December 20, 2007

Mr. William Bowie
United Technologies - Pratt and Whitney
113 Wells Road
North Berwick, Maine 03906

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0022861
Maine Waste Discharge License (WDL) Application #W002749-5L-F-R
Final MEPDES Permit/WDL

Dear Mr. Bowie:

Enclosed, please find a copy of your **final** MEPDES permit and Maine WDL, which was approved by the Department of Environmental Protection. Please read the permit/license and its attached conditions carefully. You must follow the conditions in the order to satisfy the requirements of law. Any discharge not receiving adequate treatment is in violation of State law and is subject to enforcement action.

Any interested person aggrieved by a Department determination made pursuant to applicable regulations, may appeal the decision following the procedures described in the attached DEP FACT SHEET entitled "*Appealing a Commissioner's Licensing Decision*."

If you have any questions regarding the matter, please feel free to call me at 287-7659.

Sincerely,

Bill Hinkel
Division of Water Quality Management
Bureau of Land and Water Quality

Enc.

pc: Matt Hight, DEP
Lori Mitchell, DEP
Sandy Lao, USEPA
File #2749

IN THE MATTER OF

UNITED TECHNOLOGIES - PRATT AND WHITNEY	)	MAINE POLLUTANT DISCHARGE
NORTH BERWICK, YORK COUNTY	)	ELIMINATION SYSTEM PERMIT
INDUSTRIAL MANUFACTURING	)	AND
#ME0022861	)	WASTE DISCHARGE LICENSE
#W002749-5L-F-R **APPROVAL**	)	**RENEWAL**

Pursuant to the provisions of the *Federal Water Pollution Control Act*, Title 33 USC, §1251, *Conditions of licenses*, 38 M.R.S.A. § 414-A, and applicable regulations, the Department of Environmental Protection (Department) has considered the application of UNITED TECHNOLOGIES - PRATT AND WHITNEY (UTPW), with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

APPLICATION SUMMARY

UTPW has applied to the Department for the renewal of Waste Discharge License (WDL) #W002749-5L-E-R / Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0022861, which was issued on March 15, 2002, and expired on March 15, 2007. The 3/15/2002 MEPDES permit authorized the daily maximum discharge of up to 0.05 million gallons per day of treated process waste waters to the Great Works River, Class B, in North Berwick, Maine.

On April 10, 2006, the Department amended the 3/15/02 permit to incorporate the testing requirements of the *Surface Water Toxics Control Program*, 06-096 CMR 530 (effective October 9, 2005).

PERMIT SUMMARY

This permitting action is similar to the 3/15/2002 permitting action and 4/10/05 permit amendment in that it is:

1. Carrying forward the daily maximum discharge flow limitation of 0.05 MGD;

2. Carrying forward the daily maximum concentration limit for lead (total);

3. Carrying forward the monthly average and daily maximum concentration limits for nickel (total);

PERMIT SUMMARY (cont'd)

4. Carrying forward the daily maximum concentration limit for oil and grease (O&G);

5. Carrying forward the daily maximum pH range limitation of 6.0 – 9.0 standard units;

6. Carrying forward the seasonal monthly average and daily maximum concentration and mass limitations for total phosphorous (total-P);

7. Carrying forward the daily maximum concentration limit for total suspended solids (TSS);

8. Carrying forward the daily maximum concentration limit for total toxic organics (TTO);

9. Carrying forward the monthly average and daily maximum concentration limits for zinc (total);

10. Carrying forward the chronic no observed effect level (C-NOEL) limit of 2.9% for the water flea based on results of facility testing; and

11. Carrying forward the minimum monitoring frequency requirements for cadmium, copper, discharge flow, nickel, O&G, pH, and TSS.

This permitting action is different from the 3/15/2002 permitting action and 4/10/05 permit amendment in that it is:

1. Eliminating the monthly average concentration and mass limits for arsenic (total) based on the results of facility testing;

2. Establishing a daily maximum concentration reporting requirement for total arsenic;

3. Establishing monthly average concentration and mass limits for inorganic arsenic and a schedule of compliance (Special Condition J) for implementation of these limitations;

4. Establishing more stringent (than the previous limits) monthly average and daily maximum water quality-based concentration and mass limits for cadmium (total);

5. Eliminating the daily maximum concentration and mass limits for chromium (total) based on the 40 CFR Part 122.44 waiver provisions;

6. Establishing monthly average water quality-based concentration and mass limits for Bis (2-Ethylhexyl) Phthalate based on the results of facility testing;

7. Establishing more stringent (than the previous limits) monthly average and daily maximum water quality-based concentration and mass limits for copper (total);

8. Establishing monthly average and daily maximum concentration and mass limits for cyanide (total);

PERMIT SUMMARY (cont'd)

9. Establishing more stringent (than the previous limits) monthly average water quality-based concentration and mass limits and a daily maximum mass limit for lead (total);

10. Establishing more stringent (than the previous limits) monthly average and daily maximum water quality-based mass limits for nickel (total);

11. Establishing monthly average technology-based concentration and mass limits and a daily maximum mass limit for O&G;

12. Establishing a daily maximum effluent temperature limitation of 82.0˚Farenhiet;

13. Eliminating the weekly average and daily maximum thermal loading limits of 6.88×10^6 British Thermal Units/day;

14. Establishing a daily maximum mass limit and monthly average concentration and mass limits for TSS;

15. Establishing a daily maximum technology-based limit for TTO;

16. Establishing more stringent (than the previous limits) daily maximum and monthly average mass limits for zinc (total);

17. Establishing reduced surveillance level whole effluent toxicity (WET) testing for the brook trout and acute water flea;

18. Eliminating the 2.9% limit for the brook trout based on results of facility testing;

19. Establishing reduced surveillance level priority pollutant and analytical chemistry testing, excepting cadmium, chromium, copper, cyanide, lead, nickel, and zinc, which are otherwise limited in this permit;

20. Establishing Special Condition G, *Surface Water Toxics Control Program Statement for Reduced/Waived Toxics Testing*, for reduced surveillance level whole effluent toxicity (WET), priority pollutant, and analytical chemistry testing;

21. Establishing Special Condition H, *Monitoring Waiver for Certain Guideline-Listed Pollutants*;

22. Establishing Special Condition I, *Toxicity Reduction Evaluation (TRE)*, for an exceedence of arsenic and lead; and

23. Revising the minimum monitoring frequency requirements for lead, total-P, TTO, and zinc, and establishing a monitoring frequency for temperature.

CONCLUSIONS

BASED on the findings in the attached Fact Sheet dated December 20, 2007, and subject to the Conditions listed below, the Department makes the following conclusions:

1. The discharge, either by itself or in combination with other discharges, will not lower the quality of any classified body of water below such classification.

2. The discharge, either by itself or in combination with other discharges, will not lower the quality of any unclassified body of water below the classification which the Department expects to adopt in accordance with state law.

3. The provisions of the State's antidegradation policy, *Classification of Maine Waters*, 38 M.R.S.A. § 464(4)(F), will be met, in that:

   (a) Existing in-stream water uses and the level of water quality necessary to protect and maintain those existing uses will be maintained and protected;

   (b) Where high quality waters of the State constitute an outstanding national resource, that water quality will be maintained and protected;

   (c) The standards of classification of the receiving water body are met or, where the standards of classification of the receiving water body are not met, the discharge will not cause or contribute to the failure of the water body to meet the standards of classification;

   (d) Where the actual quality of any classified receiving water body exceeds the minimum standards of the next highest classification that higher water quality will be maintained and protected; and

   (e) Where a discharge will result in lowering the existing water quality of any water body, the Department has made the finding, following opportunity for public participation, that this action is necessary to achieve important economic or social benefits to the State.

4. The discharge will be subject to effluent limitations that require application of best practicable treatment as defined in 38 M.R.S.A. § 414-A(1)(D).

ACTION

THEREFORE, the Department APPROVES the above noted application of UNITED TECHNOLOGIES-PRATT AND WHITNEY to discharge a daily maximum of up to 0.05 million gallons per day (MGD) of treated process waste waters to the Great Works River, Class B, in North Berwick, Maine, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations including:

1. *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, copy attached.

2. The attached Special Conditions, including any effluent limitations and monitoring requirements.

3. The expiration date of this permit is five (5) years from the date of signature below.

DONE AND DATED AT AUGUSTA, MAINE, THIS 21st DAY OF December, 2007.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____
DAVID P. LITTELL, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: December 22, 2006
Date of application acceptance: December 28, 2006

Date filed with Board of Environmental Protection: _____.

This Order prepared by William F. Hinkel, BUREAU OF LAND & WATER QUALITY
#ME0022861 / #W002749-5L-F-R December 20, 2007

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. The permittee is authorized to discharge **treated process waste waters via Outfall #003** to the Great Works River at North Berwick. Such discharges shall be limited and monitored by the permittee as specified below[(1)]:

Effluent Characteristic	Discharge Limitations				Minimum Monitoring Requirements	
	Monthly Average as specified	**Daily Maximum** as specified	**Monthly Average** as specified	**Daily Maximum** as specified	**Measurement Frequency** as specified	**Sample Type** as specified
Flow ***[50050]***	---	0.05 MGD *[03]*	---	---	Continuous *[99/99]*	Recorder *[RC]*
Oil and Grease ***[00556]***	6.3 lbs./day *[26]*	6.3 lbs./day *[26]*	15 mg/L *[19]*	15 mg/L *[19]*	1/Month *[01/30]*	Grab *[GR]*
Temperature ***[00011]*** **June 1 - Sept 30**	---	---	---	82°F *[15]*	1/Day *[01/01]*	Measure *[MS]*
Total Suspended Solids ***[00530]***	6.3 lbs./day *[26]*	6.3 lbs./day *[26]*	15 mg/L *[19]*	15 mg/L *[19]*	1/Month *[01/30]*	24-Hour Composite *[24]*
pH ***[00400]***	---	---	---	6.0 – 9.0 SU *[12]*	1/Day *[01/01]*	Grab *[GR]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 9 through 13 of this permit for applicable footnotes.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

1. The permittee is authorized to discharge **treated process waste waters via Outfall #003** to the Great Works River at North Berwick. Such discharges shall be limited and monitored by the permittee as specified below[(1)] (cont'd):

Effluent Characteristic	Discharge Limitations				Minimum Monitoring Requirements	
	Monthly Average as specified	**Daily Maximum** as specified	**Monthly Average** as specified	**Daily Maximum** as specified	**Measurement Frequency** as specified	**Sample Type** as specified
Arsenic (Total) [(2)] ***[01002]*** *(Upon permit issuance)*	---	---	---	Report µg/L *[28]*	1/Quarter *[01/90]*	24-Hour Composite *[24]*
Arsenic (Inorganic) [(3)] ***[01252]*** *(Upon test method approval)*	0.38 lbs./day *[26]*	---	0.9 µg/L *[28]*	---	1/Quarter *[01/90]*	24-Hour Composite *[24]*
Bis (2-ethylhexyl) phthalate *[16770]*	0.025 lbs./day *[26]*	---	90.3 µg/L *[28]*	---	1/Month *[01/30]*	24-Hour Composite *[24]*
Cadmium (Total) ***[01027]***	0.00086 lbs./day *[26]*	0.0036 lbs./day *[26]*	3.1 µg/L *[28]*	13.9 µg/L *[28]*	1/Month *[01/30]*	24-Hour Composite *[24]*
Copper (Total) ***[01042]***	0.025 lbs./day *[26]*	0.028 lbs./day *[26]*	91 µg/L *[28]*	101 µg/L *[28]*	1/Month *[01/30]*	24-Hour Composite *[24]*
Cyanide (Total) ***[00720]***	0.06 lbs./day *[26]*	0.20 lbs./day *[26]*	201 µg/L *[28]*	726 µg/L *[28]*	1/Month *[01/30]*	Grab *[GR]*
Lead (Total) ***[01051]***	0.004 lbs./day *[26]*	0.10 lbs./day *[26]*	16 µg/L *[28]*	87 µg/L *[28]*	1/Month *[01/30]*	24-Hour Composite *[24]*
Nickel (Total) ***[01067]***	0.14 lbs./day *[26]*	1.1 lbs./day *[26]*	480 µg/L *[28]*	1,000 µg/L *[28]*	1/Month *[01/30]*	24-Hour Composite *[24]*
Phosphorous (Total) [(4)] ***[00665]*** **June 1 - Sept 30**	0.034 lbs./day *[26]*	0.10 lbs./day *[26]*	82 µg/L *[28]*	240 µg/L *[28]*	2/Month *[02/30]*	24-Hour Composite *[24]*
Total Toxic Organics[(5)] ***[78232]***	---	0.89 lbs./day *[26]*	---	2.13 mg/L *[19]*	1/Quarter *[01/90]*	24-Hour Composite /Grab *[24]*
Zinc (Total) ***[01092]***	0.33 lbs./day *[26]*	0.028 lbs./day *[26]*	250 µg/L *[28]*	250 µg/L *[28]*	1/Year *[01/YR]*	24-Hour Composite *[24]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 9 through 13 of this permit for applicable footnotes.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

SURVEILLANCE LEVEL **-** Beginning upon issuance and lasting until 12 months prior to permit expiration.

Effluent Characteristic	Discharge Limitations				Minimum Monitoring Requirements	
	Monthly Average	**Daily Maximum**	**Monthly Average**	**Daily Maximum**	**Measurement Frequency**	**Sample Type**
Whole Effluent Toxicity(6)						
Acute – NOEL						
Ceriodaphnia dubia (Water flea) *[TDA3B]*	---	---	---	Report % *[23]*	1/Year *[01/YR]*	Composite *[24]*
Salvelinus fontinalis (Brook trout) *[TDA6F]*	---	---	---	Report % *[23]*	1/2 Years *[01/2Y]*	Composite *[24]*
Chronic – NOEL						
Ceriodaphnia dubia (Water flea) *[TBP3B]*	---	---	---	2.9 % *[23]*	1/Year *[01/2Y]*	Composite *[24]*
Salvelinus fontinalis (Brook trout) *[TDA6F]*	---	---	---	Report % *[23]*	1/2 Years *[01/2Y]*	Composite *[24]*
Analytical Chemistry **(7)** *[51168]*	---	---	---	Report ug/L *[28]*	1/2 Years *[01/2Y]*	Composite/Grab *[24]*

SCREENING LEVEL **-** Beginning 12 months prior to permit expiration and lasting through permit expiration and every five years thereafter.

	Monthly Average	**Daily Maximum**	**Monthly Average**	**Daily Maximum**	**Measurement Frequency**	**Sample Type**
Whole Effluent Toxicity(6)						
Acute – NOEL						
Ceriodaphnia dubia (Water flea) *[TDA3B]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Salvelinus fontinalis (Brook trout) *[TDA6F]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Chronic – NOEL						
Ceriodaphnia dubia (Water flea) *[TBP3B]*	---	---	---	2.9 % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Salvelinus fontinalis (Brook trout) *[TDA6F]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Analytical Chemistry **(7)** *[51168]*	---	---	---	Report ug/L *[28]*	1/Quarter *[01/90]*	Composite/Grab *[24]*
Priority Pollutant **(8)** *[50008]*	---	---	---	Report ug/L *[28]*	1/Year *[01/YR]*	Composite/Grab *[24]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 9 through 13 of this permit for applicable footnotes.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

FOOTNOTES:

1. **Sampling** – All effluent monitoring shall be conducted at a location following the last treatment unit in the treatment process. Sampling and analysis must be conducted in accordance with: a) methods approved by 40 Code of Federal Regulations (CFR) Part 136; b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136; or c) as otherwise specified by the Department. Samples that are sent out for analysis shall be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services. Samples that are sent to a POTW licensed pursuant to *Waste discharge licenses,* 38 M.R.S.A. § 413 are subject to the provisions and restrictions of *Maine Comprehensive and Limited Environmental Laboratory Certification Rules*, 10-144 CMR 263 (last amended February 13, 2000).

   All detectable analytical test results shall be reported to the Department including results which are detected below the respective reporting limits (RLs) specified by the Department or as specified by other approved test methods. If a non-detect analytical test result is below the respective RL, the concentration result shall be reported as <Y where Y is the detection limit achieved by the laboratory for each respective parameter. Reporting a value of <Y that is greater than an established RL is not acceptable and will be rejected by the Department. For mass, if the analytical result is reported as <Y or if a detectable result is less than a RL, report a <X lbs/day, where X is the parameter specific limitation established in the permit.

2. **Arsenic (Total) – Beginning upon issuance of this permit modification and lasting through the date that the USEPA approves a test method for inorganic arsenic,** the permittee shall sample and analyze the discharge from the facility for total arsenic. The Department's most current reporting limit (RL) for total arsenic is 5 ug/L but may be subject to revision during the term of this permit. All detectable analytical test results shall be reported to the Department, including results which are detected below the Department's most current RL at the time of sampling and reporting. Only the detectable results greater than the total arsenic threshold of 1.8 ug/L (see page 33 of the Fact Sheet attached to this permit) or the Department's RL at the time (whichever is higher) will be considered as a possible exceedence of the inorganic limit. If a test result is determined to be a possible exceedence, the permittee shall submit a toxicity reduction evaluation (TRE) to the Department for review and approval within 45 days of receiving the test result of concern from the laboratory.

3. **Arsenic (Inorganic) –** The limitations and monitoring requirements for inorganic arsenic are not in effect until the USEPA approves of a test method for inorganic arsenic. See Special Condition J, *Schedule of Compliance – Inorganic Arsenic*, of this permit.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

FOOTNOTES:

4. **Total Phosphorous** – Total phosphorus monitoring shall be performed in accordance with Attachment A of this permit, *Protocol For Total Phosphorous Sample Collection and Analysis for Waste Water and Receiving Water Monitoring Required by Permits, Finalized April, 2008*, unless otherwise specified by the Department.

5. **Total Toxic Organics (TTO) –** The term TTO is the summation of all quantifiable values greater than 0.01 mg/L for the toxics organics specified at 40 CFR Part 433.11(e). In lieu of requiring monitoring for TTO, the permittee may make the following certification statement: "Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation [or pretreatment standard] for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing of the last discharge monitoring report. I further certify that this facility is implementing the toxic organic management plan submitted to the permitting [or control] authority." This statement is to be included as a "comment" on the Discharge Monitoring Report once per calendar quarter. If monitoring is necessary to measure compliance with the TTO standard, the permittee need analyze for only those pollutants which would reasonably be expected to be present.

   In requesting the certification alternative, the permittee shall submit a solvent management plan that specifies to the satisfaction of the Department the toxic organic compounds used; the method of disposal used instead of dumping, such as reclamation, contract hauling, or incineration; and procedures for ensuring that toxic organics do not routinely spill or leak into the wastewater. Once a plan is submitted to the Department for approval, the approved terms and conditions are enforceable.

6. **Whole Effluent Toxicity (WET)** – Definitive WET testing is a multi-concentration testing event (a minimum of five dilutions bracketing the critical acute and chronic thresholds of 3.4% and 2.9% respectively), which provides a point estimate of toxicity in terms of No Observed Effect Level, commonly referred to as NOEL or NOEC. A-NOEL is defined as the acute no observed effect level with survival as the end point. C-NOEL is defined as the chronic no observed effect level with survival, reproduction and growth as the end points. The critical acute and chronic thresholds were derived as the mathematical inverse of the applicable acute and chronic dilution factors of 29:1 and 34:1, respectively.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

FOOTNOTES:

a. **Surveillance level testing** – Beginning upon issuance of this permit and lasting through twelve months prior to permit expiration, the permittee shall initiate surveillance level WET testing at a minimum frequency of once per year for the water flea (*Ceriodaphnia dubia*) and once every two years (reduced testing) for the brook trout (*Salvelinus fontinalis*). Tests shall be conducted in a different calendar quarter each year.

b. **Screening level testing** – Beginning 12 months prior to permit expiration and lasting through permit expiration and every five years thereafter, the permittee shall conduct screening level WET testing at a minimum frequency of twice per year (2/Year) for both species. There shall be at least six (6) months between testing events. Acute and chronic tests shall be conducted on the water flea (*Ceriodaphnia dubia*) and the brook trout (*Salvelinus fontinalis*).

WET test results must be submitted to the Department not later than the next Discharge Monitoring Report (DMR) required by the permit, provided, however, that the permittee may review the toxicity reports for up to 10 business days of their availability before submitting them. The permittee shall evaluate test results being submitted and identify to the Department possible exceedences of the critical acute and chronic water quality thresholds of 3.4% and 2.9%, respectively.

Toxicity tests must be conducted by an experienced laboratory approved by the Department. The laboratory must follow procedures as described in the following USEPA methods manuals.

a. Short Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms, Fourth Edition, October 2002, EPA-821-R-02-013.

b. Methods for Measuring the Acute Toxicity of Effluent and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, October 2002, EPA-821-R-02-012.

Results of WET tests shall be reported on the "Whole Effluent Toxicity Report Fresh Waters" form included as Attachment B of this permit each time a WET test is performed. **The permittee is required to analyze the effluent for the nine (9) analytical chemistry parameters specified on the "WET and Chemical Specific Data Report Form" form included as Attachment C of this permit each time a WET test is performed.**

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

FOOTNOTES:

7. **Analytical chemistry** – Pursuant to 06-096 CMR 530(2)(C)(4), analytical chemistry refers to a suite of thirteen (13) chemical tests that consist of: ammonia nitrogen (as N), total aluminum, total arsenic, total cadmium, total chromium, total copper, total cyanide, total hardness, total lead, total nickel, total silver, total zinc and total residual chlorine, unless otherwise specified in this permit for individual pollutants.

   a. **Surveillance level testing** – Beginning upon permit issuance and lasting until 12 months prior to permit expiration, the permittee shall conduct analytical chemistry testing at a minimum frequency of once every other year (1/2 Years). Tests are to be conducted in a different calendar quarter of each year.

   b. **Screening level testing** – Beginning 12 months prior to permit expiration and every five years thereafter, the permittee shall conduct analytical chemistry testing at a minimum frequency of once per calendar quarter (1/Quarter) for four consecutive calendar quarters.

      It is noted that Special Condition A 1. of this permit establishes separate limitations and more frequent monitoring requirements for cadmium, copper, cyanide, lead, nickel, and zinc.

8. **Priority pollutant testing** – Priority pollutants are those parameters specified at *Effluent Guidelines and Standards*, 06-096 CMR 525(4)(IV) (effective January 12, 2001).

   a. **Screening level testing** - Beginning 12 months prior to permit expiration and lasting through permit expiration and every five years thereafter, the permittee shall conduct screening level priority pollutant testing at a minimum frequency of once per year (1/Year).

   Surveillance level testing is not required pursuant to 06-096 CMR 530.

   Priority pollutant and analytical chemistry testing shall be conducted on samples collected at the same time as those collected for whole effluent toxicity tests when applicable. Priority pollutant and analytical chemistry testing shall be conducted using methods that permit detection of a pollutant at existing levels in the effluent or that achieve minimum reporting levels of detection as specified by the Department.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

FOOTNOTES:

Test results must be submitted to the Department not later than the next Discharge Monitoring Report (DMR) required by the permit, provided, however, that the permittee may review the toxicity reports for up to 10 business days of their availability before submitting them. The permittee shall evaluate test results being submitted and identify to the Department, possible exceedences of the acute, chronic or human health AWQC as established in *Surface Water Quality Criteria for Toxic Pollutants*, 06-096 CMR 584 (effective October 9, 2005). For the purposes of DMR reporting, enter a "1" for yes, testing done this monitoring period or "NODI-9" monitoring not required this period.

All mercury sampling required to determine compliance with interim limitations established pursuant to *Interim Effluent Limitations and Controls for the Discharge of Mercury*, 06-096 CMR 519 (last amended October 6, 2001), shall be conducted in accordance with EPA's "clean sampling techniques" found in EPA Method 1669, Sampling Ambient Water For Trace Metals At EPA Water Quality Criteria Levels. All mercury analysis shall be conducted in accordance with EPA Method 1631, Determination of Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Fluorescence Spectrometry.

B. NARRATIVE EFFLUENT LIMITATIONS

1. The effluent shall not contain a visible oil sheen, foam or floating solids at any time which would impair the usages designated by the classification of the receiving waters.

2. The effluent shall not contain materials in concentrations or combinations which are hazardous or toxic to aquatic life, or which would impair the usages designated by the classification of the receiving waters.

3. The discharge shall not cause visible discoloration or turbidity in the receiving waters, which would impair the usages designated by the classification of the receiving waters.

4. Notwithstanding specific conditions of this permit the effluent must not lower the quality of any classified body of water below such classification, or lower the existing quality of any body of water if the existing quality is higher than the classification.

SPECIAL CONDITIONS

C. AUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with: 1) the permittee's General Application for Waste Discharge Permit, accepted for processing on December 28, 2006; 2) the terms and conditions of this permit; and 3) only from Outfall #001A. Discharges of wastewater from any other point source are not authorized under this permit, and shall be reported in accordance with Standard Condition B(5), *Bypasses*, of this permit.

D. NOTIFICATION REQUIREMENTS

In accordance with Standard Condition D, the permittee shall notify the Department of the following:

1. Any substantial change in the volume or character of pollutants being introduced into the waste water collection and treatment system by a source introducing pollutants to the system at the time of permit issuance.

2. For the purposes of this section, adequate notice shall include information on:

   a. The quality and quantity of waste water introduced to the waste water collection and treatment system; and

   b. Any anticipated impact of the change in the quantity or quality of the waste water to be discharged from the treatment system.

F. MONITORING AND REPORTING

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report (DMR) forms provided by the Department and **postmarked on or before the thirteenth (13th) day of the month or hand-delivered to the Department's Regional Office such that the DMR's are received by the Department on or before the fifteenth (15th) day of the month** following the completed reporting period. A signed copy of the DMR and all other reports required herein shall be submitted to the Department assigned inspector (unless otherwise specified by the Department) at the following address:

Department of Environmental Protection
Southern Maine Regional Office
Bureau of Land and Water Quality
Division of Water Quality Management
312 Canco Road
Portland, Maine 04103

SPECIAL CONDITIONS

G. SURFACE WATER TOXICS CONTROL PROGRAM STATEMENT FOR REDUCED/WAIVED TOXICS TESTING

On or before December 31st of each year of the effective term of this permit ***[PCS Code 95799]***, the permittee shall provide the Department with statements describing the following:

(a) Changes in the number or types of non-domestic wastes contributed directly or indirectly to the wastewater treatment works that may increase the toxicity of the discharge;

(b) Changes in the operation of the treatment works that may increase the toxicity of the discharge; and

(c) Changes in industrial manufacturing processes contributing wastewater to the treatment works that may increase the toxicity of the discharge.

Further, the Department may require that annual testing be re-instituted if it determines that there have been changes in the character of the discharge or if annual certifications described above are not submitted.

H. MONITORING WAIVER FOR CERTAIN GUIDELINE-LISTED POLLUTANTS

Pursuant to 40 CFR Part 122.44, this permit provides a waiver from monitoring for chromium and silver, which are listed in the effluent guideline limitations at 40 CFR Part 433.13, except as required for analytical chemistry and priority pollutant testing established in this permit. **On or before December 31st of each year** of the effective term of this permit ***[PCS Code 95799]***, the permittee shall provide the Department with statements describing the following:

(a) Changes in the number or types of wastes contributed directly or indirectly to the wastewater treatment works that may increase the presence of chromium or silver in the discharge;

(b) Changes in the operation of the treatment works that may increase the presence of chromium or silver in the discharge; and

(c) Changes in industrial manufacturing processes contributing wastewater to the treatment works that may increase the presence of chromium or silver the discharge.

Further, the Department may require that routine testing for chromium and silver be re-instituted if it determines that there have been changes in the character of the discharge, if annual certifications described above are not submitted, or if chromium or silver testing required to fulfill the analytical chemistry or priority pollutant testing requirements established in this permit demonstrates effluent levels for those pollutants above the Department's minimum reporting level.

SPECIAL CONDITIONS

I. TOXICITY REDUCTION EVALUATION (TRE)

Within forty-five (45) days of the effective date of this permit, *[PCS code 02199]* the permittee shall submit to the Department for review and approval, a TRE plan which outlines a strategy to identify the source(s) and action items to be implemented to mitigate or eliminate exceedences of ambient water quality criteria associated with arsenic and lead. Upon approving the permittee's TRE for arsenic, the Department reserves the right to reopen this permit in accordance with Special Condition L and *Waste Discharge License Conditions,* 06-096 CMR 523(7)(3) (effective January 12, 2001), to establish interim compliance dates for arsenic.

J. SCHEDULE OF COMPLIANCE – INORGANIC ARSENIC

Beginning upon issuance of this permit modification and lasting through a date on which the USEPA approves a test method for inorganic arsenic, the limitations and monitoring requirements for inorganic are not in effect. During this time frame, the permittee is required by Special Condition A, *Effluent Limitations and Monitoring Requirements*, of this permit to conduct 1/Quarter sampling and analysis for total arsenic.

Upon receiving written notification by the Department that a test method for inorganic arsenic has been approved by the USEPA, the limitations and monitoring requirements for inorganic arsenic become effective and enforceable and the permittee is relieved of their obligation to sample and analyze for total arsenic.

K. OPERATIONS AND MAINTENANCE (O&M) PLAN

This facility shall have a current written comprehensive Operation & Maintenance (O&M) Plan. The plan shall provide a systematic approach by which the permittee shall at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit.

By December 31 of each year, **or within 90 days of any process changes or minor equipment upgrades,** the permittee shall evaluate and modify the O&M Plan including site plan(s) and schematic(s) for the waste water treatment facility to ensure that it is up-to-date. The O&M Plan shall be kept on-site at all times and made available to Department and EPA personnel upon request.

Within 90 days of completion of new and or substantial upgrades of the waste water treatment facility, the permittee shall submit the updated O&M Plan to their Department inspector for review and comment.

SPECIAL CONDITIONS

L. REOPENING OF PERMIT FOR MODIFICATION

Upon evaluation of the tests results in the Special Conditions of this permitting action, new site specific information, or any other pertinent test results or information obtained during the term of this permit, the Department may, at anytime and with notice to the permittee, modify this permit to: (1) include effluent limits necessary to control specific pollutants or whole effluent toxicity where there is a reasonable potential that the effluent may cause water quality criteria to be exceeded: (2) require additional monitoring if results on file are inconclusive; or (3) change monitoring requirements or limitations based on new information.

M. SEVERABILITY

In the event that any provision, or part thereof, of this permit is declared to be unlawful by a reviewing court, the remainder of the permit shall remain in full force and effect, and shall be construed and enforced in all aspects as if such unlawful provision, or part thereof, had been omitted, unless otherwise ordered by the court.

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

DATE: **DECEMBER 20, 2007**

PERMIT NUMBER: **#ME0022861**
WASTE DISCHARGE LICENSE: **#W002749-5L-F-R**

NAME AND ADDRESS OF APPLICANT:

UNITED TECHNOLOGIES - PRATT AND WHITNEY
113 WELLS ROAD
NORTH BERWICK, MAINE 03906

Section 1.01 COUNTY: **YORK**

NAME AND ADDRESS WHERE DISCHARGE(S) OCCUR(S):

UNITED TECHNOLOGIES - PRATT AND WHITNEY
113 WELLS ROAD
NORTH BERWICK, MAINE 03906

RECEIVING WATER/CLASSIFICATION: **GREAT WORKS RIVER/CLASS B**

COGNIZANT OFFICIAL AND TELEPHONE NUMBER: **MR. WILLIAM BOWIE**
(207) 676-4100

1. APPLICATION SUMMARY

Application: United Technologies - Pratt and Whitney (UTPW) has applied to the Department of Environmental Protection (Department) for the renewal of Waste Discharge License (WDL) #W002749-5L-E-R / Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0022861, which was issued on March 15, 2002, and expired on March 15, 2007. The 3/15/2002 MEPDES permit authorized the daily maximum discharge of up to 0.05 million gallons per day of treated process waste waters to the Great Works River, Class B, in North Berwick, Maine.

On April 10, 2006, the Department amended the 3/15/02 permit to incorporate the testing requirements of the *Surface Water Toxics Control Program*, 06-096 CMR 530 (effective October 9, 2005).

2. PERMIT SUMMARY

a. Terms and Conditions: **This permitting action is similar to the 3/15/02 permitting action and 4/10/05 permit amendment in that it is:**

1. Carrying forward the daily maximum discharge flow limitation of 0.05 MGD;

2. Carrying forward the daily maximum concentration limit for lead (total);

3. Carrying forward the monthly average and daily maximum concentration limits for nickel (total);

4. Carrying forward the daily maximum concentration limit for oil and grease (O&G);

5. Carrying forward the daily maximum pH range limitation of 6.0 – 9.0 standard units;

6. Carrying forward the seasonal monthly average and daily maximum concentration and mass limitations for total phosphorous (total-P);

7. Carrying forward the daily maximum concentration limit for total suspended solids (TSS);

8. Carrying forward the daily maximum concentration limit for total toxic organics (TTO);

9. Carrying forward the monthly average and daily maximum concentration limits for zinc (total);

10. Carrying forward the chronic no observed effect level (C-NOEL) limit of 2.9% for the water flea based on results of facility testing; and

11. Carrying forward the minimum monitoring frequency requirements for cadmium, copper, discharge flow, nickel, O&G, pH, and TSS.

This permitting action is different from the 3/15/2002 permitting action and 4/10/05 permit amendment in that it is:

1. Eliminating the monthly average concentration and mass limits for arsenic (total);

2. Establishing a daily maximum concentration reporting requirement for total arsenic;

3. Establishing monthly average concentration and mass limits for inorganic arsenic and a schedule of compliance (Special Condition J) for implementation of these limitations;

4. Establishing more stringent (than the previous limits) monthly average and daily maximum water quality-based concentration and mass limits for cadmium (total);

5. Eliminating the daily maximum concentration and mass limits for chromium (total) based on the 40 CFR Part 122.44 waiver provisions;

2. PERMIT SUMMARY (cont'd)

6. Establishing monthly average water quality-based concentration and mass limits for Bis (2-Ethylhexyl) Phthalate based on the results of facility testing;

7. Establishing more stringent (than the previous limits) monthly average and daily maximum water quality-based concentration and mass limits for copper (total);

8. Establishing monthly average and daily maximum concentration and mass limits for cyanide (total);

9. Establishing more stringent (than the previous limits) monthly average water quality-based concentration and mass limits and a daily maximum mass limit for lead (total);

10. Establishing more stringent (than the previous limits) monthly average and daily maximum water quality-based mass limits for nickel (total);

11. Establishing monthly average technology-based concentration and mass limits and a daily maximum mass limit for O&G;

12. Establishing a daily maximum effluent temperature limitation of 82.0˚Farenhiet;

13. Eliminating the weekly average and daily maximum thermal loading limits of 6.88×10^6 British Thermal Units/day;

14. Establishing a daily maximum mass limit and monthly average concentration and mass limits for TSS;

15. Establishing a daily maximum technology-based limit for TTO;

16. Establishing more stringent (than the previous limits) daily maximum and monthly average mass limits for zinc (total);

17. Establishing reduced surveillance level whole effluent toxicity (WET) testing for the brook trout and acute water flea;

18. Eliminating the 2.9% limit for the brook trout based on results of facility testing;

19. Establishing reduced surveillance level priority pollutant and analytical chemistry testing, excepting cadmium, chromium, copper, cyanide, lead, nickel, and zinc, which are otherwise limited in this permit;

20. Establishing Special Condition G, *Surface Waters Toxics Control Program Statement for Reduced Toxics Testing*, for reduced surveillance level whole effluent toxicity (WET), priority pollutant, and analytical chemistry testing;

21. Establishing Special Condition H, *Monitoring Waiver for Certain Guideline-Listed Pollutants*;

2. PERMIT SUMMARY (cont'd)

22. Establishing Special Condition I, *Toxicity Reduction Evaluation (TRE)*, for an exceedence of arsenic and lead; and

23. Revising the minimum monitoring frequency requirements for lead, total-P, TTO, and zinc, and establishing a monitoring frequency for temperature.

b. History: This section provides a summary of significant licensing/permitting actions and milestones that have been completed for UTPW. Additional history is documented in the fact sheet of WDL #W002749-5L-E-R.

February 7, 1997 – The U.S. Environmental Protection Agency (USEPA) issued a modification of National Pollutant Discharge Elimination System (NPDES) permit #ME0022861, which was issued on June 12, 1992 and subsequently modified on September 6, 1994. The 2/7/1997 and 9/6/1994 NPDES permit modifications and 6/12/1992 permit superseded the previous NPDES permit issued on January 31, 1997.

May 25, 2000 – Pursuant to *Certain deposits and discharges prohibited*, 38 M.R.S.A. § 420 and *Waste discharge licenses*, 38 M.R.S.A. § 413 and *Interim Effluent Limitations and Controls for the Discharge of Mercury*, 06-096 CMR 519 (last amended October 6, 2001), the Department issued a *Notice of Interim Limits for the Discharge of Mercury* to the permittee thereby administratively modifying WDL #W002749-42-B-R (and modifications thereof) by establishing interim monthly average and daily maximum effluent concentration limits of 4.5 parts per trillion (ppt) and 6.8 ppt, respectively, and a minimum monitoring frequency requirement of four (4) tests per year for mercury. It is noted the limitations have not been incorporated into Special Condition A, *Effluent Limitations And Monitoring Requirements*, of this permit as limitations and monitoring frequencies are regulated separately through 38 M.R.S.A. § 413 and 06-096 CMR 519. However, the interim limitations remain in effect and enforceable and any modifications to the limits and or monitoring requirements will be formalized outside of this permitting document.

January 12, 2001 – The Department received authorization from the USEPA to administer the NPDES permit program in Maine, excluding areas of special interest to Maine Indian Tribes. From that point forward, the program has been referred to as the Maine Pollutant Discharge Elimination System (MEPDES) program and MEPDES permit #ME0022861 has been utilized as the primary reference number for this facility.

March 15, 2002 – The Department issued WDL #W002749-5L-E-R / MEPDES Permit #ME0022861 for the discharge of treated process waste waters for a five-year term. The 3/15/2002 WDL/MEPDES permit superseded WDL Modification #W002749-42-D-M issued on April 4, 1996, WDL Modification #W002749-42-C-M issued on August 22, 1994, and WDL #W002749-42-B-R issued on September 10, 1993.

2. PERMIT SUMMARY (cont'd)

October 26, 2005 – UTPW submitted to the Department, for review and acceptance, a Notice of Intent (NOI) to Comply with the Maine Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activity. The NOI was accepted and assigned #MER05B446.

April 10, 2006 – The Department amended the 3/15/2002 MEPDES permit to incorporate testing requirements of 06-096 CMR 530 (the toxics rule).

December 22, 2006 – UTPW submitted a timely and complete General Application to the Department for renewal of the 3/15/2002 MEPDES permit. The application was accepted for processing on December 28, 2006 and was assigned WDL #W002749-5L-F-R / MEPDES #ME0022861.

c. Source Description: The UTPW facility located in North Berwick, Maine, manufactures turbo fan jet engine components for military and commercial use. A map created by the Department showing the location of the facility and receiving waters in included as Attachment A of this fact sheet. Production at the facility includes raw casting and stamping of parts, surface treatment including acid and alkali cleaning baths as well as nickel electroplating. Additional processes include de-burring, air scrubbing, pickling and stripping, grinding, milling, etching and painting. Average daily flows for the process waste waters discharged to the Great Works River via Outfall #003 have been approximately 32,000 gallons per day (gpd). UTPW identified a total of 32 waste streams contributing to discharges via Outfall #003 on "Figure A: Water Balance" included with UTPW's 12/28/2006 general application. A copy of the water balance is included as Attachment B of this fact sheet. The UTPW facility maintains coverage for storm water discharges associated with industrial activity under Multi-Sector General Permit #MER05B446 approved by the Department on October 26, 2005.

d. Wastewater Treatment: Dilute process waste waters from the manufacturing operation are pumped to two tanks for the purposes of equalization. An in-line chemical metering system injects an anionic polymer into the waste waters as it is pumped to a rapid mix tank. In the mix tank, sodium hydroxide is added as necessary for pH adjustment and aluminum sulfate is added to promote phosphorus removal.

From the rapid mix tanks, waste waters are pumped to a floc tank where polymer is added to facilitate flocculation of metals and other pollutants. From the floc tank, waste waters are conveyed to a clarifier (201,000 gallons) where flocculated particles are allowed to settle for removal. The sludge from the clarifier is pumped to another tank for thickening, then placed in a plate and frame filter press for de-watering. The de-watered sludge is dried and disposed of off-site as a hazardous material.

The supernatant from the clarifier is pumped to a basin then to three multi-media pressure filters for further polishing. The polished waste water is then pumped to a storage tank for discharge to the Great Works River via Outfall #003 or recycled back into the manufacturing process as make-up water for the electroplating operations or used as air scrubber water in the facilities on-site hazardous waste neutralization system.

2. PERMIT SUMMARY (cont'd)

A process flow schematic included with UTPW's 12/28/06 general application is included as Attachment C of this fact sheet.

All sanitary waste waters generated at the facility are conveyed to the North Berwick Sanitary District's waste water treatment facility. The MEPDES permit number associated with that facility is ME0101885.

Final effluent is conveyed for discharge to the Great Works River via Outfall #003. The outfall extends out into the middle of the channel of the river (approximately 300 feet downstream of the confluence with the West River) and the end of the pipe is fitted with a diffuser. The diffuser consists of a polyvinylchloride (PVC) pipe measuring 8-inches in diameter with twenty (20) equally-spaced, 1.5-inch diameter ports to enhance mixing of the effluent with the receiving waters. The Department has determined that the discharge receives rapid and complete mixing with the receiving water.

3. CONDITIONS OF PERMIT

Conditions of licenses, 38 M.R.S.A. § 414-A, requires that the effluent limitations prescribed for discharges, including, but not limited to, effluent toxicity, require application of best practicable treatment (BPT), be consistent with the U.S. Clean Water Act, and ensure that the receiving waters attain the State water quality standards as described in Maine's Surface Water Classification System. In addition, 38 M.R.S.A., § 420 and 06-096 CMR 530 require the regulation of toxic substances not to exceed levels set forth in *Surface Water Quality Criteria for Toxic Pollutants,* 06-096 CMR 584 (effective October 9, 2005), and that ensure safe levels for the discharge of toxic pollutants such that existing and designated uses of surface waters are maintained and protected.

4. RECEIVING WATER QUALITY STANDARDS

Classification of major river basins, 38 M.R.S.A § 467(16)(B) classifies tributaries of Salmon Falls River which are not otherwise classified, which includes the Great Works River at the point of discharge, as Class B waters. *Standards for classification of fresh surface waters,* 38 M.R.S.A. § 465(4) describes the standards for Class B waters.

5. RECEIVING WATER QUALITY CONDITIONS

The State of Maine 2004 Integrated Water Quality Monitoring and Assessment Report, prepared by the Department pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act, lists a 137.3-mile segment size of the Great Works River, main stem, above Route 9 bridge in North Berwick, and all tributaries, (Hydrologic Unit Code #ME0106000304 / Waterbody ID #625R) as, *"Category 2: Rivers and Streams Attaining Some Designated Uses – Insufficient Information for Other Uses."*

The Report lists all of Maine's fresh waters as, *"Category 4-B-3: Waters Impaired by Atmospheric Deposition of Mercury. Regional or National TMDL may be Required."* Impairment in this context refers to a statewide fish consumption advisory due to elevated levels of mercury in some fish tissues. The Report states, "the impairment is presumed to be

5. RECEIVING WATER QUALITY CONDITIONS (cont'd)

from atmospheric contamination and deposition. The advisory is based on probability data that a stream, river, or lake may contain some fish that exceed the advisory action level. Any freshwater may contain both contaminated and uncontaminated fish depending on size, age and species occurrence in that water." Pursuant to 38 M.R.S.A. § 420(1-B)(B), "a facility is not in violation of the ambient criteria for mercury if the facility is in compliance with an interim discharge limit established by the Department pursuant to section 413 subsection 11." The Department has established interim monthly average and daily maximum mercury concentration limits for this facility.

The Department has no information at this time that the discharge from UTPW causes or contributes to the failure of the receiving water to meet the designated uses of its ascribed classification.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS

a. Applicability of National Effluent Guideline Limitations: The USEPA has promulgated best practicable treatment (BPT)-based effluent limitations for the Metal Finishing Point Source Category at 40 Code of Federal Regulations (CFR) Part 433.13, which are applicable to the discharge from UTPW. The effluent guidelines regulates the following parameters: cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, total toxic organics, oil and grease, total suspended solids, and pH.

b. Flow: The previous permitting action established a daily maximum discharge flow limitation of 0.05 million gallons (MGD) (50,000 gallons per day) of treated process waste waters via Outfall #003, which is being carried forward in this permitting action as it remains representative of facility flows.

A review of the daily maximum flow data as reported on the Discharge Monitoring Reports submitted to the Department for the period January 2003 – October 2006 (number of DMRs = 42) indicates discharge flow has ranged from 0.028 MGD to 0.049 MGD with an arithmetic mean of 0.038 MGD.

c. Dilution Factors: Dilution factors associated with the permitted discharge flow of 0.05 MGD from the facility were derived in accordance with 06-096 CMR 530(4)(A) and were calculated as follows:

Acute: 1Q10 = 2.16 cfs $\Rightarrow \frac{(2.16 \text{ cfs})(0.6464) + (0.05 \text{ MGD})}{(0.05 \text{ MGD})} = 29:1$

Chronic: 7Q10 = 2.55 cfs $\Rightarrow \frac{(2.55 \text{ cfs})(0.6464) + (0.05 \text{ MGD})}{(0.05 \text{ MGD})} = 34:1$

Harmonic Mean[1]: = 7.65 cfs $\Rightarrow \frac{(7.65 \text{ cfs})(0.6464) + (0.05 \text{ MGD})}{(0.05 \text{ MGD})} = 100:1$

[1] Pursuant to 06-096 CMR 530(4)(a)(2)(c), the harmonic mean dilution factor is approximated by multiplying the 7Q10 flow by a factor of three (3).

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

06-096 CMR 530(4)(B)(1) states,

> *Analyses using numerical acute criteria for aquatic life must be based on 1/4 of the 1Q10 stream design flow to prevent substantial acute toxicity within any mixing zone and to ensure a zone of passage of at least 3/4 of the cross-sectional area of any stream as required by Chapter 581. Where it can be demonstrated that a discharge achieves rapid and complete mixing with the receiving water by way of an efficient diffuser or other effective method, analyses may use a greater proportion of the stream design flow, up to and including all of it, as long as the required zone of passage is maintained.*

The Department's Division of Environmental Assessment has determined that the discharge from UTPW achieves complete and rapid mixing with the receiving waters; therefore, the Department is utilizing the entire 1Q10 stream design flow in acute evaluations.

d. Temperature: The previous permitting action established weekly average and daily maximum thermal loading limits of 6.88×10^6 British Thermal Units (BTUs) per day to ensure that the discharge conformed to the requirements of Department rule Chapter 582, *Regulations Relating to Temperature*. *Regulations Relating To Temperature*, 06-096 CMR 582 (last amended February 18, 1989) limits thermal discharges to an in-stream temperature increase (ΔT) of 0.5°F above the ambient receiving water temperature when the weekly average temperature of the receiving water is greater than or equal to 66° F or when the daily maximum temperature is greater than or equal to 73° F. The temperature thresholds are based on EPA water quality criterion for the protection of brook trout and Atlantic salmon. The weekly average temperature of 66°F was derived to protect for normal growth of the brook trout and the daily maximum threshold temperature of 73° F protects for the survival of juveniles and adult Atlantic salmon during the summer months. The Department interprets the term "weekly average temperature" to mean a seven (7) day rolling average. To promote consistency, the Department also interprets the ΔT of 0.5° F as a weekly rolling average criterion when the receiving water temperature is $\geq$66° F and <73° F.

The assimilative capacity of the Great Works River (thermal load that would cause the stream to increase by 0.5°F) at the 7Q10 stream design flow of 2.55 cfs can be calculated as follows:

$$(2.55 \text{ cfs})(0.6464)(0.5°\text{F})(8.34 \text{ lbs./gallon})(10^6 \text{ gallons}) = 6.9 \times 10^6 \text{ BTU/day}$$

A review of the daily maximum thermal discharge data as reported on the Discharge Monitoring Reports submitted to the Department for the period of June 2003 – September 2005 (months of June-September only) (n=12) indicates thermal loading has ranged from 0.16×10^6 BTU/day to 3.19×10^6 BTU/day with an arithmetic mean of 1.48×10^6 BTU/day. The previous permit did not require effluent temperature monitoring and reporting in terms of degrees Fahrenheit.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

The maximum effluent temperature discharge (X°F) that at the full permitted flow rate of 0.05 MGD will, by itself, comply with the weekly rolling average limit of 0.5 °F (when the receiving water is ≤66°F and <73°F) and not exceed the assimilative capacity of the Great Works River (6.9×10^6 BTU/day) may be calculated as follows:

$$(0.05 \text{ MGD})(X^oF - 66^oF)(8.34 \text{ lbs/gal}) = 6.9 \times 10^6 \text{ BTU/day}$$
$$X = 82.5^oF$$

When the receiving water is >73°F, the temperature difference of 0.5°F is a daily maximum limit. The maximum effluent temperature discharge (X°F) that at the full permitted flow rate of 0.05 MGD will, by itself, comply with the daily criteria established in Department rule Chapter 582 and not exceed the assimilative capacity of the Great Works River (6.9×10^6 BTU/day) may be calculated as follows:

$$(0.05 \text{ MGD})(X^oF - 73^oF)(8.34 \text{ lbs./gallon})(10^6 \text{ gallons}) = 6.9 \times 10^6 \text{ BTU/day}$$
$$X = 89.5^oF$$

Therefore, this permitting action is establishing a daily maximum effluent temperature limitation of 82.0°F based on best professional judgment of the maximum effluent temperature the facility can discharge at full permitted flow while maintaining compliance with the in-stream temperature increase (ΔT) limit of 0.5°F above the ambient receiving water temperature when the weekly average temperature of the receiving water is greater than or equal to 66°F or when the daily maximum temperature is greater than or equal to 73°F.

The calculations above are examples (full permitted flow at 7Q10 conditions) of thermal loading based on worst case scenarios for both the ambient receiving water and discharge from Outfall #003. It is noted the Department determines compliance based on actual ambient receiving water flows and temperatures and actual discharge flows and temperatures.

e. Total Phosphorus (Total-P): The previous permitting action established seasonal (June 1 – September 30 of each year) daily maximum and monthly average concentration effluent limitations of 240 µg/L and 82 µg/L, respectively, for total-P. The previous permitting action established seasonal (June 1 – September 30 of each year) daily maximum and monthly average mass effluent limitations of 0.10 lbs./day and 0.034 lbs./day, respectively, for total-P. The mass limits were carried forward from the April 4, 1996 WDL, and according to the fact sheet associated with the previous permit, "are water quality based limits established by the Department in the early 1990s to protect Leigh's Mill Pond (approximately 4 river miles downstream) from algal blooms." The mass limits were determined by desktop modeling by the Department. The concentration limits were established by back-calculating from the applicable mass limits and a daily maximum discharge flow limit of 0.05 MGD. It is noted that the previous permit erroneously placed the monthly average concentration limit in the weekly average

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

column in Special Condition A. The limit of 82 µg/L was, however, intended to be established as a monthly average limitation.

Leigh's Mill Pond is an approximately 36.5-acre impoundment created by the Great Works Pond Dam, a small, grandfathered hydroelectric dam constructed around 1923 in Great Works River at the confluence with Salmon Falls River on the Maine-New Hampshire border. *Standards for classification of lakes and ponds,* 38 M.R.S.A. § 465-A, classifies the impoundment as a Class GPA waterbody. The DRAFT *State of Maine 2006 Integrated Water Quality Monitoring and Assessment Report*, prepared by the Department pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act, places Leigh's Mill Pond in "*Category 2: Lake Waters Within Hydrologic Unit Attaining Some Designated Uses-Insufficient Information for Other Uses"* and specifies that the water quality in Leigh's Mill Pond depends on water quality in the Great Works River.

For total-P, a review of the monthly average data as reported on the Discharge Monitoring Reports submitted to the Department for the period June 2003 – September 2005 (months of June through September only)(n=12) indicates the total-P concentration discharge has ranged from 6.0 µg/L to 24 µg/L with an arithmetic mean of 12.2 µg/L, and the mass discharged during said monitoring period indicates the discharge has ranged from 0.001 lbs./day to 0.002 lbs./day with an arithmetic mean of 0.00175 lbs./day. A review of the daily maximum total-P concentration discharge data for said monitoring period indicates the discharge has ranged from 8.0 µg/L to 26 µg/L with an arithmetic mean of 16.2 µg/L, and the mass discharged has ranged from 0.002 lbs./day to 0.005 lbs./day with an arithmetic mean of 0.00325 lbs./day.

This permitting action is carrying forward the seasonal monthly average and daily maximum concentration and mass limitations for total-P to ensure the discharge does not cause or contribute to non-attainment of the standards of classification for the receiving waters in Great Works River and Leigh's Mill Pond. Given the results of effluent phosphorous monitoring as described above, this permitting action is revising the minimum monitoring frequency requirement from once per week to twice per month (2/Month) during the period of June 1st through September 30th of each year.

f. Total Suspended Solids (TSS): The previous permitting action established a daily maximum concentration limit of 15 mg/L and minimum monitoring frequency requirement of once per month for TSS. The 3/15/02 permit states that this concentration limit has been carried forward in licensing/permitting actions since at least 1992. The National Effluent Guideline Standards pursuant at 40 CFR, Part 433.13 establishes monthly average and daily maximum BPT-based limits of 31 mg/L and 60 mg/L, respectively, for TSS. The fact sheet associated with the previous permit states, "The 15 mg/L limit was likely established as a technology based limitation based on a past demonstrated performance of the TSS historically discharged from the UTPW facility prior to 1992." The "anti-backsliding" provisions found in *Waste Discharge License Conditions,* 06-096 CMR 523(5)(l)(2) (effective January 12, 2001) state that a permit may not be renewed, reissued, or modified on the basis of effluent guidelines

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

promulgated under the Clean Water Act, subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit, with certain exceptions.

A review of the daily maximum effluent TSS concentration data as reported on the Discharge Monitoring Reports submitted to the Department for the period of January 2003 – May 2006 (n=42) indicates the TSS concentration discharge has ranged from 0.4 mg/L to 1.6 mg/L with an arithmetic mean of 1.7 mg/L.

Based on this performance data and anti-backsliding provisions of Department rule, this permitting action is carrying forward the daily maximum concentration limit of 15 mg/L and the minimum monitoring frequency requirement of once per month for TSS. The national effluent guidelines regulate TSS on both a daily maximum and monthly average basis. 06-096 CMR 523(4)(a) states, "In addition to conditions required in all permits (Sections 2 and 3 [of 06-096 CMR 523]), the Department shall establish conditions, as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of [the Clean Water Act] and regulations and State law." Since the USEPA has promulgated effluent limitation guidelines for TSS in terms of both daily maximum and monthly average limitations, this permitting action must limit the discharge in these terms as well. To satisfy the minimum effluent limitation requirements of 40 CFR Part 433.13, this permitting action is establishing monthly average concentration and mass limits for TSS that are equivalent to the daily maximum limits.

06-096 CMR 523(6)(f)(2) states that "…pollutants limited in terms of mass additionally may be limited in terms of other units of measurement and the permit shall require the permittee to comply with both limitations." Therefore, this permitting action is establishing daily maximum and monthly average mass limits for TSS as follows:

Monthly Average/Daily Maximum Mass =
(0.05 MGD)(8.34 lbs./gallon)(15 mg/L) = 6.3 lbs./day

g. Oil and Grease (O&G): The previous permitting action established a daily maximum concentration limit of 15 mg/L and minimum monitoring frequency requirement of once per month for O&G. The fact sheet associated with the 3/15/02 permit states that this limit was established as a Department best professional judgment (BPJ) of BPT, as "this is the concentration at which oil & grease causes a visible sheen on the surface of waterbodies." Both the monthly average and daily maximum effluent guideline limitations of 26 mg/L and 52 mg/L, respectively, promulgated at 40 CFR Part 433.13 are less stringent than the previous limit of 15 mg/L. This permitting action is carrying forward the daily maximum concentration limit of 15 mg/L to satisfy the anti-backsliding provisions of Department rule and is considered BPJ of BPT for the discharge of oil and grease from industrial facilities. This permitting action is also carrying forward the minimum monitoring frequency requirement of once per month for O&G. As with TSS, the national effluent guidelines regulate O&G in terms of both daily maximum and monthly average limits. To satisfy the minimum effluent limitation requirements of

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

40 CFR Part 433.13, this permitting action is establishing a monthly average concentration and mass limits for O&G that are equivalent to the daily maximum limits.

Based on the requirements of Chapter 523 this permitting action is establishing daily maximum and monthly average mass limits for O&G as follows:

Monthly Average/Daily Maximum Mass =
(0.05 MGD)(8.34 lbs./gallon)(15 mg/L) = 6.3 lbs./day

A review of the daily maximum effluent O&G concentration data as reported on the Discharge Monitoring Reports submitted to the Department for the period of January 2003 – October 2006 (n=42) indicates the O&G concentration discharge has been reported as <5.0 mg/L 100% of the time during said reporting period.

h. Total Toxic Organics (TTO): The previous permitting action established, and this permitting action is carrying forward, a daily maximum concentration limit of 2.13 mg/L for TTO. In accordance with the requirements of 06-096 CMR 523(6)(f)(2), this permitting action is establishing a daily maximum technology-based mass limit for TTO as follows:

Daily Maximum Mass =
(0.05 MGD)(8.34 lbs./gallon)(2.13 mg/L) = 0.89 lbs./day

The term TTO is the summation of all quantifiable values greater than 0.01 mg/L for the toxics organics specified at 40 CFR Part 433.11(e). The limit was established based on the BPT-based effluent guideline promulgated at 40 CFR Part 433.13. Special Condition A, Footnote #4 of the previous permit authorized the permittee to make a certification statement in accordance with 40 CFR Part 433.12(a&b) in lieu of TTO monitoring. 40 CFR Part 433.12 states,

> *In lieu of requiring monitoring for TTO, the permitting authority (or, in the case of indirect dischargers, the control authority) may allow dischargers to make the following certification statement: "Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation [or pretreatment standard] for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing of the last discharge monitoring report. I further certify that this facility is implementing the toxic organic management plan submitted to the permitting [or control] authority." For direct dischargers, this statement is to be included as a "comment" on the Discharge Monitoring Report required by 40 CFR 122.44(i), formerly 40 CFR 122.62(i). For indirect dischargers, the statement is to be included as a comment to the periodic reports required by 40 CFR 403.12(e). If monitoring is necessary to measure compliance with the TTO*

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

> *standard, the industrial discharger need analy[z]e for only those pollutants which would reasonably be expected to be present.*
>
> *(b) In requesting the certification alternative, a discharger shall submit a solvent management plan that specifies to the satisfaction of the permitting authority (or, in the case of indirect dischargers, the control authority) the toxic organic compounds used; the method of disposal used instead of dumping, such as reclamation, contract hauling, or incineration; and procedures for ensuring that toxic organics do not routinely spill or leak into the wastewater. For direct dischargers, the permitting authority shall incorporate the plan as a provision of the permit.*

A review of the daily maximum effluent TTO concentration data as reported on the Discharge Monitoring Reports submitted to the Department for the period of March 2003 – March 2006 indicates the facility has reported no discharge of TTO in accordance with the certification statement monitoring waiver provided at 40 CFR Part 433.12 and Special Condition A, Footnote #4 of the previous permit. This permitting action is carrying forward the certification provision for TTO monitoring.

This permitting action is carrying forward the minimum monitoring frequency requirement of once per quarter.

i. pH: The previous permitting action established, and this permitting action is carrying forward, a daily maximum pH range limitation of 6.0 – 9.0 standard units (SU) based on the BPT-based effluent guidelines promulgated at 40 CFR Part 433.13. This permitting action is carrying forward a minimum monitoring frequency requirement of once per day for pH.

h. Whole Effluent Toxicity (WET), Priority Pollutant, and Analytical Chemistry Testing: 38 M.R.S.A. § 414-A and 38 M.R.S.A. § 420 prohibit the discharge of effluents containing substances in amounts that would cause the surface waters of the State to contain toxic substances above levels set forth in Federal Water Quality Criteria as established by the USEPA. 06-096 CMR 530 sets forth effluent monitoring requirements and procedures to establish safe levels for the discharge of toxic pollutants such that existing and designated uses of surface waters are maintained and protected and narrative and numeric water quality criteria are met. 06-096 CMR 584 sets forth ambient water quality criteria (AWQC) for toxic pollutants and procedures necessary to control levels of toxic pollutants in surface waters.

WET, priority pollutant and analytical chemistry testing, as required by 06-096 CMR 530, is included in this permit in order to characterize the effluent. WET monitoring is required to assess and protect against impacts upon water quality and designated uses caused by the aggregate effect of the discharge on specific aquatic organisms. Acute and chronic WET tests are performed on invertebrate water flea (*Ceriodaphnia dubia*) and vertebrate brook trout (*Salvelinus fontinalis*). Chemical-specific monitoring is required to assess the levels of individual toxic pollutants in the discharge, comparing each

pollutant to acute, chronic, and human health water quality criteria. Priority pollutant testing refers to the analysis for levels of priority pollutants listed in 06-096 CMR 525(4)(VI). Analytical chemistry refers to a suite of thirteen (13) chemical tests consisting of: ammonia-nitrogen, total aluminum, total cadmium, total chromium, total copper, total hardness (fresh water only), total lead, total nickel, total silver, total zinc, total arsenic, total cyanide and total residual chlorine.

06-096 CMR 530(2)(A) specifies the dischargers subject to the rule as, *"all licensed dischargers of industrial process wastewater or domestic wastes discharging to surface waters of the State must meet the testing requirements of this section. Dischargers of other types of wastewater are subject to this subsection when and if the Department determines that toxicity of effluents may have reasonable potential to cause or contribute to exceedences of narrative or numerical water quality criteria."* UTPW discharges industrial process waste waters to surface waters and is therefore subject to the testing requirements of the toxics rule.

06-096 CMR 530(4)(C) states "*The background concentration of specific chemicals must be included in all calculations using the following procedures. The Department may publish and periodically update a list of default background concentrations for specific pollutants on a regional, watershed or statewide basis. In doing so, the Department shall use data collected from reference sites that are measured at points not significantly affected by point and non-point discharges and best calculated to accurately represent ambient water quality conditions." "The Department shall use the same general methods as those in section 4(D) to determine background concentrations. For pollutants not listed by the Department, an assumed concentration of 10% of the applicable water quality criteria must be used in calculations."* The Department has no information on the background levels of metals in the water column in the Great Works River. Therefore, a default background concentration of 10% of applicable water quality criteria is being used in the calculations of this permitting action.

06-096 CMR 530(4)(E) states "*In allocating assimilative capacity for toxic pollutants, the Department shall hold a portion of the total capacity in an unallocated reserve to allow for new or changed discharges and non-point source contributions. The unallocated reserve must be reviewed and restored as necessary at intervals of not more than five years. The water quality reserve must be not less than 15% of the total assimilative quantity."*

Therefore, the Department is reserving 15% of applicable water quality criteria used in the calculations of this permitting action.

06-096 CMR 530(4)(F) requires evaluation of toxic pollutant impacts on a watershed basis. This section of the rule states, "*Where there is more than one discharge into the same fresh or estuarine receiving water or watershed, the Department shall consider the cumulative effects of those discharges when determining the need for and establishment of the level of effluent limits. The Department shall calculate the total allowable discharge quantity for specific pollutants, less the water quality reserve and background concentration, necessary to achieve or maintain water quality criteria at all points of*

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

discharge, and in the entire watershed." The Department is currently working to construct a computer program model to conduct this analysis. Until such time the model is complete and a multi-discharger statistical evaluation can be conducted, the Department is evaluating the impact of UTPW's discharge assuming it is the only discharger to the river. Should the multi-discharger evaluation indicate there are parameters that exceed or have a reasonable potential to exceed applicable AWQC, this permit may be reopened pursuant to Special Condition I, *Reopening of Permit For Modifications*, to incorporate additional limitations and or revise monitoring requirements.

This permit provides for reconsideration of effluent limits and monitoring schedules after evaluation of toxicity testing results. The monitoring schedule includes consideration of results currently on file, the nature of the wastewater, existing treatment, and receiving water characteristics.

06-096 CMR 530(2)(B) categorizes dischargers subject to the toxics rule into one of four levels (Levels I through IV). Level II dischargers are those *"having a chronic dilution factor of at least 20 but less than 100 to 1."* The chronic dilution factor associated with the discharge from UTPW is 34 to 1; thus, the facility is considered a Level II facility for purposes of toxics testing. 06-096 CMR 530(2)(D) specifies default WET, priority pollutant, and analytical chemistry test schedules for Level II dischargers as follows:

Screening level testing – Beginning 12 months prior to permit expiration and lasting through permit expiration and every five years thereafter.

Level	WET Testing	Priority pollutant testing	Analytical chemistry
II	2 per year	1 per year	4 per year

Surveillance level testing – Beginning upon issuance of the permit and lasting until 12 months prior to permit expiration.

Level	WET Testing	Priority pollutant testing	Analytical chemistry
II	1 per year	None required	2 per year

The previous permitting action established chronic No Observed Effect Level (C-NOEL) limits of 2.9% for the water flea and the brook trout based on a February 1, 2002 Department statistical evaluation of WET test results on file for this facility. No other limits were established for WET species.

A review of the data on file with the Department for the UTPW indicates that, to date, they have fulfilled the WET and chemical-specific testing requirements of the previous permitting action. See Attachment D of this Fact Sheet for a summary of the WET test results, and Attachment E of this Fact Sheet for a summary of chemical-specific test dates and arsenic test results.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

WET Evaluation:

06-096 CMR 530(3)(E) states:

> *For effluent monitoring data and the variability of the pollutant in the effluent**,** the Department shall apply the statistical approach in Section 3.3.2 and Table 3-2 of USEPA's "Technical Support Document for Water Quality-Based Toxics Control" (USEPA Publication 505/2-90-001, March, 1991, EPA, Office of Water, Washington, D.C.) to data to determine whether water-quality based effluent limits must be included in a waste discharge license. Where it is determined through this approach that a discharge contains pollutants or WET at levels that have a reasonable potential to cause or contribute to an exceedence of water quality criteria, appropriate water quality-based limits must be established in any licensing action.*

On October 11, 2007, the Department conducted a statistical evaluation on the most recent 60 months of WET test results on file with the Department for the UTPW in accordance with the statistical approach outlined above. **The 10/11/07 statistical evaluation indicates a C-NOEL test result of 3.4% on 4/22/03 for the water flea demonstrates a reasonable potential to exceed the critical chronic water quality threshold of 2.9%.** The evaluation does not indicate that the discharge exceeds or has a reasonable potential to exceed the critical thresholds for any other WET species tested.

06-096 CMR 530(3) states, in part,

> *The Department shall establish appropriate discharge prohibitions, effluent limits and monitoring requirements in waste discharge licenses if a discharge contains pollutants that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an ambient excursion in excess of a numeric or narrative water quality criteria or that may impair existing or designated uses. The licensee must also control whole effluent toxicity (WET) when discharges cause, have a reasonable potential to cause, or contribute to an ambient excursion above the narrative water quality criteria.*

Therefore, this permitting action is carrying forward a chronic limit of 2.9% (mathematical inverse of the applicable chronic dilution factor of 34:1) for the water flea, and once per year surveillance level and twice per year screening level testing requirements, and is eliminating the 2.9% C-NOEL limit for the brook trout.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

06-096 CMR 530(2)(D)(3)(c) states, in part, *"dischargers in Level II may reduce surveillance testing to one WET or specific chemical series every other year provided that testing in the preceding 60 months does not indicate any reasonable potential for exceedence."* Therefore, the facility does not quality for reduced surveillance level testing for the water flea. This permitting action is establishing reduced surveillance level WET testing for the brook trout at a minimum frequency of once every two years. Screening level WET testing is being established at a minimum frequency of twice per year for both the water flea and brook trout based on 06-096 CMR 530.

06-096 CMR 530(2)(D)(4) states, *"all dischargers having waived or reduced testing must file statements with the Department on or before December 31 of each year describing the following.*

(a) Changes in the number or types of non-domestic wastes contributed directly or indirectly to the wastewater treatment works that may increase the toxicity of the discharge;

(b) Changes in the operation of the treatment works that may increase the toxicity of the discharge; and

(c) Changes in industrial manufacturing processes contributing wastewater to the treatment works that may increase the toxicity of the discharge."

This permitting action establishes Special Condition G, *Surface Waters Toxics Control Program Statement For Reduced Toxics Testing*, pursuant to 06-096 CMR 530(2)(D)(4). It is noted, however, that if future WET testing indicates the discharge exceeds critical water quality thresholds, this permit will be reopened in accordance with Special Condition J, *Reopening of Permit For Modification*, to establish effluent limitations and monitoring requirements as necessary.

Priority Pollutant Evaluation:

On October 11, 2007, the Department conducted a statistical evaluation on the most recent 60 months of chemical-specific tests results on file with the Department for UTPW in accordance with the statistical approach outlined above. **The 10/11/07 statistical evaluation indicates the discharge has demonstrated reasonable potential (RP) to exceed ambient water quality criteria (AWQC) thresholds for Bis (2-Ethylhexyl) Phthalate, cadmium, copper, and nickel. One total arsenic test result of 31.0** µg/L (10/31/06) **potentially exceeds the human health-based AWQC for inorganic arsenic. The evaluation indicates that the discharge does not exceed or have a reasonable potential to exceed the AWQC for any other parameters tested.** Further discussion and evaluation of arsenic, cadmium, chromium, copper, cyanide, lead, nickel, silver and zinc, those priority pollutants for which the USEPA has established effluent guidelines limitations applicable to this discharge, follows in this section.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

In accordance with the reduced testing provisions of 06-096 CMR 530(2)(D)(3)(c), the Department is making a best professional judgment that this facility qualifies for a reduced surveillance level priority pollutant and analytical chemistry testing to a frequency of once every two years, excepting cadmium, copper, cyanide, lead, nickel, and zinc, which are otherwise limited in this permit. This permitting action establishes Special Condition G, *Surface Waters Toxics Control Program Statement For Reduced Toxics Testing*, pursuant to 06-096 CMR 530(2)(D)(4), which requires annual certification to the Department for reduced surveillance level testing.

06-096 CMR 530(3) states, *"the Department shall establish appropriate discharge prohibitions, effluent limits and monitoring requirements in waste discharge licenses if a discharge contains pollutants that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an ambient excursion in excess of a numeric or narrative water quality criteria or that may impair existing or designated uses."*

The Department must establish the more stringent of either a technology-based or water quality-based limit in the case where both standards exist for a given parameter to assure compliance with both the Clean Water Act (CWA) and State law. Also see Section 301(b) (1) c of the CWA. Additionally, the anti-backsliding provisions of 06-096 CMR 523 prohibit the Department from issuing a permit with less stringent limitations than the comparable effluent limitations in the previous permit on the basis of effluent guidelines promulgated under the Clean Water Act (*i.e.*, effluent guideline limitations at 40 CFR Part 433.13), subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent, with certain exceptions.

Therefore, this permitting action must establish the more stringent of either the BPT-based, water quality-based or previous permit limitation for those parameters listed at 40 CFR Part 433.13, except for those guideline-listed pollutants that qualify for a 40 CFR Part 122.44 monitoring waiver. (See Special Condition H of this permit and discussion for chromium and silver in Section 6 of this fact sheet).

See Attachment F of this fact sheet for a table of previous permit limits, national effluent guideline limitations, AWQC thresholds, and limits established in this permitting action for Bis (2-Ethylhexyl) Phthalate, cadmium, chromium, copper, cyanide, lead, nickel, silver and zinc.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

Based on the applicable AWQC, acute and chronic dilution factors as calculated in Section 6.c of this fact sheet, and a permitted discharge flow limit of 0.05 MGD, monthly average and daily maximum water quality-based thresholds for Bis (2-Ethylhexyl) Phthalate, total cadmium, total chromium, total copper, total cyanide, total lead, total nickel, total silver, and total zinc may be calculated using the following formulas:

Concentration Limit/Threshold Formula =

$$(\text{Dilution Factor})[(0.75)(\text{criterion})] + (0.25)(\text{criterion})$$

Mass Limit/Threshold Formula =

$$\frac{(\text{Conc. Limit, µg/L})(8.34\ \text{lbs./gallon})(\text{flow limit, MGD})}{1000\ \text{µg/mg}}$$

06-096 CMR 530(3)(D)(1) states, *"for specific chemicals, effluent limits must be expressed in total quantity that may be discharged and in effluent concentration. In establishing concentration, the Department may increase allowable values to reflect actual flows that are lower than permitted flows and/or provide opportunities for flow reductions and pollution prevention provided water quality criteria are not exceeded."* The arithmetic mean of 0.038 MGD is less than the design capacity of 0.05 MGD as discussed in Section 6 a. of this fact sheet. The water quality-based concentration thresholds for the eight metals listed above are being increased by a factor of 1.5 so as not to penalize the permittee for operating at flows less than the permitted flow and to promote water conservation at the facility.

1. Cadmium (Total):

a. Previous Limits and Basis: The previous permitting action established monthly average and daily maximum water quality-based concentration/mass effluent limitations of 16 µg/L / 0.0045 lbs./day and 28 µg/L / 0.00077 lbs./day, respectively, for total cadmium. These limits were calculated based on acute and chronic AWQC of 0.638 µg/L and 0.32 µg/L, respectively, in effect at that time. The concentration limit thresholds were increased by a factor of 1.5 so as not to penalize the permittee for operating at flows less than the permitted flow. It is noted that 1) the current AWQC (identified below) are more stringent than the previous criteria; and 2) the daily maximum mass limit of 0.00077 lbs./day was established in error. Review of page 8 of 22 of the previous fact sheet indicates a decimal point error. The actual limitation should be 0.0077 lbs./day.

b. Statistical Evaluation Summary: Based on a 10/11/07 statistical evaluation of the most recent 60 months of total cadmium effluent data on file for this facility (# DMRs = 55), the Department has identified a total of seven (7) test results [2.0 µg/L reported on the Discharge Monitoring Reports (DMR) for the periods ending 10/31/02, 12/31/02, 1/31/03, and 2/28/03, a test result of 1.4 µg/L reported on the DMR ending 6/30/03, and two test results of 4.0 µg/L reported for 10/29/06 and 10/31/06] that demonstrate a reasonable potential to exceed potential to exceed the chronic AWQC for cadmium.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

None of these test results are mass-based exceedences, and none are RP for the acute AWQC. There are no human health-based AWQC for cadmium.

c. New Permit Limits and Basis: The USEPA has promulgated monthly average and daily maximum effluent guideline limitations of 0.26 mg/L (260 µg/L) and 0.69 mg/L (690 µg/L), respectively, for total cadmium at 40 CFR Part 433.13. 06-096 CMR 584 establishes acute and chronic criteria of 0.42 µg/L and 0.08 µg/L for total cadmium. The AWQC are nearly three and four orders of magnitude more stringent than the BPT-based guidelines and are therefore being used to calculate appropriate effluent limits for this discharge.

Based on the AWQC for cadmium, monthly average and daily maximum water quality-based limits/thresholds for total cadmium may be calculated as follows:

Monthly Average Conc. = (34)[(0.75)(0.08 µg/L)] + (0.25)(0.08 µg/L)
= 2.04 + 0.02
= 2.06 µg/L x 1.5
= **3.1 µg/L**

Daily Maximum Conc. = (29)[(0.75)(0.42 µg/L)] + (0.25)(0.42 µg/L)
= 9.14 + 0.11
= 9.25 µg/L x 1.5
= **13.9 µg/L**

$$\text{Monthly Avg. Mass} = \frac{(2.06\ \mu g/L)(8.34\ \text{lbs./gallon})(0.05\ \text{MGD})}{1000\ \mu g/mg} = \textbf{0.00086 lbs./day}$$

$$\text{Daily Max. Mass} = \frac{(9.25\ \mu g/L)(8.34\ \text{lbs./gallon})(0.05\ \text{MGD})}{1000\ \mu g/mg} = \textbf{0.0036 lbs./day}$$

The calculated water quality-based monthly average concentration and mass limits of 3.1 µg/L and 0.00086 lbs./day, respectively, are more stringent than the previous permit limits, and are therefore being established in this permitting action for total cadmium. The calculated water quality-based daily maximum concentration and mass limits of 13.9 µg/L and 0.0036 lbs./day, respectively, are more stringent than the previous permit limits and are therefore being established in this permitting action for total cadmium. It is noted that the Department is making a best professional judgment determination that the new daily maximum mass limit of 0.0036 lbs./day satisfies the anti-backsliding requirement of Department rule in that the Department made a technical mistake in establishing the previous limit of 0.00077 lbs./day.

Taking into consideration the test results on file (7 instances of RP), this permitting action is carrying forward a minimum monitoring frequency requirement of once per month for total cadmium.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

2. Chromium (Total):

a. Previous Limits and Basis: The previous permitting action established daily maximum concentration and mass effluent limitations of 250 µg/L and 0.62 lbs./day, respectively, for total chromium. The fact sheet associated with the previous permit states that these limits were carried forward from previous licensing/permitting action to satisfy the anti-backsliding provisions of federal regulations and Department rule, and that the exact derivation of these limits is not known. The fact sheet associated with the previous permit demonstrates that the daily maximum limitation of 250 µg/L is more stringent than either the calculated monthly average or daily maximum water quality-based effluent thresholds of 2,825 µg/L and 20,228 µg/L, which were calculated based on the acute and chronic AWQC of 55.4 µg/L and 465 µg/L in effect at that time and increased by a factor of 1.5 as was done for cadmium discussed above. Similarly, the daily maximum mass limit of 0.62 lbs./day carried forward in the previous permit is more stringent than either the calculated water quality-based mass thresholds of 0.78 lbs./day and 5.6 lbs./day. The fact sheet associated with the previous permit states that monthly average limitations were not being established as the daily maximum limits are more stringent in all cases.

It is noted that the current acute AWQC for chromium^{3+} (identified below) is less stringent than the acute AWQC in effect at the time the previous permit was issued and the current chronic AWQC is more stringent than the previous chronic criteria.

b. Statistical Evaluation Summary: Based on a 10/11/07 statistical evaluation of the most recent 60 months of total chromium effluent data on file for this facility (number of DMRs = 58), the Department has identified that the maximum total chromium test result of 4.3 µg/L reported on the DMR for the period ending 3/31/03 is below the Department's minimum reporting level of 10 µg/L for chromium.

c. New Permit Limits and Basis: The USEPA has promulgated monthly average and daily maximum effluent guideline limitations of 1.71 mg/L (1,710 µg/L) and 2.77 mg/L (2,770 µg/L), respectively, for total chromium at 40 CFR Part 433.13. However, 40 CFR Part 122.44, *Establishing limitations, standards, and other permit conditions (applicable to State NPDES programs see §123.25)*, states,

> *(2) Monitoring waivers for certain guideline-listed pollutants. (i) The Director may authorize a discharger subject to technology-based effluent limitations guidelines and standards in an NPDES permit to forego sampling of a pollutant found at 40 CFR Subchapter N of this chapter if*

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

> *the discharger has demonstrated through sampling and other technical factors that the pollutant is not present in the discharge or is present only at background levels from intake water and without any increase in the pollutant due to activities of the discharger.*
>
> *(ii) This waiver is good only for the term of the permit and is not available during the term of the first permit issued to a discharger.*
>
> *(iii) Any request for this waiver must be submitted when applying for a reissued permit or modification of a reissued permit. The request must demonstrate through sampling or other technical information, including information generated during an earlier permit term that the pollutant is not present in the discharge or is present only at background levels from intake water and without any increase in the pollutant due to activities of the discharger.*
>
> *(iv) Any grant of the monitoring waiver must be included in the permit as an express permit condition and the reasons supporting the grant must be documented in the permit's fact sheet or statement of basis.*

The Department has a total of 58 chromium test results on file for this facility (within the most recent 60 months period ending October 2007) and none has been detected above the Department's reporting limit of 10 µg/L. Therefore, the Department is granting a monitoring waiver for chromium in this permitting action under the provisions of 40 CFR Part 122.44, and is establishing Special Condition H, *Monitoring Waiver For Certain Guideline-Listed Pollutants,* in this permit as required by 40 CFR Part 122.44 (a)(2)(iv) cited above. It is noted that analytical chemistry and priority pollutant testing required by this permit includes testing for chromium.

3. Copper (Total):

   a. Previous Limits and Basis: The previous permitting action established monthly average and daily maximum water quality-based concentration/mass effluent limitations of 152 µg/L / 0.042 lbs./day and 169 µg/L / 0.047 lbs./day, respectively, for total copper. These limits were calculated based on acute and chronic AWQC of 3.89 µg/L and 2.99 µg/L, respectively, in effect at that time. The concentration limit thresholds were increased by a factor of 1.5. It is noted that the current AWQC for copper (identified below) are more stringent than the previous criteria.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

b. Statistical Evaluation Summary: Based on an 10/11/07 statistical evaluation of the most recent 60 months of total copper effluent data on file for this facility (number of DMRs = 58), the Department has identified a total of two 21) daily maximum test results [51 µg/L reported for 2/19/07 and 50.9 µg/L reported for the DMR ending 3/31/07] that demonstrate a reasonable potential to exceed the acute AWQC for copper.

Additionally, the 10/11/07 evaluation indicates that a total of seven (7) monthly average test results [reported on the DMRs the periods ending 1/31/03 (44 µg/L), 2/28/03 (42 µg/L), 3/31/03 (43.5 µg/L), 4/30/03 (44.3 µg/L), 2/28/07 (43.2 µg/L), 2/19/07 (51 µg/L), and 3/31/07 (50.9 µg/L)] that demonstrate a reasonable potential to exceed the chronic AWQC for copper. None of these test results are mass-based exceedences, and none are RP for the human health (water and organism)-based AWQC of 1,300 µg/L.

c. New Permit Limits and Basis: The USEPA has promulgated monthly average and daily maximum effluent guideline limitations of 2.07 mg/L (2,070 µg/L) and 3.38 mg/L (3,380 µg/L), respectively, for total copper at 40 CFR Part 433.13. 06-096 CMR 584 establishes acute and chronic criteria of 3.07 µg/L and 2.36 µg/L for total copper. Department licensing/permitting actions impose the more stringent of either a water quality-based, BPT-based, or in this case, previous permit limit (to satisfy the anti-backsliding provisions of Department rule). The AWQC are nearly three orders of magnitude more stringent than the BPT-based guidelines and are therefore being used to calculate appropriate effluent limits for this discharge.

Based on the AWQC for copper, monthly average and daily maximum water quality-based limits/thresholds for total copper may be calculated as follows:

Monthly Average Conc. = (34)[(0.75)(2.36 µg/L)] + (0.25)(2.36 µg/L)
= 60.2 + 0.6
= 60.8 µg/L x 1.5
= **91 µg/L**

Daily Maximum Conc. = (29)[(0.75)(3.07 µg/L)] + (0.25)(3.07 µg/L)
= 66.8 + 0.8
= 67.6 µg/L x 1.5
= **101 µg/L**

Monthly Avg. Mass = $\frac{(60.8\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg}$ = **0.025 lbs./day**

Daily Max. Mass = $\frac{(67.6\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg}$ = **0.028 lbs./day**

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

The calculated water quality-based monthly average concentration and mass limits of 91 µg/L and 0.025 lbs./day, respectively, are more stringent than the previous permit limits, and are therefore being established in this permitting action for total copper. The calculated water quality-based daily maximum concentration and mass limits of 101 µg/L and 0.028 lbs./day, respectively, are more stringent than the previous permit limits and are therefore being established in this permitting action for total copper.

Taking into consideration the test results on file (2 instances f acute RP and 7 instances of chronic RP), this permitting action is carrying forward a minimum monitoring frequency requirement of once per month for total copper.

4. Cyanide (Total):

a. Previous Limits and Basis: The previous permitting action eliminated monthly average and daily maximum water quality based effluent limitations (and all monitoring requirements) for total cyanide that were established in the 4/4/96 WDL. The fact sheet associated with the previous permit states that the limits were eliminated based on a review of cyanide test results on file with the Department at the time the 3/15/02 permit was issued, which indicated that cyanide had never been detected in the effluent at a detection level of 10 µg/L.

b. Statistical Evaluation Summary: Based on a 10/11/07 statistical evaluation of the most recent 60 months of total cyanide effluent data on file for this facility (n=6), the Department has identified that the maximum effluent concentration result of 9.8 µg/L reported for 4/5/05 does not exhibit a reasonable potential to exceed the acute, chronic or human health-based AWQC for cyanide. Based on the 9.8 µg/L test result, the Department has determined that the acute and chronic RP thresholds are approximately one order of magnitude less than the respective acute and chronic AWQC. The test result of 9.8 µg/L is above the Department's reporting limit of 5 µg/L; therefore, the facility has not "demonstrated through sampling and other technical factors that the pollutant is not present in the discharge," as required by 40 CFR Part 122.44 for a monitoring waiver, and appropriate limitations and monitoring requirements must be established in this permitting action.

c. New Permit Limits and Basis: The USEPA has promulgated monthly average and daily maximum effluent guideline limitations of 0.65 mg/L (650 µg/L) and 1.20 mg/L (1,200 µg/L), respectively, for total cyanide at 40 CFR Part 433.13. 06-096 CMR 584 establishes acute and chronic criteria of 22 µg/L and 5.2 µg/L for total cyanide. Since the USEPA has promulgated effluent limitation guidelines for total cyanide in terms of both daily maximum and monthly average limitations, this permitting action must limit the discharge in these terms as well. The AWQC are approximately two orders of magnitude more stringent than the

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

BPT-based guidelines and are therefore being used to calculate appropriate effluent limits for this discharge.

Based on the AWQC for cyanide, monthly average and daily maximum water quality-based limits for total cyanide are being established in this permitting action as follows:

Monthly Average Conc. = (34)[(0.75)(5.2 µg/L)] + (0.25)(5.2 µg/L)
= 132.6 + 1.3
= 133.9 µg/L x 1.5
= **201 µg/L**

Daily Maximum Conc. = (29)[(0.75)(22 µg/L)] + (0.25)(22 µg/L)
= 478.5 + 5.5
= 484.0 µg/L x 1.5
= **726 µg/L**

Monthly Avg. Mass = $\frac{(133.9\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg}$ = **0.06 lbs./day**

Daily Max. Mass = $\frac{(484.0\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg}$ = **0.20 lbs./day**

Taking into consideration the number of test results on file for cyanide, this permitting action is establishing a minimum monitoring frequency requirement of once per month for this pollutant.

5. Lead (Total):

a. Previous Limits and Basis: The previous permitting action established monthly average and daily maximum water quality-based concentration/mass effluent limitations of 21 µg/L / 0.0058 lbs./day and 87 µg/L / 0.13 lbs./day, respectively, for total lead. The daily maximum concentration limit of 87 µg/L was carried forward from the 4/4/96 licensing action as it was more stringent than the water quality-based threshold of 458 µg/L which was calculated based on acute AWQC of 10.52 µg/L in effect at that time (and increased by a factor of 1.5 as previously discussed in this fact sheet). The monthly average limits were calculated based on chronic AWQC of 0.41 µg/L in effect at that time (and increased by a factor of 1.5). It is noted that the current AWQC for lead (identified below) are more stringent than the previous criteria.

b. Statistical Evaluation Summary: Based on a 10/11/07 statistical evaluation of the most recent 60 months of total lead effluent data on file for this facility (number DMRs = 58), the Department has identified that the maximum effluent concentration results of 19.0 µg/L reported for 10/29/06 and 10/31/06 exceeds the chronic AWQC threshold for lead.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

c. New Permit Limits and Basis: The USEPA has promulgated monthly average and daily maximum effluent guideline limitations of 0.43 mg/L (430 µg/L) and 0.69 mg/L (690 µg/L), respectively, for total lead at 40 CFR Part 433.13. 06-096 CMR 584 establishes acute and chronic criteria of 10.52 µg/L and 0.41 µg/L for total lead. Department licensing/permitting actions impose the more stringent of either a water quality-based, BPT-based, or in this case, previous permit limit (to satisfy the anti-backsliding provisions of Department rule). The AWQC are nearly one and three orders of magnitude more stringent than the BPT-based guidelines and are therefore being used to calculate appropriate effluent limits for this discharge.

Based on the AWQC for lead, monthly average and daily maximum water quality-based limits/thresholds for total lead may be calculated as follows:

Monthly Average Conc. = (34)[(0.75)(0.41 µg/L)] + (0.25)(0.41 µg/L)
= 10.5 + 0.1
= 10.6 µg/L x 1.5
= **16 µg/L**

Daily Maximum Conc. = (29)[(0.75)(10.52 µg/L)] + (0.25)(10.52 µg/L)
= 228.8 + 2.6
= 231.4 µg/L x 1.5
= **320 µg/L**

Monthly Avg. Mass $= \frac{(10.6\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg} =$ **0.004 lbs./day**

Daily Max. Mass $= \frac{(231.4\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg} =$ **0.10 lbs./day**

The calculated water quality-based monthly average concentration and mass limits of 16 µg/L and 0.0004 lbs./day, respectively, are more stringent than the previous permit limits, and are therefore being established in this permitting action for total lead. The previously established daily maximum concentration limit of 87 µg/L is more stringent than the calculated water quality-based threshold of 320 µg/L and is therefore being carried forward in this permitting action for total lead. The calculated daily maximum water quality-based limit of 0.10 lbs./day is more stringent than the previous permit limit of 0.13 lbs./day and are therefore being established in this permitting action for total lead.

06-096 CMR 530(3)(C) states, in part, that if *"the discharge is causing an exceedence of applicable water quality criteria, then: (1) the licensee must, within 45 days of becoming aware of an exceedence, submit a [Toxicity Reduction Evaluation] TRE plan for review and approval and implement the TRE after Department approval…."* Special Condition I of this permit establishes a requirement for the permittee to submit to the Department, for review and comment, and to implement a TRE for lead.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

Taking into consideration the number of test results on file for lead, this permitting action is carrying forward the minimum monitoring frequency requirement of once per month for this pollutant.

6. Nickel (Total):

a. Previous Limits and Basis: The previous permitting action established monthly average and daily maximum water quality-based concentration/mass effluent limitations of 480 µg/L / 0.57 lbs./day and 1.0 mg/L (1,000 µg/L) / 2.5 lbs./day, respectively, for total nickel. The concentration limits were carried forward from the 4/4/96 WDL modification as they are more stringent than the monthly average and daily maximum water quality-based thresholds of 2.1 mg/L and 16 mg/L, respectively, which were calculated based on acute and chronic AWQC of 40.4 µg/L and 363.4 µg/L, respectively, in effect at that time (and increased by a factor of 1.5 as previously discussed in this fact sheet). The daily maximum mass limit of 2.5 lbs./day was carried forward as it is more stringent than the calculated limit of 4.4 lbs./day. It is noted that the current AWQC (identified below) are equivalent to those in effect at the time the previous permit was issued.

b. Statistical Evaluation Summary: Based on a 10/11/07 statistical evaluation of the most recent 60 months of total lead effluent test results on file for this facility (number of DMRs = 58), the Department has identified a total of forty-seven (47) test results (including the highest result of 530.6 µg/L reported on the DMRs for the period ending 6/30/07 and the most recent test result on file of 253.2 µg/L reported for the period ending 8/31/07) that demonstrate a reasonable potential to exceed the chronic AWQC for nickel. The 10/11/07 evaluation indicates that none of the test results demonstrates RP for the acute or human health-based AWQC, and none are mass-based exceedences.

c. New Permit Limits and Basis: The USEPA has promulgated monthly average and daily maximum effluent guideline limitations of 2.38 mg/L (2,380 µg/L) and 3.98 mg/L (3,980 µg/L), respectively, for total nickel at 40 CFR Part 433.13. Department rule, Chapter 584 establishes acute and chronic criteria of 120.2 µg/L and 13.4 µg/L for total nickel. Department licensing/permitting actions impose the more stringent of either a water quality-based, BPT-based, or in this case, previous permit limit (to satisfy the anti-backsliding provisions of Department rule). The AWQC are more than one and two orders of magnitude more stringent than the BPT-based guidelines and are therefore being used to calculate appropriate effluent limits for this discharge.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

Based on the AWQC for nickel, monthly average and daily maximum water quality-based limits/thresholds for total nickel may be calculated as follows:

Monthly Average Conc. = (34)[(0.75)(13.4 µg/L)] + (0.25)(13.4 µg/L)
= 341.7 + 3.4
= 345.1 µg/L x 1.5
= **518 µg/L**

Daily Maximum Conc. = (29)[(0.75)(120.2 µg/L)] + (0.25)(120.2 µg/L)
= 2,614.4 + 30.1
= 2,644.5 µg/L x 1.5
= **3,967 µg/L**

Monthly Avg. Mass = $\frac{(345.1\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg}$ = **0.14 lbs./day**

Daily Max. Mass = $\frac{(2{,}644.5\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg}$ = **1.1 lbs./day**

The previous monthly average and daily maximum concentration limits of 480 µg/L and 1,000 µg/L, respectively, are more stringent than the respective calculated water quality-based threshold above and are therefore being carried forward in this permitting action for total nickel. The calculated water quality-based monthly average and daily maximum mass limits of 0.14 lbs./day and 1.1 lbs./day, respectively, are more stringent than the previous permit limits and are therefore being established in this permitting action for total nickel.

Taking into consideration the test results on file (47 instances of RP), this permitting action is carrying forward the minimum monitoring frequency requirement of once per month for total nickel.

7. Silver (Total):

a. Previous Limits and Basis: The previous permitting action established daily maximum concentration and mass reporting requirements for total silver. The fact sheet associated with the previous permit states that numeric limitations for silver were not established as the total silver effluent data on file with the Department at that time indicated discharge levels did not exceed 0.1 µg/L and that a statistical evaluation indicated the discharge did not exhibit a reasonable potential to exceed the AWQC in effect at that time. It is noted that 1) the current acute AWQC for silver (identified below) is more stringent than the previous criterion; and 2) the chronic criterion for silver of 0.12 µg/L in effect at the time the previous permit was issued has been eliminated with issuance of 06-096 CMR 584.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

b. Statistical Evaluation Summary: Based on a 3/15/07 statistical evaluation of the most recent 60 months of total silver effluent test results on file for this facility (number of DMRs = 20), the Department has identified that the maximum effluent concentration result of 0.29 µg/L reported on the DMR for the period ending 4/30/03 does not exhibit a reasonable potential to exceed the acute AWQC for silver. Based on the 0.29 µg/L test result, the Department has determined that the acute RP threshold is approximately one order of magnitude less than the acute AWQC for silver. There are no chronic or human health-based AWQC for silver.

c. New Permit Limits and Basis: The USEPA has promulgated monthly average and daily maximum effluent guideline limitations of 0.24 mg/L (240 µg/L) and 0.43 mg/L (430 µg/L), respectively, for total silver at 40 CFR Part 433.13.

The Department has a total of 18 silver test results on file for this facility and none has been detected above the Department's reporting limit of 1 µg/L. Therefore, the Department is granting a monitoring waiver for silver in this permitting action under the provisions of 40 CFR Part 122.44, and is establishing Special Condition H, *Monitoring Waiver For Certain Guideline-Listed Pollutants,* in this permit as required by 40 CFR Part 122.44 (a)(2)(iv) cited above. It is noted that analytical chemistry and priority pollutant testing required by this permit includes testing for silver.

8. Zinc (Total):

a. Previous Limits and Basis: The previous permitting action established monthly average and daily maximum water quality-based concentration/mass effluent limitations of 250 µg/L / 0.38 lbs./day and 250 µg/L / 0.36 lbs./day, respectively, for total zinc. The exact derivation of these limits is not known. The concentration limits were carried forward from the 4/4/96 WDL modification to satisfy the anti-backsliding provisions of federal regulations and Department rule as they are more stringent than water quality-based thresholds calculated based on acute and chronic AWQC of 29.9 µg/L and 27.1 µg/L, respectively, in effect at that time (and increased by a factor of 1.5 as previously discussed in this fact sheet). The mass limitations were calculated based on the AWQC of 29.9 µg/L and 27.1 µg/L in effect at that time. It is noted that the current AWQC for zinc (identified below) are less stringent than the previous criteria.

b. Statistical Evaluation Summary: Based on a 10/11/07 statistical evaluation of the most recent 60 months of total zinc effluent test results on file for this facility (number of DMRs = 30), the Department has identified that the maximum effluent concentration result of 53.2 µg/L reported on the DMR for the period ending 6/30/07 does not exhibit a reasonable potential to exceed the acute, chronic or human health-based AWQC for zinc. Based on the 53.2 µg/L test result, the Department has determined that the acute and chronic RP thresholds

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

are approximately one order of magnitude less than the respective acute and chronic AWQC for zinc. The test result of 53.2 µg/L is above the Department's reporting limit of 5 µg/L; therefore, the facility has not "demonstrated through sampling and other technical factors that the pollutant is not present in the discharge," as required by 40 CFR Part 122.44 for a monitoring waiver, and appropriate limitations and monitoring requirements must be established in this permitting action.

c. New Permit Limits and Basis: The USEPA has promulgated monthly average and daily maximum effluent guideline limitations of 1.48 mg/L (1,480 µg/L) and 2.61 mg/L (2,610 µg/L), respectively, for total zinc at 40 CFR Part 433.13. 06-096 CMR 584 establishes identical acute and chronic criteria of 30.6 µg/L for total zinc. Department licensing/permitting actions impose the more stringent of either a water quality-based, BPT-based, or in this case, previous permit limit (to satisfy the anti-backsliding provisions of Department rule). The AWQC are nearly two orders of magnitude more stringent than the BPT-based guidelines and are therefore being used to calculate appropriate effluent limits for this discharge.

Based on the AWQC for zinc, monthly average and daily maximum water quality-based limits/thresholds for total zinc may be calculated as follows:

Monthly Average Conc. = (34)[(0.75)(30.6 µg/L)] + (0.25)(30.6 µg/L)
= 780.3 + 7.7
= 788.0 µg/L x 1.5
= **1,182 µg/L**

Daily Maximum Conc. = (29)[(0.75)(30.6 µg/L)] + (0.25)(30.6 µg/L)
= 665.6 + 7.7
= 673.3 µg/L x 1.5
= **1,010 µg/L**

Monthly Avg. Mass $= \frac{(788.0\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg} =$ **0.33 lbs./day**

Daily Max. Mass $= \frac{(673.3\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg} =$ **0.028 lbs./day**

The previously established monthly average and daily maximum concentration limits of 250 µg/L are more stringent than the respective calculated water quality-based concentration thresholds above and are therefore being carried forward in this permitting action for total zinc. The calculated water quality-based monthly average and daily maximum mass limits of 0.33 lbs./day and 0.028 lbs./day, respectively, are more stringent than the previous permit limits, and are therefore being established in this permitting action for total zinc.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

Taking into consideration the test results on file (no instances of RP), this permitting action is revising the minimum monitoring frequency requirement to once per year for total zinc. It is noted that analytical chemistry and priority pollutant testing required by this permit includes testing for zinc. The permittee is required to conduct testing for total zinc at least once per year even where reduced surveillance level analytical chemistry or priority pollutant testing is established.

It is noted the calculations above are correct in that the monthly average limitations are higher (less stringent) than the daily maximum limits. This occurs due to the acute and chronic AWQC being the same while the chronic dilution factor is greater than the acute.

9. Bis (2-Ethylhexyl) Phthalate:

a. Previous Limits and Basis: Neither the previous permitting action nor the 4/10/05 permit amendment established effluent limitations for Bis (2-Ethylhexyl) Phthalate.

b. Statistical Evaluation Summary: Based on a 10/11/07 statistical evaluation of the most recent 60 months of Bis (2-Ethylhexyl) Phthalate effluent test results on file for this facility (n = 7), the Department has identified that the maximum effluent concentration result of 134.0 µg/L reported for a priority pollutant test conducted on 2/19/07 exhibits a reasonable potential to exceed the human health-based AWQC for Bis (2-Ethylhexyl) Phthalate.

c. New Permit Limits and Basis: The USEPA has not promulgated effluent guideline limitations for . 06-096 CMR 584 establishes identical acute and chronic criteria of 30.6 µg/L for Bis (2-Ethylhexyl) Phthalate. Based on the AWQC (water and organisms) for Bis (2-Ethylhexyl) Phthalate, monthly average water quality-based limits for Bis (2-Ethylhexyl) Phthalate may be calculated as follows:

Monthly Average Conc. = (100)[(0.75)(0.8 µg/L)] + (0.25)(0.8 µg/L)
= 60.0 + 0.2
= 60.2 µg/L x 1.5
= **90.3 µg/L**

Monthly Average Mass = $\frac{(60.2\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg}$ = **0.025 lbs./day**

Taking into consideration the number of test results on file for Bis (2-Ethylhexyl) Phthalate, this permitting action is establishing a minimum monitoring frequency requirement of once per month for this pollutant.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

10. Inorganic Arsenic

a. Previous Limits and Basis: The previous permitting action established monthly average water quality-based concentration and mass effluent limitations of 2.7 µg/L and 0.001 lbs./day, respectively, for total arsenic based on a reasonable potential to exceed the AWQC for inorganic arsenic. 06-096 CMR 584 established revised AWQC for inorganic arsenic. The human health (water and organisms) AWQC for inorganic arsenic was revised from 0.018 µg/L, which was the basis for the previous total arsenic limits, to 0.012 µg/L.

b. Statistical Evaluation Summary: Based on a 4/23/07 statistical evaluation of the most recent 60 months of total arsenic effluent test results on file for this facility (n = 9), the Department has identified that the maximum total arsenic effluent concentration result of 31.0 µg/L reported for a priority pollutant test conducted on October 31, 2006 potentially exceeds the human health-based AWQC for inorganic arsenic. The remaining eight (8) test results reported during the most recent 60-month period are below the Department's minimum reporting level of 5 µg/L.

c. New Permit Limits and Basis: The USEPA has not promulgated effluent guideline limitations for inorganic arsenic for this category of discharger. This permitting action is establishing monthly average concentration and mass limits for inorganic arsenic based on 06-096 CMR 584.

End-of-pipe (EOP), water quality-based, monthly average concentration and mass limits for inorganic arsenic may be calculated as follows:

Monthly Average Conc. $= (100)[(0.75)(0.012\ \mu g/L)] + (0.25)(0.012\ \mu g/L)$
$= 0.9 + 0.003$
$=$ **0.9 µg/L**

Monthly Avg. Mass $= \frac{(0.9\ \mu g/L)(8.34\ lbs./gallon)(0.05\ MGD)}{1000\ \mu g/mg} =$ **0.38 lbs./day**

Department rule Chapter 530 (C)(6) states:

> *All chemical testing must be carried out by approved methods that permit detection of a pollutant at existing levels in the discharge or that achieve detection levels as specified by the Department. When chemical testing results are reported as less then, or detected below the Department's specified detection limits, those results will be considered as not being present for the purposes of determining exceedences of water quality criteria.*

The USEPA has not approved a test method for inorganic arsenic as of the date of issuance of this permit. Therefore, there is no way for the permittee to formally demonstrate compliance with the monthly average water quality based mass and

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

concentration limits for inorganic arsenic established in this permitting action. Therefore, beginning upon issuance of this permit and lasting through the date in which the USEPA approves a test method for inorganic arsenic the permittee is being required to monitor for total arsenic. Once a test method is approved, the Department will notify the permittee in writing and the limitations and monitoring requirements for inorganic arsenic become effective thereafter.

As of the date of this permitting action, the Department has limited data on the percentage of inorganic arsenic (approximately 50%) in total arsenic test results. Based on a literature search conducted by the Department, the inorganic fraction can range from 1% - 99% depending on the source of the arsenic. Generally speaking, ground water supplies derived from bedrock wells will likely tend to have higher fractions of inorganic arsenic (As^{+3}-arsentite and/or As^{+5}- arsenate) than one may find in a food processing facility where the inorganic fraction is low and the organic fraction (arsenobetaine, arsenoribosides) is high. Until the Department and the regulated community in Maine develop a larger database to establish statistically defensible ratios of inorganic and organic fractions in total arsenic test results, the Department is making a rebuttable presumption that the effluent contains a ratio of 50% inorganic arsenic and 50% organic arsenic in total arsenic results.

Being that the only approved test methods for compliance with arsenic limits established in permits is for total arsenic, the Department converted the water quality based end-of pipe monthly average concentration value of 0.9 ug/L for inorganic arsenic calculated on page 32 of this Fact Sheet into an equivalent total arsenic threshold (assuming 50% of the total arsenic is inorganic arsenic). This results in a total arsenic end-of-pipe monthly average concentration threshold of 1.8 ug/L. The calculation is as follows:

$$\frac{\text{0.9 ug/L inorganic arsenic}}{\text{0.5 ug/L inorganic arsenic/ 1.0 ug/L total arsenic}} = \text{1.8 ug/L total arsenic}$$

Therefore, a total arsenic value greater than 1.8 ug/L is potentially exceeding the water quality based end-of pipe monthly average concentration value of 0.9 ug/L for inorganic arsenic. However, the Department's most current reporting limit (RL) for total arsenic is 5 ug/L and may be subject to revision during the term of this permit. All detectable analytical test results shall be reported to the Department including results which are detected below the Department's most current RL at the time of sampling and reporting. Only the results greater than the total arsenic threshold of 1.8 ug/L or the Department's RL at the time of sampling (whichever is higher) will be considered a potential exceedence of the inorganic limit of 0.9 ug/L.

If a test result is determined to be a potential exceedence, the permittee shall submit a toxicity reduction evaluation (TRE) to the Department for review and approval within 45 days of receiving the test result of concern from the

laboratory. Contact the Department's compliance inspector for a copy of the Department's December 2007 guidance on conducting a TRE for arsenic.

Maine law, 38 M.R.S.A., §414-A(2), Schedules of Compliance states "*Within the terms and conditions of a license, the department may establish a schedule of compliance for a final effluent limitation based on a water quality standard adopted after July 1, 1977. When a final effluent limitation is based on new or more stringent technology-based treatment requirements, the department may establish a schedule of compliance consistent with the time limitations permitted for compliance under the Federal Water Pollution Control Act, Public Law 92-500, as amended. A schedule of compliance may include interim and final dates for attainment of specific standards necessary to carry out the purposes of this subchapter and must be as short as possible, based on consideration of the technological, economic and environmental impact of the steps necessary to attain those standards.*"

Special Condition J, *Schedule of Compliance,* of this permit modification establishes a schedule as follows:

Beginning upon issuance of this permit modification and lasting through a date on which the USEPA approves a test method for inorganic arsenic, the limitations and monitoring requirements for inorganic are not in effect. During this time frame, the permittee is required by Special Condition A, Effluent Limitations and Monitoring Requirements, of this permit to conduct 1/Quarter sampling and analysis for total arsenic.

Upon receiving written notification by the Department that a test method for inorganic arsenic has been approved by the USEPA, the limitations and monitoring requirements for inorganic arsenic become effective and enforceable and the permittee is relieved of their obligation to sample and analyze for total arsenic.

The schedule of compliance reserves the final date for compliance with the limit for inorganic arsenic. This reservation stems from the fact the EPA has no schedule for approving a test method for inorganic arsenic nor does the Department have any authority to require the EPA to do so. Therefore, the Department considers the aforementioned schedule for inorganic arsenic to be as short as possible given the technological (or lack thereof) issue of not being able to sample and analyze for inorganic arsenic with an approved method.

Department rule Chapter 523, Waste Discharge License Conditions, § Section 7, *Schedules of Compliance* sub-§3, *Interim dates,* states in part, "*if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.*

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

(i) The time between interim dates shall not exceed 1 year, except that in the case of a schedule for compliance with standards for sewage sludge use and disposal, the time between interim dates shall not exceed six months.

(ii) If the time necessary for completion of any interim requirement (such as the construction of a control facility) is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

Special Condition A, *Effluent Limitations and Monitoring Requirements,* of this permit requires that beginning upon issuance of this permit and lasting through USEPA approval of a test method for inorganic arsenic, the permittee shall conduct 1/Quarter monitoring for total arsenic. Should the test method approval for inorganic arsenic extend more than one year from the date of the issuance of this permit, the sampling and analysis for total arsenic will serve to satisfy the interim requirements specified by Department rule, Chapter 523, *Waste Discharge License Conditions*, Section 7, *Schedules of Compliance*, Sub-section 3, *Interim dates.*

Chapter 530 §(3)(D)(1) states "*For specific chemicals, effluent limits must be expressed in total quantity that may be discharged and in effluent concentration. In establishing concentration, the Department may increase allowable values to reflect actual flows that are lower than permitted flows and/or provide opportunities for flow reductions and pollution prevention provided water quality criteria are not exceeded. With regard to concentration limits, the Department may review past and projected flows and set limits to reflect proper operation of the treatment facilities that will keep the discharge of pollutants to the minimum level practicable."*

It is noted the calculations for establishing limitations for inorganic arsenic on page 33 do not increase the EOP concentration for inorganic arsenic by a factor of 1.5 due to uncertainty of the ratio between organic and inorganic fractions of total arsenic. However, the Department has given the permittee some flexibility by evaluating possible exceedences using the rebuttable presumption that the effluent contains a ratio of 50% inorganic arsenic and 50% organic arsenic in total arsenic results. In other words, the equivalent total arsenic concentration threshold has been increased by a factor of 2.0. Refer to the discussion and calculations on pages 32 and 33 of this Fact Sheet.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

Chapter 530 does not establish specific monitoring frequencies for parameters that exceed or have a reasonable to exceed AWQC. This permitting action is establishing the monitoring frequencies for arsenic based on a best professional judgment given the timing, frequency and severity of the exceedence or reasonable to exceed AWQC. To be consistent with the default monitoring requirements in Chapter 530, the Department is establishing a monitoring frequency of 1/Quarter for total arsenic.

7. DISCHARGE IMPACT ON RECEIVING WATER QUALITY

As permitted, the Department has determined the existing water uses will be maintained and protected and the discharge will not cause or contribute to the failure of the water body to meet standards for Class B classification.

8. PUBLIC COMMENTS

Public notice of this application was made in the *Portland Press Herald* newspaper on or about December 11, 2006. The Department receives public comments on an application until the date a final agency action is taken on the application. Those persons receiving copies of draft permits shall have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to *Application Processing Procedures for Waste Discharge Licenses*, 06-096 CMR 522 (effective January 12, 2001).

9. DEPARTMENT CONTACTS

Additional information concerning this permitting action may be obtained from, and written comments sent to:

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Division of Water Quality Management
Bureau of Land & Water Quality
Department of Environmental Protection
17 State House Station
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10. RESPONSE TO COMMENTS

During the period of March 22, 2007 through April 23, 2007, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit to be issued to United Technology – Pratt and Whitney for the proposed discharge. The Department received no significant comments on the proposed draft permit. However, it came to the attention of the Department during the draft comment period that new test results were available from a priority pollutant scan performed on October 31, 2006. As a result of these new data, the Department has determined that the discharge has on one occasion exceeded the human heath-based ambient water quality criteria for inorganic arsenic and the human health-based AWQC for Bis (2-Ethylhexyl) Phthalate. As a result, the draft permit and fact sheet were revised to include monthly average concentration and mass limits for inorganic arsenic, a schedule of compliance for imposition of these limits, a requirement to submit a toxicity reduction evaluation for arsenic, and a daily maximum concentration reporting requirement for total arsenic. See Special Conditions A, I, and J of the permit associated with this fact sheet for conditions and calculations related to arsenic. Additionally, the draft permit and fact sheet were revised to include monthly average concentration and mass limits for Bis (2-Ethylhexyl) Phthalate.

National Effluent Guideline-Listed Parameter	Previous Permit Limitations				Technology-Based (BPT) Guidelines 40 CFR Part 433.13		Ambient Water Quality Criteria Thresholds				New Permit Limitations			
	Mass (lbs./day)		Concentration (µg/L)		Concentration (µg/L)		Mass (lbs./day)		Concentration (µg/L)		Mass (lbs./day)		Concentration (µg/L)	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Cadmium	0.0045	0.00077	16	28	260	690	0.00086	0.0036	3.1	13.9	0.00086	0.0036	3.1	13.9
Chromium	---	0.62	---	250	1,710	2,770	0.25	4.4	893	15,939	---	---	---	---
Copper	0.042	0.047	152	169	2,070	3,380	0.025	0.028	91	101	0.025	0.028	91	101
Cyanide	---	---	---	---	650	1,200	0.06	0.20	201	726	0.06	0.20	201	726
Lead	0.0058	0.13	21	87	430	690	0.004	0.10	16	320	0.004	0.10	16	87
Nickel	0.57	2.5	480	1,000	2,380	3,980	0.14	1.1	518	3,967	0.14	1.1	480	1,000
Silver	---	---	---	---	240	430	---	0.002	---	7.6	---	---	---	---
Zinc	0.38	0.36	250	250	1,480	2,610	0.33	0.028	1,182	1,010	0.33	0.028	250	250