary to ensure that discharges do not "interfere with the attainment or maintenance of" applicable water quality standards. 33 U.S.C. § 1312(a); Tenn. Code Ann § 69-3-108(g)(1).

13. The TWQCA prohibits discharges, unless authorized, into waters that, either by themselves or in combination with others, cause any of the "Pollution," as defined in Tenn. Code Ann. § 69-3-103, or that violate any established water quality standard. Such violations are "public nuisances." Tenn. Code Ann §§ 69-3-114(a), (b). Further, financial inability is no defense under this section. *Id.* at (c).

14. The TWQCA further provides that "[i]t is unlawful for any person ... to carry out any of the following activities, except in accordance with the conditions of a valid permit:

(1) The alteration of the physical, chemical, radiological, biological, or bacteriological properties of any waters of the state;

(2) The construction, installation, modification, or operation of any treatment works, or part thereof, or any extension or addition thereto;

(3) The increase in volume or strength of any wastes in excess of the permissive discharges specified under any existing permit.

Tenn. Code Ann. § 69-3-108(b) (emphasis added); *see also* Tenn. Comp. R. & Regs. 0400-40-02-.07(1)(b), (d).

Tennessee's Water Quality Criteria for Nutrients

15. TDEC has adopted a narrative water quality criterion for nutrients. Specifically, to protect fish and aquatic life, "[t]he waters shall not contain nutrients in concentrations that stimulate aquatic plant and/or algae growth to the extent that aquatic habitat is substantially reduced and/or the biological integrity fails to meet regional goals." Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(k). TDEC has also adopted narrative water quality criteria to protect the recreational use of its waters. "[T]he waters shall not contain nutrients in concentrations that stimulate aquatic plant and/or algae growth to the extent that the public's recreational uses of the waterbody or other downstream waters are detrimentally affected. Unless demonstrated otherwise, the nutrient criteria found in subparagraph (3)(k) of this rule will be considered adequately protective of this use." Tenn. Comp. R. & Regs. 0400-40-03-.03(4)(h).

16. TDEC has developed a regionally-based numeric interpretation of its narrative nutrient criterion for fish and aquatic life. TDEC's water quality rules provide, "[i]nterpretation

of this provision may be made using the document *Development of Regionally-based Interpretations of Tennessee's Narrative Nutrient Criterion* and/or other scientifically defensible methods." Tenn. Comp. R. & Regs. 0400-40-03.03(3)(k). Accordingly, TDEC uses the numeric values established in this document to determine whether a water body is polluted as a result of excessive nitrogen and/or phosphorous.

The 303(d) List and TMDLs

17. The CWA, 33 U.S.C. § 1315(b), requires that every two (2) years Tennessee and other states assess the health of their waters and provide a list of those that are polluted. Waters that fail to meet state water quality standards, *i.e.*, those which have "unavailable parameters" and are, therefore, "water quality limited" or "impaired" are to be listed on each state's "303(d) list." 33 U.S.C. § 1313(d).

18. Once a stream is included on the 303(d) list, there can be no additional loadings of the same pollutants. *See* TDEC's *Proposed Final Year 2016 303(d) List*, p. 1 (May, 2017) attached hereto as Exhibit 2. ("If a stream is impaired, regardless of whether or not it appears on the 303(d) list, the Division cannot authorize additional loadings of the same pollutants.") Furthermore, TDEC must establish a total maximum daily load ("TMDL") for all pollutants that violate water quality criteria. *See* 33 U.S.C. § 1313(d)(1)(C). Effluent limitations must be "consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA." 40 C.F.R. §§ 122.44(d)(1)(vii)(B) and 123.25(15) (listing 40 C.F.R. § 122.44 as an EPA regulation with which delegated states must comply); Tenn. Code Ann. § 69-3-108(g)(1); Tenn. Comp. R. and Regs. 0400-40-05-.04(1)(f).

Water Quality Based Effluent Limits Must Be Developed and Cannot Wait for a TMDL

19. Until a TMDL is issued for the 303(d)-listed pollutants, a state permitting agency either must prohibit discharges or establish WQBELs on a case-by-case basis to prevent continued pollution of the impaired stream.

20. Under EPA regulations, permitting authorities must adopt interim measures, and cannot wait until the completion of a TMDL, to bring water bodies into compliance with water quality standards. 33 U.S.C. § 1313(e)(3); 40 C.F.R. § 122.44(d); *see also, e.g.*, 43 Fed. Reg. 60,662, 60,665 (Dec. 28, 1978) ("EPA recognizes that State development of TMDL's and wasteload allocations for all water quality limited segments will be a lengthy process. Water quality standards will continue to be enforced during this process. Development of TMDL's . . . is not a necessary prerequisite to adoption or enforcement of water quality standards. . .."). *See also* 54 Fed. Reg. 23,868, 23,878, 23,879 (June 2, 1989).

21. When developing NPDES permit limits to protect water quality, TDEC must first "determine[] whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard" following specific procedures. 40 C.F.R. §§ 122.44(d)(1)(ii) and 123.25; Tenn. Code Ann. § 69-3-108(g)(1); Tenn. Comp. R. and Regs. 0400-40-05-.04(1)(f), (g). These procedures, commonly referred to as a "reasonable potential analysis," must "account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, ... and where appropriate, the dilution of the effluent in the receiving water." 40 C.F.R. § 122.44(d)(1)(ii). Tennessee has adopted the *TDEC Reasonable Potential Procedures* (6/1/2004) ("RPA Procedures") to fulfill this obligation. If, after applying these procedures, there is a reasonable potential for a discharge to cause or contribute to excursions above state

narrative criteria, TDEC must impose WQBELs derived from these procedures. 40 C.F.R. §§ 122.44(d)(1)(vi) and 123.25; Tenn. Code Ann § 69-3-108(g)(1); Tenn. Comp. R. and Regs. 0400-40-05-.04(1)(f) & (g); *see generally* RPA Procedures.

22. WQBELs must be derived to protect water quality under critical conditions, and must protect water bodies under a variety of seasonal conditions. Thus, WQBELs must be set for an appropriate time period. Accordingly, TDEC's RPA Procedures direct TDEC to "apply limits based on the chronic water quality criterion as monthly averages and those based on the acute criterion as daily maximums." TDEC's nutrient criteria document, the *Development of Regionally-based Interpretations of Tennessee's Narrative Nutrient Criterion*, similarly calls for nutrient limits to protect fish and aquatic life to "be applied as a monthly average limit." *Id.* at 3.

23. EPA rules, applicable to and required to be enforced by TDEC, require that "all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall unless impracticable be stated as:...(2) Average weekly and average monthly discharge limitations for" publicly-owned treatment works, such as the Franklin STP. 40 C.F.R. §§ 122.45(d), 123.25(16) (applying Section 122.45 to states).

Permits Cannot Cause or Contribute to a Violation of Water Quality Standards

24. All NPDES permits are required to include conditions that are necessary to achieve water quality standards, including state narrative criteria for water quality, and must control all pollutants that will cause, or have the reasonable potential to cause, a violation of any state water quality control standard. 40 C.F.R. § 122.44(d). Tenn. Comp. R. & Regs. 0400-40-10-.03(1), (2)(c), 0400-40-03-.05(6), 0400-40-05-.04(1)(f), 0400-40-05-.07(1)(a).

Tennessee's Antidegradation Statement Contains Several Separate, Independent Requirements

25. In addition to the requirement to impose WQBELs on any discharge – including an existing permitted discharge – that has the reasonable potential to cause or contribute to water quality violations, TDEC must also comply with Tennessee's Antidegradation Statement. Tenn. Comp. R. & Regs. 0400-40-03-.06 ("Antidegradation Statement"). Tennessee's Antidegradation Statement contains several independent requirements.

26. First, the Antidegradation Statement requires that "in the permitting context... a complete application will include the applicant's basis for concluding that the proposed activity: (i) will not cause measurable degradation, or (ii) will only cause de minimis degradation, or (iii) will cause more than de minimis degradation." Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(b)1.

27. Second, any "proposed activity [that] will cause degradation above a de minimis level or if it is a new discharge of domestic wastewater, a complete application will: (i) analyze all reasonable alternatives and describe the level of degradation caused by each of the feasible alternatives; (ii) discuss the social and economic consequences of each alternative; and (iii) demonstrate that the degradation will not violate the water quality criteria for uses existing in the receiving waters and is necessary to accommodate important economic and social development in the area." Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(b)2. (emphasis added). (The requirements for the alternative analysis are contained in Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(b)3. TDEC is required to notify interested parties under Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(c) when an application is complete. TDEC is next required to determine the level of degradation resulting from the proposed activity. Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(d).) *See also* Tenn. Code Ann § 69-3-108(e) ("Applicants for permits that would

authorize a new or expanded wastewater discharge into surface waters shall include in the application consideration of alternatives, including, but not limited to, land application and beneficial reuse of the wastewater." Emphasis added.)

28. The Antidegradation Statement then requires that "[i]f the steps described in subparagraphs (b), (c) and (d) of this paragraph do not conclude the review under this rule, the Department shall determine whether the waters impacted by the activity are ones with available parameters, unavailable parameters, Exceptional Tennessee Waters, or Outstanding National Resource Waters, or if they are in more than one category. ... If an activity is proposed in a waterbody that is in more than one category, it must meet all of the applicable requirements." Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(e).

29. Third, and separate from the analysis required, the Antidegradation Statement provides that "[i]n waters with unavailable parameters, new or increased discharges that would cause measurable degradation of the parameter that is unavailable shall not be authorized." Tenn. Comp. R. & Regs. 0400-40-03-.06(2)(a).

30. Fourth, and again separate from and in addition to the analysis required in the usual case, the Antidegradation Statement further requires that in the case of Exceptional Tennessee Waters such as the State Scenic Harpeth River, Tenn. Code Ann. § 11-13-104, Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(a)2., "[a]t the time of permit renewal, previously authorized discharges, including upstream discharges, which presently degrade Exceptional Tennessee Waters above a de minimis level, will be subject to a review of updated alternatives analysis information provided by the applicant, but not to a determination of economic/social necessity. Public participation for these existing discharges will be provided in conjunction with permitting activities."...." Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(c)1. Similar

requirements apply in the case of degradation of habitats. Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(c)3. Review of such determinations by TDEC is provided in Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(d).

31. TDEC developed a Regionally-based *Interpretations of Tennessee's Narrative Nutrient Criterion* ("Nutrient Translator"). Without waiving Harpeth Conservancy's showing that the Nutrient Translator is flawed and insufficiently protective of water quality, it assists TDEC in establishing concentration limits for impaired water bodies. Setting concentration limits for phosphorus is a regulatory requirement. *See* Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(k) (providing that "[t]he waters shall not contain nutrients in **concentrations** that stimulate aquatic plant and/or algae growth to the extent that aquatic habitat is substantially reduced and/or the biological integrity fails to meet regional goal... [e]xamples of parameters associated with the criterion include ... phosphorus ...") (emphasis added).

Application of Best Practicable Waste Treatment Technology

32. Tennessee regulations further require that "[e]ffluent standards and limitations shall be formulated in accordance with the following guidelines: ...[f]or publicly owned treatment works, effluent limitations shall be designed to require application of the best practicable waste treatment technology." Tenn. Comp. R. & Regs. 0400-40-05-.08(1)(c) (emphasis added); 40 C.F.R. § 125.3(a)(1)(ii). Tenn. Comp. R. & Regs. 0400-40-03-.02(4) similarly requires that "[i]n order to permit the reasonable and necessary uses of the Waters of the State, existing pollution should be corrected as rapidly as practicable, and future pollution prevented through the best available technology economically achievable or that greater level of technology necessary to meet water quality standards; *i.e.*, modeling and stream survey assessments, treatment plants or other control measures." (Emphasis added.)

Maximum Weekly and Monthly Average Effluent Limitations Required

33. Tennessee regulations and the CWA require that "[f]or continuous discharges, all permit effluent limitations, standards, and prohibitions shall be expressed as maximum daily, weekly average (for POTWs only) and monthly average, unless impracticable." Tenn. Comp. R. & Regs. 0400-40-05-.08(1)(m), 0400-40-10-.03(3)(d)(2). *Accord*, 40 C.F.R § 122.45(d).

Tennessee Water Quality Criteria for Dissolved Oxygen

34. Tennessee regulations provide that, to support fish and aquatic life, "[t]he dissolved oxygen [DO] shall not be less than 5.0 mg/l...." Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(a). For recreational uses, the regulations provide that "[t]here shall always be sufficient dissolved oxygen present to prevent odors of decomposition and other offensive conditions." Tenn. Comp. R. & Regs. 0400-40-03-.03(4)(a). Permits are required to include parameters to insure adequate DO. Tenn. Comp. R. & Regs. 0400-40-05-.10(2).

Tennessee Water Quality Criteria for Odor and Related Issues

35. Tennessee regulations provide that, to support fish and aquatic life, "[t]he waters shall not contain substances that will impart unpalatable flavor to fish or result in noticeable offensive odors in the vicinity of the water or otherwise interfere with fish or aquatic life." References include, but are not limited to: Quality Criteria for Water (section 304(a) of Public Law 92-500 as amended)." Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(f). The criteria for recreational uses are even more stringent, providing that "[t]he waters shall not contain substances that will result in objectionable taste or odor." Tenn. Comp. R. & Regs. 0400-40-03-.03(4)(g).

36. Tennessee regulations further provide that, to support fish and aquatic life, "[t]here shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes,

bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life" and that "[t]here shall be no turbidity, total suspended solids, or color in such amounts or of such character that will materially affect fish and aquatic life. In wadeable streams, suspended solid levels over time should not be substantially different than conditions found in reference streams." Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(c), (d). The criteria for recreational uses are similar, if not more stringent. Tenn. Comp. R. & Regs. 0400-40-03-.03(4)(c), (d). Tennessee regulations to support fish and aquatic life also require that stream habitat must "provide for the development of a diverse aquatic community that meets regionally-based biological integrity goals...." Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(n).

V. FACTUAL BACKGROUND

37. The Franklin STP is a publicly owned and operated treatment works.

38. The current design flow of the Franklin STP is 12 million gallons per day ("MGD"). Franklin seeks to expand its STP to 16 MGD.

39. The Franklin STP is located in the Harpeth River Watershed and discharges into the Harpeth River at river mile 85.2 in Williamson County, Tennessee.

40. The River is 125 miles long with over 1000 miles of tributaries. The River meanders through agricultural, forested and suburban areas of six counties in the greater Nashville region until it joins the Cumberland River. The River is part of the freshwater rivers in the Southeastern United States, which is the third most diverse region in the world in aquatic life. Only the Amazon River basin and Mekong River basin in Southeast Asia have greater diversity of aquatic life.

41. The Harpeth Conservancy's mission is to restore and preserve the Harpeth River Watershed, clean water and health ecosystems for rivers in Tennessee through education, research, policy, discussion, recreation, and advocacy, and to encourage the public, including

industry and government, to comply with existing laws and regulations relating to water quality. The Harpeth Conservancy and its members are concerned about pollution of the River and about threats to wildlife, wildlife habitat, and the designated uses of the River that are posed by the pollutants in Franklin's discharge. The Harpeth Conservancy's members live, work, fish, swim, boat, view wildlife, engage in nature study and scientific study, participate in other forms of recreation in and around the River, and use the River for domestic and industrial water supply. Franklin's discharges into the River in the vicinity of these uses impairs a number of them and continues to impair them for many river miles below Franklin's discharge point because the impacts of the pollutants travel significantly downriver.

42. Immediately upstream of the City of Franklin, the River is unimpaired (TN 051302040103), according to Tennessee's Proposed Final Year 2016 303(d) List. While the headwaters are listed as impaired for sedimentation/siltation and low dissolved oxygen from agricultural activities, the River downstream of the headwaters is unimpaired prior to flowing into the vicinity of Franklin.

43. According to Tennessee's 303(d) List, the River is impaired downstream of the Franklin STP for phosphorus, low dissolved oxygen, and siltation in Franklin and downstream of the Franklin STP. For almost fifty (50) river miles the River fails to meet water quality standards downstream of the Franklin STP. This includes the State Scenic River designated section in Davidson County and into the next county. Tennessee's 303(d) list states the pollutant sources affecting over 50 river miles of the River are "municipal point source discharges" and stormwater runoff from "municipal separate storm sewer systems."

44. According to Franklin's Monthly Operating Reports for the period November 2010 to July 2016, the Franklin STP discharged an average of approximately 72.5 pounds of

phosphorus daily into the River. This level of discharge of phosphorus (± 72.5 lbs/day) has rendered the River impaired for phosphorus and caused (and/or contributed to) the River to be included on Tennessee's 303(d) list since 2004. These sections of the River and others have also been on TDEC's 303(d) list for nutrients and for low dissolved oxygen for at least 15 years and some since 1996. No substantial progress has been made toward restoring the River and removing it from the 303(d) list for low DO and phosphorus pollution. However, the Permit authorizes the Permittee to discharge **more than double the pounds of phosphorus currently being discharged into the River** by the Permittee.

45. The Franklin STP is the largest single discharger in the entire Harpeth River Watershed and Franklin's sewage effluent dominates the River downstream of the STP. Franklin's own monitoring data show that just one (1) river mile downstream from the STP, over the period 2009-2014, 73% of the load of Total Phosphorus in the Harpeth and 50% of the river's load of Total Nitrogen were from the Franklin sewer plant when sewer effluent was 15% or more of the River's flow. For example, during the drought conditions in October 2016, approximately one (1) mile downstream from the Franklin STP, across the entire month the daily average amount of treated sewage effluent in the River was 55% of the entire River's flow.

46. The effects of the STP's discharges are seen far downriver as well. During October 2016, approximately 22.9 river miles downstream of the STP at the Williamson – Davidson County line, which is a portion of the River comprising a State Scenic River and an "Exceptional Tennessee Water," approximately 28% of the River's flow consists of treated effluent from the Franklin STP, and is thus contaminated by excessive nitrogen and phosphorus from the Franklin STP. The effects of the excessive nitrogen and phosphorus from the Franklin STP was recorded by the water quality gage at the Highway 100/Bellevue location managed by

the United States Geological Survey. Dissolved oxygen levels were recorded below 4 mg/l (the state standard is 5 mg/l) during the period from Oct 18-22, 2016.

47. Violations of the state's DO standard in the River have occurred for many years during the summer when the River naturally has its low flow summer season. Data gathered by the EPA, TDEC, Harpeth Conservancy, Franklin, and other consultants in studies over many years related to various permit issues on the River have documented low DO levels as far downstream as the Harpeth River State Park in Cheatham County. The River is listed on the 303(d) for low DO all the way downstream to the confluence with the South Harpeth in Cheatham County. These violations are occurring in several sections of the River: the State Scenic River section in Davidson County, and the adjacent downstream section in Cheatham County adjacent to the number properties that comprise the Harpeth River State Park, the entire section in Williamson County downstream of the Franklin STP, and upstream. As recently as October 2016, during a summer/drought condition, the River also failed to meet the State DO standard. Readings in the river from the USGS gage recently installed just downstream from the STP show DO levels of as low as four (4) milligrams per liter also on or about October 20, 2016 (below the state standard of 5 mg/L). At the USGS gage installed in the River at river mile 90.5, which is approximately five (5) miles upstream of the Franklin STP, discharge the readings during this same time period in October 2016 went down to close to 3 mg/l; thus showing that the River has unavailable conditions for low DO.

48. During the same period in October 2016, the flow in the River at Pinkerton Park in downtown Franklin (at approximately river mile 88 and under 3 miles upstream of Franklin's STP discharge point) was between 2 and 6 cubic feet per second (cfs). This is a very low flow condition and is very close to the extreme condition of less than 1 cfs that the Permit is required

to protect. The Permit is supposed to, but does not, protect the River during these regularly occurring low-flow conditions to make sure the River meets water quality standards.

49. The River in the affected segments is characterized by both excessive nitrogen (N) supplies and phosphorous (P) supplies, and by a total nitrogen to total phosphorus (TN:TP) ratio that has shifted far off-balance. The shift is so extreme that the River has a "sewage signature" in the affected areas, far from the TN:TP ratio that once characterized the natural, healthy River system. The excessive nitrogen and phosphorus discharged by the Franklin STP are in forms that are readily available for plants to use and fuel algal growth long distances from the source. This will increasingly encourage noxious algal (green and blue-green) overgrowth when other conditions are conducive.

50. There are already signs of the shift from green to blue-green algae in the River in the vicinity of Franklin and its STP. Such algal growths are characteristic of blue-green algae, and indicate that current conditions in the River favor blue-green growth, and there is the potential for the growth of much more toxic Harmful Algal Bloom conditions.

51. Additionally, pollution from the Franklin STP has resulted, and continues to cause, noticeable and noxious odors in and around the River.

52. The Final Permit contemplates and allows a major increase and expansion in the amount of sewage effluent – and thus other pollutants – to be discharged into the River – **the amount of effluent to be discharged is to be increased by a third, by four million gallons a day (4 MGD), from 12 MGD to 16 MGD.** Pollutants and chemicals such as steroids and hormones, pharmaceutical and personal care products, plastic residues and other Contaminants of Emerging Concern will increase as will the nitrogen and phosphorus discharge.

53. Rather than attempt to control or hold the line, let alone improve water quality in the River as required by law, Franklin requested, and TDEC has now granted the Permit, the ability to increase and expand the STP's discharges such that **the actual poundage of phosphorus pollution will be allowed to more than double its current discharge, from the approximately 72.5 lbs/day currently actually being discharged, to approximately 174 lbs/day**. (This 174 lbs/day load is the translation of the Permit limit of 63,000 lbs/year that the Permit allows Franklin to discharge. As noted herein, among its numerous violations of law, the Permit does NOT contain a daily load limit, or any effluent limit more frequent than annually (e.g., the 63,000 lbs/year load allowed), such as the required average weekly or monthly loads, or concentration limits.)

54. Further, if Franklin discharges the amounts provided for in the Permit, measurable degradation of water quality and habitat alterations will occur, including substantial decreases in desirable aquatic biota in the River. Further, at the discharge levels allowed in the Permit, detrimental amounts of visible solids, slimes, bottom deposits, and increases in turbidity, suspended solids, and color that will materially affect fish and aquatic life and recreation, and affect the biological integrity of the River, will occur.

55. TDEC issued the Permit for the Franklin STP on June 1, 2017, and provided a response to and incorporated changes based on only a limited number of Harpeth Conservancy's (and others') comments on final Permit, pages A-1 to A-8. Among the defects of the Permit are the following:

a. Without public comment, TDEC reversed its position to consider the actual amounts of phosphorus being discharged into the river ("what the river is seeing");[2]

b. TDEC did not require Franklin to conduct an antidegradation analysis;

c. TDEC did not require Franklin to conduct an antidegradation analysis of the impact of the STP on the State Scenic section of the Harpeth River in Davidson County;

d. TDEC failed and refused to inquire (and indeed, dismissed any inquiry) regarding, or to incorporate, the technological capabilities of the proposed new sewer plant;[3]

e. TDEC failed and refused to establish, or even to consider whether to establish, a WQBEL or concentration limit for total phosphorus, even though it is possible to establish a WQBEL at this point, nor did TDEC do any of the work required to do so, and in particular did not conduct a reasonable potential analysis for the Franklin STP;

f. Without explanation or public comment, TDEC loosened proposed discharge levels on the new 16 MGD plant (increasing them from approximately 45,000

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[2] For example, in an e-mail exchange between a TDEC manager and director between September 2 and 6 of this year, attached hereto as Exhibit 3, the manager advised his supervisor that a "hold the line" calculation for river loading came out as follows: "It looks like the limit for TP will end up around 80 lb./day." After separate discussions with several officials from Franklin, catalogued in Exhibit 4, TDEC changed its permit limit to the current proposed limit of approximately 63,000 lbs/year (which equates to174 lbs./day). See also Exhibits 5 & 6.

[3] For example, in response to questions in March 2016, the following exchange occurred:

> Q: What limits [does] Franklin says it can treat to for TN and TP now (and in its future plant)?
>
> A: Franklin has not told us to what level they can treat. It appears from the data that in the current plant that they can treat to or below the current limits.

HRWA repeated its inquiries about the technological capabilities of Franklin's sewer plant, and made inquiries whether the results of the computer simulations typically used for such purposes would be available. TDEC did not have and had never requested this information. This was how TDEC discussed the issue internally, from an e-mail dated August 23, 2016 attached hereto as Exhibit 7: "[HRWA]...'s question [about the technical capabilities of Franklin's plant] is a good one but a loaded one. I'll see what I can obtain. I don't think that Franklin will want that information given out. (I wouldn't.)"

lbs/year to approximately 63,000 lbs/year) and relies on completion of a TMDL that will remain uncompleted for over a dozen years, and, TDEC, without public comment, appears to presage the outcome of the TMDL notwithstanding the River's status on the 303(d) list and Franklin's status as the largest point-source polluter on it;[4]

g. TDEC misapplies a statistical technique to allow greater phosphorus pollution, rather than using it as intended, which was to be "technology-forcing" to reduce pollution. TDEC calculates the Total Phosphorus limit in the Permit based upon what the Franklin STP can meet 95 percent of time. However, by setting this number as an average, the STP is only required to meet its historical loading highs 50 percent of the time. This allows for significant exceedances of previous loading amounts. The Franklin STP could literally double any previous daily loading amount and still comply with the limit in the Permit.

h. Further, TDEC contradictorily developed the phosphorus limit in the Permit based upon design flow, but then required it to be reported based upon actual flow. This clearly results in a limit far greater than actual conditions. The approximately 63,000 lbs/year phosphorus limit is approximately 40,000 lbs/year greater than what is actually being discharged into the River from the Franklin STP on average based on Franklin's monthly operating report data.

56. Franklin's proposed new STP can feasibly and practicably achieve an effluent P concentration of 0.53 mg/L, if not lower, without the use of chemicals. (This contrasts with the approximately 1.74 mg/L (which would translate into the 63,000 lbs/year) "limit" in the Permit.) And, Franklin has submitted plan to TDEC, in connection with its State Revolving Fund ("SRF") loan, to be able to add chemicals to reduce phosphorus. It is feasible and practicable because

[4] See Exhibit 7 and Exhibit 1 (Permit at pps. 8,0).

Franklin has designed and will pay for its new STP in part with a $100 million loan from the SRF. Further, with minimal, if any, extra expense, and without the addition of external chemicals, Franklin can promptly reduce effluent TP concentrations to at or below the level that is required to achieve a WQBEL and substantially improve the water quality in the River.

VI. LEGAL VIOLATIONS/ARGUMENT

57. In issuing the Permit, TDEC has violated numerous provisions of the CWA, the TWQCA, and implementing regulations, and acted in violation of statutory provisions, using unlawful procedures, and in an arbitrary, capricious fashion and abused its discretion and /or in a clearly unwarranted exercise of discretion, in violation of Tenn. Code Ann. § 4-5-322(h) and other provisions of law. Among other violations, TDEC failed to respond adequately to Petitioner's and others' comments, as required by 40.C.F.R. § 124.17 and Tenn. Comp. R. & Regs. 0400-40-05-.06(11), thus hindering the parties' ability to narrow differences, and minimize further proceedings and thereby conserve scarce public and private resources.

58. The Permit unlawfully allows Franklin to violate Tennessee water quality criteria for nutrients, *i.e.*, nitrogen and phosphorus. Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(k), 0400-40-03-.03(4)(h). The Permit violates Tenn. Comp. R. & Regs. 0400-40-03. Specifically, Tenn. Comp. R. & Regs. 0400-40-03-.03(k) provides that Tennessee waters shall not contain phosphorus "in concentrations" that impede biological integrity and other ecological outcomes. TDEC did not set a concentration limit for phosphorus in the Permit for Franklin STP. The Harpeth River is already assessed (*i.e.,* is on the 303(d) list) as not meeting the state's narrative water quality criterion for total phosphorus, so phosphorus discharges would be lawfully subject to this concentration provision of Tennessee regulations. The poundage limitations also violate these same regulations. *See, e.g.*, 33 U.S.C. § § 1312, 1342; 40 C.F.R. §§122.44(d)(1)(vii)(B),

123.25; Tenn. Code Ann. § 69-3-108; Tenn. Comp. R. & Regs. 0400-40-05-.04(1)(f), 0400-40-05-.08(1)(j)2.

59. The Permit fails to include a water quality based effluent limitation for total phosphorus. The Permit violates Sections 402 and 302 of the CWA, 33 U.S.C. §§ 1342(b)(l)(A) and 1312(a), Tenn. Code Ann. § 69-3-108(g), and Tenn. Comp. R. and Regs. 0400-40-05-.04(1)(f) by failing to impose an effluent limit sufficiently stringent to attain and maintain the applicable water quality criterion for total phosphorus and total nitrogen. *See also* 40 C.F.R. §§ 122.44(d) (l)(vii) (A), 123.25(15).

60. The Permit unlawfully fails to include a reasonable, potential analysis. The Permit violates Sections 402 and 302 of the Clean Water Act, 33 U.S.C. §§ 1342(b)(l)(A) and 1312(a), and Tenn. Comp. R. & Regs. 0400-40-05-.04(1) (f) because TDEC has not made a determination of whether the total phosphorus to be discharged from Franklin STP will cause, or have the reasonable potential to cause or contribute to, an excursion above state water quality standards for nutrients using the procedures mandated by the Environmental Protection Agency, including procedures that account for the variability of phosphorus in the effluent. 40 C.F.R. §§ 122.44(d)(l)(i) & (ii), and 123.25(15).

61. The Permit unlawfully fails to control all pollutants that will cause, or have the reasonable potential to cause, a violation of any state water quality control standard. 40 C.F.R. § 122.44(d). Tenn. Comp. R. & Regs. 0400-40-10-.03(1), (2)(c), 0400-40-03-.05(6), 0400-40-05-.04(1)(f), 0400-40-05-.07(1)(a).

62. The Permit unlawfully fails to comply with several separate, independent obligations under Tennessee's Antidegradation Statement, including the following:

a. TDEC has failed to require Franklin to submit a complete application, which is required to "include the applicant's basis for concluding that the proposed activity: (i) will not cause measurable degradation, or (ii) will only cause de minimis degradation, or (iii) will cause more than de minimis degradation." Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(b)1.

b. The Permit will cause degradation above both de minimis and measurable levels, but TDEC has not required Franklin to submit a complete application including analyses of (i) all reasonable alternatives and describing the level of degradation caused by each of the feasible alternatives; (ii) discussing the social and economic consequences of each alternative; and (iii) demonstrating that the degradation will not violate the water quality criteria for uses existing in the receiving waters and is necessary to accommodate important economic and social development in the area." Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(b)2. TDEC has further failed to require Franklin to submit alternative analyses as mandated by Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(b)3. TDEC failed to notify interested parties under Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(c), and failed to determine the level of degradation resulting from the proposed activity. Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(d).

c. TDEC failed to make the determination required by, and otherwise comply with Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(e) (*e.g.,* whether the waters impacted are ones with available or unavailable parameters, are Exceptional Tennessee Waters, etc. and meets all applicable requirements).

d. The Final Permit authorizes additional, measurable degradation in a water with unavailable parameters, *i.e.*, for phosphorus, in violation of Tenn. Comp. R. & Regs. 0400-40-03-.06(2).

e. TDEC failed to require that Franklin comply with the requirements of Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(c)1, which provides that "[a]t the time of permit renewal, previously authorized discharges, including upstream discharges, which presently degrade Exceptional Tennessee Waters [such as the State Scenic Harpeth River, Tenn. Code Ann. § 11-13-104, Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(a)2.] above a de minimis level, will be subject to a review of updated alternatives analysis information provided by the applicant, but not to a determination of economic/social necessity." TDEC similar failed to enforce the requirements applying to degradation of habitats in Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(c)3. TDEC failed to comply with the public participation requirements of Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(c)1. or regarding review of such determinations in Tenn. Comp. R. & Regs. 0400-40-03-.06(4)(d).

63. TDEC failed to formulate an effluent limitation for the Permit in accordance with, assess, or require the application of best practicable treatment technology, as mandated by Tenn. Comp. R. & Regs. 0400-40-05-.08(1)(c) and 40 C.F.R. § 125.3(a)(1)(ii).

64. TDEC failed to require Franklin to comply with effluent limits expressed as weekly averages and monthly averages, in violation of Tenn. Comp. R. & Regs. 0400-40-05-.08(1)(m), 0400-40-10-.03(3)(d)(2), and 40 C.F.R § 122.45(d).

65. The Permit unlawfully allows Franklin to violate Tennessee water quality criteria for each of:

a. Dissolved Oxygen, Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(a), 0400-40-03-.03(4)(a);

b. odor, Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(f), 0400-40-03-.03(4)(g);

c. habitat, Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(n);

d. biological integrity, Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(m);

e. solids, floating materials, and deposits, Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(c), 0400-40-03-.03(4)(c); and

f. total suspended solids, turbidity or color, Tenn. Comp. R. & Regs. 0400-40-03-.03(3)(d), 0400-40-03-.03(4)(d).

66. The actions complained of herein will cause damages to Harpeth Conservancy and its members. Further, such actions will cause damages pursuant to, at a minimum, Tenn. Code Ann. § 69-3-103(28), and are therefore a public nuisance and unlawful under Tenn. Code Ann. § 69-3-114(a), (b).

VII. REQUEST FOR RELIEF

Harpeth Conservancy respectfully requests that the Board, by and through an Administrative Law Judge according to the procedures established by Tenn. Code Ann. § 69-3-110(a), provide the following relief:

1. Take jurisdiction over this appeal as a contested case according to Tenn. Code Ann. § 4-5-301 *et seq.*;

2. Direct that a contested case hearing be conducted in this matter;

3. Declare that the Permit is not valid as it unlawfully:

a. violates provisions of the CWA, the TWQCA, the implementing regulations, and the water quality standards and criteria for effluents, including nitrogen and phosphorus;

b. authorizes additional loadings of phosphorous into the River even though the River is impaired and on the 303(d) list due to, inter alia, phosphorous and low dissolved oxygen and has unavailable conditions for both phosphorous and low dissolved oxygen;

c. fails to set a concentration limit for phosphorus;

d. fails to include a WQBEL for total phosphorus;

e. fails to include a reasonable potential analysis;

f. fails to control all pollutants, and in particular phosphorus and nitrogen, that will cause, or have the reasonable potential to cause, violations above state water quality control standards;

g. allows the Permittee to violate Tennessee water quality criteria for Dissolved Oxygen; odor; habitat; biological integrity; solids, floating materials, and deposits; and total suspended solids, turbidity, and color;

h. fails to comply with the following separate, independent obligations under the Tennessee Antidegradation Statement, including:

i. Submission of a complete application, including analyses of whether the proposed activity: a. will cause degradation, b. of all reasonable alternatives, discussing the social and economic consequences, and demonstrating that the degradation will not violate the water quality criteria for uses existing in the receiving waters and is necessary; and

ii. Submission of an updated alternatives analysis in the case of an Exceptional Tennessee Water such as the State Scenic Harpeth River

i. fails to enforce the requirements applying to degradation of habitats, including failing to comply with related public participation requirements or regarding review of required determinations;

j. fails to make the determination required by, and otherwise comply with Tenn. Comp. R. & Regs. 0400-40-03-.06(1)(e) (*e.g.,* whether the waters impacted are ones with available or unavailable parameters, are Exceptional Tennessee Waters, etc. and meets all applicable requirements); and

k. authorizes additional, measurable degradation in a water with unavailable parameters, *i.e.,* for phosphorus and low dissolved oxygen.

4. Declare the Permit's limits on total phosphorus and total nitrogen are insufficiently stringent to protect water quality;

5. Declare that WQBELs and effluent limitations for the Franklin STP must be expressed as weekly averages and monthly averages for nitrogen and phosphorus;

6. Remand the permit to TDEC with directions to promptly conduct a proper reasonable potential analysis and establish a proper WQBEL pending the completion of the TMDL for phosphorus and nitrogen, which should then be updated, and the Permit reopened upon completion of the TMDL, subject to whatever other terms are allowed by law; and

7. Inasmuch as the Permit (improperly) relies on the completion of a TMDL, require that TDEC promptly and diligently complete a thorough and objective TMDL:

a. Based on sound and defensible scientific principles and field data;

b. By convening appropriate and customary stakeholder and technical advisory groups promptly and on a regular basis to provide input on the work required for the TMDL;

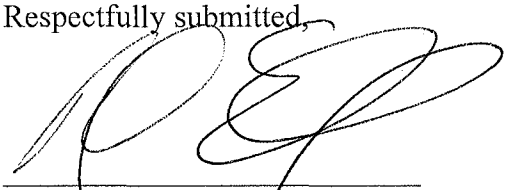
c. By requiring permittees to expend appropriate and proportional fund, including those already committed, to collect and report data regarding the River;

d. Devoting such staff and other resources required to timely complete the TMDL; and

e. Designed to restore the River so that it can be removed from the 303(d) list as soon as is practicable.

8. Grant such additional relief as the Board deems just and proper.

Respectfully submitted,



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Counsel for Petitioner Harpeth River Watershed Association

STATE OF TENNESSEE

NPDES PERMIT

No. TN0028827

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger:	**The City of Franklin (Franklin Water Reclamation Facility)**
is authorized to discharge:	**treated municipal wastewater from Outfall 001; also permitted for unrestricted non-potable reuse**
from a facility located at:	**135 Claude Yates Drive in Franklin, Williamson County, Tennessee**
to receiving waters named:	**Harpeth River at mile 85.2**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on:	**July 01, 2017**
This permit shall expire on:	**June 30, 2022**
Issuance date:	**June 01, 2017**

Wade O Murphy for
Tisha Calabrese Benton
Director

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1.0. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS (12 MGD)

The City of Franklin is authorized to discharge treated municipal wastewater from Outfall 001 to the Harpeth River at at mile 85.2. The City of Franklin is also authorized for disposal of treated municipal wastewater by unrestricted non-potable reuse. Authorized discharges consist of treated municipal wastewater from a treatment facility with a design capacity of 12 MGD.

Discharge from Outfall 001 shall be limited and monitored by the permittee as specified below:

Description : External Outfall, Number : 001, Monitoring : All Weather, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
51929	Bypass of Treatment	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

Description : External Outfall, Number : 001, Monitoring : Dry Weather, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
51925	SSO, Dry Weather	Report	-	occur/mo	Occurrences	Continuous	Monthly Total
51927	Release [Sewer], Dry Weather	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
00181	Oxygen demand, ultimate	Report	-	mg/L	Composite	Monthly	Monthly Maximum
00300	Oxygen, dissolved (DO)	>=	8.0	mg/L	Grab	Daily	Instantaneous Minimum
00400	pH	>=	6.0	SU	Grab	Daily	Minimum
00400	pH	<=	9.0	SU	Grab	Daily	Maximum
00545	Settleable Solids	<=	1.0	mL/L	Grab	Daily	Daily Maximum
00600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Twice Per Month	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Twice Per Month	Daily Maximum
00600	Nitrogen, total (as N)	<=	290	lb/d	Composite	Twice Per Month	Annual Average

00625	Nitrogen, Kjeldahl, Total (TKN as N)	Report	-	mg/L	Composite	Weekly	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Composite	Twice Per Month	Daily Maximum
00660	Phosphate, ortho (as PO4)	Report	-	mg/L	Composite	Weekly	Monthly Average
00665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Weekly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Weekly	Monthly Average
00665	Phosphorus, total (as P)	<=	63,693	lb/yr	Composite	Weekly	Rolling Average*
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
50060	Chlorine, total residual (TRC)	<=	0.02	mg/L	Grab	Daily	Daily Maximum
51040	E. coli	<=	126	#/100mL	Grab	Daily	Monthly Geometric Mean
51040	E. coli	<=	941	#/100mL	Grab	Daily	Daily Maximum
TRP3B	IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>	100	%	Composite	Quarterly	Minimum
TRP6C	IC25 Static Renewal 7 Day Chronic Pimephales	>	100	%	Composite	Quarterly	Minimum

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : Summer

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
00530	Total Suspended Solids (TSS)	<=	10	mg/L	Composite	Daily	Monthly Average
00530	Total Suspended Solids (TSS)	<=	15	mg/L	Composite	Daily	Weekly Average
00530	Total Suspended Solids (TSS)	<=	20	mg/L	Composite	Daily	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	1001	lb/d	Composite	Daily	Monthly Average
00530	Total Suspended Solids (TSS)	<=	1501	lb/d	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	0.4	mg/L	Composite	Daily	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	0.6	mg/L	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	0.8	mg/L	Composite	Daily	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	40	lb/d	Composite	Daily	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	60	lb/d	Composite	Daily	Weekly Average

80082	CBOD, 5-day, 20 C	<=	4	mg/L	Composite	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	<=	6	mg/L	Composite	Daily	Weekly Average
80082	CBOD, 5-day, 20 C	<=	8	mg/L	Composite	Daily	Daily Maximum
80082	CBOD, 5-day, 20 C	<=	400	lb/d	Composite	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	<=	600	lb/d	Composite	Daily	Weekly Average

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : Winter

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
00530	Total Suspended Solids (TSS)	<=	30	mg/L	Composite	Daily	Monthly Average
00530	Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Daily	Weekly Average
00530	Total Suspended Solids (TSS)	<=	45	mg/L	Composite	Daily	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	3002	lb/d	Composite	Daily	Monthly Average
00530	Total Suspended Solids (TSS)	<=	4003	lb/d	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	1.5	mg/L	Composite	Daily	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	2.3	mg/L	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	3	mg/L	Composite	Daily	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	150	lb/d	Composite	Daily	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	230	lb/d	Composite	Daily	Weekly Average
80082	CBOD, 5-day, 20 C	<=	10	mg/L	Composite	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	<=	15	mg/L	Composite	Daily	Weekly Average
80082	CBOD, 5-day, 20 C	<=	20	mg/L	Composite	Daily	Daily Maximum
80082	CBOD, 5-day, 20 C	<=	1001	lb/d	Composite	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	<=	1500	lb/d	Composite	Daily	Weekly Average

Description : External Outfall, Number : 001, Monitoring : Percent Removal, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
80358	CBOD, 5-day, 20 C, % removal	>=	40	%	Calculated	Daily	Daily Minimum
80358	CBOD, 5-day, 20 C, % removal	>=	85	%	Calculated	Daily	Monthly Average Minimum
81011	TSS, % removal	>=	40	%	Calculated	Daily	Daily Minimum
81011	TSS, % removal	>=	85	%	Calculated	Daily	Monthly Average Minimum

Description : External Outfall, Number : 001, Monitoring : Raw Sewage Influent, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Daily	Monthly Average
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Daily	Daily Maximum
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
80082	CBOD, 5-day, 20 C	Report	-	mg/L	Composite	Daily	Daily Maximum
80082	CBOD, 5-day, 20 C	Report	-	mg/L	Composite	Daily	Monthly Average

Description : External Outfall, Number : 001, Monitoring : Wet Weather, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
51926	SSO, Wet Weather	Report	-	occur/mo	Occurrences	Continuous	Monthly Total
51928	Release [Sewer], Wet Weather	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

*The annual rolling average (lb/year) for total phosphorus is calculated as the average of the weekly loads collected during the twelve month monitoring period beginning from the permit effective date. Each weekly load value shall be calculated using the average effluent flow rate for the date of the sample. The limit applies on the effective date of this permit, and will first be reported on the DMR due on the 15th day of the 13th month of permit effectiveness. From this point forward, the annual load limit will apply monthly on the basis of the most recent twelve months of weekly samples. If a permit limit is exceeded, it would be considered a violation only on each day of the latest reporting month used in the 12-month calculation which caused an exceedance of the rolling-average.

This constitutes an interim limitation until a new TMDL is finalized and approved by EPA, at which time the limitation will be revised to be consistent with the assumptions and requirements of the new wasteload allocation. This may result in either a decreased or an increased

limitation. If the latter, the new limitation would not constitute backsliding because it would be based on new information and would comply with the Antidegradation Statement because it would be part of an overall effort to reduce pollutant loading in the receiving waters.

1.2. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS (16 MGD)

The City of Franklin is authorized to discharge treated municipal wastewater from Outfall 001 to the Harpeth River at at mile 85.2. The City of Franklin is also authorized for disposal of treated municipal wastewater by unrestricted non-potable reuse. Authorized discharges consist of treated municipal wastewater from a treatment facility with a design capacity of 16 MGD. The 16 MGD permit limits are effective (i) within twelve months after substantial completion of the new facility or (ii) on January 1st of the year in which the annual average effluent flow discharged to the Harpeth River for the preceding calendar year exceed 12 MGD, whichever is later.

Discharge 001 shall be limited and monitored by the permittee as specified below:

Description : External Outfall, Number : 001, Monitoring : All Weather, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
51929	Bypass of Treatment	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

Description : External Outfall, Number : 001, Monitoring : Dry Weather, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
51925	SSO, Dry Weather	Report	-	occur/mo	Occurrences	Continuous	Monthly Total
51927	Release [Sewer], Dry Weather	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
00181	Oxygen demand, ultimate	Report	-	mg/L	Composite	Monthly	Monthly Maximum
00300	Oxygen, dissolved (DO)	>=	8.0	mg/L	Grab	Daily	Instantaneous Minimum
00400	pH	>=	6.0	SU	Grab	Daily	Minimum
00400	pH	<=	9.0	SU	Grab	Daily	Maximum
00545	Settleable Solids	<=	1.0	mL/L	Grab	Daily	Daily Maximum
00600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Twice Per Month	Monthly Average
00600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Twice Per Month	Daily Maximum
00600	Nitrogen, total (as N)	<=	290	lb/d	Composite	Twice Per Month	Annual Average
00625	Nitrogen, Kjeldahl, Total (TKN as N)	Report	-	mg/L	Composite	Weekly	Monthly Average
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Composite	Twice Per Month	Daily Maximum

00660	Phosphate, ortho (as PO4)	Report	-	mg/L	Composite	Weekly	Monthly Average
00665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Weekly	Monthly Average
00665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Weekly	Daily Maximum
00665	Phosphorus, total (as P)	<=	63,693	lb/year	Composite	Weekly	Rolling Average*
01042	Copper, total (as Cu)	<=	0.67	lb/d	Composite	Monthly	Monthly Average
01042	Copper, total (as Cu)	<=	1.08	lb/d	Composite	Monthly	Daily Maximum
01051	Lead, total (as Pb)	<=	0.92	lb/d	Composite	Monthly	Monthly Average
01051	Lead, total (as Pb)	<=	10.86	lb/d	Composite	Monthly	Daily Maximum
01067	Nickel, total (as Ni)	<=	3.16	lb/d	Composite	Monthly	Monthly Average
01067	Nickel, total (as Ni)	<=	28.61	lb/d	Composite	Monthly	Daily Maximum
01092	Zinc, total (as Zn)	<=	10.76	lb/d	Composite	Monthly	Monthly Average
01092	Zinc, total (as Zn)	<=	10.67	lb/d	Composite	Monthly	Daily Maximum
01147	Selenium, total (as Se)	<=	0.5	lb/d	Composite	Monthly	Monthly Average
32730	Phenolics, total recoverable	<=	144.9	lb/d	Composite	Monthly	Monthly Average
34336	Diethyl phthalate	<=	637.4	lb/d	Composite	Monthly	Monthly Average
34423	Methylene chloride	<=	85.5	lb/d	Composite	Monthly	Monthly Average
39100	Bis(2-ethylhexyl) phthalate	<=	0.3	lb/d	Composite	Monthly	Monthly Average
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
50060	Chlorine, total residual (TRC)	<=	0.02	mg/L	Grab	Daily	Daily Maximum
51040	E. coli	<=	126	#/100mL	Grab	Daily	Monthly Geometric Mean
51040	E. coli	<=	941	#/100mL	Grab	Daily	Daily Maximum
TRP3B	IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>	100	%	Composite	Quarterly	Minimum
TRP6C	IC25 Static Renewal 7 Day Chronic Pimephales	>	100	%	Composite	Quarterly	Minimum

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : Summer

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
00530	Total Suspended Solids (TSS)	<=	7.5	mg/L	Composite	Daily	Monthly Average

00530	Total Suspended Solids (TSS)	<=	12.3	mg/L	Composite	Daily	Weekly Average
00530	Total Suspended Solids (TSS)	<=	15	mg/L	Composite	Daily	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	1001	lb/d	Composite	Daily	Monthly Average
00530	Total Suspended Solids (TSS)	<=	1501	lb/d	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	40	lb/d	Composite	Daily	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	60	lb/d	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	0.3	mg/L	Composite	Daily	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	0.45	mg/L	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	0.6	mg/L	Composite	Daily	Daily Maximum
80082	CBOD, 5-day, 20 C	<=	3	mg/L	Composite	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	<=	4.5	mg/L	Composite	Daily	Weekly Average
80082	CBOD, 5-day, 20 C	<=	6	mg/L	Composite	Daily	Daily Maximum
80082	CBOD, 5-day, 20 C	<=	400	lb/d	Composite	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	<=	600	lb/d	Composite	Daily	Weekly Average

Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : Winter

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
00530	Total Suspended Solids (TSS)	<=	3002	lb/d	Composite	Daily	Monthly Average
00530	Total Suspended Solids (TSS)	<=	4003	lb/d	Composite	Daily	Weekly Average
00530	Total Suspended Solids (TSS)	<=	23	mg/L	Composite	Daily	Monthly Average
00530	Total Suspended Solids (TSS)	<=	30	mg/L	Composite	Daily	Weekly Average
00530	Total Suspended Solids (TSS)	<=	34	mg/L	Composite	Daily	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	150	lb/d	Composite	Daily	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	230	lb/d	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	1.1	mg/L	Composite	Daily	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	1.7	mg/L	Composite	Daily	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	2.3	mg/L	Composite	Daily	Daily Maximum
80082	CBOD, 5-day, 20 C	<=	7.5	mg/L	Composite	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	<=	11.3	mg/L	Composite	Daily	Weekly Average
80082	CBOD, 5-day, 20 C	<=	15	mg/L	Composite	Daily	Daily Maximum

80082	CBOD, 5-day, 20 C	<=	1001	lb/d	Composite	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	<=	1500	lb/d	Composite	Daily	Weekly Average

Description : External Outfall, Number : 001, Monitoring : Percent Removal, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
80358	CBOD, 5-day, 20 C, % removal	>=	40	%	Calculated	Daily	Daily Minimum
80358	CBOD, 5-day, 20 C, % removal	>=	85	%	Calculated	Daily	Monthly Average Minimum
81011	TSS, % removal	>=	40	%	Calculated	Daily	Daily Minimum
81011	TSS, % removal	>=	85	%	Calculated	Daily	Monthly Average Minimum

Description : External Outfall, Number : 001, Monitoring : Raw Sewage Influent, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Daily	Daily Maximum
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Daily	Monthly Average
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
80082	CBOD, 5-day, 20 C	Report	-	mg/L	Composite	Daily	Daily Maximum
80082	CBOD, 5-day, 20 C	Report	-	mg/L	Composite	Daily	Monthly Average

Description : External Outfall, Number : 001, Monitoring : Wet Weather, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
51926	SSO, Wet Weather	Report	-	occur/mo	Occurrences	Continuous	Monthly Total
51928	Release [Sewer], Wet Weather	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

*The annual rolling average (lb/year) for total phosphorus is calculated as the average of the weekly loads collected during the twelve month monitoring period beginning from the commencement of 16 MGD operation. Each weekly load value shall be calculated using the average effluent flow rate for the date of the sample. The limit applies on the effective date of this permit, and will first be reported on the DMR due on the 15th day of the 13th month of permit effectiveness. From this point forward, the annual load limit will apply monthly on the basis of the most recent twelve months of weekly samples. If a permit limit is exceeded, it would be considered a violation only on each day of the latest reporting month used in the 12-month calculation which caused an exceedance of the rolling-average.

This constitutes an interim limitation until a new TMDL is finalized and approved by EPA, at which time the limitation will be revised to be consistent with the assumptions and requirements of the new wasteload allocation. This may result in either a decreased or an increased

limitation. If the latter, the new limitation would not constitute backsliding because it would be based on new information and would comply with the Antidegradation Statement because it would be part of an overall effort to reduce pollutant loading in the receiving waters.

The following notes, narrative limitations and restrictions are applicable to treatment facilities with design capacity of both 12 MGD and 16 MGD.

Notes: The permittee shall achieve 85% removal of $CBOD_5$ and TSS on a monthly average basis. The permittee shall report all instances of releases, overflows and/or bypasses. See Part 2.3.3.a for definitions and Part 1.3.5.1 for reporting requirements.

Unless elsewhere specified, summer months are May through October; winter months are November through April.

See Part 1.4.3 for details regarding test procedures.

See Part 3.4 for biomonitoring test and reporting requirements. See next page for percent removal calculations.

This constitutes an interim limitation until a new TMDL is finalized and approved by EPA, at which time the limitation will be revised to be consistent with the assumptions and requirements of the new wasteload allocation. This may result in either a decreased or an increased limitation. If the latter, the new limitation would not constitute backsliding because it would be based on new information and would comply with the Antidegradation Statement because it would be part of an overall effort to reduce pollutant loading in the receiving waters.

Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. The concentration of the *E. coli* group after disinfection shall not exceed 126 cfu per 100 ml as the geometric mean calculated on the actual number of samples collected and tested for *E. coli* within the required reporting period. The permittee may collect more samples than specified as the monitoring frequency. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an *E. coli* group concentration of less than one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the *E. coli* group in any individual sample shall not exceed a specified maximum amount. A maximum daily limit of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

There shall be no distinctly visible floating scum, oil or other matter contained in the wastewater discharge. The wastewater discharge must not cause an objectionable color contrast in the receiving stream.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner that prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act. (40 C.F.R. 125.98(b)(1))

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the State of Tennessee published required detection levels (RDLs) for any given effluent characteristics, the results of analyses below the RDL shall be reported as Below Detection Level (BDL), unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed.

The reporting of results should be rounded to the closest higher or lower number, as applicable, to correspond to the number of decimal points set forth in the permit condition.

For $CBOD_5$ and TSS, the treatment facility shall demonstrate a minimum of 85% removal efficiency on a monthly average basis. This is calculated by determining an average of all daily influent concentrations and comparing this to an average of all daily effluent concentrations. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{average of daily effluent concentration}}{\text{average of daily influent concentration}}\right] \times 100\% = \%\ \text{removal}$$

The treatment facility will also demonstrate 40% minimum removal of the $CBOD_5$ and TSS based upon each daily composite sample. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{daily effluent concentration}}{\text{daily influent concentration}}\right] \times 100\% = \%\ \text{removal}$$

1.3. REUSED TREATED WASTEWATER (INTERNAL MONITORING POINT) – APPLICABLE TO 12 MGD DESIGN CAPACITY AND 16 MGD DESIGN CAPACITY

Description : External Outfall, Number : 002, Monitoring : Internal Monitoring Point, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
50060	Chlorine, total residual (TRC)	Report	-	mg/L	Grab	Quarterly	Maximum
50060	Chlorine, total residual (TRC)	Report	-	mg/L	Grab	Quarterly	Average
51040	E. coli	Report	-	#/100mL	Grab	Quarterly	Daily Maximum
51040	E. coli	Report	-	#/100mL	Grab	Quarterly	Average

Description : External Outfall, Number : 002, Monitoring : Prior to Reuse, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
50060	Chlorine, total residual (TRC)	>=	1	mg/L	Grab	Daily When Discharging	Daily Minimum
51040	E. coli	<=	23	#/100mL	Grab	Daily When Discharging	Daily Maximum

1.4. MONITORING PROCEDURES

1.4.1. Representative Sampling

Flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

Samples and measurements taken in compliance with the monitoring requirements specified above shall be representative of the volume and nature of the monitored discharge, and shall be taken at the following location(s):

The permittee must collect samples and monitor the influent to record representative raw wastewater flow and characteristics data. If recycle streams are combined prior to influent monitoring, one of the following approaches may be used to ensure compliance with permit conditions:

- representative raw wastewater flow and characteristics may be determined using appropriately calculated values, e.g., total influent results with recycle streams included and subtracting recycle stream results. Representative raw wastewater flow and characteristics must be determined using appropriate compositing, grab sampling, and/or mass balance techniques. The permittee must use appropriate grab sampling as required for corresponding parameters.
- the permittee may monitor for influent TSS and CBOD5 and report the percent removal for each of these parameters using the equations specified below:

$$R_{TSS}=(1-TSS_{eff}/TSS_{inf})$$

$$RC_{BOD5}=(1-CBOD_{5eff}/CBOD_{5inf})$$

Where,
Rx = removal (decimal) for the specified parameter ($CBOD_5$ or TSS)

The division may make written revisions to the above listed or other scientifically-valid approaches used for determining representative raw wastewater flow and characteristics data, without reopening the permit. If the permittee disagrees with the division's approach, it will then require a permit modification subject to the division's applicable public participation.

Procedures used to monitor representative raw wastewater flow and characteristics data should be documented and available for review within 60 days from the permit's effective date.

Effluent samples must be representative of the wastewater being discharged and collected prior to mixing with any other discharge or the receiving stream. This can be a different point for different parameters, but must be after all treatment for that parameter or all expected change:

a. The chlorine residual must be measured after the chlorine contact chamber and any dechlorination. It may be to the advantage of the permittee to measure at the end of any long outfall lines.

b. Samples for *E. coli* can be collected at any point between disinfection and the actual discharge.

c. The dissolved oxygen can drop in the outfall line; therefore, D.O. measurements are required at the discharge end of outfall lines greater than one mile long. Systems with outfall lines less than one mile may measure dissolved oxygen as the wastewater leaves the treatment facility. For systems with dechlorination, dissolved oxygen must be measured after this step and as close to the end of the outfall line as possible.

d. Total suspended solids and settleable solids can be collected at any point after the final clarifier.

e. Biomonitoring tests (if required) shall be conducted on final effluent.

1.4.2. Sampling Frequency

Where the permit requires sampling and monitoring of a particular effluent characteristic(s) at a frequency of less than once per day or daily, the permittee is precluded from marking the "No Discharge" block on the Discharge Monitoring Report if there has been any discharge from that particular outfall during the period which coincides with the required monitoring frequency; i.e. if the required monitoring frequency is once per month or 1/month, the monitoring period is one month, and if the discharge occurs during only one day in that period then the permittee must sample on that day and report the results of analyses accordingly.

1.4.3. Test Procedures

a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.

b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR, Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.

c. Composite samples must be proportioned by flow at time of sampling. Aliquots may be collected manually or automatically. The sample aliquots must be maintained at ≤ 6 degrees Celsius during the compositing period.

d. In instances where permit limits established through implementation of applicable water criteria are below analytical capabilities, compliance with those limits will be determined using the detection limits described in the TN Rules, Chapter 0400-40-03-.05(8).

e. All sampling for total mercury at the municipal wastewater plant (application, pretreatment, etc.) shall use Methods 1631, 245.7 or any additional method in 40 CFR 136 with a maximum detection limit of 5 ng/L.

1.4.4. *Recording of Results*

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date and time of sampling;

b. The exact person(s) collecting samples;

c. The dates and times the analyses were performed;

d. The person(s) or laboratory who performed the analyses;

e. The analytical techniques or methods used, and;

f. The results of all required analyses.

1.4.5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Resources.

1.5. REPORTING

1.5.1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using Discharge Monitoring Report (DMR) forms supplied by the Division of Water Resources. Submittals shall be postmarked no later than 15 days after the completion of the reporting period. A completed DMR with an original signature shall be submitted to the following address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
COMPLIANCE & ENFORCEMENT SECTION
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

A copy of the completed and signed DMR shall be mailed to the Nashville Environmental Field Office (EFO) at the following address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Nashville Environmental Field Office
711 R.S. Gass Boulevard
Nashville, Tennessee 37216

A copy should be retained for the permittee's files. In addition, any required written communication to TDEC regarding compliance with the conditions of this permit must be sent to the two offices listed above (this excludes submission of MORs, which are to be submitted to the EFO or via electronic methods, if available).

The first DMR is due on the 15th of the month following permit effectiveness.

DMRs and any other information or report must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

The electronic submission of DMR data will be accepted only if formally approved beforehand by the division. For purposes of determining compliance with this permit, data approved by the division to be submitted electronically is legally equivalent to data submitted on signed and certified DMR forms.

1.5.2. Additional Monitoring by Permittee

If the permittee monitors any pollutant specifically limited by this permit more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

1.5.3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

1.5.4. Monthly Report of Operation

Monthly operational reports shall be submitted on standard forms to the Nashville Environmental Field Office. Reports shall be submitted by the 15th day of the month following data collection.

1.5.5. Bypass and Overflow Reporting

1.5.5.1 Report Requirements

A summary report of known instances of sanitary sewer overflows, releases, and/or bypasses shall accompany the Discharge Monitoring Report (DMR). The report must contain the date(s), estimated duration in hours, estimated quantity of wastewater in gallons, and if applicable, the receiving stream for each instance of sanitary sewer overflow, release, or bypass. For each sanitary sewer overflow and release, the report shall identify (using the permittee's naming conventions) the next downstream pump station. For each sanitary sewer overflow, the report shall also identify whether it was a dry weather overflow.

The report must also detail activities undertaken during the reporting period to correct the reported sanitary sewer overflows and releases.

On the DMR, the permittee must separately report: the total number of sanitary sewer overflows for the reporting month and the cumulative total for the previous 12 months; the total number of dry-weather overflows for the reporting month and the cumulative total for the previous 12 months; the total number of releases for the reporting month; and the total number of bypasses for the reporting month. On the DMR, sanitary sewer overflows are coded "number per month or per year" and releases are coded

"occurrences per month or per year." Each release due to improper operation or maintenance shall be reported as such. Each discrete location of a sanitary sewer overflow or a release shall be reported as a separate value. A sanitary sewer overflow or release occurring at one location over a period of up to 24 hours shall be reported as one event. A sanitary sewer overflow or release occurring at one location over a period more than 24 hours shall be reported as the appropriate number of events.[1]

1.5.5.2 Anticipated Bypass Notification

If, because of unavoidable maintenance or construction, the permittee has need to create an in-plant bypass which would cause an effluent violation, the permittee must notify the division as soon as possible, but in any case, no later than 10 days prior to the date of the bypass.

1.5.6. Reporting Less Than Detection

A permit limit may be less than the accepted detection level. If the samples are below the detection level, then report "BDL" or "NODI =B" on the DMRs. The permittee must use the correct detection levels in all analytical testing required in the permit[2]. The required detection levels are listed in the Rules of the Department of Environment and Conservation, Division of Water Resources, Chapter 0400-40-03-.05(8).

For example, if the limit is 0.02 mg/l with a detection level of 0.05 mg/l and detection is shown; 0.05 mg/l must be reported. In contrast, if nothing is detected reporting "BDL" or "NODI =B" is acceptable.

1.6. COMPLIANCE WITH SECTION 208

The limits and conditions in this permit shall require compliance with an area-wide waste treatment plan (208 Water Quality Management Plan) where such approved plan is applicable.

1.7. REOPENER CLAUSE

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections

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[1] For example, if a sanitary sewer overflow discharges continuously from 1 pm until 3 am the following morning, the event shall be reported as a single violation. Similarly, if the same sanitary sewer overflow discharges intermittently for the same time period, it should be reported as one violation. By contrast, if the same sanitary sewer overflow did not end until 3 pm two days later, it should be reported as three violations.

[2] All analytical methods and systems have a certain level of "noise" associated with them. This "noise" is due to random variations in the analytical and detection components of the system. When testing for contaminants at low concentrations there is a point where the method's results cannot be distinguished from the "noise" level of the system. Interference from other pollutants such as bromine, when testing for chlorine can also be detected. The Method Detection Limit (MDL) is the basic measure of whether a pollutant parameter has been detected. It's the minimum concentration at which we can be confident that the effluent concentration is greater than zero. The Quantification Level (QL) is the minimum concentration at which we can be confident that the numerical result is accurate, and is determined by the laboratory performing the analysis.

301(b)(2)(C) and (D), 307(a)(2) and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation or sludge disposal requirement so issued or approved:

a. Contains different conditions or is otherwise more stringent than any condition in the permit; or
b. Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

In addition, the permit may be reopened and modified to incorporate changes necessary to accommodate watershed planning requirements associated with TMDL development and any wasteload allocation(s) assigned to the facility in a new TMDL.

1.8. SCHEDULE OF COMPLIANCE

Full compliance and operational levels shall be attained from the effective date of this permit, except where otherwise specified.

2.0. GENERAL PERMIT REQUIREMENTS

2.1. GENERAL PROVISIONS

2.1.1. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of the Division of Water Resources (the "director") no later than 180 days prior to the expiration date. Such forms shall be properly signed and certified.

2.1.2. Right of Entry

The permittee shall allow the director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and

c. To sample at reasonable times any discharge of pollutants.

2.1.3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Resources. As required by the Federal Act, effluent data shall not be considered confidential.

2.1.4. Proper Operation and Maintenance

a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.

b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and or other technology based effluent limitations such as those in State of Tennessee Rule 0400-40-05-.09.

2.1.5. Treatment Facility Failure (Industrial Sources)

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

2.1.6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

2.1.7. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

2.1.8. Other Information

If the permittee becomes aware of failure to submit any relevant facts in a permit application, or of submission of incorrect information in a permit application or in any report to the director, then the permittee shall promptly submit such facts or information.

2.2. CHANGES AFFECTING THE PERMIT

2.2.1. Planned Changes

The permittee shall give notice to the director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants, which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

2.2.2. Permit Modification, Revocation, or Termination

a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.

b. The permittee shall furnish to the director, within a reasonable time, any information which the director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the director, upon request, copies of records required to be kept by this permit.

c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.

d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

2.2.3. Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

a. The permittee notifies the director of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and

c. The director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), "Signatories to permit applications"; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

2.2.4. Change of Mailing Address

The permittee shall promptly provide to the director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

2.3. NONCOMPLIANCE

2.3.1. Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable state and federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2.3.2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate Environmental Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The

Environmental Field Office should be contacted for names and phone numbers of environmental response team).

A written submission must be provided within five days of the time the permittee becomes aware of the circumstances unless the director on a case-by-case basis waives this requirement. The permittee shall provide the director with the following information:

i. A description of the discharge and cause of noncompliance;

ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.3.2.a above, the permittee shall report the noncompliance on the Discharge Monitoring Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

2.3.3. Overflow

a. Sanitary sewer overflows, including dry-weather overflows, are prohibited.

b. The permittee shall operate the collection system so as to avoid sanitary sewer overflows and releases due to improper operation or maintenance. A "release" may be due to improper operation or maintenance of the collection system or may be due to other cause(s). Releases caused by improper operation or maintenance of the permittee's collection and transmission system are prohibited.

c. The permittee shall take all reasonable steps to minimize any adverse impact associated with releases.

d. No new or additional flows shall be added upstream of any point in the collection or transmission system that experiences chronic sanitary sewer overflows or releases (greater than 5 events per year) or would otherwise overload any portion of the system. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow or release point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are

customary in the environmental engineering field and reported in an attachment to a Monthly Operating Report submitted to the local TDEC Environmental Field Office. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

e. In the event that chronic sanitary sewer overflows or releases have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Resources EFO staff to petition for a waiver based on mitigating evidence.

2.3.4. Upset

a. "***Upset***" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   i. An upset occurred and that the permittee can identify the cause(s) of the upset;

   ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;

   iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and

   iv. The permittee complied with any remedial measures required under "Adverse Impact."

2.3.5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.3.6. Bypass

a. "***Bypass***" is the intentional diversion of waste streams from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypasses are prohibited unless all of the following 3 conditions are met:

   i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

   ii. There are no feasible alternatives to bypass, such as the construction and use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment downtime or preventative maintenance;

   iii. The permittee submits notice of an unanticipated bypass to the Division of Water Resources in the appropriate Environmental Field Office within 24 hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the director, if possible, at least 10 days before the date of the bypass.

c. Bypasses not exceeding permit limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 2.3.6.b.iii, above.

2.3.7. Washout

a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.

b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Resources in the appropriate Environmental Field Office within 24 hours by telephone. A written submission must be provided within five days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

2.4. LIABILITIES

2.4.1. Civil and Criminal Liability

Except as provided in permit conditions for "***Bypassing,***" "***Overflow,***" and "***Upset,***" nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2.4.2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or the Federal Water Pollution Control Act, as amended.

3.0. PERMIT SPECIFIC REQUIREMENTS

3.1. CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a certified wastewater treatment operator and the collection system shall be operated under the supervision of a certified collection system operator in accordance with the Water Environmental Health Act of 1984.

3.2. POTW PRETREATMENT PROGRAM GENERAL PROVISIONS

As an update of information previously submitted to the division, the permittee will undertake the following activity.

a. The permittee has been delegated the primary responsibility and therefore becomes the "control authority" for enforcing the 40 CFR 403 General Pretreatment Regulations. Where multiple plants are concerned the permittee is responsible for the Pretreatment Program for all plants within its jurisdiction. The permittee shall implement and enforce the Industrial Pretreatment Program in accordance with Section 403(b)(8) of the Clean Water Act, the Federal Pretreatment Regulations 40 CFR 403, Tennessee Water Quality Control Act Part 63-3-123 through 63-3-128, and the legal authorities, policies, procedures, and financial provisions contained in its approved Pretreatment Program, except to the extent this permit imposed stricter requirements. Such implementation shall require but not limit the permittee to do the following:

   i. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user (IU), whether the IU is in compliance with the pretreatment standards;

   ii. Require development, as necessary, of compliance schedules for each IU for the installation of control technologies to meet applicable pretreatment standards;

   iii. Require all industrial users to comply with all applicable monitoring and reporting requirements outlined in the approved pretreatment program and IU permit;

   iv. Maintain and update, as necessary, records identifying the nature and character of industrial user discharges, and retain such records for a minimum of three years;

   v. Obtain appropriate remedies for noncompliance by an IU with any pretreatment standard and/or requirement;

vi. Publish annually, pursuant to 40 CFR 403.8 (f)(2)(viii), a list of industrial users that have significantly violated pretreatment requirements and standards during the previous twelve-month period.

vii. Maintain an adequate revenue structure for continued operation of the pretreatment program.

viii. Update its Industrial Waste Survey at least once every five years. Results of this update shall be submitted to the Division of Water Resources, Compliance and Enforcement Unit within 120 days of the effective date of this permit, unless such a survey has been submitted within 3 years of the effective date.

ix. Submit a written technical evaluation of the need to revise local limits within 120 days of the effective date of this permit to the state pretreatment program coordinator. The evaluation shall include the most recent pass-through limits proposed by the division. The technical evaluation shall be based on practical and specialized knowledge of the local program and not be limited by a specified written format.

b. The permittee shall enforce 40 CFR 403.5, "prohibited discharges". Pollutants introduced into the POTW by a non-domestic source shall not cause pass through or interference as defined in 40 CFR Part 403.3. These general prohibitions and the specific prohibitions in this section apply to all non-domestic sources introducing pollutants into the POTW whether the source is subject to other National Pretreatment Standards or any state or local pretreatment requirements.

Specific Prohibitions. Under no circumstances shall the permittee allow introduction of the following wastes in the waste treatment system:

i. Pollutants which create a fire or explosion hazard in the POTW;

ii. Pollutants which will cause corrosive structural damage to the treatment works, but in no case discharges with pH less than 5.0 unless the system is specifically designed to accept such discharges.

iii. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the treatment system resulting in interference.

iv. Any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment works.

v. Heat in amounts which will inhibit biological activity in the treatment works resulting in interference, but in no case heat in such quantities that the temperature at the treatment works exceeds 40°C (104°F) unless the works are designed to accommodate such heat.

vi. Any priority pollutant in amounts that will contaminate the treatment works sludge.

vii. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

viii. Pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

ix. Any trucked or hauled pollutants except at discharge points designated by the POTW.

c. The permittee shall notify the division of any of the following changes in user discharge to the system no later than 30 days prior to change of discharge:

i. New introductions into such works of pollutants from any source which would be a new source as defined in Section 306 of the Act if such source were discharging pollutants.

ii. New introductions of pollutants into such works from a source which would be subject to Section 301 of the "Federal Water Quality Act as Amended" if it were discharging such pollutants.

iii. A substantial change in volume or character of pollutants being introduced into such works by a source already discharging pollutants into such works at the time the permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the publicly owned treatment works, and on any anticipated impact on the effluent discharged from such works. If this discharge necessitates a revision of the current NPDES permit or pass-through guidelines, discharge by this source is prohibited until the Tennessee Division of Water Resources gives final authorization.

d. Reporting Requirements

The permittee shall provide an annual (calendar year) report briefly describing the permittee's pretreatment program activities over the previous twelve-month period. Reporting periods shall end on the last day of December. The report shall be submitted to the Division of Water Resources, Central Office and a copy to the appropriate Environmental Field Office no later than February 14 following each reporting period. For control authorities with multiple STPs, one report should be submitted with a separate Form 1 for each STP. Each report shall conform to the format set forth in the State POTW Pretreatment Annual Report Package which contains information regarding:

i. An updated listing of the permittee's industrial users (including information required pursuant to 403.12(i)(1), e.g., deletions and additions, categorical standards applied, local standards more stringent than categorical standards, and standards applied to each industrial user).

ii. Results of sampling of the influent and effluent of the wastewater treatment plant. At least once each reporting period, the permittee shall analyze the wastewater treatment plant influent and effluent for the following pollutants, using the prescribed sampling procedures:

Pollutant	Sample Type
chromium, trivalent	24-hour composite
chromium, hexavalent	24-hour composite
copper	24-hour composite
lead	24-hour composite
nickel	24-hour composite
zinc	24-hour composite
cadmium	24-hour composite
mercury	24-hour composite
silver	24-hour composite
total phenols	grab
cyanide	grab

If any particular pollutant is analyzed more frequently than is required, the permittee shall report the maximum and average values in its annual report. All upsets, interferences, and pass-through violations must also be reported in the annual report, the actions that were taken to determine the causes of the incidents and the steps that have been taken to prevent the incidents from recurring.

At least once during the term of this permit, the permittee shall analyze the effluent from the STP (and report the results in the next regularly scheduled report) for the following pollutants:

chromium III	cyanide	phthalates, sum of the following: bis (2-ethylhexyl) phthalate butyl benzylphthalate di-n-butylphthalate diethyl phthalate
chromium VI	silver	
copper	benzene	
lead	carbon tetrachloride	
nickel	chloroform	
zinc	ethylbenzene	1,2 trans-dichloroethylene
cadmium	methylene chloride	tetrachloroethylene
mercury	naphthalene	toluene
phenols, total	1,1,1 trichloroethane	trichloroethylene

iii. Compliance with categorical and local standards, and review of industrial compliance, which includes a summary of the compliance status for all permitted industries. Also included is information on the number and type of major violations of pretreatment regulations, and the actions taken by the POTW to

obtain compliance. The effluent from all significant industrial users must be analyzed for the appropriate pollutants at least once per reporting period.

iv. A list of industries in significant non-compliance as published in local newspapers in accordance with the requirements set forth in 40 CFR 403.8(f)(2)(viii).

v. A description of all substantive changes made to the permittee's pretreatment program. Any such changes shall receive prior approval. Substantive changes include, but are not limited to, any change in any ordinance, major modification in the program's administrative structure, local limits, or a change in the method of funding the program.

vi. Summary of permittee's industrial user inspections, which includes information on the number and type of industry inspected. All significant industrial users must be inspected at least once per year.

3.3. BIOSOLIDS MANAGEMENT PRACTICES

All sludge and/or biosolids use or disposal must comply with 40 CFR 503 et seq. Biosolids shall be sampled and analyzed at a frequency dependent on the amount used annually.

Any facility that land applies non-exceptional quality biosolids must obtain an appropriate permit from the division in accordance with Chapter 0400-40-15.

a. Reopener: If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2) of the Clean Water Act.

b. The current method of sludge disposal is to a municipal solid waste landfill (or co - composting facility). This method of disposal is controlled by the rules of the Tennessee Division of Solid Waste Management (DSWM) and Federal Regulations at 40 CFR 258. If the permittee anticipates changing its disposal practices to either land application or surface disposal, the Division of Water Resources shall be notified prior to the change. A copy of the results of pollutant analyses required by the Tennessee Division of Solid Waste Management (DSWM) and/or 40 CFR 258 shall be submitted to the Division of Water Resources.

3.4. BIOMONITORING REQUIREMENTS, CHRONIC

The permittee shall conduct a 3-Brood *Ceriodaphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow *(Pimephales promelas)* Larval Survival and Growth Test on samples of final effluent from Outfall 001.

The measured endpoint for toxicity will be the inhibition concentration causing 25% reduction in survival, reproduction and growth (IC_{25}) of the test organisms. The IC_{25} shall be determined based on a 25% reduction as compared to the controls, and as derived from linear interpolation. The average reproduction and growth responses will be determined based on the number of *Ceriodaphnia dubia* or *Pimephales promelas* larvae used to initiate the test.

Test shall be conducted and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
Permit Limit (PL)	**0.50 X PL**	**0.25 X PL**	**0.125 X PL**	**0.0625 X PL**	**Control**
% effluent					
100	**50**	**25**	**12.5**	**6.25**	**0**

The dilution/control water used will be moderately hard water as described in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013 (or the most current edition). A chronic standard reference toxicant quality assurance test shall be conducted with each species used in the toxicity tests and the results submitted with the discharge monitoring report. Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the IC_{25} is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

All tests will be conducted using a minimum of three 24-hour flow-proportionate composite samples of final effluent collected on days 1, 3 and 5. If, in any control more than 20% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within two (2) weeks. Furthermore, if the results do not meet the acceptability criteria in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013 (or the most current edition), or if the required concentration-response review fails to yield a valid relationship per guidance contained in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein shall be conducted quarterly (1/Quarter) for Outfall 001 and begin no later than 90 days from the effective date of this permit.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. **The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation.**

In the event of 2 consecutive test failures or 3 test failures within a 12-month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. **During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months.** Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary to conduct further analyses. The final determination of any extension period will be made at the discretion of the division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. **During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.**

Test procedures, quality assurance practices, determinations of effluent survival/reproduction and survival/growth values, and report formats will be made in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analyses shall be compiled in a report. The report will be written in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Two copies of biomonitoring reports (including follow-up reports) shall be submitted to the division. One copy of the report shall be submitted along with the discharge monitoring report (DMR). The second copy shall be submitted to the local Division of Water Resources office address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Nashville Environmental Field Office
711 R.S. Gass Boulevard
Nashville, Tennessee 37216

3.5. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream. The minimum sign size should be two feet by two feet (2' x 2') with one-inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following is given as an example of the minimal amount of information that must be included on the sign:

Permitted CSO or unpermitted bypass/overflow point:

UNTREATED WASTEWATER DISCHARGE POINT
Franklin STP
(615) 794-4554
NPDES Permit NO. TN0028827
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Nashville

NPDES Permitted Municipal/Sanitary Outfall:

TREATED MUNICIPAL/SANITARY WASTEWATER
Franklin STP
(615) 794-4554
NPDES Permit NO. TN0028827
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Nashville

No later than sixty (60) days from the effective date of this permit, the permittee shall have the above sign(s) on display in the location specified.

3.6. ULTIMATE CBOD INVESTIGATIONS

The permittee shall continue to monitor and report as an attachment to its monthly DMRs, its Outfall 001 treated effluent ultimate CBOD using a method proposed by the permittee (including upgraded QA/QC procedures) and approved in writing by the division. The permittee shall submit its proposed ultimate CBOD method(s) to the division's Water Resources Nashville Environmental Field and Central Offices within 60 days from the permit's effective date. Until TDEC approves the updated method, if applicable, the permittee shall continue to sample ultimate CBOD based on the permittee's prior method.

3.7. PLANT OPTIMIZATION

The permittee shall collect samples and perform analyses with an effort to reduce nutrient loading to the river within one year after permit issuance and submit a brief report with the Monthly Operating Report by the 15th month of the permit effective date. This brief one or two-page report must address, at a minimum, information pertaining to the following areas:

- Anoxic zone
- Aeration process
- Clarification process
- Denitrification
- Methanol feed system
- Filter operation

The permittee shall provide a brief update on progress toward nutrient optimization/management on an annual basis thereafter.

Wastewater characterization conducted internally by the permittee for nutrient optimization or action level purposes may deviate from approved methods contained in 40 CFR Part 136. However, effluent characterization conducted for monthly DMR reporting shall use approved methods in 40 CFR Part 136.

Action level for total phosphorus

Action level for total phosphorus has been developed in the absence of a TMDL on the Harpeth River. This action levels does not constitute a violation of the permit, but rather a level in which operations will be analyzed and refined in efforts to reduce total phosphorus levels to below the action level, without significant capital expenditures spent for reduction. Action level is based on calendar months and will begin one full calendar month after the issuance of the permit.

A total phosphorus monthly average action level of 1.3 mg/L has been established. If, during the calendar month, the WRF exceeds the monthly average action level, the City will report monthly to TDEC. The reporting will include a brief one to two-page summary indicating the analysis that has been performed and any process changes that occurred to achieve lower phosphorus levels until such time the monthly average is below the

action limit. Once the level has been reduced to below the action level, the City shall report this information on the following month's MOR.

3.8. INSTREAM MONITORING

The facility shall conduct instream chemical, biological and diurnal dissolved oxygen monitoring in the Harpeth River. In summary, instream monitoring will be conducted according to the following schedule:

Diurnal monitoring:

- vicinity of Cotton Lane Bridge (DS4, year-round)
- vicinity of Moran Road Bridge (DS5, seasonal)
- vicinity of Trinity Road Bridge (may, but does not have to overlap with US2, seasonal).

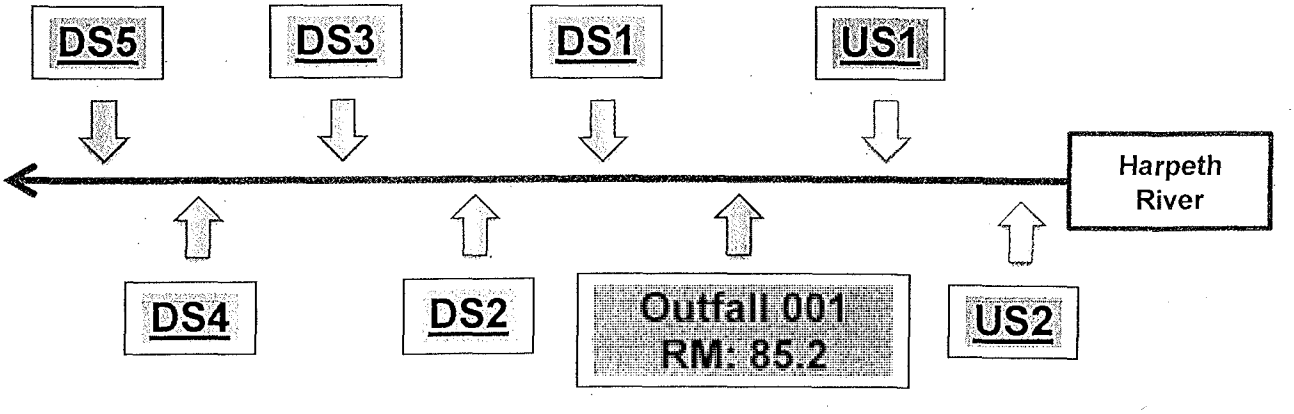
Chemical monitoring:

- Outfall 001
- vicinity of Cotton Lane Bridge (DS4, year-round)
- 50 yards upstream of Outfall 001 (US1)
- 150 yards downstream of Outfall 001 (DS1)

Bioassessement monitoring

- vicinity of Cotton Lane Bridge (DS4, year-round)
- 50 yards upstream of Outfall 001 (US1)
- 500 feet downstream of Outfall 001 (DS2)
- upstream of the WTP intake (US2, to be established in cooperation with the Nashville EFO)
- downstream of the WTP intake (DS3, to be confirmed in cooperation with the Nashville EFO)

Monitoring locations are presented below in a graphical format:



Upstream Locations:
US1 Approximately 50 yards upstream (just downstream of Spencer Creek confluence, RM approximately = 85.23). This sampling location can be used as a "downstream" from the water supply withdrawal location for purposes of instream monitoring required in the Aquatic Resource Alteration permit NRS12.195.
US2 Location "upstream" from the water supply withdrawal for purposes of instream monitoring required in the Aquatic Resource Alteration permit NRS12.195. The exact location of this monitoring station should be established in cooperation with the Nashville EFO.

Outfall Location:
Outfall 001 River Mile 85.2 (discharge rate 12/16 MGD)

Downstream Locations:
DS1 Approximately 150 yards downstream
DS2 Approximately 500 yards downstream
DS3 Downstream at the Hillsboro Road bridge [RM approximately = 82]
DS4 Downstream at the Cotton Road Bridge (@ Cotton Lane) [RM approximately = 79.8]
DS5 Downstream at the Moran Road Bridge

	Effluent	Chemical	Bioassessment (BMAP)	Diurnal Investigations
US2			X	X*
US1		X	X	
Outfall 001	X	X		
DS1		X		
DS2			X	
DS3			X	
DS4		X	X	X
DS5				X*

* seasonal

Chemical Sampling

Locations: US1, Outfall 001, DS1 and DS4.

The facility shall conduct a nutrient-focused sampling event. The facility shall sample for the parameters in the following table. All results of monitoring shall be reported with the discharge monitoring report (DMR) forms in lb/day.

Parameters
Ammonia
Nitrite-Nitrate as N
TKN
Orthophosphate
Total Phosphorus
Total Nitrogen
$CBOD_5$
TSS
pH
Temperature
E.Coli
Turbidity
Conductivity

1. Type of sample - grab
2. Monitoring should be conducted year-round, with one sample collected at each location, where practical, at approximate mid-channel, at mid-depth

   Instream samples shall be collected/monitored biweekly (once every two weeks) between the hours of 6:00 a.m. - 8:00 a.m. (with corresponding once per month 4:30 p.m. – 6:30 p.m. monitoring or nighttime sampling pursuant to division-notification) for the parameters in the table above.
   Climatological information (e.g., rainfall, barometric pressure) shall be recorded for the monitoring time, with an attached summary for the prior week.

Diurnal Investigations

Locations: US2, DS4, and DS5.

1. Type of Monitoring – continuous using instream sondes (with appropriate calibration and crosschecks via grab samples). At a minimum, the sondes shall be able to monitor the instream temperature, pH, dissolved oxygen, and conductivity at 15 minute intervals, with transmitting and/or local recording features. The permittee shall obtain concurrent climatological data and stream flow estimates for the four monitoring stations[3].

2. Analysis/Frequency

Within 60 days from the permit's effective date, the permittee must submit its Harpeth River Diurnal Investigations Plan to the division for approval. The plan shall include an installation schedule, actual monitoring locations, instrumentation and analytical parameters, procedures, and data handling methods. The diurnal monitoring stations must be operational within 3 months from the date of division's approval of the Diurnal

[3] It is recognized that any setup which involves continuous monitoring may have periods of downtime due to mechanical failure, theft, vandalism, and routine calibrations. The permittee should have the equipment operational for > 95% of the time, if feasible.

Investigations Plan. Diurnal investigation should be limited to 4-week period during summer low-flow conditions.

All results of monitoring shall be reported with the discharge monitoring report (DMR) forms.

3.9. BIOASSESSMENT

The permittee shall conduct a macroinvertebrate assessment of the biological integrity of the receiving stream. Specifically, this permit requires assessment of the biological integrity of the receiving streams in accordance with the Tennessee Water Quality Criteria for all streams classified for Fish and Aquatic life per Rule 0400-40-3-.03(k). The receiving stream of interest is located in ecoregion 71h and in the Harpeth River Watershed.

The permittee must perform stream monitoring as specified below. Adherence by the permittee or its consultant at the time of the assessment to any modifications of these specified procedures recommended in writing by either division biologists or division permit or assessment staff shall not be construed as a violation of this part.

Pursuant to the permittee's coordination with the division's Nashville Environmental Field Office (EFO) regarding sampling locations and timing, the permittee shall submit a monitoring plan to the division central office (Water-based Systems Unit) for review and comment in coordination with its field biologists no later than 90 days following the permit effective date. The permittee shall proceed with its plan if no written comments are received on the plan within 60 days of its receipt by the division.

Reports of the final results at minimum will include the raw data, taxa lists, and biometric calculations. Final study reports shall be submitted to two locations:

1) DWR central office along with a DMR, and
2) DWR Nashville EFO along with an MOR.

1. Frequency

Biological monitoring shall be conducted annually, collected during low flow, high temperature conditions.

2. Location

The facility will sample at locations defined above, designated as US1, US2, DS2, DS3, and DS4. The sites selected must provide appropriate habitat and must be generally comparable. No site shall be in an area where modification has taken place (i.e., dams, bridges).

3. Sampling

The survey will be conducted by a qualified biologist, who may be employees of the permittee. The permittee will notify the appropriate EFO, Division of Water Resources, at least two weeks prior to conducting the biological survey.

The biosurvey will consist of a single habitat semi-quantitative macroinvertebrate sample and a habitat survey. Habitat assessments, sample collection, subsampling, taxonomy and metric calculation must adhere exactly to the methodology found in the most recent revision of the State of Tennessee Department of Environment and Conservation, Division of Water Resources, Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys (referred to as TDEC QSSOP).

a. Habitat Assessment

Appropriate habitat assessment forms will be completed concurrent with each biological survey. These forms can be found in Appendix B in the TDEC QSSOP. The High Gradient Form will be used in conjunction with riffle kick collections and the Low Gradient Form will be used in conjunction with rooted bank collections.

b. Macroinvertebrate Sample Collection

A semi-quantitative single habitat macroinvertebrate sample will be collected at each site following Protocol G in the TDEC QSSOP. The habitat to be sampled will be appropriate for ecoregion 71h.

In ecoregions 65j, 66d, 66e, 66f, 66g, 67f, 67g, 67h, 67i, 68a, 68b, 68c,69d, 71e, 71f, 71g, 71h, appropriate 71i and 74a; 2 one meter square riffle kicks using a 500 micron mesh net will be collected . Additional kicks are collected if needed to insure at least 200 organisms. The debris from all kicks will be composited and preserved. All sorting and identification is to be conducted in the laboratory.

c. Subsampling

All samples will be reduced to 200+/- 20% organisms following subsampling protocols detailed in Protocol I of the TDEC QSSOP.

d. Taxonomy

All taxa in the subsample will be identified to genus level.

e. Biometrics

The following biometrics will be calculated for each subsample (without extrapolation).

- Taxa Richness (TR)
- EPT Richness (EPT)
- EPT Abundance (%EPT)
- Chironomidae and Oligochaeta Abundance (%OC)

- North Carolina Biotic Index (NCBI) using values found in Appendix C of the TDEC QSSOP
- Percent Contribution of Nutrient Tolerant Organisms (%NUTOL)
- Percent Clingers (%CLINGERS) using designations found in Appendix C of the TDEC QSSOP

4. Station Information

The following information will be recorded at each station during the biosurvey

a. Water temperature (°C)
b. Dissolved Oxygen (mg/l)
c. pH (S.U.)
d. Conductivity (umhos)
e. Stream Flow (cfs)
f. Parameters required in Section 3.8 of the permit

5. Reporting

Results of the biological stream sampling including complete taxa lists and habitat assessments shall be electronically submitted to water.permits@tn.gov or in the mail to each of the addresses listed below:

Nashville - Environmental Field Office
Attn: Division of Water Resources
711 R.S. Gass Blvd
Nashville, Tennessee 37216

Division of Water Resources
Attn: Water-Based Systems Unit
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

Division of Water Resources
Attn: Planning & Standards Unit
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

3.10. TREATED WASTEWATER REUSE

This permit allows treated wastewater effluent to be distributed for land application reuse by industrial customers, commercial developments, golf courses, recreational areas, residential developments and other non-potable uses. The reuse water must receive all treatment steps applied to the discharged wastewater and must comply with all effluent limitations applied to the discharge wastewater. In addition, the reuse

wastewater must comply with the numeric limitations in Section 1.3 and the following requirements:

- No discharge of the reuse water to waters of the State of Tennessee is allowed.

- Reuse activities are restricted to use of the water in a manner that results in its disposal by land application (including via spray irrigation or drip irrigation systems). The application rate employed shall be restricted such that there shall be no ponding or runoff of the reuse water. This requirement shall not be construed to warrant any use of harvested products from irrigated cover crops and the permittee shall take full responsibility for their proper use or disposal. Dedicated irrigation sites must have proper ownership arrangements and permitting. Perpetual easement arrangements may be applicable for land application sites. In such cases, appropriate division permits are required.

- In order to protect public health, this permit requires that the permittee meet a daily maximum *E. coli* concentration of 23 cfu per 100 ml and a daily minimum total chlorine residual of 1.0 mg/l (after holding the sample for 30 minutes) as exiting the treatment system and within the reuse distribution system.

- The permittee shall take appropriate measures, including signs, tags, permanently imprinted warnings, appropriate color piping/equipment, etc., to ensure that all points where water can be accessed from the reuse distribution system are clearly marked to indicate that the reuse water is unfit for drinking or other potable purposes.

4.0. DEFINITIONS AND ACRONYMS

4.1. DEFINITIONS

"***Biosolids***" are treated sewage sludge that have contaminant concentrations less than or equal to the contaminant concentrations listed in Table 1 of subparagraph (3)(b) of Rule 0400-40-15-.02, meet any one of the ten vector attraction reduction options listed in part (4)(b)1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 of Rule 0400-40-15-.04, and meet either one of the six pathogen reduction alternatives for Class A listed in part (3)(a)3, 4, 5, 6, 7, or 8, or one of the three pathogen reduction alternatives for Class B listed in part (3)(b)2, 3, or 4 of Rule 0400- 40-15-.04.

A "***bypass***" is defined as the intentional diversion of waste streams from any portion of a treatment facility.

A "***calendar day***" is defined as the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

A "***composite sample***" is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over a 24-hour period. Under certain circumstances a lesser time period may be allowed, but in no case, less than 8 hours.

The "***daily maximum concentration***" is a limitation on the average concentration in units of mass per volume (e.g. milligrams per liter), of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

"***Discharge***" or "**discharge of a pollutant**" each refers to the addition of pollutants to waters from a source.

"Degradation" means the alteration of the properties of waters by the addition of pollutants, withdrawal of water, or removal of habitat, except those alterations of a short duration.

"***De Minimis***" - Degradation of a small magnitude, as provided in this paragraph.

(a) Discharges and withdrawals

1. Subject to the limitation in part 3 of this subparagraph, a single discharge other than those from new domestic wastewater sources will be considered de minimis if it uses less than five percent of the available assimilative capacity for the substance being discharged.
2. Subject to the limitation in part 3 of this subparagraph, a single water withdrawal will be considered de minimis if it removes less than five percent of the 7Q10 flow of the stream.

3. If more than one activity described in part 1 or 2 of this subparagraph has been authorized in a segment and the total of the authorized and proposed impacts uses no more than 10% of the assimilative capacity, or 7Q10 low flow, they are presumed to be de minimis. Where the total of the authorized and proposed impacts uses 10% of the assimilative capacity, or 7Q10 low flow, additional degradation may only be treated as de minimis if the Division finds on a scientific basis that the additional degradation has an insignificant effect on the resource.

(b) Habitat alterations authorized by an Aquatic Resource Alteration Permit (ARAP) are de minimis if the Division finds that the impacts, individually and cumulatively are offset by impact minimization and/or in-system mitigation, provided however, in ONRWs the mitigation must occur within the ONRW.

A "***dry weather overflow***" is a sanitary sewer overflow that is not directly related to a rainfall event.

An "***ecoregion***" is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

The "***geometric mean***" of any set of values is the n^{th} root of the product of the individual values where "n" is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

A "***grab sample***" is a single influent or effluent sample collected at a particular time.

The "***instantaneous maximum concentration***" is a limitation on the concentration, in milligrams per liter, of any pollutant contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "***instantaneous minimum concentration***" is the minimum allowable concentration, in milligrams per liter, of a pollutant parameter contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "***monthly average amount***", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

The "***monthly average concentration***", other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

A "***one week period***" (or "***calendar-week***") is defined as the period from Sunday through Saturday. For reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

"***Pollutant***" means sewage, industrial wastes, or other wastes.

A "***quarter***" is defined as any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.

A "***rainfall event***" is defined as any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A "***rationale***" (or "fact sheet") is a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency's permit decision and is not an enforceable condition of the permit.

A "***reference site***" means least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

A "***reference condition***" is a parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

A "***release***" is the flow of sewage from any portion of the collection or transmission system owned or operated by the permittee other than through permitted outfalls that does not add pollutants to waters. In addition, a "release" includes a backup into a building or private property that is caused by blockages, flow conditions, or other malfunctions originating in the collection and transmission system owned or operated by the permittee. A "release" does not include backups into a building or private property caused by blockages or other malfunctions originating in a private lateral.

A "***sanitary sewer overflow (SSO)***" is an unpermitted discharge of pollutants from the collection or transmission system owned or operated by the permittee other than through a permitted outfall.

"***Sewage***" means water-carried waste or discharges from human beings or animals, from residences, public or private buildings, or industrial establishments, or boats, together with such other wastes and ground, surface, storm, or other water as may be present.

"***Severe property damage***" when used to consider the allowance of a bypass or SSO means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass or SSO. Severe property damage does not mean economic loss caused by delays in production.

"***Sewerage system***" means the conduits, sewers, and all devices and appurtenances by means of which sewage and other waste is collected, pumped, treated, or disposed.

"***Sludge***" or "***sewage sludge***" is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not

limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

A "***subecoregion***" is a smaller, more homogenous area that has been delineated within an ecoregion.

"***Upset***" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

The term, "***washout***" is applicable to activated sludge plants and is defined as loss of mixed liquor suspended solids (MLSS) of 30.00% or more from the aeration basin(s).

"***Waters***" means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

The "***weekly average amount***", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar week when the measurements were made.

The "***weekly average concentration***", is the arithmetic mean of all the composite samples collected in a one-week period. The permittee must report the highest weekly average in the one-month period.

4.2. ACRONYMNS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval

30Q20 – 30-day minimum, 20-year recurrence interval

7Q10 – 7-day minimum, 10-year recurrence interval

BAT – best available technology economically achievable

BCT – best conventional pollutant control technology

BDL – below detection level

BOD_5 – five day biochemical oxygen demand

BPT – best practicable control technology currently available

$CBOD_5$ – five day carbonaceous biochemical oxygen demand

CEI – compliance evaluation inspection

CFR – code of federal regulations

CFS – cubic feet per second

CFU – colony forming units

CIU – categorical industrial user

CSO – combined sewer overflow

DMR – discharge monitoring report

D.O. – dissolved oxygen

E. coli – *Escherichia coli*

EFO – environmental field office

LB(lb) - pound

IC_{25} – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms

IU – industrial user

IWS – industrial waste survey

LC_{50} – acute test causing 50% lethality

MDL – method detection level

MGD – million gallons per day

MG/L(mg/l) – milligrams per liter

ML – minimum level of quantification

ml – milliliter

MLSS – mixed liquor suspended solids

MOR – monthly operating report

NODI – no discharge

NOEC – no observed effect concentration

NPDES – national pollutant discharge elimination system

PL – permit limit

POTW – publicly owned treatment works

RDL – required detection limit

SAR – semi-annual [pretreatment program] report

SIU – significant industrial user

SSO – sanitary sewer overflow

STP – sewage treatment plant

TCA – Tennessee code annotated

TDEC – Tennessee Department of Environment and Conservation

TIE/TRE – toxicity identification evaluation/toxicity reduction evaluation

TMDL – total maximum daily load

TRC – total residual chlorine

TSS – total suspended solids

WQBEL – water quality based effluent limit

ADDENDUM TO RATIONALE
The City of Franklin
PERMIT NO. TN0028827

June 1, 2017

Addendum prepared by: Mr. Vojin Janjic

Comments received regarding the draft NPDES Permit No. TN0028827 were all updated into the division's database and published on the TDEC DataViewer (http://environment-online.tn.gov:8080/pls/enf_reports/f?p=9034:34051:::NO:34051:P34051_PERMIT_NUMBER:TN0028827). This addendum to rationale summarizes the comments and provides responses and rationale for changes introduced in the final permit, where appropriate. A number of comments that did not call for changes in permit limitations or restrictions became a part of the administrative record, but were not specifically repeated or summarized in this addendum to rationale. In addition, some changes in the final permit (particularly related to issues provoking contradictory suggestions) involved changes in language, providing clarification without changing the substance (e.g., see Reopener Clause).

The commenter suggested that limitations and restrictions in the NPDES permit should be protective of the Harpeth River during hot weather and low flow conditions.

The draft NPDES permit was prepared so it would be protective of the receiving stream designated uses under the critical low flow conditions. Specifically, TN Rule 0400-40-03-.05(4) Interpretation of Criteria, in part (emphasis added):

> Water quality criteria for fish and aquatic life and livestock watering and wildlife set forth shall generally be applied on the basis of the following stream flows: unregulated streams - stream flows equal to or exceeding the **7-day minimum, 10-year recurrence interval**; regulated streams - all flows in excess of the minimum critical flow occurring once in ten years as determined by the Division. However, criteria that are wholly or partially based on measurements of ambient aquatic community health, such as the nutrient, biological integrity, and habitat criteria for the fish and aquatic life use, shall support the designated use. These criteria should be considered independent of a specified minimum flow duration and recurrence. All other criteria shall be applied on the basis of stream flows equal to or exceeding the **30 day minimum 5 year recurrence interval**.

All reasonable potential calculations in the draft permit rationale were performed using the 7-day minimum, 10-year recurrence interval (7Q10) or 30 day minimum 5 year recurrence interval (30Q5), as appropriate. These critical low flow conditions correspond to hot weather and low flow conditions in the Harpeth River.

Several commenters expressed their concern about limitations for total phosphorus being less restrictive in the draft permit when compared to the previous permit. In addition, the commenters were concerned with overall water quality conditions of the Harpeth River.

The limitations on total phosphorus in the draft permit are expressed differently than in the previous permit. This may have caused some confusion and misunderstanding with respect to level of protection awarded to the Harpeth River, as well as to the regulatory concept of backsliding. Any remaining issues will be explained in this addendum to rationale.

Since the receiving stream is considered unavailable conditions for phosphorus, there are two questions that need to be answered. The first question is: "What is currently authorized in the NPDES permit?" followed by the second question: "Is draft permit proposing an increase of a discharge that would cause measurable degradation?"

Antidegradation review in the NPDES context applies when a permit would authorize a new or increased discharge. Rule 0400-40-03-.06(2)(a) ("In waters with unavailable parameters, new or increased discharges that would cause measurable degradation of the parameter that is unavailable shall not be authorized."), (3)(a) ("In waters with available parameters, new or increased discharges that would cause degradation above the level of de minimis for any available parameter for any criterion will only be authorized...").

In this case, the permit authorizes an ongoing discharge from an existing facility that proposes to expand, so it is not a new discharge.

To determine whether the permit authorizes an increased discharge from the 16 MGD facility, the Department first looks to the existing permit limits (i.e., the amount of pollutants the facility is currently authorized to discharge). For pollutants with existing numeric limits, the permit caps the loading for the 16 MGD facility at the current permit loading limit based on a 12 MGD design flow to ensure the permit does not authorize an increased discharge.

Accordingly, this permit does not authorize a new or increased discharge of pollutants, and antidegradation review is not required.

The existing 12 MGD facility is authorized to discharge 91,323 pounds of total phosphorus (TP) during the summer based on a limit of 5 mg/L for a 12 MGD design flow for six months. In addition, the existing facility has discharged approximately 14,107 pounds of TP during the winter months [when calculated using average concentration of TP of 1.2 mg/L] or 26,590 pounds of TP during the winter months [when calculated using 95% - concentration of TP of 2.26 mg/L]. Using the 95% number (which is the standard way we evaluate performance-based effluent limitations) the total authorized discharge of TP is thus 117,913 lbs/year. The draft permit proposes to authorize a discharge of 63,693 lbs of TP/year, so it does not authorize an increased discharge and no additional antidegradation review is required.

Comments claiming the permit allows an increased discharge of TP are misplaced. These comments compare various interpretations of current actuals to the new permit limits, an apples to oranges comparison that assumes Franklin's future actual discharge will equal the new permit limits. That assumption is contradicted by Franklin's record: it has discharged both TN and TP well below its current permit limits as a result of nutrient optimization and good plant operation. There is every reason to believe Franklin will continue to discharge below its new permit limits, both

because it has a long track record of compliance and because the permit expressly requires Franklin to continue optimizing its treatment plant for nutrient removal.

Franklin WRF - Total Phosphorus Limitations - Summary		
	12 MGD	**16 MGD**
Anti-backsliding	The current limit is 5 mg/L in the summer - equates to 500.4 lbs/day or 91,323 lbs/6 months. There is no limit in the winter. Limit of 63,693 lbs/year is more stringent than current limit, so there is no backsliding.	Not applicable beyond the first 12 MGD – Anti-backsliding only applies to the first 12 MGD. There are no existing limits for the additional 4 MGD.
Antidegradation	Not applicable (current permitted discharge)	Baseline is 91,323 lbs/6 months (summer limit), plus additional actual winter loading (can be calculated in several different ways, but certainly not a negative number). Limit of 63,693 lbs/year ensures no increased discharge of TP, so antidegradation review is not applicable. (Note 1)
WQBEL	While a WQBEL for TP may be required in the future, the Department lacks sufficient data and corresponding methodology to develop a proper and defensible numeric WQBEL at this time. The forthcoming TMDL will determine whether a WQBEL is needed and, if so, what the WLA should be. In the interim, the permit reduces allowable TP loading and, furthermore, requires optimization to minimize nutrient loading.	
TMDL	The 2004 TMDL does not develop a WLA for TP for this facility because this stream segment was not impaired for TP at that time. The new TMDL will supersede the 2004 TMDL and establish applicable WLAs.	
Nutrient Reduction Framework	Not applicable - the framework (USGS SPARROW model) is not yet calibrated for this watershed. Also, the framework is not likely to apply to this facility because the new TMDL will govern the WLAs.	

Note 1 - Rule 0400-40-03-.06(2)(a) (In waters with unavailable parameters, new or increased discharges...).

With respect to de minimis discharges from the facility, the water quality calculations spreadsheet presented on the following page details calculation used to derive new limits that would be in compliance with antidegradation provision of the General Water Quality Criteria.

Antidegradation De Minimis Calculation Worksheet

FACILITY: Franklin Water Reclamation Facility (WRF)
PERMIT NUMBER: TN0028827

Stream (7Q10)	Stream (30Q5)	Current Authorized Design Flow	Total Suspended Solids	Hardness (as CaCO3)	Stream Allocation	Proposed Increase in Design Flow
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]	[MGD]
0.54	1.37	12	11.4	207.7	100	4

1	2	3	4	5	6	7	8	9	10	13	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
Stream Background		Fish & Aquatic Life (F&AL)		Effluent	F&AL Water Quality Criteria (7Q10)				Human Health Criteria (30Q5		Current Discharge						Proposed Discharge						Permit Limit [3]		
Concen-	Basis[1]	Water Quality Criteria		Fraction	In-Stream Allowable		Available	Capacity	In-Stream Criter	Assimilative	Chronic			Acute			Chronic			Acute			Chronic	Acute	
EFFLUENT CHARACTERISTIC	tration [ug/l]		Chronic [ug/l]	Acute [ug/l]	Dissolved [Fraction]	Chronic [ug/l]	Acute [ug/l]	Chronic [lbs/day]	Acute [lbs/day]	Organisms [ug/l]	Organisms [lbs/day]	Conc.[2] [ug/l]	Mass [lbs/day]	Percent of Capacity	Conc.[2] [ug/l]	Mass [lbs/day]	Percent of Capacity	Conc.[2] [ug/l]	Mass [lbs/day]	Percent of Capacity	Conc.[2] [ug/l]	Mass [lbs/day]	Percent of Capacity	Mass [lbs/day]	Mass [lbs/day]	EFFLUENT CHARACTERISTIC
Copper *	8.362	1/2 WQS	16.724	26.758	0.340	49.19	78.696	6.75	10.82	NA	NA	3.4	0.34	5.0%	5.2	0.52	4.8%	3.4	0.11	1.7%	5.2	0.17	1.6%	0.67	1.08	Copper *
Lead *	2.761	1/2 WQS	5.522	141.709	0.180	30.679	787.27	4.22	108.59	NA	NA	9.2	0.92	21.8%	65.9	6.60	6.1%	9.2	0.31	7.3%	65.9	2.20	2.0%	0.92	10.86	Lead *
Nickel *	48.259	1/2 WQS	96.518	868.992	0.419	230.57	2075.90	31.59	286.14	4600	666	7.6	0.76	2.4%	22.9	2.29	0.8%	7.6	0.25	0.8%	22.9	0.76	0.3%	3.16	28.61	Nickel *
Selenium	2.5	1/2 WQS	5.0	20.0	1.000	5.00	20.000	0.68	2.75	4200	608	0.4	0.04	5.9%	0.4	0.04	1.5%	0.4	0.01	2.0%	0.4	0.01	0.5%	0.07	0.27	Selenium
Zinc *	108.84	1/2 WQS	219.461	217.68	0.280	783.52	777.160	107.59	106.71	26000	3,765	36.7	3.67	3.4%	66.9	6.70	6.3%	36.7	1.22	1.1%	66.9	2.23	2.1%	10.76	10.67	Zinc *
Methylene Chloride	0	Zero	NA	NA	1.0	NA	NA	NA	NA	5900	855	1.5	0.15	0.0%	NA	NA	NA	1.5	0.05	0.0%	NA	NA	NA	65.5	NA	Methylene Chloride
Total Phenols	0	Zero	NA	NA	1.0	NA	NA	NA	NA	10000	1,449	19	1.90	0.1%	NA	NA	NA	19	0.63	0.0%	NA	NA	NA	144.9	NA	Total Phenols
Bis(2-ethylhexyl) phthalate	0	Zero	NA	NA	1.0	NA	NA	NA	NA	22	3.2	3	0.30	9.4%	NA	NA	NA	3	0.10	3.1%	NA	NA	NA	0.30	NA	Bis(2-ethylhexyl) phthalate
Diethyl phthalate	0	Zero	NA	NA	1.0	NA	NA	NA	NA	44000	6,374	8	0.80	0.0%	NA	NA	NA	8	0.27	0.0%	NA	NA	NA	637.4	NA	Diethyl phthalate

* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions.
The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.

** The criteria for these parameters are in the total form.

[1] The basis for background is either "1/2 lowest water quality standard" or zero for organic pollutants

[2] Discharge concentration values are derived from application data

[3] If SUM of either colums 18+24 or columns 21+27 is above 10%, or any single value for proposed ischarge in columns 24 or 27 exceeds 5%, the current applicable CHRONIC and ACUTE mass loadings are established as new permit limits.
If SUM of both colums 18+24 and columns 21+27 is below 10%, and all single values for proposed discharge in columns 24 or 27 is below 5%, the applicable CHRONIC and ACUTE mass loadings are calculated as 10% of assimilative capacity.
The antidegradation provision is applied differently for selenium, as the previous permit did have a limit for selenium. The 16 MGD limit is derived from the previous permitted loadings based on the 12 MGD flow rate (0.005 mg/L * 8.34 * 12 MGD = 0.5 lb/day as a monthly average).

NOTE: Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

The Total N Summer concentration and monthly average amount of 377 lbs./day have been superseded by the 2004 EPA TMDL and need to be replaced with the TMDL limits of 2.9 mg/l and 290 lbs./day.

We agree that the seasonal (Summer) monthly average amount of 377 lb/day does not provide any additional receiving stream protection when compared to the annual average limitation of 290 lb/day. Therefore, the monthly average amount of 377 lb/day will be removed from the final permit. However, while the facility will have to report effluent concentration of total nitrogen (both as monthly average and a daily maximum values), the limitation will be expressed as loading, not concentration. See "Tennessee Nutrient Reduction Framework" (https://www.tn.gov/environment/article/wr-ws-tennessee-nutrient-reduction-framework) for more information.

Anticipated TMDL development does not mean that water-quality based limits should not be included in this NPDES permit. Actually, TDEC has an obligation to include water-quality based limits despite any plans for future TMDLs.

The language from the referenced case states, in part (emphasis added):

> *TMDLs take time and resources to develop and have proven to be difficult to get just right; thus, under EPA regulations, permitting authorities* ***must adopt interim measures*** *to bring water bodies into compliance with water quality standards. Id. § 1313(e)(3); 40 C.F.R. § 122.44(d); see also, e.g., 43 Fed. Reg. 60,662, 60,665 (Dec. 28, 1978) ("EPA recognizes that State development of TMDL's and wasteload allocations for all water quality limited segments will be a lengthy process. Water quality standards will continue to be enforced during this process. Development of TMDL's . . . is not a necessary prerequisite to adoption or enforcement of water quality standards . . . ."). Upper Blackstone Water Pollution Abatement District v. U.S. EPA, 690 F.3d 9, n*
> *8. (1st Cir. 2012)*

The proposed permit requires for the City of Franklin to develop a WWTP optimization plan for removal of nutrients. We have consistently used this approach, which is in accord with the Nutrient Reduction Framework (URL), and is considered an interim measure while TMDL is being developed. These are interim measures implemented in the process of restoring Harpeth River designated uses to "available conditions waters."

Should the TP limit be 63,693 or 63,393 (compare page 2 with R-107)?

The value of 63,393 lb/year was a typographical error. The correct value should be:

174.5 lb/day x 365 days/year = 63,693 lb/year.

The final permit eluent limitations table has been correspondingly updated.

Limitation for total phosphorus should be expressed as a monthly average amount, not the annual rolling average. If expressed as the annual rolling average, the permittee can pollute

the Harpeth River for 11 months without any consequences. In addition, proposed limitations for total phosphorus and total nitrogen should be expressed in terms of concentration, not only loading.

All limitations in NPDES permits, unless specifically described in a "schedule of compliance" sub-part are fully enforceable as of the permit effective date. Statistical base used for reporting and establishing compliance is derived from particular pollutant characteristics, and based on the Department's experience with permit implementation. When it comes to nutrients, the specific approach is described in the "Tennessee Nutrient Reduction Framework" (https://www.tn.gov/environment/article/wr-ws-tennessee-nutrient-reduction-framework). On page 4, it states, in part (emphasis added):

> *"The Division recognizes that each waterbody has individual needs as well as tolerance threshold on nutrients. Not enough and too much nutrients are both harmful to the health of the aquatic ecosystem and the intended use of the waterbody. Unlike the dose-response effects expected from toxics, nutrient effects are better characterized as indirect and waterbody-specific.* ***Instead of concentration, annual (or seasonal) load is deemed more appropriate to address nutrient reduction.*** *A detailed discussion of setting water quality-based effluent limits for nutrients can be found in Brown and Caldwell (2014)."*

What is the purpose of the NUTRIENT OPTIMIZATION PLAN (NOP) (Appendix 6 of the permit rationale)?

Nutrient Optimization Plan has been replaced with the Plant Optimization requirement, similarly focusing on reduction of nutrient loading (see sub-part 3.8 of the permit).

In addition, the division wishes to clarify that references to the best attainable condition (BAC) and nutrient reduction strategy are outdated in Appendix 5 to the draft permit rationale dated September 20, 2016. That content was developed by the division several years ago and has been superseded by the Draft Tennessee Nutrient Reduction Framework that the division published in 2015 (http://www.tn.gov/environment/article/wr-ws-tennessee-nutrient-reduction-framework). The division included this content in the draft permit rationale to relate its statewide nutrient reduction effort to both its water quality assessment responsibilities and the anti-degradation provision of state water quality standards. Inclusion of the outdated references was an oversight. Their inclusion does not alter the overall objective of the rationale.

§ 3.6 of the draft permit (at p. 36) provides for the City to submit it ultimate CBOD method (including upgraded QA/QC procedures) to be approved in writing by TDEC. The permit should reflect that, until TDEC approves the updated method, the City shall continue to sample ultimate CBOD based upon the City's prior method.

The following sentence was added to the paragraph describing Ultimate CBOD investigations:

> *"Until TDEC approves the updated method, if applicable, the permittee shall continue to sample ultimate CBOD based on the permittee's prior method."*

Section 3.9, Chemical Sampling, ¶2 (on p. 39) provides that monitoring should be conducted year-round with one sample collected at each location, mid-channel, at mid-

depth." Depending upon conditions, it may not always be practical to get mid-stream and mid-depth. As such, we request that the wording be changed to state "where practical, at approximate mid-channel and mid-depth." The "practical" standard would also recognize the fact that the City is not required to send out sampling personnel when conditions (e.g., flooding) would pose a threat to worker health and safety.

Phrase "where practical, at approximate" was added to paragraph 2 in sub-part 3.9, to read:

> 2. *Monitoring should be conducted year-round, with one sample collected at each location, where practical, at approximate mid-channel, at mid-depth*

It is requested that the first sentence under "Chemical Sampling" (Page 38) be modified as follows (i.e., "The facility shall conduct a nutrient-focused sampling event that quantifies the nutrient loading from the facility and to the receiving stream.") This change will avoid an argument as to whether the described sampling, other than at the outfall, actually quantifies the nutrient loading from the facility and to the receiving stream. The City is not objecting to the sampling, it is merely seeking to avoid a debate on what we believe to be an inaccurate description of the sampling.

The requested change was made in the final permit. In addition, a notation is added in Part 3.8 of the permit relative to parameters for which monitoring and reporting is required. The algae parameters identified for sampling in the draft permit, chlorophyll A concentration and dry-weight algal biomass, have been struck from the table at permit issue. These 2 parameters were conceived by the division several years ago prior to initiation of the current water quality model development. During the comment period, the division reconsidered the usefulness of these 2 parameters to the current modeling effort. It is intended that the algae parameters sampled during the permit term meet the needs of water quality modeling and TMDL development. Therefore, the final permit removes these 2 parameters from the sampling table becoming effective at permit issue. The division reserves the right to require algae-related monitoring during the term of the permit via minor modification procedures (written notification to the permittee) and/or the right to request information under the state Water Quality Control Act.

The first sentence of §3.10 states that "the permittee shall conduct a macroinvertebrate assessment to define the biological impact of its discharge on the receiving stream." The remaining part of § 3.10 spell out what is required, and all that is required is a bioassessment survey. An evaluation to assess the impact of the effluent on the biota is beyond the scope of the monitoring requirement. The first sentence should simply state: "The permittee shall conduct a macroinvertebrate assessment of the biological integrity of the receiving stream." The bioassessment will not be conclusive as to cause and effect since there are other potential impacts on the receiving water unrelated to the City's discharge (e.g., physical features such as riparian conditions, natural conditions affecting water quality, runoff, and other point sources).

The requested change was made in the final permit.

Section 3.7 purports to provide notice that pursuant to the State's antidegradation provision the "permittee shall further be required, pursuant to the terms and conditions of

this permit, 14 to ...." This condition does not impose any additional requirements and should be deleted.

The requested change was made in the final permit.

Draft § 2.3.3.c (at p. 24) requires the permittee to take all reasonable steps to minimize any impacts associated with releases. While the City questions TDEC's authority to impose any requirements on overflows that do not reach State waters, the City is willing to live with the proposed standard. In the event the final permit changes the §2.3.2 overflow standards (or associated definitions) the City sets forth its objection to the permit addressing releases.

In the event § 2.3.3.c remains, we request that TDEC confirm that reasonable steps to minimize any adverse impact associated with releases could involve, for example, (a) cleaning an area with a vacuum truck and applying lime, where deemed appropriate, or (b) in those situations where a basement backup was caused due to the city owned or operated collection system, arranging for cleaning of the basement.

While he proposed action items are reasonable and standard operating procedures for dealing with overflow situations, including such language would be to prescriptive and would limit permittee's ability to use alternative solutions, if appropriate. All appropriate ICIS codes for overflows and releases, as advised by EPA, have been incorporated in the final version of the permit, and will be consequently included in the permittee's DMRs.

VMJ

Permit Addendum TN0028827.DOC

RATIONALE

Franklin STP
NPDES Permit No. TN0028827
Permit Writers: Gary Davis, Wade Murphy and Vojin Janjic

1. FACILITY INFORMATION

Franklin STP
Mr. Mark Hilty - Director
Franklin, Williamson County, Tennessee
(615) 794-4554
Average Design Flow: 12 MGD (current) - 16 MGD (proposed)
Percentage Industrial Flow: 0.8%
Treatment Description: An advanced treatment system (extended aeration activated sludge, which includes biological nitrification and tertiary filters/denitrification, with methanol addition). Sludge dewatering is completed using dissolved air flotation units and belt filter presses for sludge disposal via off-site landfilling.
Certified Operator Grades: STP: IV; Collection System: II

2. RECEIVING STREAM INFORMATION

Harpeth River at at mile 85.2
Watershed Group: Harpeth
Hydrocode: 5130204
Low Flow: 7Q10 = 0.54 MGD
30Q5 = 1.37 MGD
Low Flow Reference: USGS Streamstats
Water Quality Designation: Unavailable Conditions
Stream Classification Categories:

Domestic Wtr Supply	Industrial	Fish & Aquatic	Recreation
	X	X	X
Livestock Wtr & Wlife	Irrigation	Navigation	
X	X		

Water Quality Assessment: Not supporting for low DO, total phosphorus and sedimentation/siltation

3. CURRENT PERMIT STATUS

Permit Type:	**Municipal**
Classification:	**Major**
Issuance Date:	**30-SEP-10**
Expiration Date:	**30-NOV-11**
Effective Date:	**01-NOV-10**

4. PERMIT RENEWAL CONSIDERATIONS

This individual NPDES permit was last placed on public notice dated April 22, 2013. The public hearing was held on October 29, 2013. During the public notice period, the division received a very large number of comments with respect to wastewater collection and treatment system operation, as well as the receiving stream water quality considerations. Prior to issuance of the final permit, the applicant submitted an application to modify the existing authorized design flow rate from 12 MGD to 16 MGD. This draft permit proposes terms and conditions for both 12 MGD facility in consideration of public comments and proposes new terms and conditions for the future 16 MGD facility. Effluent limitations in the new permit are prepared with consideration of the state antidegradation provision of the General Water Quality Criteria and the statewide Nutrient Reduction Framework, as well as in anticipation of additional water quality modeling required as a result of the low-head dam removal in 2012.

In developing the revised draft permits the division has considered updated information, including the permittee's additional DMR/MOR results, Harpeth River instream water quality results, the potential impacts due to the low-head dam removal, the Franklin STP (TN0028827) application for upgrading its WWTP from 12 to 16 MGD, and changes associated with the two smaller WWTPs, Berry's Chapel Utility STP (TN0029718), now known as "Harpeth Wastewater Cooperative", and Cartwright Creek (TN0027278) operation/performance.

The division has decided to begin working on a new TMDL for dissolved oxygen and nutrients, in part due to the low-head dam removal and additional data that has been gathered. EPA Region 4 has agreed to provide technical assistance with the upcoming Harpeth River modeling.

The recent BMAP results following the low-head dam removal appear to demonstrate a significant improvement for just upstream of Franklin STP's discharge, with the trend not manifested further downstream. BMAP improvements associated with the nutrient tolerant indicator species results (upstream/downstream of the Franklin STP discharge) are not as clearly demonstrated. The division considers this an important factor regarding the revised draft discharge permits. As such, when coupled with the instream water quality data, the division still considers nutrient reduction to be an important factor for improving the Harpeth River's water quality.

The division has developed mass loading discharge requirements for Franklin's 16 MGD discharge design capacity enhanced WWTP in compliance with antidegradation requirements. The revised permit also includes an updated monitoring stations schematic diagram for the receiving stream.

The division acknowledges that the effluent reuse provisions in the Franklin STP TN0028827 and Cartwright Creek's TN0027278 discharge permit's affords some decreased discharge loadings on the Harpeth River during low-flow summer conditions. However, such operations cannot be used as a WWTP substitute. The division anticipates that permit reuse provisions will continue to be used, which will serve to decrease loadings on the Harpeth River.

The division's Nutrient Reduction Framework requires permittees discharging into receiving streams characterized as needing additional nutrient controls to develop/implement applicable WWTP nutrient removal optimization and receiving stream investigation pursuant to their reissued permits. As such, the revised permit continues to include these requirements. Consistent with its Nutrient Reduction Framework, the division now includes rolling annual average loading limitations for discharged nutrients as warranted based on receiving stream assessments. As such, the revised draft permit will include additional rolling averages nutrient load limitations. These provisions constitute interim requirements until the new TMDL is finalized.

5. NEW PERMIT LIMITATIONS AND COMPLIANCE SCHEDULE SUMMARY

The draft permit proposes to require a more sensitive test method than used in the past for mercury for treated effluent analyses conducted for pretreatment program reporting and NPDES application renewal. In recent years, approved test methods in 40 CFR Part 136 have been revised to include methods for testing mercury that have detection limits lower than the minimum required detection level specified in the state water quality standards. However, the water quality standards allow for use of other detection limits on a case by case basis. Test results reported as less than the promulgated minimum detection level of 0.2 mg/L are not sensitive enough to demonstrate that effluent mercury is not contributing to, or does not have reasonable potential to contribute to, excursion of the water quality standard. Accordingly, Section 1.4.3 has been revised to read, "*All sampling for total mercury (application, pretreatment, etc.) shall use Methods 1631, 245.7 or any additional method in 40 CFR 136 with a maximum detection limit of 5 ng/L.*"

b. Compliance Schedule Summary

Description of Report to be Submitted	Reference Section in Permit
Monthly Discharge Monitoring Reports	1.5.1
Monthly Operational Reports	1.5.4
Monthly Bypass and Overflow Summary Report	1.5.5.1
Industrial Waste Survey Report within 120 days of the effective permit date	3.2.a.viii
Biomonitoring Report beginning within 90 days of the effective permit date	3.4

c. For comparison, this rationale contains a table depicting the previous permit limits and effluent monitoring requirements in Appendix 1.

6. PREVIOUS PERMIT DISCHARGE MONITORING REPORT REVIEW

A review of the DMR summary is located in Appendix 2 of this rationale. Any exceedances of permit limitations are being reviewed by the division's Compliance and Enforcement Unit.

7. PROPOSED PERMIT DISCHARGE LIMITATIONS

7.1. CBOD5, DISSOLVED OXYGEN, AND PERCENT REMOVALS REQUIREMENTS

The current permit's discharge requirements were defined pursuant to requirements presented in EPA's September 2004 "Final Organic Enrichment/Low Dissolved Oxygen, Total Maximum Daily Load (TMDL)" for the Harpeth River Watershed (HUC 05130204). The division recognizes that some TMDL updating may be warranted, e.g., provisions for enhanced SOD controls for low-flow summer conditions, total phosphorus allocations etc. The division is aware that upgrades are being made which should translate to instream water quality improvements, including the 2012 Harpeth River low head dam removal project. For example, instream water quality upgrades are anticipated due to the planned upstream City of Eagleville centralized WWTP, additional MS4 controls, and startup/operation of the low-pressure sewer system and pumping wastewater from the failing septic tanks located in the Hillsboro Acres, Meadowgreen and Farmington Subdivisions to the permittee's WWTP.

EPA's 2004 TMDL (which addressed organic enrichment and low dissolved oxygen conditions in the receiving steam) involved comprehensive computer modeling. Pursuant to the TMDL, the permittee's current permit's Outfall 001 monthly average CBOD5 (summer period) was retained at 4.0 mg/l, with related maximum weekly average, daily values, and corresponding discharge mass loading limits. The TDML also considered the oxygen requirements associated with the Outfall 001 treated effluent ammonia-nitrogen, and required that no changes were warranted. The new permit's limitations and monitoring requirements for the Outfall 001 treated effluent CBOD5 and ammonia-nitrogen have been retained from the current permit.

The TMDL also noted that substantial reductions in the receiving stream's sediment oxygen demand (SOD) would be needed in conjunction with a further reduction in the monthly average Outfall 001 total nitrogen mass loading in order to consistently achieve an instream dissolved oxygen concentration at or above the required minimum of 5.0 mg/l. Major changes for instream water quality improvements have already been made. Since instream algal growth can result in dissolved oxygen reductions, and based on the fact that the receiving stream was found to be unavailable conditions for phosphorus, the permittee's Outfall 001 treated effluent phosphorus limits were reevaluated. The TMDL did not require an increase in the permittee's current permit's dissolved oxygen limit of 8.0 mg/l, which was retained for the new permit. The 2004 TDML used a relatively high Outfall 001 treated effluent ultimate CBOD for its receiving stream water quality modeling investigations.

The treatment facility is required to remove at least 85% of the CBOD5 and TSS that enter the facility on a monthly basis. This is part of the minimum requirement for all municipal treatment facilities contained in Code of Federal Regulations 40 Part 133.102. The reasons stated by the U.S.E.P.A. for these requirements are to achieve these two basic objectives:

1. To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems, and
2. To help prevent intentional dilution of the influent wastewater as a means of meeting permit limits.

The treatment facility is required to remove at least 40% of the CBOD5 and TSS that enter the facility on a daily basis. This percent removal will be calculated based on its daily monitoring results and recorded on the Monthly Operation Report (MOR). The number of excursions (days when CBOD5 and/or TSS removal is less than 40%) will be reported on the Discharge Monitoring Report (DMR).

7.2. NH_3-N TOXICITY

To access toxicity impacts, the state utilizes the EPA document, 1999 Update to Ambient Water Quality Criteria for Ammonia, pursuant to 0400-40-03-.0-3(3)(j), and assumed stream temperatures of 27°C and 17°C (assumed average summer and winter in middle Tennessee) and pH of 8.0 (effluent dominated, see DMR data) to derive an allowable instream protection value protective of chronic exposure to a continuous discharge. A mass balance equation with sewage treatment facility and stream flows and this allowable value determines the monthly average permit limit. The criteria document states that a 30Q5 flow value is protective in deriving allowable values. Where the division has 30Q5 flow values, the division may use them. Otherwise, the division utilizes the available 7Q10 or 1Q10 values that are generally more conservative. The criteria continuous concentrations (CCC) derived from assumed temperature and pH values are as follows:

CCC values based on temperature and pH, in mg/L:

Temperature (°C)	7.5 pH	8.0 pH
25	2.22	1.24
27	1.94	1.09
30	1.61	0.90

Temperature (°C)	7.5 pH	8.0 pH
15	4.22	2.36
17	3.72	2.07
20	3.06	1.71

The mass balance equation is as follows:

$$CCC = \frac{Q_S C_S + Q_{STP} C_{STP}}{Q_S + Q_{STP}} \qquad \text{or,} \qquad C_{STP=} \frac{CCC(Q_S + Q_{STP}) - (Q_S C_S)}{Q_{STP}}$$

where:

CCC = Criteria continuous concentration (mg/l)
Q_S = 7Q10 flow of receiving stream (MGD)
Q_{STP} = Design flow of STP (MGD)
C_S = Assumed/Measured instream NH_3 (mg/l)
C_{STP} = Allowable STP discharge of NH_3 (mg/l)

12 MGD

$$C_{STP} = \frac{1.09 \text{ mg/L} * (0.54 \text{ MGD} + 12 \text{ MGD}) - (0.54 \text{ MGD} \times 0.1 \text{mg/l})}{12 \text{ MGD}} = 1.13 \text{ mg/l (summer)}$$

16 MGD

$$C_{STP} = \frac{1.09 \text{ mg/L} * (0.54 \text{ MGD} + 16 \text{ MGD}) - (0.54 \text{ MGD} \times 0.1 \text{mg/l})}{16 \text{ MGD}} = 1.12 \text{ mg/l (summer)}$$

12 MGD

$$C_{STP} = \frac{2.07 * (0.54 \text{ MGD} + 12 \text{ MGD}) - (0.54 \text{ MGD} \times 0.1 \text{mg/l})}{12 \text{ MGD}} = 2.16 \text{ mg/l (winter)}$$

16 MGD

$$C_{STP} = \frac{2.07 * (0.54 \text{ MGD} + 16 \text{ MGD}) - (0.54 \text{ MGD} \times 0.1 \text{mg/l})}{16 \text{ MGD}} = 2.14 \text{ mg/l (winter)}$$

Because the NH_3-N concentration limits calculated to protect dissolved oxygen are more restrictive than the toxicity limits calculated above, the monthly average limits for NH_3-N from the previous permit are applied to the new permit.

7.3 TOTAL SUSPENDED SOLIDS (TSS) AND TSS REMOVAL

Due to the division's concern for decreasing the insoluble organic nitrogen and insoluble phosphorus discharged during summer months, the new permit will continue to include the 10 mg/l monthly average TSS limit. The permittee has demonstrated that its advanced treatment tertiary filtration plant can achieve the current permit's 10 mg/L summer TSS monthly average limit. The new permit continues to include the qualifier from the current permit which explicitly states that a violation of this 10 mg/L value will not result in a Warning Letter (used to be

referred to as Notice of Violation), if the reason for a higher monthly average value occurrence was not due to tertiary filter neglect. Due to the higher Harpeth River flow during winter conditions, the current permit's technology-based (per federal secondary standards - Rule 0400-40-5-.09) average monthly 30 mg/l TSS limit will be retained in the new permit for winter operation.

7.4. CHLORINATION

The residual chlorine limit is derived using the mass balance formula and the EPA instream protection value of 0.019 mg/l for fish and aquatic life. Applying this formula yields the following calculation:

12 MGD

$$\frac{0.019\ (Qd + Qs)}{Qd} = \text{Limit (mg/l)} = \frac{0.019\ (12 + 0.54)}{12} = 0.02 \text{ mg/l}$$

where:

0.019	=	instream protection value (acute)
12	=	Qd, design flow of STP (MGD)
0.54	=	Qs, 7Q10 flow of receiving stream (MGD)

16 MGD

$$\frac{0.019\ (Qd + Qs)}{Qd} = \text{Limit (mg/l)} = \frac{0.019\ (16 + 0.54)}{16} = 0.02 \text{ mg/l}$$

where:

0.019	=	instream protection value (acute)
16	=	Qd, proposed design flow of STP (MGD)
0.54	=	Qs, 7Q10 flow of receiving stream (MGD)

7.5 TOTAL NITROGEN AND TOTAL PHOSPHORUS LIMITATIONS

The division proposes interim permit terms and conditions for nutrients to comply with the state regulations until the new TMDL is finalized, at which time the permit could be reopened (or modified upon renewal) to apply limitations consistent with the wasteload allocations established by that TMDL, including any applicable schedules of compliance. In summary, the permit imposes limits that will prevent the POTW effluent from contributing additional nutrient loading, requires optimization of existing nutrient removal capability and compliance with biologically achievable nutrient limits after optimization, and stream monitoring and reporting to demonstrate the resulting effects. For total nitrogen, the proposed loading limits are based on the wasteload allocation in the current TMDL and/or the current permit loading limits. For total phosphorus, the proposed effluent limitations represent a substantial reduction from the current permit loading limits. Specific details and rationale are provided in

Appendix 5. Additionally, a reopener clause is added to Part 1.5 of the permit allowing for the permit to be reopened and modified, subject to public comment and appeal, to incorporate changes necessary to accommodate watershed planning requirements associated with total maximum daily load (TMDL) development.

7.6 *E. COLI* REQUIREMENTS

Disinfection of wastewater is required to protect the receiving stream from pathogenic microorganisms. Fecal coliform and *E. coli* are indicator organisms used as a measure of bacteriological health of a receiving stream and the effectiveness of disinfection.

As of September 30, 2004, the criterion for fecal coliform has been removed from the State's Water Quality Standards. Thus, the division imposes an *E. coli* limit on discharges of treated sewage for the protection of recreational use of the stream in lieu of the fecal coliform limit. The *E. coli* daily maximum limit of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

7.7. SELENIUM, SILVER AND CYANIDE

Monthly average and daily maximum effluent limitations for total selenium, total silver and total cyanide were included in the previous permit. Based on the permittee's permit renewal application data and the receiving stream reasonable potential water quality evaluations presented in Appendix 3, the new permit would eliminate limits for all three parameters, regardless of the design flow rate. However, additional considerations had to be given to antidegradation rule with respect to an expansion to the 16 MGD design flow rate (see next section), resulting in a proposed selenium limit.

7.8 PERMIT DEVELOPMENT CONSIDERATIONS (FOR 16 MGD DESIGN FLOW)

The permittee decided that its proposed upgraded WWTP for 16 MGD design flow would be designed/operated such that any increase in authorized pollutant loading would be below the applicable threshold for antidegradation. The appropriate baseline for this analysis is either (1) the existing permit loading limit (or a calculation of loading based on the concentration limit and the permitted design flow of 12 MGD) or (2) if there is no such limit, the current loading based on the 12 MGD design flow. The division will retain the right to reopen and modify the 12 and/or 16 MGD design flow permit(s) to protect water quality. As such, the division's Antidegradation Statement (per Rule 0400-40-03-.06) must be achieved via a de minimis/no measurable increased instream degradation approach, depending on the parameter. It is the division's understanding that EPA plans to collect sufficient Harpeth River modeling calibration data and complete the necessary modeling to insure that the discharge limits presented Part 1 are appropriate and provide for protecting the receiving stream's water quality..

Due to antidegradation compliance (and no additional instream degradation provisions), the division has considered the following Outfall 001 discharge limits in the draft permit:

Table A1 - 16 mgd Permit Application Loadings (Maximum and Average Results)

	No. of Samples	Maximum (ug/L)	Maximum (lb/day)	Current Load @ 12MGD (lb/day)	Flow (Calc'd) (mgd)	Average (ug/L)	Average (lb/day)	Flow (Calc'd) (mgd)	Average (Per 12 mgd) (lb/day)	Average (16 mgd) (lb/day)	Increase Mass Loading (%)
Copper	9	5.2	0.3	0.52	6.92	3.4	0.2	7.05	0.340	0.454	133
Lead	9	65.9	4.8	6.60	8.73	9.6	1	12.49	0.961	1.281	133
Nickel	11	22.9	1.5	2.29	7.85	7.6	0.7	11.04	0.761	1.014	133
Zinc	14	66.9	4.7	6.70	8.42	36.7	2.4	7.84	3.673	4.897	133
Total Phenolic Compounds	5	31	2	3.10	7.74	19	0.6	3.79	1.902	2.535	133
Methylene Chloride	3	2.1	0.11	0.21	6.28	1.5	0.04	3.20	0.150	0.200	133
Bis(2 EthylHexyl)Phthalate	3	5	0.3	0.50	7.19	3	0.1	4.00	0.300	0.400	133
Diethyl Phthalate	3	26	1.7	2.60	7.84	8	0.6	8.99	0.801	1.068	133

Note: Above parameters had Outfall 001 results > MDL.

These values were further compared with de minimis provision; in other words, does the proposed increase in pollutant loading represent more than 5% of the available assimilative capacity of the receiving stream? Using the same assumptions as in reasonable potential calculations, a comparison was made between permit application information and de minimis levels for pollutants with available numeric water quality criteria. As expected for a proposed 25% increase of effluent flow rate into an effluent dominated stream, the results indicate that all effluent characteristics exceed the 5% of the available assimilative capacity of the receiving stream, and should be included as antidegradation-derived loading limits for the 16 MGD facility. The antidegradation provision is applied differently for selenium, as the previous permit did have a limit for selenium. The 16 MGD limit is derived from the previous permitted loadings based on the 12 MGD flow rate (0.005 mg/L * 8.34 * 12 MGD = 0.5 lb/day as a monthly average).

Antidegradation De Minimus Calculation Worksheet
FACILITY: Franklin
PERMIT #: TN0028827

Stream (7Q10)	Stream (30Q5)	Waste Flow (16-12 MGD)	Ttl. Susp. Solids	Hardness (as CaCO3)	Stream Allocation
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]
0.540	1.370	4.000	13.5	200	90

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15a	16	17	18
	Stream Background		Fish/Aqua. Life		Effluent	sh & Aquatic Life Water Quality Criteria (7Q1				Human Health Water Quality Criteria (30Q5)						5%	Discharger Data		
	Concen-	Basis[1]	Water Quality Criteria		Fraction	In-Stream Allowable		Available Capacity		In-Stream Allowable			Available Capacity			Loading	Discharger A		
EFFLUENT CHARACTERISTIC	tration [ug/l]		Chronic [ug/l]	Acute [ug/l]	Dissolved [Fraction]	Chronic [ug/l]	Acute [ug/l]	Chronic [lbs/day]	Acute [lbs/day)]	Organisms [ug/l]	Water/Organism [ug/l]	DWS [ug/l]	Organisms [lbs/day]	Water/Organism [lbs/day]	DWS [lbs/day]	(De Minimis) [lbs/day]	Conc.[2] [ug/l]	Mass [lbs/day]	Above De Minimis?
Copper *	8.097	1/2 WQS	16.193	25.823	0.330	49.02	78.165	**1.549**	**2.653**	NA	N/A	NA	NA	NA	NA	0.077	3.4	0.1134	Yes
Lead *	2.653	1/2 WQS	5.305	136.142	0.175	30.305	777.67	**1.047**	**29.34**	NA	NA	5.0	NA	NA	0.105	0.005	9.6	0.3203	Yes
Nickel *	46.741	1/2 WQS	93.482	841.659	0.401	233.06	2098.35	**7.055**	**77.7**	4,600	610.0	100.0	204	25	2	0.119	7.6	0.2535	Yes
Selenium	2.500	1/2 WQS	5.0	20.0	1.000	5.00	20.000	**0.095**	**0.66**	NA	NA	50.0	NA	NA	2.127	0.005	0.4	0.0133	Yes **
Zinc *	106.274	1/2 WQS	212.547	210.823	0.270	786.89	780.505	**25.77**	**25.53**	NA	NA	NA	NA	NA	NA	1.276	66.9	2.2318	Yes
Methylene Chloride	0.000	Zero	NA	NA	1.000	NA	NA	NA	NA	16,000	47.0	5.0	717	2.1	0.2239	0.011	1.5	0.0500	Yes

* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions. The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.

** However, antidegradation provision has to be evaluated with respect to the previous permit limit, which was 0.05 mg/L*12 MGD * 8.34 = 0.5 lb/day

[1] The basis for background is either "1/2 lowest water quality standard", "measured instream data", or zero for organic pollutants

[2] Discharge concentration values are derived from application data or required detection levels (RDL) through values (where application data is not available)

NOTE: Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

7.9. SETTLEABLE SOLIDS

Settleable solids results provide an indication of the treatment system performance. The treated effluent settleable solids limitation (1.0 ml/l) included in the current permit will be used for the new permit.

7.10. pH

The permittee's must comply with secondary treatment technology pH limitations (6.0 to 9.0 s.u.) for its treated effluent. These pH limits are in the current permit and will be used for the new permit.

7.11. BIOMONITORING

The division evaluates all dischargers for reasonable potential to exceed the narrative water quality criterion, "no toxics in toxic amounts". The division has determined that for municipal facilities with stream dilutions of less than 500 to 1, any of the following conditions demonstrates reasonable potential to exceed this criterion.

a. Toxicity is suspected or demonstrated.
b. A pretreatment program is required.
c. The design capacity of the facility is greater than 1.0 MGD.

Since the facility has a pretreatment program and is greater than 1.0 MGD, biomonitoring will be continued to be required in the new permit. The permittee's Outfall 001 IC_{25} results were consistently >100%. However, since the receiving stream is effluent dominated under low flow conditions the new permit will continue to require the Outfall 001 treated effluent to achieve an IC_{25} limit of > 100%.

7.12 METALS AND TOXICS

Pass-through limitations for heavy metals and other toxic substances have been recalculated as part of the permit issuance process and/or due to changes in industrial waste contribution to the POTW. This POTW is required to implement/maintain a pretreatment program. More frequent monitoring will be required **in the permit** if (a) the reported concentrations approach or exceed calculated allowable values, (b) significant amounts of particular pollutants are present which may impact the treatment process sludge character or the receiving stream, or (c) minimum information is lacking to accurately calculate water quality protection values, in which case additional stream monitoring may also be required.

A summary of the semi-annual report data does not indicate that the potential exists for the water quality criteria for any parameter to be exceeded. Appendix 3 lists the metal and toxic parameters calculations and the procedure used to derive the results.

7.13 VOLATILE ORGANIC, ACID-EXTRACTABLE, AND BASE-NEUTRAL COMPOUNDS

The division evaluated effluent concentrations of volatile organic, acid-extractable, and base-neutral compounds and antimony, arsenic, beryllium, selenium and thallium for potential to violate water quality criteria using the following mass balance equation:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

where:

Cm = resulting in-stream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow, (STP design flow)
Qs = stream low flow

to protect water quality:

$$Cw \leq Ca$$

where:

Ca = STP effluent concentration allowable

$$= \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs]}{Qw}$$

and (S_A) = the percent "Stream Allocation".

The reasonable potential evaluation uses the following assumptions and procedures:

a. Stream background concentrations, Cs, for all volatile organic, acid-extractable, and base-neutral compounds equal zero unless actual stream data exists to show otherwise. Use of the effluent concentrations of such pollutants contributed by upstream dischargers as background is not justifiable due to the volatility and reactivity of these pollutants.

b. The stream allocation, S_A, is 90% and is used as a factor of safety.

c. A mass balance uses the STP design flow, the receiving stream critical low flow (7Q10 or 1Q10), the state water quality numeric criteria, and the stream allocation safety factor to derive the allowable effluent concentrations.

d. When pollutants have potential to violate standards because the concentrations are below the scan detection levels but could be above the allowable water quality based effluent concentrations, the pollutants are handled one of three (3) ways:

i. Additional testing of detected and non-detected pollutants is required if contributing industrial processes are likely to contain them and the effluent scans have not met the minimum required detection levels (RDL) in the state water quality standards or approximated the method detection limits (MDL) of the approved test methods for the pollutants in 40 CFR Part 136.
ii. If the required RDL has been used and resulted in non-detection, or if an MDL has been used with non-detection and the contributing industrial processes do not reasonably contain that pollutant, the division drops the pollutant from further consideration.
iii. Pollutants detected at levels high enough to violate standards are limited in the permit to the allowable concentration, Cw, based on STP design flow.

Calculations for this permit have been done using a standardized spreadsheet, titled "WQ Based Effluent Calculations- Other Compounds", and are located in Appendix 4. All metals other than antimony, arsenic, beryllium, selenium, and thallium have been evaluated using procedures described in the rationale, or fact sheet, section headed, "METALS & TOXICS".

The evaluation indicates that volatile organic, acid extractable, and base neutral compounds and antimony, arsenic, beryllium, selenium, and thallium do not exhibit the potential to violate water quality criteria and thus will not be given effluent limitations and monitoring requirements in the permit.

8. OTHER PERMIT REQUIREMENTS AND CONDITIONS

8.1. CERTIFIED WASTEWATER TREATMENT OPERATOR

The waste treatment facilities shall be operated under the supervision of a Grade IV certified wastewater treatment operator in accordance with the Water Environmental Health Act of 1984. Operator grades are under jurisdiction of the Water and Wastewater Operators Certification Board. This NPDES permit is under jurisdiction of the Tennessee Board of Water Quality, Oil and Gas. Operator grades are rated and recommended by the Division of Water Resources pursuant to Rule 0400-49-01 (formerly 1200-05-03) and are included in this fact sheet for reference. The grades are intentionally not specified in the permit so that the operation certification board can authorize changes in grade without conflicting with this permit.

8.2. COLLECTION SYSTEM CERTIFIED OPERATOR

The collection system shall be operated under the supervision of a Grade II certified collection system operator in accordance with the Water Environmental Health Act of 1984.

8.3. PRETREATMENT PROGRAM

The Franklin STP has an approved pretreatment program. An updated Industrial Waste Survey must be completed within 120 days of the effective date of the permit, unless such a survey has been submitted within 3 years of the effective date.

At least once each reporting period, all permittees with approved pretreatment programs are required to analyze the STP influent and effluent for the following pollutant parameters: chromium (trivalent and hexavalent and total if drinking water use applies), copper, lead, nickel, zinc, silver, cadmium, mercury, total phenols, and cyanide. These pollutants were selected because, historically, they are the ones that tend to be predominant in industrial wastewaters. Other pollutants may be added to the list, as required.

During preparation of this permit, data from ten previous semiannual reports, as well as data from previous Toxics Release Inventory (TRI) lists, were analyzed. If any particular value of a pollutant equals or exceeds 85% of the pass-through limit, or if the TRI list indicates what may be a significant amount of other pollutants being discharged to the sewer system, the pollutant was added to the list of those that are required to be sampled. Based on our review of the semiannual reports and other documents, sampling for additional pollutants is not required at this time.

8.4. BIOSOLIDS/SLUDGE MANAGEMENT

The Clean Water Act (CWA) requires that any NPDES permit issued to a publicly owned treatment works or any other treatment works treating domestic sewage shall comply with 40 CFR Part 503, the federal regulation governing the use and disposal of sewage sludge. It is important to note that "biosolids" are sewage sludge that has been treated to a level so that they can be land applied.

The language in subpart 3.3 of the permit, relative to biosolids management, a CWA requirement, allows the "permitting authority" under 40 CFR Part 503.9(p) to be able to enforce the provisions of Part 503. The "permitting authority" relative to Part 503 is either a state that has been delegated biosolids management authority or the applicable EPA Region; in the case of Tennessee it is EPA-Region 4.

Tennessee regulates the land application of biosolids under state rules, Chapter 0400-40-15. The state rules became effective on June 30, 2013. Under these state rules, all facilities that land apply biosolids must obtain a biosolids permit from the division. The land application of biosolids under state rules will be regulated through either a general permit or by an individual permit. It is anticipated that the permitting of biosolids land application will begin near the beginning of calendar year 2014. Questions about the division's biosolids regulations and permitting program should be directed to the division's Biosolids Coordinator at:

State of Tennessee
Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102
(615) 532-0625

8.5. PERMIT TERM

This permit is being reissued for 5 years in order to allow time for TMDL development.

8.6. TREATED WASTEWATER REUSE

The new permit retains the permittee's reuse program from its current permit by operating an unrestricted treated wastewater reuse program for industrial customers, commercial developments, golf courses, recreational areas, and residential developments for irrigation in common areas. Irrigation system can use a combination of both spray disposal (above ground) and drip irrigation (below ground) as needed to minimize potential for human contact while maximizing wastewater disposal.

Reuse activities are restricted to use of the water in a manner that results in its disposal by land application (including via spray irrigation or drip irrigation systems). No discharge of the reuse water is allowed to waters of the State of Tennessee. The application rate shall be restricted such that there shall be no reuse water ponding or runoff. Application rates shall also be restricted such that nitrogen uptake by the receiving cover crop is sufficient during all months of the year to prevent the reuse water from causing the groundwater underlying the application site to exceed State groundwater criteria for nitrate. This requirement shall not be construed to warrant any use of harvested products from irrigated cover crops and the permittee shall take full responsibility for their proper use or disposal. Requirements for dedicated irrigation sites are presented in the new permit.

In order to protect public health, the division will require that the permittee achieve the maximum *E.coli* limit and a minimum chlorine residual limit at the primary distribution point an also at points throughout the distribution system.

9. ANTIDEGRADATION STATEMENT/WATER QUALITY STATUS

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06. It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.

Stream determinations for this permit action are associated with the waterbody segment identified by the division as segment ID# TN05130204016_1000.

The division has made a water quality assessment of the receiving waters associated with the subject discharge(s) and has found the receiving stream to be neither an exceptional nor outstanding national resource water. Additionally, this water does not support designated uses due to following causes and sources:

CAUSE_NAME	SOURCE_NAME
Phosphorus (Total)	Municipal Point Source Discharges
Oxygen, Dissolved	Municipal Point Source Discharges

Phosphorus (Total)	Discharges from Municipal Separate Storm Sewer Systems (MS4)
Oxygen, Dissolved	Discharges from Municipal Separate Storm Sewer Systems (MS4)
Sedimentation/Siltation	Discharges from Municipal Separate Storm Sewer Systems (MS4)

TMDLs have been developed and approved for this waterbody segment on the following parameters and dates:

- Harpeth River -Total Maximum Daily Load for siltation and habitat alteration in the Harpeth River watershed. Approved 10/31/2002.

8.0 IMPLEMENTATION PLAN

8.1 Point Sources

8.1.1 NPDES Regulated Municipal and Industrial Wastewater Treatment Facilities Calculations show that TSS discharges from facilities covered under individual NPDES permits account for less than two percent of the total existing average annual sediment loading in the Harpeth River watershed. This TMDL allows these facilities to discharge at their current permitted levels. The WLA for these facilities will be implemented through each facility's NPDES permit.

- Harpeth River - Total Maximum Daily Load for Metals in the Harpeth River Watershed. Approved 07/18/2003.

8.0 IMPLEMENTATION PLAN

8.1 Point Sources

A WLA to an individual point source discharger does not necessarily result in a permit limit or monitoring requirement. Through the NPDES permitting process, a determination will be made whether the metals discharges from a point source have the reasonable potential of violating the allocated concentration and/or load. The results of this reasonable potential analysis will determine specific permit requirements for each metal.

8.1.1 Dry Weather Conditions

At the present time, there are no permitted point source discharges of antimony, arsenic, cadmium, lead, or zinc during dry weather conditions to the 2.7 mile segment of the Harpeth River identified as impaired in the 2002 assessment. Any future point source discharges of these metals will be expected to comply with the WLAs specified in Section 7.4.1.

Table 11 TMDLs for Metals – Dry Weather Conditions

Metal (Total Recoverable)	TMDL – Dry Weather Conditions			
	Chronic		Acute	
	Concentration [µg/l]	Mass [lbs/day]	Concentration [µg/l]	Mass [lbs/day]
Antimony	6	0.0384	—	—
Arsenic	50	0.3198	—	—
Cadmium	5	0.0063	32.74[b]	0.0295
Lead	5	0.0284	810.1[b]	0.7297
Zinc	710.1[a]	0.6396	777.7[b]	0.7005

a – 4-day average, once every three years.
b – 1-hour average, once every three years.

- Harpeth River and Harpeth River Tributaries - Total Maximum Daily Loads (TMDLs) developed by EPA for organic enrichment/low dissolved oxygen in the Harpeth River and Harpeth River Tributaries. Approved 09/28/2004.

Table 25 Wasteload Allocation to STPs to protect DO levels in the lower Harpeth River

Facility	* Summer CBOD5 Lbs/day	* Summer Ammonia lbs/day	* Winter CBOD5 lbs/day	* Winter Ammonia lbs/day	Annual Total N lbs/day
Franklin STP	400 (4.0mg/l)	40 (0.4 mg/l)	1001 (10.0 mg/l)	150 (1.5 mg/l)	290 (2.9 mg/l)
Lynnwood STP	17 (5.0 mg/l)	7 (2.0mg/l)	33 (10.0 mg/l)	17 (5.0mg/l)	22 (6.6 mg/l)
Cartwright Creek STP	10 (5.0 mg/l)	4 (2.0 mg/l)	21 (10.0 mg/l)	10 (5.0 mg/l)	15 (7.0 mg/l)

* Summer: May 1 – October 31; Winter: November 1 – April 30

- Harpeth River - Total Maximum Daily Load for E. Coli in the Harpeth River Watershed in Cheatham, Davidson, Dickson, Hickman, Rutherford and Williamson Counties. Approved 03/24/2006.

9.1 Point Sources

9.1.1 NPDES Regulated Municipal and Industrial Wastewater Treatment Facilities

All present and future discharges from industrial and municipal wastewater treatment facilities are required to be in compliance with the conditions of their NPDES permits at all times, including elimination of bypasses and overflows. In Tennessee, permit limits for treated sanitary wastewater require compliance with coliform water quality standards (ref: Section 5.0) prior to discharge. No additional reduction is required. WLAs for WWTFs are derived from facility design flows and permitted E. coli limits and are expressed as average loads in CFU per day.

The proposed terms and conditions of this permit comply with the wasteload allocations of these TMDLs.

The applicant did not request additional pollutant loading to the river due to upgrading the facility to 16 MGD. As a result of the upgrade, the City of Franklin requested an approval to improve the level of treatment and is requesting a permit with the same wasteload allocations as currently proposed, with the modification to allow an additional four million gallons per day of flow to be discharged. It is important to note that the City of Franklin Water Reclamation Facility upgrades include provisions for producing an effluent of higher quality to achieve this goal. In addition, the City is also committed to increasing reuse of the highly treated reclaimed water produced at the facility to decrease discharges to the Harpeth River.

The planned plant upgrades will provide a higher effluent quality (e.g., lower concentrations) allowing the facility to discharge additional flow without increasing the mass of constituents discharged. The process upgrades (as described in the Preliminary Design Report) include a design that improves the effluent quality from the treatment process.

10. OVERFLOW (SANITARY SEWER AND DRY-WEATHER), RELEASE AND BYPASS REPORTING

For the purposes of demonstrating proper operation of the collection, transmission and treatment system, the permit treats releases separately from overflows and bypass. State regulations at 0400-40-05-.07(2) establish "standard conditions." These standard conditions include 0400-40-05-.07(2)(n) that sets forth specific language prohibiting sanitary sewer overflows (defined in the regulations as a "discharge") and standard conditions in 0400-40-05-.07(2)(l) and (m) pertaining to bypass. While the regulations prohibit sanitary sewer overflow (i.e., discharges that reach receiving waters) it does not prohibit "releases" that do not reach receiving waters. However, releases that do not reach receiving waters may be indicative of other problems, such as improper operation and maintenance of the sewer system. Whether another violation occurs or whether, for example, there is an unavoidable accident (see, e.g., § 69-3-114(a)), will involve case-specific evaluations. Regardless, the permit assures, without waiving rights to pursue other violations associated with a release, as applicable, that the permittee would, at a minimum be reporting and responding to releases. Any release potentially warrants permittee mitigation of human health risks via direct or indirect contact and demonstrates a hydraulic problem in the system that warrants permittee consideration as part of proper operation and maintenance of the system.

APPENDIX 1
PREVIOUS PERMIT LIMITS

Parameters	Effluent Limitations						Monitoring Requirements		
	Monthly Average Conc. (mg/l)	Monthly Average Amount (lb/day)	Weekly Average Conc. (mg/l)	Weekly Average Amount (lb/day)	Daily Maximum Conc. (mg/l)	Daily Minimum Percent Removal	Measurement Frequency	Sample Type	Sampling Point
$CBOD_5$ (summer)	4.0	400	6.0	600	8.0	40	7/week	composite	effluent
	Report	—	—	—	Report	—	7/week	composite	influent
$CBOD_5$ (winter)	10	1,001	15	1,500	20	40	7/week	composite	effluent
	Report	—	—	—	Report	—	7/week	composite	influent
$CBOD_u$ (a) (summer)	—	—	—	—	Report	—	(a)	composite	effluent
Ammonia as N (summer)	0.4	40	0.6	60	0.8	—	7/week	composite	effluent
Ammonia as N (winter)	1.5	150	2.3	230	3.0	—	7/week	composite	effluent
Total Nitrogen (summer)	5.0	377 (b)	—	—	Report	—	2/month	composite	effluent
	—	—	—	—	—	—	2/month	composite	influent
Total Nitrogen (winter)	Report	(b)	—	—	Report	—	2/month	composite	effluent
	—	—	—	—	—	—	2/month	composite	influent
Insoluble TKN as N (summer)	Report	—		—		—	2/month	composite	effluent
Total Phosphorus as P (summer)	5.0	Report	—	—	Report	—	2/month	composite	effluent
	—	—	—	—	—	—	2/month	composite	influent
Total Phosphorus as P (winter)	Report	Report	—	—	—	—	2/month	composite	effluent
	—	—	—	—	—	—	2/month	composite	influent
Insoluble Total Phosphorus as P (summer)	Report	—	—	—	—	—	2/month	composite	effluent
Suspended Solids (summer)	10 (c)	1,001	15	1,501	20	40	7/week	composite	effluent
	Report	—	—	—	Report	—	7/week	composite	influent
Suspended Solids (winter)	30	3,002	40	4,003	45	40	7/week	composite	effluent
	Report	—	—	—	Report	—	7/week	composite	influent

Note: Summer = May 1 – Oct. 31 and winter = Nov. 1 – Apr. 30. The permittee shall achieve $CBOD_5$ and TSS of at least 85 percent removals, on a monthly average basis. Total Nitrogen and Total Phosphorus monitoring – report monthly influent and effluent average concentrations, mass loadings, and percentage removals based on 2/month monitoring.

(a) Ultimate CBOD (CBODu) shall be determined pursuant to Section 3.6. For the first 2 years of the permit, the ultimate CBOD must be monitored 1/month for the months of May, July, and September, with annual 1x/summer monitoring thereafter.

(b) Annual Total Nitrogen average permit limit shall be $\leq$ 290 lb/day, and result shall be reported with the DMR submitted by January 15.

(c) A violation of this value will not result in a Notice of Violation (NOV) if the reason for a higher monthly average value occurrence was not due to tertiary filter neglect.

Parameters	Effluent Limitations			Monitoring Requirements		
	Monthly Average (mg/L)	Daily Minimum (mg/L)	Daily Maximum (mg/L)	Measurement Frequency	Sample Type	Sampling Point
Sanitary Sewer Overflows, Total Occurrences	Report	Report	Report	continuous	visual	NA
Dry Weather Overflows, Total Occurrences	Report	Report	Report	continuous	visual	NA
Bypass of Treatment, Total Occurrences	Report	Report	Report	continuous	visual	NA
Selenium, Total	0.005	—	0.019	Semiannual	composite	effluent
E. coli (cfu/100 ml)	126	—	941	7/week	grab	effluent
Chlorine Residual , Total (b)	—	—	0.02 (a)	7/week	grab	effluent
Settleable Solids (ml/l)	—	—	1.0	7/week	composite	effluent
Dissolved Oxygen (mg/l)	—	8.0 (a)	—	7/week	grab	effluent
pH (s. u.)	—	6.0	9.0	7/week	grab	effluent
Flow (MGD)	Report	—	Report	7/week	continuous	influent
	Report	—	Report	7/week	continuous	effluent
IC_{25} (c)	>100% (Survival, reproduction and growth)			1/quarter	composite	effluent

(a) Instantaneous requirement

(b) Applicable if chlorination is used for disinfection or when the treated effluent may be reasonably expected to contain total residual chlorine. Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

(c) Whole effluent toxicity – chronic testing pursuant to Section 3.4.

The City of Franklin is authorized to distribute treated municipal wastewater for non-potable reuse. The reuse water shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	**Effluent Limitations**		**Monitoring Requirements**		
	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type	Sampling Point
E.coli		23 colonies /100 ml (see the following paragraphs)	1/day	grab	See note (1)
Residual Chlorine, Total	1 mg/l (after 30 min.)		1/day or continuous	grab	See notes (1) and (2)

(1) Daily *E.coli* and total residual chlorine samples shall be collected at the point of release from the treatment system. Quarterly *E.coli* and residual chlorine samples must be collected for analysis at two points within the distribution system: one that is representative of the system's average residence time and one that is representative of the system's maximum residence time.

(2) Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

This permit allows the operation of land application (spray irrigation or drip irrigation). The operation must be such that there is no contamination of and no wastewater discharge to any surface or subsurface stream because of collected pools of water called "ponding" or because of improper irrigation. Applications shall not be performed when wet or frozen conditions exist at the application sites. Any runoff due to improper operation must be reported in writing to the Division of Water Resources, Environmental Field Office - Nashville within 5 days of the incident. In addition, the reuse irrigation system must be operated in a manner preventing the creation of a public health hazard or a public/private nuisance. Additional requirements are found in Section 3.9.

APPENDIX 2
Discharge Monitoring Report Summary

	Flow (MGD)		Biochemical Oxygen Demand				Suspended Solids				Effluent
			Influent	Effluent (mg/l)		%	Influent	Effluent (mg/l)		%	Settleable
	Monthly Average	Daily Max	(mg/l)	Monthly Average	Daily Max	Removal	(mg/l)	Monthly Average	Daily Max	Removal	Solids (ml/l)
Limits	Report	Report	Report			85	Report			85	1.0
Summer				4	8			30	45		
Winter				10	20			30	45		
Average	8.217	16.195	188	1	2	100	207.1	1	3	99	0.1
Maximum	13.449	30.800	243.7	2	4	100	286.3	1	7	100	1.0
Minimum	2.655	5.180	127.9	1	1	99	119.7	1	2	99	0.1
+ = Exceedance											
Date											
Jan/12	9.039	17.310	198.6	1	1	99.6	119.7	1	3	99	0.1
Feb/12	7.156	10.080	192.2	1	1	99.6	198.1	1	2	99.4	0.1
Mar/12	8.523	13.850	158.9	1	1	99.6	181.9	1	2	99.4	0.1
Apr/12	5.100	7.930	207.2	1	1	99.7	218.3	1	3	99.5	0.1
May/12	5.236	14.110	221.8	1	1	99.7	230.7	1	3	99.5	0.1
Jun/12	2.655	5.180	229.7	1	2	99.6	251.3	1	6	99.5	0.1
Jul/12	4.210	9.310	193.5	1	2	99.6	227.9	1	2	99.5	0.1
Aug/12	4.360	6.390	209.5	1	1	99.6	245.5	1	2	99.5	0.1
Sep/12	5.092	11.440	192.9	1	3	99.4	241.1	1	5	99.4	0.1
Oct/12	5.220	9.960	188.7	2	4	98.9	221.9	1	4	99.4	0.1
Nov/12	5.520	7.140	233.2	2	4	99.2	249.9	1	6	99.5	0.1
Dec/12	8.478	14.200	187.4	1	2	99.5	190.1	1	3	99.3	0.1
Jan/13	13.065	29.730	142.8	1	1	99.5	145.8	1	6	99.2	0.1
Feb/13	9.350	12.400	164.4	1	1	99.6	170	1	2	99.4	1.0
Mar/13	9.090	14.080	172.2	1	2	99.5	181	1	2	99.4	0.1
Apr/13	13.449	30.800	149	1	1	99.5	182.9	1	2	99.4	0.1
May/13	11.065	29.050	162.2	1	1	99.6	161.5	1	2	99.3	0.1
Jun/13	7.019	8.770	243.7	1	4	99.5	244.8	1	2	99.6	0.1
Jul/13	9.240	22.340	187.8	1	1	99.6	207	1	2	99.5	0.1
Aug/13	8.150	13.890	198.3	1	1	99.6	191.5	1	3	99.3	0.1
Sep/13	7.382	11.060	207	1	2	99.6	189.5	1	3	99.4	0.1
Oct/13	6.530	9.080	231.9	1	1	99.6	223.9	1	2	99.5	0.1
Nov/13	6.197	7.710	229.7	1	1	99.6	256.7	1	3	99.5	0.1
Dec/13	8.035	20.070	152.3	1	2	99.4	154.3	1	2	99.2	0.1
Jan/14	9.060	17.520	162.7	1	1	99.5	164.3	1	2	99.3	0.1
Feb/14	12.430	23.840	127.9	1	2	99.2	167	1	3	99.2	0.1
Mar/14	9.490	17.870	155.9	1	2	99.4	189.5	1	4	99.4	0.1
Apr/14	10.460	25.610	164.1	1	1	99.6	181	1	2	99.4	0.1
May/14	9.000	15.400	154.4	1	1	99.5	173.4	1	2	99.4	0.1
Jun/14	11.220	24.750	136	1	2	99.2	196.5	1	7	99.3	0.1
Jul/14	7.160	15.610	191.8	1	2	99.5	286.3	1	3	99.6	0.1
Aug/14	6.370	8.380	226.6	1	2	99.5	268	1	2	99.6	0.1
Sep/14	5.830	7.050	237	1	2	100	263	1	3	99	0.1
Oct/14	8.310	24.200	200	1	1	100	218	1	2	100	0.1
Nov/14	8.680	19.240	187	1	1	100	210	1	2	99	0.1
Dec/14	10.000	26.500	168			99	195	1	2	99	
Jan/15	8.580	12.620	176			100	216	1	3	99	
Feb/15	9.900	25.460	189			99	224	1	2	99	
Mar/15	12.440	27.240	151	1	1	99	185	1	2	99	
Apr/15	10.590	20.640	238	1	2	100	260	1	2	100	0.1

APPENDIX 2
Discharge Monitoring Report Summary

	Flow (MGD)		Effluent									
			pH (std. units)		Cl2	Ammonia		D.O.	E. coli		By-passing
	Monthly Average	Daily Max	Min	Max	Daily Max	Monthly Average	Daily Max	Daily Min	Monthly Average	Daily Max	
Limits	Report	Report	6.0	9.0				8.0	126	941	
Summer					0.02	0.4	0.8				
Winter					0.02	1.5	3.0				
Average	8.217	16.195	7.8	8.1	0.05	0.1	0.6	8.9	4	118	
Maximum	13.449	30.800	8.2	8.4	0.05	1.1	7.1	10.0	39	1986	
Minimum	2.655	5.180	7.4	7.8	0.05	0.0	0.0	7.9	1	1	
+ = Exceedence					1	1	2	1		1	1

Date											
Jan/12	9.039	17.310	8.1	8.2		0.32	4.80 +	9.6	1	167	
Feb/12	7.156	10.080	8.1	8.2		0.05	0.08	9.8	1.1	5.2	
Mar/12	8.523	13.850	8.1	8.2		0.03	0.08	9.5	1	2	
Apr/12	5.100	7.930	8.1	8.2		0.01	0.02	8.9	1	3.1	
May/12	5.236	14.110	8.1	8.2		0.04	0.09	8.5	1	74.9	
Jun/12	2.655	5.180	8.2	8.3		0.05	0.10	8.1	3	48	
Jul/12	4.210	9.310	8.2	8.4		0.05	0.08	8.0	1.5	21.6	
Aug/12	4.360	6.390	8.1	8.3		0.06	0.15	8.0	2.6	32.7	
Sep/12	5.092	11.440	8.0	8.3		0.13	0.40	8.1	4	76.7	
Oct/12	5.220	9.960	8.0	8.2	0.05 +	0.38	0.80	8.2	39	1986 +	
Nov/12	5.520	7.140	8.1	8.2		0.60	1.90	9.2	4.1	54.8	
Dec/12	8.478	14.200	8.0	8.2		0.17	0.70	9.1	7	261	
Jan/13	13.065	29.730	8.0	8.1		0.05	0.20	9.3	1	1	
Feb/13	9.350	12.400	8.0	8.1		0.04	0.07	9.8	1	115	
Mar/13	9.090	14.080	7.5	8.1		0.04	0.07	9.8	1	3	
Apr/13	13.449	30.800	7.9	8.1		0.04	0.08	8.7	1	5.2	
May/13	11.065	29.050	7.5	8.1		0.05	0.09	8.8	1	4.1	
Jun/13	7.019	8.770	7.9	8.1		1.08 +	7.10 +	8.4	3	130	
Jul/13	9.240	22.340	7.4	8.2		0.11	0.30	8.3	1	3.1	
Aug/13	8.150	13.890	7.8	8.2		0.05	0.03	8.0	1	6.3	
Sep/13	7.382	11.060	7.9	8.3		0.05	0.07	8.0	1	3.1	
Oct/13	6.530	9.080	7.9	8.3		0.08	0.60	8.0	1	12.1	
Nov/13	6.197	7.710	7.7	8.1		0.05	0.08	8.5	1.9	93.3	
Dec/13	8.035	20.070	7.5	8.1		0.03	0.10	8.9	1	9.8	
Jan/14	9.060	17.520	7.5	8.0		0.10	0.30	9.6	1	18.5	
Feb/14	12.430	23.840	7.5	8.0		0.10	0.10	10.0	2	127	1
Mar/14	9.490	17.870	7.6	8.1		0.05	0.20	9.1	2	115	
Apr/14	10.460	25.610	7.8	8.1		0.04	0.08	8.9	1	21.6	
May/14	9.000	15.400	7.7	8.0		0.03	0.06	8.5	3	75.9	
Jun/14	11.220	24.750	7.8	8.1		0.03	0.10	8.4	8.3	40.8	
Jul/14	7.160	15.610	7.8	8.2		0.08	0.30	7.9 +	9.9	119	
Aug/14	6.370	8.380	7.9	8.2		0.09	0.20	8.0	12	308	
Sep/14	5.830	7.050	7.9	8.2		0.09	0.30	8.4	7	727	
Oct/14	8.310	24.200	7.8	8.2		0.06	0.10	9.5	2	11	
Nov/14	8.680	19.240	7.8	8.1		0.10	0.30	9.3	3	15	
Dec/14	10.000	26.500	7.6	7.9		0.10	0.30	9.3	2	11	
Jan/15	8.580	12.620	7.7	7.9		0.10	0.20	9.8	2	5	
Feb/15	9.900	25.460	7.5	7.9				9.8	1	2	
Mar/15	12.440	27.240	7.6	7.8		0.10	1.00	9.8	1	12	
Apr/15	10.590	20.640	7.7	7.9		0.10	0.10	9.5	2	10	

APPENDIX 2
Discharge Monitoring Report Summary

51662 Nitrogen, Kjeldahl,Total [TKN], insoluble / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
11/1/2010	11/30/2011	COMPOS	Twice per Month

Limit	
Limit Unit Desc	Milligrams per Liter
Statistical Base	MO AVG
Limit Value	
DMR Values	QI
05/31/2012	0.55
06/30/2012	0.54
07/31/2012	0.542
08/31/2012	0.797
09/30/2012	3.01
10/31/2012	0.95
05/31/2013	1.1
06/30/2013	1.61
07/31/2013	0.56
08/31/2013	0.68
09/30/2013	0.56
10/31/2013	0.71
05/31/2014	0.78
06/30/2014	0.42
07/31/2014	0.62
08/31/2014	0.81
09/30/2014	0.99
10/31/2014	0.61

APPENDIX 2
Discharge Monitoring Report Summary

51663 Phosphorus, insoluble / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
11/1/2010	11/30/2011	COMPOS	Twice per Month

Limit	
Limit Unit Desc	Milligrams per Liter
Statistical Base	MO AVG
Limit Value	
DMR Values	C1
05/31/2012	1.01
06/30/2012	2.15
07/31/2012	1.25
08/31/2012	0.737
09/30/2012	1.41
10/31/2012	0.6565
05/31/2013	0.93
06/30/2013	2.47
07/31/2013	1.22
08/31/2013	1.5
09/30/2013	0.89
10/31/2013	1.4
05/31/2014	1.25
06/30/2014	1.5
07/31/2014	1.14
08/31/2014	1.4
09/30/2014	0.84
10/31/2014	1.15

APPENDIX 2
Discharge Monitoring Report Summary

51670 Nitrogen, total, percent removal [%] / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
11/1/2010	11/30/2011	CALCTD	Twice per Month

Limit	
Limit Unit Desc	Percent
Statistical Base	MO AVG
Limit Value	
DMR Values	
01/31/2012	92.8
02/29/2012	93.9
03/31/2012	93.6
04/30/2012	96.1
05/31/2012	95.8
06/30/2012	96.3
07/31/2012	94
08/31/2012	95.3
09/30/2012	92.6
10/31/2012	94.3
11/30/2012	92.9
12/31/2012	92.9
01/31/2013	89.3
02/28/2013	91.8
03/31/2013	92.6
04/30/2013	75.5
05/31/2013	91.3
06/30/2013	93.1
07/31/2013	94.8
08/31/2013	94.6
09/30/2013	93.7
10/31/2013	94.3
11/30/2013	93.5
12/31/2013	90.9
01/31/2014	91.9
02/28/2014	93.6
03/31/2014	93
04/30/2014	94
05/31/2014	94.91
06/30/2014	86.7
07/31/2014	93.81
08/31/2014	94
09/30/2014	94
10/31/2014	94
11/30/2014	98
12/31/2014	92
01/31/2015	92
02/28/2015	94
03/31/2015	92
04/30/2015	95

APPENDIX 2
Discharge Monitoring Report Summary

74062 Overflows / Location T / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
11/1/2010	11/30/2011	OCCURS	Continuous

Limit	
Limit Unit Desc	Occurrences per Month
Statistical Base	MO TOTAL
Limit Value	
DMR Values	01
01/31/2012	0
02/29/2012	0
03/31/2012	0
04/30/2012	0
05/31/2012	0
06/30/2012	0
07/31/2012	0
08/31/2012	0
09/30/2012	0
10/31/2012	0
11/30/2012	0
12/31/2012	0
01/31/2013	1
02/28/2013	0
03/31/2013	0
04/30/2013	6
05/31/2013	1
06/30/2013	0
07/31/2013	0
08/31/2013	0
09/30/2013	0
10/31/2013	0
11/30/2013	0
12/31/2013	0
01/31/2014	0
02/28/2014	1
03/31/2014	0
04/30/2014	1
05/31/2014	0
06/30/2014	0
07/31/2014	0
08/31/2014	0
09/30/2014	0
10/31/2014	0
11/30/2014	0
12/31/2014	0
01/31/2015	0
02/28/2015	1
03/31/2015	1
04/30/2015	0

APPENDIX 2
Discharge Monitoring Report Summary

74062 Overflows / Location U / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
11/1/2010	11/30/2011	OCCURS	Continuous

Limit	
Limit Unit Desc	Occurrences per Month
Statistical Base	MO TOTAL
Limit Value	
DMR Values	Q1
01/31/2012	1
02/29/2012	1
03/31/2012	0
04/30/2012	1
05/31/2012	1
06/30/2012	0
07/31/2012	0
08/31/2012	2
09/30/2012	0
10/31/2012	0
11/30/2012	1
12/31/2012	1
01/31/2013	1
02/28/2013	0
03/31/2013	1
04/30/2013	0
05/31/2013	1
06/30/2013	1
07/31/2013	1
08/31/2013	1
09/30/2013	0
10/31/2013	2
11/30/2013	1
12/31/2013	2
01/31/2014	2
02/28/2014	2
03/31/2014	0
04/30/2014	4
05/31/2014	0
06/30/2014	0
07/31/2014	3
08/31/2014	1
09/30/2014	1
10/31/2014	1
11/30/2014	1
12/31/2014	0
01/31/2015	3
02/28/2015	0
03/31/2015	0
04/30/2015	2

APPENDIX 2
Discharge Monitoring Report Summary

81012 Phosphorus, total percent removal / Location 1 / Season 0 / Base

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
11/1/2010	11/30/2011	CALCTD	Twice per Month

Limit	
Limit Unit Desc	Percent
Statistical Base	MO AVG
Limit Value	
DMR Values	C2
01/31/2012	87.9
02/29/2012	71.7
03/31/2012	70.6
04/30/2012	74.4
05/31/2012	71.7
06/30/2012	63.8
07/31/2012	54
08/31/2012	73.4
09/30/2012	69.3
10/31/2012	63.8
11/30/2012	66.1
12/31/2012	66
01/31/2013	64.3
02/28/2013	72.2
03/31/2013	59.4
04/30/2013	54.1
05/31/2013	60.4
06/30/2013	32.3
07/31/2013	67.5
08/31/2013	67
09/30/2013	75.5
10/31/2013	73.4
11/30/2013	76.9
12/31/2013	72.9
01/31/2014	77.5
02/28/2014	87.2
03/31/2014	80.64
04/30/2014	74.8
05/31/2014	73.73
06/30/2014	54.1
07/31/2014	76.83
08/31/2014	73.9
09/30/2014	79
10/31/2014	72
11/30/2014	85
12/31/2014	80
01/31/2015	77
02/28/2015	82
03/31/2015	80
04/30/2015	84

APPENDIX 2
Discharge Monitoring Report Summary

TRP3B IC25 Static Renewal 7 Day Chronic Chrceriodaphnia / Location 1 / Season 0 / Ba

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
11/1/2010	11/30/2011	COMPOS	Quarterly

Limit	
Limit Unit Desc	Percent
Statistical Base	MINIMUM
Limit Value	100
DMR Values	QL
01/31/2012	100
02/29/2012	NODI=9
03/31/2012	NODI=9
04/30/2012	100
05/31/2012	NODI=9
06/30/2012	NODI=9
07/31/2012	NODI=9
08/31/2012	NODI=9
09/30/2012	100
10/31/2012	NODI=9
11/30/2012	100
12/31/2012	NODI=9
01/31/2013	50
02/28/2013	NODI=9
03/31/2013	100
04/30/2013	NODI=9
05/31/2013	NODI=9
06/30/2013	100
07/31/2013	NODI=9
08/31/2013	NODI=9
09/30/2013	44.5
10/31/2013	100
11/30/2013	NODI=9
12/31/2013	2.02
01/31/2014	100
02/28/2014	NODI=9
03/31/2014	100
04/30/2014	46.2
05/31/2014	100
06/30/2014	NODI=9
07/31/2014	100
08/31/2014	NODI=9
09/30/2014	NODI=9
10/31/2014	100
11/30/2014	NODI=9
12/31/2014	NODI=9
01/31/2015	100
02/28/2015	NODI=9
03/31/2015	NODI=9
04/30/2015	NODI=9

APPENDIX 2
Discharge Monitoring Report Summary

TRP6C IC25 Static Renewal 7 Day Chronic Chrpimephales / Location 1 / Season 0 / Bas

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
11/1/2010	11/30/2011	COMPOS	Quarterly

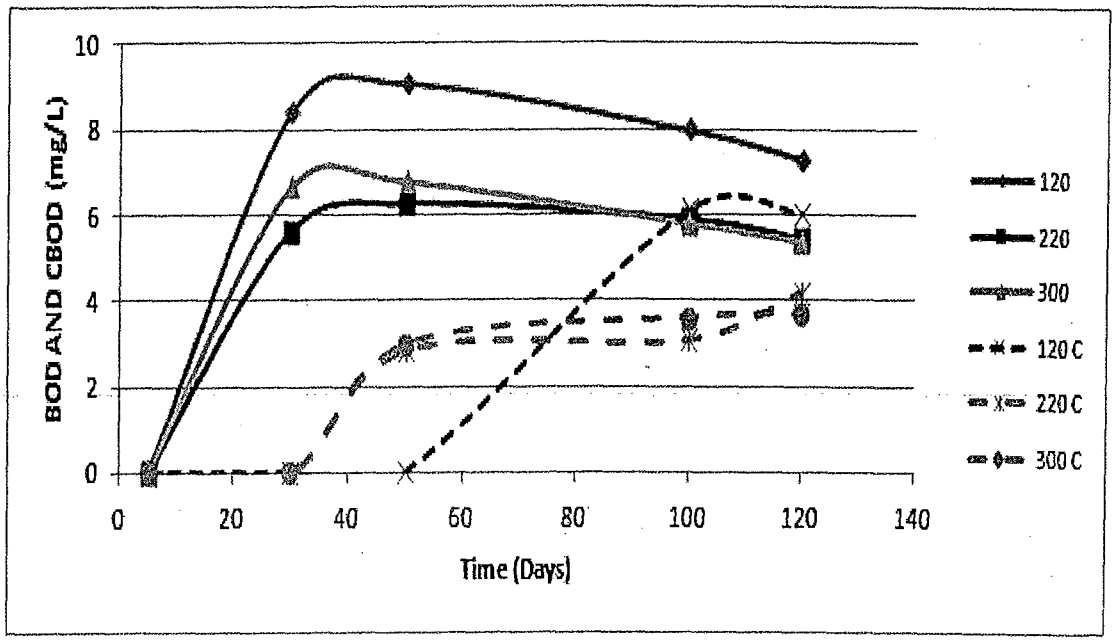
Limit	
Limit Unit Desc	Percent
Statistical Base	MINIMUM
Limit Value	100
DMR Values	(%)
01/31/2012	100
02/29/2012	NODI=9
03/31/2012	NODI=9
04/30/2012	100
05/31/2012	NODI=9
06/30/2012	NODI=9
07/31/2012	NODI=9
08/31/2012	NODI=9
09/30/2012	100
10/31/2012	NODI=9
11/30/2012	100
12/31/2012	NODI=9
01/31/2013	100
02/28/2013	NODI=9
03/31/2013	NODI=9
04/30/2013	NODI=9
05/31/2013	NODI=9
06/30/2013	100
07/31/2013	NODI=9
08/31/2013	NODI=9
09/30/2013	100
10/31/2013	NODI=9
11/30/2013	NODI=9
12/31/2013	100
01/31/2014	NODI=9
02/28/2014	NODI=9
03/31/2014	100
04/30/2014	100
05/31/2014	100
06/30/2014	NODI=9
07/31/2014	100
08/31/2014	NODI=9
09/30/2014	NODI=9
10/31/2014	100
11/30/2014	NODI=9
12/31/2014	NODI=9
01/31/2015	100
02/28/2015	NODI=9
03/31/2015	NODI=9
04/30/2015	NODI=9

APPENDIX 2
Discharge Monitoring Report Summary

BODu and CBODu Test Results (July 29, 2011Treated Effluent)

Franklin STP TN0028827 UBOD and UCBOD RESULTS

Time (Days)	UBOD (mg/L)			UCBOD (mg/L)		
	Sample/300 ml			Sample/300 ml		
	120 ml	220 ml	300 ml	120 ml	220 ml	300 ml
5	<1	<1	<1	<1	<1	<1
30	8.43	5.62	6.66	<1	<1	<1
50	9.08	6.26	6.78	<1	2.82	2.95
100	7.98	5.89	5.79	6.13	3.07	3.58
120	7.30	5.43	5.38	6.05	4.19	3.68

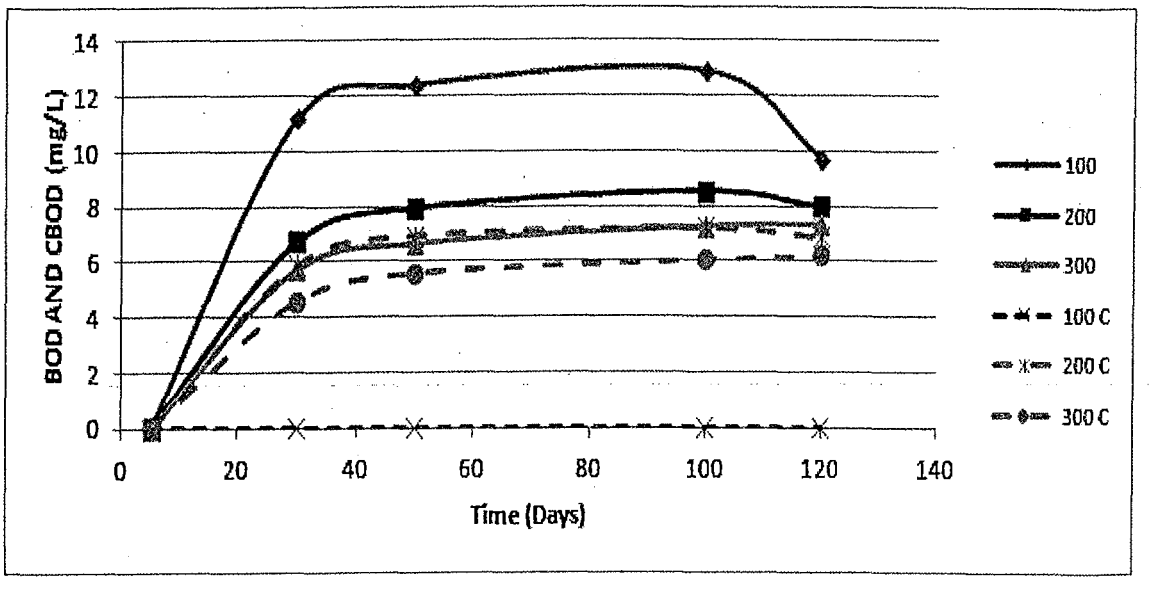


APPENDIX 2
Discharge Monitoring Report Summary

BODu and CBODu Test Results (June 5, 2012 Treated Effluent)

Franklin STP TN0028827 UBOD and UCBOD RESULTS (6-5-2012 Treated Effluent)

Time (Days)	UBOD (mg/L)			UCBOD (mg/L)		
	Sample/300 ml			Sample/300 ml		
	100 ml	200 ml	300 ml	100 ml	200 ml	300 ml
5	<1	<1	<1	<1	<1	<1
30	11.2	6.73	5.73	<1	5.91	4.6
50	12.4	7.94	6.64	<1	6.96	5.6
100	12.9	8.55	7.26	<1	7.22	6.08
120	9.72	7.98	7.34	<1	6.89	6.24



APPENDIX 2
Discharge Monitoring Report Summary

Total Nitrogen Results

	Summer				
	Influent		Effluent		
	MO AVG	MO AVG	MO AVG	MO AVG	DAILY MX
	Report	Report	377	5	Report
	lb/day	mg/L	lb/day	mg/L	mg/L
05/31/2011	2414	28	216	2.5	3.2
06/30/2011	1980	31	64	1.7	2.2
07/31/2011	1887	30	37	1.4	1.6
08/31/2011	2111	36	40	1.9	2.4
09/30/2011	2521	31	134	2.2	2.8
10/31/2011	1961	35	63	2.5	3.6
05/31/2012	2435	34	61	1.3	1.5
06/30/2012	2061	36	25	1.3	1.5
07/31/2012	1735	26	51	1.5	2.3
08/31/2012	1636	27	39	1.2	1.4
09/30/2012	2275	26	96	2.0	2.6
10/31/2012	2100	28	70	1.6	2.0
05/31/2013	2700	27	187	2.3	3.6
06/30/2013	2605	33	150	2.3	3.2
07/31/2013	2439	29	93	1.4	1.8
08/31/2013	2441	29	100	1.5	1.6
09/30/2013	2297	28	101	1.7	2.0
10/31/2013	2440	34	104	1.9	2.4
05/31/2014	1072	75	27	1.8	1.9
06/30/2014	1748	22	259	2.7	3.7
07/31/2014	1723	29	102	1.8	2.0
08/31/2014	1797	32	98	1.9	2.1
09/30/2014	1767	36	101	2.1	2.2
10/31/2014	2336	34	203	2.2	2.6
05/31/2015	2997	41	83	1.5	1.6
Average	2139	33	100	1.9	2.3
Standard Deviation	418	9.8	62	0.4	0.7
95th Percentile	2975	52	223	3	4

APPENDIX 2
Discharge Monitoring Report Summary

Total Nitrogen Results

	Winter			
	Influent		Effluent	
	MO AVG	MO AVG	MO AVG	DAILY MX
	Report	Report	Report	Report
	lb/day	mg/L	mg/L	mg/L
11/30/2010	2582	39	2.5	2.8
12/31/2010	2264	28	3.3	3.8
01/31/2011	3106	44	2.9	3.1
02/28/2011	2691	35	2.2	2.6
03/31/2011	2631	26	2.7	3.6
04/30/2011	3301	29	2.8	3.7
11/30/2011	2592	29	1.9	2.4
12/31/2011	2607	26	2.2	2.3
01/31/2012	3087	29	2.0	2.4
02/29/2012	2561	31	1.9	2.0
03/31/2012	2345	32	1.7	1.9
04/30/2012	2296	33	1.2	1.6
11/30/2012	1973	31	2.1	2.9
12/31/2012	2268	26	1.8	2.1
01/31/2013	1987	18	1.8	2.7
02/28/2013	1756	19	1.6	2.2
03/31/2013	2563	24	1.8	2.2
04/30/2013	2115	20	2.9	4.9
11/30/2013	2608	37	2.4	2.7
12/31/2013	2712	25	2.2	2.6
01/31/2014	2702	2	2.1	2.7
02/28/2014	2551	25	1.5	1.7
03/31/2014	2415	26	1.8	2.0
04/30/2014	2808	26	1.5	1.9
11/30/2014	3042	32	1.9	2.1
12/31/2014	2436	28	2.0	2.2
01/31/2015	2515	27	1.9	2.2
02/28/2015	2618	33	2.0	2.2
03/31/2015	2626	22	1.8	1.8
04/30/2015	3739	28	1.5	1.5
Average	2583	28	2.1	2.5
Standard Deviation	403	7.4	0.5	0.7
95th Percentile	3390	42.5	3.0	4.0

APPENDIX 2
Discharge Monitoring Report Summary

Total Phosphorus (TP) Results (outliers excluded)

Date	TP	TP Load
Units	mg/l	lb/day
11/30/2010	2.38	238.190
12/28/2010	1.50	150.120
01/25/2011	1.39	139.111
02/22/2011	1.13	113.341
03/29/2011	0.91	90.873
04/26/2011	1.15	114.592
05/31/2011	1.35	135.108
06/28/2011	2.13	212.670
07/26/2011	1.58	157.626
08/30/2011	1.62	162.130
09/27/2011	1.75	175.140
10/25/2011	1.51	150.620
11/29/2011	0.84	83.667
12/27/2011	1.05	104.584
01/31/2012	0.70	70.256
02/28/2012	1.25	124.600
03/27/2012	1.13	112.590
04/24/2012	1.14	114.341
05/29/2012	1.26	125.700
06/26/2012	2.15	215.172
07/31/2012	1.54	154.524
08/28/2012	1.15	114.992
09/25/2012	1.35	135.108
10/29/2012	1.65	165.332
11/27/2012	1.73	172.963
12/25/2012	1.17	117.069
01/29/2013	0.96	95.977
02/26/2013	0.79	79.213
03/26/2013	1.42	142.114
04/30/2013	1.01	101.161
05/28/2013	1.41	141.088
06/25/2013	1.68	168.134
07/30/2013	1.40	140.312
08/27/2013	1.35	135.108
09/24/2013	1.06	106.418
10/29/2013	1.28	128.503
11/26/2013	1.19	119.095
12/31/2013	0.90	89.672
01/28/2014	0.89	89.071
02/25/2014	0.46	46.287
03/25/2014	0.66	66.303
04/29/2014	0.97	96.827
05/27/2014	0.95	94.826

APPENDIX 2
Discharge Monitoring Report Summary

Total Phosphorus (TP) Results (continued)

Date	TP	TP Load
Units	mg/l	lb/day
06/24/2014	1.55	154.874
07/29/2014	0.82	81.565
08/26/2014	1.23	122.848
09/23/2014	1.02	101.831
10/28/2014	1.32	132.356
11/25/2014	0.92	91.573
12/23/2014	0.80	79.564
01/27/2015	0.93	93.074
02/17/2015	0.88	88.070
03/17/2015	0.74	73.559
04/21/2015	0.76	76.061
05/19/2015	1.35	135.108
06/16/2015	1.40	140.112
07/21/2015	0.75	75.060
08/18/2015	1.17	116.593
09/22/2015	1.61	160.628
10/20/2015	1.27	127.552
12/29/2015	0.34	34.478
01/26/2016	0.53	52.592
02/23/2016	0.23	22.818
03/22/2016	0.25	24.820
04/19/2016	0.80	79.764
05/17/2016	0.77	76.661
Total	66.0	67.0
Average	1.2	113.9
Std dev	0.4	44.6
95th percentile	1.7	174.5

from pgs E-5 & E-6 in the TSD:

$x_p = \mu + z_p\sigma$

where:

μ = mean of monthly averages

σ = standard deviation of monthly averages

z_p = pth percentage point for std normal dist

x_{95} = 95th %ile n-day monthly average limit

$= \mu + 1.645\sigma$

Note: $z_p = 1.645$

x95 (mg/l)= 1.86

x95 (lb/day)= **187.31**

Outlier= 2 (0.7)+1.2= >2.6 (0.7 is σ of the original dataset)

APPENDIX 3
Metal and Toxic Parameter Calculations

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations.

a. The most recent background conditions of the receiving stream segment are compiled. This information includes:

* 7Q10 of receiving stream (0.54 MGD, USGS)
* Calcium hardness (200 mg/l, ambient monitoring data)
* Total suspended solids (13.5 mg/l, ambient monitoring data)
* Background metals concentrations (½ water quality criteria in absence of ambient monitoring data)
* Other dischargers impacting this segment (none other than accounted in the EPA's TMDL)
* Downstream water supplies, if applicable

b. The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.

c. The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel and silver.

d. The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.

e. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

The following formulas are used to evaluate water quality protection:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

where:

Cm = resulting in-stream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow
Qs = stream low flow

to protect water quality:

$$Cw \leq \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs]}{Qw}$$

where (S_A) is the percent "Stream Allocation".

Calculations for this permit have been done using a standardized spreadsheet, titled "Water Quality Based Effluent Calculations." Division policy dictates the following procedures in establishing these permit limits:

1. The critical low flow values are determined using USGS data:

   Fish and Aquatic Life Protection
   7Q10 - Low flow under natural conditions
   1Q10 - Regulated low flow conditions

   Other than Fish and Aquatic Life Protection
   30Q2 - Low flow under natural conditions

2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.

3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless STORET or Water Supply intake data substantiate a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.

4. Background concentrations are determined from the division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic "In-stream Allowable" water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, then the measured background concentration is used in lieu of the chronic "In-stream Allowable" water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the "stream allocation" is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic "In-stream Allowable" water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream.

Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fifteen (15) data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "Stream Background" concentrations of the effluent characteristics.

Column 2: The "Chronic" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp \{ m_C [\ln (\text{stream hardness})] + b_C \}) (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained *in The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp \{ m_A [\ln (\text{stream hardness})] + b_A \}) (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 4: The "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated

using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{diss}}{C_{total}} = \frac{1}{1 + \{ [K_{po}] [ss^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/l]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

Column 5: The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.

Column 6: The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.

Column 7: The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the chronic limit.

Column 8: The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the acute limit.

Column 9: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).

Column 10: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both "Recreation" and "Domestic Water Supply."

Column 11: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.

Column 12: The Calculated Effluent Concentration associated with Organism Consumption.

Column 13: The Calculated Effluent Concentration associated with Water and Organism Consumption.

Column 14: The Calculated Effluent Concentration associated with Domestic Water Supply.

Column 15: The Effluent Limited criteria. This upper level of allowable pollutant loading is established if (a) the calculated water quality value is greater than accepted removal efficiency values, (b) the treatment facility is properly operated, and (c) full compliance with the pretreatment program is demonstrated. This upper level limit is based upon EPA's 40 POTW Survey on levels of metals that should be discharged from a POTW with a properly enforced pretreatment program and considering normal coincidental removals.

The most stringent water quality effluent concentration from Columns 7, 8, 12, 13, 14, and 15 is applied if the receiving stream is designated for domestic water supply. Otherwise, the most stringent effluent concentration is chosen from columns 7, 8, 12, and 15 only.

WQ Based Effluent Calculations (12 MGD Design Flow)

2013 WQC

METALS AND OTHER TOXIC SUBSTANCES
WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY:	PERMIT #:	DATE:	CALC BY:
Franklin STP	TN0028827	2/11/2015	GMDa

non-regulated stream worksheet (7Q10)

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tot. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.54	1.37	12	13.5	283	90

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	Stream Bckgrnd. Conc.	Fish/Aqua. Life (F & AL) WQC lab conditions		Fraction Dissolved	F & AL- instream allowable ambient conditions (Tot)		Calc. Effluent Concentration based on F & AL		Human Health Water Quality Criteria * In-Stream Criteria			Calc. Effluent Concentration **			Permit Appl. For 15 mgd Avg/Max; ML/MDL results & (# of values)	
PARAMETER	[ug/l]	Chronic [ug/l]	Acute [ug/l]	[Fraction]	Chronic [ug/l]	Acute [ug/l]	Chronic [ug/l]	Acute [ug/l]	Organisms [ug/l]	Water/Organisms [ug/l]	DWS [ug/l]	Organisms [ug/l]	Water/Organisms [ug/l]	DWS [ug/l]	[ug/l]	PARAMETER
Copper (a,b)	1.460	16.193	25.823	0.330	49.017	78.165	46.04	73.45	N/A	N/A	N/A	N/A	N/A	N/A	3.4/5.2; <1 (3), <5 (6) (total = 9)	Copper (a,b)
Chromium III	1.150	130.752	1005.167	0.199	657.323	5053.243	618.17	4762.53	N/A	N/A	N/A	N/A	N/A	N/A	–	Chromium III
Chromium VI	1.150	11.000	16.000	1.000	11.000	16.000	10.30	15.00	N/A	N/A	N/A	N/A	N/A	N/A	–	Chromium VI
Chromium, Total	1.150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100.0	N/A	N/A	100.16	<0.4 (3)	Chromium, Total
Nickel (a,b)	5.000	93.482	841.659	0.401	233.062	2098.348	218.99	1973.29	4600.0	610.0	100.0	4612.14	611.16	99.76	7.6/22.9; <5 (2), <0.4 (6), <1 (3) (total =11)	Nickel (a,b)
Cadmium (a,b)	0.500	0.398	3.949	0.260	1.531	15.190	1.42	14.27	N/A	N/A	5.0	N/A	N/A	4.96	<1 (2), <0.2 (6), <0.5 (6) (total = 14)	Cadmium (a,b)
Lead (a,b)	1.000	5.305	136.142	0.175	30.305	777.670	28.46	731.36	N/A	N/A	5.0	N/A	N/A	4.91	4.8/65.9; <1 (3), <0.4 (6) ___ (total = 9)	Lead (a,b)
Mercury (T) (c,e)	0.006	0.770	1.400	1.000	0.770	1.400	0.72	1.32	0.051	0.05	2.0	0.05	0.05	2.00	<0.06 (2), <0.2 (6) (total = 8)	Mercury (T) (c,e)
Silver (a,b,f)	0.500	N/A	10.597	1.000	N/A	10.597	N/A	9.95	N/A	N/A	N/A	N/A	N/A	N/A	<1 (2), <0.3 (6), <0.5 (3) (total = 11)	Silver (a,b,f)
Zinc (a,b)	3.460	212.547	210.823	0.270	786.890	780.505	739.93	733.93	26000.0	7400.0	N/A	26071.14	7419.99	N/A	4.7/66.9; <5 (2), <30 (3), <10(3), <0.4 (6) (total = 14)	Zinc (a,b)
Cyanide (c)	2.600	5.200	22.000	1.000	5.200	22.000	4.79	20.59	140.0	140.0	200.0	140.12	140.12	200.28	<5 (2), <2 (3) (total = 5)	Cyanide (d)
Toluene	0.000								15000.0	1300.0	1000.0	15041.25	1303.58	1002.75	<0.95 (1), <0.78 (3)(total = 4)	Toluene
Benzene	0.000								510.0	22.0	5.0	511.40	22.06	5.01	<0.7 (1), <0.33 (3), <1 (15) (TOTAL =19)	Benzene
1,1,1 Trichloroethane	0.000								N/A	N/A	200.0	N/A	N/A	200.55	<0.32 (3), <1 (15) (TOTAL = 18)	1,1,1 Trichloroethane
Ethylbenzene	0.000								2100.0	530.0	700.0	2105.78	531.46	701.93	<0.75 (1), <0.38 (3), <1 (9) (TOTAL = 13)	Ethylbenzene
Carbon Tetrachloride	0.000								16.0	2.3	5.0	16.04	2.31	5.01	<1.2 (1), <0.38 (3), <1 (15) (TOTAL = 19)	Carbon Tetrachloride
Chloroform	0.000								4700.0	57.0	N/A	4712.93	57.16	N/A	<0.32 (3)	Chloroform
Tetrachloroethylene	0.000								33.0	6.9	5.0	33.09	6.92	5.01	<0.85 (1), <0.37 (3), <1 (9), <5 (6) (TOTAL = 19)	Tetrachloroethylene
Trichloroethylene	0.000								300.0	25.0	5.0	300.83	25.07	5.01	<2.5 (1), <0.4 (3), <1 (9), <2 (6) (TOTAL = 19)	Trichloroethylene
1,2 trans Dichloroethylene	0.000								10000.0	140.0	100.0	N/A	140.39	100.28	<2.65 (1), <0.4 (3), <1 (15) (TOTAL = 19)	1,2 trans Dichloroethylene
Methylene Chloride	0.000								5900.0	46.0	N/A	5916.23	46.13	N/A	1.5/2.1; <1 (3)	Methylene Chloride
Total Phenols	0.000								860000.0	10000.0	N/A	862365.00	10027.50	N/A	19/31; <20 (2), <8.3 (3) (TOTAL = 5)	Total Phenols
Naphthalene	0.000								N/A	N/A	N/A	N/A	N/A	N/A	<1.25 (1), <1 (9), <5 (6) (TOTAL =16)	Naphthalene
Total Phthalates	0.000								N/A	N/A	N/A	N/A	N/A	N/A	–	Total Phthalates
Chlorine (T. Res.)	5.500	11.000	19.000	1.000	11.000	19.000	11.26	19.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chlorine (T. Res.)

a Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness.
b The criteria for this metal is in the dissolved form at lab conditions. The calculated effluent concentration is in the total recoverable form.
c The chronic criteria for mercury is not converted to dissolved, since it is based on fish tissue data rather then toxicity.
d The criteria for this parameter is in the total form.
e Previously, the Division established that 0.006 ug/L would be maximum background default if no sample data available or if all samples were <RDL (<0.2 ug/L), based on reference stream monitoring by DOE.
f Silver limit is daily max if column 8 is most stringent.
g When columns 7 or 8 result in a negative number, use results from columns 5 or 6, respectively.
h When columns 12, 13 or 14 result in a negative number, use results from columns 9, 10 or 11, respectively, as applicable.
* Domestic supply included in river use so pick from columns 7,8,12,13,14,15 or Domestic supply not included in river use so pick from columns 7, 8, 12 or 15.
** Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

WQ Based Effluent Calculations (12 MGD Design Flow)

Summary (Part 1 of 4)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Franklin STP
PERMIT: TN0028827

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tot. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.64	1.37	12	13.5	200	90

1	2	3	5	6	7	8	9	10	11	12	13	14	15
Stream	Detection Levels		Fish/Aqua. Life Water Quality Criteria		Calculated Effluent Concentration		Human Health Water Quality Criteria (30Q5)						Permit Application For 12 mgd Renewal
							In-Stream Criteria			Calculated Effluent Concentration			
PARAMETER	Bckgrnd. Conc. [ug/l]	Scan MDL [ug/l]	WQC RDL *EPA MDL [ug/l]	Chronic [ug/l]	Acute [ug/l]	Chronic [ug/l]	Acute [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	Avg/Max, ML/MDL results & (# of values) [ug/l]
ANTIMONY		5.0	3.0					640.0	5.6	6.0	641.8	5.6	6.0	<0.8 (5)
ARSENIC		1.0	1.0	150.0	340.0	141.1	319.8	10.0	10.0	10.0	10.0	10.0	10.0	<1.6 (1), <1(2) & (total = 3)
BERYLLIUM		1.0	1.0							4.0			4.0	<0.2 (5)
SELENIUM		3.0	2.0	5.0	20.0	4.7	18.8			50.0			50.1	<1 (3)
THALLIUM		10.0	*					0.47	0.24	2.0	0.5	0.2	2.0	<0.8 (5)
ACROLEIN	0.0	10.0	1.0					290.0	190.0		290.8	190.5		<26 (3)
ACRYLONITRILE	0.0	10.0	1.0					2.5	0.51		2.5	0.5		<5 (3)
BENZENE	0.0	5.0	1.0					510.0	22.0	5.0	511.4	22.1	5.0	<0.7 (1), <0.33 (3), <1 (15) & (total = 19)
BROMOFORM	0.0	5.0	1.0					1490.0	43.0		1493.9	43.1		<2.5 (1), <0.47 (3), <1 (9), <5 (6) & (total = 19)
CARBON TETRACHLORIDE	0.0	5.0	1.0					16.0	2.3	5.0	16.0	2.3	5.0	<1.2 (1), <0.38 (3), <1 (15) & (total = 19)
CHLOROBENZENE	0.0	5.0	*					1690.0	130.0	100	1694.4	130.4	100.3	<1.05 (1), <0.35 (3), <1 (6), <5 (5) & (total = 16)
CHLORODIBROMO-METHANE	0.0	10.0	*					130.0	4.0		130.4	4.0		<0.9 (1), <0.33 (3), <1 (9), <5 (6) & (total = 19)
CHLOROETHANE	0.0	10.0	*											<1.35 (1), <0.45 (3), <1 (5), <5 (5) & (total = 19)
2-CHLORO-ETHYLVINYL ETHER	0.0	10.0	*											<2.5 (1), <3 (3), <50 (9), <25 (5) & (total = 19)
CHLOROFORM	0.0	5.0	0.5					4730.0	57.0		4712.9	57.2		<0.32 (3)
DICHLOROBROMO-METHANE	0.0	5.0	1.0					170.0	5.5		170.5	5.5		<0.9 (1), <0.38 (3), <1 (9) & (total = 13)
1,1-DICHLOROETHANE	0.0	5.0	1.0					NA	NA	NA	NA	NA	NA	<1.2 (1), <0.25 (3), <1 (9), <2 (6) & (total = 19)
1,2-DICHLOROETHANE	0.0	5.0	1.0					370.0	3.8	5.0	371.0	3.8	5.0	<1.1 (1), <0.36 (3), <1 (9) & (total = 13)
TRANS 1,2-DICHLORO-ETHYLENE	0.0	5.0	*					13000	140.0	100.0	10027.5	140.4	100.3	<2.55 (1), <0.4 (3), <1 (15) & (total = 19)
1,1-DICHLOROETHYLENE	0.0	5.0	1.0					7,100	330	7.0	7119.5	330.9	7.0	<1.4 (1), <0.4 (3), <1 (15) & (total = 19)
1,2-DICHLOROPROPANE	0.0	5.0	*					150.0	5.0	5.0	150.4	5.0	5.0	<1.35 (1), <0.31 (3), <1 (5), <5 (5) & (total = 19)
1,3-DICHLORO-PROPYLENE	0.0	5.0	1.0					210.0	3.4		210.5	3.4		1.5/2.1; <0.75 (1), <0.42 (3), <1 (9), <5 (6) & (total = 19)

WQ Based Effluent Calculations (12 MGD Design Flow)

Summary (Part 2 of 4)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Franklin STP
PERMIT: TN0028827

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tot. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.54	1.37	12	13.5	200	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream	Detection Levels		Fish/Aqua. Life		Calculated Effluent		Human Health Water Quality Criteria (30Q5)						Permit Application For 12 mgd Renewal
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria		Concentration		In-Stream Criteria			Calculated Effluent Concentration			Avg/Max; ND/MDL results & (# of values)
	Conc.	MDL	*EPA MDL	Chronic	Acute	Chronic	Acute	Organisms	Water/Org	DWS	Organisms	Water/Org	DWS	
PARAMETER	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
ETHYLBENZENE	0.0	5.0	1.0					2100	530.0	700.0	2105.8	531.5	701.9	<0.75 (1), <0.34 (3), <1 (9) & (total = 13)
METHYL BROMIDE	0.0	10.0	*					1500.0	47.0		1504.1	47.1		<1.5 (1), <0.67 (3), <5 (12) & (total = 16)
METHYL CHLORIDE	0.0	1.0	1.0											<0.28 (3)
METHYLENE CHLORIDE	0.0	10.0	1.0					6900.0	46.0		6916.2	46.1		<1 (3)
1,1,2,2-TETRACHLORO-ETHANE	0.0	5.0	0.5					40.0	1.7		40.1	1.7		<0.56 (3)
TETRACHLORO-ETHYLENE	0.0	5.0	0.5					33.0	6.9	5.0	33.1	6.9	5.0	<0.85 (1), <0.37 (3), <1 (9), <5 (6) & (total = 19)
TOLUENE	0.0	5.0	1.0					15000	1300.0	1000.0	15041.3	1303.6	1002.8	<0.55 (1), <0.78 (3) (total = 4)
1,1,1-TRICHLOROETHANE	0.0	5.0	1.0							200.0			200.6	<0.32 (3), <1 (15) (total = 18)
1,1,2-TRICHLOROETHANE	0.0	5.0	0.2					150.0	5.9	5.0	150.4	5.9	5.0	<0.36 (3)
TRICHLORETHYLENE	0.0	5.0	1.0					300.0	25.0	5.0	300.8	25.1	5.0	<2.5 (1), <0.4 (3), <1 (9), <2 (6) (total = 19)
VINYL CHLORIDE	0.0	10.0	2.0					24.0	0.25	2.0	24.1	0.3	2.0	<1 (1), <0.25 (3), <1 (15) (total = 19)
P-CHLORO-M-CRESOL	0.0	10.0	*											<10 (3)
2-CHLOROPHENOL	0.0	10.0	*					150.0	81.0		150.4	81.2		<10 (3)
2,4-DICHLOROPHENOL	0.0	10.0	*					290.0	77.0		290.8	77.2		<10 (3)
2,4-DIMETHYLPHENOL	0.0	10.0	*					850.0	380.0		852.3	381.0		<10 (3)
4,6-DINITRO-O-CRESOL	0.0	20.0	24.0					280.0	13.0		280.8	13.0		<10 (3)
2,4-DINITROPHENOL	0.0	10.0	42.0					5300.0	69.0		5314.6	69.2		<10 (3)
2-NITROPHENOL	0.0	10.0	*											<10 (3)
4-NITROPHENOL	0.0	10.0	*											<10 (3)
PENTACHLOROPHENOL	0.0	20.0	5.0	15	19	14.1	17.9	30.0	2.7	1.0	30.1	2.7	1.0	<10 (3)
PHENOL	0.0	10.0	*					1700000	21000.0		1704575.0	21057.8		<10 (3)

WQ Based Effluent Calculations (12 MGD Design Flow)

Summary (Part 3 of 4)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Franklin STP
PERMIT: TN0028827

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tll. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.54	1.37	12	13.5	200	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream	Detection Levels		Fish/Aqua. Life		Calculated Effluent		Human Health Water Quality Criteria (30Q5)						Permit Application For 12 mgd Renewal
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria		Concentration		In-Stream Criteria			Calculated Effluent Concentration			Avg/Max; ML/MDL results & (# of values)
PARAMETER	Conc. [ug/l]	MDL [ug/l]	*EPA MDL [ug/l]	Chronic [ug/l]	Acute [ug/l]	Chronic [ug/l]	Acute [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	[ug/l]
2,4,6-TRICHLOROPHENOL	0.0	10.0	2.7					24.0	14.0		24.1	14.0		<10 (3)
ACENAPHTHENE	0.0	10.0	*					990.0	670.0		992.7	671.8		<1 (3)
ACENAPHTHYLENE	0.0	10.0	2.3											<1 (3)
ANTHRACENE	0.0	10.0	0.7					40000	8300.0		40110.0	8322.8		<1 (3)
BENZIDINE	0.0	10.0	*					0.0020	0.00069		0.002	0.0		<1 (3)
BENZO(A)ANTHRACENE	0.0	10.0	0.3					0.18	0.038		0.2	0.0		<1 (3)
BENZO(A)PYRENE	0.0	10.0	0.3					0.18	0.038	0.2	0.2	0.0	0.2	<1 (3)
3,4 BENZO-FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		0.2	0.0		<1 (3)
BENZO(GH)PERYLENE	0.0	10.0	*											<1 (3)
BENZO(K)FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		0.2	0.0		<1 (3)
BIS (2-CHLOROETHOXY) METHANE	0.0	10.0	*											<10 (3)
BIS (2-CHLOROETHYL)-ETHER	0.0	10.0	1.0					5.3	0.30		5.3	0.3		<10 (3)
BIS (2-CHLOROISO-PROPYL) ETHER	0.0	10.0	*					65000	1400.0		66178.8	1403.9		<10 (3)
BIS (2-ETHYLHEXYL) PHTHALATE	0.0	10.0	2.5					22.0	12.0	6.0	22.1	12.0	6.0	3.0/5.0; <1.16 (2), <3 (1) & (total = 3)
4-BROMOPHENYL PHENYL ETHER	0.0	10.0	*											<10 (3)
BUTYL BENZYL PHTHALATE	0.0	10.0	*					1900.0	1500.0		1905.2	1504.1		<1.15 (2), <3 (3) (total = 5)
2-CHLORONAPHTHALENE	0.0	10.0	*					1600.0	1000.0		1604.4	1002.8		<1 (3)
4-CHLORPHENYL PHENYL ETHER	0.0	10.0	*											<10 (3)
CHRYSENE	0.0	10.0	2.5					0.18	0.038		0.2	0.0		<1 (3)
DI-N-BUTYL PHTHALATE	0.0	10.0	2.6					4500.0	2000.0		4512.4	2005.5		<1.15 (2), <3 (1) (total = 3)
DI-N-OCTYL PHTHALATE	0.0	10.0	*											<3 (3)
DIBENZO(A,H) ANTHRACENE	0.0	10.0	*					0.18	0.038		0.2	0.0		<1 (3)
1,2-DICHLOROBENZENE	0.0	5.0	2.0					1300.0	420.0	600	1303.6	421.2	601.7	<0.8 (1), <0.35 (3), <1 (9) (total = 13)
1,3-DICHLOROBENZENE	0.0	5.0	2.0					960.0	320.0		962.6	320.9		<1.25 (1), <0.22 (3), <1 (7) (total = 13)

WQ Based Effluent Calculations (12 MGD Design Flow)

Summary (Part 4 of 4)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Franklin STP
PERMIT: TN0028827

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Ttl. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.54	1.37	12	13.5	200	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream	Detection Levels		Fish/Aqua. Life Water Quality Criteria		Calculated Effluent Concentration		Human Health: Water Quality Criteria (30Q5)						Permit Application For 12 mgd Renewal
	Bckgrnd.	Scan	WQC RDL					In-Stream Criteria			Calculated Effluent Concentration			Avg/Max; ML/MDL results & (# of values)
PARAMETER	Conc. [ug/l]	MDL [ug/l]	*EPA MDL [ug/l]	Chronic [ug/l]	Acute [ug/l]	Chronic [ug/l]	Acute [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	[ug/l]
1,4-DICHLOROBENZENE	0.0	5.0	2.0					190.0	63.0	75	190.5	63.2	75.2	<1.25 (1), <0.27 (3), <1 (9) (total = 13)
3,3-DICHLOROBENZIDINE	0.0	10.0	"					0.28	0.21		0.3	0.2		<10 (3)
DIETHYL PHTHALATE	0.0	10.0	1.9					44000	17000.0		44121.0	17046.8		<1.16 (2), <3 (1) (total = 3)
DIMETHYL PHTHALATE	0.0	10.0	1.6					1100000	270000.0		1103025.0	270742.5		<3 (3)
2,4-DINITROTOLUENE	0.0	10.0	1.0					34.0	1.1		34.1	1.1		<10 (3)
2,6-DINITROTOLUENE	0.0	10.0	"											<10 (3)
1,2 DIPHENYLHYDRAZINE	0.0	10.0	"					2.0	0.36		2.0	0.4		<10 (3)
FLUORANTHENE	0.0	10.0	2.2					140.0	130.0		140.4	130.4		<1 (3)
FLUORENE	0.0	10.0	0.3					5300.0	1100.0		5314.6	1103.0		<1 (3)
HEXACHLOROBENZENE	0.0	10.0	1.9					0.0028	0.0028	1.0	0.003	0.0	1.0	<1 (3)
HEXACHLOROBUTADIENE	0.0	10.0	5.0					180.0	4.4		180.5	4.4		<10 (3)
HEXACHLOROCYCLO-PENTADIENE	0.0	50.0	"					1100.0	40.0	50.0	1103.0	40.1	50.1	<10 (3)
HEXACHLOROETHANE	0.0	10.0	0.5					33.0	14.0		33.1	14.0		<10 (3)
INDENO(1,2,3-CD)PYRENE	0.0	10.0	"					0.18	0.038		0.2	0.0		<1 (3)
ISOPHORONE	0.0	10.0	"					9600	350.0		9626.4	351.0		<1 (3)
NAPHTHALENE	0.0	10.0	"											<1.25 (1), <1 (8), <5 (6) (total =15)
NITROBENZENE	0.0	10.0	10.0					690.0	17.0		691.9	17.0		<10 (3)
N-NITROSODI-N-PROPYLAMINE	0.0	10.0	"					5.1	0.050		5.1	0.1		<10 (3)
N-NITROSODI- METHYLAMINE	0.0	10.0	"					30.0	0.0069		30.1	0.0		<10 (3)
N-NITROSODI-PHENYLAMINE	0.0	10.0	"					60.0	33.0		60.2	33.1		<10 (3)
PHENANTHRENE	0.0	10.0	0.7											<1 (3)
PYRENE	0.0	10.0	0.3					4000.0	830.0		4011.0	832.3		<1 (3)
1,2,4-TRICHLOROBENZENE	0.0	10.0	"					70.0	35.0	70.0	70.2	35.1	70.2	<10 (3)

a. Columns 7-8, and 12-14 are the effluent concentrations allowable to prevent exceedence of water quality criteria.
b. Potential to exceed criteria exists if the measured quantity in column 15 exceeds, or could exceed, the calculated allowable concentrations in columns 7-8, and 12-14.
c. Additional testing is required if the detection level used in the scan is higher than the state RDL and/or the MDL of the approved EPA scan method and industry is known to have that pollutant.
d. All background concentrations for these volatile organic, acid-extractable, and base-neutral compounds are assumed zero in the absence of supporting monitoring data.
e. Other metals for which data were provided on the application are evaluated on the Metals & Toxics spreadsheet.
f. Reasonable potential not demonstrated. In some cases, the MDLs are not sufficient to identify potential water quality problems.

WQ Based Effluent Calculations (16 MGD Design Flow)

2013 WQC

METALS AND OTHER TOXIC SUBSTANCES
WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY:	PERMIT #:	DATE:	CALC BY:
Franklin STP	TN0028827	2/11/2015	GMDa

non-regulated stream worksheet (7Q10)

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tot. Susp. Solids [mg/L]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.54	1.37	16	13.5	200	30

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	Stream Bckgrnd Conc	Fish/Aquis. Life (F & AL) WQC lab conditions		Fraction Dissolved	F & AL- Increase allowable ambient conditions (Tot)		Calc. Effluent Concentration based on F & AL		Human Health Water Quality Criteria *						Permit Appl. For 16 mgd Avg/Max; MU/MD, results & (# of values)	
									In-Stream Criteria			Calc. Effluent Concentration **				
PARAMETER	[ug/l]	Chronic [ug/l]	Acute [ug/l]	[Fraction]	Chronic [ug/l]	Acute [ug/l]	Chronic [ug/l]	Acute [ug/l]	Organisms [ug/l]	Water/Organisms [ug/l]	DWS [ug/l]	Organisms [ug/l]	Water/Organisms [ug/l]	DWS [ug/l]	[ug/L]	PARAMETER
Copper (a,b)	1.460	18.193	25.823	0.330	49.017	78.165	46.66	72.68	N/A	N/A	N/A	N/A	N/A	N/A	3.4/6.2; <1 (3), <5 (5) (total = 9)	Copper (a,b)
Chromium III	1.150	130.752	1005.187	0.199	657.323	5053.243	811.62	4701.38	N/A	N/A	N/A	N/A	N/A	N/A	–	Chromium III
Chromium VI	1.150	11.000	16.000	1.000	11.000	16.000	10.20	14.86	N/A	N/A	N/A	N/A	N/A	N/A	–	Chromium VI
Chromium, Total	1.150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100.0	N/A	N/A	97.62	<0.4 (3)	Chromium, Total
Nickel (a,b)	5.000	93.482	841.659	0.401	233.062	2098.348	216.68	1952.10	4600.0	610.0	100.0	4494.10	595.62	97.32	7.8/22.9; <5 (2), <0.4 (5), <1 (3) (total =11)	Nickel (a,b)
Cadmium (a,b)	0.500	0.398	3.949	0.260	1.531	15.190	1.41	14.12	N/A	N/A	5.0	N/A	N/A	4.85	<1 (2), <0.2 (5), <0.6 (6) (total = 14)	Cadmium (a,b)
Lead (a,b)	1.000	5.305	136.142	0.175	30.305	777.670	28.16	723.49	N/A	N/A	5.0	N/A	N/A	4.81	4.8/66.9; <1 (3), <0.4 (5) ___ (total = 9)	Lead (a,b)
Mercury (T) (c,e)	0.006	0.770	1.400	1.000	0.770	1.400	0.72	1.30	0.051	0.05	2.0	0.05	0.05	1.96	<0.08 (2), <0.2 (6) (total = 8)	Mercury (T) (c,e)
Silver (a,b,f)	0.500	N/A	10.597	1.000	N/A	10.597	N/A	9.84	N/A	N/A	N/A	N/A	N/A	N/A	<1 (2), <0.3 (6), <0.5 (3) (total = 11)	Silver (a,b,f)
Zinc (a,b)	3.480	212.547	210.823	0.270	786.890	780.505	732.00	726.06	26000.0	7400.0	N/A	25403.36	7230.00	N/A	4.7/68.9; <5 (2), <30 (3), <10(3), <0.4 (6) (total = 14)	Zinc (a,b)
Cyanide (d)	2.600	5.200	22.000	1.000	5.200	22.000	4.76	20.39	140.0	140.0	200.0	136.59	136.59	195.21	<5 (2), <2 (3) (total = 5)	Cyanide (d)
Toluene	0.000								15000.0	1300.0	1000.0	14655.94	1270.18	977.06	<0.96 (1), <0.78 (3)(total = 4)	Toluene
Benzene	0.000								510.0	22.0	5.0	498.30	21.50	4.89	<0.7 (1), <0.33 (3), <1 (16) (TOTAL =19)	Benzene
1,1,1 Trichloroethane	0.000								N/A	N/A	200.0	N/A	N/A	195.41	<0.32 (3), <1 (16) (TOTAL = 18)	1,1,1 Trichloroethane
Ethylbenzene	0.000								2100.0	530.0	700.0	2051.83	517.84	683.94	<0.75 (1), <0.38 (3), <1 (9) (TOTAL = 13)	Ethylbenzene
Carbon Tetrachloride	0.000								16.0	2.3	5.0	15.63	2.25	4.89	<1.2 (1), <0.38 (3), <1 (15) (TOTAL = 19)	Carbon Tetrachloride
Chloroform	0.000								4700.0	57.0	N/A	4592.19	55.69	N/A	<0.32 (3)	Chloroform
Tetrachloroethylene	0.000								33.0	6.9	5.0	32.24	6.74	4.89	<0.85 (1), <0.37 (3), <1 (9), <5 (6) (TOTAL = 19)	Tetrachloroethylene
Trichloroethylene	0.000								300.0	25.0	5.0	293.12	24.43	4.89	<2.6 (1), <0.4 (3), <1 (9), <2 (6) (TOTAL = 19)	Trichloroethylene
1,2 trans Dichloroethylene	0.000								10000.0	140.0	100.0	N/A	136.79	97.71	<2.65 (1), <0.4 (3), <1 (15) (TOTAL = 19)	1,2 trans Dichloroethylene
Methylene Chloride	0.000								5900.0	46.0	N/A	5764.67	44.94	N/A	1.6/2.1; <1 (3)	Methylene Chloride
Total Phenols	0.000								860000.0	10000.0	N/A	840273.76	9770.63	N/A	19/31; <20 (2), <3.3 (3) (TOTAL = 5)	Total Phenols
Naphthalene	0.000								N/A	N/A	N/A	N/A	N/A	N/A	<1.25 (1), <1 (8) <5 (6) (TOTAL =15)	Naphthalene
Total Phthalates	0.000								N/A	N/A	N/A	N/A	N/A	N/A	–	Total Phthalates
Chlorine (T. Res.)	5.500	11.000	19.000	1.000	11.000	19.000	11.19	19.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chlorine (T. Res.)

a Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness.
b The criteria for this metal is in the dissolved form at lab conditions. The calculated effluent concentration is in the total recoverable form.
c The chronic criteria for mercury is not converted to dissolved, since it is based on fish tissue data rather then toxicity.
d The criteria for this parameter is in the total form.
e Previously, the Division established that 0.006 ug/L would be maximum background default if no sample data available or if all samples were <RDL (<0.2 ug/L), based on reference stream monitoring by DOE.
f Silver limit is daily max if column 8 is most stringent.
g When columns 7 or 8 result in a negative number, use results from columns 5 or 6, respectively.
h When columns 12, 13 or 14 result in a negative number, use results from columns 9, 10 or 11, respectively, as applicable.
* Domestic supply included in river use so pick from columns 7,8,12,13,14,15 or Domestic supply not included in river use so pick from columns 7, 8, 12 or 15.
** Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

WQ Based Effluent Calculations (16 MGD Design Flow)

Summary (Part 1 of 4)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Franklin STP
PERMIT: TN0028827

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tot. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.54	1.37	16	13.5	200	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream	Detection Levels		Fish/Aqua. Life		Calculated Effluent		Human Health Water Quality Criteria (30Q5)						Permit Application For 16 mgd
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria		Concentration		In-Stream Criteria			Calculated Effluent Concentration			Avg/Max; ML/MDL results & (# of values)
	Conc.	MDL	*EPA MDL	Chronic	Acute	Chronic	Acute	Organisms	Water/Org	DWS	Organisms	Water/Org	DWS	
PARAMETER	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
ANTIMONY		5.0	3.0					640.0	5.6	6.0	625.3	5.5	5.9	<9.8 (6)
ARSENIC		1.0	1.0	150.0	340.0	139.6	315.3	10.0	10.0	10.0	9.8	9.8	9.8	<1.5 (1), <1(2) & (total = 3)
BERYLLIUM		1.0	1.0							4.0			3.9	<9.2 (6)
SELENIUM		3.0	2.0	5.0	20.0	4.7	18.6			50.0			48.9	<1 (3)
THALLIUM		10.0	*					0.47	0.24	2.0	0.5	0.2	2.0	<0.8 (6)
ACROLEIN	0.0	10.0	1.0					290.0	190.0		283.3	185.6		<29 (3)
ACRYLONITRILE	0.0	10.0	1.0					2.5	0.51		2.4	0.5		<5 (3)
BENZENE	0.0	5.0	1.0					510.0	22.0	5.0	498.3	21.5	4.9	<0.7 (1), <0.33 (3), <1 (15) & (total = 19)
BROMOFORM	0.0	5.0	1.0					1400.0	43.0		1367.8	42.0		<2.5 (1), <0.47 (3), <1 (9), <5 (6) & (total = 19)
CARBON TETRACHLORIDE	0.0	5.0	1.0					16.0	2.3	5.0	15.6	2.2	4.9	<1.2 (1), <0.38 (3), <1 (15) & (total = 19)
CHLOROBENZENE	0.0	5.0	*					1600.0	130.0	100	1563.3	127.0	97.7	<1.05 (1), <0.35 (3), <1 (9), <5 (6) & (total = 19)
CHLORODIBROMO-METHANE	0.0	10.0	*					130.0	4.0		127.0	3.9		<0.9 (1), <0.33 (3), <1 (9), <5 (6) & (total = 19)
CHLOROETHANE	0.0	10.0	*											<1.35 (1), <0.45 (3), <1 (9), <5 (6) & (total = 19)
2-CHLORO-ETHYLVINYL ETHER	0.0	10.0	*											<2.5 (1), <3 (3), <50 (9), <25 (6) & (total = 19)
CHLOROFORM	0.0	5.0	0.5					4700.0	57.0		4592.2	55.7		<0.32 (3)
DICHLOROBROMO-METHANE	0.0	5.0	1.0					170.0	5.5		166.1	5.4		<0.9 (1), <0.38 (3), <1 (9) & (total = 13)
1,1-DICHLOROETHANE	0.0	5.0	1.0					NA	NA	NA	NA	NA	NA	<1.2 (1), <0.25 (3), <1 (9), <2 (6) & (total = 19)
1,2-DICHLOROETHANE	0.0	5.0	1.0					370.0	3.8	5.0	361.5	3.7	4.9	<1.1 (1), <0.35 (3), <1 (9) & (total = 13)
TRANS 1,2-DICHLORO-ETHYLENE	0.0	5.0	*					10000	140.0	100.0	9770.6	136.8	97.7	<2.65 (1), <0.4 (3), <1 (15) & (total = 19)
1,1-DICHLOROETHYLENE	0.0	5.0	1.0					7,100	330	7.0	6937.1	322.4	6.8	<1.4 (1), <0.4 (3), <1 (15) & (total = 19)
1,2-DICHLOROPROPANE	0.0	5.0	*					150.0	5.0	5.0	146.6	4.9	4.9	<1.35 (1), <0.31 (3), <1 (9), <5 (6) & (total = 19)
1,3-DICHLORO-PROPYLENE	0.0	5.0	1.0					210.0	3.4		205.2	3.3		1.5?2.1; <0.75 (1), <0.42 (3), <1 (9), <5 (6) & (total = 19)

WQ Based Effluent Calculations (16 MGD Design Flow)

Summary (Part 2 of 4)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Franklin STP
PERMIT: TN0028827

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tot. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/]	Margin of Safety [%]
0.54	1.37	16	13.5	200	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream	Detection Levels		Fish/Aqua. Life		Calculated Effluent		Human Health Water Quality Criteria (30Q5)						Permit Application For 16 mgd
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria		Concentration		In-Stream Criteria			Calculated Effluent Concentration			Avg/Max; ML/MDL results & (# of values)
PARAMETER	Conc. [ug/l]	MDL [ug/l]	*EPA MDL [ug/l]	Chronic [ug/l]	Acute [ug/l]	Chronic [ug/l]	Acute [ug/l]	Organisms [ug/]	Water/Org [ug/l]	DWS [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	[ug/l]
ETHYLBENZENE	0.0	5.0	1.0					2100	530.0	700.0	2051.8	517.8	683.9	<0.75 (1), <0.38 (3), <1 (9) & (total = 13)
METHYL BROMIDE	0.0	10.0	*					1500.0	47.0		1466.6	45.9		<1.6 (1), <0.87 (3), <5 (12) & (total = 16)
METHYL CHLORIDE	0.0	1.0	1.0											<0.28 (3)
METHYLENE CHLORIDE	0.0	10.0	1.0					5900.0	46.0		5764.7	44.9		<1 (3)
1,1,2,2-TETRACHLORO-ETHANE	0.0	5.0	0.5					40.0	1.7		39.1	1.7		<0.58 (3)
TETRACHLORO-ETHYLENE	0.0	5.0	0.5					33.0	8.9	5.0	32.2	8.7	4.9	<0.85 (1), <0.37 (3), <1 (9), <5 (3) & (total = 19)
TOLUENE	0.0	5.0	1.0					15000	1300.0	1000.0	14656.9	1270.2	977.1	<0.95 (1), <0.78 (3) (total = 4)
1,1,1-TRICHLOROETHANE	0.0	5.0	1.0							200.0			195.4	<0.32 (3), <1 (15) (total = 18)
1,1,2-TRICHLOROETHANE	0.0	5.0	0.2					160.0	5.9	5.0	156.3	5.8	4.9	<0.38 (3)
TRICHLORETHYLENE	0.0	5.0	1.0					300.0	26.0	5.0	293.1	24.4	4.9	<2.5 (1), <0.4 (3), <1 (9), <2 (5) (total = 19)
VINYL CHLORIDE	0.0	10.0	2.0					24.0	0.25	2.0	23.4	0.2	2.0	<1 (1), <0.26 (3), <1 (15) (total = 19)
P-CHLORO-M-CRESOL	0.0	10.0	*											<10 (3)
2-CHLOROPHENOL	0.0	10.0	*					150.0	81.0		146.6	79.1		<10 (3)
2,4-DICHLOROPHENOL	0.0	10.0	*					290.0	77.0		283.3	75.2		<10 (3)
2,4-DIMETHYLPHENOL	0.0	10.0	*					850.0	380.0		830.5	371.3		<10 (3)
4,6-DINITRO-O-CRESOL	0.0	20.0	24.0					280.0	13.0		273.6	12.7		<10 (3)
2,4-DINITROPHENOL	0.0	10.0	42.0					5300.0	69.0		5178.4	67.4		<10 (3)
2-NITROPHENOL	0.0	10.0	*											<10 (3)
4-NITROPHENOL	0.0	10.0	*											<10 (3)
PENTACHLOROPHENOL	0.0	20.0	5.0	15	19	14.0	17.7	30.0	2.7	1.0	29.3	2.6	1.0	<10 (3)
PHENOL	0.0	10.0	*					1730000	21600.0		1691006.3	20518.3		<10 (3)

WQ Based Effluent Calculations (16 MGD Design Flow)

Summary (Part 3 of 4)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Franklin STP
PERMIT: TN0028827

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tll. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.54	1.37	16	13.5	200	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream	Detection Levels		Fish/Aqua. Life		Calculated Effluent		Human Health Water Quality Criteria (30Q5)						Permit Application For 16 mgd
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria		Concentration		In-Stream Criteria			Calculated Effluent Concentration			Avg/Max; ML/MDL results & (# of values)
	Conc.	MDL	*EPA MDL	Chronic	Acute	Chronic	Acute	Organisms	Water/Org	DWS	Organisms	Water/Org	DWS	
PARAMETER	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
2,4,6-TRICHLOROPHENOL	0.0	10.0	2.7					24.0	14.0		23.4	13.7		<10 (3)
ACENAPHTHENE	0.0	10.0	*					990.0	670.0		967.3	654.6		<1 (3)
ACENAPHTHYLENE	0.0	10.0	2.3											<1 (3)
ANTHRACENE	0.0	10.0	0.7					40000	8300.0		39082.5	8109.6		<1 (3)
BENZIDINE	0.0	10.0	*					0.0020	0.00086		0.002	0.0		<1 (3)
BENZO(A)ANTHRACENE	0.0	10.0	0.3					0.18	0.038		0.2	0.0		<1 (3)
BENZO(A)PYRENE	0.0	10.0	0.3					0.18	0.038	0.2	0.2	0.0	0.2	<1 (3)
3,4 BENZO-FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		0.2	0.0		<1 (3)
BENZO(GHI)PERYLENE	0.0	10.0	*											<1 (3)
BENZO(K)FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		0.2	0.0		<1 (3)
BIS (2-CHLOROETHOXY) METHANE	0.0	10.0	*											<10 (3)
BIS (2-CHLOROETHYL)-ETHER	0.0	10.0	1.0					5.3	0.30		5.2	0.3		<10 (3)
BIS (2-CHLOROISO-PROPYL) ETHER	0.0	10.0	*					65000	1400.0		63509.1	1367.9		<10 (3)
BIS (2-ETHYLHEXYL) PHTHALATE	0.0	10.0	2.5					22.0	12.0	6.0	21.5	11.7	5.8	3.0/5.0; <1.16 (2), <3 (1) & (total = 3)
4-BROMOPHENYL PHENYL ETHER	0.0	10.0	*											<10 (3)
BUTYL BENZYL PHTHALATE	0.0	10.0	*					1900.0	1500.0		1856.4	1465.6		<1.16 (2), <3 (3) (total = 5)
2-CHLORONAPHTHALENE	0.0	10.0	*					1600.0	1000.0		1563.3	977.1		<1 (3)
4-CHLORPHENYL PHENYL ETHER	0.0	10.0	*											<10 (3)
CHRYSENE	0.0	10.0	2.5					0.18	0.038		0.2	0.0		<1 (3)
DI-N-BUTYL PHTHALATE	0.0	10.0	2.5					4500.0	2000.0		4396.8	1954.1		<1.16 (2), <3 (1) (total = 3)
DI-N-OCTYL PHTHALATE	0.0	10.0	*											<3 (3)
DIBENZO(A,H) ANTHRACENE	0.0	10.0	*					0.18	0.038		0.2	0.0		<1 (3)
1,2-DICHLOROBENZENE	0.0	5.0	2.0					1300.0	420.0	600	1270.2	410.4	586.2	<0.8 (1), <0.35 (3), <1 (9) (total = 13)
1,3-DICHLOROBENZENE	0.0	5.0	2.0					960.0	320.0		938.0	312.7		<1.25 (1), <0.22 (3), <1 (9) (total = 13)

WQ Based Effluent Calculations (16 MGD Design Flow)

Summary (Part 4 of 4)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Franklin STP
PERMIT: TN0028827

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tot. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
0.64	1.37	16	13.5	200	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream	Detection Levels		Fish/Aqua. Life		Calculated Effluent		Human Heath Water Quality Criteria (30Q5)						Permit Application For 16 mgd
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria		Concentration		In-Stream Criteria			Calculated Effluent Concentration			Avg/Max; NL/MDL results & (# of values)
PARAMETER	Conc. [ug/l]	MDL [ug/l]	*EPA MDL [ug/l]	Chronic [ug/l]	Acute [ug/l]	Chronic [ug/l]	Acute [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	Organisms [ug/l]	Water/Org [ug/l]	DWS [ug/l]	[ug/l]
1,4-DICHLOROBENZENE	0.0	5.0	2.0					190.0	53.0	75	185.6	51.6	73.3	<1.25 (1), <0.27 (3), <1 (9) (total = 13)
3,3-DICHLOROBENZIDINE	0.0	10.0	*					0.28	0.21		0.3	0.2		<10 (3)
DIETHYL PHTHALATE	0.0	10.0	1.9					44000	17000.0		42990.8	16610.1		<1.16 (2), <3 (1) (total = 3)
DIMETHYL PHTHALATE	0.0	10.0	1.8					1100000	270000.0		1074768.8	263806.9		<3 (3)
2,4-DINITROTOLUENE	0.0	10.0	1.0					34.0	1.1		33.2	1.1		<10 (3)
2,6-DINITROTOLUENE	0.0	10.0	*											<10 (3)
1,2 DIPHENYLHYDRAZINE	0.0	10.0	*					2.0	0.36		2.0	0.4		<10 (3)
FLUORANTHENE	0.0	10.0	2.2					140.0	130.0		136.8	127.0		<1 (3)
FLUORENE	0.0	10.0	0.3					5300.0	1100.0		5178.4	1074.8		<1 (3)
HEXACHLOROBENZENE	0.0	10.0	1.8					0.0029	0.0028	1.0	0.003	0.0	1.0	<1 (3)
HEXACHLOROBUTADIENE	0.0	10.0	5.0					180.0	4.4		175.9	4.3		<10 (3)
HEXACHLOROCYCLO-PENTADIENE	0.0	50.0	*					1100.0	40.0	50.0	1074.8	39.1	48.9	<10 (3)
HEXACHLOROETHANE	0.0	10.0	0.5					33.0	14.0		32.2	13.7		<10 (3)
INDENO(1,2,3-CD)PYRENE	0.0	10.0	*					0.18	0.038		0.2	0.0		<1 (3)
ISOPHORONE	0.0	10.0	*					9600	350.0		9379.8	342.0		<1 (3)
NAPHTHALENE	0.0	10.0	*											<1.25 (1), <1 (3), <5 (6) (total =15)
NITROBENZENE	0.0	10.0	10.0					690.0	17.0		674.2	16.6		<10 (3)
N-NITROSODI-N-PROPYLAMINE	0.0	10.0	*					5.1	0.050		5.0	0.0		<10 (3)
N-NITROSODI- METHYLAMINE	0.0	10.0	*					30.0	0.0069		29.3	0.0		<10 (3)
N-NITROSODI-PHENYLAMINE	0.0	10.0	*					60.0	33.0		58.6	32.2		<10 (3)
PHENANTHRENE	0.0	10.0	0.7											<1 (3)
PYRENE	0.0	10.0	0.3					4000.0	830.0		3908.3	811.0		<1 (3)
1,2,4-TRICHLOROBENZENE	0.0	10.0	*					70.0	35.0	70.0	68.4	34.2	68.4	<10 (3)

a. Columns 7-8, and 12-14 are the effluent concentrations allowable to prevent exceedence of water quality criteria.
b. Potential to exceed criteria exists if the measured quantity in column 15 exceeds, or could exceed, the calculated allowable concentrations in columns 7-8, and 12-14.
c. Additional testing is required if the detection level used in the scan is higher than the state RDL and/or the MDL of the approved EPA scan method and industry is known to have that pollutant.
d. All background concentrations for these volatile organic, acid-extractable, and base-neutral compounds are assumed zero in the absence of supporting monitoring data.
e. Other metals for which data were provided on the application are evaluated on the Metals & Toxics spreadsheet.
f. Reasonable potential not demonstrated. In some cases, the MDLs are not sufficient to identify potential water quality problems.

APPENDIX 5
WQS NUTRIENT PERMIT STRATEGY (NPS)

This permit incorporates terms and conditions consistent with the state water quality standards and permit regulations. This rationale represents the permit writer's outline for analyzing conditions, evaluating options and imposing requirements to a point source discharging into a nutrient impaired waterbody. This permit strategy is derived from, but not to be confused with the state's nutrient reduction framework currently being developed separately from individual NPDES actions. The future nutrient reduction strategy will:

- Prioritize watersheds
- Set watershed load reduction goals
- Ensure effectiveness of point source permits
- Develop implementable watershed-scale plans that maximize the effectiveness of agricultural BMPs
- Ensure nutrient reductions from non-MS4 developed communities
- Include watershed-based monitoring programs to evaluate effectiveness

The timeline for completing the nutrient reduction framework development is not established. Therefore, this permit incorporates every item in the outline below except for item 5):

1) Initiate NPDES Permit Action
   a) Permit renewals
   b) Permit modifications (for activity with potential to increase nutrient loading)
   c) Enforcement actions (with potential to increase nutrient loading)

2) Verify, Document and Reference Division's Water Quality Information for Nutrients
   a) Review Assessment Database (ADB) for:
      i) Any form of Nitrogen
      ii) Any form of Phosphorus
      iii) Overall characterization of the receiving discharge segment (causes, sources)
      iv) Downstream discharge segment(s) - if degraded by activity
      v) If necessary, consult with Planning and Standards staff (Greg Denton)
   b) Review Water Quality (Ambient) Monitoring Data
      i) Chemical data < 5 Years Old
      ii) Macro-invertebrate or bio-recon < 5 Years Old
      iii) Alternate assessment review/rationale if data .> 5 Years Old
      iv) Verify eco-regional goals not met
      v) If necessary, consult with planning and standards staff (Linda Cartwright)

3) Develop NPDES Permit with EPA Approved TMDL WLAs
   a) Allow three year compliance schedule unless TMDL establishes less time
   b) Consider applicability of any proposed TMDL

4) Impose Anti-Degradation Nutrient Limits (during compliance period, if applicable)

a) Based on three samples minimum
b) Consider facility specific factors supplied by the permittee
c) Apply as 6-month or annual load limit (discuss rationale for the decision)

5) Impose Nutrient Reduction Strategy Limits (after the compliance period)
   a) Implement Best Attainable Condition (BAC) based on USGS SPARROW-HUC 10 Model (or HUC 12 model results, if available)

6) Associate with Compliance Schedule (minimum one year for Treatment Optimization Plan, three years for construction)
   a) Impose biological and chemical stream monitoring plan to evaluate results

The water quality assessment and permit development considerations are best understood in consideration of the water quality standards and permit rules currently applicable to this discharge. Water quality standards include both a narrative criterion and an anti-degradation provision. The permit regulation imposes narrative criteria in addition to minimum treatment standards.

Water Quality Standards

State water quality standards impose a narrative nutrient criterion to protect the fish and aquatic life designated use of streams in Tennessee. This criterion requires that nutrient levels in streams do not stimulate aquatic plant and/or algae growth to the extent that aquatic habitat is substantially reduced and/or the biological integrity fails to meet regional goals. The division interprets the primary goal to be for water to support a macro-invertebrate community comparable to biological communities found in eco-region reference streams which are not subject to impacts by society activities such as farming, urban runoff and point source discharges. The measureable goal of the narrative standard is the target index score established for each set of eco-regions in the state. An eco-region is a relatively homogenous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, and other ecologically relevant variables. The index score is sum of matrix scores based on the quantity and types of macro-invertebrates in a stream biological survey.

For assessment purposes, the division also compares the ambient level of nutrients in a stream to the 90th percentile values seen in comparable eco-region reference streams. Whenever the ambient levels are consistently elevated above the reference stream value, the division considers that stream as having unavailable conditions for nutrients. Unavailable conditions necessitate development of effluent limitations consistent with the state anti-degradation policy. The anti-degradation policy specifically requires that discharges not further a condition of impairment.

Permit Standards

In addition to establishing minimum treatment levels for technology, the permit regulation also requires the commissioner[1] to set effluent limits in each permit which will indicate adequate operation or performance of treatment units used and which will appropriately limit

[1] Rule 0400-40-05-.09

harmful parameters present in the wastewater. Therefore, the permit writer considers site specific factors to determine if more stringent controls are warranted at the time of permit issue. Site specific factors include type of treatment, permit compliance factors, actual flow rate, design flow rate, and stream flow rate. Permit specific considerations are detailed below following discussion on the receiving stream assessment.

Water Quality Assessment of Receiving Stream

Harpeth River is assessed as impaired for Phosphorus and Dissolved Oxygen (see above - ANTIDEGRADATION STATEMENT/WATER QUALITY STATUS section of rationale for details). Municipal wastewater is a source of nutrients. Therefore, effluent limitations on nutrients must be considered in this permit. This permit develops limits that are consistent with the state-wide nutrient reduction framework being developed by the division.

Planned State-wide Nutrient Reduction Strategy

On a state-wide basis, use of SPARROW is considered a pre-Total Maximum Daily Load (TMDL) approach with the goal of attaining use support. The term "SPARROW" refers to SPAtially Referenced Regressions On Watershed attributes, a model that relates in-stream water-quality data to spatially referenced characteristics of watersheds, including contaminant sources and transport factors. The SPARROW model performs a nonlinear least squares multiple regression on hydrologic elements to determine constituent load. The modeling employs the concepts of an enrichment factor (EF), best attainable condition (BAC), and aggregated WWTP loads to develop a decision making matrix of performance levels for both phosphorus and nitrogen. Both matrices are calculated and applied independently.

The best attainable condition (BAC) is the applicable water quality requirement to implement narrative standards for nitrogen and phosphorus. This strategy approach sets realistic numeric percent reduction goals that result in the best possible conditions given available BMPs and other pollutant controls. To achieve the water quality requirement, the strategy ultimately prescribes a reduction in pollutants discharged from point sources and the implementation of BMPs that mitigate or reduce the adverse effects of stressors on the stream's overall ecology.

The loadings from the SPARROW model are used to determine the enrichment factor. Atmospheric deposition load represents background for nitrogen and soil-parent rock (S-P R) load represents background for phosphorus. Enrichment factors for nitrogen and phosphorus were calculated for each HUC 10 watershed. The calculated EFs and percent WWTP contributions for HUC 10 watersheds were used to derive thresholds for a decision-making matrix to determine the appropriate level of control from WWTPs to achieve the BAC.

The SPARROW model is developed and supported by the United States Geological Survey (USGS) for regional watersheds in the nation. Tennessee watersheds fall into three of these models: Southeast Region, Great Lakes, and Mississippi. At the present time, the USGS has only calibrated the Southeast Region model using broad inputs generalized for the southeast United States. The state intends to use SPARROW when calibrated for Tennessee watersheds such that it models the cumulative effects of upstream watersheds.

The division uses the southeast regional calibration to develop permit limits for watersheds where the division determines that the model fits the local watershed conditions (e.g. Little Pigeon River watershed in Sevier County). Otherwise, permit writers may run the SPARROW model using generalized inputs at the HUC-12 level, with and without the point source discharger, only to depict the net change in watershed nutrient loadings attributable to the point source discharger. Such modeling is used to portray the division's nutrient impairment assessment.

Total nitrogen and total phosphorus effluent data reported on facility DMRs since November 2010 were presented in Appendix 2 (Discharge Monitoring Report Summary). For purposes of anti-degradation and protection of water quality, this permit develops nutrient limits as discussed below.

Total Nitrogen

Currently applicable TMDL (September 2004) allocates 290 lb/day (based on the 2.9 mg/L total nitrogen concentration) as an "Annual load limit" to the Franklin STP. In addition, the TMDL requires for the permittee to comply with a seasonal average load of 377 lbs/day for the period May1 to October 31 (summer). TMDL further defines summer concentration limits for total nitrogen of 5.0 mg/L and "Reporting" in the winter months. The monitoring frequency is twice per month, consistent with similar municipal facilities. Loading limitations will also be applicable following the proposed facility upgrade from 12 to 16 MGD. Concentration limitation is proportionally adjusted to 3.75 mg/L as a monthly average.

Total Phosphorus

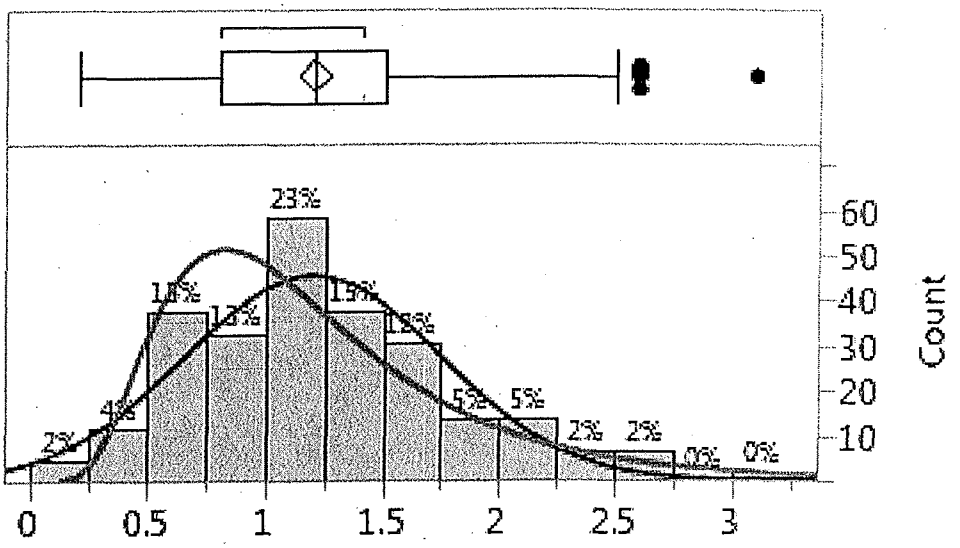
Currently applicable TMDL (September 2004) does not specify a WLA to the Franklin STP.

Current Limits

The current permit establishes phosphorus limits at 5 mg/L as a monthly average concentration. Using the design flow rate of 12 MGD, it is an equivalent of 500.4 lb/day.

Current Loading

The review of DMR data and consultation with the permittee resulted in elimination of two data points, for which statistical analysis showed to be outliers. The data presented in Appendix 2 was also analyzed with respect to data distribution. The analysis showed that the date follows normal distribution:



Mean	1.2048387
Std Dev	0.5450335
Std Err Mean	0.0346097
Upper 95% Mean	1.2730064
Lower 95% Mean	1.136671
N	248

100.0%	maximum	3.1
99.5%		2.9775
97.5%		2.5775
90.0%		2
75.0%	quartile	1.5
50.0%	median	1.2
25.0%	quartile	0.8
10.0%		0.6
2.5%		0.3
0.5%		0.2
0.0%	minimum	0.2

In order to establish current loading, a 95th percentile of the dataset was calculated using the standard Excel spreadsheet formula, as well as the formula offered in the EPA's Technical Support Document. For Water Quality-based Toxics Control handbook. Besides the fact that phosphorus is not considered toxic in concentrations and chemical form found in the wastewater treatment plant effluent, the loading obtained using formula in Excel spreadsheet was more conservative and is implemented as a new permit limitation:

TP loading = 174.5 lb/day

Compared with the previous permit limit, this represents a 65% reduction of phosphorus loading. Consequently, following the permit effective date, the permit imposes limits based on actual loadings to cap the loadings at their present levels. Load limits, versus concentration limits, give credit for any waste water diverted from the outfall for reuse and thereby encourages reuse alternatives. The treatment facility is not fully optimized to remove nutrients and also since current biological removals of nutrients are functions of other variables. The monitoring frequency is once per week, consistent with other facilities discharging into nutrient-impaired waterbodies.

Maintaining existing loads may prevent the water quality health from getting worse. However, it may not enable improvement in water quality. The treatment facility incorporates an advanced treatment system (extended aeration activated sludge, which includes biological nitrification and tertiary filters/denitrification, with methanol addition). Biological treatment is capable of achieving nutrient removal. Additionally, division water quality assessments have identified situations where wastewater treatment plant optimization can allow macro-invertebrate communities to achieve index scores that achieve eco-region goals. These situations have occurred where the low stream flow still provided some dilution of the treated effluent. The permit imposes annual rolling average load limits based on currently achievable TP removal loadings:

174.5 x 365 = **63,693 lb/year**

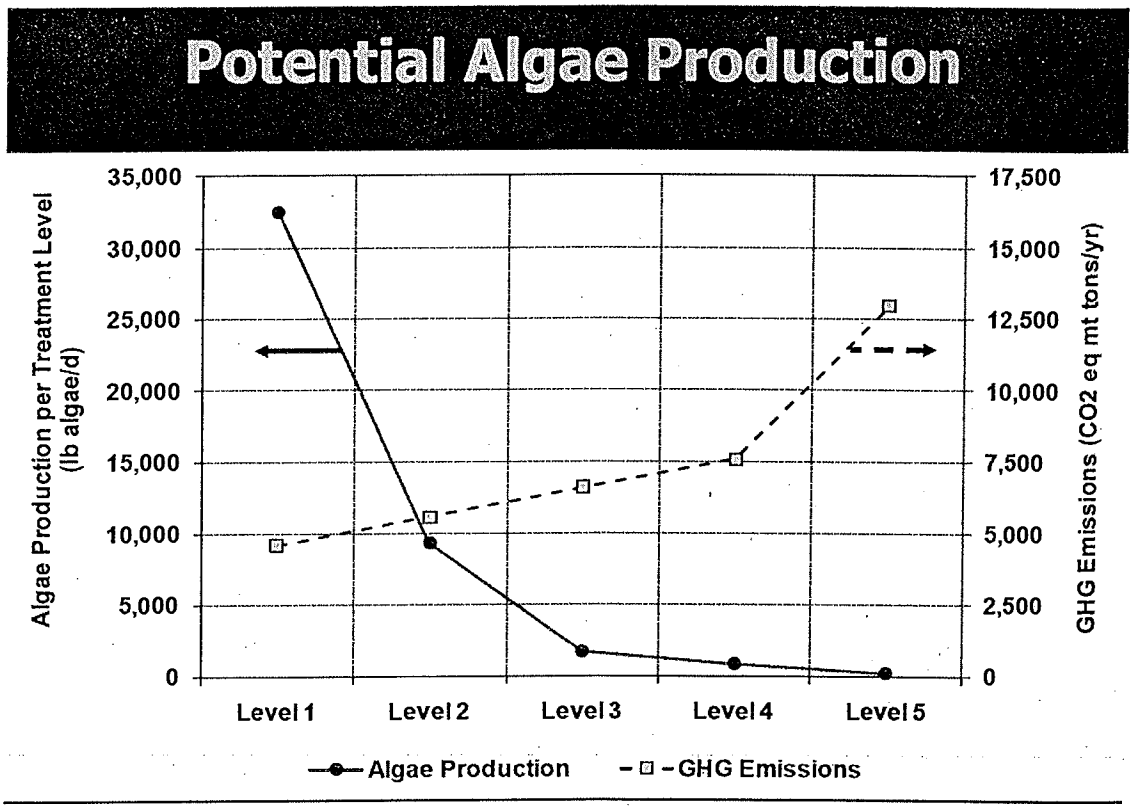
These interim permit limitations and conditions for nutrients are imposed to comply with the state regulations until the new TMDL is finalized, at which time the permit could be reopened (or modified upon renewal). Future changes in the permit would apply limitations consistent with the wasteload allocations established by that TMDL, including any applicable schedules of compliance. In summary, the draft permit imposes limits that will prevent the POTW effluent from contributing additional nutrient loading, requires optimization of existing nutrient removal capability and compliance with biologically achievable nutrient limits after optimization, and stream monitoring and reporting to demonstrate the resulting effects.

For total phosphorus, as stated before, the proposed effluent limitations applicable to both 12 and 16 MGD design flow rates represent a substantial reduction from the current permit loading limits. Additionally, a reopener clause is added to Part 1.5 of the permit allowing for the permit to be reopened and modified, subject to public comment and appeal, to incorporate changes necessary to accommodate watershed planning requirements associated with total maximum daily load (TMDL) development or other pollutant reduction strategy for nutrients by either the permittee or the State of Tennessee

Research presented by the Water Environment Research Foundation (WERF) suggests a relationship between optimized removal rates and water quality impacts[2]. The research shows that a treatment level objective of 8 mg/l TN and 1 mg/l TP, results in a significant reduction in algae production level.

[2] WERF 2011 Webinar Series, Water Environment Research Foundation, Nutrient Removal: Cost and Benefits, Degrees of Difficulty, and Regulatory Decision Making, October 5, 2011, A. Pramanik, PhD, BCEEM (WERF), M. Falk, PhD, J.B. Neethling, PhD, PE, BCEE, D. Reardon, PE, BCEE (HDR Engineering, Inc.)

Treatment Level Objective Level	BOD (mg/L)	TSS (mg/L)	TN (mg N/L)	TP (mg P/L)
1	30	30	-	-
2	<30	<30	8	1
3	<30	<30	4-8	0.1-0.3
4	<30	<30	3	0.1
5	<30	<30	2	<0.02



Considering the level treatment currently achieved and technology available at the wastewater treatment facility, additional removal of nutrients can be reasonably expected in this permit cycle. Therefore, the permit requires an optimization study in Section 3.7 of the permit. The factors which the division considers appropriate to include in the study are contained in Appendix 6. The permittee shall meet the nutrient limitations on the 25th month of permit effectiveness (reported by the 15th day of the 26th month).

To assist in determining whether more stringent levels of nutrient treatment and removal may be required after optimization, the permit requires instream monitoring and a bioassessment monitoring plan.

Appendix 6
NUTRIENT OPTIMIZATION PLAN (NOP)

Although a compliance schedule of 24 months has been included in this permit for implementation of the NMP, it is the division's position that operational changes for enhanced nutrients (total nitrogen and total Phosphorus) control should be implemented as soon as practicable, even if this is before the development and implementation of the final NMP.

At a minimum, the NOP shall include the following information:

- Evaluation of STP historical wastewater characteristics, e.g. variations in strength and mass loadings;
- Results from literature and discussions with others, including municipalities and consultants will be evaluated in developing/implementing the STP enhanced nutrients control program;
- Treatability/testing results from bench, pilot and/or the full-scale STP regarding nutrient control, e.g., operation at alternative food/microorganism ratios or sludge ages, total and soluble nutrients, and benefit of chemical(s) addition and/or filtration will be addressed;
- Identification of increased STP treatment system monitoring to provide for enhanced nutrient control (e.g., multi-point dissolved oxygen monitoring points to ensure satisfactory operating conditions in the anoxic zone, biological nitrification/denitrification regions, and multi-point pH/alkalinity monitoring); and
- Ongoing correlations of STP results to provide for an increased understanding of the nature of the wastewater nutrients and cost-effective control options for the STP.

Jim Redwine

From: Jennifer Dodd
Sent: Saturday, October 22, 2016 6:20 PM
To: Melanie Stanley
Subject: FW: City of Franklin Total P Data

Department of Environment & Conservation

Jennifer Dodd | Deputy Director
Division of Water Resources
William R. Snodgrass TN Tower, 11th Floor
312 Rosa L. Parks Ave, Nashville, TN 37243
615-532-0643
jennifer.dodd@tn.gov
tn.gov/environment

From: Vojin Janjic
Sent: Tuesday, September 06, 2016 10:25 PM
To: Jennifer Dodd
Subject: FW: City of Franklin Total P Data

It looks like the limit for TP will end up around 80 lb/day. I will finish the calculation tomorrow.

Department of Environment & Conservation

Vojin Janjic | Manager, Water-Based Systems
Division of Water Resources
William R. Snodgrass Tennessee Tower, 11th Floor
312 Rosa L. Parks Ave, Nashville, TN 37243
p. 615-532-0670
vojin.janjic@tn.gov
tn.gov/environment

From: Mark Hilty [mailto:mark.hilty@franklintn.gov]
Sent: Friday, September 02, 2016 12:52 PM
To: Vojin Janjic
Subject: RE: City of Franklin Total P Data

Vojin,

Attached are the TP and effluent data. As I mentioned in my voicemail, I am a bit concerned with the potential direction of this. I know the concept of using historic river loads versus concentrations was discussed in our meeting with HRWA and had the impression we had all settled in on concentrations. TDEC, the City and HRWA seemed to be amenable to

Exhibit 1

this approach. Now that HRWA is not seeing the numbers that they like, they want to change the rules. That said, I may be jumping the gun on where you are going with this so I'll reserve additional comments for another time. Thanks.

Hope you have a good weekend,

Mark

From: Vojin Janjic [mailto:Vojin.Janjic@tn.gov]
Sent: Friday, September 02, 2016 11:06 AM
To: Mark Hilty <mark.hilty@franklintn.gov>
Cc: Dorie Bolze (doriebolze@harpethriver.org) <doriebolze@harpethriver.org>; Jim Redwine <jimredwine@harpethriver.org>; Michelle Hatcher <michelle.hatcher@franklintn.gov>
Subject: RE: City of Franklin Total P Data

Mark:

Can you please re-send this file with daily flow corresponding to the TP concentration. I think I will need that information to establish "hold the line" TP limit in a more accurate way. I do think that all data points can be used with such approach. Thanks in advance, and have a great long weekend.

TN Department of Environment & Conservation

Vojin Janjic | Manager, Water-Based Systems
Division of Water Resources
William R. Snodgrass Tennessee Tower, 11th Floor
312 Rosa L. Parks Ave, Nashville, TN 37243
p. 615-532-0670
vojin.janjic@tn.gov
tn.gov/environment

From: Mark Hilty [mailto:mark.hilty@franklintn.gov]
Sent: Thursday, June 30, 2016 3:53 PM
To: Vojin Janjic
Cc: Dorie Bolze (doriebolze@harpethriver.org); Jim Redwine; Michelle Hatcher
Subject: City of Franklin Total P Data

Good Afternoon, Vojin,

Attached are the City's total phosphorus concentrations from the beginning of the current permit cycle through May 2016. As discussed, I've calculated the 95th percentile of our discharge concentration and scaled that to 16 MGD to represent the City's performance. I had gone back through 2005 but felt that the data within the current permit cycle are more representative of current operations. Happy to discuss when you would like. Thanks,

Mark S. Hilty

Director
City of Franklin
Water Management Department

124 Lumber Drive
Franklin, Tennessee 37064
Phone: 615.794.4554
Fax: 615.790.1340

From: Eric Stuckey <eric.stuckey@franklintn.gov>
Date: September 9, 2016 at 5:18:31 PM CDT
To: "Tisha Calabrese Benton (Tisha.Calabrese@TN.gov)" <Tisha.Calabrese@TN.gov>
Subject: FW: Draft Permit

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Tisha,
I hope you are doing well. The City is really taken aback by the change in the permit level for phosphorus contained in the draft permit. As I understand it, we would be moving from a permit limit of 5 mg/L to essentially 0.8. This is an incredible change and represents a reduction of approximately 85% compared to the current permit. We really need to sit down together on this ASAP. The City is at a loss as to where this is coming from (especially, given the time and effort we have put into study, planning, and work with TDEC on this subject). I hope TDEC staff will take a good look at Mark's comments below. I would appreciate any insight you could provide on this. Thanks.
Eric

Eric S. Stuckey
City Administrator
City of Franklin
109 3rd Avenue South
Franklin, TN 37064

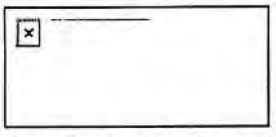
Office: 615-550-6605
Mobile: 615-708-9385
Website: www.franklintn.gov

Exhibit 2

Follow the City of Franklin on ... 

From: Jennifer Dodd [mailto:Jennifer.Dodd@tn.gov]
Sent: Friday, September 09, 2016 4:39 PM
To: Mark Hilty <mark.hilty@franklintn.gov>; Vojin Janjic <Vojin.Janjic@tn.gov>
Cc: Shauna Billingsley <shauna.billingsley@franklintn.gov>; Eric Stuckey <eric.stuckey@franklintn.gov>; Gary Cohen (gcohen@hall-associates.com) <gcohen@hall-associates.com>; JW Luna (jwluna@lunalawnashville.com) <jwluna@lunalawnashville.com>; Michelle Hatcher <michelle.hatcher@franklintn.gov>; Tisha Calabrese <Tisha.Calabrese@tn.gov>; Patrick Parker <Patrick.Parker@tn.gov>; Stephanie Durman <Stephanie.Durman@tn.gov>
Subject: RE: Draft Permit

Mark,
I haven't gotten past the first paragraph in the email, so I can't respond to your email as a whole, but I wanted to quickly state that TDEC did not work with HRWA to establish the phosphorus limit. We are taking into consideration comments that we have received from the City as well as HRWA, and I'm sorry if anything I said gave you the impression that HRWA was given authority to establish limits for you. It appears that you believe that we are not applying our rules appropriately. We are willing to continue this conversation. Given the circumstances, would you prefer that we not public notice the permit this coming Monday in order to allow more time for discussion?



Jennifer Dodd | Deputy Director
Division of Water Resources
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jennifer.dodd@tn.gov
tn.gov/environment

From: Mark Hilty [mailto:mark.hilty@franklintn.gov]
Sent: Friday, September 09, 2016 3:40 PM
To: Vojin Janjic
Cc: Jennifer Dodd; Shauna Billingsley; Eric Stuckey; Gary Cohen (gcohen@hall-associates.com); JW Luna (jwluna@lunalawnashville.com); Michelle Hatcher; Tisha Calabrese
Subject: Draft Permit

Vojin,

I as mentioned in my email and voicemail to you on September 2, 2016, I am concerned about a couple of items with respect to how TDEC and HRWA are establishing the phosphorus limits. In speaking with Jennifer Dodd a short while ago, my concerns are confirmed. While I understand the permit is to be publically noticed on Monday, I would like to submit the following information with respect to my concerns.

Ellen Hansen

From: Mark Hilty
Sent: Friday, September 9, 2016 3:40 PM
To: Vojin Janjic
Cc: jennifer.dodd@TN.gov; Shauna Billingsley; Eric Stuckey; Gary Cohen; JW Luna (jwluna@lunalawnashville.com); Michelle Hatcher; Tisha Calabrese-Benton (tisha.calabrese@tn.gov)
Subject: Draft Permit

Vojin,

I as mentioned in my email and voicemail to you on September 2, 2016, I am concerned about a couple of items with respect to how TDEC and HRWA are establishing the phosphorus limits. In speaking with Jennifer Dodd a short while ago, my concerns are confirmed. While I understand the permit is to be publically noticed on Monday, I would like to submit the following information with respect to my concerns.

Item 1: With respect to "holding the line" based on what the Harpeth sees, this in effect attempts to apply the anti-degradation concept in establishing a phosphorus limit. As discussed on numerous occasions, the City is willing to consider more stringent phosphorus limits but is unwilling to accept limits developed through inappropriate application of rules. Based on discussions to date, the City is looking at a reduction of about 60% already, even without a new TMDL or other compelling science. As we all know, as set forth in the EPA's Response to Comments in its recent promulgation strengthening the federal antidegradation regulation, 80 Fed. Reg. 51019 (Aug. 21, 2015), the new or increased loadings standard applies to the permitted load, not the actual loads discharged:

> Comments requested clarification that an antidegradation analysis would be triggered when an increase to permitted loadings is proposed. . . . [G]enerally EPA would expect that states and authorized tribes initiate Tier 2 review for an activity that would allow more degradation than was previously allowed in that water body. One example of this would be a water body with a previously-issued NPDES permit to discharge pollutant A into a water body where the water quality-based effluent limit (WQBEL) for pollutant A is X mg/L. If the state or tribe wishes to re-issue the permit with the same WQBEL, the re-issued permit would not allow any more degradation than was previously allowed, and Tier 2 review would not be triggered. If the state or tribe wishes to re-issue the permit with a WQBEL for pollutant A of X+Y mg/L, it is likely that Tier 2 review will be initiated because the permit would allow more degradation than it had previously.

U.S. EPA, Chapter 3 Issue Category: Antidegradation, Pages 3-138 - 3-289, Response to Public Comments, Water Quality Standard Regulatory Revisions, August 2015, 40 CFR Part 131 Docket #: EPA-HQ-OQ-2010-0606, at 3-272.

TDEC's antidegradation rule similarly applies to the permitted load with two exceptions inapplicable to the City's discharge into the Harpeth River – discharges that degrade Exceptional Tennessee Waters or Outstanding National Resource Waters ("ONRWs"). Accordingly, antidegradation does not justify more stringent TP limits for Franklin.

By using the "hold the line" approach, this applies anti-degradation inappropriately by taking the position that the effluent cannot go beyond what the effluent has been, irrespective of the established permit limit. This limit is significantly below the permitted limit of 5 mg/L (summer) and in effect punishes the City for excellent performance. Moreover, earlier this year TDEC signed a settlement with another municipality wherein TDEC acknowledges that anti-degradation is not based upon prior performance. Paragraph 2 of the Chancery Court Consent Decree between TDEC and the City of Cookeville specifically states:

Exhibit 4

> Within twelve (12) months after entry of this Consent Decree, Cookeville shall develop and begin to implement a wastewater treatment plant optimization plan. The goal of this plan is to reduce effluent concentration and loading of total phosphorus and total nitrogen to the maximum extent practicable thorough maximization of treatment plant efficiency and operational changes, without imposing capital expenditures on Cookeville. Implementation of the wastewater treatment plant optimization plan and the level of treatment achieved via the plan, however, shall not require or result in more stringent permit limits being imposed in any subsequent or modified NPDES permit issued to the permittee. However, future permits may include more stringent nutrient limitations based on other factors, including but not limited to the need for water quality based effluent limitations. (Emphasis added.)

As such, the focus should not be on what the City has achieved in the past.

While as noted above, the City does not believe TDEC has the authority to impose effluent limits based upon past performance of our 12 MGD plant, an additional argument pertains to the 16 MGD plant which, as you know, has not yet been constructed, tested or operational. TCA § 69-23-108l(i) specifically provides that no permit for the construction of a new waste treatment system or the modification or extension of an existing waste treatment system "shall be construed as creating a presumption of correct operation nor as warranting by the commissioner that the approved facilities will reach the designated goals." TDEC is precluded from assuming that the 16 mgd plant will be able to achieve the past performance levels.

Item 2: Establishing more stringent TP limits have been discussed I believe largely based on a belief that it is necessary since the Harpeth River is identified in the 303(d) list as being impaired for total phosphorus. And the City has willingly discussed the concept of more stringent TP loading relative to the existing NPDES permit (5 mg/L TP at 12 MGD).

A review of the Final 303(d) List for the Harpeth River from the Franklin WRF (see Attachment) indicates that the stream is impaired for low dissolved oxygen and phosphorus but it has been placed in Category 4a because EPA approved a DO and nutrient TMDL for all known pollutants. In describing Category 4a, the Final 303(d) List provides that this category indicates that TMDLs have been completed and approved for all listed pollutants. In other words, the phosphorus 303(d) listing recognizes that the DO TMDL addresses the underlying concerns.

The DO TMDL establishes TP wasteload allocations for a number of dischargers, but specifically determined that a TP limit is not necessary for Franklin:

> There are 19 NPDES permitted WWTFs in the Harpeth River watershed that discharge wastewater containing BOD and nutrients. The location of these facilities is shown in Figure 8. Eleven of these facilities discharge upstream of the waters identified in Table 2. These WWTFs discharge varying levels of BOD, nitrogen, and phosphorus. Permit limits and monitoring requirements for selected effluent characteristics are summarized in Tables 8 & 9 for those facilities that are located in HUC-12 subwatersheds containing waterbodies impaired for organic enrichment/low dissolved oxygen. A summary of effluent monitoring data, submitted on Discharge Monitoring Reports (DMRs), from the larger facilities (design flow > 0.25 MGD) is presented in Table 9.
>
> As part of the TMDL development effort, many of the 19 NPDES permitted WWTFs in the Harpeth River watershed were determined not to cause or contribute to violations of water quality standards for the segments addressed by this TMDL. For each discharge, this determination was made based on factors including: 1) the WWTF discharges to a water that is not impaired and is not expected to cause or contribute to a downstream impairment; 2) the WWTF was determined through a modeling or technical analysis not to cause or contribute to an impairment. However, all eleven of the point sources that are located upstream from an impaired segment identified in Table 2 are receiving a wasteload allocation. The NPDES facilities that are receiving a wasteload allocation in this TMDL are identified in Table 10.

Thus, the TMDL provides explicit wasteload allocations for TP to point sources discharging to the headwaters of the Harpeth River (See, TMDL at 48). The TMDL does not provide any TP wasteload allocations to point sources discharging

to the lower sections of the Harpeth River. This is not an oversight. Rather these facilities have wasteload allocations for ammonia-nitrogen and total nitrogen (TN) (See, TMDL at 55). The rationale for imposing TN limits to a stream segment that is not listed as impaired for nitrogen is that nitrogen is the limiting nutrient in the Harpeth River (TMDL at 54).

Therefore, it is apparent that a site-specific assessment (TMDL) was made of the Harpeth River at the point of discharge from the Franklin WRF and downstream. This assessment explicitly determined that phosphorus was not causing an impairment of the river in this location. Furthermore, the assessment determined that all impairments have been addressed by the TMDL.

While the TMDL determined that other than the applicable WLAs, further regulation of Franklin to address nutrients was not supported, the City, nevertheless, agreed to more stringent requirements in its 2010 NPDES permit to accommodate potential concerns raised by others regarding nutrients. The existing 5.0 mg/l TP limit, mind you, was not required by the TMDL or otherwise water-quality based. It was based upon TDEC requesting and the City's willingness to have a TP limit added, notwithstanding the findings of the TMDL. Similarly, the TSS limits in the City's existing NPDES permit are much more stringent than secondary treatment requirements. Again, the City was willing to agree to this to accommodate potential concerns regarding nutrient issues.

Continuing to impose stricter and stricter requirements based upon the City's commendable performance or an ideal performance goal is untoward as the 303(d) listing of phosphorus has already been addressed by the DO TMDL (which is implemented in the City's current NPDES permit). Nevertheless, the City is again willing to accommodate further TP concerns primarily including the use of action levels as discussed with both TDEC and HRWA. Although the City and HRWA are not in full agreement as to how TP will be addressed, we note that in its August 31, 2016, e-mail to you, HRWA also endorsed using action levels. While the City remains amenable to discussing and subjecting itself to more stringent phosphorus limits, this should not be confused with a willingness to agree to arbitrary effluent limits that would pose potential compliance issues. The City is willingly participating in the TMDL work now being conducted and any TP limits significantly more stringent than existing limits should appropriately await the outcome of the DO TMDL currently being revisited.

You keep bringing up the idea that loads must be limited to what the Harpeth River is "seeing". This approach presumes that either higher concentrations or higher loads of phosphorus exert a deleterious effect on aquatic life. Neither of these is the case. Phosphorus is not toxic so phosphorus concentration is not a concern. Increasing phosphorus loads can be a concern if it stimulates algal growth to a level that causes impairment. This concern was specifically addressed by the DO TMDL and it was determined that phosphorus control by the City was not necessary. Despite this determination, the City accepted a TP limit in its existing permit which serves as the basis for subsequent anti-degradation determinations. In addition, pending the new TMDL, the City is agreeable to a reasonable more stringent TP limit supplemented with the use of action levels.

In addition, we note that HRWA requested that TDEC send them the spreadsheet you used in setting forth alternative ways of calculating proposed loadings. We also request such information.

Thank you,

Mark S. Hilty
Director
City of Franklin
Water Management Department

124 Lumber Drive
Franklin, Tennessee 37064
Phone: 615.794.4554
Fax: 615.790.1340

Melanie Stanley

From: Mark Hilty <mark.hilty@franklintn.gov>
Sent: Friday, September 09, 2016 5:00 PM
To: Jennifer Dodd; Vojin Janjic
Cc: Shauna Billingsley; Eric Stuckey; Gary Cohen (gcohen@hall-associates.com); JW Luna (jwluna@lunalawnashville.com); Michelle Hatcher; Tisha Calabrese; Patrick Parker; Stephanie Durman
Subject: RE: Draft Permit

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Thanks for the response, Jenny. Given the circumstances, I'd like to request that public notice be delayed and that we schedule a meeting as soon as possible to discuss. Thanks again,

Mark.

Sent from my Verizon, Samsung Galaxy smartphone

-------- Original message --------
From: Jennifer Dodd <Jennifer.Dodd@tn.gov>
Date: 9/9/16 4:39 PM (GMT-06:00)
To: Mark Hilty <mark.hilty@franklintn.gov>, Vojin Janjic <Vojin.Janjic@tn.gov>
Cc: Shauna Billingsley <shauna.billingsley@franklintn.gov>, Eric Stuckey <eric.stuckey@franklintn.gov>, "Gary Cohen (gcohen@hall-associates.com)" <gcohen@hall-associates.com>, "JW Luna (jwluna@lunalawnashville.com)" <jwluna@lunalawnashville.com>, Michelle Hatcher <michelle.hatcher@franklintn.gov>, Tisha Calabrese <Tisha.Calabrese@tn.gov>, Patrick Parker <Patrick.Parker@tn.gov>, Stephanie Durman <Stephanie.Durman@tn.gov>
Subject: RE: Draft Permit

Mark,
I haven't gotten past the first paragraph in the email, so I can't respond to your email as a whole, but I wanted to quickly state that TDEC did not work with HRWA to establish the phosphorus limit. We are taking into consideration comments that we have received from the City as well as HRWA, and I'm sorry if anything I said gave you the impression that HRWA was given authority to establish limits for you. It appears that you believe that we are not applying our rules appropriately. We are willing to continue this conversation. Given the circumstances, would you prefer that we not public notice the permit this coming Monday in order to allow more time for discussion?

TN State Board of Environment & Conservation

Jennifer Dodd | Deputy Director
Division of Water Resources
William R. Snodgrass TN Tower, 11th Floor

Exhibit 13

Jim Redwine

From: Patrick Parker
Sent: Thursday, March 10, 2016 2:30 PM
To: Tisha Calabrese; Jennifer Dodd; Vojin Janjic; George Garden; David Duhl; Regan McGahen; Sherry Wang
Cc: Joseph Sanders
Subject: SELC email answers
Attachments: Email answers.docx

See attached proposed answers. These are from my notes so you may have additional input. Of course edit as you see fit.

TN Department of Environment & Conservation

Patrick Parker | Senior Counsel
Office of the General Counsel
Tennessee Tower, 2nd Floor
312 Rosa L. Parks Ave., Nashville, TN 37243
p. 615-532-0129 c. 615-571-9304
patrick.parker@tn.gov
tn.gov/environment
tnstateparks.com

Exhibit 14

Permit email

Q: Will there be TN and TP limits in Franklin's forthcoming permit?

A: Yes.

Q: What limits Franklin says it can treat to for TN and TP now (and in its future plant)?

A: Franklin has not told us to what level they can treat. It appears from the data that in the current plant that they can treat to or below the current limits.

Q: Does TDEC have a written agreement with any of the facilities that are optimizing them to reassure them that they won't get NOVs for temporary exceedances that result from such operational changes? Or is this written into a permit? Or am I wrong that this is a consideration?

A: No it is a consideration. We do not have any written agreements with any facility. It is not written in to the permit and that would not be appropriate permit language. It might be appropriate in the rationale that enforcement discretion will be used during optimization.

TMDL email

Q: Do you know whether an FTP site/server has been made available for the data?

A: An FTP site has not been made available yet but EPA says there will be one once data collection is complete.

Q: What's the best way to send data to EPA/TDEC?

A: Email is the best way, however EPA only will accept data from the entity that collected the data with copy to TDEC.

Q: How is the data being stored and what data have been received to date?

A: We don't know how the data is being stored. TDEC sent our chemical, DMR and diurnal data sets.

Q: How would you describe the source and scope of funding for the TMDL? In other words, who is paying for what? Are the agencies committed to funding additional data collection? Are the agencies in any way limited by available funding? If there were additional funding, could it be useful for the project?

A: EPA and TDEC have some limited resources for additional data collection. Additional funding is welcome but we need to determine where the data gaps are to determine what that additional funding might look like.

Optimization email

Q: Another question where I'm not sure who to ask – is TDEC open to additional cities joining the wastewater treatment plan nutrient optimization program. If so, is there a deadline for participation this year? Am I right that TDEC is using "The Water Planet Company" as a consultant?

A: At his point the cities have already been determined for this round. However more can participate in the next round. Obviously cities can hire the contractor The Water Plant Company as their own consultant for optimization.

Melanie Stanley

From: Jennifer Dodd
Sent: Tuesday, August 23, 2016 5:19 PM
To: George Garden; Vojin Janjic
Cc: Tisha Calabrese
Subject: 160823_Dodd_RE: Franklin permit

Follow Up Flag: Follow up
Flag Status: Flagged

If we've already got the information, it is open to the public and we should go on and send it to them. If we don't have it, I understand that HRWA already requested it from the City, so we can just let Franklin provide it to them.

TN Department of Environment & Conservation

Jennifer Dodd | Deputy Director
Division of Water Resources
William R. Snodgrass TN Tower, 11th Floor
312 Rosa L. Parks Ave, Nashville, TN 37243
615-532-0643
jennifer.dodd@tn.gov
tn.gov/environment

From: George Garden
Sent: Tuesday, August 23, 2016 2:16 PM
To: Jennifer Dodd; Vojin Janjic
Cc: Tisha Calabrese
Subject: RE: Franklin permit

Jim's question is a good one but a loaded one. I'll see what I can obtain. I don't think that Franklin will want that information given out. (I wouldn't.)

From: Jennifer Dodd
Sent: Tuesday, August 23, 2016 11:47 AM
To: Vojin Janjic; George Garden
Cc: Tisha Calabrese
Subject: FW: Franklin permit

Vojin and George,
I've reached out to HRWA and SELC to see if they want to discuss the Franklin permit with us before it goes on public notice. SELC says that since the law suit was settled, they are no longer representing HRWA, therefore they do not need to attend the meeting. I'm waiting on a call back from Jim Redwine about dates for next week. (George, it looks like you are out next week). I told Jim that we would provide them with the draft permit before we meet with them, and he asked for some additional information (See highlighted area below). Do we have the information that Jim is requesting?

TN Department of Environment & Conservation

Exhibit 15

Jennifer Dodd | Deputy Director
Division of Water Resources
William R. Snodgrass TN Tower, 11th Floor
312 Rosa L. Parks Ave, Nashville, TN 37243
615-532-0643
jennifer.dodd@tn.gov
tn.gov/environment

From: Jim Redwine [mailto:jimredwine@harpethriver.org]
Sent: Tuesday, August 23, 2016 10:17 AM
To: Jennifer Dodd
Cc: Dorie Bolze
Subject: RE: Franklin permit

Jenny, to follow up on my e-mail to you of yesterday afternoon and my voice mail to you of this morning, we are prepared to meet with you next week. Dorie is headed out of town Thursday to take her daughter to college. Let us know when might work for you next week.

To make our meeting meaningful, we believe that it is appropriate for us to review the phosphorus removal design capabilities of the 12 and 16 MGD plants. These are sometimes contained or calculated in BioWin or similar computer modelling programs. If you have received any of such material as a part of the submissions by Franklin in support of its permit applications (or otherwise), we would appreciate receiving it as soon as possible, so that we can adequately prepare for the meeting.

Thanks,

Jim

Jim Redwine

James M. Redwine
Director, Water Quality Protection and Sustainability Program
Harpeth River Watershed Association
(225) 281-4089 mobile
Protecting the State Scenic Harpeth River and Clean Water in Tennessee
www.harpethriver.org
jimredwine@harpethriver.org
Street address:
215 Jamestown Park
Brentwood, TN 37027
Mailing address:
P.O. Box 1127
Franklin, TN 37065

From: Jennifer Dodd [mailto:Jennifer.Dodd@tn.gov]
Sent: Monday, August 22, 2016 5:12 PM
To: Dorie Bolze <DorieBolze@harpethriver.org>; Jim Redwine <jimredwine@harpethriver.org>; 'apassino@selctn.org' <apassino@selctn.org>
Subject: RE: Franklin permit

All -
Vojin tells me that he thinks the draft of the Franklin permit will be done today (or very shortly). We plan to put it on the next public notice (two weeks from today). We would like to meet with you and get your input if you are interested in discussing it with us prior to it going on public notice. I would prefer to talk this week, if at all possible. Please let me know if you are interested in meeting this week, and if yes, what times you have available.

Thanks,
Jenny

TN Department of Environment & Conservation

Jennifer Dodd | Deputy Director
Division of Water Resources
William R. Snodgrass TN Tower, 11th Floor
312 Rosa L. Parks Ave, Nashville, TN 37243
615-532-0643
Jennifer.dodd@tn.gov
tn.gov/environment

From: Jennifer Dodd
Sent: Tuesday, August 16, 2016 9:22 AM
To: doriebolze@harpethriver.org; jimredwine@harpethriver.org; apassino@selctn.org
Subject: Franklin permit

Dorie,
I'm sorry I wasn't able to get in touch last week. We would like to set up a meeting with you all to go over the draft of the Franklin permit. I am out of town, but should be back in the office Thursday and Friday of this week. When I left the office, Vojin was close to having a draft ready. I'll ask him to forward a copy to you before we meet so you will have time to look it over. Please give me some suggested times that you are available either later this week or next week.

Looking forward to seeing you all soon.

Jenny

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Melanie Stanley

From: Mark Hilty <mark.hilty@franklintn.gov>
Sent: Friday, September 16, 2016 3:53 PM
To: Vojin Janjic
Cc: Jennifer Dodd; Eric Stuckey; Michelle Hatcher; Shauna Billingsley; Zack Daniel; Tisha Calabrese; Patrick Parker; Stephanie Durman; George Garden; Wade Murphy; Gary Cohen (gcohen@hall-associates.com); Bill Hall (bhall@hall-associates.com); JW Luna
Subject: 160916_Hilty_RE: Meeting Follow Up
Attachments: NPDES Application Cover Letter - EXECUTED.PDF

Thanks Vojin,

I look forward to any information from your meeting and analyses. I know that this has been a long process and appreciate all the work the TDEC team has put into this effort. The timing is a bit challenging without yet having completed the TMDL work. While we've been assured from the beginning that the permit won't prejudge the TMDL I have a lingering concern should the TMDL result in less stringent limits. The feedback thus far has been that TDEC has the potential to establish less stringent limits. This concept has been one of the compelling reasons for the City's participation in the TMDL process. If I remember, I think Patrick was going to verify this and didn't know if he had a chance to see if the rules had provisions to do so. To avoid any arguments in the future we would like for it to be explicitly stated in the permit.

I also wanted to reiterate the City's position at the time of application and throughout the application process with respect to loadings. The attached cover letter submitted with the application, near the top of page 2 states "Per our discussions with you, we understand that as long as there is no new outfall and that the City is not requesting additional permitted loading to the river, antidegradation would not apply to this project." This statement, among other passages in the letter I hope clarify the City's request was based upon permitted loading, not performance.

Thanks again and I look forward to hearing from you.

Mark Hilty

From: Vojin Janjic [mailto:Vojin.Janjic@tn.gov]
Sent: Thursday, September 15, 2016 9:54 PM
To: Mark Hilty <mark.hilty@franklintn.gov>
Cc: Jennifer Dodd <Jennifer.Dodd@tn.gov>; Eric Stuckey <eric.stuckey@franklintn.gov>; Michelle Hatcher <michelle.hatcher@franklintn.gov>; Shauna Billingsley <shauna.billingsley@franklintn.gov>; Zack Daniel <danielza@cdmsmith.com>; Tisha Calabrese <Tisha.Calabrese@tn.gov>; Patrick Parker <Patrick.Parker@tn.gov>; Stephanie Durman <Stephanie.Durman@tn.gov>; George Garden <George.Garden@tn.gov>; Wade Murphy <Wade.Murphy@tn.gov>
Subject: RE: Meeting Follow Up

Mark:

Thanks for visiting with us yesterday. It was, I thought, a very productive meeting. We have an internal meeting tomorrow, where we'll further discuss elements of the draft permit.

We did perform further analysis of TP data you provided. Only if one does not remove two outliers you pointed out, data may be interpreted to be lognormally distributed (not convincingly, though). Once outliers are removed, there is practically no doubt in our minds that it follows a normal distribution.

We'll keep you updated...

Vojin

From: Mark Hilty [mailto:mark.hilty@franklintn.gov]
Sent: Thursday, September 15, 2016 12:39 PM
To: Vojin Janjic
Cc: Jennifer Dodd; Eric Stuckey; Michelle Hatcher; Shauna Billingsley; Zack Daniel
Subject: Meeting Follow Up

Good Afternoon, Vojin,

Thank you again for taking the time to meet with us yesterday afternoon. I wanted to touch base to see if you have been able to review the calcs for TP based on our discussion and to request that you please forward to me.

I know there was a fair amount of discussion yesterday related to what the City's request was at the time of application in terms of loading relative to performance or permitted loads. I think I shared my perspective and have been going with the understanding that the loading for the new permit was with respect to current permitted loads. The attached letter (page 2) touches on this so I felt it was important to share to hopefully provide some context at the time of application.

Thanks again,

Mark Hilty