1. APPLICATION SUMMARY

a. Application: The applicant has applied to the Department for renewal of Department Waste Discharge License (WDL) #W001479-46-B-R which was issued on April 30, 1997 and expired on April 30, 2002. The 4/30/97 WDL authorized the discharge of up to a monthly average flow of 1.07 million gallons per day (MGD) of secondary treated sanitary waste waters to the Penobscot River, Class C, and an specified quantity of untreated combined sanitary and storm water from one (1) combined sewer overflow (CSO) to Mattanawcook Stream, Class C, in Lincoln, Maine.

2. LICENSE SUMMARY
a. **Regulatory** - On January 12, 2001, the Department received authorization from the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System (NPDES) permitting program in Maine except in certain areas of the State. The Penobscot Indian Nation has raised objections to EPA authorizing the State to administer the program for dischargers on the main stem of the Penobscot River north of Indian Island in Old Town, Maine. The discharge from the LSD falls within the disputed area, therefore, the State of Maine does not have authorization to issue a MEPDES program for the LSD. As result, the State of Maine is issuing a WDL for the LSD discharge pursuant to state law.

b. **License Limitations and Monitoring Requirements:** This licensing action is similar to the 4/30/97 WDL action in that it is;

1. Carrying forward the monthly average flow limit of 1.07 MGD.

2. Carrying forward the monthly average and weekly average technology based mass and concentration limits for biochemical oxygen demand (BOD₅) and total suspended solids (TSS).

3. Carrying forward the reporting requirement for the daily maximum mass loadings for BOD₅ and TSS.

4. Carrying forward the monthly average and daily maximum water quality based concentration limits for *E. coli* bacteria.

5. Carrying forward the daily maximum technology based concentration limit for total residual chlorine.

6. Carrying forward the screening level monitoring requirements for whole effluent toxicity (WET) testing and chemical specific testing.

7. Establishing monthly average and or daily maximum reporting requirements for flow, surface overflow rates, number of discharge days per month and percent removal for BOD₅ and TSS.

**This licensing action is different than the 4/30/97 WDL action in that it is;**

*Secondary Treated Waste Waters:*

8. Establishing a requirement for achieving a minimum of 85% removal for BOD₅ and TSS.

9. Establishing a daily maximum best practicable treatment (BPT) limit of 0.3 ml/L for settleable solids and deleting the weekly average concentration reporting requirement.

2. **LICENSE SUMMARY (cont’d)**
10. Revising the daily maximum BPT pH range limit from 6.0 – 8.5 standard units to 6.0 – 9.0 standard units based on a new Department regulation.

11. Eliminating surveillance level monitoring requirements for WET testing and chemical specific testing.

12. Establishing a monthly average and daily maximum mass and concentration reporting requirement for total phosphorus for calendar year 2003 only.

*Primary Treated Waste Waters:*

13. Establishing a daily maximum technology based concentration limit for total residual chlorine.

14. Establishing a daily maximum water quality based concentration limit for *E. coli* bacteria.

c. **History:** The most current relevant regulatory actions for the LSD include the following:

*April 30, 1997* – The Department issued WDL #W001479-46-B-R for a five-year term.


*December 17, 1998* – The EPA issued an Administrative Compliance Order (Docket No. 99-02) to Lincoln Sanitary District. The Administrative Order (AO) required the District to implement improvements/upgrades at the waste water treatment facility and CSO discharge elimination measures in accordance with the Master Plan and implementation schedule, both of which were approved by the EPA and the Department on 12/16/98.

*March 31, 2000* – The EPA issued NPDES permit #ME0101796 for a five-year term. It is noted the NPDES permit contained reporting requirements for an internal wet weather waste stream that receives only primary treatment and disinfection, if necessary, before being combining with secondary treated and disinfected waste waters and discharge to the Penobscot River.

2. **LICENSE SUMMARY (cont’d)**
January 7, 2001 – The LSD submitted a timely application to the Department to renew the WDL for the waste water treatment facility.

May 22, 2002 – The Department administratively modified the 4/30/97 WDL by suspending surveillance level (annual) WET and chemical specific testing as the facility met the criteria established for the suspension pursuant to Department regulation Chapter 530.5 and associated program protocols.

d. Source Description: The waste water treatment facility receives sanitary waste water flows from a population of approximately 4,200 residential and commercial users within the District’s boundaries in the Town of Lincoln. The waste water treatment facility is currently licensed to accept up to 3,600 gpd of septage. The LSD has an up-to-date septage management for the facility required by Department regulation Chapter 555, that has been reviewed and approved by the Department.

The LSD owns and maintains a sewer collection system that is approximately 17.4 miles in length and is approximately 5% combined and 95% separated. The collection system has nine (9) pump stations, all with emergency power provisions and audio/visual alarm systems, with six (6) being hard-wired to the waste water treatment facility. The one (1) remaining licensed CSO's in the previous licensing action (Creamery Court pump station) associated with the collection system was eliminated in February 2000. The CSO was eliminated by the addition of a third wetwell with a vertical turbine pump which upgraded the capacity of the pump station to be able to pump peak flows of up to 8.07 MGD. An emergency bypass port remains in the pump station and must be monitored for bypasses occurrences by this licensing action. A new standby generator has been installed in the pump station.

e. Waste Water Treatment: The LSD waste water treatment facility commenced operations in April of 1982 and provides a secondary level of treatment via a bar rack, two aerated grit chambers, a comminutor, two primary clarifiers each measuring 40 feet in diameter and 10 feet deep, four air-driven rotating biological contactors (RBC's) with coarse bubble diffused aeration and a total media surface area of 488,000 square feet and two circular final clarifiers each measuring 40 feet in diameter and 10 feet deep. The effluent is seasonally disinfected with gaseous chlorine in a chlorine contact chamber measuring 55 feet by 10 feet providing approximately 44 minutes of detention at 1.07 MGD. Flow is measured by an ultrasonic flow meter prior to being discharged to the east bank of the Penobscot River via Outfall #001A through an iron pipe measuring 18 inches in diameter. The waste water treatment facility is designed to provide secondary treatment for an average daily flow of 1.07 MGD and a peak hourly capacity of 2.80 MGD.

During wet weather events (greater than the design flows cited above) an overflow structure at the headworks of the facility diverts the excess flow to a treatment train where the waste water receives treatment via a bar rack, a vortex de-gritter, a primary clarifier and disinfected with gaseous chlorine if necessary, prior to combining with the

2. LICENSE SUMMARY (cont’d)
secondary treated waste water for discharge to the Penobscot River via Outfall #001A. This treatment process was constructed in response to EPA’s 12/16/98 AO and completed in February 2000. The LSD also updated their Wet Weather Flow Management Plan in February 2000 which was reviewed and approved by the Department.

Special Condition I, *Wet Weather Flow Management Plan*, requires the LSD to review and update the plan if necessary. This licensing action requires the LSD to monitor and report effluent quality for the secondary treated and primary treated waste streams independently.

See Attachment A of this Fact Sheet for a schematic of the waste water treatment processes.

Sludge generated at the facility is dewatered via a one-meter belt filter press and disposed of by way of land application between February and May of each year and composted on-site on a year-round basis. On average, the facility generates approximately 12 dry-tons of sludge per month.

3. **CONDITIONS OF LICENSES**

Maine law, 38 M.R.S.A. Section 414-A, requires that the effluent limitations prescribed for discharges require application of best practicable treatment, 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, Maine law, 38 M.R.S.A., Section 420, and Department Regulation Chapter 530.5, *Surface Water Toxics Control Program* requires the regulation of toxic substances at the levels set forth for Federal Water Quality Criteria as published by the U.S. Environmental Protection Agency pursuant to the Clean Water Act.

4. **RECEIVING WATER STANDARDS**

Maine law, 38 M.R.S.A., Section 467(7)(A)(3) indicates the Penobscot River main stem, from the confluence of Cambolasse Stream to the confluence of the Piscataquis River, is classified as a Class C waterway. Maine law, 38 M.R.S.A., Section 465(3) describes standards for classification of Class C waters.
5. RECEIVING WATER CONDITIONS

The 2002 Integrated Water Quality Monitoring and Assessment Report, published by the Department [Table 5-A: Rivers And Streams Impaired By Pollutants Other Than Those Listed in 5-B Through 5-D (TMDL Required)] states that aquatic life standards and fishing (consumption) in a 20.5-mile segment of the Penobscot River main stem from Cambolassee Stream to the Piscataquis River are impaired. The report lists low dissolved oxygen levels, and the discharge of nutrients and dioxin from industrial and municipal point sources and non-point sources as being the cause of the impairment.

In the summers of 1997 and 2001, the Department conducted ambient water quality sampling on a 103-mile segment of the Penobscot River from Millinocket to Bucksport. In reports entitled Penobscot River Modeling Report, Final, June 2000, Penobscot River Data Report May 2002, and Penobscot River Modeling Report Draft, March 2003, prepared by the Department indicates there are sections of non-attainment of dissolved oxygen standards in portions of the Class B sections of the rivers. The segment of the Penobscot River of concern regarding this licensing action is between the confluence of the Mattawamkeag River and the Penobscot River downstream to point on-mile above the West Enfield Dam. Dissolved oxygen standards are not being attained with the treatment plant flows and loadings at actual levels of performance rather than at full licensed/permitted flows and loadings. The Department is scheduled to perform a comprehensive evaluation of the data collected and calibrate an existing model of the river and issue a final report in late spring or early summer of calendar year 2003. If the evaluation and modeling runs determine that at full permitted discharge limits, the LSD’s discharge is causing or contributing to the non-attainment, this permit will be re-opened per Special Condition N, Reopening of Permit For Modifications, to impose more stringent limitations to meet water quality standards.

6. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Secondary Treated Effluent:

a. Flow: The monthly average flow limitation of 1.07 MGD in the previous licensing action is being carried forward in this licensing action and is representative of the monthly average design flow for the waste water treatment facility.

b. Dilution Factors - The Department established applicable dilution factors for the discharge in accordance with freshwater protocols established in Department Rule Chapter 530.5, Surface Water Toxics Control Program, October 1994. With a WDL flow limit of 1.07 MGD the dilution factors are as follows:
6. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont’d)

Modified Acute\(^{(1)}\) = 676 cfs  \(\Rightarrow (676 \text{ cfs})(0.6464) + (1.07 \text{ MGD}) = 408:1\) 

Acute: 1Q10 = 2,703 cfs  \(\Rightarrow (2,703 \text{ cfs})(0.6464) + (1.07 \text{ MGD}) = 1,634:1\) 

Chronic: 7Q10 = 2,822 cfs  \(\Rightarrow (2,882 \text{ cfs})(0.6464) + (1.07 \text{ MGD}) = 1,703:1\) 

Harmonic Mean: = 5,678 cfs  \(\Rightarrow (5,678 \text{ cfs})(0.6464) + (1.07 \text{ MGD}) = 3,431:1\)

Footnotes: (1) Chapter 530.5 (D)(4)(a) states that analyses using numeric 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. The 1Q10 is the lowest one day flow over a ten-year recurrence interval. The regulation goes on to say that 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, up to including all of it. The Department has made the determination that the discharge does not receive rapid and complete mixing with the receiving water, therefore the default stream flow of \(\frac{1}{4}\) of the 1Q10 is applicable in acute statistical evaluations pursuant to Chapter 530.5.

c. Biochemical Oxygen Demand (BOD\(_5\)) & Total Suspended Solids (TSS): - The previous licensing established monthly and weekly average BOD\(_5\) and TSS best practicable treatment (BPT) concentration limits of 30 mg/L and 45 mg/L respectively, that were based on secondary treatment requirements of the Clean Water Act of 1977 §301(b)(1)(B) as defined in 40 CFR 133.102 and Department rule Chapter 525(3)(III). The maximum daily BOD\(_5\) and TSS concentration limits of 50 mg/L were based on a Department best professional judgment of BPT. All three concentration limits are being carried forward in this licensing action.

As for mass limitations, the previous licensing action established monthly average and weekly average limitations based on a monthly average limit of 1.07 MGD that are being carried forward in this licensing action. The limitations were calculated as follows:

Monthly average: \((1.07 \text{ MGD})(8.34)(30 \text{ mg/L}) = 268 \text{ lbs/day}\)
Weekly average: \((1.07 \text{ MGD})(8.34)(45 \text{ mg/L}) = 402 \text{ lbs/day}\)

No daily maximum mass limitations (report only) for BOD\(_5\) or TSS were established in the previous licensing or this licensing action as doing so may discourage the LSD from treating as much waste water through the secondary treatment system during wet weather events.
6. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont’d)

Secondary Treated Effluent:

This licensing action also establishes a new requirement of 85% removal for BOD and TSS pursuant to Department rule Chapter 525(3)(III)(a&b)(3).

Monitoring frequencies for BOD and TSS of 2/Week are being carried forward from the previous licensing action and are based on Department policy for facilities with a monthly average flow greater than 1.0 MGD but less than 5.0 MGD.

d. Settleable Solids – The previous licensing established weekly average and daily maximum concentration reporting requirements. The Department has reconsidered its position on reporting requirements versus numeric limitations. This licensing action is establishing a daily maximum concentration limit of 0.3 ml/L for settleable solids and is considered by the Department as a best professional judgment of BPT for secondary treated waste waters. This licensing action is eliminating the weekly average reporting requirement.

e. E. coli bacteria – The previous licensing action established seasonal monthly average and daily maximum limits of 142 colonies/100 ml and 949 colonies/100 ml, respectively, that are being carried forward in this licensing action. The limits are based on the State of Maine Water Classification Program as established in Maine law, 38 M.R.S.A, §465(3).

f. Total Residual Chlorine - The previous licensing action established a daily maximum BPT limit of 1.0 mg/L for the discharge. Limits on total residual chlorine (TRC) are specified to ensure that ambient water quality standards are maintained and that BPT technology is being applied to the discharge. Licensing/permitting actions by the Department impose the more stringent of water quality or technology based limits. End-of-pipe water quality based concentration thresholds may be calculated as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Acute Criteria</th>
<th>Chronic Criteria</th>
<th>Acute Dilution</th>
<th>Chronic Dilution</th>
<th>Acute Limit</th>
<th>Chronic Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine</td>
<td>19 ug/L</td>
<td>11 ug/L</td>
<td>408:1</td>
<td>1,703:1</td>
<td>7.8 mg/L</td>
<td>19 mg/L</td>
</tr>
</tbody>
</table>

Example calculation: Acute – 0.019 mg/L (408) = 7.8 mg/L

In the case of the LSD facility, the calculated acute water quality based threshold is higher than 1.0 mg/l, thus the BPT limit of 1.0 mg/L is imposed as a daily maximum limit.

g. pH Range- The previous licensing action established a pH range limitation of 6.0 - 8.5 standard units. The limits were based on Maine Board of Environmental Protection Policy regarding the certification of NPDES permits and were considered best practicable treatment limitations. This licensing action is expanding the range limit from 6.0 – 8.5 to
6.0 –9.0 standard units pursuant to a new Department rule found at Chapter 525(3)(III)(c). The new limits are considered BPT.

6. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont’d)

Secondary Treated Effluent:

h. Total Phosphorus – This licensing action is establishing a 1/Week monitoring requirement for total phosphorus during the summer months of calendar year 2003. The information collected will assist the Department in its on-going modeling efforts to determine the assimilative capacity for total phosphorus on the main stem of the upper Penobscot River.

i. Whole Effluent Toxicity (WET) and Chemical Specific Testing Maine Law, 38 M.R.S.A., Sections 414-A and 420, prohibits the discharge of effluents containing substances in amounts which 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 EPA. Department Rules, 06-096 CMR Chapter 530.5, Surface Water Toxics Control Program, set forth ambient water quality criteria (AWQC) for toxic pollutants and procedures necessary to control levels of toxic pollutants in surface waters.

WET and chemical specific (priority pollutant) testing, as required by Chapter 530.5, is included in order to fully characterize the effluent. This license also 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 waste water, existing treatment and receiving water characteristics.

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 and vertebrate species. Chemical specific, or “priority pollutant (PP),” testing 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.

The Chapter 530.5 regulation places the LSD facility in the low frequency category for WET testing as the facility does not meet the criteria established for inclusion in the medium or high categories. As for chemical specific testing, the regulation places the LSD facility in the high frequency category as the facility has a licensed flow of greater than 1.0 MGD.

A recent review of LSD’s data indicates that they have fulfilled the Chapter 530.5 testing requirements to date. See Attachment B of this Fact Sheet for a summary of the WET test results and Attachment C of this Fact Sheet for a summary of the chemical specific test dates.
6. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont’d)

Secondary Treated Effluent:

Department Rule Chapter 530.5 and Protocol E(1) of a document entitled *Maine Department of Environmental Protection, Toxicity Program Implementation Protocols*, dated July 1998, states that statistical evaluations shall be periodically performed on the most recent 60 months of WET and chemical specific data for a given facility to determine if water quality based limitations must be included in the license.

Chapter 530.5 §C(2) states when a discharge "...contains pollutants at levels that have a reasonable potential to cause or contribute to an ambient excursion in excess of a numeric or narrative water quality criterion, appropriate water quality based limits must be established in the permit upon issuance."

Chapter 530.5 §C(3) also states that if data indicates that a discharge is causing an exceedence of applicable AWQC, then: "(1) the Department must notify the licensee of the exceedence; (2) the licensee must submit a toxicity reduction evaluation (TRE) plan for review and approval within 30 days of receipt of notice and implement the TRE after Department approval; (3) the Department must modify the waste discharge license to specify effluent limits and monitoring requirements necessary to control the level of pollutant and meet receiving water classification standards within 180 days of the Department’s approval of the TRE.”

On November 25, 2002, the Department conducted a statistical evaluation on the aforementioned tests results in accordance with the statistical approach outlined in EPA's March 1991 document entitled *Technical Support Document (TSD) for Water Quality Based Toxics Control*, Chapter 3.3.2 and Maine Department of Environmental Protection Guidance, July 1998, entitled *Toxicity Program Implementation Protocols*. The results of the 11/25/02 WET evaluation indicates the discharge from the LSD facility does not exceed or have a reasonable potential to exceed the critical acute or chronic ambient water quality thresholds for any of the WET species tested in the 60-month evaluation period. In addition, the statistical evaluation indicates the discharge does not exceed or have a reasonable potential to exceed acute, chronic or human health ambient water quality criteria (AWQC) established in state law and Department regulations.

Maine Department of Environmental Protection Guidance entitled *Toxicity Program Implementation Protocols*, July 1998, protocol #F(9) establishes the criteria for reduced surveillance level testing for publicly owned treatment works. The protocol states that for facilities with all dilution factors greater than 20:1 and no reasonable potential or exceedences of AWQC over a full five-year cycle may receive a reduction to one round of screening testing for the complete suite of chemical specific (priority pollutants) and acute and chronic WET tests for all required species and that all screening tests must be completed in the screening year. The screening year begins 12-months prior to the expiration date of the license.
6. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont’d)

Secondary Treated Effluent:

The Department has made the determination that the LSD qualifies for the chemical specific and WET testing reduction and therefore has made a best professional judgment to grant the LSD the reduction in chemical specific and WET testing to a screening level of testing. Screening level testing must be completed in the 12-month period prior to the expiration date of this license. No surveillance level (1/Year) of testing is required in the interim. In accordance with protocol F(9), the licensee must submit to the Department on an annual basis, a written statement evaluating its current status for each of the four conditions listed in Department regulation, Chapter 530.5(B)(7)(c)(iii). See Special Condition M, Chapter 530.5(B)(7)(c)(iii) Certification, of this license.

Primary Treated Effluent:

For those flows in excess of the daily and peak hourly design flows received at the treatment facility which are greater than that which can be treated to a secondary level of treatment, the Department has made a best professional judgment that primary treatment and disinfection constitutes appropriate and best practicable treatment. The previous licensing action did not contain any limitations or monitoring requirements for this waste stream as the treatment process was constructed after the issuance date of the previous license. The reporting requirements for the parameters in Special Condition A(2) of this license (Flow, Surface Loading Rate, Overflow Occurrences and BOD5 and TSS percent removal rates) are being established based on a Department best professional judgment of the parameters deemed necessary to evaluate the performance of the primary treatment process and are consistent with the reporting requirements in MEPDES permits and WDL’s with secondary bypass capabilities. It is noted the secondary treated waste water and primary treated waste waters (during wet weather events) are disinfected independently and the primary treated waste stream combines with the secondary treated waste stream after the chlorine contact chamber.

j. **E. coli bacteria** – The licensing action is establishing a daily maximum water quality based limit of 949 colonies/100 ml that is based on the State of Maine Water Classification Program as established in Maine law, 38 M.R.S.A, §465(3).

k. **Total residual chlorine** – This licensing action is establishing a daily maximum technology based limit of 1.0 mg/L based on a Department best professional judgment of BPT for this type of waste stream and treatment process.
7. DISCHARGE IMPACT ON RECEIVING WATER QUALITY

The effluent limitations in this license are equal to or more stringent than the limits in the previous license and/or effective NPDES permit with the exception of the pH range limitation. The Department has made a best professional judgment determination that as licensed, the discharge will not cause or contribute the failure of the receiving water to meet the standards of its ascribed classification and the designated uses of the river will continue to be maintained and protected. If future modeling runs determine that at full permitted discharge limits, the licensee’s discharge is causing or contributing to the non-attainment, this permit will be re-opened per Special Condition N, Reopening of Permit For Modifications, to impose more stringent limitations to meet water quality standards.

8. PUBLIC COMMENTS

Public notice of this application was made in the Lincoln News newspaper on or about December 6, 2001. The Department receives public comments on an application until the date a final agency action is taken on that 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 Chapter 522 of the Department’s rules.

9. DEPARTMENT CONTACTS

Additional information concerning this licensing action may be obtained from and written comments should be sent to:

Gregg Wood  
Division of Water Resource Regulation  
Bureau of Land and Water Quality  
Department of Environmental Protection  
17 State House Station  
Augusta, Maine 04333-0017  
Telephone: (207) 287-7685

10. RESPONSE TO COMMENTS

During the period of February 10, 2003 through March 10, 2003, the Department solicited comments on the proposed draft Waste Discharge License to be issued for the discharges cited in this license. The Department received written comments from the Lincoln Sanitary District in a letter dated February 12, 2003. Responses to LSD’s comments are as follows:

Comment #1 – The LSD indicated that the LSD waste water treatment facility is currently preparing a facilities plan for the replacement of the rotating biological contactors (RBCs). The LSD has recommended delaying the seasonal phosphorus testing until after the facility upgrade as data collected prior to the upgrade may not be representative of the effluent quality in the future. The LSD has recommended commencing phosphorus sampling beginning the summer of calendar year 2005.
10. RESPONSE TO COMMENTS (cont’d)

*Response #1*: The Department believes collecting phosphorus data is necessary and appropriate beginning calendar year 2003 given the dissolved oxygen non-attainment in the Class B segment below the LSD discharge. Once the Department’s modeling efforts are complete in late spring or early summer of 2003, the Department will re-evaluate limitations and or monitoring requirements of the license.