

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND REGION
ONE CONGRESS STREET
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

NPDES PERMIT NO.: NH0101052

PUBLIC NOTICE START AND END DATES:

PUBLIC NOTICE NUMBER:

NAME AND MAILING ADDRESS OF APPLICANT:

Town of Troy
P.O. Box 215
Troy, New Hampshire 03465

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Troy Wastewater Treatment Plant
151 Dort Street
Troy, New Hampshire 03465

RECEIVING WATER: South Branch Ashuelot River (Hydrologic Unit
Code: 01080201)

CLASSIFICATION: B

I. Proposed Action, Type of Facility and Discharge Location.

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) to reissue its NPDES permit to discharge treated effluent into the designated receiving water (South Branch Ashuelot River). The South Branch Ashuelot River is used for fishing, boating, swimming and other primary contact recreation. The effluent, though, does not discharge directly near a swimming beach area. The facility collects and treats industrial, commercial and domestic wastewater from the Town of Troy. The facility does not accept septage.

The plant is designed as a 0.265 million gallon per day (MGD) aerated-facultative lagoon facility. Upon entering the facility the wastewater passes through a bar screen and comminutor before entering the first aerated facultative lagoon. The flow then passes through two more lagoons. The flow next enters a chlorine contact chamber for disinfection, after which it discharges to the South Branch Ashuelot River. The location of Troy's Publicly Owned Treatment Works (POTW) and Outfall 001 are presented on Attachment A.

The previous permit was issued on February 4, 1986, and expired on February 4, 1991. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant completed reapplication for permit as per 40 Code of Federal Regulations (CFR) §122.6 on February 4, 1991. The EPA recently requested the permittee to update their NPDES permit application. The updated permit application was considered complete by the EPA on April 30, 2002. The existing permit authorizes discharge from Outfall 001 (Treatment Plant).

II. Description of Discharge.

A quantitative description of the treatment plant's discharge in terms of recent effluent-monitoring data March 1999, through March 2002, is shown in Attachment B. The data was compiled from Discharge Monitoring Reports (DMR) that were submitted to the EPA and New Hampshire Department of Environmental Services, Wastewater Division (NHDES-WD). The draft permit contains limitations for Carbonaceous Biochemical Oxygen Demand (CBOD), Total Suspended Solids (TSS), Ammonia as Nitrogen (NH₃-N), Total Residual Chlorine (TRC), pH, Escherichia coli (E. coli) and Whole Effluent Toxicity (WET). A requirement to monitor for Total Phosphorous has also been added to the draft permit.

III. Limitations and Conditions.

Effluent limitations, monitoring requirements, and any implementation schedule (if required) are found in PART I of the draft NPDES permit. The basis for each limit and condition is discussed in sections IV.C. through IV.I. of this Fact Sheet.

IV. Permit Basis and Explanation of Effluent Limitations Derivation.

A. General Regulatory Background

The Clean Water Act (ACT) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the ACT. The NPDES permit is the mechanism used to implement technology and water quality based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the ACT and any applicable State administrative rules. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

EPA is required to consider technology and water quality based requirements as well as those requirements and limitations included in the existing permit when developing the revised permit's effluent limits. Technology based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the ACT. Secondary treatment technology guidelines, i.e. effluent limitations, for POTWS can be found at 40 CFR §133.

All statutory deadlines for meeting various treatment technology based effluent limitations established pursuant to the ACT have expired. When technology based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. (See 40 CFR §125.3(a)(1)) Compliance schedules and deadlines not in accordance with the statutory provisions of the Act can not be authorized by a NPDES permit.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology based limits where more stringent

limits are necessary to maintain or achieve state or federal water quality standards. (See Section 301(b)(1)(C) of the ACT) A water quality standard consists of three elements: (1) beneficial designated use or uses for a water body or a segment of a water body; (2) a numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirement to ensure that once a use is attained it will not be eroded.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical specific numeric criteria from the state's water quality standards to develop permit limits both the acute and chronic aquatic life criteria, expressed in terms of maximum allowable in stream pollutant concentration, are used. Acute aquatic life criteria are considered applicable to daily time periods (maximum daily limit) and chronic aquatic life criteria are considered applicable to monthly time periods (average monthly limit). Chemical specific limits are allowed under 40 CFR §122.44(d)(1) and are implemented under 40 CFR §122.45(d).

B. Development of Water Quality Based Limits

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion. An excursion occurs if the projected or actual in stream concentration exceeds the applicable criterion.

Reasonable Potential

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit's reissue application, Monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls*, March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5)

dilution of the effluent in the receiving water. In accordance with New Hampshire statutes and administrative rules [RSA 485-A:8,VI, Env-Ws 1705], available dilution is based on a known or estimated value of the lowest average annual flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life or the mean annual flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01.

Anti-Backsliding

The permit may not be renewed, reissued or modified with less stringent limitations or conditions than those conditions in the previous permit unless in compliance with the anti-backsliding requirement of the ACT (See Sections 402(o) and 303(d)(4) of the ACT and 40 CFR §122.44(l)(I and 2). EPA's anti-backsliding provisions found in 40 CFR §122.44(l) prohibit the relaxation of permit limits, standards, and conditions unless certain conditions are met. Therefore, unless those conditions are met the limits in the reissued permit must be at least as stringent as those in the previous permit.

State Certification

The Act requires that EPA obtain State Certification which asserts that all water quality standards will be satisfied. The permit must conform to the conditions established pursuant to a State Certification under Section 401 of the ACT (40 CFR §124.53 and §124.55). EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.44(d).

The conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards. In order to protect the existing quality of the State's receiving waters, the NHDES-WD adopted anti-degradation requirements in their December 3, 1999, Surface Water Quality Regulations (Env-Ws 1708). Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

C. Total Maximum Daily Loads

Background

Section 303(d)(1) of the ACT requires each State to identify waters for which secondary or technology-based effluent limitations (40 CFR Part 133 for POTWs) are not stringent enough to meet water quality standards. The States are further required for those identified waters to establish a Total Maximum Daily Load (TMDL) for the pollutants of concern. These impaired rivers, streams, ponds, etc. (surface waters of the United States) are identified in various states under Section 303(d) of the ACT. Pollutants of concern are listed as well as the particular impaired segment. The states are currently required to update the 303(d) list every two (2) years with the next one due October 1, 2002; however, the two year time interval may be expanded in the near future. The development of a TMDL for any surface water requires extensive sampling and analysis, evaluation of the health and diversity of aquatic organisms, planned future uses, and mathematical modeling which will include all point and non-point source loadings in the impaired water body.

Presently, the South Branch of the Ashuelot River in the vicinity of Troy is not listed on the New Hampshire's latest 303(d) list dated June 30, 1998. The South Branch, however, affords very limited available dilution with a calculated Dilution Factor of 2.0 (Refer to the following Available Dilution section) to assimilate Troy's treated effluent. This limited available dilution is cause for concern, particularly if the treatment plant wishes to expand its capacity. It is possible, due to the characteristics of Troy's discharge and the low dilution in the receiving water, that the South Branch is impaired. Any impairment would increase should the permittee seek to increase the wastewater treatment plant's discharge. Specific concerns regarding the discharge of phosphorous are described later in the Fact Sheet. If monitoring or further analysis demonstrates that the receiving water is impaired, the River will be added to Section 303(d) of impaired State waters along with an accompanying TMDL requirement.

Plan of Action

The State of New Hampshire believes the draft permit's effluent limitations and conditions are sufficient to insure Troy's discharge does not violate NH Standards. Additionally, a Reopener Clause has been added to the draft permit (Part I, Section F). This clause will allow the Agency to modify or revoke and reissue Troy's NPDES permit if a future TMDL or any other water-quality study of the South Branch by the EPA and/or NHDES demonstrates the need for more stringent pollutant limits. While the NPDES Permit would be effective for the normal five year term, it can be reopened, changed and reissued due to "new information" in accordance with 40 CFR §122.62(a)(2).

This new information would be used to determine additional permit limit(s); such as for, phosphorus, ammonia and/or dissolved oxygen. Additionally, more stringent limit(s) could result for those pollutants currently limited, such as CBOD₅/BOD₅ and TSS. Any of these additional limits could be expressed in terms of concentration and/or mass where appropriate. A change in the available dilution, which is integral part of any TMDL or other water-quality effort, may result in revision to current limit based on that dilution; such as, Total Residual Chlorine and Whole Effluent Toxicity (See following Total Residual Chlorine and Whole Effluent Toxicity sections).

D. Conventional PollutantsCarbonaceous Biochemical Oxygen Demand (CBOD) and
Total Suspended Solids (TSS)

Average monthly, average weekly and maximum daily concentration-based effluent limits (mg/l) in the draft permit for Carbonaceous Biochemical Oxygen Demand (CBOD) and Total Suspended Solids (TSS) are based upon limits in the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44. Carbonaceous Biochemical Oxygen Demand effluent limits have replaced those for Five-Day Biochemical Oxygen Demand in the draft permit. The average monthly and average weekly

concentration based limitations for CBOD and TSS are also based on requirements under Section 301(b)(1)(B) of the ACT as defined in 40 CFR §133.102.

The presence of nitrifying bacteria in an effluent sample can lead to erroneous BOD₅ test results. Troy's Water and Sewer Supervisor has observed that nitrification caused by presence of nitrifying bacteria have skewed the biochemical oxygen demand tests of facility's effluent. The Supervisor has verbally requested that CBOD limits be substituted for BOD₅ limits. A CBOD test eliminates the effects of the nitrifying bacteria. The equivalent to secondary treatment regulations in 40 CFR §133.105(e) allow optional use of a CBOD limit and test procedure for BOD₅ limits. The CBOD limits are set 5 units, i.e, 5 mg/l, lower than the BOD₅ limits. The CBOD average monthly concentration limit will be 25 mg/l; the average weekly limit is 40 mg/l; and the daily maximum at 45 mg/l. The substitution of CBOD limits for BOD₅ limits still meets the antibacksliding requirement that a NPDES permit may not be renewed, reissued or modified with less stringent limitations or conditions than those conditions in the previous permit.

The draft permit also contains average monthly, average weekly and maximum daily mass-based limits (lbs/day) for CBOD and TSS. Mass-based limits are incorporated into the permit based on 40 CFR §122.45(f). These mass based limits were calculated using the conversion formula shown in Attachment C, the appropriate concentration limits and the facility's design flow. Refer to Attachment C for the calculation of these limits.

pH

The pH limits, 6.5 to 8.0 Standard Units (SU), in the draft permit remain unchanged from the existing permit. Language has been added, however, to the State Permit Conditions (PART I.E.1.a.) allowing for a change in pH limit(s) under certain conditions. A change would be considered if the applicant can demonstrate to the satisfaction of NHDES-WD that the in stream pH standard will be protected when the discharge is outside the permitted range, then the applicant or NHDES-WD may request (in writing) that the permit limits be modified by EPA to incorporate the results of the demonstration. Anticipating the situation where NHDES-WD grants a formal approval changing the pH limit(s) to outside the 6.5 to 8.0 Standard Units (S.U.), EPA has added a provision to this draft permit (See SPECIAL CONDITIONS section).

That provision will allow EPA to modify the pH limit(s) using a certified letter approach. This change will be allowed as long as it can be demonstrated that the revised pH limit range does not alter the naturally occurring receiving water pH. Reference Part I.E.1. SPECIAL CONDITIONS in that permit. However, the pH limit range cannot be less restrictive than 6.0 - 9.0 S.U. found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for the facility.

If the State approves results from a pH demonstration study, this permit's pH limit range can be relaxed in accordance with 40 CFR §122.44(l)(2)(i)(B) because it will be based on new information not available at the time of this permit's issuance. This new information includes results from the pH demonstration study that justifies the application of a less stringent effluent limitation, EPA anticipates that the limit determined from the demonstration study as approved by the NHDES-WD will satisfy all effluent requirements for this discharge category and will comply with NH Standards amended on December 3, 1999.

Escherichia coli

Effluent limitations for Total Coliform bacteria are limited in the existing permit. Effective August 31, 1991, revision of State statutes changed the bacteria testing requirements for discharges to freshwater and saltwater receiving waters (N.H. RSA 485-A:8). This revision has resulted in the replacement of testing for Total Coliform with testing for Escherichia coli bacteria in the draft permit. Historically, the NHDES-WD, has required bacteria limits to be satisfied at end-of-pipe with no allowance for dilution. Therefore, the average monthly and maximum daily limits for Escherichia coli bacteria are based upon State Certification Requirements. There are two sets of Escherichia coli bacterial limits in the State's Statutes (N.H. RSA 485-A:8): one for beach areas, and one for non-designated beach areas. Since no designated beaches exist in the vicinity of the POTW's outfall, the non-designated beach area limit was applied. Calculation for compliance with the Average Monthly limit for Escherichia coli shall be determined by using the geometric mean. The original basis for this limitation is found in New Hampshire's State statutes (N.H. RSA 485-A:8) and State certification requirements for POTWs under section 401(d) of the CWA, 40 CFR §§124.53 and 124.55.

Total Phosphorous

Total Phosphorous was another effluent component tested in Troy's recently updated NPDES permit application. The Total Phosphorous was determined to be 3.87 mg/l. A common result of elevated phosphorous levels are algae blooms in the waterway. Phosphorous is a nutrient which can accelerate the growth of algae. Elevated phosphorous levels can lead to eutrophication in a waterway. Both algae respiration and the decay of dead algae on the a river's bottom directly contribute to the reduction of dissolved oxygen; i.e., eutrophication, in a waterway.

The South Branch Ashuelot River is a river that is at risk for eutrophication. The River is of low volume and slow flowing. Troy's POTW effluent discharge, which contains phosphorous, could encourage eutrophication in the South Branch Ashuelot River. The NHDES-WD has voiced concern over the possibility of high nutrient levels in the South Branch leading to the waterway's eutrophication. The NHDES-WD is considering the expansion of the TMDL study for the Ashuelot River at Keene, NH to include the South Branch in the vicinity of Troy. Based on the present level of phosphorous in Troy's POTW effluent discharge, and the potential of these phosphorous levels to contribute to eutrophication in the South Branch, the draft permit monitoring of the POTW's effluent for Total Phosphorous.

A monitor only requirement, not a numeric effluent limitation, for Total Phosphorous is contained in the draft permit. Only a potential for eutrophication, not any actual eutrophication, has been demonstrated for the South Branch. The EPA and NHDES-WD; therefore, consider that the prudent course is to monitor and begin to build a database of the Total Phosphorous levels of the effluent discharge. The collection of this data and the possible execution of a TMDL study of the South Branch of the Ashuelot River or adaption of phosphorous water quality criteria for Total Phosphorous will provide sufficient evidence whether a numeric Total Phosphorous limit will be required for Troy's POTW.

The permittee should be aware that EPA is developing Section 304(a) water-quality criteria for nutrients. The nutrient criteria are to control the excessive levels of these nutrients; such as, Total Phosphorus and Total Nitrogen, that discharge to

the nation's surface waters. The expected criteria will apply to four major types of waterbodies; lakes and reservoirs, rivers and streams, estuarine and coastal areas, and wetlands across fourteen major ecoregions of the United States. EPA's Section 304(a) criteria are intended to provide for the protection and propagation of aquatic life and recreation. The criteria for rivers and streams will govern Troy's wastewater treatment plant discharge to the South Branch. The NHDES-WD has already indicated it intends to adopt the nutrient criteria for the State's Surface Water Quality Regulations beginning in the 2004/2005 time frame.

Initial indications place the criteria values in the vicinity of 0.05 mg/l for Total Phosphorus as Phosphorous (TP - P) and 0.75 mg/l for Total Nitrogen as Nitrogen (TN₂ - N₂). For discussion, using a phosphorus criteria of 0.05 mg/l as the aquatic-life acute criteria in the NH Standards, that would translate into a 0.1 mg/l maximum daily TP - P permit limit. (Refer to the Water Quality Based Permit Limits section of Attachment C for the equation that is used to calculate the TP - P limit. The EPA, at this juncture, can not speculate whether or not phosphorus limits will be included in a future NPDES permit issued to Troy. Instead, this discussion is used to illustrate the approximate magnitude of a possible phosphorous limit. Troy may want to include in any plans to upgrade the wastewater treatment plant a means of removing phosphorous from the plant's discharge. It would be advantageous to have the wastewater facility already configured to accept phosphorous removal equipment; instead of having to retrofit any such equipment to the plant.

The Total Phosphorous monitoring applies from May 1st - September 30th when the potential for eutrophication is considered most detrimental to water quality goals. In non-summer months, the

cooler water temperatures and reduced light intensity greatly diminish algae growth to a point where its effect on dissolved oxygen is marginal.

Settleable Solids

Settleable Solids is limited in the existing permit as a State Certification Requirement, but will not be limited in the draft permit. The State no longer certifies that limitation because the Settleable Solids limitation test yields uncertain results. Furthermore, EPA and the State view Settleable Solids as a "process-control parameter" rather than an effluent limitation. Total Suspended Solids is a more appropriate measure of the solids content discharging to the receiving water; therefore, Settleable Solids limitation was not included in the draft permit.

E. Non-Conventional and Toxic Pollutants

Water-quality based limits for specific toxic pollutants such as chlorine, ammonia, etc. are determined from numeric chemical specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in *Quality Criteria for Water*, 1986, EPA 440/5-86-001 as amended, commonly known as the Federal "Gold Book". Each criteria consists of two values; an acute aquatic-life criteria to protect against short-term effects, such as death, and a chronic aquatic-life criteria to protect against long-term effects, such as poor reproduction or impaired growth. New Hampshire adopted these "Gold Book" criteria, with certain exceptions and included them as part of the State's Water Quality Regulations adopted on December 3, 1999. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit, such as for the fast acting toxicant chlorine should a limit be required. Available dilution is discussed in the next subheading.

Available Dilution

Available dilution (also referred to as dilution factor) in the receiving water was determined to be 2.00 using the plant's design flow of 0.265 MGD (0.41 cfs), an estimate of the 7Q10 low

flow in South Branch Ashuelot River at the treatment plant's outfall of 0.58 MGD (0.9 cfs), and a State of New Hampshire dictated 10% set aside or reserve. A directly measured 7Q10 flow for South Branch Ashuelot River is not available. The 7Q10 flow used for South Branch Ashuelot River at the POTW's outflow was calculated by the State using an equation named the "Dingman Equation." This equation is a logarithmic expression which uses the stream's mean basin elevation, the fraction of the stream basin underlain by stratified glacial drift in contact with the stream's channel, and the stream's drainage area. The calculation determined the 7Q10 flow for South Branch Ashuelot River of 0.58 MGD (0.9 cfs). State's set aside reserves 10% of the Assimilative Capacity of the receiving water for future uses pursuant to RSA 485-A:13, I.(a). See Attachment C for calculations of 7Q10 flow and dilution factor.

Total Residual Chlorine (TRC)

Chlorine and chlorine compounds, such as "organo-chlorines", produced by the chlorination of wastewater can be extremely toxic to aquatic life. Section 101(a)(3) of the CWA and State law N.H. RSA 485-A:8, VI and the N.H. Surface Water Quality Regulations, Section Env-Ws 1703.21 prohibits the discharge of toxic pollutants in toxic amounts.

Applying the State's acute aquatic life criterion of 0.019 mg/l and an available dilution of 2.0, the acute limit of 0.038 mg/l was calculated. This limit was rounded to 0.04 mg/l. For the chronic aquatic life criterion of 0.011 mg/l, a chronic limit of 0.022 mg/l was calculated; with the limit set at 0.02 mg/l. See Attachment C for calculation of the TRC limitations.

Both the average monthly and maximum daily TRC limits in the draft permit are new to this facility and replace the narrative limitations in Part I.A.1.f. of the existing permit.

Ammonia as Nitrogen (NH₃-N)

Troy's recently updated NPDES permit application included a test of certain components contained in the POTW's effluent. One of the parameters tested was ammonia as nitrogen (NH₃-N). That test showed an elevated level at 14.2 mg/l of ammonia (as N). Based on

the summer average pH and temperature of the South Branch Ashuelot River the average concentration, or chronic concentration level, for ammonia (as N) during summer in Troy's POTW effluent is 7.2 mg/l.

Elevated ammonia levels present two distinct environmental threats. First, short term or acute effects of high levels of ammonia will cause death of aquatic organisms. Longer term or chronic effects of an elevated average ammonia levels will cause reproductive or growth difficulties. Secondly, high levels of ammonia can catalyze the growth of nitrifying bacteria. Nitrification caused by the bacteria breaks down ammonia and combines the freed nitrogen with oxygen to produce nitrites which are further metabolized by bacteria to nitrates. Since oxygen is taken out of solution from the POTW's effluent to form the nitrogen compounds, the level of dissolved oxygen in the effluent is lowered. If excessive ammonia levels cause lowering of dissolved oxygen levels of POTW's wastewater stream, the treatment process can be adversely affected. If the POTW's effluent is discharged with high ammonia levels, the nitrification induced by the ammonia can cause the dissolved oxygen levels of the receiving water to drop.

The EPA and NHDES-WD have determine a reasonable potential exists that the Troy POTW can produce high levels of ammonia. Based on this potential a BPJ has been made to include ammonia as nitrogen limits in the draft permit. The effect of ammonia on an aquatic environment is both temperature and pH depended. A water body can tolerate higher levels of ammonia in the winter than the summer. Accordingly, seasonable limits for ammonia have been applied to the draft permit. These limits have been determined using EPA's (December) *1999 Update of Ambient Water Quality Criteria for Ammonia*. The State of New Hampshire's Surface Quality Regulation, Env-Ws 1704.01(c) allows the use of updated water quality criteria. The ammonia limits were calculated based on December 1999 Update's "Temperature and pH-Dependent Values of the CCC (Chronic Criteria) for Fish Early Life Stages Present."

The summer limit, applied May 1st - September 30th and expressed as ammonia as nitrogen, is 7.2 mg/l (15.9 lb/day). The winter limit, applied from October 1st - April 30th and again expressed as ammonia as nitrogen, is 10.9 mg/l (24.1 lb/day). The summer limitation was based on an average temperature of 21.1°C and

average pH of 6.57. These averages were calculated from data collected at Troy for the NHDES Ambient River Monitoring Program. The winter limit was based on the same pH value and an assumed average river temperature of 10°C. Ammonia mass limits are required by 40 CFR §122.45(f). Refer to Attachment C for calculation of the ammonia limits.

Only chronic limitations, under the discharge limitation heading of "Average Monthly" found in Part I.A.1 of the draft permit, have been established. The EPA and NHDES-WD consider it is unlikely the Troy WWTF would ever discharge ammonia at a concentration that would exceed the acute or "Maximum Daily" limitation for ammonia as nitrogen. Based on the NH Standards an acute limitation for ammonia would be 47.4 mg/l. A "Report" only requirement has been added to the draft permit to record the highest concentration sampled for ammonia each month as the "Maximum Daily" concentration.

F. Whole Effluent Toxicity

EPA's *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. Pollutant specific approaches, as those in the Gold Book and State regulations, address individual chemicals. A Whole Effluent Toxicity (WET) approach, alternatively, evaluate interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. WET testing measures the "Additive" and/or "Antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not. WET testing also provides the best means to discover the presence of an unknown toxic pollutant. An integrated strategy, consisting of both specific pollutant and WET testing, is required to protect aquatic life and human health.

New Hampshire law states that, "...all waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals,

humans, or aquatic life;...." NH Surface Water Quality Regulations, PART Env-Ws 1703.21(a)). The federal NPDES regulations, 40 CFR §122.44(d)(1)(v), require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity.

EPA-New England's current policy requires toxicity testing in all municipal permits until no toxicity is demonstrated at the permit level. The type of whole effluent toxicity (WET) test, acute and/or chronic and effluent limitations (LC50 and/or C-NOEC), are based on available dilution (See Attachment D). It is EPA-New England's approach to set LC50 and C-NOEC limits for minor POTW's consistent with the policy for major POTW's. The monitoring frequency for minor POTW's is usually set at once per year if the available dilution is above 10. The available dilution calculated for the Troy's wastewater treatment facility is 2.0, which indicates Troy is a high risk POTW. Since the Troy POTW has a dilution factor of 2.0, the LC50 and C-NOEC monitoring frequency has been set at four times a year. In other words, the permittee will be required to perform four WET tests per year. The permittee will perform one chronic and modified acute WET test, using two test species, per calendar quarter. The results of these quarterly WET tests are to be reported by the 15th of April, July, October and January, respectively.

Section 101(a)(3) of the ACT specifically prohibits the discharge of toxic pollutants in toxic amounts and New Hampshire law states, "all waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Ws 430.50(a)). The federal NPDES regulations at 40 CFR §122.44(d)(1)(v) require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity. The 2.0 dilution factor associated with Troy's treatment plant's outfall contributes to a "reasonable potential" to cause an excursion of the no toxics provision in the State's regulations. Inclusion of the whole effluent toxicity limits in the draft permit will ensure compliance with both the Act's and the State's narrative water quality criterion of "no toxics in toxic amounts".

The draft permit contains an LC50 limit of greater than or equal to 100 percent effluent concentration (See Appendix D for the LC50 limit). The LC50 is defined as the concentration of toxicant, or as in this draft permit, the percentage of effluent lethal to 50% of the test organisms during a specific length of time. Samples with a high LC50 value are less likely to cause environmental impact. Fathead Minnow (Pimephales promelas) and the Daphnid (Ceriodaphnia dubia) are species selected for the LC50 test.

The Chronic-No Observed Effect Concentration (C-NOEC) is defined as the highest concentration to which test organisms are exposed in a life cycle or partial life cycle test, which causes no adverse effect on growth, survival or reproduction during a specific time of observation. The C-NOEC has been calculated as greater than or equal to 50% effluent (Refer to Attachment C). The test results (growth, survival or reproduction) at a specific time of observation as determined from hypothesis testing should exhibit a linear dose response relationship. However, where the test results do not exhibit a linear dose response relationship, the draft permit requires the permittee to report the lowest concentration where there is no observable effect (See the draft permit's ATTACHMENT A (VII. TOXICITY TEST DATA ANALYSIS) on page A-9 for additional clarification in selecting appropriate C-NOEC values). Survival and growth (weight) tests will use the Fathead Minnow (Pimephales promelas). Survival and reproduction tests use the Daphnid (Ceriodaphnia dubia).

Results of these toxicity tests will demonstrate compliance with the no toxic provision of the ACT. If the results-of these tests are consistently negative during a one year period, the monitoring frequency and testing requirements may be reduced. As a special condition of this draft permit, the frequency of testing may be reduced by a certified letter from the EPA. This permit provision anticipates that the permittee may wish to request a reduction in WET testing. After a minimum of four complete and consecutive WET tests, all of which must be valid and demonstrate compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a review of the toxicity test results. The EPA will review the test results and other pertinent information to

make a determination. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

Alternatively, if toxicity is found, monitoring frequency and testing requirements may be increased. The permit may also be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements or chemical specific limits. These actions will occur if the Regional Administrator determines the WET limits are not adequate to protect the NH Surface Water Quality Standards during the remaining life of the permit. Results of these toxicity tests are considered "new information not available at permit development"; therefore, the permitting authority is allowed to use said information to modify an issued permit under authority in 40 CFR §122.62(a)(2).

This draft permit requires the reporting of selected parameters determined from the chemical analysis of the WET tests 100% effluent samples. Specifically, parameters for the constituents of ammonia nitrogen as nitrogen, hardness, and total recoverable aluminum, cadmium, copper, chromium, lead, nickel, and zinc are to be reported on the appropriate Discharge Monitoring Reports for entry into the EPA's Permit Compliance System Data Base. EPA New England does not consider reporting these requirements an unnecessary burden as the reporting of these constituents is required with the submission of each toxicity report (See Draft Permit, ATTACHMENT A, page A-8).

G. Sludge

Section 405(d) of the ACT requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on March 22, 1993. Domestic sludge which is land applied; disposed of in a surface disposal unit; or fired in a sewage sludge incinerator are subject to Part 503 technical and to State Env-Ws 800 standards. Part 503 regulations have a self-implementing

provision, however, the ACT requires implementation through permits. Domestic sludge which is disposed of in municipal solid waste landfills are in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 CFR Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA New England has included with the draft permit a 72-page Sludge Compliance Guidance document for use by the permittee in determining their appropriate sludge conditions for their chosen method of sludge disposal. The permittee is also required to submit to EPA and to NHDES-WD annually, on February 19th, an annual report containing the information specified in the Sludge Compliance Guidance Document for the permittee's chosen method of sludge disposal once that happens.

Troy's POTW is an aerated lagoon system. Lagoon system are designed to have their sludge removed about every 20 years. Troy's POTW came on-line in 1983. Even though its operation is reaching the twenty year point, the sludge in the lagoons has not accumulated to a depth where the secondary treatment process is impaired.

H. Industrial Users

The permittee is presently not required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR §§ 403 and 307 of the Act. However, the draft permit contains conditions that are necessary to allow EPA and NHDES-WD to ensure that pollutants from industrial users will not pass through the facility and cause water-quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility.

The permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharge to the facility from a primary industrial category (see 40 CFR §122 Appendix A for list) is planned or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the

permit. The permit also contains the requirements to: (1) report to EPA and NHDES-WD the name(s) of all Industrial Users subject to Categorical Pretreatment Standards (see 40 CFR §403 Appendix C as amended) pursuant to 40 CFR §403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443,446-447, 454-455, 457-461, 463-469, and 471 as amended) and/or New Hampshire Pretreatment Standards (ENV-Ws 904) who commence discharge to the POTW after the effective date of the finally issued permit, and (2) submit to EPA and NHDES-WD copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users.

I. Essential Fish Habitat and Endangered Species

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established a new requirement to describe and identify (designate) "essential fish habitat" (EFH) in each federal fishery management plan. Only species managed under a federal fishery management plan are covered. Fishery Management Councils determine which areas will be designated as EFH. The Councils have prepared written descriptions and maps of EFH, and include them in fishery management plans or their amendments. EFH designations for New England were approved by the Secretary of Commerce on March 3, 1999.

The 1996 Sustainable Fisheries Act broadly defined essential fish habitat as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical and biological properties. Substrate includes sediment, hard bottom, and structures underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. Spawning, breeding feeding, or growth to maturity covers all habitat types utilized by a species throughout its life cycle. Adversely affect means any impact which reduces the quality and/or quantity of EFH. Adverse affects may include direct (i.e. contamination; physical disruption), indirect (i.e. loss of prey), site specific or habitat wide impacts, including individual, cumulative or synergistic consequences of actions.

The Magnuson-Stevens Act requires all federal agencies to consult with National Marine Fisheries Service (NMFS) on all actions, proposed actions, permitted, funded, undertaken by the agency, that "may adversely affect any essential fish habitat." The Connecticut River and its tributaries, including the South Branch Ashuelot River, are designated EFH for Atlantic salmon (*Salmo salar*). According to the New Hampshire Fish and Game Department, approximately 367 rearing units (36,700 square meters) of juvenile salmon habitat exists in a stretch of the river starting approximately 1 mile downstream from the plant's outfall and extending downstream approximately 2.6 miles. The South Branch Ashuelot River has been stocked with salmon fry every year since 1998, as well as trout species, and some level of stocking effort is expected in the future. Moving upstream past the outfall, the river divides into a series of brooks and ponds within the Town of Troy. Atlantic salmon habitat has not been identified in areas upstream of the outfall. In addition to Atlantic salmon, an effort to restore spawning habitat and access for shad and blueback herring in the Ashuelot is also underway.

The conditions, limitations (including new numeric limits for chlorine), and monitoring requirements contained in this permit are designed to be protective of all sensitive aquatic species in the Ashuelot River. Accordingly, it is EPA's opinion that adverse impacts to Atlantic salmon EFH have been minimized to the

extent they are negligible. If adverse affects to EFH do occur as a result of this permit action, or if new information changes the basis for this conclusion, then NMFS will be notified and consultation will be re-initiated.

Endangered Species

The Endangered Species Act (16 USC 1451 et seq), Section 7, requires the EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (USFWS) and/or NMFS, as appropriate, that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species, or adversely affect its critical habitat. Based on information provided by USFWS and NMFS, there are no federally listed species present in the vicinity of this discharge.

According to the USFWS, there is an extant population of dwarf wedge mussel (*Alasmidonta heterodon*) in the South Branch Ashuelot River. The dwarf wedge mussel is federally listed as endangered. This population is limited to a stretch of river approximately 0.5 miles long in the Town of East Swanzey, New Hampshire which is approximately 5 miles downstream from the Troy Wastewater Treatment Plant outfall. According to USFWS, no other populations have been identified upstream of this site which tends to be poorly suited as dwarf wedge mussel habitat due to higher current velocities.

J. Additional Requirements and Conditions

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR §§§122.41(j), 122.44(i) and 122.48. Compliance monitoring frequencies for Flow, CBOD, TSS, pH, Escherichia coli, TRC and NH₃-N in the draft permit have been established in accordance with the EPA/NHDES-WD Effluent Monitoring Guidance mutually agreed upon and implemented in March 9, 1993. The effluent limitations for Ammonia (as N) in the draft permit are seasonal. Since ammonia is less deleterious to water quality the colder the water, it is appropriate to have both summer and winter limitations. The summer period is defined from May 1st to September 30th; with the winter period, then, from October 1st to April 30th. Based on the potential of phosphorous to contribute to eutrophication of the South Branch of the

Ashuelot, a reporting requirement for phosphorous was added to the draft permit. A report only requirement is appropriate at this juncture. Further data collection and study of the Ashuelot River is needed before a phosphorous limit, if any, can be determined. Again, since phosphorous contribution to eutrophication is temperature dependent, the reporting requirement is only for the summer period (May 1st -September 30th). WET test monitoring requirements have been set according to EPA - New England's Municipal Toxicity Policy.

It is the intent of EPA and NHDES-WD to establish minimum monitoring frequencies in all NPDES permits at permit modification and/or reissuance in accordance with this Effluent Monitoring Guidance. The draft permit contains changes to both the parameters sampled and sampling frequencies. These changes were required to bring those parameters and sampling frequencies into conformance with the Monitoring Guidance.

It should be noted all composite sampling for effluent was changed to grab sampling. Troy's WWTF is a lagoon system. A characteristic of a lagoon system is long retention times of the wastewater being process. There is typically little variability in the contents of a lagoon's effluent. Any changes to a lagoons effluent characteristically occur over a period of days or weeks. Grab sampling is then acceptable for monitoring a POTW's effluent content. (Composite sampling is needed when the POTW process provides shorter retention times. These shorter retention times, therefore, present an opportunity for more variability in the facility's discharger)

Federal regulations, 40 CFR §§133.102(a)(3)and §133.102(b)(3), requires the 30 day percent removal for BOD₅ and TSS to be not less than 85%. The historical approach in the New England Region has been to require POTWs to sample their influent using a flow proportional, composite sample twice per month. The concentration of BOD₅ and TSS in the influent samples are then mathematically compared to the monthly concentration average for BOD₅ and TSS in the facility's effluent. This comparison determines the percent removal for BOD₅ and TSS. Troy's WWTF influent composite sampler is in disrepair and needs to be replaced. Additionally, the influent pump station where the composite sampler is located is unreliable and needs to be redesigned and rebuilt. There are further major modifications which must be accomplished at the

Troy WWTF. A special condition has been included in the draft permit that gives Troy an eighteen month grace period before flow proportional, composite influent samples must be taken. In the interim, Troy will be allowed to gather a composite sample composed of at least six individual grab samples taken at regular time intervals. These samples may be taken during normal working hours, and have to be spaced minimally one hour apart. Each grab sample shall be added to the composite sample in its proportion to the total influent flow during the eight (minimal) hour sampling period.

All of the sample type and frequency changes are highlighted:

Parameter	Existing Permit		Draft Permit	
	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	Continuous		Continuous	
BOD ₅	Weekly	8-Hr Composite	Eliminated	Eliminated
CBOD			1/Week	Grab
Total Suspended Solids	Weekly	8-Hr Composite	1/Week	Grab
Settleable Solids	Daily	Grab	Eliminated	Eliminated
pH	Daily	Grab	Daily	Grab
Total Coliform	Weekly	Grab	Eliminated	Eliminated
<u>Escherichia coli</u>			3/Week	Grab
Total Residual Chlorine	Daily	Grab	1/Day	Grab
Ammonia as Nitrogen			2/Week	Grab

Total Phosphorous			1/Week	Grab
WET			1/3 Months	Grab

The remaining conditions of the permit are based on the NPDES regulations 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

V. Antidegradation

This draft permit is being reissued with wasteloads limitations more stringent than those in the existing permit and no change in the outfall location. Since the State of New Hampshire has indicated there will be no lowering of water quality and no loss of existing uses, no additional antidegradation review is warranted.

VI. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate NH Standards or waives its right to certify as set forth in 40 CFR §124.53.

Upon public noticing of the draft permit, EPA is formally requesting that the State's certifying authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

The NHDES-WD is the certifying authority. EPA has discussed this draft permit with the Staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the

Clean Water Act, Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issue, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The only exception to this is the sludge conditions/requirements implementing Section 405(d) of the CWA are not subject to the Section 401 State Certification requirements.

Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 CFR Part 124.

VII. Comment Period, Hearing Requests, and Procedures for Final Decisions.

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

**Brian Pitt, Team Leader
NPDES Permit Unit
U.S. Environmental Protection Agency
1 Congress Street
Suite 1100 (Mailcode CPE)
Boston, Massachusetts 02114-2023**

Any person, prior to such date, may submit a request in writing

for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issue proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston Office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the final permit decision, any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearing must satisfy the requirement of 40 CFR §124.74.

VIII. EPA Contact.

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

**John Paul King, Environmental Scientist
U.S. Environmental Protection Agency
1 Congress Street
Suite 1100 (Mailcode CPE)
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1295
FAX No.: (617) 918-1505**

Date Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Attachments: A- Site map not available electronically
B - Effluent Data Summary
C - Calculations - see separate file
D - Dilution

ATTACHMENT B
EFFLUENT CHARACTERISTICS AT OUTFALL 001

The following effluent characteristics were derived from analysis of discharge-monitoring data collected from Outfall 001 during the 37-month period, March 1999 through March 2002. All the data were extracted from the monthly Discharge Monitoring Reports submitted by the Troy Wastewater Treatment Plant. These effluent values characterize treated sanitary wastewaters discharged from this facility.

Effluent Characteristic	Average of Average Monthly	Maximum of Maximum Daily ¹
Flow (MGD)	0.096	0.270, 0.240, 0.210
pH (Standard Units)	--	5.09 to 8.40 ²
Total Coliform (Colonies/100 ml)	13.63	110, 110, 96
Total Chlorine Residual (mg/l)	0.29	3.80, 1.70, 1.70
TSS (lbs/day)	2.58	N/A
TSS (mg/l)	3.28	40.0, 13.0, 8.0
TSS (Percent Removal)	93.8	76.2 ³ , 86.1 ³ , 87.0 ³
BOD ₅ (lbs/day)	11.24	N/A
BOD ₅ (mg/l)	12.16	28.0, 26.0, 25.0
BOD ₅ (Percent Removal)	95.5	89.9 ³ , 91.7 ³ , 92.3 ³

1. More than one number represents the second and third highest values, except for pH.
2. Numbers listed are minimum and maximum daily readings.
3. Minimums of the Average Monthly values.

Attachment C

See Attached File for Calculations

ATTACHMENT D

Toxicity Strategy for Municipal Permits

	LOW RISK	HIGH RISK	MED-HIGH RISK	MED-LOW RISK
DILUTION FACTOR	<10:1		10.1-20:1	20.1-100:1
SAMPLING EVENTS PER YEAR	4(1/3 MONTHS)		4(1/3 MONTHS)	4(1/3 MONTHS)
TOXICITY TESTS:				
FRESH WATER	CHRONIC ¹		CHRONIC ¹	ACUTE
MARINE WATER	CHRONIC & ACUTE		CHRONIC & ACUTE	ACUTE
NUMBER OF SPECIES:				
FRESH WATER	2		2	2
MARINE WATER	3		3	2
PERMIT LIMITS	LC50=100% C-NOEC ² ≥RWC ³		LC50=100%	LC50=100%
TEST SPECIES:				
FRESH WATER	DAPHNID ¹ (<i>Ceriodaphnia dubia</i> or <i>Daphnia pulex</i>) FATHEAD MINNOW ¹ (<i>Pimephales promelas</i>)			DAPHNID (<i>Ceriodaphnia dubia</i> or <i>Daphnia pulex</i>) FATHEAD MINNOW (<i>Pimephales promelas</i>)
MARINE WATER	INLAND SILVERSIDE ¹ (<i>Menidia beryllina</i>) MYSID SHRIMP (<i>Mysidopsis bahia</i>) SEA URCHIN (<i>Arbacia punctulata</i>)			INLAND SILVERSIDE MYSID SHRIMP (<i>Mysidopsis bahia</i>)

1. 7-DAY CHRONIC/MODIFIED ACUTE.
2. C-NOEC IS CHRONIC NO OBSERVED EFFECT CONCENTRATION.
3. RWC IS RECEIVING WATER CONCENTRATION, IN PERCENT, AS DETERMINED FROM DIVIDING ONE BY THE DILUTION FACTOR ALL TIMES 100.