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ENVIR. APPEALS BOARD

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May 28, 2005

U.S. Environmental Protection Agency
Clerk of the Board, Environmental Appeals Board
Colorado Building
1341 G Street, N.W., Suite 600
Washington, D.C. 20005

Re: NPDES Permit No. MA0101010
Petition for Review

Dear Clerk of the Board:

Enclosed herewith please find the original and five copies of a Petition for Review for the subject NPDES permit.

Sincerely,

Timothy A Watts

Douglas H Watts

BEFORE THE

ENVIRONMENTAL APPEALS BOARD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C.

In the Matter of:

The City of Brockton NPDES Appeal No. _____

Brockton Advanced Wastewater Facility

NPDES Permit No. MA0101010

Timothy A. Watts

Douglas H. Watts

Petitioners.

PETITION FOR REVIEW

Pursuant to 40 CFR § 124.19, Timothy A. Watts and Douglas H. Watts ("Petitioners") submit to the Environmental Appeals Board (the"Board") this Petition for Review ("Petition") to review or otherwise contest the May,11 2005 final permit decision of the United States Environmental Protection Agency (the" EPA") to issue a permit to the City of Brockton (the "City" or the "Permittee") for a five year renewal for a National Pollutant Discharge Elimination System Permit issued jointly by the EPA pursuant to the Federal Clean Water Act, 33 U.S.C.§ 1251 et seq. (the "CWA"), and the Massachusetts Department of Environmental Protection (the "DEP") under the Massachusetts Clean Waters Act, M.G.L. c. 21, § 26 et seq., (the "Act"), Permit

No.MA01001010 (the "Permit").

Any permit issued by EPA and DEP to the Permittee must provide for compliance with the applicable requirements of the CWA, the Act and regulations thereunder. See 40 CFR §122.4(a); 314 CMR § 3.07(1). Any such permit issued by EPA and DEP must also ensure compliance with the applicable water quality requirements of all affected states. 40 CFR §122.4(d); 314 CMR 3.07(4). The DEP also has affirmative obligations that must be satisfied in issuing any CWA certification. Specifically, any certification of a permit by the DEP must ensure that the permit imposes conditions adequate to assure compliance with the applicable provisions of the CWA, including state water quality standards. 33 U.S.C. § 1341, 40 CFR § 124.53.

Petitioners assert there are certain conditions included in the Permit, and certain conditions omitted from the Permit, based on "a finding of fact or conclusion of law which is clearly erroneous" or on "an exercise of discretion or an important policy consideration which the [Board] should, in its discretion, review". 40 CFR § 124.19(a).

The Petitioners seek review of certain Permit conditions on the grounds that these conditions are based on erroneous findings of fact or conclusions of law (a) whether the conditions of the Permit and Certification adequately conform to the Massachusetts water quality requirements, specifically the antidegradation, anticutrophication, Class B, odor, color and turbidity water quality requirements, and the minimum criteria applicable to all surface waters, (b) whether the conditions of the Permit and Certification adequately ensure compliance with the CWA, the Act and regulations promulgated thereunder, and (c) whether the Permit contains and the Certification requires adequate control mechanisms necessary to meet the conditions of the Permit that prohibit the

Permittee from causing violations of the water quality standards in the Receiving Waters.

1. Description of Petitioners

Timothy A. Watts and Douglas H. Watts are citizens of the United States of America who are disgusted by the ongoing gross and blatant pollution of the Salisbury Plain River, the Matfield River and the Taunton River by this Facility. As a direct result of the discharge of the Facility the whole of the Salisbury Plain River below the Facility, and its parent stream, the Matfield River, are unusable and unsafe for public recreation and unsuitable habitat for these rivers' native aquatic species. In June 2004, Petitioners filed timely written comments on the draft permit for the Facility (Exhibits A,B). This Petition addresses issues discussed in detail by both Petitioners in their previous comments to EPA.

2. Receiving Waters and Facility

Salisbury Plain River (Segment MA62-06) Location: From the Brockton Wastewater Facility discharge, Brockton to the confluence with Beaver Brook forming the Matfield River, East Bridgewater.

Segment Length: 2.3 miles

Classification: Class B, Warm Water Fishery

The drainage area of this segment is approximately 21.3 square miles. Land-use estimates (top three) for the subwatershed:

Residential.....45.7%

Forest.....24.5%

Open land……9.3%

The impervious cover area for this subwatershed is 25.7%.

This segment is on the Massachusetts Year 2002 Integrated List of Waters – Category 5 for not meeting water quality standards for pathogens and causes unknown (MA DEP 2003 Exhibit I).

The Brockton Wastewater Treatment Facility (Facility) discharges pollution into the Taunton River watershed, the largest watershed in southeastern Massachusetts and the largest undammed coastal watershed in southern New England. The Taunton River watershed is the largest tributary to Mount Hope Bay and Narragansett Bay in Massachusetts and Rhode Island. Prior to the onset of severe pollution, the Taunton River Watershed supported nearly all of the diadromous fish species native to the northeastern United States and Canada, including Atlantic sturgeon, shortnose sturgeon, striped bass, sea lamprey, American shad, blueback herring, alewife, anadromous brook trout, white perch, American eel, rainbow smelt and tomcod. The eastern portion of the Taunton River watershed is fed by a connected series of freshwater ponds -- Assawompset, Great Quitticas, Little Quittacas, Nanapocksha and Apponequet Ponds -- the largest natural freshwater lakes in Massachusetts. The western portion of the Taunton River watershed is fed by the Hockomock Swamp, a 6,000 acre array of swamps and meadows which comprise the largest freshwater wetland complex in Massachusetts.

The Taunton River watershed has been home to humans for more than eight millennia. The richness and diversity of its native aquatic fauna have sustained humans since the last Ice Age. In less than one century, the native aquatic fauna of the Taunton River has been nearly destroyed by the pollution of its waters. The Taunton River is one

of the most severely polluted rivers in New England. The largest source of pollution in the Taunton River watershed is human and industrial sewage from the City of Brockton, Massachusetts. Mount Hope Bay, the coastal embayment which receives all of the water of the Taunton River, is the most degraded coastal embayment in New England. One of the largest contributors of pollution to Mount Hope Bay is the Facility.

Because the Facility is located in the uppermost headwaters of the Taunton River watershed, the pollution from this plant degrades and impairs the health of the entire length of the Taunton River and its estuarial complex in southeastern Massachusetts and Rhode Island. Native fauna -- from brook trout in the Taunton River's headwaters to winter flounder and quahogs in Narragansett Bay -- are severely harmed by ongoing pollution from the Facility.

Deeds of record from the 17th century show the Native American name for the Salisbury Plain River and its parent, the Matfield River, is Aquanissiwamissoo. Historic accounts show the native fisheries of Aquanissiwamissoo included an abundance of native brook trout, American eel and American shad. The Aquanissiwamissoo is a medium to high gradient stream, with numerous rapids and riffles. The Aquanissiwamissoo is primarily fed by groundwater and springs, resulting in water temperatures and habitat favored by native brook trout (Salvelinus fontinalis). Much of the native brook trout habitat of the Salisbury Plain and Matfield River watersheds has been destroyed by urban and residential development. This habitat can be physically restored, but restoration efforts will be fruitless if the waters of the Salisbury Plain and Matfield Rivers are severely polluted from effluent discharges by the Facility.

Historic records (Belding 1925) show the Aquanissiwamissoo was an important

breeding ground for the native American shad of the Taunton River watershed. Severe pollution from the Facility is now preventing native American shad from reestablishing themselves in the Taunton River watershed. A remnant run of native American shad persists in the Palmer River, a Mount Hope Bay tributary adjacent to the Taunton River in Rehoboth, Massachusetts. Despite the close proximity of this remnant population, the Taunton River, Matfield and Salisbury Plain Rivers do not support any American shad. American shad will not be able to recolonize their native habitat in the Taunton River watershed so long as the Taunton River remains severely polluted due to effluent from the Facility.

Today, the Facility discharges the waste of more than 100,000 people into a spring-fed native brook trout stream less than 30 feet in width. Since the City of Brockton began discharging its sewage into the Salisbury Plain River, the City's discharge has been in violation of the United States Clean Water Act.

The City of Brockton's discharge of sewage into the Salisbury Plain River has been in violation of the United States Clean Water Act since the discharge began nearly 30 years ago. Today, the City of Brockton's discharge of sewage into the Salisbury Plain River is in violation of the United States Clean Water Act. The Draft Permit issued by US EPA on May 11, 2005 will allow the City of Brockton's illegal discharge of sewage to continue indefinitely. These facts have forced this Petition.

3. The Facility Discharge is the Primary Cause of the Degraded Condition of the Receiving Waters.

"Many commenters requested that language restricting new sewer connections

and limiting the Towns of Abington and Whitman to 1MGD be deleted from the draft permit." (Comment #19 Page # 7 Response to Public Comments Exhibit D)

"We understand that several communities near the treatment facility are faced with difficult decisions relative to water and wastewater management, however, the Salisbury Plain River can not support an increase in flow. As stated in the fact sheet, the facility frequently exceeds its design flow of 18 MGD and high flows have caused the facility to be out of compliance with their existing NPDES permit. The Salisbury Plain River, is an effluent dominated river (the Salisbury Plain River at the point of the POTW discharge is about 98 percent effluent under 7Q10 conditions) and does not meet the State's Water Quality Standards for Class B Waters. It is also on the State's 2004 Integrated List of Waters as a Catergory 5 water (water requiring a TMDL), for pathogens." (EPA Response to Comment # 19 Page # 7 Exhibit D)

In a June 2003 press release EPA made the following statement regarding the Facility "The city's treatment plant, which discharges to the Salisbury Plain River, has consistently failed to meet pollution discharge limits in its federal permit over the last decade. Inspections by EPA and the Massachusetts Department of Environmental Protection (DEP) and the plant's own reports document equipment failures, operator errors, chemical feed problems and chronic bypassing of treatment equipment at the plant. This has led to excessive discharges of sewage solids, bacteria, ammonia and chlorine into the river, which flows to the Matfield River which downstream becomes the Taunton River." (Exhibit F)

The Petitioners assert that these statements by EPA are an acknowledgement by EPA that the Facility is the primary cause of the receiving waters not meeting

MAWQS. Furthermore, since the above statements were made MA DEP has released 2005 draft reassessment of the 303d list for the receiving waters. The draft for the segment from the Facility discharge, Brockton to the confluence with Beaver Brook forming the Matfield River, East Bridgewater segment Length: 2.3 miles states the following "Sewage odors, turbidity, filamentous green algae and trash/construction materials were observed in the Salisbury Plain River near Belmont Street, West Bridgewater by both DWM and ESS staff in 2001 and 2002." (MA DEP 2005 Exhibit I)

"The *Primary Contact Recreational Use* is assessed as impaired because of elevated bacteria counts. The *Secondary Contact Recreational* and *Aesthetics* uses are also assessed as impaired because of the objectionable conditions (odors, turbidity, filamentous green algae and trash and debris). These uses are impaired as a result of the Brockton Advanced Water Reclamation Facility discharge as well as nonpoint source pollution in this urbanized subwatershed."

"The *Aquatic Life Use* is assessed as impaired for this segment of the Salisbury Plain River based primarily on the results of the benthic macroinvertebrate community analysis and the limited water quality data. Low dissolved oxygen/saturation and elevated total phosphorus concentrations were both documented and are associated with the Brockton Advanced Water Reclamation Facility discharge as well as nonpoint source pollution in this urbanized subwatershed. Acute and chronic toxicity in the Brockton Advanced Water Reclamation Facility effluent are also of concern." (MA DEP Exhibit I)

This segment was previously listed on the Massachusetts Year 2002 Integrated List of Waters – Category 5 for not meeting water quality standards for pathogens and

causes unknown only (MA DEP 2005 Exhibit K).

The Salisbury Plain River segment upstream of the Facility was reassessed as well. This segment runs from the confluence of Trout and Salisbury brooks, Brockton to the Facility discharge, Brockton, Segment Length: 2.4 miles. This segment is on the Massachusetts Year 2002 Integrated List of Waters – Category 5 for not meeting water quality standards for siltation, pathogens, suspended solids, and other habitat alterations (MA DEP 2005 Exhibit J).

"This segment of the Salisbury Plain River is assessed as impaired for both the *Primary* and Secondary Contact Recreational uses because of elevated levels of bacteria during both wet and dry weather sampling conditions." (Ma DEP 2005 Exhibit J) The *Aesthetics Use* is not assessed. The draft 2005 assessment for this segment remained unchanged from the MA DEP 2002 assessment.

In a letter dated August 9, 2002 EPA made the following statement to the City of Brockton regarding the Facility. "The receiving water for Brockton's wastewater discharge is dominated by the effluent during low flow conditions. There is evidence that the receiving water does not support aquatic life uses designated in the Massachusetts Water Quality Standards. Toxicity and nutrient loadings are a primary concern relative to water quality. The existing permit contains a 1.0 mg/l phosphorus limit but future limits will be much more stringent. The new national criteria recommendation for receiving water concentrations of total phosphorus is 0.024 mg/l. The existing permit expires in 2004 and the reissued permit will almost certainly contain a much more stringent water quality based phosphorus limit."

"In addition, nitrogen loadings to Mt. Hope Bay are a significant concern. A Total

Maximum Daily Load (TMLD) will be established for Mt. Hope Bay in the next few years that will likely require significant reductions in current nitrogen loadings. Given that the Brockton wastewater treatment facility has been estimated to contribute as much as 30% on the nitrogen loading to Mt. Hope Bay, there is high likelihood that the total nitrogen limits will be incorporated in future NPDES permits." (EPA letter to City 2002, Exhibit G).

The Petitioners assert that these statements by EPA and MA DEP are an acknowledgement by EPA and MA DEP that the Facility is the primary cause of the receiving waters not meeting MAWQS. **"The Treatment Facility Discharge is the Primary Cause of the Degraded Condition of the Receiving Waters"** These statements also establish that the impacts of the Facility's discharge are not limited to the Salisbury Plain River alone. EPA acknowledges the impacts of the Facility's flow on the whole aquatic ecosystem of the Salisbury Plain River, Matfield River, Taunton River and Mount Hope Bay.

The following list of submitted exhibits further support the Petitioners assertion that, "The Facility Discharge is the Primary Cause of the Degraded Condition of the Receiving Waters."

The Petitioners offer the following exhibits as attachments in support of our assertion that, "The Facility Discharge is the Primary Cause of the Degraded Condition of the Receiving Waters."

Exhibit C Page 1, 2, Taunton River Watershed Alliance public comments regarding 2002 flows.

Exhibit L, Bridgewater State College public comments.

Exhibit M, Taunton River watershed 1996 and 2001 Biological Assessment MA DEP.

Exhibit N, ESS Group Matfield and Salisbury Plain River Watersheds Nonpoint Pollution Assessment Report and Management Plan MA DEP 2003.

Exhibit N, Part A, Sample Site Locations.

Exhibit N, Part B, Field Data Sheets

Exhibit N, Part C, Field Reconnaissance Observations.

4. Compliance With Statutory Water Quality Standards.

For EPA to issue a NPDES permit for the discharge of pollutants by the City Facility into the Salisbury Plain River, the EPA must show this discharge of pollutants will not cause the receiving water, the Salisbury Plain River, to fail to meet its statutory minimum water quality standards. 33 U.S.C. § 1341, 40 CFR § 124.53. This is demonstrated in EPA's Permit for the Facility, which contains the following mandatory compliance requirement at page 6, Part I.A.I, Line A: (Exhibit E)

"a. "The discharge shall not cause a violation of the water quality standards in the receiving waters."

In the EPA's "Responses to Public Comments" which accompanies the Permit, EPA states: "The Salisbury Plain River is an effluent dominated river (the Salisbury Plain River at the point of the POTW discharge is about 98 percent effluent under 7Q10 conditions) and does not meet the State's Water Quality Standards for Class B Waters."(EPA Response to Comment 19 Exhibit D)

The Permit provides no evidence its proposed effluent limitations will allow

the Salisbury Plain River to meet its minimum statutory water quality standards. In its response to Comment 47, EPA indicates the proposed effluent limitations will not allow the Salisbury Plain River to meet its statutory water quality standard: "EPA and MA DEP believe these measures in conjunction with the plant upgrades will contribute toward minimizing the further degradation of the Salisbury Plain River and move closer toward meeting the State's Water Quality Standards during this five year permit cycle." (EPA Response to Comment 47 Exhibit D)

EPA is assuming that future upgrades and future permit limits "will contribute toward minimizing the further degradation of the Salisbury Plain River and move closer toward meeting the State's Water Quality Standards during this five year permit cycle." Water quality based effluent limitations require otherwise as pointed out by EPA in their response to comments by the Town of Hudson during the public comment period on the Hudson Wastewater Treatment Facility "The establishment of water quality based limits, unlike technology based limits, are not based on treatment capabilities." (Assabet River NPDES Permits-Response to Comments, page #3 response #4 Exhibit II) US EPA further states on Page # 7 Comment # 3, "In addition to technology based controls, permits must contain any more stringent limitations for particular pollutants that are necessary to meet MAWQS. A water quality based effluent limitation must be calculated at levels to ensure achievement of MAWQS, regardless of the availability or effectiveness of technologies or the cost dischargers would incur to meet those limits (Assabet River NPDES Permits-Response to Comments, page #7 response #3 Exhibit H)." EPA further states on Page # 18, 19 Response # 12 last sentence, "Finally, The Agencies note that permits must include limits as stringent as

necessary to meet Massachusetts WQS irrespective of technological feasibility." (Assabet River NPDES Permits-Response to Comments, page #19 response #12 Exhibit H) The effluent limits in this permit are not in keeping with this EPA standard by the EPA's own admission.

In its response to Comment 50, EPA suggests the proposed effluent limitations may not allow the Salisbury Plain River to meet its statutory water quality standard: "Many variables can contribute to a water body not achieving its assigned water quality standards. Large scale reductions in dry weather and wet weather point source pollutant loadings will be necessary to achieve Standards in the Salisbury Plain River This permit as well as the Phase II stormwater permit, will result in significant reductions in dry weather and wet weather pollutant loadings but if further reductions are necessary the permit may be modified or revoked and reissued with more stringent limits if cause exists, pursuant to 30 CFR 122.62." (EPA Response to Comment 50 Exhibit D)

Here again EPA is assuming that that this permit and a yet to be established Phase II stormwater permit will result in significant reductions in dry weather and wet weather pollutant loadings. "**But if** further reductions are necessary the permit may be modified or revoked and reissued with more stringent limits if cause exists." Water quality based effluent limitations do not allow for **But ifs'.** EPA must demonstrate this Permit as issued will allow the Salisbury Plain River to meet its water quality standard.

As shown above, EPA itself has stated the Permit for the Facility will continue to cause the Salisbury Plain River to fail to meet its statutory water quality standards; and

the Permit will not allow the Salisbury Plain River to meet its statutory water quality standards. Without evidence showing the Permit will allow the Salisbury Plain River to meet its statutory water quality standards, the Permit is illegal.

5. Compliance with Statutory Aesthetic Standards

EPA acknowledges that under existing conditions, the odor of chlorine emanating from wastewater discharged from the facility is noticeable and objectionable in the Salisbury Plain River, the Matfield River and the Taunton River for many miles downstream from the WWTP outfall (Public Comment 43 Exhibit D). Petitioners and other commenters have informed EPA that the strong chemical odor emanating from the water in these rivers due to the Facility discharge is objectionable and makes these waters unsuitable for swimming, fishing and boating (Exhibit C Page 3, 4). In response to these comments, EPA states: "The Massachusetts Water Quality Standards for Class B waters prohibit odor in concentrations or combinations which are aesthetically objectionable, that would impair use assigned to Class B waters, or cause tainting in the edible portion of aquatic life." (EPA Response to Comment 43 Exhibit D)

This EPA response indicates the agency has ignored or does not understand the issue raised by commenters. EPA states: "The upgrades to the facility which include improvements for sludge storage, the sludge thickening and dewatering process and the headworks will all contribute to the elimination of odors emanating from the facility." (EPA Response to Comment 43 Exhibit D).

The issue raised by Petitioners and other commenters does not involve odors emanating from the wastewater treatment facility itself. The issue raised by commenters

is the noticeable and objectionable odor of the water of the Salisbury Plain, Matfield and Taunton Rivers due to large amounts of chemicals used in the wastewater effluent discharged by the Facility. As noted by the EPA, Petitioners and other commenters, the waters of the Salisbury Plain, Matfield and upper Taunton Rivers now smell like a sewage treatment plant due to wastewater from the Brockton WWTP. The odor of chemicals in the water of these rivers is as strong as that from laundromat for many miles below the WWTP discharge. This is further confirmed by the field data sheets of the ESS Nonpoint Study. Field personal noted sewage odors emanating from the water at every sample site on the Salisbury Plain River and Matfield River downstream of the Facility. They noted no sewage odors at sample sites on the Salisbury Plain River up stream of the Facility. (Exhibit N, Parts A, B, C)

These observations should not be surprising because the EPA itself describes the Salisbury Plain River as an "effluent dominated river" and states that during low flow conditions more than 98 percent of the water in the Salisbury Plain River consists of effluent from the Facility. (US EPA Response to Comment 19 Exhibit D).

EPA provides no evidence or assurance its Draft Permit will eliminate the strong and objectionable odor in the receiving waters below the Facility. Unless this odor is eliminated from these receiving waters, the Draft Permit is not in compliance with Massachusetts statutory water quality standards and is illegal.

"In addition to technology based controls, permits must contain any more stringent limitations for particular pollutants that are necessary to meet MAWQS. A water quality based effluent limitation must be calculated at levels to ensure achievement of MAWQS, regardless of the availability or effectiveness of technologies or the cost

dischargers would incur to meet those limits" (Assabet River NPDES Permits-Response to Comments, page #7 response #3 Exhibit II). Unless and until a Use Attainability Analysis justifies a downgrading of the use classification of the Salisbury Plain, Matfield and Upper Taunton Rivers' the Permit must provide controls to eliminate the foul odors which clearly violate the MAWQS in the Salisbury Plain, Matfield and Upper Taunton Rivers'.

Because the Taunton River is in the final stages of designation by the National Park Service as a Wild and Scenic River, and because the Matfield and Salisbury Rivers have been recognized as significant tributaries of the same, it is highly unlikely that a Use Attainability Analysis would result in the uses of these rivers being downgraded. (National Park Service Comments Exhibit O)

The Facility disinfects human sewage and wastewater with chlorine, an element highly toxic to life. Other methods exist to disinfect human sewage which do not require the use of chlorine. One of these methods is ultra-violet (UV) radiation. Disinfection of human sewage with UV radiation is a common practice in wastewater treatment facilities across the United States of America. Several commenters requested the EPA require the Facility convert from its use of chlorine as a disinfectant to UV treatment because it would eliminate the discharge of toxic chlorine into the Salisbury Plain, Matfield and upper Taunton Rivers (EPA Comment 34). In its Response, the US EPA states: "The permit includes extensive new requirements on chlorine monitoring to ensure that discharges of residual chlorine are consistent with permit limits." (EPA Response to Comment 34 Exhibit D).

This Response evades the question. EPA provides no reason or explanation why it

is not requiring the Facility to convert to ultra-violet disinfection and eliminate the discharge of chlorine into the Salisbury Plain River. Conversion of the Facility to ultra-violet disinfection would eliminate the discharge of toxic chlorine into the Salisbury Plain, Matfield and Taunton Rivers by the Facility. The technology to achieve this conversion is readily available and affordable. As noted by EPA, the existing objectionable odor from the disinfection process which spoils the receiving waters for many miles downstream is a violation of Massachusetts Water Quality Standards. EPA provides no evidence or assurance its permit restrictions on the discharge from the Facility will result in compliance with the statutory water quality standards.

EPA's assurance that the discharge of residual chlorine into these rivers will be "consistent with permit limits" is tautological. Discharge of residual chlorine into the Salisbury Plain River must be consistent with permit limits. This statement is not relevant to the issue of why any discharge of chlorine is allowed in the Permit when technological methods are available to eliminate the use of chlorine at the Facility.

If the EPA required the facility to convert to UV disinfection and eliminate the of use of chlorine as disinfectant, there would be no need for EPA to require extensive monitoring and permit limitations on this highly toxic element. EPA provides no explanation for its refusal to require the Facility to convert to ultra-violet disinfection and to eliminate the discharge of chlorine into the Salisbury Plain, Matfield and Taunton Rivers.

5. Lack of Dilution Flows

In its "Responses to Public Comments,"EPA states: "The Salisbury Plain

River is an effluent dominated river (the Salisbury Plain River at the point of the POTW discharge is about 98 percent effluent under 7Q10 conditions) and does not meet the State's Water Quality Standards for Class B Waters." (EPA Response to Comment 19 Exhibit D)

Despite this statement, EPA's Draft Permit requires no reductions in the amount of wastewater effluent discharged by the Facility into the Salisbury Plain River. The severe impact of the existing volume of effluent on the receiving waters from the Brockton WWTP is cited by US EPA as the reason for its refusal to allow additional communities to send their wastewater to the facility. EPA states: "Increasing flow to the facility by allowing new sewer connections would inevitably contribute to further water quality impairment of the Salisbury Plain River .... We believe increasing the flow at the Brockton facility by having additional communities send their wastewater to the facility will cause further degradation of the Salisbury Plain River." (EPA Response to Comments 19 and 20 Exhibit D)

There are a number of methods available to the Facility to reduce its discharge volume into the Salisbury Plain River, especially during dry weather periods. These include land based application (spraying), construction of storage lagoons and recycling of wastewater for industrial uses. These methods are now being used in many parts of the United States. EPA provides no explanation as to why none of these methods have been explored or required so as to reduce the severe impact of the Facility effluent discharge on the Salisbury Plain, Matfield and Taunton Rivers. This failure is puzzling because EPA itself concludes that the sheer volume of effluent discharged by the Facility is a principal reason for the river's failure to

meet its statutory water quality standards. Statements by EPA show it has scant confidence that allowing the existing volume of wastewater to continue, even with improved treatment, will allow the Salisbury Plain River to meet its statutory water quality standards. This is shown by EPA's statement that: "EPA and MA DEP believe these measures in conjunction with the plant upgrades will contribute toward minimizing the further degradation of the Salisbury Plain River and move closer toward meeting the State's Water Quality Standards during this five year permit cycle." (EPA Response to Comment 47 Exhibit D) EPA's statement, "will contribute toward minimizing further degradation of the Salisbury Plain River and help the river move closer toward meeting the State's Water Quality Standards" are material admissions the EPA believes the conditions in the Permit will not allow the Salisbury Plain River to meet its statutory water quality standards during the five year permit cycle.

Petitioners have repeatedly informed EPA that significant reductions in flow volume from the Facility, particularly in dry weather periods, are necessary to allow the Salisbury Plain River to meet its statutory water quality standards. This finding is supported by EPA's conclusion that increasing flow volume of the Facility, even with proposed improvements in effluent treatment, will result in "further degradation" and "further water quality impairment" of the Salisbury Plain River. (EPA Response to Comments 19 and 20 Exhibit D). In short, US EPA has concluded that increase in flow volume or continuation of the existing flow volume at the Facility will cause the Salisbury Plain River to fail to meet its statutory water quality standards. Despite these findings, the Permit requires no reductions in flow volume at the Facility.

In June 2004, Petitioners provided EPA with extensive documentation of

recently issued NPDES permits from the State of Maine for wastewater treatment plants on rivers of a size similar to the Salisbury Plain River. This documentation shows that EPA and the State of Maine routinely require wastewater treatment plants to sharply curtail or eliminate direct discharges to small rivers to prevent effluent from dominating the natural flow of a stream.

NPDES license data from the State of Maine shows the maximum allowable daily discharge of treated wastewater into small rivers and streams in Maine is less than 1.0 million gallons per day (MGD) with one exception. In contrast, the maximum daily discharge in the proposed NPDES permit for the Facility is in excess of 18 MGD.

In this one exception in Maine (Town of Sanford POTW), the NPDES license forbids any discharge at stream flows lower than 20 cfs. The NPDES permit for the Unity, Maine POTW forbids any discharge at stream flows lower than 15 cfs; the NPDES permit for the Canton, Maine POTW forbids any discharge at stream flows lower than 20 cfs; and the NPDES permit for the Norway, Maine POTW forbids any discharge at stream flows less than 31 cfs. In all of these cases, the receiving waters for these POTWs (Great Works River, 25 Mile Stream, Whitney Brook, Little Androscoggin River) are similar or larger in drainage size and flow volume than the Salisbury Plain River, yet the NPDES permits for these streams prohibit any discharge into them during low-flow conditions and require minimum dilution ratios of 20:1 or more during periods when discharge is allowed.

This is why when Petitioner Douglas Watts informed Mr. Gregg Wood, P.E. of the Maine Department of Environmental Protection of the dilution ratios at the Facility, Mr. Wood

physically grimaced and said:

"It sounds like they need to find a new receiving water."

In its "Response to Comments" EPA provides no meaningful reply to the above documentation or Petitioners' request that flow volume from the Facility be sharply curtailed during dry weather periods to ensure compliance with statutory water quality standards established for the Salisbury Plain, Matfield and Taunton Rivers.

Despite the obvious need of flow limits in the Permit higher flows are likely in the future. Camp Dresser Mckee (CDM) asserts in public comments that, "In general, there are many references to a design flow of 18.0 mgd, which is the correct flow for the Facility upgraded in the 1970's. However, over the coming five year permit duration, this design flow rate will be increased to 20.48 mgd. (CDM public comments Page # 1 Exhibit D) The Towns of Abington and Whitman will also be allowed to sell their unused flow if an abutting Town with a completed Comprehensive Wastewater Management Plan demonstrates that a tie in to Abington or Whitman is an appropriate option. (Permit footnotes page 4 # 3 Exhibit E) This is unacceptable.

6. Closing Comments.

The Salisbury Plain River has not met its MAWQS at anytime in the history of The Facility. By the late 1970s, this plant was nearing the end of its 20-year design life, and a major plant expansion project was completed in the mid-1980s. Since that major expansion, the Brockton WWTF has not undergone a major plant-wide upgrade program. Shortly after completion of this major plant expansion project the upgraded and expanded plant was failing to meet permit limits, and in 1988 the City of Brockton

entered into a consent decree with the regulating authorities. On November 14, 2001 Ma DEP issued a notice of non-compliance to the City of Brockton. Fifteen years ago the City's newly updated and expanded Facility was failing to meet permit limits less than five years after the update was completed.

Today in 2005 we are presented with a similar situation as in 1980's. The Administrative Consent Decree agreed to 1988 has been ineffective and a Judicial Consent Decree is now being negotiated between regulating authorities and the City. The initial phase of a major Facility expansion and upgrade has begun and this Permit has been finalized.

The Petitioners recognize that all of these events appear to complicate matters regarding this Permit. However, when this whole affair is boiled down to its essence it is not the least bit complicated. What it boils down to is a simple standard clearly defined in the permit, in the Federal Clean Water Act and in Massachusetts State Law: **"a. "The discharge shall not cause a violation of the water quality standards in the receiving waters."**

The Petitioners assert that the limits placed in this permit will in large part determine the terms of the pending Judicial Consent Decree and guide the proposed upgrade and expansion process. If issued as written this Permit will not allow Salisbury Plain River to meet its MAWQS, and therefore the rest of the process will be doomed to failure. The mistakes of the mid 1980's will be repeated. This Permit as currently written is illegal and must not be issued.

STATEMENT OF RELIEF REQUESTED

The Petitioners incorporate all paragraphs above and exhibits, as if fully set forth there in.

For the reasons set forth above, the Petitioners request the following:

a. that the Board hold that EPA's actions and decisions in regard to the Contested Permit Conditions and the Omitted Permit Conditions concerning the discharge of by the Treatment Works were clearly erroneous;

b. that the Board review EPA's permit action for the additional reason that EPA's exercise of discretion raises important issues of policy and discretion that the Board should review; and

c. that the Board reverse and remand those decisions to EPA Region I for action consistent with the Petioners contentions.

IX. SUBMISSION OF DOCUMENTS

In addition to the materials submitted herewith, the petitioners reserve their right to submit additional material as may appear necessary and appropriate during the pendency of any review proceedings.

Respectfully Submitted,

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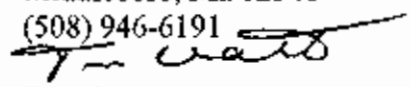
(508) 946-6191



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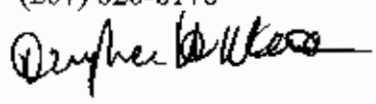

Dated: May 28, 2005

The Petitioners PETITION FOR REVIEW OF NPDES PERMIT NO.

MA0101010, ISSUED May 11, 2005

INDEX TO EXHIBITS

A. Written comments submitted by Timothy Watts on draft permit MA0101010 June 2004.

B. Written comments submitted by Douglas Watts on draft permit MA0101010 June 2004.

C. Written comments submitted by Taunton River Watershed Alliance on draft permit MA0101010 June 2004.

D. EPA response to public comments on draft to final permit MA0101010.

E. Final Permit MA0101010 May 11, 2005.

F. August 9, 2002 letter from Brian Pitt Team Leader NPDES Unit to Brockton Commissioner of Public Works.

G. EPA press release regarding failures at the Facility June 4, 2003.

H. Assabet River NPDES Permits – Response to Comments 2004.

I. 2005 Draft MA 303d listing for Salisbury Plain River downstream of Facility.

J. 2005 Draft MA 303d listing for Salisbury Plain River upstream of Facility.

K. 2002 MA 303d listing for Salisbury Plain River upstream and downstream of Facility.

L. Written comments submitted by Bridgewater State College Watershed Access Lab on draft permit MA0101010 June 2004.

M. Taunton River Watershed 1996 and 2001 Biological Assessment MA DEP.

N. ESS Group Matfield and Salisbury Plain River Watersheds Nonpoint Pollution Assessment Report and Management Plan MA DEP 2003.

Exhibit N, Part A, Sample Site Locations.

Exhibit N, Part B, Field Data Sheets

Exhibit N, Part C, Field Reconnaissance Observations.

Exhibit O, Written comments submitted by National Park Service on draft permit MA0101010 June 2004.

Exhibit P. Letter from Robert Varney Regional Administrator, Region 1 EPA, to the Mayor of Brockton, 2004.

Q. Daily discharge flows from the Facility 2002 – 2003.

R. Fact Sheet for Draft Permit MA0101010 May 21, 2004.

Petition for Review MA Permit MA0101010

Exhibit A

A. Written comments submitted by Timothy Watts on draft permit MA0101010 June 2004.

U.S. EPA
Office of Ecosystem Protection
1 Congress Street, Suite 1100 (CPE)
Boston, MA 02114-2023

Public Notice Number: MA-033-04
Permit Number: MA0101010: Brockton Advanced Water Reclamation Facility

The process which we use to attain the goals set forth in the Clean Water Act has been twisted into an unrecognizable mess in regard to this plant and more importantly the river system which receives its toxic flow. Toxic flow is an appropriate term in regard to this plants discharge. In fact EPA recognized and acknowledged this in their own 2003 press release, " Inspections by EPA and the Massachusetts Department of Environmental Protection (DEP) and the plant's own reports document equipment failures, operator errors, chemical feed problems and chronic bypassing of treatment equipment at the plant. This has led to excessive discharges of sewage solids, bacteria, ammonia and chlorine into the river, which flows to the Matfield River which downstream becomes the Taunton River." In 2001 when all of the above was taking place an employee of the MA DEP, Lakeville office, who is intimately familiar with the plant told me in a phone conversation, "that's good water coming out of the plant." In the spring of 2003 while at the Lakeville MA DEP office I had the privilege of conversing with a different mid level DEP employee who was "familiar" with the Brockton Sewer Plant and Salisbury Plain River. It was an enlightening conversation. He explained to me that more "water" from the plant was better for the river, "Without the plants discharge of "water" the river below would dry up and become a trickle." (As if pumping your septic system into your neighbors well would be considered a charitable act.) This is merely a sample of the idiocy one has to deal with when entering the Ma DEP regulatory hall of mirrors surrounding the Brockton Sewer Plant.

Page #4 NPDES Permit # MA0101010 paragraph #3; Flows originating from the Towns of Abington and Whitman are limited each to 1MGD. The permitte shall not accept any new sewer connections in other communities from facilities not currently connected to the WWTP. Increased flows from facilities currently connected to the WWTP shall be offset, to the extent feasible, in order to minimize any net increase in flow to the WWTP.

"The permitte shall not accept any new sewer connections in other communities from facilities not currently connected to the WWTP." We feel flow is the essence of this permit. If EPA does not incorporate this one sentence, and this simple language into the final permit it will gut the Federal Clean Water Act, hamstring it, and hang it from a gin pole to rot. This language must be accompanied by flow limits which will reduce the flow of effluent into the receiving waters. At what point does a river cease to be a river to become a sluiceway for effluent? Naturally, being the simplest language in the draft permit, it also appears to be the most controversial.

The cry of foul has been heard emanating from the bowels of surrounding communities whom are eager to hook up to the Brockton Sewer Plant. East Bridgewater, Easton and West Bridgewater, Oh woe, we need the services of the Brockton Sewer Plant to solve our septic problems.

- At what point does a river cease to be a river to become a sluiceway for effluent?

August 2002 Salisbury Plain River flow above plant 1.94 MGD (ESS NPS study 2002 Attachment 1 8/7/02 sample site SPR2), Plant flow "good water Ma DEP 2001" 14.28 MGD, Beaver Brook 0.01 MGD, Meadow Brook 1.18 MGD, Satucket 1.6 MGD below Satucket there are no tributaries of any significant size or flow until the Matfield's confluence with the Town River. This is approximately eight miles of river. River water 4.73 MGD, Effluent 14.28 MGD, are Salisbury Plain and Matfield, rivers, or are they sluiceways for effluent?

Projected future flow 2025, (City of Brockton Facilities Assessment Report, Camp Dresser McKee 2002, Page 8 Attachment #2) 22.2 MGD. (This figure assumes no additional hookups to outside communities and does not consider 4 MGD of additional water to Brockton from proposed freshwater de sal plant.) Plant flow August 2025, 22.2 MGD (probably still "good water" Ma DEP) Salisbury Plain River flow above plant 1.94 MGD, Beaver Brook 0.01 MGD, Meadow Brook 1.18 MGD, Satucket 1.6 MGD below Satucket there are no tributaries of any significant size or flow until the Matfield's confluence with the Town River. This is approximately eight miles of river. River water 4.73 MGD, Effluent 22.2 MGD, are Salisbury Plain and Matfield, rivers, or are they sluiceways for effluent?

Upon completion of this plants proposed EXPANSION and upgrade it will have a capacity of 20.5 MGD. There is no, and will be no capacity for additional flow at this plant from outside communities unless it is expanded beyond what is currently proposed! The following is a quote from David Norton, Brockton's interim Department of Public Works commissioner. It's from a June 2004 Brockton Enterprise article regarding the septic woes of the above mentioned towns.

"Expanded connections with other towns would offer some benefits to the city, Norton said. If the regulatory agencies approve a regional system, federal funding may come easier, and it could open the door to other funding sources. Even so, the city's current plant, even with the planned upgrades, would have to be expanded, he said."

What, exactly are the towns of East Bridgewater, Easton and West Bridgewater planning to do? What are their projected future flows? What parts of their towns are going to be sewered? How large will the plant have to be to accommodate their flows into the year 2025 and beyond? It's ridiculous to even be going through this mind numbing exercise thirty odd years after the passage of the Federal Clean Water Act.

The most fundamental concept of the Federal Clean Water Act and a concept embraced by most everyone from the greenest cub scout to Neanderthal Man is that you don't crap upstream of your campsite. Furthermore, in the case of the environmentally enlightened hamlet of Easton, you should not, out of common courtesy, crap upstream of your neighbors campsite. Despite these seemingly simple realities and courtesies these communities seem hell bent on defecating all over themselves and their neighbors.

Over the past several years the City of Brockton has been pulling every political string possible to have a freshwater de sal plant built in Dighton at the base of the Taunton River. This plant will supply the city with drinking water, a well of sorts? Over the past several years the City of Brockton has also been pulling every political and legal string possible to expand and regionalize their sewer plant at the top of the Taunton River, a toilet of sorts?

Salisbury Plain and Matfield Rivers are the largest rivers in East Bridgewater. They run through the heart of the town. Since the Brockton Sewer Plant was built, and to this very day East Bridgewater and it's largest river have been and continue to be the City of Brockton's toilet. Today rather than being offended by this indignity and trying to clean up the this toilet of Brockton, East Bridgewater has apparently chosen to elbow their way onto this porcelain throne alongside their neighbors. What a disgusting spectacle.

These communities have options, EPA has indicated that large centralized sewer plants emptying into small river systems were mistakes. The Brockton plant is a classic example of such a plant. One only needs to spend some time in the waters of these rivers, through a season, to see the havoc that has been wreaked on a once diverse and bountiful ecosystem. The towns of East Bridgewater, Easton and West Bridgewater can build their own plants. Better yet they could partner with Brockton to build modern, smaller regional plants which would recycle the effluent or put it back in the ground. All of these communities have streams which suffer the consequences of heavy water withdrawals. Canoe River, Queset Brook, Stump Brook, Satucket, Beaver Brook, West Meadow Brook, all have dried up in seasons past. Today in 2004 we need to be looking forward in our quest for water, in both its use and disposal. The Brockton Sewer Plant "solution" may be economically attractive, however its environmental impacts have been and will continue to be devastating in the future.

Much of the above may be irrelevant to this permit process. I don't know? It's really not meant to be offensive either, although it will sound that way to many. In many ways the Clean Water Act is an act to protect us from our own ignorance. Who would argue that our practices regarding our water before the Clean Water Act were not ignorant? We must begin reducing flows here. To do otherwise would be unconscionable and an affront to the Federal Clean Water Act and to the Public Trust in which all our rivers are held.

NPDES Permit #MA0101010 Page #6 Part I.A.I Line A

a. "The discharge shall not cause a violation of the water quality standards in the receiving waters".

This permit requirement clearly states that this plants discharge will not cause a violation of the water quality standards in the receiving waters. If the final permit is reflective of this draft permit it will clearly cause a violation of the receiving waters Class B standard. This has been the case for twenty odd years and will be the case for twenty more if EPA continues issuing permits like this one.

- Is the above language required by law to be in the final permit?
- If so, will the plants flow violate the water quality standards of the receiving waters upon issuance of this final permit?
- According to this plants 1999 NPDES Permit (Attachment 3) the instream 7Q10 flow of the receiving waters is 0.39 MGD at the plant. Can a stream with a flow of 0.39 MGD assimilate an effluent flow of approximately 20 MGD?
- Considering MA EOEA has approved an upgrade and expansion of this plant which will increase its discharge by 2.5 MGD to total capacity of 20.5 MGD, does EPA feel this draft permit contains limits stringent enough to allow the receiving waters to attain its assigned standard?
- Does this draft permit lay the groundwork to move incrementally closer to attaining this standard in a timely fashion?
- EPA has indicated through personal communication that the receiving waters will probably not attain their assigned standards for 50 or 100 years. While we fully recognize that achieving the goals of the Clean Water Act is an incremental process, we do not believe it is reasonable to wait eighty or one hundred and thirty years after passage of the Clean Water Act for attainment to be realized.
- Does EPA feel that fifty or one hundred years is a reasonable amount of time to achieve attainment?
- Does EPA feel the intent of the Clean Water Act was to maybe achieve attaintment eighty or one hundred and thirty years after its passage?
- If EPA does not feel this is a reasonable amount of time then how does EPA justify issuing a permit which does not bring us incrementally closer to attainment?
- What does EPA consider a reasonable amount of time to achieve attainment?

Neither this draft permit or the proposed upgrade to the plant will allow Salisbury Plain River to meet its Class B water quality standard. More disturbing is the fact that this permit and the proposed upgrade offer no hope of it meeting this standard in the foreseeable future or beyond. Whether or not line (a) is a requirement of this permit is irrelevant, the broader laws clearly dictate that Salisbury Plain must at some point in time meet its attainment goal of a Class B waterway.

Flow is the primary limiting factor. Without significant flow reductions the Salisbury Plain will not meet its assigned standard.

August 2002: Salisbury Plain River flow above plant 1.94 MGD. (Actual flow above sewer plant as recorded by the ESS Group, Matfield and Salisbury Plain Non Point Source Pollution Study 2002 Attachment 1)

August 7 2002 Brockton WWTP discharge: 14.28 MGD. (From Brockton AWRF records for 2002-2003 Attachment 4)

Dilution (stream flow: plant discharge): 1:7.36

August 2002 Salisbury Plain River flow above plant plus tributaries entering Matfield River below plant: 4.73 MGD (Actual flow above sewer plant as recorded by the ESS Group, Matfield and Salisbury Plain Non Point Source Pollution Study 2002 see CD #1 and Bridgewater State College Watershed Access Lab Overnight Nutrient Studies 2002 see CD #2)

August 2002 Brockton WWTP discharge: 14.28 MGD (From Brockton AWRF records for 2002-2003 Attachment 4)

Dilution in Matfield River (stream flow: plant discharge): 1:3.22

Using the EPA 7Q10 figure of 0.39 combined with the future estimated plant flow of 20.5 MGD provides the following figures.

Salisbury Plain River flow above plant 0.39 MGD (City of Brockton WWTP1999 NPDES Permit Attachment 3)

Brockton WWTP discharge 20.5 MGD

Dilution (stream flow: plant discharge) 1:52.5

- What possible chance does this stream have of meeting its assigned standard with this dilution?
- Does EPA agree that this is unacceptable dilution?
- At what point does a river cease to be a river to become a sluiceway for effluent? This is a serious and relevant question given the flow figures above.

- This formula of increased plant flow coupled with I&I reduction has serious implications for the future of the receiving waters.

When you review the actual daily effluent flows from the plant as opposed to the average flow, there appears to be a significant drop in plant effluent flows during periods of low water. In effect the plants flow appears to fluctuate with the rising and lowering of groundwater levels. In periods of high groundwater the plants flow goes up due to infiltration. In periods of low water the flow appears to drop significantly (see attached daily plant flows, Attachment 4). According to Brockton WWTP flow data 2002-2003 between the months of June and mid September actual plant effluent flows dropped well below 18 mgd for significant periods of time. If this infiltration flow is reduced and then replaced by a constant year round flow of 20.5 MGD it could have a devastating impact on the already failing aquatic ecosystem of the Salisbury Plain, Matfield and Taunton Rivers. Again, according to actual daily plant flows the plant's flow drops below 13 MGD during low summer flows. If in the future flow becomes steady at 20.5 MGD there will be up to an additional 7 MGD of effluent entering the river system when it is most stressed. This would be the equivalent of adding six new treatment plants about the size of the Middleboro WWTP.

One could reasonably argue that during low flow periods the headwaters of the Matfield and Upper Taunton Rivers are the Brockton WWTP. While the physical discharge of the plant is at the plant site, the overwhelming dominance of its flow has the effect of turning the Salisbury Plain River into an extended sluice way comprised of 99% effluent. This in turn becomes the Matfield River and then further down stream the Taunton River.

"USGS partial recording station stream flow data for similar-sized streams in the Taunton River Basin suggest that the naturally occurring 7Q2 at the site locale without augmentation by the City of Brockton AWRF would be approximately 1.7 cfs. The 7Q10 at this point on the Salisbury Plain River would be approximately 0.6 cfs. USGS long-term monitoring of streams throughout the basin suggests a naturally-occurring minimum monthly mean flow of 0.8 cfs in this segment of the Salisbury Plain River." (Epsilon Associates, inc 1998 water resources 29298/deir/Sec5.8water.doc Attachment 5)

According to Brockton Advanced Wastewater Treatment Facility Upgrades Environmental Notification Form September 2003 (Attachment 6) average historical flow (98-02) is 19.79 MGD. Projected flow (2025) is 20.49 MGD. Based on the figure 19.79 the following summarizes the amount of effluent in the receiving waters.

(98-02) equals 19.79 mgd or 30.5 cfs there is a mixture of 927 thousand gallons of river water (0.6 cfs divided by .647 = 927 TGD) to 19.79 million gallons per day of effluent during periods of low flow. In other words the Salisbury Plain below the Brockton AWRF is a river of effluent. Unfortunately the Brockton AWRF impacts do not end with the Salisbury Plain. According to USGS Survey Water-Resources Investigations Report 84-4283 the Salisbury Plains major tributary Beaver Brook has a 7Q10 of .6 cfs or 463 thousand gallons per day. Where the

Salisbury Plain and Beaver Brook conjoin is the beginning of the Matfield River. Therefore at the beginning of the Matfield River the approximate mix of effluent to water is 1.4 mgd water to 19.79 mgd effluent during low flows. Therefore at this point 2.2 miles downstream of the Brockton AWRF the river is little more than a river of effluent. The next significant down stream tributary (in terms of flow contribution) to the Matfield River is the Satucket River. Satucket is approximately 3 miles downstream from the confluence of the Salisbury Plain and Beaver Brook According to USGS Survey Water-Resources Investigations Report 84-4283 Satucket's 7Q10 is 1.3 cfs or approximately 2 mgd. Therefore at this river junction the ratio of water to effluent is approximately 3.3 mgd water to 19.79 mgd effluent during periods of low flow. Therefore at this point approximately 5.2 miles downstream of the Brockton AWRF the river is little more than a river of effluent. Down stream of Satucket approximately 8.2 miles from the Brockton AWRF the Matfield River joins the Town River to become the Taunton River. According to USGS Survey Water-Resources Investigations Report 84-4283 the Town River's 7Q10 is 2.7 cfs or 4.1 mgd. Therefore at this river junction the ratio of water to effluent is approximately 7.4 mgd water to 19.79 mgd effluent during low flows. Therefore at this point approximately 8.2 miles downstream of the Brockton AWRF the river is little more than a river of effluent. The next down stream tributary is the Winnetuxet River which is several miles below the confluence of the Town and Matfield River. According to USGS Survey Water-Resources Investigations Report 84-4283 the Winnetuxet has a 7Q10 of 7.8 cfs or 5 mgd. Therefore at this river junction some 14 miles from the Brockton AWRF the ratio of water to effluent is approximately 12.4 mgd water to 19.79 mgd effluent.

For comparison we will compare actual Brockton dilution to the minimum dilution ratios required by the State of Maine.

- Before embarking on this futile exercise we would like to make note of this and request clarification on how EPA calculates dilution ratios. It is our understanding that EPA assumes the effluent discharge dilutes itself upon discharge into the receiving waters. In other words they add the effluent flow to the stream flow and then calculate dilution, rather than taking the actual stream flow and dividing it by effluent discharge.
- Is the above a fair all be it simplified representation of EPA methods?
- If so the evidence of its effectiveness is clear in the filthy polluted water that fouls the receiving waters.
- How can effluent dilute itself?
- If the stream flow is 0.39 MGD, and plant flow is 20.5 then the dilution ratio is (stream flow: plant discharge) 1:52.5 period.
- Did Joseph Heller write the EPA formula for calculating dilution?

The lowest allowable dilution rate we found for plants on small streams is 5.2:1 (stream flow :plant flow) at 7Q10 (10-year drought conditions) at the Limestone, Maine WWTP. At normal flows, the dilution rate for that plant is 13.3:1. Limestone Stream is about the size of the Salisbury Plain.

To achieve even a 5:1 dilution ratio on the Salisbury Plain River at August 2002 flows (stream flow = about 2 MGD), the total Brockton plant discharge would have to be reduced to 0.4 MGD -- which is 2.8 percent of existing plant flows, representing a 97.2 percent REDUCTION in existing plant flows.

The minimum dilution ratios required in the Maine permits for small streams range from 11:1, 13:1, 18:1, 20:1, 32:1, 50:1, 75:1, 100:1 or 150:1 (stream flow: plant flow).

Based on the above, let's use a 20:1 dilution ratio as the 'average' minimum dilution ratio for the Maine WWTPs located on streams of similar size as the Salisbury Plain River. For August 2002 data (Salisbury Plain flow at 2 MGD),the total Brockton plant discharge would have to be reduced to less than 0.1 MGD -- which is 0.7 percent of existing plant flows, representing a 99.3 percent reduction in existing plant flows.

Flow Limits and Dilution Requirements Included In
Recently Issued NPDES Discharge Licenses for
State of Maine POTWs Discharging into Small Rivers and Streams

Source: NPDES Licenses on file at Maine Department of Environmental Protection, State House Station 17, Augusta, ME 04333.

1. Mars Hill POTW, Mars Hill, Maine.
Receiving water: Prestile Stream (Class B waterway)
MEPDES ID No.: ME0101079
License issued: December 10, 2002.
Maximum allowed discharge: 1.0 MGD
Flow limitations:
50:1 flow dilution from March 1 to May 31 and Oct. 1 to Nov. 30.
75:1 flow dilution from June 1 to Sept. 30 and Dec. 1 to Feb. 28.

2. Sanford POTW, Sanford, Maine
Receiving water: Mousam River (Class C waterway)
MEPDES ID No.: ME0100617
License issued: Feb. 2, 2002
Maximum allowed discharge: 5.5 MGD
Flow limitations:

Tier I discharge limits (prior to June 1, 2005)
a) No discharge allowed when river flow is less than 10 cfs.
b) 5.5 MGD from Nov. 1 to April 30.
c) 3.48 MGD from June 1 to Oct. 31.

Tier II discharge limits (beginning June 1, 2005):
a) No discharge allowed when river flow is less than 20 cfs.
b) 4.4 MGD from Oct. 1 to April 30.
c) 3.48 MGD from May 1 to Sept. 30.

Tier III discharge limits (beginning Jan. 1, 2006)
same as Tier II except discharge of up to 8.8 MDG allowed from Feb. 15 to April 15 but ONLY if river flow exceeds 100 cfs.

3. Thomaston POTW, Thomaston, Maine.
Receiving water: St. George River (marine estuary)
MEPDES ID No.: ME0100668
License Issued: March 23, 2003
Maximum allowed discharge: 0.9 MGD
Flow limitations:
Discharge of 0.9 MGD allowed in Jan., Feb., March. only.
No in-river discharge allowed from April 15 to Nov. 15;
Must use land-based, spray irrigation system April - November.

4. Canton POTW, Canton, Maine.
Receiving water: Whitney Brook (Class B waterway)
MEPDES ID No.: ME0102067
License Issued: February 3, 2003
Maximum allowed discharge: 0.25 MGD
Flow limitations:
No discharge allowed at stream flow is less than 20 cfs.
Must maintain 53:1 dilution ratio at all times.

5. Clinton POTW, Clinton, Maine
Receiving water: Sebasticook River (Class C waterway)
MEPDES ID No.: ME0101699
License Issued: February 14, 2003
Maximum allowed discharge: 0.35 MGD
Flow limitations:
No discharge between June 1 and Sept. 30
when river flow is less than 65 cfs.

6. Corinna POTW, Corinna, Maine.
Receiving water: East Branch Sebasticook River (Class C waterway)
MEPDES ID No.: W-002179.
Maximum allowed discharge: 0.2 MGD
Flow dilution at 7Q10: 11.6: 1
Flow dilution at harmonic mean: 32.7: 1
Note: POTW now in process of converting to land-based,
spray irrigation and cessation of in-river discharge
(Gregg Wood, P.E., Maine DEP, pers. comm. June 16, 2004)

7. Dexter POTW, Dexter, Maine.
MEPDES ID No.: MEU500830
License issued: December 20, 2002.
Maximum allowed discharge: 0.273 MGD
Note: Land-based, spray irrigation system, no discharge allowed to surface waters. Former discharge location was East Branch Sebasticook River.

8. Limestone POTW, Limestone, Maine.
Receiving water: Limestone Stream (Class C waterway)
MEPDES ID No.: W-000860.
License issued: January 25, 2001.
Maximum allowed discharge: 0.3 MGD
Discharge limited to 0.2 MGD from July 1 to Sept. 30
Dilution ratios: 5.2:1 (7Q10); 13.3:1 (harmonic mean)

9. North Berwick POTW, North Berwick, Maine.
Receiving Water: Great Works River (Class B waterway)
MEPDES ID No.: ME0101885
License issued: August 14, 2002.
Maximum allowed discharge: 1.0 MGD
Flow limitations:
Discharge must be seasonally limited to maintain
minimum dilution of 20:1.

10. Norway POTW, Norway, Maine.
Receiving water: Little Androscoggin River (Class C waterway)
MEPDES ID No.: ME0100455
License issued: May 3, 2001.
Maximum discharge allowed: 0.975 MGD
Flow limitations:
No discharge allowed from June 16 to August 31.
No discharge allowed when river flow is less than 31 cfs.
When river flow is greater than 31 cfs, discharge limits are:
a) 0.947 MGD from Jan. 1 to May 15
b) 0.755 MGD from May 16 to June 15.
c) 0.755 MGD from Sept. 1 to Dec. 31.

11. Unity POTW, Unity, Maine.
Receiving water: 25 Mile Stream (Class B waterway)
MEPDES ID No.: ME0101150
License issued: August 13, 2002.
Maximum discharge allowed: 0.5 MGD
Flow limitations:
No discharge allowed when stream flow is less than 15 cfs.
Dilution factor of 100:1 required from March 16 to Dec. 15.
Dilution factor of 150:1 required from Dec. 16 to March 15.

12. Warren POTW, Warren, Maine.
Receiving water: St. George River (estuarine segment)
MEPDES ID No.: ME0102253
License issued: May 15, 2001.
Maximum discharge allowed: 0.244 MGD
Flow limitations:
Discharge limited to 0.0795 MGD from June 1 to Sept. 30.
Discharge limited to O.244 MGD from Oct. 1 to May 31.

13. Farmington POTW, Farmington, Maine.
Receiving water: Sandy River (Class B waterway)
MEPDES ID No.: ME0101249
License issued: November 27, 2001.
Maximum discharge allowed: 0.9 MGD
Flow limitations:
From June 1 to Sept. 30: BOD5 and TSS limited to 150 lbs./day (monthly average). From Oct. 1 to May 31, BOD5 and TSS limited to 225 lbs./day (monthly average).
Dilution at 7Q10: 18.2:1.
Receiving water drainage size at plant outfall: 268 square miles.

Note: All daily discharge limits (MGD) calculated as monthly average.

- We are not sure how the EPA, MA DEP and City of Brockton can respond to this disparity, except to say Maine likes clean rivers and Massachusetts prefers effluent. It's nuts.

EPA must go beyond just prohibiting hookups to outside communities in this permit. Without significant reductions in plant flow Salisbury Plain and Matfield Rivers have no hope of attaining
their assigned standards today or twenty years from now.

To begin the process of incrementally achieving the goals set forth in the Clean Water Act we offer the following simple suggestions.

- Maintain in the final permit language preventing an increase in hookups to outside communities and facilities.

- Add language to this permit which would prohibit additional flow to the plant as I&I is reduced. This should be a prohibition on flow from any sources, from within the City of Brockton and without. If the City and surrounding communities need additional sewer services let them partner together and build smaller plants to share the burden. The Salisbury Plain, Matfield and Taunton Rivers have been our draft animals long enough. Its time to put them out to pasture.

There is no middle course in this matter, permit limits and numbers are a facade in regard to this plant, they serve no other purpose than to muddy the waters when the solution is clear. EPA itself has acknowledged that large centralized plants which empty into small river systems were a mistake. For streams such as Salisbury Plain the only answer is to begin the process of de-centralizing this plant. This draft permit and the pending expansion and upgrade of this plant move us in the exact opposite direction. To continue following along this misguided course is to repeat history at a great expense to the environment and the rate payers.

Fifteen years ago in 1988 the City of Brockton newly updated and expanded plant was failing to meet permit limits less than five years after an expansion and upgrades were completed. CDM

states the following on page 1 of attachment 1 in the Brockton Advanced Wastewater Treatment Facility Upgrades Environmental Notification Form September 2003 (Attachment 7). "Wastewater treatment in Brockton first began in the early 1900s, at a site west of the Veterans Administration Hospital on Belmont Street. Additional sewer construction and treatment facilities were required in the City by 1960, and a new plant was placed into service at the site of the current treatment facility. By the late 1970s, this plant was nearing the end of its 20-year design life, and a major plant expansion project was completed in the mid-1980s. Since that major expansion, the Brockton WWTF has not undergone a major plant-wide upgrade program." Shortly after completion of this "major plant expansion project" the upgraded and expanded plant was failing to meet permit limits, and in 1988 the City of Brockton entered into a consent decree with the regulating authorities. On November 14, 2001 the Ma DEP issued a notice of non-compliance to the City of Brockton. If EPA, Ma DEP and the City of Brockton continue on this course this cycle is certain to be repeated.

The following pages are a synopsis of the current state of the receiving waters. In addition to this synopsis we are submitting various water quality studies that have been undertaken in the receiving waters over the past several years, we would like these attachments to be entered as part of our official comments and as part of the public record.

It is worth noting that several of these studies were overseen or undertaken by Ma DEP, yet Ma DEP has not used them in their 305 b assessments. In fact the receiving waters although on the 303 d list have not been reassessed in the last two assessment cycles (see Attachment 8 for our comments on this). This is a disgrace and is an indication of gross incompetence on the part of Ma DEP. Having been involved in this process for the past several years it is clear that Ma DEP through their own incompetence and lack of leadership have enabled the City of Brockton to continue the gross pollution of the receiving waters. The Ma DEP has and continues to be a willing obstacle to river advocates perusing the goals set forth in the Federal Clean Water Act. In 2004 it is convenient to blame budget cuts for this lack of attention to their responsibilities. However this has been going on as far back as 1998 (see attachment 9) when the DEP was better funded and staffed.

Water Quality Synopsis

(Attachment 10) The Taunton River Watershed 2001 Biological Assessment at site TR03 Salisbury Plain River 2 km downstream from the Brockton Sewer Plant was found to be moderately impaired by the DEP surveyor. He made the following statements about this reach. "That habitat quality here was found to be highly comparable (actually better) to the reference condition suggests that water quality limits biological potential in this portion of the Salisbury Plain River. Metric values for the TR03 benthos were strongly suggestive of water quality degradation related to organic enrichment and low dissolved oxygen levels. Pollution sensitive EPT taxa, as well as algal scrapers (Tables A1) - generally less tolerant of organic pollutants than filter feeders and gatherer collectors, were virtually absent from the benthos sample taken here and suggest an oxygen stressed community. Community imbalance also characterized the TR03 benthic community, the result of the hyper dominance of a single family. Indeed, the Chironomidae comprise well over half of the assemblage observed at TR03. The numerical dominance of the chironomid Polypedilum flavum is particularly significant, as this species is considered very tolerant of organic pollution. It has been associated with sewage "recovery zones"

(Attachment 11)The following is from the *Draft Taunton River Watershed Assessment Report 1998, Taunton River Watershed Benthic Macroinvertebrate Biomonitoring.*

The surveyor had the following comments on this sampling site (TRO3) which is also at Belmont St. East Bridgewater Salisbury Plain River.

"I recommend omitting TRO2 as an upstream reference site and instead using the regional reference station TRO1 as the primary reference for TRO3. With an EPT index of 1 and a taxa richness of only 6, it would seem unconscionable to place TRO3 anywhere near the non-impaired category. The relatively high habitat assessment score (83% comparable to the regional reference station) received by TRO3, coupled with its low metric scores, lead me to believe that impairment to the invertebrate community is primarily due to degradation of water quality. The Brockton WWTP seems the likely pollution source here, although a horse farm adjacent to the stream at Belmont St. may be a possible source of nutrient loading."

In the *Matfield & Salisbury Plain River Watersheds Nonpoint Source Pollution Assessment Report May 19, 2003* page 45 (Attachment 12) the following was observed at a sampling site at High St. Bridgewater Matfield River. This site is approximately 8 miles downstream of the Brockton AWRF and one quarter mile upstream of the beginning of the Taunton River. "Copious amounts of macrophytes and algae were observed at this site which could be a result of the elevated nutrient levels found at this site. Strong chlorine odors were also noted during every visit to this site, which can be an indication of over chlorination by a sewage treatment plant or chemical industry, or discharge of swimming pool. Evidence of primary recreation was noted at this site in the form of a rope swing. It is advised that such activities should be actively prohibited."
The following is from the same study at the sampling site at Belmont St. Bridge Salisbury Plain River East Bridgewater (Attachment 12) this site is about one and a half miles below the Brockton AWRF.

"SPR1 was sampled on five dates and exhibited elevated levels of bacteria on two out of three wet weather sampling days, with a peak level of 14,000 col/100 ml on 6/6/02. This site ranks as number 7 on the "Recommended Priority for Site Management (during wet weather)" list (Table 9), and number 4 on the "Recommended Priority for Site Management (during dry weather)" list (Table 10). Which means overall this site was relatively bad in terms of water quality during wet and dry weather conditions."

The following is from summer 2000 over night nutrient studies performed by the Bridgewater State College Watershed Access Lab on the Upper Taunton River. (See attachment 14 for more detail)

"Once again, the nutrient loading in the Upper Taunton River near the confluence of the Matfield and Town Rivers is mostly due to the contributions from the Matfield River Basin."

"Surveys of tributaries within the Matfield Basin revealed that most of this load appears to be from the Brockton Sewage Treatment Plant by late summer"

It is our understanding that high loads of phosphorus can be a limiting factor in freshwater

systems, causing algae blooms which in turn reduce levels of dissolved oxygen. The following are DO levels found at several sample sites below the Brockton AWRF during the Matfield & Salisbury Plain River Watersheds Nonpoint Source Pollution Assessment Report May 19, 2003.(see attachment for more detail Attachment 13)

Salisbury Plain River sample site SPR1 at Belmont St. East Bridgewater (7/24/02/ 2.4 mg/l) (8/30/02/ 4.4 mg/l) (6/20/02/ 4.3 mg/l) (8/7/02/ 1.9 mg/l) Mean DO 3.3 mg/l.

Matfield River three separate sample sites MR1 being High St. Bridgewater approximately 8 miles downstream of plant and one quarter mile above the beginning of the Taunton River. (7/10/02/ 3.6 mg/l) (7/24/02/ 5.6 mg/l) (9/16/02/ 3.9 mg/l) (6/24/02/ 5.0 mg/l) (8/8/02/ 5.4 mg/l) Mean DO 4.6 mg/l (Attachment 14)

See Attachment 13 for Bacteriological and Nutrient Data as well.

Tim Watts
Executive Director
Glooskap & the Frog
633 Wareham St
Middleboro Ma 02346

Works Cited

1. Matfield and Salisbury Plain River Non Point Source Pollution Study, ESS Group 2002.

2. City of Brockton Facilities Assessment Report, Camp Dresser McKee 2002

3. City of Brockton WWTP1999 NPDES Permit.

4. Brockton AWRF records for 2002-2003

5. Epsilon Associates, inc 1998 water resources 29298/deir/Sec5.8water.doc

6. Brockton Advanced Wastewater Treatment Facility Upgrades Environmental Notification Form 2003.

7. USGS Survey Water-Resources Investigations Report 84-4283

8. Public Comments on 305 b assessments, Glooskap & the Frog 2004

9. Comments by Taunton River Watershed Alliance, Water Quality Monitoring advisory Committee Dr. Brian Brodeur 1998

10. Taunton River Watershed 2001 Biological Assessment Technical Memorandum TM-62-4

11. Draft Taunton River Watershed Assessment Report 1998, Taunton River Watershed Benthic Macroinvertebrate Biomonitoring.

12. Bridgewater State College Overnight Nutrient Monitoring 2000, 2002

Petition for Review MA Permit MA0101010

Exhibit B

B. Written comments submitted by Douglas Watts on draft permit MA0101010 June 2004.

U.S. Environmental Protection Agency
Massachusetts Office of Ecosystem Protection (CMA)
1 Congress St., Suite 1100
Boston MA 02114-2023

RE: City of Brockton, Mass. Wastewater Treatment Plant
NPDES Permit No. MA0101010

June 18, 2004

To Whom It May Concern:

My name is Douglas Watts. I was born in Brockton, Massachusetts and grew up in North Easton, Massachusetts. I now reside in Augusta, Maine. My mother, grandmother and great-grandparents grew up alongside the Salisbury Plain and Matfield Rivers in Brockton, Massachusetts.

I would like to provide the following comments and supplemental information to the record for the U.S. EPA's consideration of a NPDES permit for the City of Brockton, Mass. wastewater discharge into the Salisbury Plain River in Brockton, Massachusetts.

I. Compliance with statutory water quality standards established for the Salisbury Plain River.

The U.S. EPA (as NPDES permit granter) and the City of Brockton (as NPDES permit holder) have distinct legal responsibilities under the U.S. Clean Water Act. As the permit granter, the U.S. EPA is prevented by law from issuing a NPDES permit for a discharge of pollutants that will cause violations of statutory water quality standards for the receiving water. As the permit holder, the City of Brockton is prevented by law from discharging a pollutant which causes a violation of statutory water quality standards for the receiving water.

In order for the U.S. EPA to issue a NPDES permit for the discharge of pollutants by the City of Brockton treatment plant into the Salisbury Plain River, the U.S. EPA must

prove the discharge will not cause the receiving water, the Salisbury Plain River, to fail to meet its statutory minimum water quality standards.

This is demonstrated in U.S. EPA's proposed NPDES permit for the Brockton wastewater treatment plant, which contains the following compliance requirement at p. 6, Part I.A.I, Line A:

"a. "The discharge shall not cause a violation of the water quality standards in the receiving waters."

At present, the Brockton treatment plant discharge is causing numerous, ongoing, and well documented violations of water quality standards in the receiving water, the Salisbury Plain River.

Upon acceptance of an NPDES permit, the City of Brockton is required by federal law to comply with all of the conditions of its NPDES permit, including the requirement at p. 6, Part I.A.I., Line A, which states:

"a. The discharge shall not cause a violation of the water quality standards in the receiving waters."

For more than a decade, the U.S. EPA has allowed the City of Brockton to willfully and repeatedly violate its existing NPDES permit and the Clean Water Act by discharging pollution into the Salisbury Plain River which causes a violation of the Salisbury Plain River's statutory water quality standards.

For more than a decade the U.S. EPA has willfully and knowingly refused to enforce the following condition in its NPDES permit for the City of Brockton's treatment plant:

"a. The discharge shall not cause a violation of the water quality standards in the receiving waters."

As a citizen who wishes to swim, fish, drink from and enjoy the Salisbury Plain River, myself and my family are now prevented from engaging in these activities due to the ongoing and illegal discharge of pollutants into the Salisbury Plain River by the City of

Brockton waste treatment plant. Myself and my family are prevented from engaging in these activities because the U.S. EPA has willfully and knowingly allowed the City of Brockton to violate the following mandatory condition in its NPDES permit :

"a. The discharge shall not cause a violation of the water quality standards in the receiving waters."

II. Are conditions in the draft NPDES permit sufficient to prevent the City of Brockton wastewater discharge from causing violations of statutory water quality standards established for the Salisbury Plain River?

This question is tautological because the proposed NPDES permit states clearly:

"a. The discharge shall not cause a violation of the water quality standards in the receiving waters."

This permit condition is of a different logical type than those which limit the amount of a particular chemical substance in the pollutant discharge. Rather than regulating what is in the pollutant discharge, this permit condition regulates the IMPACT of the entire pollutant discharge upon the health of receiving water; the ability of citizens to use the receiving water for fishing, drinking and swimming; and the ability of living organisms to survive and reproduce in the receiving water.

Presumably, the U.S. EPA believes the discharge limitations its staff have included in its proposed NPDES permit are sufficient to ensure the City of Brockton's pollutant discharge will not cause cause violations of statutory water quality standards in the Salisbury Plain River. Were this not the case, the U.S. EPA would be willfully and knowingly issuing a NPDES permit which is illegal on its face. *This is because it is unlawful for the U.S. EPA to issue a permit for an activity which it knows will violate a condition of the permit.*

In recent months, my brother, Timothy Watts of Middleborough, Mass., has been privately informed by various U.S. EPA and Mass. DEP staff that due to the very large flow volume of the City of Brockton pollutant discharge, they believe it is unlikely the Salisbury Plain River will meet its statutory minimum water quality standards for 50 or even 100 years.

If true, this means the U.S. EPA is willfully and knowingly proposing a NPDES permit which will allow the City of Brockton's pollution discharge to continue causing violations of the statutory minimum water quality standards for the Salisbury Plain River. Such a NPDES permit would be in direct violation of an explicit condition in the permit itself, which states at p. 6:

"a. The discharge shall not cause a violation of the water quality standards in the receiving waters."

If these private statements by EPA staff are true, the proposed NPDES permit for the City of Brockton pollutant discharge is illegal on its face. *This is because it is unlawful for the U.S. EPA to issue a permit for an activity which it knows will violate a condition of the permit.*

III. Dilution

On a daily basis, the volume of wastewater discharged into the Salisbury Plain River by the City of Brockton greatly exceeds the stream flow of the Salisbury Plain River under virtually all flow conditions. During low flow conditions in the Salisbury Plain River, the volume of wastewater discharged into the river by the City of Brockton wastewater plant exceeds the river's flow volume by a factor of 10:1 or more.

During low flow conditions, the volume of wastewater discharged by the City of Brockton exceeds the flow volume of the Matfield River and the upper Taunton River as well. According to recent water quality data, neither of these receiving waters of the City of Brockton's pollution discharge are in attainment of their statutory minimum water quality standards. As such, the City of Brockton's pollution discharge contributes to the non-attainment of a significant portion of the entire Taunton River, the largest river drainage wholly within the Commonwealth of Massachusetts.

A simple review of flow dilution ratios (stream flow: discharge flow) for the Salisbury Plain River and Matfield River demonstrates that the volume of polluted water discharged into these rivers by the City of Brockton treatment plant consistently exceeds the flow volume of the receiving waters by a significant margin. In effect, for all or part of

each year, *most of the flow in these two rivers consists entirely of effluent from the City of Brockton's sewer plant.*

If, as U.S. EPA has often stated, "The solution to pollution is dilution," the receiving water must have a flow volume sufficient to dilute the pollution discharge. If the volume of the pollution discharge exceeds the river flow by a 3:1 or 7:1 or 30:1 margin, as is the case with the City of Brockton pollutant discharge, *there is insufficient water with which to dilute the pollution.*

This fact is demonstrated below:

Salisbury Plain River

In August 2002, Salisbury Plain River flow above the City of Brockton treatment plant outfall was measured at 1.94 MGD. (Source: Actual stream flow above sewer plant as recorded by the ESS Group, Matfield and Salisbury Plain Non Point Source Pollution Study, 2002.)

In August 2002, discharge of the Brockton treatment plant into the Salisbury Plain River was measured at 14.28 MGD. (Source: City of Brockton AWRF records for 2002-2003)

This provides a dilution ratio (stream flow: plant discharge) of 1:7.36.

This means that in August 2002, the flow volume of effluent by the City of Brockton treatment plant into the Salisbury Plain River exceeded the flow of the Salisbury Plain River by a 7 to 1 margin.

Matfield River

In August 2002, flow of Salisbury Plain River above City of Brockton treatment plant outfall and Matfield River tributaries below the City of Brockton treatment outfall was estimated at 4.73 MGD. (Source: Actual flow above sewer plant as recorded by the ESS Group; tributary flow recorded by Matfield and Salisbury Plain Non Point Source Pollution Study 2002 and Bridgewater State College Watershed Access Lab Overnight Nutrient Studies 2002.)

In August 2002, City of Brockton wastewater discharge into the Salisbury Plain River was measured at 14.28 MGD. (Source: City of Brockton AWRF records for 2002-2003)

This provides a dilution ratio in the Matfield River (stream flow: plant discharge) of 1:3.22.

This means that in August 2002, the flow volume of effluent by the City of Brockton treatment plant into the Matfield River exceeded the non-effluent flow volume of the Matfield River by a 3 to 1 margin.

Salisbury Plain River under 7Q10 flows

According to U.S. EPA calculations, the Salisbury Plain River has a 7Q10 flow of 0.39 MGD above the City of Brockton wastewater outfall. (Source: U.S. EPA, 1999 NPDES Permit Attachment A Page #15)

In August 2002, City of Brockton wastewater discharge into the Salisbury Plain River was measured at 14.28 MGD. (Source: City of Brockton AWRF records for 2002-2003).

These inputs provide a dilution ratio at 7Q10 flow conditions (stream flow: plant discharge) of 1:36.

This means that at 7Q10 flows calculated by U.S. EPA, the flow volume of effluent from the City of Brockton treatment plant into the Salisbury Plain River will exceed the flow of the Salisbury Plain River by a 36 to 1 margin.

In its proposed NPDES permit, the U.S. EPA provides no substantive evidence showing its permit conditions on the City of Brockton pollutant discharge will allow for the attainment of statutory minimum water quality standards in the Salisbury Plain River, the Matfield River, or the upper Taunton River.

Unless the U.S. EPA provides substantive evidence which shows this, its proposed NPDES permit for the City of Brockton wastewater discharge into the Salisbury

Plain River is illegal on it face, since it will allow the City of Brockton to violate the following section of its NPDES permit:

"a. The discharge shall not cause a violation of the water quality standards in the receiving waters."

IV. Comparison with the proposed NPDES permit for the City of Brockton with other NPDES permits for wastewater discharges into small rivers and streams.

On June 16, 2004 I met with Gregg Wood, P.E., Senior Environmental Engineer for Industrial and Municipal Licensing with the Maine Department of Environmental Protection, Land and Water Quality Bureau in Augusta, Maine. Mr. Wood's job is to write NPDES permits for wastewater treatment plant discharges in the State of Maine.

I asked Mr. Wood if I could review State of Maine NPDES wastewater discharge licenses for wastewater treatment plants discharging into rivers and streams of similar drainage size and flow volume as the Salisbury Plain River.

I then informed Mr. Wood that I was seeking this NPDES license information to compare with a proposed NPDES wastewater discharge in Brockton, Massachusetts where effluent volume exceeds 15 MGD and the flow volume of the receiving water is often less than 2 MGD.

Upon hearing these figures, Mr. Wood physically grimaced and said:

"It sounds like they need to find a new receiving water."

Mr. Wood then provided me with the NPDES licenses for 13 municipal wastewater treatment plants in the State of Maine which discharge into small rivers and streams of similar drainage size and flow volume as the Salisbury Plain River. Pertinent information from these 13 NPDES licenses are provided below:

Flow Limits and Dilution Requirements In Recently Issued NPDES Licenses for State of Maine POTWs Discharging into Small Rivers and Streams

(Source: NPDES Licenses on file at the Maine Department of Environmental Protection, State House Station 17, Augusta, ME 04333-0017.)

1. Mars Hill POTW, Mars Hill, Maine.
Receiving water: Prestile Stream (Class B waterway)
MEPDES ID No.: ME0101079
License issued: December 10, 2002.
Maximum allowed discharge: 1.0 MGD
Flow limitations:
50:1 flow dilution from March 1 to May 31 and Oct. 1 to Nov. 30.
75:1 flow dilution from June 1 to Sept. 30 and Dec. 1 to Feb. 28.

2. Sanford POTW, Sanford, Maine
Receiving water: Mousam River (Class C waterway)
MEPDES ID No.: ME0100617
License issued: Feb. 2, 2002
Maximum allowed discharge: 5.5 MGD
Flow limitations:

Tier I discharge limits (prior to June 1, 2005)
a) No discharge allowed when river flow is less than 10 cfs.
b) 5.5 MGD from Nov. 1 to April 30.
c) 3.48 MGD from June 1 to Oct. 31.

Tier II discharge limits (beginning June 1, 2005):
a) No discharge allowed when river flow is less than 20 cfs.
b) 4.4 MGD from Oct. 1 to April 30.
c) 3.48 MGD from May 1 to Sept. 30.

Tier III discharge limits (beginning Jan. 1, 2006)

same as Tier II except discharge of up to 8.8 MDG allowed from Feb. 15 to April 15 but ONLY if river flow exceeds 100 cfs.

3. Thomaston POTW, Thomaston, Maine.
Receiving water: St. George River (marine estuary)
MEPDES ID No.: ME0100668
License Issued: March 23, 2003
Maximum allowed discharge: 0.9 MGD
Flow limitations:
Discharge of 0.9 MGD allowed in Jan., Feb., March. only.
No in-river discharge allowed from April 15 to Nov. 15;
Must use land-based, spray irrigation system April - November.

4. Canton POTW, Canton, Maine.
Receiving water: Whitney Brook (Class B waterway)
MEPDES ID No.: ME0102067
License Issued: February 3, 2003
Maximum allowed discharge: 0.25 MGD
Flow limitations:
No discharge allowed when stream flow is less than 20 cfs.
Must maintain 53:1 dilution ratio at all times.

5. Clinton POTW, Clinton, Maine
Receiving water: Sebasticook River (Class C waterway)
MEPDES ID No.: ME0101699
License Issued: February 14, 2003
Maximum allowed discharge: 0.35 MGD
Flow limitations:
No discharge between June 1 and Sept. 30
when river flow is less than 65 cfs.

6. Corinna POTW, Corinna, Maine.
Receiving water: East Branch Sebasticook River (Class C waterway)
MEPDES ID No.: W-002179.
Maximum allowed discharge: 0.2 MGD
Flow dilution at 7Q10: 11.6: 1

Flow dilution at harmonic mean: 32.7: 1
Note: POTW now in process of converting to land-based,
spray irrigation and cessation of in-river discharge
(Gregg Wood, P.E., Maine DEP, pers. comm. June 16, 2004)

7. Dexter POTW, Dexter, Maine.
MEPDES ID No.: MEU500830
License issued: December 20, 2002.
Maximum allowed discharge: 0.273 MGD
Note: Land-based, spray irrigation system, no discharge allowed to surface waters. Former discharge location was East Branch Sebasticook River.

8. Limestone POTW, Limestone, Maine.
Receiving water: Limestone Stream (Class C waterway)
MEPDES ID No.: W-000860.
License issued: January 25, 2001.
Maximum allowed discharge: 0.3 MGD
Discharge limited to 0.2 MGD from July 1 to Sept. 30
Dilution ratio at 7Q10 flow: 5.2:1
Dilution ratio: 13.3:1 (harmonic mean)

9. North Berwick POTW, North Berwick, Maine.
Receiving Water: Great Works River (Class B waterway)
MEPDES ID No.: ME0101885
License issued: August 14, 2002.
Maximum allowed discharge: 1.0 MGD
Flow limitations:
Discharge must be seasonally limited to maintain
minimum dilution of 20:1.

10. Norway POTW, Norway, Maine.
Receiving water: Little Androscoggin River (Class C waterway)
MEPDES ID No.: ME0100455
License issued: May 3, 2001.
Maximum discharge allowed: 0.975 MGD
Flow limitations:

No discharge allowed from June 16 to August 31.
No discharge allowed when river flow is less than 31 cfs.
When river flow is greater than 31 cfs, discharge limits are:
a) 0.947 MGD from Jan. 1 to May 15
b) 0.755 MGD from May 16 to June 15.
c) 0.755 MGD from Sept. 1 to Dec. 31.

11. Unity POTW, Unity, Maine.
Receiving water: 25 Mile Stream (Class B waterway)
MEPDES ID No.: ME0101150
License issued: August 13, 2002.
Maximum discharge allowed: 0.5 MGD
Flow limitations:
No discharge allowed when stream flow is less than 15 cfs.
Dilution factor of 100:1 required from March 16 to Dec. 15.
Dilution factor of 150:1 required from Dec. 16 to March 15.

12. Warren POTW, Warren, Maine.
Receiving water: St. George River (estuarine segment)
MEPDES ID No.: ME0102253
License issued: May 15, 2001.
Maximum discharge allowed: 0.244 MGD
Flow limitations:
Discharge limited to 0.0795 MGD from June 1 to Sept. 30.
Discharge limited to O.244 MGD from Oct. 1 to May 31.

13. Farmington POTW, Farmington, Maine.
Receiving water: Sandy River (Class B waterway)
MEPDES ID No.: ME0101249
License issued: November 27, 2001.
Maximum discharge allowed: 0.9 MGD
Flow limitations:
From June 1 to Sept. 30: BOD5 and TSS limited to 150 lbs./day (monthly average). From Oct. 1 to May 31, BOD5 and TSS limited to 225 lbs./day (monthly average).
Dilution ratio at 7Q10: 18.2:1.
Receiving water drainage size at plant outfall: 268 square miles.

As the legal conditions in the above NPDES licenses show, the State of Maine does not allow the discharge of wastewater into small rivers and streams unless there is sufficient stream flow to provide a dilution ratio (stream flow: discharge flow) in excess of 5.2:1. Further, numerous NPDES licenses recently issued by the State of Maine for wastewater discharges into small rivers and streams require minimum dilution ratios of 20:1, 50:1, 75:1, 100:1 or 150:1 in order to prevent violations of statutory water quality standards in the receiving waters. Further, many of the NPDES licenses recently issued by the State of Maine for wastewater discharges into small rivers and streams prohibit all wastewater discharges when stream flows fall below certain established points, ie. 10 cfs, 20 cfs, 30 cfs or 65 cfs. Further, the State of Maine is now actively working with municipal wastewater treatment plants to eliminate wastewater discharges into small rivers and streams via conversion of the plants to land-based, spray irrigation treatment methods in cases where in-stream flows are too small to sufficiently dilute the effluent.

To illustrate the enormous discrepancy between flow limitations in NPDES licenses recently issued by the State of Maine (and approved by U.S. EPA) for wastewater discharges into small rivers and streams, and flow limitations in the proposed NPDES permit for the City of Brockton's discharge into the Salisbury Plain River, let us examine the following NPDES permit data:

In the State of Maine, the lowest allowable dilution rate for wastewater discharges into small rivers and streams is 5.2:1 (stream flow: plant flow) at 7Q10 flows at the Limestone, Maine wastewater treatment plant.

To even achieve a 1:1 dilution ratio on the Salisbury Plain River at 7Q10 flows (stream flow = 0.39 MGD), the total Brockton wastewater plant discharge would have to be reduced from 14-18 MGD to 0.39 MGD.

To achieve a 5.2:1 dilution ratio on the on the Salisbury Plain River at 7Q10 flows (stream flow = 0.39 MGD), the total Brockton wastewater plant discharge would have to be reduced from 14-18 MGD to 0.075 MGD.

Now let us compare the proposed NPDES permit for the City of Brockton with that issued August 14, 2002 by the State of Maine (and approved by U.S. EPA) for the North

Berwick, Maine POTW discharge into the Great Works River, which is of similar size, if not larger, than the Salisbury Plain River. In the North Berwick, Maine POTW license, the State of Maine forbids a daily effluent discharge greater than 1.0 MGD and requires seasonal discharge limitations to ensure a dilution ratio (stream flow: plant discharge) of at least 20:1.

First, we note that the maximum daily discharge proposed for the City of Brockton plant is 18-20 times larger than the maximum allowed for the North Berwick, Maine POTW (18-20 MGD vs. 1.0 MGD) for receiving waters of similar or larger drainage size and flow volume. Second, we note the following comparison of minimum dilution ratios:

In August 2002, Salisbury Plain River flow above the City of Brockton treatment plant outfall was measured at 1.94 MGD. (Source: Actual stream flow above sewer plant as recorded by the ESS Group, Matfield and Salisbury Plain Non Point Source Pollution Study, 2002.) In August 2002, discharge of the Brockton treatment plant into the Salisbury Plain River was measured at 14.28 MGD (Source: City of Brockton AWRF records for 2002-2003). This provides a dilution ratio (stream flow: plant discharge) of 1:7.36.

For the City of Brockton POTW to meet a minimum dilution ratio of 20:1 (as required for the North Berwick, Maine POTW), the flow volume of the Brockton plant would have to be reduced from 14 MGD to 0.097 MGD.

The above NPDES license data show the maximum allowable daily discharge of treated wastewater into small rivers and streams in the State of Maine is less than 1.0 MGD with one exception (5.5 MGD into the Mousam River by the Sanford POTW between Nov. 1 and April 30 only). In contrast, the maximum daily discharge in the proposed NPDES permit for the City of Brockton treatment plant is in excess of 18 MGD.

In this one exception in Maine (Sanford POTW), the NPDES license forbids any discharge at stream flows lower than 20 cfs. The NPDES permit for the Unity, Maine POTW forbids any discharge at stream flows lower than 15 cfs; the NPDES permit for the Canton, Maine POTW forbids any discharge at stream flows lower than 20 cfs; and the NPDES permit for the Norway, Maine POTW forbids any discharge at stream flows less than 31 cfs. In all of these cases, the receiving waters for these POTWs (Great Works River, 25 Mile Stream, Whitney Brook, Little Androscoggin River) are similar or larger in drainage size and flow volume than the Salisbury Plain River, yet the NPDES permits for

these streams prohibit ANY discharge into them during low-flow conditions and require minimum dilution ratios of 20:1 or more during periods when discharge is allowed.

This is why when I informed Mr. Gregg Wood, P.E. of the Maine Department of Environmental Protection of the dilution ratios at the City of Brockton treatment plant, Mr. Wood physically grimaced and said:

"It sounds like they need to find a new receiving water."

The flow volumes and dilution ratios in the NPDES permit proposed by the U.S. EPA for the City of Brockton are far too divergent from those recently approved by the U.S. EPA for wastewater discharges in small rivers and streams in the State of Maine to have any basis in fact or law. There is no rational way for the U.S. EPA to explain its conditioning of a wastewater permit for the North Berwick, Maine POTW with a minimum dilution ratio of 20:1 and its proposed dilution ratios ranging from 1:7 to 1:30 for the Brockton, Mass. POTW.

The only conclusion one can draw from this divergence is that the U.S. EPA's proposed NPDES permit for the City of Brockton wastewater discharge is illegal, is not supported by any evidence in the record, and is arbitrary and capricious.

The wastewater from a city of 100,000 people cannot be discharged into a stream as small as the Salisbury Plain River without causing a violation of statutory minimum water quality standards for the river. The laws of physics mandate that such an enormous input of treated human fecal matter into such a small receiving stream must massively degrade the health of the receiving water for many miles downstream.

The Salisbury Plain River is the home of native brook trout. Its principal tributary is called "Trout Brook."

Common sense dictates we cannot discharge the treated fecal matter of 100,000 people into a 25-foot wide, spring fed native brook trout stream.

By law, the U.S. EPA must prepare a final NPDES permit for the City of Brockton wastewater discharge with conditions which will *provably* allow for attainment of statutory minimum water quality standards in the Salisbury Plain River. If the U.S. EPA does not

produce substantive evidence which proves this, the U.S. EPA must deny the City of Brockton's NPDES permit application and immediately order the the City of Brockton to cease its discharge of pollution into the Salisbury Plain River.

It is unlawful for the U.S. EPA to issue a permit for an activity which it knows will violate a condition of the permit.

Sincerely,

Douglas H. Watts
38 Northern Avenue
Augusta, ME 04330

Petition for Review MA Permit MA0101010

Exhibit C

C. Written comments submitted by Taunton River Watershed Alliance on draft permit MA0101010 June 2004.

Taunton River Watershed Alliance, Inc.

PO Box 146 Bridgewater, MA 02324
Telephone (508) 697-5700
Internet: http://tauntonriver.tripod.com
E-mail: trwabrdg@ma.ultranet.com

U.S. EPA
Office of Ecosystem Protection
1 Congress Street, Suite 1100 (CPE)
Boston, MA 02114-2023

18 June, 2004

Public Notice Number: MA-033-04
Permit Number: MA0101010: Brockton Advanced Water Reclamation Facility

Flow

The outside hookup cap in this permit, which prohibits additional hookups too outside communities as specified on page 4 # 3 of the permit is a vital component of this permit. While it is physically possible to expand the capacity of the plant to accommodate twenty, thirty, forty or fifty million gallons per day, the receiving water, Salisbury Plain River and the river system which receive it, simply does not have the capacity to receive and assimilate such a large flow and maintain its biological integrity as a river, (let us not forget that the purpose of this whole exercise is to bring Salisbury Plain and the river system which receives it up to their assigned water quality standards). In fact it is common knowledge that the plant's current design capacity of 18 mgd is far more than this river system can assimilate (attached water quality data). Even, assuming completion of the proposed upgrade of the plant and its treatment processes in 2008, this river system will likely still not meet its assigned Class B standard at a flow of 18 mgd. Therefore, without a specific flow limit of x amount per day it is vital that the plants flow be limited to the City of Brockton proper and the communities of Abington and Whitman whom are currently under contract for one million mgd each.

The language used in the above cited section is also important and must be maintained in the final permit. It is our understanding that only the towns of Abington and Whitman are contractually committed as towns to the Brockton Plant. All other hookups are hooked up as individual facilities. As an example, Stonehill College is hooked up to the Brockton plant but the Town of Easton as a town entity is not. Therefore, the language in the permit which reads "The permittee shall not accept any new sewer connections in other communities from facilities not currently connected to the WWTP." is important and must be maintained as such in the final permit. It is also our understanding that the town of West Bridgewater has some individual facilities with minor hookups but has no contractual agreement with Brockton as a town. The fact that these minor individual facility hookups exist in West Bridgewater should not entitle the town of West Bridgewater proper to add any additional hookups.

The following flow figures are from water quality sampling preformed by Bridgewater State College and the ESS Group summer 2002. Using the flow data from the plant for that day (August 7, 02) provides the following flow figures for the significant tributaries to the Salisbury Plain, Matfield and

Upper Taunton River.

The flow figures for Satucket, Meadow Brook and Beaver Brook are from the ESS Group Matfield River NPS data and were taken on August 8, 2002. All others are from Bridgewater State College Watershed Access Lab (August 7, 02). Flows are million gallons per day (mgd).

During periods of low summer flows the plants discharge often drops to between 13 and 15 mgd, because there is little Inflow and Infiltration into their sewer delivery infrastructure.

Beginning at the plant and moving downstream.

Plant flow to Salisbury Plain 14.28 mgd

Salisbury Plain flow above plant 1.94 mgd

Meadow Brook 1.18 mgd

Beaver Brook 0.01 mgd

Satucket 1.6 mgd

Matfield at High St. Bridgewater 18 mgd

Town River Haywood St. 4.0 mgd

Winnetuxet .4 mgd

Nemasket 5.0 mgd

Taunton River Titicut St. 32 mgd

Below are the same figures showing how dominant the plants flow will be if Brockton eliminates their I&I and replaces it with their requested 20.5 mgd flow.

Plant flow to Salisbury Plain 20.5 mgd

Salisbury Plain above plant 1.94 mgd

Meadow Brook 1.18 mgd

Beaver Brook 0.01 mgd

Satucket 1.6 mgd

Matfield at High St. Bridgewater 18 mgd

Town River Haywood St. 4.0 mgd

Winnetuxet 4 mgd

Nemasket 5.0 mgd

Taunton River Titicut St. 32 mgd

Prohibiting additional hook ups as outlined in this draft permit is both a reasonable and prudent action to insure future permit compliance and to meet the Salisbury Plain River's water quality attainment goal of a Class B river. The current plant design capacity will remain at 18 mgd throughout the five-year cycle of this draft permit. Until the city significantly reduces their I&I problems and completes the proposed expansion and upgrade of the plant their will be no additional capacity at the plant to accommodate additional hookups from outside communities. Furthermore, given the inherent difficulty of reducing current I&I sources and controlling those that will arise in the future it is highly unlikely that the expanded and upgraded plant could accommodate the sewer demands of surrounding communities. Beyond the I&I issues Brockton is planning on receiving up to 4 mgd of drinking water from the proposed freshwater desalinization plant in Dighton which will further reduce capacity to outside communities.

While it may be cost effective and convenient for surrounding communities to solve their septic woes by hooking up to the existing plant, neither the city nor the regulatory authorities are bound by any obligation to accommodate them. The language in this draft permit regarding additional hookups simply insures that one additional hookup will not lead to another and then another and so on and so forth until ten years from now we our back to square one with an overburdened plant and more importantly a grossly polluted river.

Chlorination/Dechlorination

The use or better yet misuse of chlorine at this plant has been a chronic problem for many years. The fact that the plant has problems with bacteria violations and chlorine violations indicate either poorly trained operators, inadequate equipment or a combination of the two(most likely the latter). According to plant records the maximum daily limit for total residual chlorine, 0.019 mg/l was exceeded during the month of July 2002 (0.192 mg/L) August 2002 (0.066 mg/L) November 2002 (0.17 mg/L) and May 2003 (0.86 mg/L)

Chlorine, which is used to sterilize bacteria in the effluent, is equally effective at sterilizing aquatic. life in the stream. Stream sterilization is not good. As we have pointed out this plants effluent becomes the flow of the stream during low flows. A single annual chlorine violation of significant magnitude represents more than a simple permit violation. It can sterilize the streams aquatic ecosystem.

Consider this, if once or twice a year a local manufacturing plant sent forth a toxic plume from its smoke stack which left the ground littered with dead birds, would we simply shrug our shoulders and write it off as violation? NO! The difference is nobody is there to witness the results of such an event in the Salisbury Plain River. These chlorine violations are no small matter and must stop. We feel the addition of continuous chlorine monitoring in this permit is essential to both identifying and eliminating future violations.

Another repulsive aspect of the chlorine/de chlorination process, is the smell. The odor from this process persists not only in the water of the Salisbury Plain River but in the Matfield and Taunton

Rivers as well. The flow of this plant is so dominant in this river system that it can be smelt twenty miles downstream of the plant at Vernon St. on the Middleboro, Bridgewater town line. While we recognize that for the time being this chlorine/de chlorination process will continue, it must be done within the safe limits of the permit.

We suggest that as part of the proposed expansion & upgrade and as part of the pending judicial enforcement order that both the City of Brockton and regulatory agencies consider eliminating this chlorination process, and replace it with a modern ultra violet effluent disinfection system. This change alone would be a significant step forward in protecting the river systems aquatic life and aesthetic value.

I&I Reduction

The inflow and infiltration reduction plan outlined in this draft permit is an improvement and one we support. Although significant I&I reductions could probably be realized in a shorter period, this schedule coupled with the impending judicial enforcement order will not only send the city a clear message, it will compel them in an enforceable manner to fix their neglected sewer delivery infrastructure.

The benefits of this I&I reduction are two-fold and far-reaching. First, it will prevent the plant and river system from being overwhelmed during high flows. Second, it will go along way toward cleaning up the river system above the plant.

If water from extraneous sources is leaking into the sewer system during high flows, it stands to reason that sewer leaks out into the city's streams during low flows. The Matfield & Salisbury Plain NPS Study of 2002 shows that this is the case at several sample sites in the city. This studies water quality sampling revealed that many sample sights had elevated levels of bacteria during low flows (see attachment). A well supervised and an enforceable I&I reduction plan will in time improve water quality in river reaches above and below the plant.

Phosphorus & Nitrogen

The facility description notes the facility offers seasonal nitrification and phosphorus removal though this draft permit appears to institute year-round phosphorus removal. We highly support a year–round concentration and loading limit for phosphorus. The effluent is often a majority of the flow in the receiving water and the receiving water is tributary to a larger, sensitive system including the Wild and Scenic study area of the Taunton River. A year round phosphorus limit will help limit the accumulation of phosphorus in the sediments in the river system and at least help reduce some of the impacts associated with artificially elevated phosphorus limits in a fresh water system.

The Fact Sheet states both the EPA and MA DEP require tertiary treatment for this facility. We support the this requirement and believe the effluent discharged into the Salisbury Plain River should be of the highest quality practicably achievable and should be of the smallest volume achievable given the negligible dilution available in the Salisbury Plain River.

The flow design capacity of this facility is listed as 18 mgd in the Fact Sheet. The discharge monitoring data provided indicate this facility routinely exceeds 18 mgd on a daily basis and as a monthly average. The institution of a rolling average in determining the monthly flow average is a marked backsliding. The New England region is noted for many things, most certainly our diverse seasons. Having a monthly flow average that is 'flattened' by annual averaging means the flow

contribution in relation to seasonal aquatic activity and flow regimes is a significant loss to the ability to assess impacts and understand the operating issues at a facility. We feel this change in calculation method for monthly average flows violates the anti-degradation requirements contained in the Clean Water Act.

The 60 day rolling average for phosphorus is atypical as most POTWs with nutrient monitoring and limitations have monthly averages. Why has a 60 day rolling average been chosen for this facility? How is the monthly average for P currently determined? The start date of April 1 is also not explained; shouldn't the averaging start 60 days after the NPDES permit renewal is finalized?

As the Fact Sheet indicates, the phosphorus load in the Salisbury Plain River is well above the EPA recommendations for this ecoregion. The elevated concentrations are not limited to the Salisbury Plain River, the monitoring done by the TRWA and the Water Access Lab at Bridgewater State show problems continuing downstream. Given this data, the year round phosphorus limit and reporting requirement is a sound decision and one that will help protect the water quality of the receiving waters.

Toxicity testing

The addition of an additional two sets of toxicity tests for flow events above 30 mgd is a valuable addition to the permit requirements as this facility has had several flow events in excess of 30 mgd. The toxicity testing, while unable to capture all of the impacts possible from an effluent discharge, is able to integrate all factors including those constituents that are not monitored and the effects of different interactions between pollutants. The renewal of the test solutions are done daily but effluent collection is done on days 1, 3 and 5. This infrequent collection of test water could result in some changes to the effluent including reductions in concentration of volatile pollutant such as TRC, a consideration when reviewing the toxicity test results for this facility which has had historic compliance problems with its TRC concentrations.

The Fact Sheet has a summary of DMR data in Table 1. The data for the toxicity tests list only three dates. The EPA's on-line data base has test results for several additional dates in the recent past. The facility has a more problematic compliance report when this on-line data is considered. The LC50 of 1/03 was listed as 58.6%, 12/02 was listed as both 70% (report designator B) and 72.5% (report designator T). The results for the NOEL went as low as 12.5% in 9/03 to 25% in 12/02 and 50% on 4/30 and 6/02. The facility appears to have a significant acute and chronic toxicity problem. Testing is not done monthly so one or two noncompliant tests translates to 25 or 50% failure rate. Has the facility attempted to determine the cause of toxicity? Given some of the low survival numbers from some of these tests, (12.5%, 25%) in-stream monitoring of the aquatic community would provide insight into the impacts the effluent has on in-stream aquatic organisms.

Sincerely,

Robert W. Davis

Robert Davis W. Davis
Technical Advisor/Advocacy Director
Board of Directors

Petition for Review MA Permit MA0101010

Exhibit D

D. EPA response to public comments on draft to final permit MA0101010.

RESPONSE TO PUBLIC COMMENT

From May 18, 2004 to June 19, 2004, the United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MA DEP) solicited Public Comments on a draft NPDES permit, developed pursuant to a reapplication from the City of Brockton for reissuance of the City's NPDES permit to discharge wastewater to the Salisbury Plain River. A public hearing was held on August 25, 2004 where additional comments were accepted and the public comment period was extended until August 27, 2004. After a review of the comments received, EPA has made a final decision to issue the permit authorizing the discharge. The following response to comment describes the changes and briefly describes and responds to the comments on the draft permit. A copy of the final permit may be obtained by writing or calling Betsy Davis, United States Environmental Protection Agency, 1 Congress Street, Suite 1100 (CMA), Boston, Massachusetts 02114-2023; Telephone (617) 918-1576.

Comments submitted by Camp, Dresser and McKee on behalf of the City of Brockton on June 19, 2004.

Comment #1: In general, there are many references to a design flow rate of 18.0 mgd, which is the correct flow for the facility upgraded in the 1970's. However, over the coming five year permit duration, this design flow rate will be increased to 20.48 mgd. Language should be added to the permit noting this design flow change.

Response: The references in the fact sheet to the design flow of 18 MGD accurately reflect the current design flow of the facility, which was used in conjunction with the 7Q10 to calculate the water quality-based effluent limits in the draft permit. This is the same design flow used to calculate the water quality-based effluent limitations in the current permit. The final permit does not contain a flow limitation, but there is a requirement in footnote 2, page 4 of te final permit which requires the permittee to report the quantity of flow discharged from the facility.

We understand that the City's current plans are to construct upgraded facilities with a design flow of 20.48 MGD. However, the facilities plan which proposes this design flow increase has not yet been approved by MADEP, it has not been shown that Class B water quality standards can be attained at the increased flow, nor has the state conducted a review which demonstrates that this increase can be authorized under its antidegradation policy.

An increase in design flow at the facility may be reflected in the City's permit after their facility's plan has been approved, it has been shown that the Class B water quality standards can be achieved at the increased flow and that the increased discharge can be authorized under the MADEP antidegradation policy. Limitations in the permit based upon a dilution factor [metals] would need to be adjusted to reflect the change in dilution at the low flow conditions.

Comment #2 On page 2 and 3 of the permit, both mass loading and concentration limits are provided. This is problematic and the City requests that only concentration limits are included in the permit for the following reasons.

The proposed lb/day discharge limitations for average monthly, average weekly and average daily loads are all based on the average annual plant flow of 18.0 mgd, and applied to permit concentration limits. The permit is written such that mass limits govern during flow periods greater than the annual average. Concentration limits govern during flow periods less than the annual average.

The concentration limits are based on water quality requirements established at 7Q10 flow conditions. In New England, these conditions and annual average plant flows are not simultaneous occurring events. When stream flow approaches 7Q10, the plant flow is substantially less than the annual average. The permit as written requires the highest quality effluent (or lowest concentration) during those periods when stream flows are the highest. Such stringency is not required for meeting water quality standards.

The City requests that the final permit include only concentration based limits. If mass limits must be included, then peaking factors should be provided to account for monthly, weekly, and daily variations.

Response: Mass limits for BOD_5 and TSS are now added to all POTW permits in Massachusetts as is part of a flow policy change that allows the flow limit in a permit to be calculated as an annual rather than a monthly average. This change was made in an effort to allow a facility to operate at the maximum monthly hydraulic capacity. To prevent degradation of the receiving water, DEP and EPA agreed that mass limitations for BOD_5 and TSS should be included as permit conditions to ensure that existing controls on mass discharges of BOD_5 and TSS are maintained.

Comment #3: On page 3 of 16, the permit refers to a concentration and loading limits for phosphorus and nitrogen but there are no references to the fact that a facility upgrade is underway to meet these limits. Promulgation of this permit, as written, will create a permit violation and initiate a penalty as described in the draft Consent Decree. The permit needs to describe that the phosphorus and nitrogen limits becomes effective at the conclusion of the three phased WWTF Upgrade. A predraft version of the new permit contained a paragraph discussing this issue but has since been removed. Attention regarding this issue needs to be addressed before the permit becomes acceptable to the City.

Response: Pursuant to Section 301(b)(1)(C) of the Clean Water Act (CWA), discharges are subject to effluent limitations based on Water Quality Standards. The concentration and loading limits for phosphorus are new water quality-based limits. EPA intends to include a reasonable schedule of compliance reflecting the time necessary to complete the treatment facility upgrade in an enforcement document.

The ammonia nitrogen limits are the same as in the previous permit, and there are no total nitrogen concentration or mass limits in this permit. Total nitrogen limits are expected to be included in the future and an appropriate schedule, if necessary, will be developed at that time.

A Consent Decree has not been negotiated between the Parties and discussion of a penalty is premature.

Comment #4: On page 3 of 16 of the permit, an average monthly loading limit of 30 lbs/day is provided for phosphorus. This mass loading limit for phosphorus is not consistent with the conditions provided for the phosphorus concentration limit. A rolling average is allowed for concentration reporting but not mass loading reporting. For these reasons, the City request that all loading limits for phosphorus be taken out of the permit.

Response: The mass loading limit has been removed; the permittee is now only required to report the mass of phosphorus discharged. If the mass loading levels and/or new water quality information indicate that mass loadings must be further controlled, a mass loading limit may be included in future permits.

The definition of compliance with the 0.2 mg/l total phosphorus limit contained in footnote #10 has been clarified in the final permit. The footnote in the draft permit indicated that calculation of the 60 day rolling average must be calculated on the 60th day after April 1. However, since the phosphorus limit is not a seasonal limit, the footnote now requires that the 60 day rolling average be calculated on the 60th day after the effective date of the permit. An enforcement document is expected to establish an interim limit to be in effect until completion of the treatment facility upgrade.

Comment #5: On page 3 of 16 of the permit, the copper limit is unreasonably stringent. If the WWTF effluent passes Whole Effluent Toxicity testing, copper should not be of concern. Moreover, studies conducted by DEP in southeastern Massachusetts have indicated that copper limits established per Gold Book criteria are unreasonably stringent. As noted in the Draft Conceptual Design Report dated October 2003, the current upgrade is not being designed for specific copper removals or effluent quality.

Response: Massachusetts Surface Water Quality Standards establish that allowable receiving water concentrations of toxics are to be based on recommended limits published by EPA pursuant to 33 USC1251 Section 304(a) unless a site specific limit has been established (see 314CMR4.05(5)(e)). EPA has not approved any site-specific copper criteria for the Salisbury Plain River, so EPA's most current recommended copper criteria, found in "National Recommended Water Quality Criteria: 2002" were used to develop the effluent limitations for copper.

There are ongoing efforts by the state to establish site specific limits for copper. If such limits are ultimately approved by EPA the permit limits may be modified using appropriate permit modification procedures. EPA intends to establish interim effluent limitations for copper in an enforcement document.

Comment #6: On page 3 of 16, the permit includes an increase in fecal monitoring requirements from 3x per week to 5x per week. The City believes that this is excessive and unnecessary and requests that the monitoring frequency remain at 3x per week.

Disinfection challenges have recently been resolved by the installation of new chemical feed and pacing equipment.

Response: Past discharge monitoring reports (DMRs) show the monthly average and maximum daily fecal coliform limits have been exceeded many times over the past several years. Given the number of violations and the lack of a track record for the new chemical feed and pacing equipment, we believe an increase in sampling is necessary to characterize the effluent over a variety of flow and capacity conditions at the facility.

Comment #7: On page 4 of 16, paragraph 3, the permit refers to flow limits for Abington and Whitman. In the first sentence, it should be noted that these are annual average limits. In addition, the last sentence in this paragraph must be deleted. The City of Brockton should not be responsible for offsetting flow additions from Abington and Whitman. The current Intermunicipal Agreements allow for up to 1 MGD per community with no requirement to offset flow additions up to that limit.

Response: The 1.0 MGD flow limits for the Towns of Abington and Whitman have been defined in the final permit as annual average limits; increases above the 1 MGD flow limits in the contracts will not be allowed.

The offset requirement in footnote 3 does not apply to Whitman and Abington, or to connections within the City of Brockton, but to existing connections from other communities connected to the Brockton facility. The intent of the offset requirement was to ensure that any flow increases from facilities in other communities which were currently connected, would be minimized. The permit prohibits new connections from communities other than Brockton, Abington, and Whitman. However, if an abutting Town were to complete a Comprehensive Wastewater Management Plan (CWMP) which demonstrates that a tie-in to Abington or Whitman was an appropriate option EPA and MADEP may allow such a tie-in through a permit modification or permit reissuance. We have clarified this language in the final permit.

We have also added a requirement that Brockton report the annual average flow volumes received from each community discharging to its POTW in order to track compliance with the sewer connection restrictions.

Comment #8: On page 5 of 16 of the permit, footnote 11 requires that toxicity testing samples be collected in the second week of the stated months, instead of requiring the testing be done in a given quarter. This is unnecessary and inconsistent with the existing permit. Also, the new results submittal requirement could be troublesome if the testing lab has a problem and needs to retest. The result submittal requirement should remain the month following the quarter ending period.

Response: Toxicity test sampling is required during the second weeks of February, May, August and December in all NPDES permist issued to dischargers in the Taunton Watershed. Requiring the same sampling schedule for all toxicity tests supports the State's watershed approach and provides the Agencies with a better sense of toxicity impacts to the receiving water.

Each year, EPA Region 1 sends permittees a copy of the," NPDES Permit Program Instructions for Discharge Monitoring Reports" and the attachment titled, "The NPDES Whole Effluent Toxicity Testing Monitoring and Reporting Tips, Common Pitfalls and Guidance". This document provides guidance on what to do when the samples can not be used or a retest is necessary.

Comment #9: On page 6 of 16, paragraph 2 of the permit. Clarify and/or define "Director".

Response: Director is the Regional Administrator or the State Director as defined in 40 CFR Part 122.

Comment #10: In paragraph I.A 1.f on page 6 of 16 of the permit, there is a requirement to address WWTF influent flow when it exceeds 80 percent of the design flow over 90 consecutive days. This threshold has been exceeded numerous times and engineering reports required to address the concern have been submitted to DEP and EPA. Since the upgraded facilities will be started under this condition, the facilities assessment and conceptual design reports satisfy this requirement. The City requests that this paragraph be removed from the permit.

Response: This requirement is unnecessary and has been removed from the permit.

Comment #11: On page 9 of 16 of the permit, in the first paragraph under "OPERATION AND MAINTENANCE OF THE SEWER SYSTEM", delete the second sentence and insert therefore:

"The permitee and co-permittee shall independently meet the following conditions for those portions of the collection system which it owns and operates."

Response: The suggested change has been made in the final permit.

Comment #12: On page 10 of 16 of the permit, the title "Reporting Requirements" should be changed to "Independent Reporting Requirements for Brockton, Whitman and Abington

Response: We believe that the last sentence in the first paragraph of Section D, "The permittee and co-permittees shall meet the following conditions for those portions of the collection system which it owns and operates." clearly establishes that the requirements in this section of the permit, which include the reporting requirement, are independent.

Comment #13: On page 12 of 16, paragraph 4.h refers to "fluidized bed incinerator". The Brockton WWTF has a multiple hearth incinerator.

Response: The final permit has been changed.

Comment #14: On page 13 of 16, paragraph j contains language that is too broad and can leave the City open to violations for circumstances beyond the City's control (for example, if a bald eagle nests in the vicinity of the plant). The first sentence should therefore be modified to insert the words "the City becomes aware that" between the words "if' and "it".

Response: This is standard language in NPDES permits pursuant to 40 CFR 503.45(g) for any facility that incinerates sewerage sludge.

Comment #15: On page 3 of the Fact Sheet, in the section titled FLOW, the second paragraph should be

revised to state annual average flow limit of 1.0MGD. Also in this section, it is requested that the second sentence in the third paragraph be deleted. Facilities' planning shows that new connections in the existing service area are minimal and should not have a noticeable impact on total flow to the treatment facility. This requirement is unnecessary and would be a burden on limited resources to enforce.

Response: See Response #7 above. Language in the fact sheet is not changed once the draft permit has gone to public notice. Any appropriate corrections to the Fact Sheet are noted in the Response to Comments document which becomes part of the administrative record. This correction is noted for the record.

Comment #16: On page 4 of the Fact Sheet in the section titled "Conventional Pollutants", BOD5 limits and reporting has been taken out of the permit. Reference to BOD5 should be removed from this paragraph.

Response: See Response to Comment #15 regarding modifications to the fact sheet. The correction is noted.

Comment #17: On page 5 of the Fact Sheet in the section titled "Total Phosphorus", the last sentence in this section is vague and should either be deleted or modified to be more specific. The City cannot agree to a statement allowing EPA and DEP to set future phosphorus limits as desired. Requiring treatment facility improvements for unknown (future) pollutant limits is unjustifiable. In addition, this issue is discussed on page 9 of Section 1, in the Conceptual Design Report dated October 2003. The City requests that this sentence be removed.

Response: The statement accurately describes EPA and DEP authorities and responsibilities under State and Federal Clean Water Acts. Any changes to the phosphorus limits could only be in done using appropriate permit modification or reissuance procedures, which include public comment and appeal rights.

The statement is also consistent with guidance given to the City during the planning process.

Comment #18: On page 5 of the Fact Sheet in the section titled "Nitrogen", the last sentence in this section is vague and should either be deleted or modified to be more specific. The City cannot agree to a statement allowing EPA and DEP to set future nitrogen limits as desired. Requiring treatment facility improvements for unknown (future) pollutant limits is unjustifiable. In addition, this issue is discussed on page 9 of Section 1, in the Conceptual Design Report dated October 2003. The City requests that this sentence be removed.

Response: The statement accurately describes EPA and DEP authorities and responsibilities under State and Federal Clean Water Acts (also, see response to Comment #17). The statement is also consistent with guidance given to the City during the planning process.

Ccomments were received from the Brockton City Council, the Town of Easton, Town of East Bridgewater, East Bridgewater Wastewater Management Study Committee, Town of West Bridgewater, Old Colony Planning Council, State Senator Brian Joyce, Congressman Stephen Lynch, Town of Abington, State Representative Kathleen Teahan, Kenneth Carlson, the Massachusetts Riverways Program, the Taunton River Watershed Alliance, Save the Bay, the Natural Resource Trust of Bridgewater, Massachusetts Audubon Society, the Nature Conservancy, the National Parks Service, the East Bridgewater Open Space Committee, the Green Futures, Douglas Watts, Tim Watts and Kevin Curry.

Comment # 19: Many commenters requested that language restricting new sewer connections and limiting the Towns of Abington and Whitman to 1 MGD be deleted from the draft permit.

The primary concern is that economic growth and development has been restricted in the surrounding communities due to limited options available for treating wastewater. On-site septic systems are not suitable for much of the area because of poor soil conditions and high groundwater levels.

Response: We understand that several of the local communities near the treatment facility are faced with difficult decisions relative to water and wastewater management, however, the Salisbury Plain River can not support an increase in flow.

As stated in the fact sheet, the facility frequently exceeds its design flow of 18 MGD and high flows have caused the facility to be out of compliance with their existing NPDES permit. The Salisbury Plain River, is an effluent dominated river (the Salisbury Plain River at the point of the POTW discharge is about 98 percent effluent under 7Q10 conditions) and does not meet the State's Water Quality Standards for Class B Waters. It is also on the State's 2004 Integrated List of Waters as a Category 5 water (water requiring a TMDL), for pathogens. Increasing flow to the facility by allowing new sewer connections would inevitably contribute to further water quality impairment of the Salisbury Plain River.

Comment #20: Many comments recommended establishing a regional facility as a cost effective alternative to managing wastewater in the area. Suggestions included expanding the Brockton facility and relocating the discharge to the Taunton River or constructing a new facility with a new discharge location.

A few comments referred to the original 208 Water Quality Management Plan and requested resurrection of the Old Colony Water Pollution Abatement District. The Plan recommended a regional facility be built in Bridgewater and available to surrounding communities to treat their wastewater.

Response: Alternatives that involve treating additional flows at the Brockton facility but discharging at alternative locations should be considered as part of any planning of wastewater alternatives. However, these alternatives would have to be consistent with State Water Quality Standards, including the antidegradation provisions of the Standards. There are significant water quality issues throughout the basin that require significant consideration.

State and Federal priorities for any planning process will be for the communities to aggressively pursue alternatives for keeping wastewater treatment and disposal local. We recognize that this likely will not be an inexpensive solution for managing wastewater, but is most likely necessary in order to achieve Standards, including maintaining base flows for the protection of aquatic life in tributary watersheds.

EPA and MA DEP know of the recommendations in the 208 Water Quality Management Plans. Since they were published in the 1970s, the Agencies have become more aware that large regional treatment plants, which result in wastewater being transported away from local water sources cause the resource to diminish over time. EPA and MA DEP recommend that Towns treat their own wastewater with smaller treatment facilities or on-site septic systems whenever feasible.

The Massachusetts Executive Office of Environmental Affairs, (EOEA) has finalized a water policy for the State that recommends maximizing sources of groundwater infiltration via recharge and reuse to help maintain a community's water supply. EPA and MA DEP support the recommendations in the draft policy. Transporting wastewater out of a community to be treated it at a regional facility defeats this approach. A copy of the draft policy is on their website at http://www.mass.gov/envir.

In the last decade, growth in the southeast region of the State has caused water resources in the area to be stressed. We believe increasing the flow at the Brockton facility by having additional communities send their wastewater to the facility will cause further degradation to Salisbury Plain River.

Comment #21: Several commenters requested EPA and MA DEP assist the communities in developing an approach to manage their wastewater in the area that supports industrial and commercial growth.

Response: The Agencies are committed to assisting the communities in finding sustainable solutions for wastewater management. We recognize that extensive planning will be necessary.

Comment #22: One comment stated that base flows in the subbasin are not an issue due to the ample quantity of water in the watershed.

Response: We do not agree that there is ample base flow in the subbasins in this watershed. The Taunton River has been identified as a stressed basin by the State and a detailed accounting of inflows and outflows would likely indicate that many subwatershed reaches are significantly stressed.

Comment #23: Comments were submitted requesting that Abington and Whitman be allowed to sell excess capacity, should it be available, to other communities in the region. The concern is that the proposed permit eliminates flexibility in the region should Abington or Whitman decide it is in their best interests to transfer a portion of their allotted 1 MGD to another community. Towns of Abington and Whitman could sell excess capacity to nearby communities and flows to the Brockton facility would remain unchanged, but the wastewater needs of the region could be addressed, providing environmental benefit by reducing the number of failing or malfunctioning on-site septic system.

Response: Footnote #3 page 3 of the draft permit specifically states that flows from the Towns of Abington and Whitman shall originate from each Town or from another community if a Comprehensive Wastewater Management Plan has been approved and the final permit has been modified. See Response to Comments # 7. The final permit maintains this condition. Also see Response to Comments #20, and #47.

Our records indicate that this may be a minor issue given that both Whitman and Abington are fairly close to their contracted flow limit. An EPA memo in the Administrative Record, dated July 2003, provides annual average flow data from both Towns. The domestic and sanitary annual average total flow rate for Abington from January 2000 to July 2001 was 0.71 MGD and 0.77 MGD for Whitman. (See July 17, 2003 memo on Influent flow and loads to the Brockton Wastewater Treatment Facility.) The Town of Abington provided flow data in a comment letter to the draft permit in June 2004. The Town currently produces 875,000 gallons of effluent per day, 82% of properties in Abington have municipal sewer services and 17% have equitable entitlement and direct access to use it.

Comment #24: One commenter requested that language be added to the final permit which not only eliminates any additional connections to the facility but, also terminates connections from Towns other than Abington and Whitman that have one or two properties with existing connections to the facility until Brockton can meet the needs of their own City.

Response: The Agencies have co-permitted Abington and Whitman because these Towns have town-wide sewage collection system which have contractual agreements with Brockton. We are aware of a small number of connections from other Towns, but it is our understanding that wastewater discharges from these Towns are very small, and we have prohibited new connections from these Towns. There are no restrictions in the permit relative to new connections within the City of Brockton. Please see Response #7 above.

Comment #25: The Town of West Bridgewater request that the final permit include "Specific Area Only" language that grants sewer connections to Towns that have a business associated with the Marley Street Industrial Corridor.

The Town of West Bridgewater requests that they be added as a Co-Permittee to the final permit because there is a connection from the Town to the treatment plant.

Response: The final permit does not include the Town of Bridgewater as a Co-permittee or language allowing additional connections to accommodate businesses in the Marley Street Industrial Corridor. Response to Comments #1, #19, #20 and #22 address impacts to the Salisbury Plain River that will cause further environmental degradation if the flow to the Treatment Plant is increased.

Comment #26: The Town of Abington requests priority access should capacity for additional connections become available after the treatment plant is upgraded.

Response: The Town of Abington may make whatever additional connections it believes are appropriate within the 1 MGD limit in its contract. Decisions on access to any additional future capacity will be made by the EPA, MADEP, and Brockton. EPA and MADEP will only allow additional flow from outside communities where it can be accomplished within the constraints of achieving water quality standards in the Salisbury Plain River,

and also only when there is a demonstrated need as shown by Comprehensive Wastewater Planning.

Comment #27: The Agencies received several comments requesting that the City continue efforts to reduce sources of I/I as well as support of the Infiltration/Inflow (I/I) language in the permit. One commenter specifically recommended reducing I/I by having the permittee implement a leak detection and conservation program.

Response: As part of a Consent Decree with MA DEP, the City of Brockton was required to identify the existing condition of the City's wastewater collection system, identify sources of I/I, and implement sewer rehabilitation and repair measures to reduce I/I throughout the City.

In August 2000, A City Wide Sewer System Evaluation Study, was prepared by Camp Dresser and McKee (CDM) for the City which identifies problem areas and makes recommendations for improvements. The permit requires implementation of extensive I/I reduction measures.

Comment #28: The Natural Trust Resource recommended that the final permit require that any facility currently connected to the treatment facility be required to offset any increases in their flow to the treatment facility.

Response: In an effort to minimize a net increase in flow to the Brockton facility, an offset requirement for facilities currently connected to the WWTP that are not in Brockton or in the Towns of Abington and Whitman was included in the permit. See footnote #3 on page four of the final permit.

The extensive requirements related to I/I control in conjunction with the restrictions on new connections from communities outside of Brockton are expected to control flow to the facility. The City may choose to pursue an offset program for connections within its collection system in order to provide additional resources for accomplishing I/I reductions. Offset requirements within Brockton may be considered in future permits or enforcement actions if necessary to further control flow.

Comment #29: Comments were submitted from several organizations and individuals in nearby communities in support of the more stringent effluent limits, the I/I requirements, and flow restrictions language in the proposed permit.

Response: EPA and MA DEP believe these measures, in conjunction with the plant upgrades will contribute towards meeting the State's Water Quality Standards during this five year permit cycle

Comment #30: Comments were submitted from several organizations in support of year round tertiary treatment at the facility.

Response: Many of the limitations in the permit, including the phosphorus limitations are year-round. Also, see Response to Comment #29.

Comment #31: Several commenters recommended effluent limits for nitrogen and phosphorus be added to the final permit.

Response: The year round phosphorus limits of 0.2 mg/l in the final permit reflects 314 CMR 4.04(5) of the Massachusetts Water Quality Standards which requires control of eutrophication to be addressed with the highest and best practical treatment. The discharge from the facility is to a fresh water river therefore the nutrient of concern is primarily phosphorus.

Limits for total nitrogen are expected to be incorporated in future permit issuances to address eutrophication issues in Mt. Hope Bay. A TMDL is currently under development for Mt. Hope Bay. In addition, the treatment facility upgrade is incorporating nitrogen treatment capabilities.

Comment #32: There was a recommendation to include technology based nitrogen limits in the final permit as an interim step until the TMDL for Mt. Hope Bay has been completed.

Response: See Response to Comment #31.

Comment #33: A comment was received stating that the calculation of the monthly average as an annual average violates the anti-degradation requirement in the CWA.

Response: See Response #2 above.

Comment #34: A few comments were received recommending the facility upgrades include an ultraviolet disinfection system. Comments were received stating the TRC levels discharged into the receiving water consistently violates the permit limitation and the odor from the existing system impacts the Taunton River system up to 20 miles downstream from the discharge.

Response: The permit includes extensive new requirements on chlorine monitoring to ensure that discharges of residual chlorine are consistent with permit limits. See Response to Comment #6.

Comment #35: The schematic of the facility (figure 2) shows a bypass from the primary clarifiers to the chlorine contact chamber. Is this an active bypass? Under what conditions are flows bypassed around the advanced treatment processes directly to the chlorination process? If flows are bypassed, is the facility required to report the volume of bypassed flow to the EPA and DEP? Incorporating a requirement to record the date and volume of bypassed flows into the permit should be considered and an increase in the monitoring of certain parameters, BOD, TSS and nutrients in particular, to capture the nature of any bypassed flows.

Response: The plant does have the capability of bypassing secondary treatment. This occurs during wet weather events, and the bypassed flow is recombined with the secondary treated flow prior to disinfection. This bypassing is not authorized by the permit, and it has contributed to violations of the permits discharge limitations. Bypasses are relatively infrequent, and the frequency is expected to further decrease in the future as the mandated I/I program is completed. The facility is required to report bypass events on their monthly discharge monitoring reports, including the volume of bypassed flow, as required in Part II.General Requirements of the permit.

While BOD, TSS, and nutrient monitoring are composite samples and are frequent enough that some samples will include bypass periods, bacteria sampling may not reflect bypass periods. We have added a requirement in the final permit for an additional bacteria grab sample during all bypass events to be collected at a time when the final discharge is representative of bypass conditions.

Comment #36: The Fact Sheet notes the facility uses sulfur dioxide gas to dechlorinate effluent but details of the process are not provided; such as where the gas is added or the length of contact time between the gas and effluent under the range of flows seen at this facility. The DMR data show the facility has had some elevated fecal coliform levels in the effluent in addition to high residual chlorine concentrations. One could infer there may be an issue with the design of the chlorination - dechlorination process or issues with operation. It would be helpful to have more specific information about the process to assess the efficacy of the methods used to chlorinate and dechlorinate. If problems in meeting limits imposed in the NPDES permit persist, it is hoped an assessment of the chlorination-dechlorination process is undertaking and improvements made to bring the facility into compliance consistently.

Response: Sulfur dioxide, used to dechlorinate the effluent after chlorination, is added through diffusers at the end of the chlorine contact tanks. Sulfur dioxide when mixed adequately with chlorine, reacts instantaneously so there is no contact time required. Please also see Response to Comment #6.

Comment #37: The facility description notes the facility offers seasonal nitrification and phosphorus removal. The draft permit appears to institute year-round phosphorus removal. We highly support a year round concentration and loading limit for phosphorus and welcome this addition to the draft permit. The effluent from this point source is often a majority of the flow in the receiving water and the receiving water is tributary to a large sensitive systems including the Wild and Scenic study area of the Taunton River and Mount Hope and Narragansett Bays. A year round phosphorus limit will help limit the accumulation of phosphorus in the sediments in the river system, reduce the likelihood of early seasonal growth of algae which can be detrimental to aquatic life and habitat including the successful spawning of anadromous fish and may help reduce some of the impacts associated with artificially elevated phosphorus limits in a fresh water system.

Response: The permit does require year-round phosphorus removal. Also see Response to Comments #4 and #31.

Comment #38: The flow design capacity of this facility is listed as 18 mgd in the Fact Sheet. The discharge monitoring data provided and the recent flow average listed in the Fact Sheet indicate this facility routinely exceeds 18 mgd daily maximum and as a monthly average. Given the frequent exceedances of design capacity, particularly in certain seasons, instituting a rolling annual average to determine the monthly flow average appears to be a case of backsliding since monthly averages are likely to be tempered in the traditionally higher flow months. We have expressed our opinion concerning this matter in comment letters on other draft permits. The New England region is noted for many things, most certainly our diverse seasons. Having a monthly flow average that is flattened by annual averaging muddles the actual monthly average contribution in relation to seasonal aquatic activity and flow regimes. This is a significant loss to ones ability to assess effluent impacts and understand the operating issues at a facility. This change will also obfuscate

assessments of progress made in the reduction of I/I in the system. We reiterate our opinion that this change in calculation methods for monthly average flows violates the anti-degradation requirements contained in the Clean Water Act.

Response: The reporting requirement for flow is now expressed as an annual average, rather than a monthly average as in the current permit. This change is being made to all POTW permits in MA at the request of MADEP. The purpose of this change was to allow some variation in POTW flows in response to wet weather, and in recognition that the flow rate used as the monthly average is in most cases presented in the treatment plant planning documents as an annual monthly average. As part of this change in how flow limits are written, DEP and EPA agreed that mass limitations for BOD and TSS should be included as permit conditions to ensure that existing controls on mass discharges of BOD and TSS were maintained, in order to prevent degradation of the receiving water. We have also strengthened the I/I requirements of the permit to ensure that the permittee maintains efforts to minimize extraneous flows to the collection system.

EPA believes this policy change does not constitute "back-sliding" or require State antidegradation review.

Comment #39: The discussion of the reporting requirements for conventional pollutants in the Fact Sheet states the requirement for BOD_5 will remain the same. Reporting requirements for CBOD appear in the draft permit but there is no obvious BOD_5 report requirement in the draft permit. Assigning CBOD limitations and monitoring requirements is understandable and appropriate given the nitrogen removal done seasonally at this facility. None-the-less, the Fact Sheet seems to indicate the nitrification is only seasonal so a year-round monitoring and reporting requirement for BOD_5 is warranted and may be a better measure of the facility's operating efficiency when nitrification is not part of the treatment process. BOD_5 monitoring and reporting requirements should be added to the permit at the same frequency and with the same sampling requirements as CBOD. Some consideration should be made to adding a BOD concentration and loadings limits to the permit during seasons when nitrogen removal is not being done at the plant.

Response: The permit includes year round ammonia limits. Consequently, CBOD is an appropriate measurement for biochemical oxygen demand.

Comment #40: The 60 day rolling average for phosphorus is a typical as most POTWs with nutrient monitoring and limitations have monthly averages. Why has a 60day rolling average been chosen for this facility? How is the monthly average for P currently determined? The start date of April 1 is also not explained; shouldn't the averaging start 60 days after the NPDES permit renewal is finalized and the final permit issued?

Response: Please see Response to Comment #4. The 60 day rolling average limit is a reasonable relaxation from a monthly average limit in that it allows for greater flexibility relative to infrequent short term exceedances of the permit limit that may be difficult to prevent while protecting water quality standards. Short term exceedances are unlikely to result in a significant response in the receiving water relative to aquatic plant growth. Longer term exceedances which would elicit a response in plant growth would also likely result in a violation of the rolling average limit. The rolling average ensures that any reduction in treatment efficiency is responded to quickly. The rolling average allows for unavoidable excursions while ensuring that the excursions are only short term. A requirement to report

the monthly average value has been included in the permit.

Comment #41: As the Fact Sheet indicates, the phosphorus load in the Salisbury Plain River is well above the EPA recommendations for this ecoregion. The elevated concentrations are not limited to the Salisbury Plain River, the monitoring done by the Taunton River Watershed Alliance and the Water Access Lab at Bridgewater State show problems continuing downstream. Given this data, the year round phosphorus limit and reporting requirement is a sound decision and one that will help protect the water quality of the receiving waters.

It is regrettable no numeric limits exist in the MA water quality standards since the Salisbury Plain River is a part of the larger Taunton River and Narragansett Bay watershed and this facility discharges a significant load of nitrogen on a daily and annual basis. The RI DEM has Mount Hope Bay (segment RI0007032E-01-62-1998) listed as impaired for pathogens, nutrients and hypoxia. Mount Hope Bay is downstream of the Brockton discharge. In general the Taunton River estuary and the greater Narragansett Bay are nitrogen sensitive embayments. Given the impaired status of downstream waters and data from the Water Access Lab showing nitrate nitrogen loads of greater than 300,000 g/day below the Brockton treatment facility, it is likely nitrogen from this facility is contributing to the nutrient problem in the impaired Mount Hope Bay segments and of the greater Taunton River and Narragansett Bay watershed. More frequent monitoring during the warm weather months would provide more data for TMDL development and help monitor the efficacy of the nitrification process at the facility. We would like to suggest twice monthly monitoring of nitrate and TKN at this facility between May 1 and October 31.

Response: The monitoring requirements in the final permit have been increased to two per month for nitrite/nitrate and TKN.

Comment #42: Comments were received advocating for nitrogen concentration and loads limits for this facility, (nitrate and TKN). The data collected by Water Access Laboratory (WAL) at Bridgewater State College and the Taunton River Watershed Alliance (TRWA) show the majority of nitrogen in the lower Taunton River is from this point source, (TWRA Water Quality Report, 1999-2000). The plant is most likely one of the two largest Massachusetts sources of nitrogen to Narragansett Bay, the other being the Upper Blackstone Regional Wastewater facility. Beginning to lower the loadings of nitrogen to the estuarine and coastal areas of the Taunton and Narragansett Bay is a pro-active measure and a warranted one. It seems inevitable that a TMDL done for these waters will require a reduction in nitrogen loading, adding some nitrogen limits in this permit is a recognition of this probability.

Response: See Response #31.

Comment #43: The chlorine limits and the monitoring requirements for this facility are sound. Continuous monitoring is an important addition as it will help to prevent temporary elevated TRC concentrations with the potential to have a toxic affect on the aquatic ecosystem of the receiving waters. A daily check of the accuracy of the continuous monitor are also a sound idea to guarantee there are no unwitting problems with elevated TRC and it offers a level of redundancy to the testing of this pollutant. A possible TRC related concern is the odor often present near and even well downstream of the facility.

The odor may be a product of the facility's chlorination-dechlorination method. While not a visual aesthetic concern, objectionable odors do impacts users and potential users of the Salisbury Plain River even the Matfield and Nemasket. Can the permit be modified in any manner to address what is perceived by many to be an objectionable and pervasive problem?

Response: See Response to Comments #6 and #34. The Massachusetts Water Quality Standards for Class B waters prohibit odor in concentrations or combinations which are aesthetically objectionable, that would impair use assigned to Class B waters, or cause tainting in the edible portion of aquatic life.

The upgrades to the facility which include improvements for sludge storage, the sludge thickening and dewatering process and the headworks will all contribute to the elimination of odors emanating from the facility

Comment #44: The additional two sets of toxicity tests for flow events above 30 mgd is a valuable supplement to the permit requirements as this facility has had several flow events in excess of 30 mgd and many of the permit limits are calculated using the dilution factor based on the 18 mgd design flow. The toxicity testing, while unable to capture all of the impacts possible from an effluent discharge, is able to integrate factors including those constituents not monitored and the affects of different interactions between pollutants. The toxicity testing methods are not infallible indicators of chronic or acute toxicity issues. For example: test solutions are renewed daily but effluent collection is done on days 1, 3 and 5. This infrequent collection of test water could result in some changes to the effluent sample water used as test solutions including reductions in concentrations of volatile pollutant such as TRC. This is something to consider when reviewing the toxicity test results for this facility which has had historic compliance problems with its TRC concentrations.

Response: We acknowledge the points made in the comment and agree that toxicity testing methods are not infallible indicators of chronic or acute toxicity. This is one of the primary reasons that toxicity testing is supplemented with chemical specific limits. It should be noted relative to chlorine that the timing of effluent collection is irrelevant since samples are dechlorinated before the test. The toxicity of chlorine is well understood and that is the reason for the stringent permit requirements relative to chlorine. Toxicity testing is designed to determine the presence of unknown toxicants and/or the synergistic effects of multiple toxicants.

Comment # 45: The Fact Sheet has a summary of DMR data in Table 1. The data for the toxicity tests lists information for only three dates. The EPAs on-line PCS data base has test results for several additional dates in the recent past. The facility has a more problematic compliance report when this on-line data is considered. The LC50 results of 1/03 is listed as 58.6%, 12/02 was listed as both 70% (report designator B) and 72.5% (report designator T). The results for the NOEL went as low as 12.5% in 9/03 to 25% in 12/02 and 50% on 4/30 and 6/02. The facility's effluent appears to have acute and chronic toxicity. Testing is not done monthly so one or two noncompliant tests can translate to 25 or 50% failure rate for the year. Has the facility attempted to determine the cause of toxicity? Given some of the low survival numbers from some of these tests, (12.5%, 25%) in-stream monitoring of the aquatic community would provide insight into the impacts the effluent has on in-stream aquatic organisms. An in-stream monitoring

program should be considered as a supplement to the lab testing. The facility should also perform a thorough assessment and analysis to determine the probably cause(s) of the toxicity being uncovered by the LC50 and NOEC testing and implement corrective measures.

Response: The Agencies agree that the record of compliance with whole effluent toxicity requirements has been poor. The permit continues to require six tests per year including two during high flow events. Mandated improvements in the pre-treatment program as well as significant upgrades at the treatment facility are expected to greatly reduce effluent toxicity. Toxicity Identification Evaluations and Toxicity Reduction Evaluations may be required if toxicity persists. Instream monitoring for toxicity is conducted periodically by MADEP. While this monitoring is relatively infrequent, it is appropriate for monitoring the results of significant pollutant reductions such as will occur over the life of this permit.

Comment #46: The permit is requiring an I/I removal program which we heartily support. The facility receives a significant volume of I/I according to studies completed by the permit holder, this I/I problem is also easily inferred from the flow data for the plant. And the seasonal peaks seen in the flow volume. The data illustrates the need for aggressive I/I removal for this system. We would like to ask that the I/I plan required by the draft permit be made available to interested individuals and entities for review when it is completed. A suggestion for an inclusion in the I/I plan is to include a prioritization of discrete projects and a clear outline of the decision making structure and the criteria used to determine the priority for each I/I reduction project.

Response: Once submitted by the permittee, the I/I plan will be part of the administrative record and available to the public for review. MA DEP recently approved a City Wide Sewer System Evaluation Study (SSES) to address I/I that was prepared by the City. The report is very detailed and provides specifics on project priorities, and the criteria used to determine the priorities. It is available for public review at MADEP and EPA.

Comment #47: Many commenters were supportive of language in the draft permit restricting flow at the facility until the receiving water meets State Water Quality Standards for Class B waters.

Response: The final permit addresses flow by including mass limits in the final permit, requiring implementation of an I/I reduction plan, and restricting an increase in additional wastewater being treated at the facility.

EPA and MA DEP believe, these measures in conjunction with the plant upgrades will contribute towards minimizing further degradation of the Salisbury Plain River and move closer toward meeting the State's Water Quality Standards during this five year permit cycle.

Comment #48: The decision to restrict new flows to the facility including a ban on expanding the service network for this facility is definitely supported. The facility has many issues from an average influent flow well above the design capacity of the plant to problems meeting existing NPDES permit limits to a dilution factor of less than 1.5. Additional flows can only exacerbate problems and negatively affect the receiving waters. Requiring, to the extent feasible, an offset of new flows from within the existing wastewater system with equivalent reductions in I/I is also a sound idea and perhaps the concept could be refined

to require a reduction in I/I to offset new flows above the reduction milestones included in the I/I report. This would guarantee general I/I remediation at a pace set by the plan without losing ground when a new flow is added from the current service area.

Response: See Response to Comment #47.

Comment # 49: In the section of the draft permit covering the industrial pretreatment program, we would like to recommend an additional clause to part 1.e :Obtain appropriate *and implement* remedies for noncompliance by an industrial user.

Response: The pre-treatment program requirements include provisions for enforcement of non-compliance by industrial users.

Comment #50: Comments were received questioning the length of time needed before the Salisbury Plain River meets water quality standards and what justification the Agencies have in issuing this NPDES permit that will not meet water quality standards.

Response: Many variables can contribute to a water body not achieving its assigned water quality standards. Large scale reductions in dry weather and wet weather point source pollutant loadings will be necessary to achieve Standards in the Salisbury Plain River. This permit, as well as the Phase II stormwater permit, will result in significant reductions in dry weather and wet weather pollutant loadings but if further reductions are necessary the permit may be modified or revoked and reissued with more stringent limits if cause exists, pursuant to 40 CFR 122.62.

Comment #51: Many commenters expressed concern over the impact of nutrients in the Taunton River and Mt. Hope Bay stemming from this facility and the impact nutrients are having on biodiversity in the watershed. There were several requests for the final permit to have effluent limitations for TKN and nitrate/nitrite.

Response: See Response to Comment #31.

Comment #52: Are the limits in the draft permit sufficient to ensure the Salisbury Plain River will meet state water quality standards for Class B waters? Is the stream flow of the Salisbury Plain River sufficient to assimilate the volume of pollutants in the wastewater from the treatment plant under all flow conditions?

Response: In general, if the discharge meets the effluent limitations in the draft permit the water quality of the receiving water should meet the State Water Quality Standards for Class B waters in Massachusetts.

The most uncertainty involves phosphorus and the lack of a numeric phosphorus criteria in the Standards. A future TMDL or water quality analysis, or the adoption of a numeric phosphorus criteria in the Standards, may result in a more stringent phosphorus limit in the future. The permittee has been advised to implement phosphorus removal technologies that are compatible with additional technologies that may be necessary in the future.

Comment # 53: One commenter recommended that flow limits should be included in the final permit as well as prohibiting new sewer connections from other communities due to the

environmental degradation of the River. Two commenters questioned whether the in-stream flow of the Salisbury River will meet water quality standards if the City of Brockton can continue to increase flows to the Salisbury Plain River.

Response: The Agencies agree that an increase in effluent flow to the River is unacceptable and the prohibition on new sewer connections from communities outside of Brockton, Abington, and Whitman, as well as the requirements for I/I reduction will remain in the final permit. Flow limits may be included in future permit issuances if necessary to control flow. Please see Response to Comments #1, #7, #19, #20, and #22.

Comment #54: There were comments submitted referring to the limited dilution available in the receiving water and comparing more stringent dilution ratios used for treatment plants in the State of Maine.

Response: Dilution ratios for NPDES permits in Massachusetts are based on Massachusetts Water Quality Standards pursuant to 314 CMR 4.03(3)(a). The regulation requires dilution calculations for NPDES permits be calculated using the receiving water 7Q10, the lowest observed mean river flow for seven consecutive days recorded over a ten year period, and the plant design flow.

Comment #55: Water quality monitoring results were submitted from local watershed groups documenting detrimental impacts the effluent from the facility is having on the receiving water, the sub-watersheds, the Taunton River watershed, Narragansett Bay and Mt Hope Bay.

Response: See Response to Comment #31.

Comment #56: It was recommended that the plant's flow be increased by 20% to reflect the upgrade and expected sustained higher quality effluent.

Response: See Response to Comments #1, #19, #20 and #22.

Comment #57: It was recommended that the final permit include restrictive language to allow selective sewering while maintaining groundwater and stream flows by requiring comparable amounts of stormwater recharge in the sub-basins.

Response: See Response to Comment #19, #20 and #22.

04/04/2005

Petition for Review MA Permit MA0101010

Exhibit E

E. Final Permit MA0101010 May 11, 2005.

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

City of Brockton

is authorized to discharge from the facility located at

Brockton Advanced Water Reclamation Facility
303 Oak Hill Way
Brockton, Massachusetts 02401

to receiving water named

Salisbury Plain River
Taunton River Watershed (62)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein. The Town of Abington and the Town of Whitman are co-permittees for Part I.C. Unauthorized Discharges, Part I.D. Operation and Maintenance of the Sewer System, and Part I.E. Alternate Power Source, which include conditions regarding the operation and maintenance of the collection systems, owned and operated by the Towns. The responsible Town Departments are,

Town of Abington
Sewer Department
350 Summer Street
Abington, MA 02351

Town of Whitman
Department of Public Works
100 Essex Street, P.O. Box 454
Whitman, MA 02382

This permit shall become effective sixty days from the date of signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on September 30, 1999.

This permit consists of 17 pages in Part I including effluent limitations, monitoring requirements, Attachments A through C, and 35 pages in Part II including General Conditions and Definitions.

Signed this 11 day of May, 2006

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A.1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to the Salisbury Plain River. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS						MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE[4]**
FLOW[1,3]	****	****	****	Report	****	Report	Continuous	Recorder
FLOW[2]	****	****	****	Report	****	Report	Continuous	Recorder
$CBOD_5$ (May 1 - Oct.31) (Nov.1 - April 30)	750 lbs/day 2250 lbs/day	1200 lbs/day 3750 lbs/day	2250 lbs/day 4500 lbs/day	5 mg/l 15 mg/	8 mg/l 25 mg/l	15 mg/l 30 mg/l	1/Day 1/Day	24-Hr Comp.[5,6]
TSS (May 1 - Oct. 31) (Nov. 1- April 30)	750 lbs/day 2250 lbs/day	1200 lbs/day 3750 lbs/day	2250 lbs/day 4500, lbs/day	5 mg/l 15 mg/l	8 mg/l 25 mg/l	15 mg/l 30 mg/l	1/Day 1/Day	24-Hr Comp.[5,6]
pH RANGE	6.5 - 8.3 SU SEE PERMIT PAGE 6 OF 17, PARAGRAPH I.A.1.b.						1/Day	Grab
DISSOLVED OXYGEN (April 1- Oct. 31)	NOT LESS THAN 6.0 mg/l						1/Day	Grab
TOTAL CHLORINE RESIDUAL[9]	****	****	****	Report	****	Report	Continuous	Recorder
TOTAL CHLORINE RESIDUAL[7,9,10]	****	****	****	0.011 mg/l	****	0.019 mg/l	3/Day	Grab

CONTINUED FROM PREVIOUS PAGE

A.1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number **001**, treated effluent to the Salisbury Plain River. Such discharges shall be limited and monitored as specified below.

EFFLUENT CHARACTERISTIC				EFFLUENT LIMITS			MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE[4]**
FECAL COLIFORM[7,8]	****	****	****	200/100 cfu's/ml	****	400/100 cfu's/ml	5/Week	Grab
NH_3-N (June 1 - Oct. 31) (Nov 1 - Nov 30) (Dec 1 - Apr 30) (May 1 - May 31)	150 lbs/day **** **** ****	150 lbs/day **** **** ****	225 lbs/day **** **** ****	1.0 mg/l 6.3 mg/l 9.5 mg/l 3.2 mg/l	1.0 mg/l **** **** ****	1.5 mg/l Report mg/l Report mg/l Report mg/l	2/Week 2/Week 2/Week 2/Week	24-Hr Comp.[6]
TKN	Report lbs/day	****	Report lbs/day	Report mg/l	****	Report mg/l	2/Month	24-Hr Comp.[6]
NO_2/NO_3	Report lbs/day	****	Report lbs/day	Report mg/l	****	Report mg/l	2/Month	24-Hr Comp.[6]
COPPER, TOTAL	****	****	****	5.3 ug/l	****	7.4 ug/l	1/Month	24-Hr Comp.[6]
PHOSPHORUS	Report lbs/day	****	Report, mg/l	0.2 mg/l[11] Report[11], mg/l	****	Report, mg/l	2/Week	24-Hr Comp.[6]
WHOLE EFFLUENT TOXICITY SEE FOOTNOTES[12,13,14,15]	Acute $LC_{50} \geq 100$ % Chronic C-NOEC >98 %						6/Year	24-Hr Comp.[6]

Footnotes:

1. For flow receiving secondary treatment, report maximum and minimum daily rates and total flow for each operating date. This is an annual average reporting requirement, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. Each subsequent month's DMR will report the annual average flow that is calculated from that month and the previous 11 months.

2. The monthly average and maximum daily flows for each month shall be reported.

3. Flows originating from the Towns of Abington and Whitman are limited each to an annual average of 1 MGD. The Co-permittees shall not accept flow from any new sewer connections in other communities although, EPA and MA DEP may allow such a tie-in through a permit modification, if an abutting Town with a completed Comprehensive Wastewater Management Plan (CWMP) demonstrates that a tie-in to Abington or Whitman is an appropriate option.

   Increased flows from facilities currently connected directly to the Brockton sewer system shall be offset, to the extent feasible, in order to minimize any net increase in flow to the WWTP.

4. All required effluent samples shall be collected at the point of discharge. Any change in sampling location must be reviewed and approved in writing by EPA and MA DEP. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136. Samples shall be 24-hour composites unless specified as a grab sample in 40 CFR §136.

5. Sampling required for influent and effluent.

6. A 24-hour composite sample will consist of at least twenty four (24) grab samples, which are flow proportional, and taken during one working day. Working day is defined as a twenty-four hour period such as 12 am to 12 am the following day.

7. Fecal coliform and total residual chlorine monitoring will be conducted April 1 through October 31. This is a State certification requirement. Fecal coliform discharges shall not exceed a monthly geometric mean of 200 colony forming units (cfu's) per 100 ml, nor shall they exceed 400 cfu's per 100 ml as a daily maximum. Fecal coliform samples shall be taken 5 times per week and conducted concurrently with the TRC sampling described below.

   If chlorine is added to the wastewater flow at any time during the period from November 1 through March 31, the effluent shall be sampled for TRC at the frequency required by the permit. The effluent limitation on TRC is in effect year-round.

8. The permittee is required to submit an additional fecal coliform grab sample of the final combined effluent that is discharged into the receiving water when there is a bypass. The sample shall be representative of the blended effluent discharged to the river. This is a report only requirement and shall be included with the bypass reports submitted with the monthly discharge monitoring reports (DMRs).

9. The permittee shall collect and analyze a minimum of three TRC grab samples for compliance purposes. Any additional grab sample monitoring results shall be included in the compliance report.

   The results of the grab samples and a comparison to the continuous analyzer reading, including the time of the grab samples, shall be included with the DMRs.

   The permittee shall also report the average monthly and maximum daily discharge of TRC using data collected by the continuous TRC analyzer. The permittee shall collect and analyze a minimum of one grab sample per day for calibration purposes. Four continuous recording charts (1/week) showing weekly data, shall be submitted with the monthly DMRs. If the continuous analyzer is not working properly, the permittee shall substitute the TRC results recorded for compliance purposes.

10. The minimum level (ML) for total residual chlorine is defined as 20 ug/l. This value is the minimum level for chlorine using EPA approved methods found in the most currently approved version of Standard Methods for the Examination of Water and Wastewater Method 4500-CL E and G or USEP A Manual of Methods of Analysis of Water and Wastewater Method 330.5. One of these methods must be used to determine total residual chlorine. For effluent limitations less than 20 ug/l, compliance/non-compliance will be determined based on the ML. Sample results of 20 ug/l or less shall be reported as zero on the discharge monitoring report.

11. The 0.2 mg/l total phosphorus limit is a 60 day rolling average limit. The 60 day average value for each day in a given month, beginning on the 60th day after the permit becomes effective, must be calculated and the highest 60 day average value for that month must be reported on the monthly discharge monitoring report (DMR). In addition, the monthly average and the maximum daily values must be reported for each month.

12. The permittee shall conduct chronic (and modified acute) toxicity tests six times per year. The chronic test may be used to calculate the acute LC_{50} at the 48 hour exposure interval. The permittee shall test the invertebrate, Ceriodadaphnia dubia, only. Four toxicity test samples shall be collected and tests completed during the second week of February, May, August, and November. Results for these tests are to be submitted by last day of the month following the test date.

    An additional two samples shall be collected and tests completed during days when treatment plant total daily flow exceeds 30 mgd. These two test may be conducted during any month of the year. The results for these tests shall be submitted by the last day of the month following the test in which they are taken. See Permit Attachment A, Toxicity Test Procedure and Protocol.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**	**Chronic Limit C-NOEC**
February May August November	March 31 June 30 September 31 December 31	Ceriodaphnia dubia (daphnid)	≥ 100%	> 98 %

After submitting **one year** and a **minimum** of six consecutive sets of WET test results, all of which

demonstrate compliance with the WET permit limits, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

13. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

14. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The "98% or greater" limit is defined as a sample which is composed of 98% (or greater) effluent, the remainder being dilution water. This is a maximum daily limit derived as a percentage of the inverse of the dilution factor of 1.02

15. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required **in Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A.**

Part I.A.1. (Continued)

a. The discharge shall not cause a violation of the water quality standards in the receiving waters.

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time.

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values, and shall be reported on the monthly discharge monitoring report.

f. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.

g. The results of sampling for any parameter above its required frequency must also be reported.

2. All POTWs must provide adequate notice to the Director of the following:

   a. Any new introduction of pollutants into the POTW from an indirect discharger in a primary industry category discharging process water; and

   b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

   c. For purposes of this paragraph, adequate notice shall include information on:

      (1) the quantity and quality of effluent introduced into the POTW; and

      (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass Through:

   Pollutants introduced into POTW's by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

4. Toxics Control

   a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

   b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

5. Numerical Effluent Limitations for Toxicants

   EPA or DEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

6. Limitations for Industrial Users:

a. Pollutants introduced into POTW's by a non-domestic source (user) shall not pass through the POTW or Interfere with the operation or performance of the works.

b. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond.

Within (90 days of the effective date of this permit), the permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form (Attachment B) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA Guidance Manual for the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program (December, 1987).

B. INDUSTRIAL PRETREATMENT PROGRAM

1. The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR 403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):

a. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP but in no case less than once per year and maintain adequate records.

b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.

c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.

d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.

2. The permittee shall provide the EPA and the MA DEP with an annual report describing the permittee's pretreatment program activities for the twelve month period ending 60 days prior to the due date in accordance with 403.12(i). The annual report shall be consistent with the format described in Attachment C of this permit and shall be submitted no later than March 1 of each year.

3. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR 403.18(c).

4. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR 405 et. seq.

5. The permittee must modify its pretreatment program to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program. The permittee must provide EPA, in writing, within 180 days of this permit's effective date proposed changes to the permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the permittee must address, if applicable in its written submission the following areas: (1) enforcement response plan; (2) revised sewer use ordinances; and (3) slug control evaluations. The permittee will implement these proposed changes pending EPA Region I's approval under 40 CFR 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.A.6.b.

C. UNAUTHORIZED DISCHARGES

The permit only authorizes discharges in accordance with its terms and conditions and only from the outfall listed in Part I.A. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) from any portion of the collection system owned and operated by the permittee or co-permittees are not authorized by this permit and shall be reported by the owner of the discharge in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

D. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and, the following terms and conditions. The permittee and co-permittees shall independently meet the following conditions for those portions of the collection system which it owns and operates.

1. Maintenance Staff

Provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Preventative Maintenance Program

Maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Infiltration/Inflow Control Plan:

The permittee and co-permittees shall develop and implement plans to control infiltration and inflow (I/I) to its sewer system. The plans shall be submitted to EPA and MA DEP within six months of the effective date of this permit (see page 1 of this permit for the effective date) and shall describe the permittees' and co-permittees' programs for preventing I/I related effluent limit violations, and all unauthorized discharges of wastewater, including overflows and bypasses due to excessive I/I.

The plans shall include:

- An ongoing program to identify and remove sources of I/I. The program shall include the necessary funding level and the source(s) of funding.

- An inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts. Priority should be given to removal of public and private inflow sources that are upstream from, and potentially contribute to, known areas of sewer system backups and/or overflows.

- Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of I/I to the system.

- An educational public outreach program for all aspects of I/I control, particularly private inflow.

The City of Brockton's plan shall include implementation of the recommended I/I reduction projects, including the private inflow control program, in the August 2000 report titled, A City Wide Sewer System Evaluation Study. The plan shall also include a schedule for implementing the recommended reduction projects within seven years of the date the I/I plan is submitted. The schedule shall be based on, to the maximum extent practical, equal funding levels for each year and prioritization of the recommended inflow reduction program. Any proposed revisions to the recommended projects or schedule during the term of the permit shall be documented in the annual summary report and shall achieve, at a minimum, the same amount of I/I reduction estimated in the original plan and schedule.

Reporting Requirements:

A summary report of all actions taken to remove I/I during the previous calendar year shall be submitted to EPA and MA DEP annually, by the anniversary date of the effective date of this permit. The summary report shall, at a minimum, include:

- A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year.

- Expenditures for any I/I related maintenance activities and corrective actions taken during the previous year.

- A map with areas identified for I/I related investigation/action in the coming year.

- A calculation of the annual average I/I, the maximum month I/I for the reporting year.

- A report of any I/I related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.

- A report of all flow volumes connected and flow volumes removed from the sewerage system.

E. ALTERNATE POWER SOURCE

In order to maintain compliance with the terms and conditions of this permit, the permittee and co-permittees shall continue to provide alternative power sources with which to sufficiently operate its treatment works (as defined at 40 CFR 403).

F. SLUDGE CONDITIONS

The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

If an applicable management practice or numerical limitation for pollutants in sewage sludge more stringent than existing federal and state regulations promulgated under Section 405(d) of the CWA, this permit shall be modified or revoked and reissued to conform to the promulgated regulation.

The permittee shall give prior notice to the EPA and MA DEP of any change(s) planned in the permittee's sludge use or disposal practice.

A change in the permittee's sludge use or disposal practice is a cause for modification of the permit. It is a cause for revocation and reisssuance of the permit if the permittee requests or agrees.

1. General Requirements

   a. No person shall fire sewage sludge in a sewage sludge incinerator except in compliance with the requirements of 40 CFR part 503 subpart E.

2. Pollutant Limitations

   a. Firing of sewage sludge shall not violate the requirements in the National Emission Standard for Beryllium in 40 CFR part 61, subpart C, 10 grams per 24-hour period.

   b. Firing of sewage sludge shall not violate the requirements in the National Emission Standard for Mercury in 40 CFR part 61, subpart E, 3200 grams per 24-hour period.

   c. The daily concentration of metals in sewage sludge fed to the incinerator shall not exceed the limit specified below (dry weight basis):

	Max. Daily
Arsenic	489 mg/kg
Cadmium	103 mg/kg
Chromium	14397 mg/kg
Lead	2751 mg/kg
Nickel	686629 mg/kg

3. Operational Standards

   a. The monthly average concentration for Total Hydrocarbons (THC), corrected to zero percent moisture and to seven percent oxygen, in the exit gas from the sewage sludge incinerator stack shall not exceed 100 PPM on a volumetric basis.

   b. The measure THC concentration shall be corrected to zero percent moisture using the correction factor below:

   $$\text{Correction factor (percent moisture)} = \frac{1}{(1-X)}$$

   Where:

   X = the decimal fraction of the percent moisture in the sewage sludge incinerator exit gas in hundredths.

   c. The measured THC concentration shall be corrected to seven percent oxygen using the correction factor below:

   $$\text{Correction factor (oxygen)} = \frac{14}{(21-Y)}$$

   Where:

   Y = the percent oxygen concentration in the sewage sludge incinerator stack exit dry gas (dry volume/dry volume)

   d. The measured THC value shall be multiplied by the correction factors in items b and c.
   The corrected THC value shall be used to determine compliance with Paragraph F.3.a.

4. Management Practices

   a. An instrument that continuously measures and records the THC concentration in the sewage sludge incineration stack gas shall be installed, calibrated, operated and maintained for each incinerator in accordance with the manufacturer's written instructions.

   b. The THC instrument shall employ a flame ionization detector; have a heated sampling line maintained at a temperature of 150 degrees Celsius or higher at all times and shall be calibrated at least once every 24 hour operation period using propane.

   c. An instrument that continuously measures and records the oxygen concentration in the sewage sludge incinerator stack exit gas shall be installed, calibrated, operated and maintained for each incinerator in accordance with the manufacture's written instructions.

d. The THC monitor and the oxygen monitor must meet the performance specifications detailed in "Continuous Emissions Monitoring Guidance for Part 503 Sewage Sludge".

e. Upon completion of the testing to demonstrate compliance with the performance specifications, but not later than 90 days from the effective date of this permit, the operator of the incinerators shall submit to EPA-New England a certification stating that the continuous emissions monitoring system meets the performance specifications detailed in the above referenced guidance.

f. An instrument that measures and records information used to determine the moisture content in the sewage sludge incinerator stack exit gas continuously, shall be installed calibrated, operated and maintained for each sewage sludge incinerator in accordance with manufacturer's written instructions.

g. An instrument that measures and records combustion temperatures continuously shall be installed, calibrated, operated and maintained for each sewage sludge incinerator in accordance with manufacturer's written instructions.

h. The daily average of the combustion temperatures within the combustion zone of the multiple hearth incinerator shall not exceed 1,750°F.

i. The air pollution control devices shall be operated so that the differential pressure across the venturi scrubber shall be a minimum of 20 to 38 inches water column.

j. Sewage sludge shall not be fired in a sewage sludge incinerator if it is likely to adversely affect a threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated critical habitat.

k. The permittee shall notify the EPA-New England within 7 days if any continuous emission monitoring equipment is shutdown or broken down for more than 72 hours while the incinerator continues to operate.

l Notification shall include the following:

(1) The reason for the shutdown or break down;
(2) Steps taken to restore the system;
(3) The expected length of the down time; and
(4) The expected length of the incinerator operation during the down time of the monitoring system.

m. Break downs or shutdowns of less than 72 hours shall be recorded in the operations log along with an explanation of the event.

n. Copies of all manufacturer's instructions shall be kept on file and be available during inspections.

5. Monitoring Frequency

   a. Beryllium and mercury shall be monitored at the following frequency: 2 times per year, during the months of January and July.

   b. Either stack testing or sludge testing may be used for demonstration of compliance with the beryllium and mercury requirements in Paragraph F.2.a and b.

   c. The pollutants in Paragraph F.2.c. should be monitored at the following frequency: 6 times per year, during the months of January, March, May, July, September and November.

   d. The operating parameters for the air pollution control devices shall be monitored at the following frequency: l/day.

   e. The THC concentration in the gas, the oxygen concentration in the exit gas, information from the instrument used to determine moisture content, and combustion temperatures shall be monitored continuously.

6. Sampling and Analysis

   a. The sewage sludge shall be sampled at a location which is prior to charging to the incinerator and provides a representative sample of the sewage sludge being used or disposed.

   b. The metals in the sewage sludge shall be analyzed using "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, Second Edition (1982) with Updates I (April 1984) and II (April 1985) and Third Edition (November1986) with Revision I (December 1987).

   c. If emission testing is done for demonstration of NESHAPS, testing shall be in accordance with Method 101A in 40 CFR Part 61, Appendix B, "Determination of Particulate and Gaseous Mercury Emissions from Sewage Sludge Incinerators."

   d. When sludge sampling is used for demonstration of compliance with NESHAPS, the following equation shall be used:

$$E = \frac{(M) \times (Q) \times (PS)}{1000}$$

Where:

E = Emission rate in grams/day
M = Pollutant concentration in sewage sludge in ug/gram
Q = Sludge feed rate to incinerator
PS = Percent solids

When determining emissions for beryllium, multiply the above equation by (1- CE). CE is the control efficiency for beryllium.

7. Record Keeping

The permittee shall develop and retain the following information for five years:

a. The concentration of pollutants in Paragraph F.2.c. Report the maximum value of each pollutant.

b. The THC concentration in the exit gas from each sewage sludge incinerator stack. Report the average monthly concentration as defined in Paragraph F.3.a.

c. The information that demonstrates that the requirements in the National Emission Standard for beryllium are met. The results of either the emission testing or sludge sampling shall be reported. If sludge sampling is reported, include calculation in Paragraph F.6.d. for compliance demonstration.

d. The information that demonstrates that the requirements in the National Emissions Standard for mercury are met. The results of either the emission testing or sludge sampling shall be reported. If sludge sampling is reported, include calculation in Paragraph F.6.d. for compliance demonstration.

e. The combustion temperatures, including the maximum combustion temperature for each sewage sludge incinerator. Report the average temperature range within the combustion zone and the maximum combustion temperature described in Paragraph F.4.h.

f. The values for the air pollution control device(s) operating parameters. Report the monthly average operating range.

g. The oxygen concentration and information used to measure moisture content in the exit gas from the sewage sludge incinerator. Report the oxygen concentration and percent moisture results which were used to determine the THC values reported in Paragraph F.7.b.

h. The sewage sludge feed rate to the incinerator. Record the average daily and average monthly feed rate.

i. The stack height of the sewage sludge incinerator.

j. The dispersion factor for the site where the sewage sludge incinerator is located.

k. The control efficiency for lead, arsenic, cadmium, chromium and nickel for

each incinerator.

l. The risk specific concentration for chromium, if a site specific risk specific concentration is determined.

m A calibration and maintenance log for the instruments used to measure the THC concentration and oxygen concentration in the exit gas from the sewage sludge incinerator stack, the information needed to determine moisture content in the exit gas, and the combustion temperatures.

8. Reporting

The information in paragraph F.7., a through g, shall be reported annually by February 19. All reports shall be submitted to EPA and MADEP.

G. MONITORING AND REPORTING

1. Reporting

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month.

Signed and dated originals of these, and all other reports required herein, shall be submitted to the EPA and the State at the following addresses:

Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

The State Agency is:

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

Signed and dated Discharge Monitoring Report Forms and toxicity test reports required by this permit shall also be submitted to the State at:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

Signed and dated Industrial Pretreatment reports and Industrial User report revising local limits required by this permit shall also be submitted to the State at:

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention - Industrial Waste Section
1 Winter Street
Boston, MA 02108

H. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chapter 21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this Permit is declared, invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as an NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this Permit is declared invalid, illegal or otherwise issued in violation of Federal law, this Permit shall remain in full force and effect under State law as a Permit issued by the Commonwealth of Massachusetts.

Petition for Review MA Permit MA0101010

Exhibit F

F. August 9, 2002 letter from Brian Pitt Team Leader NPDES Unit to Brockton Commissioner of Public Works.

Exhibit F

EPA Orders City of Brockton to Improve Wastewater Treatment Plant

Contact: Andrew Spejewski, EPA Press Office, 617-918-1014

For Immediate Release: June 4, 2003; Release # 03-06-03

BOSTON – The U.S. Environmental Protection Agency announced today that it has ordered the City of Brockton to carry out a number of projects to improve its wastewater treatment system. The city's treatment plant, which discharges to the Salisbury Plain River, has consistently failed to meet pollution discharge limits in its federal permit over the last decade.

Inspections by EPA and the Massachusetts Department of Environmental Protection (DEP) and the plant's own reports document equipment failures, operator errors, chemical feed problems and chronic bypassing of treatment equipment at the plant. This has led to excessive discharges of sewage solids, bacteria, ammonia and chlorine into the river, which flows to the Matfield River which downstream becomes the Taunton River.

The discharges had the potential to cause significant aquatic ecosystem system damage and public health problems in the river, especially during the dry season when water levels in the river are lower.

"This order lays out a clear and reasonable path for the city to improve the facility's performance so Brockton-area residents can get the environmental protection they deserve," said Robert W. Varney, regional administrator of EPA's New England Office. "The city has already begun setting aside money for sewer and treatment upgrades and this order will help ensure that these improvements are realized."

Under the terms of the administrative order issued by EPA, the city must carry out a number of projects over the next four years to improve its wastewater treatment plant and sewage collection system. The projects range from replacement of aging equipment and odor control improvements to a significant upgrade of the treatment system to better remove ammonia from the plant's discharges. The order also requires the city to begin planning and design for longer-term projects necessary to upgrade its treatment plant and collection system. The dates for completion of these longer term projects will be the subject of further negotiations among EPA, DEP and the city followed by appropriate action by the agencies.

Petition for Review MA Permit MA0101010

Exhibit G

G. EPA press release regarding failures at the Facility June 4, 2003.

Exhibit G

August 9, 2002

Mr. Robert Smith
Commissioner of Public Works
Department of Public Works
City Hall - 45 School Street
Brockton, MA 02401

Dear Mr. Smith:

The National Pollution Discharge Elimination System (NPDES) Permit Unit has reviewed the July 2002 report titled Facilities Assessment - Brockton Advanced Wastewater Treatment Facility. We are concerned that the report does not adequately address conditions which we anticipate will be included in future NPDES permits issued to Brockton. while it is the responsibility of the Massachusetts Department of Environmental Protection to review and approve facilities planning documents, we believe it is important to consider the following issues in your long term planning.

The receiving water for Brockton's wastewater discharge is dominated by the effluent during low flow conditions. There is evidence that the receiving water does not support aquatic life uses designated in the Massachusetts Water Quality Standards. Toxicity and nutrient loadings are a primary concern relative to water quality. The existing permit contains a 1.0 mg/l phosphorus limit but future limits will be much more stringent. The new national criteria recommendation for receiving water concentrations of total phosphorus is 0.024 mg/l. The existing permit expires in 2004 and the reissued permit will almost certainly contain a much more stringent water quality based phosphorus limit.

In addition, nitrogen loadings to Mt. Hope Bay are a significant concern. A Total Maximum Daily Load (TMLD) will be established for Mt. Hope Bay in the next few years that will likely require significant reductions in current nitrogen loadings. Given that the Brockton wastewater treatment facility has been estimated to contribute as much as 30% on the nitrogen loading to Mt. Hope Bay, there is high likelihood that the total nitrogen limits will be incorporated in future NPDES permits.

The fact sheet accompanying the existing NPDES permit issued in September 1999 anticipated these issues and stated that any planning for additional wastewater abatement facilities should consider options for providing high levels on control for both phosphorus and nitrogen. Brockton's current planning process should evaluate treatment alternatives for achieving low levels of total phosphorus and should ensure that treatment alternatives are compatible with achieving low levels of total nitrogen.

While the current permit does not contain a flow limit, other parameter limits are based on a design flow on 18.0 MGD. The reissued permit will contain a flow limit. An increase in the design flow will not be authorized without a determination that toxicity

Petition for Review MA Permit MA0101010

Exhibit H

H. Assabet River NPDES Permits – Response to Comments 2004.

Comment No. 4: We cannot comply with the alarm requirements and the respective reporting conditions for chlorine without significant modifications to the existing facilities. Since the long-term plan for treatment plant improvements may include an alternate disinfection system, we request that this requirement be removed.

Response No. 4: As noted in the Fact Sheet, chlorine and chlorine compounds can be extremely toxic to aquatic life. The Total Residual Chlorine ("**TRC**") limit is based on national criteria recommendations promulgated by EPA and adopted by Massachusetts as a part of its water quality standards. See EPA National Recommended Water Quality Criteria (2002) and 314 C.M.R. § 4.05(5)(e). There was one violation of the TRC limit between May 2001 and December 2003. Because the Agencies have concluded that there is a reasonable potential for the Hudson WWTF to exceed MAWQS relative to chlorine, the Agencies are required to include a limit in the Final Permit, as well as reasonable reporting and monitoring requirements.

The alarm and reporting requirements for TRC are intended to timely warn the Town of system interruptions or malfunctions and to notify the Agencies of such incidents. Given the daily variability of flow in the Hudson WWTF as well as the variability of chlorine demand of wastewater, periodic grab samples alone cannot sufficiently determine whether effluent chlorine and bacteria levels are in compliance with limits.

We have included a schedule in the Final Permit that allows for necessary modifications to be completed as part of the overall treatment plant improvements. If the treatment plant improvements eliminate the need for the use of chlorine, the need to alarm the chlorination and dechlorination system is obviously negated. The Agencies cannot, however, eliminate the alarm and reporting requirements for chorine based on the mere possibility that the Town will in the future adopt a disinfection system that does not utilize the chemical. In evaluating disinfection options, the Town should note that future permit requirements for monitoring chlorination and dechlorination systems will likely require continuous monitoring.

Comment No. 5: The 0.1 mg/l phosphorus limit for total phosphorus as defined in the permit is unacceptable. Even with a 60-day rolling average, any single major deviation could cause a permit violation. We request that a median average or an alternative method which would exclude extreme excursions be established for calculating the rolling average.

Response No. 5: Water quality-based limits that are developed to protect against chronic impacts such as eutrophication are typically established as monthly average limits. The 60-day rolling average limit for phosphorus possesses advantages over monthly averaging because it provides the permittee with flexibility to deal with occasional, perhaps unavoidable excursions above limits, while at the same time necessitating that such exceedences are short-term and that low levels of effluent discharges are maintained overall. Short-term exceedances of the phosphorus limit are unlikely to result in a significant response in the receiving water relative to aquatic plant growth. Longer term exceedances capable of eliciting a response in plant growth would likely result in a violation of the rolling average limit. The rolling average also ensures that any reduction in treatment efficiency is responded to quickly. A median limit would allow for up to 50% of the sampling results to exceed the 0.1 mg/l limit. This frequency of excursions would not ensure that water quality criteria are met in the peak growing season. See Maynard

Response No. 7 for the Agencies' rationale regarding the imposition of a monthly median limit for the transitional month of April.

Comment No. 6: The Town requests that the aluminum limit be removed from the permit until more data is obtained to substantiate the basis for the limit and determine the ability of the facility to achieve the expected removal.

Response No. 6: The basis for the aluminum limit is found in the MAWQS, which requires an ambient chronic criterion of 87 µg/l for the pollutant. Over the past two years, the average monthly aluminum discharge from the Hudson WWTF has ranged from 143 µg/l to 575 µg/l, which constitutes a reasonable potential to cause or contribute to an excursion above MAWQS. Accounting for dilution, the Agencies determined that a monthly average aluminum limit of 278 µg/l would be sufficient to comply with MAWQS.

The establishment of water quality-based limits, unlike technology-based limits, are not based on treatment capabilities. The Permittee may wish to pursue development of a site specific aluminum criterion, although other municipal treatment facilities, e.g. Milford, MA, have demonstrated the ability to achieve both low phosphorus limits and low aluminum limits. The Agencies also note that the elimination of the aluminum limit, an existing permit condition, would violate the anti-backsliding provisions of the Clean Water Act ("CWA") and the applicable NDPES regulations.

Comment No. 7: The Town objects to the reduction of the total copper limit to 17 µg/l and notes that meeting the current limit of 50 µg/l has been difficult and inconsistent. The current interim limit imposed by EPA should remain in effect until such time as the treatment facility upgrade is completed.

Response No. 7: MAWQS require that EPA criteria established pursuant to Section 304(a) of the CWA be used for toxic constituents, including copper, unless site specific criteria have been established. Discharge Monitoring Reports ("DMRs") for the Hudson WWTF from May 2001 to December 2003 indicate a monthly average copper value of 40 µg/l and highest daily maximum values of 57 µg/l and 220 µg/l, which constitute a reasonable potential of the Hudson WWTF discharge to cause or contribute to an exceedance of the water quality-based chronic copper criterion of 17 µg/l. The Agencies are therefore obligated to include the limit. Water quality-based limits are established on the basis of achieving water quality standards and not on treatment capabilities. As indicated at Attachment C to the Draft Permit, the copper limit is based on ambient, hardness dependant chronic criteria. Please also see Westborough Response No. 7.

The same copper limit was contained in the permit issued on December 14, 2000. The interim limit of 50 ug/l referenced above was imposed through an administrative compliance order in connection with the existing permit for the Hudson WWTF. It is not stringent enough to meet applicable MAWQS, and it is therefore not appropriate for inclusion in the Final Permit.

Comment No. 8: The Town objects to the November 1 to May 31 ammonia limit of 10 mg/l and requests ammonia be a report only requirement.

Comment No. 2: Ammonia monitoring has been increased from once monthly to once per week (November 1 to May 31). There are cost implications associated with the increased testing and we are not aware of any problems with our discharges of this constituent. Maynard has historically reported concentrations of ammonia well below our current limit as a result of the large quantity of RBC media relative to ammonia load. Historically, the ammonia has averaged 2 - 4 mg/l over the long term indicating a very stable effluent quality.

Response No. 2: Although Maynard WPCF effluent may currently be discharging below permitted limits, an ammonia limit and attendant monitoring are necessary to ensure that that Maynard continues to nitrify in the winter period, which it is currently not required to do. In the absence of nitrification, municipal wastewater effluent after secondary treatment is generally in the range of 15-20 mg/l of ammonia, a level which has the reasonable potential to cause or contribute to an exceedance of the water quality criterion for ammonia toxicity. Please see Hudson Response No. 9 for further discussion of the Agencies' rationale for increased ammonia monitoring.

Comment No. 3: A phosphorus limit of 0.1 mg/l is extremely stringent and EPA has not presented compelling evidence demonstrating the need or benefits associated with achieving this low level. What funding mechanisms or priorities will EPA be providing to assist with the cost?

Response No. 3: In addition to technology-based controls, permits must contain any more stringent limitations for particular pollutants that are necessary to meet MAWQS. A water quality-based effluent limitation must be calculated at levels to ensure achievement of MAWQS, regardless of the availability or effectiveness of technologies or the costs dischargers would incur to meet those limits. A water quality-based effluent limitation for a pollutant also must be consistent with any available waste load allocation approved by EPA in connection with a TMDL for that pollutant and receiving water. 40 C.F.R. § 122.44(d)(1)(vii)(B).

The Assabet River suffers from eutrophication, which is a process of nutrient accumulation and ecosystem change that can occur in aquatic ecosystems. In the Assabet River, cultural, or man-made, eutrophication has occurred in the presence of excessive nutrient loadings and impoundments. As a result of water quality problems associated with eutrophication, the Assabet River was placed on a list of impaired waterbodies requiring water quality improvement, known as a Section 303(d) list. Specifically, the Assabet River, designated as a Class B waterbody, has been observed to frequently fail to meet applicable numerical MAWQS, including dissolved oxygen concentration, and applicable narrative criteria, including aesthetics, bottom pollutants and alterations and nutrients. Under the CWA, Massachusetts is required to develop a Total Maximum Daily Load ("**TMDL**") allocation plan for all priority waterbodies on the Section 303(d) list.

As discussed, DEP developed a TMDL for the Assabet River that established maximum load (for non-point sources) and waste load (for point sources) allocations the waterbody can receive and still meet MAWQS relating to eutrophication. EPA approved the TMDL on September 23, 2004. The TMDL and the supporting water quality data demonstrate the need for the 0.1 mg/l phosphorus limit.

The TMDL establishes a target of reducing biomass by at least 50% based on 1999 conditions, meeting the minimum criterion for dissolved oxygen of 5.0 mg/l throughout the Assabet River, and reducing the duration of dissolved oxygen super-saturation by approximately 30%. As discussed in Hudson Response No. 2, the TMDL identifies a combination of point source phosphorus reduction and sediment remediation as the preferred scenario. Specifically, the TMDL calls for a reduction in point source discharges of total phosphorus to 0.1 mg/l during the growing season in combination with a 90% reduction in the phosphorus loading from the sediments in the impoundments. As the TMDL states:

> Reduction in phosphorus in the sediments may occur naturally over a long period of time once the phosphorus levels in the effluent from the POTWs are reduced to 0.1 mg/l or lower. The reduction in sediment phosphorus flux can likely be expedited with measures such as dredging, encapsulating and/or dam removal. Given this and the importance of sediment remediation, a phased approach is recommended to allow the communities an opportunity to investigate sediment remediation and/or dam removal options which could result in achieving water quality standards and designated uses in a more cost effective manner than solely reducing point source phosphorus sources. See TMDL at p. 43.

The Final Permits reflect the TMDL's waste load allocation and recommended phosphorus effluent limitation of 0.1 mg/l.

The Agencies have adopted the 0.1 mg/l phosphorus effluent limit proposed by the TMDL, but have not mandated sediment remediation at this point. While there is nothing in the Final Permits that guarantees a reduction in non-point source loadings, there is a basis for the Agencies to reasonably conclude that sediment remediation efforts will be pursued. Please see Hudson Response No. 2.

If the sediment flux issue is not adequately addressed through remediation efforts as contemplated by the TMDL, the Agencies will likely be obligated to pursue more stringent point source phosphorus load reductions at the next permit issuance. At present, the Agencies believe that a 0.1 mg/l phosphorus limitation along with a 90% reduction in the sediment flux presents an opportunity to achieve uses more quickly and cost-effectively, while potentially offering additional ecosystem restoration benefits such as habitat improvement associated with dredging and/or dam removal.

The TMDL also calls for year round monitoring and reporting of effluent data for total and dissolved phosphorus. See TMDL at p. 7. The Agencies have adopted Final Permit limits consistent with TMDL recommendations.

The major funding mechanism available to the Town is the State Revolving Fund (SRF), which provides low interest loans to fund treatment facility upgrades.

Comment No. 4: We assume that only technologies that have demonstrated success under similar conditions will be considered applicable for implementation. If the town implements best

Response No. 12: The removal of TSS mass limits, adoption of a 12-month rolling average and adjustment of the seasonal period to account for higher stream flows will not meet MAWQS.

Effluent limitations for TSS and $CBOD_5/BOD_5$ for November through March are based on secondary treatment requirements. The calculation of the TSS limit is included as Attachment A to the Fact Sheet. A similar calculation was used to derive $CBOD_5/BOD_5$ limits.

TSS and $CBOD_5/BOD_5$ limitations for April through October are water quality-based limits. Traditionally, DEP evaluated flow in NPDES permits by applying design flow (the average annual flow) as a monthly average flow limit. As part of a policy change requested by DEP, flow limits in NPDES permits are now expressed as a 12-month rolling average, rather than a monthly average based on average annual flow. See June 12, 2000, "MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrients in NPDES Permits" ("DEP Flow Policy"). The purpose of the change was to allow some variation in WWTF flows in response to wet weather, and in recognition that the flow rate used as a monthly average is in most cases presented in the treatment plant planning documents as an annual monthly average. Agreeing to revise the flow limit from a monthly average based on average annual flow to a 12-month rolling average caused concern that there could be a significant net increase of pollutants discharged to the receiving water, particularly during higher flow months when the monthly average discharge flow exceeds the annual average flow. To prevent further degradation of the receiving water, the Agencies agreed to add mass limits based on the then current average annual design flow of the facility for both BOD_5 and TSS as a permit condition to ensure that existing controls on mass discharges are maintained.

NPDES regulations allow for the exercise of best professional judgment on the part of the permit writer to establish mass limits. See e.g. In re City of Port St. Joe, 7 E.A.D. 275, 293-93 (EAB 1997) (observing that "The NPDES regulations do not provide guidance to the Regions on how to establish appropriate mass limits for a POTW, except for the general direction that "in the case of POTWs, permit effluent limitations, standards, or prohibitions shall be based on design flow"); "Training Manual for NPDES Permit Writers" at 26 (EPA May 1987). Here, the Agencies concluded that mass limits are necessary in light of the continuing severe impairment of the receiving waters caused by the POTW effluent discharges. The receiving waters are listed under Category 5 on the Massachusetts Year 2002 List of Impaired Waters ("Section 303(d) List"), a ranking reserved for the most severely impaired waters in the state. Segments of the receiving water show impairment for suspended solids, nutrients, organic enrichment and low dissolved oxygen, among others. The Agencies believe that removing the mass limits for $CBOD_5/BOD_5$ and TSS has a reasonable potential to cause or contribute to further violations of standards with respect to the listed pollutants and has a potential to result in further degradation of the receiving waters. See 314 C.M.R. § 4.04. The Permittee has not offered evidence to satisfy the antidegradation review procedures necessary to justify such an outcome in non-attainment waters such as the Assabet River. See "Massachusetts Antidegradation Review Procedure for Discharge Requiring a Permit Under 314 CMR 3.03" (1993). The Agencies have also considered and rejected the alternative of using a 12-month rolling average to calculate mass loadings. Use of the average annual flow furthers the objective of the permit requirement, which is to maintain not only the overall magnitude of pollutant loadings, but also the frequency and

Comment No. 10: The schedule proposed in the draft permit is extremely problematic. For instance, the permit requires the Board to complete an evaluation of dam removal/sediment remediation alternatives for the five impoundments identified in the Assabet River TDML. This is not an option for the Board. The Board's legal jurisdictional boundary is the property that the wastewater treatment plant is situated on. None of the dams or sediments are located within the property under jurisdiction of the Board. In fact, none of the dams or sediment are within the boundaries of its signatory towns. Therefore, the Board does not have any legal right to perform analysis on property(s) not under its jurisdiction. In addition, this schedule is inconsistent with the rationale behind the CWMP and the practicalities of financing the work to be performed under the schedule. Therefore, as previously stated, the Board adopts in whole the proposed compliance schedule set forth in the Consortium's letter dated July 14, 2004.

Response No. 10: The sediment remediation study requirement has been removed from the Final Permit. Please see Hudson Response No. 10 above.

Comment No. 11: The fiscal year 2005 budget has been authorized by town meeting. The Board anticipates that the permit will become effective during fiscal year 2005. The draft permit has items that will significantly affect the Board's budget. Therefore, the Board requests that such items become effective July 1, 2005. The items include but are not limited to the following:

Ammonia - Nitrogen (June 1 - October 31)
Ammonia - Nitrogen (November 1 - May 31)
Total Phosphorous (Winter Optimizing)
Ortho Phosphorous (November 1 - March 31)
Total Lead
Total Aluminum
Alarm System for Chlorination and Dechlorination Systems.

Response No. 11: Given the changes made in the Draft Permit (see Hudson Response Nos. 4 and 10) and the fact that the earliest potential effective date for the Final Permit is mid-fiscal year 2005, the Agencies do not believe that foreseeable scheduling and logistical implications pertaining to the budgetary process warrant a delay in the effective date of the requirements.

Comment No. 12: The TSS mass limits are not justified by water quality criteria. For instance, stream flows in April are substantially higher than critically low stream flow conditions that are used to develop the discharge limits. The weekly maximum TSS mass limits are particularly a concern during elevated wet weather flow events that are likely to occur in spring, especially in April. For example, if peak weekly flow were two to three times the annual average flow, which can occur without having excess I/I, the facility will have to meet a 5 mg/l to 7.5 mg/l TSS concentration to comply with the permit's effluent TSS mass loading limits. Such performance may not be consistently achieved at the facility, especially under acceptable wet weather flows. While the Board concurs with the comments of the Consortium that the limits be removed or, if they are to remain, that there be a 12-month rolling average, the Board also requests that the seasonal tiers be shifted by one month, i.e. May 1 - November 30 and December 1 - April 30 to recognize the significantly higher flows in April.

duration of such loadings, subsequent to the change in flow policy. As the Agencies are obligated to include reasonable limitations and conditions that are necessary to ensure compliance with MAWQS, the mass limits, as well as the measuring period, have been retained. See 33 USC § 301(b)(1)(C); 40 CFR § 122.44(d)(1)(i). It should also be noted that the DEP Flow Policy itself contemplates the imposition of mass limits in conjunction with the revised flow designation. See DEP Flow Policy at p. 1.

In addition, the mass limits for BOD_5/$CBOD_5$ cannot be made less stringent without violating applicable anti-backsliding provisions.

Finally, the Agencies note that permits must include limits as stringent as necessary to meet Massachusetts WQS irrespective of technological feasibility.

Comment No. 13: The proposed 0.1 mg/l total phosphorus limit may not be consistently achieved even if the best available process technology were installed. Therefore, the permit requirements should be modified to 0.2 mg/l, until a technology demonstration-testing program is performed. At that time, the permit's total phosphorus limit could be modified to reflect best documented performance. It is also recommended that seasonally-tiered limits for phosphorus be provided in the spring and fall, and the lowest limit of 0.2 mg/l apply only in the warmer summer months (that is July and August).

Response No. 13: Please see Maynard Response Nos. 3, 4 and 7 above.

Comments were received from the Assabet River Consortium in a letter dated July 14, 2004:

Comment No. 1: The Draft NPDES Permits cap wastewater treatment plant flow based on a 12-month rolling average basis, when the regulators clearly understand the design year flow projection for the service areas are expected to exceed their current permit limits. As was presented in the CWMP Phase II Documents, a multi-million-dollar premium is required to discharge flow in excess of the permitted capacity to a local groundwater discharge site. The cost-benefit of this requirement is not supported by the CWMP or the TMDL.

Three of the WWTFs would be over their allotted flow based on build out projections in the approved CWMP Phase I Document and approved CWMP Phase II Document, preventing economic development in these areas of the communities. Given the Commonwealth's current position on sustainable/smart growth we would expect the regulatory agencies to be promoting growth in this primarily commercial and industrial areas of the Consortium communities, located along major transportation corridors, some of which currently have water and sewer infrastructure in place. The proposed cap in WWTF flows is counter to the sustainable/smart growth initiative.

Use attainability, minimal impacts of an increased discharge, economic development, and the non-existence of less environmentally damaging feasible alternatives are all points to be expanded upon and presented in the CWMP Phase III Document and CWMP Phase IV Document to meet the requirements of 314 C.M.R. 4.00. A re-opener clause should be included

in the Draft NPDES Permit(s) that allows an increase in the WWTF capacity while holding the effluent concentration limits (e.g. not mass loading limits), pending the results of the CWMP Phase III Document and CWMP Phase IV Document.

Response No. 1: The TMDL was calculated using current permitted design flows and further states that, "[A]ny request to increase a discharge beyond currently permitted volumes would require supporting documentation satisfying DEP's Antidegradation Policy that no other feasible alternative exists including, but not limited to, the discharge of additional treated effluent to groundwater to help restore tributary flows." TMDL at p. 8. The Consortium has not provided documentation that adequately demonstrates the lack of feasible alternatives and therefore at present has not satisfied the antidegradation review policy in order to support a flow increase. Please also see Consortium Response No. 25.

Consistent with the TMDL, the flow limits in the Final Permits reflect current design flows. The Assabet River is already dominated by effluents (approximately 80% of the river flow during low flow periods currently is wastewater and this is expected to approach 100% at future design flows) and suffers from severe impairment of uses due in large part to point source loading. Increasing the flow limitation would increase the frequency and duration of periods in which the river is comprised entirely, or almost entirely, of wastewater effluent, resulting in further potential for excursions above water quality criteria.

The Agencies believe that the cost of achieving uses, in particular, the cost of updating the POTWs to meet a 0.1 mg/l phosphorus limit, is within EPA's affordability guidelines. Restoring uses, however, is not dependent on a cost-benefit analysis but is required under the CWA, unless a UAA is conducted that demonstrates that achieving uses is not feasible or would cause widespread social and economic impacts (see also Maynard Response No. 4). The Permittees should be aware that a UAA that justifies a lowering of designated uses does not necessarily justify an increase in the permitted pollutant loadings. Additionally, a UAA may not be used to justify the removal of existing uses. The scope of work for the ongoing state planning process does not include all of the necessary components of a UAA or a reevaluation of the TMDL.

In light of the foregoing, a specific re-opener clause pending the results of the CWMP Phase III Document and CWMP Phase IV Document would not be appropriate in this circumstance. The Agencies note that a general re-opener clause is included in Part II of the Final Permits.

The Agencies support sustainable/smart growth, which entails development in a manner that is consistent with protecting public resources. The Assabet River was identified by Massachusetts in December 2001 as a stressed watershed relative to flow quantity. As the TMDL Response to Comment states, "[P]otential impacts associated with increased flows go beyond nutrient related impacts. There are also secondary impacts that need to be considered and evaluated such as where the additional water is coming from and what the potential impacts may be on the smaller tributaries where withdrawals may occur." See TMDL at p. 75.

Comment No. 2: The Draft NPDES Permits for Marlborough and Westborough contains mass limits for $CBOD_5$, BOD_5 and TSS. These were determined by multiplying the 12-month rolling average flow limit by the monthly and weekly concentration limit. The Consortium requests that

Petition for Review MA Permit MA0101010

Exhibit I

I. 2005 Draft MA 303d listing for Salisbury Plain River downstream of Facility.

Salisbury Plain River (Segment MA62-06)

Location From the Brockton ARWF discharge, Brockton to the confluence with Beaver Brook forming the Matfield River, East Bridgewater

Segment Length. 2.3 miles

Classification: Class B, Warm Water Fishery

The drainage area of this segment is approximately 21.3 square miles. Land-use estimates (top three) for the subwatershed:

Residential.....45.7%

Forest 24.5%

Open land.....9.3%

The impervious cover area for this subwatershed is 25.7%.

This segment is on the Massachusetts Year 2002 Integrated List of Waters – Category 5 for not meeting water quality standards for pathogens and causes unknown (MA DEP 2003).

WMA water withdrawal Summary (APPENDIX G, TABLE G5)

Facility	WMA Permit Number	WMA Registration Number	Source (G = ground)	Authorized Withdrawal (MGD)

Facility	WMA Permit Number	WMA Registration Number	Source (G = ground)	Authorized Withdrawal (MGD)
West Bridgewater Water Department*	9P42532201	42532201	4322000-01G 4322000-02G 4322000-04G 4322000-05G	0.73 reg 0.08 perm Total – 0.81

* Indicates system-wide withdrawal; all sources are not necessarily within this segment

NPDES wastewater discharge summary (Appendix G, table G1)

The City of Brockton is authorized to discharge treated sanitary and industrial wastewater via outfall #001 (no flow limit in permit) from the Brockton Advanced Water Reclamation Facility into the Salisbury Plain River (NPDES permit# MA0101010 issued September 1999). This advanced activated sludge facility incorporates nitrification for ammonia-nitrogen reduction (1 mg/l NH_3-N average monthly June 1 to October 31). The ammonia-nitrogen concentrations listed in the facility's whole effluent toxicity test reports between November 1999 and August 2004 ranged from <0.10 to 16.33 mg/L (n=29). Total phosphorus (TP) reduction is accomplished by chemical addition (1 mg/l TP average monthly May 1 to October 31). The pH measurements listed in the facility's whole effluent toxicity test reports between November 1999 and August 2004 ranged from 6.92 to 7.62 SU (n=30). The facility utilizes sodium hypochlorite for seasonal disinfection and sulfur dioxide for dechlorination (TRC limit = 0.011 mg/L average monthly April 1 to October 31, 0.019 mg/L maximum daily) (Norton 2004). The TRC measurements listed in the facility's whole effluent toxicity test reports between November 1999 and August 2004 were all <0.05 mg/L (n=30). The facility's whole effluent toxicity limits are $LC_{50} \geq 100\%$ and C-NOEC ≥98% with a monitoring frequency of six times/year using *Ceriodaphnia dubia*.

The City of Brockton has received funding through the 2003 SRF program to rehabilitate its aging collection system and its treatment facility. The project objective is to eliminate the environmental and public health issues associated with the Sewer System overflows and discharge violations at the treatment facility. Contract #1 will implement the recommended improvements in the July 2000 WWTF Project Evaluation Report, while Contract #2 will implement improvements in the August 2000 city wide sewer system evaluation report. The Brockton WWTP in 2004 has begun a 3-phase facility-wide upgrade that is projected to take 6 years. Proposed in the upgrade are additional advanced treatment processes such as biological nutrient reduction (BNR) for total nitrogen reduction and multipoint chemical addition for total phosphorus reduction. A new draft permit is under review and does contain significant lower limits for nitrogen and phosphorus (Norton 2004).

Use Assessment
Aquatic Life

Habitat and Flow

In August 2001 DWM evaluated habitat conditions in this segment of the Salisbury Plain River near Belmont Street, West Bridgewater (station TR03). The habitat assessment score was 168/200. Riparian zone disruption and erosion along the right bank affected the score most negatively. Filamentous green algae covered approximately 50% of the reach (Appendix D). DWM also sampled this site in the Salisbury Plain River in July 1995 (Appendix E).

ESS documented similar conditions during their habitat evaluation of the Salisbury Plain River near Belmont Street, West Bridgewater (Station SPR1) in June 2002. Their overall score was 160/200 (ESS 2003).

Biology

The results of DWM's RBP III analysis of the benthic community in the Salisbury Plain River (station TR03) was "moderately impacted" compared to the Canoe River (TR01) reference station (Appendix D). DWM biologists concluded that water quality degradation was related to organic enrichment and low dissolved oxygen. RBP II results from the 1996 survey can be found in Appendix E.

Toxicity

Effluent

A total of 30 toxicity tests were conducted on the Brockton WWTP effluent (Outfall #001) between November 1999 and August 2004 using *C. dubia*. The effluent did not exhibit acute toxicity in 24 of the 30 tests. The LC_{50}'s of the six acutely toxic tests ranged from 35.4 to 99.9% effluent. Several (n=3) of the chronic tests were invalid (did not meet test acceptability criterion). Of the 27 valid tests, the C-NOEC results ranged from <6.25 to 100% and 12 of the 27 tests (44%) were less than 98% effluent.

Chemistry – water

Between June and August 2002 ESS conducted water quality sampling on five occasions at one station in this segment of the Salisbury Plain River near Belmont Street, West Bridgewater (station SPR1) as part of the ESS NPS study. These results are presented below:

Dissolved Oxygen (DO) and % Saturation

All four measurements of DO were <5.0 mg/L and 60% ranging from 1.9 to 4.4 mg/L and 23.5 to 50 1%, respectively.

Temperature

The maximum temperature was 22.8°C (n=5).

pH

The pH ranged from 6.7 to 7.4 SU.

Specific Conductance

Specific conductance ranged from 323 5 to 652.0 µmhos/cm.

TSS

The concentration of total suspended solids ranged from 1.0 to 9.0 mg/L (n=5).

TKN

TKN ranged from 0.9 to 4.4 mg/L.

Total Phosphorus

Total phosphorus concentrations ranged from 0.16 to 0.37 mg/L (n=5).

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* Indicates system-wide withdrawal; all sources are not necessarily within this segment.

NPDES wastewater discharge summary (Appendix G, table G1)

The City of Brockton is authorized to discharge treated sanitary and industrial wastewater via outfall #001 (no flow limit in permit) from the Brockton Advanced Water Reclamation Facility into the Salisbury Plain River (NPDES permit# MA0101010 issued September 1999). This advanced activated sludge facility incorporates nitrification for ammonia-nitrogen reduction (1 mg/l NH_3-N average monthly June 1 to October 31). The ammonia-nitrogen concentrations listed in the facility's whole effluent toxicity test reports between November 1999 and August 2004 ranged from <0.10 to 16.33 mg/L (n=29). Total phosphorus (TP) reduction is accomplished by chemical addition (1 mg/l TP average monthly May 1 to October 31). The pH measurements listed in the facility's whole effluent toxicity test reports between November 1999 and August 2004 ranged from 6.92 to 7.62 SU (n=30). The facility utilizes sodium hypochlorite for seasonal disinfection and sulfur dioxide for dechlorination (TRC limit = 0.011 mg/L average monthly April 1 to October 31, 0.019 mg/L maximum daily) (Norton 2004). The TRC measurements listed in the facility's whole effluent toxicity test reports between November 1999 and August 2004 were all <0.05 mg/L (n=30). The facility's whole effluent toxicity limits are $LC_{50} \geq 100\%$ and C-NOEC ≥98% with a monitoring frequency of six times/year using *Ceriodaphnia dubia*.

The City of Brockton has received funding through the 2003 SRF program to rehabilitate its aging collection system and its treatment facility. The project objective is to eliminate the environmental and public health issues associated with the Sewer System overflows and discharge violations at the treatment facility. Contract #1 will implement the recommended improvements in the July 2000 WWTF Project Evaluation Report, while Contract #2 will implement improvements in the August 2000 city wide sewer system evaluation report. The Brockton WWTP in 2004 has begun a 3-phase facility-wide upgrade that is projected to take 6 years. Proposed in the upgrade are additional advanced treatment processes such as biological nutrient reduction (BNR) for total nitrogen reduction and multipoint chemical addition for total phosphorus reduction. A new draft permit is under review and does contain significant lower limits for nitrogen and phosphorus (Norton 2004).

Use Assessment
Aquatic Life

Habitat and Flow

In August 2001 DWM evaluated habitat conditions in this segment of the Salisbury Plain River near Belmont Street, West Bridgewater (station TR03). The habitat assessment score was 168/200. Riparian zone disruption and erosion along the right bank affected the score most negatively. Filamentous green algae covered approximately 50% of the reach (Appendix D). DWM also sampled this site in the Salisbury Plain River in July 1995 (Appendix E).

ESS documented similar conditions during their habitat evaluation of the Salisbury Plain River near Belmont Street, West Bridgewater (Station SPR1) in June 2002. Their overall score was 160/200 (ESS 2003).

Biology

The results of DWM's RBP III analysis of the benthic community in the Salisbury Plain River (station TR03) was "moderately impacted" compared to the Canoe River (TR01) reference station (Appendix D). DWM biologists concluded that water quality degradation was related to organic enrichment and low dissolved oxygen. RBP II results from the 1996 survey can be found in Appendix E.

Toxicity

Effluent

A total of 30 toxicity tests were conducted on the Brockton WWTP effluent (Outfall #001) between November 1999 and August 2004 using *C. dubia*. The effluent did not exhibit acute toxicity in 24 of the 30 tests. The LC_{50}'s of the six acutely toxic tests ranged from 35.4 to 99.9% effluent. Several (n=3) of the chronic tests were invalid (did not meet test acceptability criterion). Of the 27 valid tests, the C-NOEC results ranged from <6.25 to 100% and 12 of the 27 tests (44%) were less than 98% effluent.

Chemistry – water

Between June and August 2002 ESS conducted water quality sampling on five occasions at one station in this segment of the Salisbury Plain River near Belmont Street, West Bridgewater (station SPR1) as part of the ESS NPS study. These results are presented below:

Dissolved Oxygen (DO) and % Saturation

All four measurements of DO were <5 0 mg/L and 60% ranging from 1.9 to 4.4 mg/L and 23.5 to 50.1%, respectively.

Temperature

The maximum temperature was 22.8°C (n=5).

pH

The pH ranged from 6 7 to 7.4 SU.

Specific Conductance

Specific conductance ranged from 323.5 to 652.0 µmhos/cm.

TSS

The concentration of total suspended solids ranged from 1.0 to 9.0 mg/L (n=5).

TKN

TKN ranged from 0.9 to 4.4 mg/L.

Total Phosphorus

Total phosphorus concentrations ranged from 0.16 to 0.37 mg/L (n=5).

The *Aquatic Life Use* is assessed as impaired for this segment of the Salisbury Plain River based primarily on the results of the benthic macroinvertebrate community analysis and the limited water quality data. Low dissolved oxygen/saturation and elevated total phosphorus concentrations were both documented and are associated with the Brockton Advanced Water Reclamation Facility discharge as well as nonpoint source pollution in this urbanized subwatershed. Acute and chronic toxicity in the Brockton Advanced Water Reclamation Facility effluent are also of concern.

Primary and Secondary Contact RECREATION and aesthetics

Both fecal coliform and E. coli bacteria samples were collected by ESS from the Salisbury Plain River in this segment of the Salisbury Plain River near Belmont Street, West Bridgewater (station SPR1) between June and August 2002 (ESS 2033). These data are summarized below.

ESS 2003 bacteria data

Station	Fecal Coliform data range (cfu/100mL)	Geometric Mean (cfu/100mL)	E. Coli bacteria data range (cfu/100mL)	Geometric Mean (cfu/100mL)
SPR1	65 – 14,000*	632	62 – 14,000	626

*80% of the samples collected were ≤ 400 cfu/100mL but only one of the five samples exceeded 2,000 cfu/100mL.

It should be noted that these results represent both wet and dry weather sampling conditions

Sewage odors, turbidity, filamentous green algae and trash/construction materials were observed in the Salisbury Plain River near Belmont Street, West Bridgewater by both DWM and ESS staff in 2001 and 2002 (MA DEP 2001a and ESS 2003).

The *Primary Contact Recreational Use* is assessed as impaired because of elevated bacteria counts. The *Secondary Contact Recreational* and *Aesthetics* uses are also assessed as impaired because of the objectionable conditions (odors, turbidity, filamentous green algae and trash and debris). These uses are impaired as a result of the Brockton Advanced Water Reclamation Facility discharge as well as nonpoint source pollution in this urbanized subwatershed.

Petition for Review MA Permit MA0101010

Exhibit J

J. 2005 Draft MA 303d listing for Salisbury Plain River upstream of Facility.

Salisbury Plain River (Segment MA62-05)

Location: From the confluence of Trout and Salisbury brooks, Brockton to the Brockton AWRF discharge, Brockton

Segment Length: 2 4 miles

Classification: Class B

The drainage area of this segment is approximately 16.8 square miles. Land-use estimates (top three) for the subwatershed:

Residential.....47 9%

Forest..... .20.1%

Open land.....8.9%

The impervious cover area for this subwatershed is 29.6%.

This segment is on the Massachusetts Year 2002 Integrated List of Waters – Category 5 for not meeting water quality standards for siltation, pathogens, suspended solids, and other habitat alterations (MA DEP 2003).

WMA water withdrawal Summary (APPENDIX G, TABLE G5) and npdes wastewater discharge summary

Facility	WMA Permit Number	WMA Registration Number	Source (G = ground)	Authorized Withdrawal (MGD)

Facility	WMA Permit Number	WMA Registration Number	Source (G = ground)	Authorized Withdrawal (MGD)
Brockton DPW Water Division	9P42504401	42504402	01G	0.04 reg 0.83 perm 0.87 total
Churchill Linen Service	V42504401	NA	01G	0.09 reg

Based on available information there are no NPDES dischargers in this subwatershed.

Use Assessment
Aquatic Life

Habitat and Flow

ESS conducted habitat evaluations at two sites along this segment of the Salisbury Plain River near Plain Street, Brockton (Station SPR2) and near #1690 Main Street, Brockton (Station SPR3) in June/July 2002. The overall habitat assessment scores were 113 and 98/200, respectively. The instream habitat near Plain Street was limited most by lack of velocity/depth combinations as well as limited riffle areas. Channel alteration was also evident and the riparian vegetative width and bank stability were also somewhat limited. Embeddedness/sediment deposition, limited riffle areas and lack of velocity/depth combinations as well as bank stability, all contributed to the lower habitat assessment score of the river near #1690 Main Street (ESS 2003).

Biology

In July 1996 DWM conducted a Rapid Bioassessment Protocol (RBP) II benthic macroinvertebrate survey in this segment of the Salisbury Plain River

(station TR02) located upstream of the Brockton WWTP, Brockton. The results of this survey can be found in Appendix E.

Chemistry – water

Between June and November 2002 water quality sampling was conducted by ESS at two sites in this segment of the Salisbury Plain River as part of the ESS NPS study. The most upstream station was located near Plain Street, Brockton (station SPR2) while the downstream station was located behind #1690 Main Street (station SPR3) (ESS 2003). The results of this survey are summarized below.

Dissolved Oxygen (DO) and % Saturation

DO measurements ranged from 4.0 to 7.9 mg/L at Station SPR2 with percent saturations ranging from 45 to 86 9%. Of the three measurements taken in the river at Station SPR3 DOs ranged from 3.3 to 7 0 mg/L with saturations ranging from 42.2 to 68.2%. Of the seven measurements taken, three were below 5.0 mg/L and 60% saturation.

Temperature

The maximum temperature recorded in the Salisbury Plain River was 28.5°C (station SPR3 in August 2002).

pH

The pH ranged from 6.5 to 7.6 SU in this segment of the Salisbury Plain River.

Specific Conductance

Specific conductance ranged from 199.9 to 470.0 µmhos/cm in this segment of the Salisbury Plain River.

TSS

Total suspended solids concentrations measured in this segment of the Salisbury Plain River ranged from 1.0 to 12.0 mg/L at both sampling stations (n=8).

TKN

TKN ranged from 0.3 to 1.4 mg/L (n=8).

Total Phosphorus

Total phosphorus concentrations ranged from 0.04 to 0.17 mg/L and two of the eight measurements were <0.05 mg/L.

The *Aquatic Life Use* is not assessed for this segment of the Salisbury Plain River as a result of the lack of instream biological data (response type indicators of in-stream water quality conditions). This use is identified with an Alert Status, however, because of habitat degradation resulting from development, low dissolved oxygen/saturation and slightly elevated total phosphorus concentrations in this urbanized subwatershed.

Primary and secondary Contact RECREATION and aesthetics

As part of the ESS NPS study, both fecal coliform and E. coli bacteria were collected between June and November 2002. The most upstream station was located near Plain Street, Brockton (station SPR2 five sampling events) while the downstream station was located behind #1690 Main Street (station SPR3 three sampling events) (ESS 2003). These data are summarized below.

ESS 2003 bacteria data

Station	Fecal Coliform data range (cfu/100mL)	Geometric Mean (cfu/100mL)*	E Coli bacteria data range (cfu/100mL)	Geometric Mean (cfu/100mL)
SPR2	2,000 – 20,000*	5,168	900 – 13,000	3,572
*100% samples collected during the primary contact season exceeded 2,000 cfu/100mL				
SPR3	2,300 - 5,800*	NA	2,000 - 5,000	NA
*Both samples collected during the primary contact season exceeded 2,000 cfu/100mL				

It should be noted that these results represent both wet and dry weather sampling conditions.

With the exception of turbidity being noted by ESS in the Salisbury Plain River near #1690 Main Street (station SPR3), no other objectionable conditions (i.e, odors, colors, deposits) were documented (ESS 2003). No information was provided on objectionable conditions such as trash and debris in this urbanized subwatershed.

This segment of the Salisbury Plain River is assessed as impaired for both the *Primary* and Secondary Contact Recreational uses because of elevated levels of bacteria during both wet and dry weather sampling conditions. The *Aesthetics Use* is not assessed.

Salisbury Plain River (MA62-05) Use Summary Table

Designated Uses		Status
Aquatic Life		NOT ASSESSED*
Fish Consumption		NOT ASSESSED
Primary Contact		IMPAIRED Cause: Fecal coliform bacteria Source: Unknown (Suspected Sources: Discharges from municipal separate storm sewer systems (MS4), illicit connections/hookups to storm sewers, municipal (urbanized high density area))
Secondary Contact		IMPAIRED Cause: Fecal coliform bacteria Source. Unknown (Suspected Sources: Discharges from municipal separate storm sewer systems (MS4), Illicit connections/hookups to storm sewers, municipal (urbanized high density area))
Aesthetics		NOT ASSESSED

*Alert Status issues identified, see details in use assessment

Recommendations:

Review and implement appropriate recommendations from the ESS Nonpoint Source Pollution Assessment Report and Management Plan (ESS 2003).

Conduct monitoring (biological, habitat and water quality) to evaluate impacts to the Salisbury Plain River from potential sources of pollution and to better assess the status of the *Aquatic Life Use*.

Continue to conduct bacteria sampling to evaluate effectiveness of nonpoint source pollution control activities and other actions (i.e., illicit connection identification/remediation) and to assess the status of the *Primary* and *Secondary Contact Recreational* uses.

Petition for Review MA Permit MA0101010

Exhibit K

K. 2002 MA 303d listing for Salisbury Plain River upstream and downstream of Facility.

Listed Water Information

CYCLE : 2002

Click here to see metadata for this report.

Cycle: 2002 **State:** MA **List ID:** MA62-05

Waterbody Name: SALISBURY PLAIN RIVER

State Basin Name: TAUNTON

Listed Water Map Link: MAP 303(d)

Comments:
CONFLUENCE OF TROUT BROOK AND SALISBURY BROOK, BROCKTON TO BROCKTON WWTP.

State List IDs:

Cycle	State List ID
2002	MA62-05_2002

State Impairments:

State Impairment	Parent Impairment	Priority	Rank	Targeted Flag	Anticipated TMDL Submittal
PATHOGENS					
SUSPENDED SOLIDS					
SILTATION	SEDIMENT/SILTATION				

Potential Sources of Impairement:

There were no potential sources reported to EPA by the state

Total Maximum Daily Load (TMDL) Information:

There were no TMDLs reported to EPA by the state.

Watershed Information:

Watershed Name	Watershed States
NARRAGANSETT	MASSACHUSETTS RHODE ISLAND

Listed Water Information

CYCLE : 2002

Click here to see metadata for this report.

Cycle: 2002 **State:** MA **List ID:** MA62-06

Waterbody Name: SALISBURY PLAIN RIVER

State Basin Name: TAUNTON

Listed Water Map Link: MAP 303(d)

Comments:
BROCKTON WWTP, BROCKTON TO CONFLUENCE WITH BEAVER BROOK AND MATFIELD RIVER, EAST BRIDGEWATER. MILES 2.2-0.0

State List IDs:

Cycle	State List ID
2002	MA62-06_2002

State Impairments:

State Impairment	Parent Impairment	Priority	Rank	Targeted Flag	Anticipated TMDL Submittal
CAUSE UNKNOWN					
PATHOGENS					

Potential Sources of Impairement:

There were no potential sources reported to EPA by the state.

Total Maximum Daily Load (TMDL) Information:

There were no TMDLs reported to EPA by the state.

Watershed Information:

Watershed Name	Watershed States
NARRAGANSETT	MASSACHUSETTS RHODE ISLAND

BSC
BRIDGEWATER
STATE COLLEGE

14 June 2004

Ms. Betsy Davis

Environmental Protection Agency

1 Congress St., Suite 1100

Boston MA 02114.

Dear Ms. Davis:

As the Watershed Access Lab coordinator at Bridgewater State College, I strongly support the permit restrictions listed in the draft NPDES Permit No. MA0101010 for the City of Brockton Wastewater Treatment Plant (WWTP). It is essential that the current plant design capacity remain at 18 mgd throughout the five-year cycle of this draft permit. After coordinating summer studies on flow and nutrient loading in the Upper Taunton River and specifically the Matfield and Salisbury Plain Rivers since 1999, we have become increasingly alarmed over the impact of the nutrient levels in the Salisbury Plain and Matfield Rivers resulting from the effluent volume from the wastewater treatment plant. Our estimates of the average daily nitrate nitrogen loading to the Upper Taunton River in the summers of 1999, 2000, and 2002 showed 54 – 70% of the projected load was from the Matfield River (Fig. 1). Our Summer 2000 study showed that most of this loading comes from its tributary stream, Salisbury Plain, downstream of the Brockton WWTP (Fig 2). The ESS Non Point Pollution Study report clearly demonstrated that the Salisbury Plain and Matfield Rivers fall below the Massachusetts Surface Water Quality Standards for Warm Water Fish (5.0 mg/L) for dissolved oxygen in August. This supports our findings on dissolved oxygen from our 24 hour studies of the Matfield River in June through August of 2002 when average readings were never above the Warm Water Fish Minimum of 5.0 mg/L dissolved oxygen. The Matfield River and Salisbury Plain are impaired waters linked to excessive nutrients causing dissolved oxygen stress during the summer low flow periods of July and August. Expanding the capacity of the Brockton WWTP and allowing other new sources from surrounding communities would only further degrade the Salisbury Plain and Matfield Rivers by increasing the length of river miles that would not meet the Massachusetts Water Quality Use Classification because of dissolved oxygen stress from the increased discharge and volume of nutrients. This would not only violate the mandate in the Clean Water Act by working against restoring the physical, chemical, and biological integrity of our surface waters in the Upper Taunton River basin but it would also violate the Massachusetts Water Quality Use Standards that specify that any changes in discharge to a surface water body should not cause further impairment to the receiving water.

Restricting the NPDES permit for the Brockton WWTP to its design flow of 18MGD insures that no further degradation from bank erosion and nutrients will occur and helps to protect the groundwater resources in the surrounding communities. The outside hookup cap in this permit, which prohibits additional hookups too outside communities as specified on page 4 # 3 of the permit is a vital component of this permit. Expanding the capacity of the plant to accommodate 20 or 39 MGD may be technically possible but the receiving water, Salisbury Plain River and the river system which receives it do not have the capacity to assimilate such a large flow and maintain its biological integrity as a river. Recent news articles have made it apparent that several towns have approached the City of Brockton about becoming a regional treatment plant so they can discharge their sewage to the Brockton WWTP and expand development in their communities to land that can not sustain septic tanks for treatment of sewage. In the end, not only would this further degrade the Salisbury Plain and the Upper Taunton River system but these communities would be drawing down their groundwater supplies to deliver drinking water for development without any local recharge to their groundwater supply that could come from their own local sewage treatment. Since Southeastern Massachusetts is experiencing more water bans each summer, sending the sewage from these surrounding communities away from a local treatment facility would accelerate the stress on the ground water resources in the region and threaten critical wetland habitats and tributaries that sustain so much of the biodiversity in this region of Southeastern Massachusetts.

I support your efforts to restrict the Brockton WWTP to its original design capacity without any new hookups and feel strongly that the data from the ESS study and our years of summer nutrient studies on the Upper Taunton River point to the need for further removal of nutrients to prevent any further degradation. This is especially critical since the City plans on expanding its drinking water supply by ~ 4.0 MGD from the desalinization project. Increasing the drinking water supply also means that the sewage discharge will increase as well. If other communities in our region look to desalinization to expand their drinking water supplies because of the increasing tension on groundwater resources, then they should be discharging their wastewater to a local treatment facility that will process the nutrients and return the water to recharge their local groundwater resources and not "sending it down the river" to further degrade the Salisbury Plain and Matfield Rivers. Ultimately if the plants capacity is ever expanded without addressing the I & I problems and no steps are taken to increase the removal of nutrients in the wastewater, then more nitrates will be sent downriver in a seasonal spiral of absorption and release. The cumulative result will be increased production of algae and aquatic macrophytes resulting in more river miles that experience dissolved oxygen stress from increased biomass and decomposition in Salisbury Plain, the Matfield River, the Upper Taunton River and eventually Mount Hope Bay.

Respectfully yours

Kevin D. Curry

Kevin D. Curry

Professor of Biology

Watershed Access Lab Coordinator

Figure 1

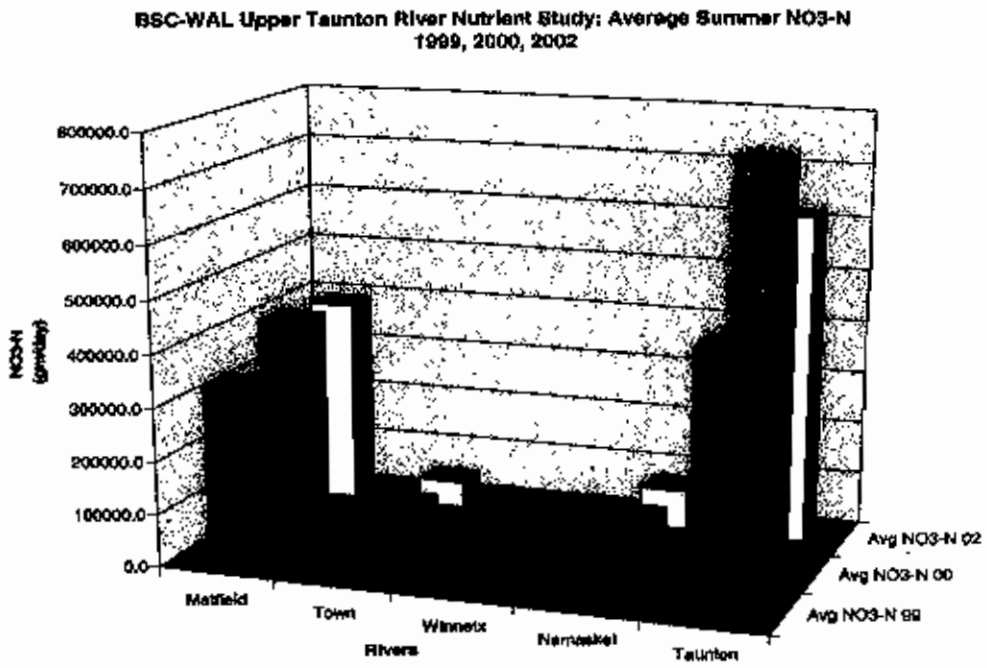
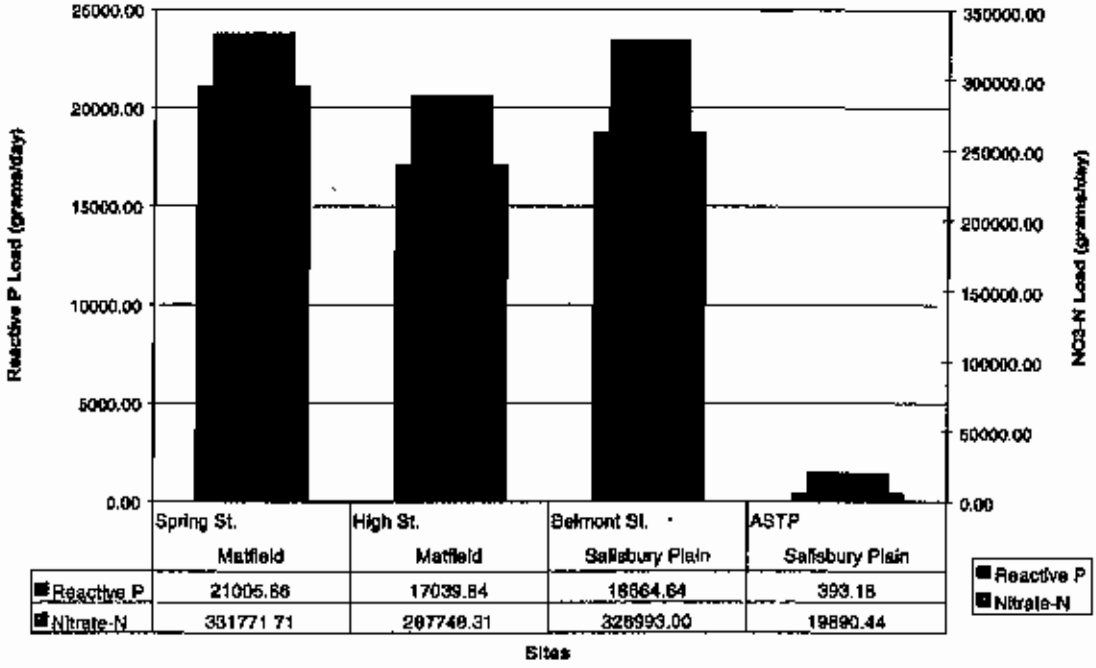

BSC-WAL Upper Taunton River Nutrient Study: Average Summer NO3-N
1999, 2000, 2002
800000.0
700000.0
600000.0
500000.0
400000.0
300000.0
200000.0
100000.0
0.0
NO3-N (gm/day)
Matfield
Town
Winnetu
Nemasket
Taunton
Rivers
Avg NO3-N 02
Avg NO3-N 00
Avg NO3-N 99

Figure 2

BSC-WAL Nutrient Load Study: July 17, 2000.
Matfield River at Spring St., Matfield River at High St.,
Salisbury Plain at Belmont St.,
and Salisbury Plain above the Sewage Treatment Plant



	Spring St. Matfield	High St. Matfield	Belmont St. Salisbury Plain	ASTP Salisbury Plain
Reactive P	21005.66	17039.84	18564.64	393.18
Nitrate-N	331771.71	297749.31	326993.00	19890.44

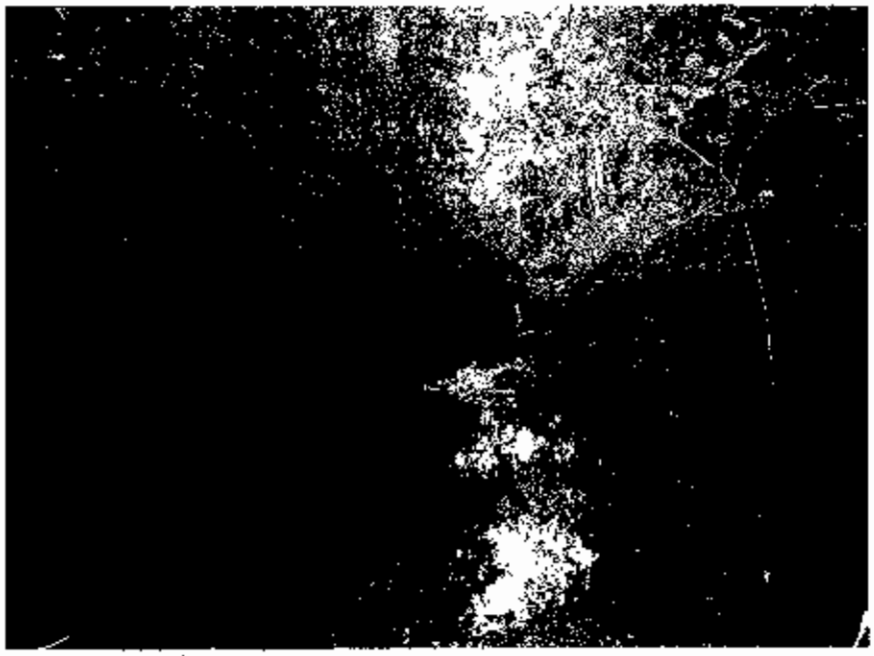
Petition for Review MA Permit MA0101010

Exhibit M

M. Taunton River Watershed 1996 and 2001 Biological Assessment MA DEP.

Technical Memorandum TM-62-4

TAUNTON RIVER WATERSHED 2001 BIOLOGICAL ASSESSMENT



Rumford River, downstream from Willow Street, Mansfield, MA

John F. Fiorentino
Massachusetts Department of Environmental Protection
Division of Watershed Management
Worcester, MA

2 February 2004

CN 185.0

Salisbury Plain River

The Salisbury Plain River originates at the confluence of Salisbury and Trout brooks near downtown Brockton. The river flows in a southerly direction through highly urbanized portions of Brockton before heading east to form the Matfield River at its confluence with Beaver Brook in East Bridgewater. The river receives discharge contributions from the Brockton Wastewater Treatment Plant (WWTP) (NPDES Permit No. MA0101010) just upstream from the West Bridgewater town line. The Brockton WWTP is an advanced treatment facility engaged in the collection and treatment of domestic wastewater. In addition, there are about 20 industrial users contributing wastewater to this facility.

TR03—Salisbury Plain River, mile point 0.8, 300 m downstream from Belmont Street, East Bridgewater, MA

Habitat

TR03 meandered through a residential portion of East Bridgewater near its boundary with West Bridgewater. The sampling reach began approximately 300 m downstream from Belmont Street and about 2 km downstream from the Brockton WWTP outfall. Estimated stream width was 4 m, while depth ranged from 0.50 m in the riffles to 0.75 m in the deepest pool areas. Swift current velocity and an abundance of large rocky substrates offered excellent epifaunal habitat for macroinvertebrates. Deep pools containing large boulders and submerged logs provided fish with ample stable cover as well. Channel flow status was optimal, with water reaching the base of both banks and leaving only minimal amounts of substrates exposed. Despite a mostly-closed (60% shaded) canopy, aquatic vegetation in the form of mosses and dense beds of macrophytes (water starwort, *Callitriche* sp.; waterwort, *Elodea* sp., pondweed, *Potamogeton* sp.) covered virtually all of the 100 m sampling reach. Algal cover was also substantial (>50% cover), consisting mainly of filamentous green forms attached to boulders in both fast and slow current areas. Bank stability was good along the left (north) bank, due in part to a dense layer of shrubs (rose, *Rosa* sp.; sweet pepperbush, *Clethra alnifolia*), vines (*Vitis riparia*), and herbaceous (jewelweed, *Impatiens capensis*, smartweed, *Polygonum* sp., Japanese knotweed, *Polygonum cuspidatum*) growth. Much of the right (south) bank, however, contained areas of erosion. Bank failure was exacerbated by the dumping of trash and construction materials along portions of the reach—apparently an ongoing activity as this was observed during the 1996 biosurvey here as well (Fiorentino 1996). Riparian vegetation, while undisturbed along the left bank, was extremely reduced along the right bank with a thin layer of trees (red maple, *Acer rubrum*; oak, *Quercus* sp.; beech, *Fagus* sp.) providing only a narrow buffer between the river and adjacent road (Matfield Street).

TR03 received a total habitat assessment score of 168/200 (Table A3). Riparian disruption and erosion along the right bank led to the majority of the point reductions for habitat quality. In addition, instream sediment (sand) deposition and slight turbidity were observed during the benthos collections at TR03. Nevertheless, habitat parameters scored better here than at the regional reference station.

Benthos

Resident biota at TR03 received total metric scores of 16 and 14, representing only 38% and 33% comparability to the reference station and resulting in an assessment of "moderately impacted" for biological condition (Table A2). That habitat quality here was found to be highly comparable (actually better) to the reference condition suggests that water quality limits biological potential in this portion of the Salisbury Plain River. Metric values for the TR03 benthos were strongly suggestive of water quality degradation related to organic enrichment and low dissolved oxygen levels. Pollution sensitive EPT taxa, as well as algal scrapers (Tables A1)—generally less tolerant of organic pollutants than filter-feeders and gathering collectors, were virtually absent from the benthos sample taken here and suggest an oxygen-stressed community. Community imbalance also characterized the TR03 benthic community, the result of the hyperdominance of a single family. Indeed, the Chironomidae comprise well over half of the assemblage observed at TR03. The numerical dominance of the chironomid *Polypedilum flavum* is particularly significant, as this species is considered very tolerant of organic pollution. It has been commonly observed in streams with high amounts of suspended organic particulates and has been associated with sewage "recovery zones" (Bode and Novak 1998).

The 2001 bioassessment of TR03 was similar to results documented by DEP during the last biomonitoring survey conducted here in 1996, when high densities of filter-feeding hydropsychids and pollution tolerant chironomids resulted in poorly performing metrics (especially EPT Index and Scrapers/Filterers) and an assessment of "moderately impaired" (Fiorentino 1996). That the TR03 macroinvertebrate community remains structured in response to organic enrichment is not surprising given its location downstream from the Brockton WWTP. Nutrient loadings originating from the treatment facility's discharge probably not only shape benthic community structure and function in this portion of the river, but also probably account for the luxuriant filamentous algal growth and macrophyte cover observed here.

Satucket River

The Satucket River originates in Robbins Pond in Bridgewater and meanders in a generally westerly direction before joining the Matfield River in East Bridgewater. The subwatershed is relatively undeveloped, with some light residential land-use and small-scale agriculture mainly in the form of cranberry farms.

SR00—Satucket River, mile point 2.0, immediately upstream from Bridge Street, East Bridgewater, MA

Habitat

Due to the lentic nature of the Satucket River, SR00 differed greatly from other biomonitoring stations in the Taunton River watershed survey in terms of epifaunal/riparian habitat, channel morphology, and hydrology. DWM conducted only a qualitative assessment of habitat and biological integrity at SR00, where soft substrates and imperceptible current velocity made comparisons to the more lotic Canoe River reference station inappropriate. Rather than conduct "kick" sampling throughout a 100 m reach, net "jabs" were made in the most productive habitat available to macroinvertebrates in this portion of the stream—namely submerged vegetation, snags, and root masses along the banks. In addition, a few kicks were made in what limited riffle area was available—those rocky substrates present appeared to be introduced. Virtually all sampling was confined to the area immediately upstream from the Bridge Street crossing.

The low-gradient SR00 biomonitoring station was characterized by a mostly open-canopied channel bordered by a profusion of herbaceous and shrubby flood plain vegetation—typical of much of the Satucket River system. While the soft, muck-mud substrates that comprised most of the stream bottom provided only marginal epifaunal habitat, a variety of snags, submerged logs, overhanging shrubs, and deep pool areas provided fish with excellent habitat. Stream depth was approximately 0.2 m in the runs and over 0.50 m in the pool areas, with water easily reaching the base of both banks. Instream vegetation consisted of aquatic mosses while algae were not observed.

Both stream banks were well-vegetated and stabilized with shrubs (rose, *Rosa* sp.; dogwood, *Cornus stolinifera*; *Viburnum* sp.) and grasses. Riparian vegetation in the form of a hardwood (red maple, *Acer rubrum*; alder, *Alnus* sp.; ash, *Fraxinus americana*; elm, *Ulmus rubra*) forest extended undisturbed from the right (north) bank, while a nearby pasture disrupted the zone along the left (south) bank.

Benthos

The SR00 benthic community was comprised of a total of 26 taxa and included high densities of taxa (e.g., Gastropoda, Hemiptera, Amphipoda) commonly found in lentic stream systems. The assemblage displayed good trophic structure, with virtually every major feeding guild represented. EPT taxa, generally not abundant in low-gradient wetland dominated stream systems such as the Satucket River, were well represented and included several fairly pollution-sensitive genera (Table A1). Due to the qualitative nature of the biosurvey conducted at SR00, an assessment of biological condition based on RBP III criteria could not be made; however, the macroinvertebrate community encountered here does not appear to suggest the presence of gross organic pollution in this portion of the Satucket River. In fact, based on the variety of pollution intolerant taxa observed here, coupled with good overall riparian and instream habitat quality for a river of this nature, MA DEP/DWM's Assessment Group may want to consider a designation of "support" for

1986)--are particularly low, indicative of decreasing water quality, habitat suitability, and habitat diversity. The dominance of only a few, tolerant taxa (biotic index = 6.28; % contribution dominant family = 67%) is further indication of environmental stress to the aquatic community here. RBP II analysis placed this site in the moderately impaired category.

Several factors associated with its urban setting probably contribute to the degraded status of TR02. Urban runoff from the parking lot adjacent to the stream reach and from Grove St. just upstream of the reach, as well as storm drain discharges into the stream midreach, are probably the primary nonpoint sources affecting water quality. In addition, the stream is being subjected to considerable habitat degradation. Sand, possibly entering the stream from the parking lot or further upstream, is being deposited in pools and on hard substrates, reducing the availability of suitable habitat for macroinvertebrates and fish. An abundance of anthropogenic debris throughout the reach is also responsible for habitat alteration, and probably water quality impairment as well.

TR03--Salisbury Plain River, East Bridgewater MA (18 July 1996)

HABITAT

This station was located approximately 2500 m downstream of the Brockton WWTP. We accessed the stream at Belmont St. in West Bridgewater and followed it downstream for approximately 300 m until we found a suitable reach to conduct sampling. Here the stream appeared to meander naturally, although the right bank was rip-rapped where the road (Matfield St.) came within a few meters of the channel. Across the stream the riparian zone was quite wide and heavily wooded. Current was generally fast, with deep riffle/runs predominant throughout the reach and pool habitats virtually absent. The majority of sampling consisted of kicks in the rocky substrates in these riffle/run areas, however, a few jabs were made in the dense aquatic vegetation (*Elodea* sp., *Callitriche* sp., *Potamogeton* sp.) found in some riffles. Although cobble and boulder dominated the bottom substrate, much of it (50-75%) was surrounded by sand, which may be entering the stream from the road adjacent to the stream and separated by only a narrow vegetated buffer.

TR03 received a habitat assessment score of 150, which was higher than that received by its upstream counterpart (TR02), and 83% comparable to the regional reference station at Canoe River.

BENTHOS

When using the Canoe River (TR01) station as a regional reference site, TR03 received a total metric score of 21 out of a possible 42. This score represents a 54% comparability to the reference station, placing TR03 in the moderately impaired category. When compared to its upstream reference station TR02, however, TR03 received a total metric score of 27--representing a 75% comparability to the reference, and placing the station intermediate to the non-impaired/moderately impaired categories. Due to the low habitat assessment score and apparent state of water quality degradation, I recommend omitting TR02 as an upstream reference site and instead using the regional reference station TR01 as the primary reference for TR03. With an EPT index of 1 and a taxa richness of only 6, it would seem unconscionable to place TR03 anywhere near the non-impaired category.

The relatively high habitat assessment score (83% comparable to the regional reference station) received by TR03, coupled with its low metric scores, lead me to believe that impairment to the invertebrate community is primarily due to degradation of water quality. The Brockton WWTP seems the likely pollution source here, although a horse farm adjacent to the stream at Belmont St. may be a possible source of nutrient loading.

TR04A, TR04B--Wading River, Mansfield MA (30 July 1996)

HABITAT

At the request of the Taunton River Basin Team leader, we attempted to bracket the effects of Charles A. Richardson, Inc.--a metal plating industry--on the Wading River. TR04A, located immediately upstream of the plant discharge, was to serve as the upstream control site. The top of the proposed reference reach was intersected by Otis St., at the outlet of an unnamed impoundment. Unfortunately, a lack of any appreciable current velocity coupled with minimal productive habitat rendered it impossible to apply our standard sampling protocol anywhere between the Richardson discharge and the impoundment.

An investigation of potential downstream sampling sites (to be designated TR04B) proved equally unsuccessful. We accessed the stream from the railroad crossing which runs perpendicular to Gilbert St. While flow conditions were adequate for kick sampling, the majority of the potential reach was not wadable. In addition, productive benthic habitats encountered immediately above and below the railroad line were markedly different than anything found upstream of the Richardson discharge. A marshy, heavily vegetated riparian zone also posed problems with regard to stream accessibility. If the need for macroinvertebrate data from this site is imperative, artificial substrate samplers (e.g., rock baskets, Hester-Dendy multiplate samplers) could be utilized; however, finding a suitable upstream reference station could be difficult.

While we were unable to conduct biomonitoring and associated habitat assessments at TR04A and TR04B, it should be mentioned that we did observe a rather dubious situation in the upstream reach which may contribute to habitat and water quality degradation. A small channel of unknown source running parallel to Barrows St. enters the Wading River approximately 10-15 m below the reservoir outlet. The channel substrate consists of extremely "mucky," orange-stained (and presumably of a ferric origin) sediment. A considerable amount of this sediment is being carried into the main stem, as evident by the orange plume and heavy deposition visible in the upstream reach near the confluence. Sedimentation is particularly heavy for approximately 15 m downstream of the confluence--all rocky substrates here are covered by a fine layer of silt. It would probably be worthwhile for the Taunton River Basin Team to investigate possible anthropogenic origins to this apparent nonpoint source input.

TR05A--Wading River, Norton MA (30 July 1996)

HABITAT

TR05A served as the upstream reference station for TR05B, in an attempt to bracket discharge effects from Tweave, Inc.--a clothing manufacturer located on the Wading River in Norton, just downstream of

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Exhibit N

N. ESS Group Matfield and Salisbury Plain River Watersheds Nonpoint Pollution Assessment Report and Management Plan MA DEP 2003.

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Exhibit N, Part A

Exhibit N, Part A, Sample Site Locations.

Table 1: Water Quality Sampling Locations for the Matfield River and Salisbury Plain River Watersheds

Station	Type	Sampling Site Location
BB1	BWWF	Crescent Street (Route 27) – Brockton. South-west side of Crescent Street, downstream of bridge.
BB2	BWWF	E. Ashland/Groveland Street- Brockton/Abington border. Downstream of bridge.
BB3	BWWF	Plymouth Street – Holbrook. South-west side of Plymouth Street, downstream of bridge.
SHR1	BWWF	Franklin Street (Route 27) – Whitman/Hanson Border. East side of Franklin Street, downstream of bridge.
SHR2	BWWF	Summer Street – Abington. South-west side of Summer Street, downstream of bridge.
SHR3	BWWF	South Avenue – Whitman. North-West of "Body magic auto collision repair" downstream of South Avenue bridge.
SHR4	BWWF	South Avenue – Whitman. Just west of Conrail line. Downstream of Hobart Pond. Down slope East of parking lot next to "Whitman Furniture" #356 South Avenue.
MB1	BWWF	West Union Street – East Bridgewater. South side of street, downstream of bridge.
SR1	BWWF	Plymouth Street (Route 106) – East Bridgewater. Downstream of Satucket River Reservoir. East side of street, upstream of bridge.
SST1	BWWF	Spring Street, East Bridgewater. Site sampled on small channel draining to Spring Street Tributary, South-East side of road, ~ 80 feet north-east of Spring Street Tributary.
WT1	BWWF	West Street – East Bridgewater. North-east side of street, downstream of road, upstream of barbed wire fence.
MR1	BWWF	High Street – Bridgewater. North-east side of High Street, upstream of bridge.
MR2	BWWF	Bedford Street (Route 18) – East Bridgewater. Immediately south of intersection with Route 106. East side of Broad Street, downstream of bridge.
MR3	BWWF	West Union Street – East Bridgewater. South side of Union Street, downstream of bridge.
ABB1	A	Old Pond Street – Avon. Just west of DW Field East Parkway, upstream of Old Pond Street.

Table 1: Water Quality Sampling Locations for the Matfield River and Salisbury Plain River Watersheds- Continued

TB1	BWWF	Crescent Street (Route 27)- Brockton. South-west side of Crescent Street, downstream of bridge.
TB2	BWWF	East Ashland Street – Brockton. West of parking lot for "McGinnis Paper Recycling", downstream of bridge.
TB3	BWWF	Court Street, Brockton. North side of Court Street, upstream of bridge.
TB4	BWWF	Studley avenue, off of North Montello street – Brockton. Through gate on left, into forest directly east of car lot, west of railroad.
LB1	BWWF	DW Field East Parkway – Brockton. West side of road, upstream of Ellis Brett Pond.
SB1	BWWF	Otis Street – Brockton. West side of Otis Street, upstream of bridge.
SB2	BWWF	Chester Street – Brockton. South-east of Chester Avenue and behind parking lot for "Law Office of Robert Clark" #18 Chester Avenue.
SB3	BWWF	Elmwood Avenue – Brockton. North of parking area behind #459 Prospect Street, downstream of small bridge from parking lot to #459.
SB4	BWWF	Montgomery Avenue – Brockton. At end of Montgomery Avenue.
SB5	BWWF	Belmont Avenue – Brockton. South-east of Belmont Avenue, downstream of bridge.
SEB1	BWWF	Vine Street – Brockton. South side of Vine Street, downstream of bridge.
SEB2	BWWF	Village way (off of Battles Street)– Brockton. South East of end of parking lot for condo complex. Off of Oak street.
MAB1	BWWF	North Cary Street – Brockton. East side of North Cary Street, upstream of intersection with Ashfield Drive.
CB1	BWWF	Elliot Street – Brockton. North-east side of Elliot Street, downstream of bridge.
CB2	BWWF	Court Street – Brockton. West side of Court Street, downstream of bridge.
SPR1	BWWF	Belmont Street – West Bridgewater. South-east side of Belmont Street, downstream of bridge.
SPR2	BWWF	Plain Street – Brockton. South-west of Plain Street, ~150 feet downstream of bridge.
SPR3	BWWF	Main Street (Route 28) – Brockton. East of Main Street. East into forest at back end of parking lot behind "Champion Lincoln Mercury Dealership" next door to Bell Atlantic #1690 Main Street.

1: Classification of waterbodies according to Massachusetts Water Quality Standards 314 CMR 4.00 for the Taunton River Basin.

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Exhibit N, Part B

Exhibit N, Part B, Field Data Sheets

score and riparian zone width was low in places. See section 2.3.5.3 for a description of all habitat parameters assessed for the MADEP habitat assessment.

Potential NPS Sources

(Information Obtained from Research, Reconnaissance, Field Data Analysis, and Interviews with Municipal Officials and Others with Knowledge of the Watershed)

Field Reconnaissance Observations

- SPR1 (Salisbury Plain River at Belmont Street bridge, East Bridgewater) was sampled on five dates and exhibited elevated levels of bacteria on two out of the three wet weather sampling days and one out of the two dry weather sampling days, with a peak level of 14,000 col/100ml on 6/6/02. This site ranks as number 7 on the "Recommended Priority for Site Management (during wet weather)" list (Table 9) and number 4 on the "Recommended Priority for Site Management (during dry weather)" list (Table 10), which means overall this site was relatively bad in terms of water quality during wet and dry weather conditions. Potential sources of NPS pollution at this site include stormwater runoff from Matfield Street and Belmont Street compounded by a narrow vegetation buffer along sections of the river close to the roads. Vegetation buffers tend to act as a filtering strip, in their widespread use to remove sediments and other waterborne nutrients and pollutants from surface runoff. In their absence all of the potential pollutants present in stormwater runoff (such as bacteria, nutrients and sediments), run unhindered and undiluted directly into the water body to ultimately cause harm to the ecosystem.
- In addition, a horse stable (Stonecroft farm #108 Belmont Street) was located immediately adjacent to the site, a paddock for the horses was located along the bank adjacent to/downstream of the site (*Point 64-Figure B-2*), where only two horses were ever observed at one time. There is the potential for stormwater runoff from this paddock down the bank into the river, compounded by the narrow vegetation buffer along that section.
- Another potential source of runoff is a stormdrain pipe (origins unknown) on the Northern bank of the river at the sampling site (*Point 63-Figure B-2 and Photo 67 Appendix 2*), which was observed to flow during dry weather conditions. Wildlife waste impacts associated with the extensive areas of forest and wetland upstream is also a potential source, from animals such as raccoons, skunks, rats or feral cats. Another possible source of pollutants is the sewage disposal plant, upstream of the site on Industrial Boulevard, Brockton. In addition, town officials identified a potential area of concern for NPS pollution along Pinecrest Road, where there are residences with septic systems within a Zone II well head protection area for town wells. Strong sewage/musty odors (when close to the water) were noted during every visit to the site, which can be an indication of untreated sewage, livestock waste or algae (which was also observed). The copious amounts of macrophytes and algae observed at the site could be a result of the elevated nutrient levels found at this site. A small number of DEP tier-classified 21E sites in the sub-watershed could also have a limited impact on the site, further investigations

may be necessary to determine the significance of these sites on the water quality of Salisbury Plain River and the rest of the watershed.

- SPR2 (Salisbury Plain River at Plain Street bridge, Brockton) was sampled on five dates and exhibited elevated levels of bacteria on all of them, with a peak level of 20,000 col/100ml on 6/6/02 during wet weather conditions. The main potential source of NPS pollution at this site is stormwater runoff from the large areas of impervious land around and upstream of the site. A stormdrain, likely draining Plain Street (no catch basins were observed), was observed downstream of the Plain Street bridge on the south-east side of the river built into the concrete structure for the bridge (*Point 67-Figure B-2*). There is also the potential for stormwater runoff from the large parking lot for the Campello T-Stop (*Point 66-Figure B-2*) immediately upstream of the Plain Street Bridge. A stormdrain likely draining this area was observed on the south-east bank of the river (*Point 65-Figure B-2 and Photo 69 Appendix* 2) in between the section running underneath the train track and the Plain Street Bridge. Further upstream (after the river runs under the tracks) there is the potential for stormwater runoff from the impervious grounds associated with the "Trojan Recycling Transfer Station". Two stormdrains were observed on the south-east side of the river draining from this area into the river. Upstream of the transfer station is literally a sea of pavement and parking lots, where there is enormous potential for excessive stormwater runoff. The majority of this section of the Salisbury Plain River is heavily channelized and has a narrow to non-existent vegetation buffer, both which will compound the stormwater runoff from the surrounding highly industrialized impervious areas. Vegetation buffers tend to act as a filtering strip, in their widespread use to remove sediments and other waterborne nutrients and pollutants from surface runoff. In their absence all of the potential pollutants present in stormwater runoff (such as bacteria, nutrients and sediments), run unhindered and undiluted directly into the water body to ultimately cause harm to the ecosystem.

- In addition, a potential source of wastewater was identified by town officials associated with defects in the sewer and drain pipes between Montello and Clinton Streets, linked to an outfall on Clinton Street draining to a tributary of the Salisbury Plain River. More television inspection was recommended to get a full understanding of the problems. A large number of DEP tier-classified 21E sites in the sub-watershed could also have a limited impact on the site, further investigations may be necessary to determine the significance of these sites on the water quality of Salisbury Plain River and the rest of the watershed.

- SPR3 (Salisbury Plain River at Main Street bridge, Brockton) was sampled on three dates and exhibited elevated levels of bacteria on all of them with a peak of 5,800 col/100ml on 11/6/02 during wet weather conditions. This site ranks as number 9 on the "Recommended Priority for Site Management (during dry weather)" list (Table 10), which means overall this site was relatively bad in terms of water quality during dry weather conditions. The main potential source of NPS pollution at this site is stormwater runoff from the large areas of impervious land around and upstream of the site. Numerous catch basins (likely draining to the river) were observed on Sargents Way, (*Point 68-Figure B-2*) which crosses the river upstream of the site and also on Meadowbrook Road (*Point 69-Figure B-2*) which runs parallel to the river for a short distance upstream of Sargents Way. The whole of Meadowbrook Road and Sargents Way is heavily industrialized; any stormwater runoff from these roads would be compounded by the very

narrow vegetation buffer along this section of the river. Vegetation buffers tend to act as a filtering strip, in their widespread use to remove sediments and other waterborne nutrients and pollutants from surface runoff. In their absence all of the potential pollutants present in stormwater runoff (such as bacteria, nutrients and sediments), run unhindered and undiluted directly into the water body to ultimately cause harm to the ecosystem.

- A stormdrain (likely draining from the observed catch basins) was observed off of Meadowbrook Road opposite the brick and stone dealership called "Lee's Stone". Stormwater runoff is also a potential source from other streets in close proximity to this section of the river, upstream of the site i.e. Watson Street, Holmes Street, Meadow Lane and even Main Street (Route 28) itself (although this is a little further away). In addition, site SPR3 is in very close proximity to site SPR2, so it is likely that any NPS pollution in the river at site SPR2 will impact the water quality at site SPR3. A small number of DEP tier-classified 21E sites in the sub-watershed could also have a limited impact on the site, further investigations may be necessary to determine the significance of these sites on the water quality of Salisbury Plain River and the rest of the watershed.

Summarized Observations

The following potential source areas of NPS pollution were identified within this sub-watershed:

- Stormwater runoff from Matfield Street and Belmont Street, East Bridgewater, compounded by narrow vegetation buffers.
- Stormwater runoff from horse paddock at Stonecroft farm, #108 Belmont Street, East Bridgewater, compounded by narrow vegetation buffers.
- Stormwater runoff from the Plain Street area via a stormdrain pipe downstream of the bridge on the south-east side, Brockton.
- Stormwater runoff from the impervious area associated with Campello T-stop, via a stormdrain pipe upstream of the Plain Street bridge, on the south-east bank, Brockton.
- Stormwater runoff from the impervious area associated with the Trojan Recycling Transfer Station, via two stormdrain pipes located on the south-east side downstream of the railroad, Brockton.
- Stormwater runoff via catch basins on Sargents Way and Meadowrook Road, compounded by very narrow vegetation buffers, Brockton.
- Stormwater runoff from a stormdrain on Meadowbrook Road, opposite "Lee's Stone" brick and stone dealership, Brockton.
- Dry weather runoff from stormdrain on North bank of river, off of Belmont Street, East Bridgewater.
- Potential stormwater runoff from Watson Street, Holmes Street, Meadow Lane and Main Street, Brockton.
- Wildlife waste impacts associated with forest and wetland upstream of Belmont Street, East Bridgewater.
- Residences with septic systems on Pinecrest Road, within a Zone II well head protection area for town wells, West Bridgewater.

Summarized Observations

The following potential source areas of NPS pollution were identified within this sub-watershed:

- Stormwater runoff from West Street , East Bridgewater.
- Stormwater runoff from two storm drain pipes on the upstream and downstream side of West Street draining directly into Westdale Tributary, East Bridgewater.
- Wildlife waste impacts associated with the extensive forest and wetland area upstream of West Street, East Bridgewater.

3.2.1.6 Matfield River

The total area of the Matfield river sub-watershed is approximately 4,833 acres with an impervious area of 7%. The main stem of the river runs in a south-easterly direction from its origin (at its confluences with the Salisbury Plain River and Beaver Brook directly north from the end of Pleasant Avenue, East Bridgewater) down to its confluence with the Town River in Bridgewater. The predominant land use is forest (42%), followed by medium density residential areas (21%). Two out of the three sites sampled on the Matfield River ranked very low on the "Recommended Priority for Site Management" lists developed as part of this study. Site MR2 on Bedford Street, East Bridgewater ranks as number 4 on the "wet weather list" (Table 9) and 2 on the "dry weather list" (Table 10). Site MR3 on West Union Street, East Bridgewater ranks as number 8 on the "dry weather list" (Table 10). This indicates that overall the mid to upper reaches of the Matfield River sub-watershed was one of the worst areas in terms of water quality during wet and dry weather conditions. This sub-basin shows only a small number of potential sources of NPS pollution despite its size, i.e. runoff from major and minor roads via country drainage and catch basins, runoff from gardens adjacent to the river, and wildlife waste impacts associated with gardens, forest and wetland areas in the sub-watershed. However in addition to these sources it is likely that the input of impaired waters from the Salisbury Plain River and Beaver Brook will affect the water quality of the Matfield river accordingly and thus may explain the poor quality of the water on the Matfield River.

Bacteria

- All three of the sites sampled on Matfield River (MR1, MR2 and MR3) did not meet Massachusetts Class B standards for fecal coliform bacteria (Table 4 and 5g). In addition, the peak standard of 400 col/100ml was exceeded on 2 out of 3 wet weather sampling dates' at all three sites. The peak standard was also exceeded during dry weather conditions on 1 out of 2 days at both sites MR2 and MR3. This indicates there is a potential wet and dry weather source of bacteria in the Matfield river watershed, although wet weather events appear to exacerbate the problems. The highest wet weather levels of bacteria were found at site MR2 (a peak of 18,000 col/100ml on 7/10/02) which is located approximately mid-watershed. The other two sites exhibit

similarly elevated average bacteria levels during wet weather conditions but none as high as those seen at MR2. The site MR2 may therefore be influenced by an extra local source within its small sub-watershed that has a maximum impact during wet weather events. However, it is clear that further sources exist in the lower and upper reaches of the watershed which contribute to the elevated levels of bacteria found at sites MR3 and MR1. Such sources will be discussed in the relevant "Potential NPS Sources" section later in the report.

Nutrients and TSS

- All sites sampled in the Matfield River sub-watershed did not meet EPA guidance criteria for total phosphorus and TKN during wet and dry weather conditions for all the sampling dates (Table 4 and 6g). The average concentrations of total phosphorus were found to decrease slightly going downstream. This seems to indicate that sources of total phosphorus are more prevalent in the upper reaches of the watershed. Elevated levels of both nitrogen and phosphorus at all the sites in the Matfield River sub-watershed suggests the sub-watershed may be experiencing elevated nutrient loads. Elevated levels of these nutrients can promote algal blooms, excessive weed growth and reduced dissolved oxygen levels which can cause the loss of species diversity. High levels of phosphorus can result from erosion, discharge of sewers or detergents, urban runoff and rural runoff containing fertilizers, animal and plant matter. High levels of Nitrogen can result from the natural breakdown of vegetation, runoff from lawn and crop fertilizers and feedlots. In addition, inadequately treated sewage and poor septic tank systems can increase levels of nitrogen in waterways
- Site MR2 was the only site not to meet the Massachusetts aquatic life use standard for TSS, but during just one wet weather sampling day (9/16/02) (Table 4 and 6g).

Field Parameter Findings of Special Concern

- All the sites sampled on the Matfield River exhibited below (Massachusetts Class B) standard levels of dissolved oxygen on the majority of sampling days, and the average values also failed the standard at these sites (Table 7). Even those sampling dates that did not fail the standard exhibited very low/borderline failing levels of dissolved oxygen. Low levels of dissolved oxygen can have an effect on the water body's ability to support aquatic life, and thus on its overall water quality. Low dissolved oxygen levels can be caused by excessive amounts of rotting vegetation, (that can come about through plant and algae blooms) and other organic wastes, as aerobic bacteria consume oxygen in the process of decomposition. This process can be compounded by high nutrient concentrations e.g. fertilizers contained in stormwater runoff, as well as by hot weather and low flows. In this case, the low levels of dissolved oxygen in the Matfield River could also be caused by the input of impaired waters from the Salisbury Plain River and Beaver Brook, in addition to any sources in the Matfield River sub-watershed.
- The best professional judgment standard for specific conductance, adopted by ESS scientists for Class B waters was exceeded at least once at all three sites sampled on the Matfield River (Table 7). The level of impairment increased going downstream with site MR1 (the most downstream site)

exhibiting the highest average as well as the greatest percentage of failing days (4 out of 5), Site MR3 (the most upstream site) failed on 1 out of 5 days. High levels of specific conductance can have an effect on the water body's ability to support aquatic life, and thus on its overall water quality. Elevated levels of specific conductance can be caused by agricultural and sewage effluent and stormwater runoff, as well as the natural geology of the river bed.

Habitat Assessment Findings

Overall the assessment scores at the three sites assessed along the Matfield River ranged from sub-optimal to optimal (Table 3). The habitat quality appears to decrease moving downstream from MR3, to MR2 to MR1. The parameters scoring badly at the most downstream site (MR1) were mostly a factor of the waterbody being wide and deep and quite slow moving, i.e. riffles and runs were virtually non existent, there was a high percentage of embeddedness, and few velocity depth patterns. In general, the other two sites scored well for all the assessed parameters. See section 2.3.5.3 for a description of all habitat parameters assessed for the MADEP habitat assessment.

Potential NPS Sources

(Information Obtained from Research, Reconnaissance, Field Data Analysis, and Interviews with Municipal Officials and Others with Knowledge of the Watershed)

Field Reconnaissance Observations

- MR1 (Matfield River at High Street bridge, Bridgewater) was sampled on five dates and exhibited elevated levels of bacteria on two out of the three wet weather sampling days, with a peak level of 2,300 col/100ml on 9/16/02. Potential sources of NPS pollution at this site include stormwater runoff via catch basins from High Street into storm drains observed in the bank on the downstream side of the High Street Bridge. Catch basins and county drainage in close proximity to the river were also observed upstream on Bridge Street. The presence of well established vegetation buffers on both sides of the river up-stream and down-stream of the site may mitigate runoff impacts. Strong sewage/musty odors (when close to the water) were noted during every visit to the site, which can be an indication of untreated sewage, livestock waste or algae. The presence of a small pumping station just up-gradient from the site could also be a potential source. Pump station by-passes may contribute fecal coliform concentrations which are likely to be similar to those from combined sewer overflows. Such by-passes, if they occur in this area, may require further investigation or correction. Copious amounts of macrophytes and algae were observed at the site which could be a result of the elevated nutrient levels found at this site. Strong chlorine odors were also noted during every visit to the site, which can be an indication of over chlorination by a sewage treatment plant or chemical industry, or discharge of swimming pool water. Evidence of primary recreation was noted at the site in the form of a rope swing (*Photo 27 Appendix 2*). It is advised that such activities should be actively prohibited.

- MR2 (Matfield River at Bedford Street bridge, (Route 18), East Bridgewater) was sampled on five dates and exhibited elevated levels of bacteria on two out of the three wet weather sampling days and one out of the two dry weather sampling days, with a peak level of 18,000 col/100ml on 7/10/02 during wet weather conditions. This site ranks as number 4 on the "Recommended Priority for Site Management (during wet weather)" list (Table 9) and number 2 on the "Recommended Priority for Site Management (during dry weather)" list (Table 10), which means overall this site was one of the worst in terms of water quality during wet and dry weather conditions. Potential sources of NPS pollution at this site include stormwater runoff from catch basins on Broad Street (Route 18) and other surrounding roads. Runoff observed from a stormdrain draining to the river is another potential source of NPS pollution at this site. The stormdrain was located on the downstream side of the road approximately 25m north of the river along the side of the road (*Point 24-Figure B-1 and Photo 29 Appendix 2*), a small channel led from the stormdrain down to the river. The origin of the stormdrain was not confirmed. The sediment in the channel and the bottom of the stormdrain pipe were covered with a bright orange coating. Such a coating results from bacterial (*Thiobacillus ferrooxidans*) action on iron resulting in iron precipitating out of the water and appearing as an orange sludge. This can indicate an anoxic condition upstream or runoff from industrial areas or landfills. Another potential source upstream of the site is stormwater runoff from the numerous gardens on Keene Lane in close proximity to the south side of the river, just upstream of the bridge, compounded by a narrow vegetation buffer (*Point 25-Figure B-1*). Vegetation buffers tend to act as a filtering strip, in their widespread use to remove sediments and other waterborne nutrients and pollutants from surface runoff. In their absence all of the potential pollutants present in stormwater runoff (such as bacteria, nutrients and sediments), run unhindered and undiluted directly into the water body to ultimately cause harm to the ecosystem. In contrast, the vegetation buffer on the north side of the river upstream of the bridge is thick and well established due to the lack of residential development. Another potential source at the site is wildlife waste impacts associated with waterfowl such as wild ducks, farm ducks and Canadian geese. The presence of farm ducks observed on the water indicates the possibility that a small farm may exist upstream of the site, but this could not be confirmed. Several DEP tier-classified 21E sites in the upper watershed could also have a limited impact on the site, further investigations may be necessary to determine the significance of these sites on the water quality of the Matfield River and the rest of the watershed. In addition there is a large shopping mall off of Route 18 which is within the Zone II for a town well located near the Matfield River. Strong sewage/musty odors (when close to the water) were noted during every visit to the site, which can be an indication of untreated sewage, livestock waste or algae. Copious amounts of macrophytes and algae were also observed which could be a result of the elevated nutrient levels found at this site.
- MR3 (Matfield River at West Union Street bridge, East Bridgewater) was sampled on five dates and exhibited elevated levels of bacteria on two out of the three wet weather sampling days and one out of the two dry weather sampling days, with a peak of 3,900 col/100ml on 6/6/02 during wet weather conditions. This site ranks as number 8 on the "Recommended Priority for Site Management during Dry-Weather" list developed as part of this study (see Section 3.1.3 and Table 10), which means overall the water quality at

this site was relatively poor during dry weather conditions. Potential sources at this site include stormwater runoff via country drainage on West Union Street (*Point 26-Figure B-1 and Photo 31 Appendix 2*) and from a number of catch basins observed in close proximity to the river upstream from site on the North Central Street bridge. The presence of well established vegetation buffers on both sides of the river up-stream and down-stream of the site may mitigate runoff impacts. Strong sewage/musty odors (when close to the water) were noted during every visit to the site, which can be an indication of untreated sewage, livestock waste or algae. Copious amounts of macrophytes and algae were observed at the site which could be a result of the elevated nutrient levels found at this site. Site MR3 is the closest (of the three sites sampled on the Matfield River) to the confluence with the Salisbury Plain River and Beaver Brook, input of impaired waters from the Salisbury Plain River and Beaver Brook may be a reason for some degree of the elevated nutrient and bacteria levels seen at the site in addition to any further sources in the sub-watershed for site MR3

Summarized Observations

The following potential source areas of NPS pollution were identified within this sub-watershed:

- Stormwater runoff via catch basins from the High Street bridge, Bridgewater, into a storm drain observed in the bank on the downstream side of the bridge.
- Stormwater runoff into catch basins and county drainage in close proximity to the river on Bridge Street, Bridgewater.
- Stormwater runoff into catch basins on Bedford Street (Route 18), East Bridgewater.
- Runoff from a stormdrain (origins unknown) draining to the river, downstream side of Bedford Street, 25m north of the river along the side of the road, East Bridgewater.
- Stormwater runoff from gardens on Keene Lane, compounded by a narrow vegetation buffer on the south side of the river, East Bridgewater.
- Stormwater runoff via country drainage on West Union Street, East Bridgewater.
- Stormwater runoff into a number of catch basins on the North Central Street Bridge in close proximity to the river, East Bridgewater.
- Wildlife waste impacts associated with waterfowl such as wild ducks, farm ducks and Canadian geese on the water upstream of Bedford Street and in gardens on Keene Lane, East Bridgewater.
- A large shopping mall off of Route 18, within the Zone II for a town well located near the Matfield River, East Bridgewater.

3.2.2 Salisbury Plain River Watershed

The Salisbury Plain River watershed falls within the municipalities of Avon, Brockton and East Bridgewater, Massachusetts (Figure 1, 2 and 4). The entire watershed is approximately 16,641 acres in area. The predominant land use in the watershed is

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Exhibit N, Part C

Exhibit N, Part C, Field Reconnaissance Observations.

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SPR1

Massachusetts DEP | Physical Characterization/Water Quality Field Data Sheet

STATION: SPR1 STREAM NAME: Salisbury Plain River RIVER MILE: _____ DATE: 6/4

RIVER BASIN: _____ STREAM CLASSIFICATION: _____ INVESTIGATORS: DH + JS

RECONN | HABITAT | INVERTEBRATE | FISH | FLOW | WQ

DESCRIBE LOCATION: _____

STREAM CHARACTERIZATION

■ Subsystem Classification
- ___ Tidal
- ✓ Lower Perennial
- ___ Upper Perennial
- ___ Intermittent

■ Stream Type
- ✓ Coldwater
- ___ Warmwater

RIPARIAN ZONE/INSTREAM FEATURES

■ Predominant Surrounding Land Use
- ✓ Forest
- ✓ Field/Pasture
- ___ Agricultural
- ✓ Residential
- ___ Commercial
- ___ Industrial
- ___ Other

■ Channelized ___ Y ✓ N

■ Dam Present ___ Y ✓ N

■ Local Water Erosion
- ___ None
- ___ Moderate
- ___ Heavy

■ Local Watershed NPS Pollution
- ___ No evidence
- ___ Some potential sources
- ✓ Obvious sources

■ High Water Mark 2.5 (ft)

■ Velocity ___ m/sec 2/11 / 25 secs

■ Estimated Stream Width ___ 25/11

■ Estimated Stream Depth
- Riffle ___ m 0.5
- Run ___ m 1
- Pool ___ m

■ Estimated Fish Reach Length ___ m

■ Canopy Cover
- ___ Partly open
- ✓ Partly shaded
- ___ Shaded

SEDIMENT/SUBSTRATE

■ Odors
- ___ Normal
- ✓ Sewage
- ___ Petroleum
- ___ Chemical
- ___ Anaerobic
- ___ None
- ___ Other

■ Oils
- ✓ Absent
- ___ Slight
- ___ Moderate
- ___ Profuse
- ___ Relict shells
- ___ Other

■ Deposits
- ___ Sludge
- ___ Sawdust
- ___ Paper fiber
- ___ Sand

■ Are the undersides of stones not deeply embedded black? ___ Y ___ N

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	Diameter	Percent Composition in Sampling Area	Substrate Type	Characteristic	Percent Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	>256mm (10 in)	10			
Cobble	64-256mm (2.5-10 in)	25			
Gravel	2-64mm (0.1-2.5 in)	30	Muck-mud	black, very fine organic (FPOM)	
Sand	0.06-2mm (gritty)	35			
Silt	0.004-0.06mm		Marl	grey, shell fragments	
Clay	<0.004mm (slick)				

WATER QUALITY

■ Temperature ___ °C
■ Specific Conductance ___
■ Dissolved Oxygen ___
■ pH ___
■ Turbidity
■ Instrument(s) Used
- Hydrolab H2O No. ___
- Hydrolab SRV3 No. ___

■ Other _____

■ Water Odors
- ___ Normal/None
- ✓ Sewage
- ___ Petroleum
- ___ Chemical
- ___ Fish
- ___ Other

■ Water Surface Oils
- ___ Slick
- ___ Sheen
- ___ Globs
- ___ Flecks
- ✓ None

■ Turbidity (if not measured)
- ___ Clear
- ___ Slightly turbid
- ___ Turbid
- ___ Opaque
- ___ Water color

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SPR2

Massachusetts DEP | Physical Characterization/Water Quality Field Data Sheet

STATION: SPR2 STREAM NAME: Sutton Brook RIVER MILE: _____ DATE: 6/7/02

RIVER BASIN: _____ STREAM CLASSIFICATION: _____ INVESTIGATORS: DH & JB

RECON | HABITAT | INVERTEBRATE | FISH | FLOW | WQ

DESCRIBE LOCATION: _____

STREAM CHARACTERIZATION

■ Subsystem Classification
- ___ Tidal
- ___ Lower Perennial
- ✓ Upper Perennial
- ___ Intermittent

■ Stream Type
- ✓ Coldwater
- ___ Warmwater

RIPARIAN ZONE/INSTREAM FEATURES

■ Predominant Surrounding Land Use
- ✓ Forest
- ✓ Field/Pasture
- ___ Agricultural
- ✓ Residential
- ✓ Commercial
- ___ Industrial
- ___ Other

■ Channelized ✓ Y ___ N
■ Dam Present ___ Y ✓ N

■ Local Water Erosion
- ___ None
- ___ Moderate
- ___ Heavy

■ Local Watershed NPS Pollution
- ___ No evidence
- ___ Some potential sources
- ✓ Obvious sources

■ High Water Mark 2 m
■ Velocity ___ m/sec 1/1 Issues

■ Estimated Stream Width: 20 m
■ Estimated Stream Depth
Riffle ___ m
Run ___ m → 1.5 ft
Pool ___ m
■ Estimated Fish Reach Length ___ m
■ Canopy Cover
- ___ Partly open
- ✓ Partly shaded
- ___ Shaded

SEDIMENT/SUBSTRATE

■ Odors
- ✓ Normal
- ___ Sewage
- ___ Petroleum
- ___ Chemical
- ___ Anaerobic
- ✓ None
- ___ Other

■ Oils
- ✓ Absent
- ___ Slight
- ___ Moderate
- ___ Profuse
- ___ Relict shells
- ___ Other

■ Deposits
- ___ Sludge
- ___ Sawdust
- ___ Paper fiber
- ___ Sand

■ Are the undersides of stones not deeply embedded black?
___ Y ___ N

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	Diameter	Percent Composition in Sampling Area	Substrate Type	Characteristic	Percent Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	>256mm (10 in)				
Cobble	64-256mm (2.5-10 in)	20			
Gravel	2-64mm (0.1-2.5 in)	20	Muck-mud	black, very fine organic (FPOM)	
Sand	0.06-2mm (gritty)	60			
Silt	0.004-0.06mm		Marl	grey, shell fragments	
Clay	<0.004mm (slick)				

WATER QUALITY

■ Temperature ___ °C
■ Specific Conductance ___
■ Dissolved Oxygen ___
■ pH ___
■ Turbidity
■ Instrument(s) Used
Hydrolab H2O No. ___
Hydrolab SRV3 No. ___
■ Other _____

■ Water Odors
- ✓ Normal/None
- ___ Sewage
- ___ Petroleum
- ___ Chemical
- ___ Fish
- ___ Other

■ Water Surface Oils
- ___ Slick
- ___ Sheen
- ___ Globs
- ___ Flecks
- ✓ None

■ Turbidity (if not measured)
- ___ Clear
- ___ Slightly turbid
- ___ Turbid
- ___ Opaque
- ___ Water color

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Massachusetts DEP | Physical Characterization/Water Quality Field Data Sheet

STATION: SP03 STREAM NAME: Salisbury Plain R. RIVER MILE: _____ DATE: 7/29

RIVER BASIN: _____ STREAM CLASSIFICATION: _____ INVESTIGATORS: DK JS

RECONN | HABITAT | INVERTEBRATE | FISH | FLOW | WQ

DESCRIBE LOCATION: Salisbury Plain R. above sewage treatment plant

STREAM CHARACTERIZATION

■ Subsystem Classification
___ Tidal
___ Lower Perennial
✓ Upper Perennial
___ Intermittent

■ Stream Type
✓ Coldwater
___ Warmwater

RIPARIAN ZONE/INSTREAM FEATURES

■ Predominant Surrounding Land Use
✓ Forest
___ Field/Pasture
___ Agricultural
___ Residential
___ Commercial
___ Industrial
___ Other

■ Channelized ___ Y ✓ N
■ Dam Present ___ Y ✓ N

■ Local Water Erosion
___ None
✓ Moderate
___ Heavy

■ Local Watershed NPS Pollution
___ No evidence
✓ Some potential sources
___ Obvious sources

■ High Water Mark ___m 4'
■ Velocity ___m/sec 3'/4"

■ Estimated Stream Width ___m 17'
■ Estimated Stream Depth
Riffle ___m 2"
Run ___m 7"
Pool ___m
■ Estimated Fish Reach Length ___m
■ Canopy Cover
___ Partly open
✓ Partly shaded
___ Shaded

SEDIMENT/SUBSTRATE

■ Odors
✓ Normal
___ Sewage
___ Petroleum
___ Chemical
___ Anaerobic
___ None
___ Other

■ Oils
✓ Absent
___ Slight
___ Moderate
___ Profuse
___ Relict shells
___ Other

■ Deposits
___ Sludge
___ Sawdust
___ Paper fiber
___ Sand

■ Are the undersides of stones not deeply embedded black?
___ Y ✓ N

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	Diameter	Percent Composition in Sampling Area	Substrate Type	Characteristic	Percent Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	
Boulder	>256mm (10 in)	5			5
Cobble	64-256mm (2.6-10 in)				
Gravel	2-64mm (0.1-2.6 in)	5	Muck-mud	black, very fine organic (FPOM)	
Sand	0.06-2mm (gritty)	20			
Silt	0.004-0.06mm	70	Marl	grey, shell fragments	
Clay	<0.004mm (slick)				

WATER QUALITY

■ Temperature ___ °C
■ Specific Conductance ___
■ Dissolved Oxygen ___
■ pH
■ Turbidity
■ Instrument(s) Used
Hydrolab H2O No. ___
Hydrolab SRV3 No. ___
■ Other _____

■ Water Odors
✓ Normal/None
___ Sewage
___ Petroleum
___ Chemical
___ Fish
___ Other

■ Water Surface Oils
___ Slick
___ Sheen
___ Globs
___ Flecks
✓ None

■ Turbidity (if not measured)
___ Clear
___ Slightly turbid
✓ Turbid
___ Opaque
___ Water color

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MR1

Massachusetts DEP | Physical Characterization/Water Quality Field Data Sheet

STATION: MR1 STREAM NAME: Mullai River RIVER MILE: _____ DATE: 6/4/02

RIVER BASIN: _____ STREAM CLASSIFICATION: _____ INVESTIGATORS: DC | JS

RECONN | HABITAT | INVERTEBRATE | FISH | FLOW | WQ

DESCRIBE LOCATION: U/S of Bridge Road (High Street)

STREAM CHARACTERIZATION

■ Subsystem Classification
- ___ Tidal
- ✓ Lower Perennial
- ___ Upper Perennial
- ___ Intermittent

■ Stream Type
- ✓ Coldwater
- ___ Warmwater

RIPARIAN ZONE/INSTREAM FEATURES

■ Predominant Surrounding Land Use
- ✓ Forest
- ___ Field/Pasture
- ✓ Agricultural
- ✓ Residential
- ___ Commercial
- ___ Industrial
- ___ Other

■ Channelized ___Y ✓N
■ Dam Present ___Y ✓N

■ Local Water Erosion
- ___ None
- ✓ Moderate
- ___ Heavy

■ Local Watershed NPS Pollution
- ___ No evidence
- ___ Some potential sources
- ✓ Obvious sources

■ High Water Mark 2 m
■ Velocity ___m/sec 4 ft/s | 2 ft

■ Estimated Stream Width ___m 35 ft
■ Estimated Stream Depth 3 ft
Riffle ___m
Run ___m
Pool ___m
■ Estimated Fish Reach Length ___m
■ Canopy Cover
- ✓ Partly open
- ___ Partly shaded
- ___ Shaded

SEDIMENT/SUBSTRATE

■ Odors
- ___ Normal
- ___ Sewage
- ___ Petroleum
- ___ Chemical
- ___ Anaerobic
- ___ None
- ___ Other

■ Oils
- ✓ Absent
- ___ Slight
- ___ Moderate
- ___ Profuse
- ___ Relict shells
- ___ Other

■ Deposits
- ___ Sludge
- ___ Sawdust
- ___ Paper fiber
- ___ Sand

■ Are the undersides of stones not deeply embedded black?
___Y ✓N

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	Diameter	Percent Composition in Sampling Area	Substrate Type	Characteristic	Percent Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	3
Boulder	>256mm (10 in)	10			
Cobble	64-256mm (2.6-10 in)	10			
Gravel	2-64mm (0.1-2.6 in)	5	Muck-mud	black, very fine organic (FPOM)	
Sand	0.06-2mm (gritty)	45			
Silt	0.004-0.06mm	30	Marl	grey, shell fragments	
Clay	<0.004mm (slick)				

WATER QUALITY

■ Temperature ___°C
■ Specific Conductance ___
■ Dissolved Oxygen ___
■ pH ___
■ Turbidity
■ Instrument(s) Used
Hydrolab H2O No. ___
Hydrolab SRV3 No. ___
■ Other _____

■ Water Odors
- ___ Normal/None
- ✓ Sewage
- ___ Petroleum
- ___ Chemical
- ___ Fish
- ___ Other

■ Water Surface Oils
- ___ Slick
- ___ Sheen
- ___ Globs
- ___ Flecks
- ✓ None

■ Turbidity (if not measured)
- ___ Clear
- ___ Slightly turbid
- ___ Turbid
- ___ Opaque
- ___ Water color

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MR2

Massachusetts DEP | Physical Characterization/Water Quality Field Data Sheet

STATION: MR2 STREAM NAME: Mallard's River RIVER MILE: _____ DATE: 8/4/02

RIVER BASIN: _____ STREAM CLASSIFICATION: _____ INVESTIGATORS: DH + JS

(RECON) | (HABITAT) | INVERTEBRATE | FISH | FLOW | WQ

DESCRIBE LOCATION: _____

STREAM CHARACTERIZATION

■ Subsystem Classification
___ Tidal
✓ Lower Perennial
___ Upper Perennial
___ Intermittent

■ Stream Type
✓ Coldwater
___ Warmwater

RIPARIAN ZONE/INSTREAM FEATURES

■ Predominant Surrounding Land Use
✓ Forest
___ Field/Pasture
___ Agriculture
✓ Residential
___ Commercial
___ Industrial
___ Other

■ Channelized ___ Y ✓ N
■ Dam Present ___ Y ✓ N

■ Local Water Erosion
___ None
✓ Moderate
___ Heavy

■ Local Watershed NPS Pollution
___ No evidence
✓ Some potential sources
___ Obvious sources

■ High Water Mark 2 m
■ Velocity ___ m/sec 3ft/2secs

■ Estimated Stream Width 35 ft
■ Estimated Stream Depth
Riffle ___ m
Run ___ m 3ft
Pool ___ m
■ Estimated Fish Reach Length ___ m
■ Canopy Cover
✓ Partly open
___ Partly shaded
___ Shaded

SEDIMENT/SUBSTRATE

■ Odors
___ Normal
___ Sewage
___ Petroleum
___ Chemical
___ Anaerobic
___ None
___ Other

■ Oils
___ Absent
___ Slight
___ Moderate
___ Profuse
___ Relict shells
___ Other

■ Deposits
___ Sludge
___ Sawdust
___ Paper fiber
___ Sand

■ Are the undersides of stones not deeply embedded black?
___ Y ___ N

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	Diameter	Percent Composition in Sampling Area	Substrate Type	Characteristic	Percent Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	
Boulder	>256mm (10 in)	20			
Cobble	64-256mm (2.6-10 in)	40			
Gravel	2-64mm (0.1-2.5 in)	10	Muck-mud	black, very fine organic (FPOM)	
Sand	0.06-2mm (gritty)	30			
Silt	0.004-0.06mm		Marl	grey, shell fragments	
Clay	<0.004mm (slick)				

WATER QUALITY

■ Temperature ___ °C
■ Specific Conductance ___
■ Dissolved Oxygen ___
■ pH
■ Turbidity
■ Instrument(s) Used
Hydrolab H2O No. ___
Hydrolab SRV3 No. ___
■ Other _____

■ Water Odors
___ Normal/None
✓ Sewage
___ Petroleum
___ Chemical
___ Fish
___ Other

■ Water Surface Oils
___ Slick
___ Sheen
___ Globs
___ Flecks
✓ None

■ Turbidity (if not measured)
___ Clear
___ Slightly turbid
___ Turbid
___ Opaque
___ Water color

Massachusetts DEP Preliminary Biological Monitoring and Assessment Protocols for Wadable Rivers and Streams

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MR3

Massachusetts DEP | Physical Characterization/Water Quality Field Data Sheet

STATION: MR3 STREAM NAME: Mattfield R. RIVER MILE: _____ DATE: 6/4/02

RIVER BASIN: _____ STREAM CLASSIFICATION: _____ INVESTIGATORS: DK / JS

RECONN | HABITAT | INVERTEBRATE | FISH | FLOW | WQ

DESCRIBE LOCATION: (1) Union St @ Mattfield R.

STREAM CHARACTERIZATION

■ Subsystem Classification
___ Tidal
___ Lower Perennial
___ Upper Perennial
___ Intermittent

■ Stream Type
___ Coldwater
___ Warmwater

RIPARIAN ZONE/INSTREAM FEATURES

■ Predominant Surrounding Land Use
✓ Forest
___ Field/Pasture
___ Agricultural
✓ Residential
___ Commercial
___ Industrial
___ Other
■ Channelized ___Y ✓N
■ Dam Present ___Y ✓N

■ Local Water Erosion
✓ None
✓ Moderate
___ Heavy
■ Local Watershed NPS Pollution
___ No evidence
___ Some potential sources
___ Obvious sources
■ High Water Mark 1.5 m
■ Velocity ___m/sec 3'/3 sec

■ Estimated Stream Width 30' m
■ Estimated Stream Depth
Riffle 4" m
Run 12" m
Pool ___m
■ Estimated Fish Reach Length ___m
■ Canopy Cover
✓ Partly open
___ Partly shaded
___ Shaded

SEDIMENT/SUBSTRATE

■ Odors
___ Normal
___ Anaerobic
✓ Sewage
___ None
___ Petroleum
___ Other
___ Chemical

■ Oils
✓ Absent
___ Slight
___ Moderate
___ Profuse
___ Relict shells
___ Other

■ Deposits
___ Sludge
___ Sawdust
___ Paper fiber
___ Sand

■ Are the undersides of stones not deeply embedded black?
___Y ✓N

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	Diameter	Percent Composition in Sampling Area	Substrate Type	Characteristic	Percent Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	~~10~~ 3
Boulder	>256mm (10 in)	20			
Cobble	64-256mm (2.5-10 in)	25			
Gravel	2-64mm (0.1-2.5 in)	25	Muck-mud	black, very fine organic (FPOM)	
Sand	0.06-2mm (gritty)	30			
Silt	0.004-0.06mm		Marl	grey, shell fragments	
Clay	<0.004mm (slick)				

WATER QUALITY

■ Temperature ___°C
■ Specific Conductance ___
■ Dissolved Oxygen ___
■ pH ___
■ Turbidity
■ Instrument(s) Used
Hydrolab H2O No. ___
Hydrolab SRV3 No ___
■ Other _____

■ Water Odors
✓ Normal/None
___ Sewage
___ Petroleum
___ Chemical
___ Fish
___ Other

■ Water Surface Oils
___ Slick
___ Sheen
___ Globs
___ Flecks
✓ None

■ Turbidity (if not measured)
___ Clear
___ Slightly turbid
___ Turbid
___ Opaque
___ Water color

Petition for Review MA Permit MA0101010

Exhibit O

Exhibit O. Written comments submitted by National Park Service on draft permit MA0101010 June 2004.

United States Department of the Interior

NATIONAL PARK SERVICE
Boston Support Office
15 State Street
Boston, Massachusetts 02109-3572

IN REPLY REFER TO:

June 18, 2004

Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Re: Brockton Advanced Water Reclamation Facility, Public Notice #MA-033-04

The National Park Service is generally supportive of the proposed permit conditions contained in draft NPDES Permit No. MA0101010, but believes that the permit could be strengthened in significant ways.

National Park Service Interest

The National Park Service is nearing the final stages of a congressionally authorized study of the Taunton River as a potential addition to the National Wild and Scenic Rivers system. Critical elements of the study include documenting the natural and cultural resource values of the Taunton River that may warrant national recognition and protection, as well as developing a river conservation plan designed to ensure long-term protection of those outstanding values.

Though not complete, our study is likely to find that the Taunton qualifies for national designation based on values that include instream recreation, fish, and biological diversity of the river and its estuary in Mt. Hope Bay.

In addition, our management planning efforts have concluded that one of the greatest threats to the long-term protection and enhancement of these values is water quality deterioration from both point and non-point sources which is exacerbated by summer low flow stress conditions on the river and its tributaries.

The Wild and Scenic Rivers Act specifies that rivers under congressionally authorized study for inclusion in the Wild and Scenic Rivers System receive the same protections as designated rivers,

Petition for Review MA Permit MA0101010

Exhibit P

Exhibit P. Letter from Robert Varney Regional Administrator, Region 1 EPA, to the Mayor of Brockton, 2004.

Honorable John T. Yunits, Jr.
Office of the Mayor
Brockton City Hall
45 School Street
Brockton, MA 02301

Dear Mayor Yunits:

I am writing in response to your January 8, 2004 letter in which you raise concerns about the pending reissuance of the City of Brockton's National Pollutant Discharge Elimination System (NPDES) permit which you have understood will propose a flow limitation of 18 million gallons per day (MGD).

By way of background, it is my understanding that EPA's Office of Environmental Stewardship has been coordinating with the City on an EPA issued administrative order sent to the City on May 30, 2003. The goal of this order and EPA's coordination with the City and Commonwealth has been to ensure that the City is on track with taking the steps, both short and long term, to upgrade its treatment plant so as to meet its current and future NPDES limits, steps that will ultimately be incorporated in a judicial decree. And, while the City's receipt of state funding is not a prerequisite to compliance, EPA has been coordinating among the parties to ensure that the City does not lose any opportunity for SRF funding.

During negotiations among EPA, the Commonwealth and the City on the order, the City's NPDES permit came up for reissuance. As you know the City's discharge into the Salisbury Plain River represents nearly the entire flow of the River under critical low flow conditions. Such conditions demand a consistently high level of treatment and cannot tolerate unabated flow increases including the significant infiltration/inflow that the City's system experiences.

After reviewing the City's Facilities Assessment Report in July 2002, which recommended an increase in flow, EPA responded on August 9, 2002, informing the City that an increase from the 18 MGD former design would be authorized only if there is "a determination that toxicity and nutrient issues can be addressed to a level that will result in full attainment of the designated uses of the receiving water." EPA's response did put the City on notice that a flow limit would be incorporated in the permit and, while not ruling a higher flow limit out of the question, noted that the City would have to justify such a higher limit.

In October 2003 the City submitted a conceptual design report which included a flow increase to 20.5 MGD by the year 2025. Apparently, because the MA DEP and MEPA did not object to the higher flow, the City assumed that the increase would be permissible. However, EPA continues to have concerns since the Salisbury Plain River does not meet all Massachusetts Class B criteria. We understand that while Brockton is the largest pollution source to the river, it is not the only contributor. These water quality concerns were expressed by watershed constituents during the MEPA process and will likely be raised again during the NPDES public comment period.

In the continued spirit of cooperation with the City, our staff met with your representatives and

staff from the Massachusetts Department of Environmental Protection (MA DEP) to discuss the flow issue. At the conclusion of the meeting, a proposal was discussed that EPA believes would allow the City to proceed with the planned improvements without jeopardizing the parties' ongoing efforts to complete both the short and long term remedial action necessary for the City to achieve compliance. Specifically, it was proposed that the reissued NPDES permit would not contain a flow limit. It will establish mass loadings based on existing conditions, prohibit any additional outside flows beyond those that the City currently is contractually obligated to accept (this will not apply to additional development within Brockton) and anticipates the City accelerating its I/I reduction program. If this arrangement meets with the City's approval, EPA is prepared to immediately redraft and public notice the permit with these conditions. Final issuance would follow shortly thereafter unless significant comment were received during the public notice period.

My staff is available to continue discussing this matter and I am confident that a resolution can be achieved so that the City can continue with the important task of upgrading its treatment plant. Please have them contact Roger Janson, Director of our NPDES program at (617)918-1621. Matters related to the on-going enforcement issues should continue to be directed to Eric Hall at (617) 918-1880 or, for legal issues, Tonia Bandrowicz at (617) 918-1734.

Sincerely,

Robert W.Varney
Regional Administrator

cc: Glenn Haas, MA DEP

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Exhibit Q

Q. Daily discharge flows from the Facility 2002 – 2003.

Brockton AWRF Effluent Flows 2002 - 2003

Date	MGD	Date	MGD	Date	MGD	Date	MGD	Date	MGD
1/1/2002	17.04	2/17/2002	17.13	4/5/2002	21.43	5/22/2002	23.86	7/8/2002	18.73
1/2/2002	16.96	2/18/2002	17.86	4/6/2002	21.25	5/23/2002	23.09	7/9/2002	17.96
1/3/2002	17.11	2/19/2002	17.31	4/7/2002	20.41	5/24/2002	22.75	7/10/2002	16.41
1/4/2002	16.42	2/20/2002	18.14	4/8/2002	20.08	5/25/2002	20.67	7/11/2002	16.49
1/5/2002	17.10	2/21/2002	18.13	4/9/2002	20.39	5/26/2002	19.18	7/12/2002	16.38
1/6/2002	17.44	2/22/2002	18.50	4/10/2002	19.18	5/27/2002	20.25	7/13/2002	16.86
1/7/2002	17.39	2/23/2002	18.34	4/11/2002	18.91	5/28/2002	20.91	7/14/2002	16.52
1/8/2002	17.32	2/24/2002	18.42	4/12/2002	19.19	5/29/2002	21.45	7/15/2002	16.66
1/9/2002	17.29	2/25/2002	18.24	4/13/2002	19.14	5/30/2002	19.37	7/16/2002	16.29
1/10/2002	16.94	2/26/2002	18.22	4/14/2002	18.66	5/31/2002	20.42	7/17/2002	15.81
1/11/2002	17.30	2/27/2002	17.96	4/15/2002	18.74	6/1/2002	22.00	7/18/2002	15.65
1/12/2002	17.03	2/28/2002	18.53	4/16/2002	18.35	6/2/2002	20.90	7/19/2002	14.89
1/13/2002	18.98	3/1/2002	17.35	4/17/2002	17.89	6/3/2002	19.18	7/20/2002	14.84
1/14/2002	16.37	3/2/2002	18.59	4/18/2002	18.16	6/4/2002	19.49	7/21/2002	15.25
1/15/2002	16.50	3/3/2002	21.32	4/19/2002	17.42	6/5/2002	20.76	7/22/2002	15.48
1/16/2002	16.66	3/4/2002	20.20	4/20/2002	17.04	6/6/2002	21.62	7/23/2002	14.95
1/17/2002	16.83	3/5/2002	19.81	4/21/2002	17.06	6/7/2002	23.53	7/24/2002	15.50
1/18/2002	17.65	3/6/2002	19.61	4/22/2002	16.36	6/8/2002	22.87	7/25/2002	12.92
1/19/2002	18.12	3/7/2002	20.14	4/23/2002	16.62	6/9/2002	23.11	7/26/2002	14.01
1/20/2002	17.68	3/8/2002	18.88	4/24/2002	16.25	6/10/2002	22.40	7/27/2002	13.43
1/21/2002	18.14	3/9/2002	19.63	4/25/2002	17.11	6/11/2002	21.55	7/28/2002	14.78
1/22/2002	17.56	3/10/2002	20.27	4/26/2002	16.76	6/12/2002	20.52	7/29/2002	15.07
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1/28/2002	17.18	3/16/2002	17.54	5/2/2002	19.45	6/18/2002	21.37	8/4/2002	14.84
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1/30/2002	17.37	3/18/2002	17.06	5/4/2002	18.74	6/20/2002	20.89	8/6/2002	14.36
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2/1/2002	16.14	3/20/2002	19.20	5/6/2002	18.99	6/22/2002	21.16	8/8/2002	13.83
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2/4/2002	17.43	3/23/2002	18.76	5/9/2002	19.85	6/25/2002	20.28	8/11/2002	14.22
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2/7/2002	17.80	3/26/2002	20.17	5/12/2002	18.52	6/28/2002	19.74	8/14/2002	13.92
2/8/2002	17.40	3/27/2002	22.93	5/13/2002	25.72	6/29/2002	19.18	8/15/2002	14.61
2/9/2002	15.52	3/28/2002	21.92	5/14/2002	26.57	6/30/2002	19.22	8/16/2002	13.88
2/10/2002	16.27	3/29/2002	22.27	5/15/2002	25.69	7/1/2002	19.86	8/17/2002	13.47
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2/12/2002	16.03	3/31/2002	21.11	5/17/2002	24.80	7/3/2002	19.57	8/19/2002	13.44
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2/15/2002	16.99	4/3/2002	22.94	5/20/2002	25.16	7/6/2002	18.75	8/22/2002	13.63
2/16/2002	17.05	4/4/2002	22.09	5/21/2002	24.76	7/7/2002	18.57	8/23/2002	12.85

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53										
54	Date	MGD	Date	MGD	Date	MGD	Date	MGD	Date	MGD
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56	8/25/2002	13.42	10/19/2002	14.39	12/13/2002	21.03	2/6/2003	17.10	4/2/2003	31.62
57	8/26/2002	13.44	10/20/2002	14.76	12/14/2002	30.99	2/7/2003	17 20	4/3/2003	29.32
58	8/27/2002	14.45	10/21/2002	14.26	12/15/2002	30.35	2/8/2003	17.26	4/4/2003	29.08
59	8/28/2002	14.27	10/22/2002	13.74	12/16/2002	29.62	2/9/2003	17.73	4/5/2003	28.52
60	8/29/2002	14.14	10/23/2002	13.82	12/17/2002	27.13	2/10/2003	16.87	4/6/2003	29 46
61	8/30/2002	13.15	10/24/2002	13.69	12/18/2002	25.71	2/11/2003	17.13	4/7/2003	28.31
62	8/31/2002	13 47	10/25/2002	13.24	12/19/2002	24.42	2/12/2003	17 20	4/8/2003	26.41
63	9/1/2002	13.32	10/26/2002	15.61	12/20/2002	27.11	2/13/2003	16.96	4/9/2003	25.50
64	9/2/2002	15.74	10/27/2002	15.46	12/21/2002	28.42	2/14/2003	17 44	4/10/2003	25.62
65	9/3/2002	14.99	10/28/2002	14.83	12/22/2002	28.27	2/15/2003	17.11	4/11/2003	34.34
66	9/4/2002	13.86	10/29/2002	14.11	12/23/2002	27.02	2/16/2003	16.32	4/12/2003	43.57
67	9/5/2002	14.09	10/30/2002	13.89	12/24/2002	25.77	2/17/2003	17.06	4/13/2003	38.76
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69	9/7/2002	13.19	11/1/2002	13.93	12/26/2002	28.40	2/19/2003	16.98	4/15/2003	33.60
70	9/8/2002	14.01	11/2/2002	13.79	12/27/2002	27.70	2/20/2003	16.98	4/16/2003	31.29
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74	9/12/2002	13.91	11/6/2002	16.58	12/31/2002	24.53	2/24/2003	23.59	4/20/2003	24 18
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76	9/14/2002	13.35	11/8/2002	14.82	1/2/2003	27.97	2/26/2003	21.21	4/22/2003	26.16
77	9/15/2002	15.25	11/9/2002	15.76	1/3/2003	29.63	2/27/2003	20.42	4/23/2003	24.35
78	9/16/2002	16.88	11/10/2002	15.39	1/4/2003	37.55	2/28/2003	19.82	4/24/2003	25.46
79	9/17/2002	15.08	11/11/2002	16.05	1/5/2003	35 17	3/1/2003	20.07	4/25/2003	23.78
80	9/18/2002	14.58	11/12/2002	18.22	1/6/2003	32.74	3/2/2003	25.53	4/26/2003	26.46
81	9/19/2002	14.87	11/13/2002	17 63	1/7/2003	29.48	3/3/2003	23.87	4/27/2003	27.39
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83	9/21/2002	14.49	11/15/2002	17.30	1/9/2003	27.45	3/5/2003	23.19	4/29/2003	25.52
84	9/22/2002	15.35	11/16/2002	20.00	1/10/2003	26.18	3/6/2003	22.59	4/30/2003	24.44
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87	9/25/2002	14 53	11/19/2002	23.31	1/13/2003	23.83	3/9/2003	25.36	5/3/2003	22.76
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89	9/27/2002	14.01	11/21/2002	21.21	1/15/2003	21.75	3/11/2003	23.97	5/5/2003	21.81
90	9/28/2002	13.98	11/22/2002	22.81	1/16/2003	21.48	3/12/2003	24.01	5/6/2003	21.29
91	9/29/2002	14.40	11/23/2002	21.66	1/17/2003	20.43	3/13/2003	22.84	5/7/2003	20.24
92	9/30/2002	13.80	11/24/2002	20.97	1/18/2003	21.53	3/14/2003	22.34	5/8/2003	19.06
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94	10/2/2002	14.24	11/26/2002	20.71	1/20/2003	20.67	3/16/2003	23.90	5/10/2003	17.94
95	10/3/2002	14.07	11/27/2002	20.57	1/21/2003	21.24	3/17/2003	24 47	5/11/2003	19.37
96	10/4/2002	13.23	11/28/2002	19.66	1/22/2003	19.91	3/18/2003	24.02	5/12/2003	19.03
97	10/5/2002	13.01	11/29/2002	19.51	1/23/2003	21.51	3/19/2003	23.76	5/13/2003	19.75
98	10/6/2002	13.50	11/30/2002	19.23	1/24/2003	18.84	3/20/2003	24.24	5/14/2003	18.31
99	10/7/2002	13.49	12/1/2002	19.01	1/25/2003	18.60	3/21/2003	26.73	5/15/2003	18.53
100	10/8/2002	12.84	12/2/2002	18.81	1/26/2003	19.02	3/22/2003	26.32	5/16/2003	16.45
101	10/9/2002	12.70	12/3/2002	18.89	1/27/2003	18.37	3/23/2003	25.68	5/17/2003	16.95
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103	10/11/2002	13.58	12/5/2002	17.76	1/29/2003	17.59	3/25/2003	22.88	5/19/2003	17.89
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107	10/15/2002	13.66	12/9/2002	17.44	2/2/2003	16.28	3/29/2003	23.81	5/23/2003	17.69
108	10/16/2002	14.89	12/10/2002	17.66	2/3/2003	17 85	3/30/2003	35.47	5/24/2003	17.86
109	10/17/2002	14.26	12/11/2002	18.49	2/4/2003	16.15	3/31/2003	38.02	5/25/2003	16.84

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110										
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114	5/28/2003	21.43	7/20/2003	16.10	9/11/2003	14.40	11/3/2003	18.67	12/26/2003	28.06
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116	5/30/2003	21.76	7/22/2003	16.53	9/13/2003	14.59	11/5/2003	18.03	12/28/2003	26.45
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118	6/1/2003	26.39	7/24/2003	16.90	9/15/2003	14.35	11/7/2003	17.23	12/30/2003	23.84
119	6/2/2003	24.66	7/25/2003	16.03	9/16/2003	14.39	11/8/2003	18.82	12/31/2003	22.68
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121	6/4/2003	23.35	7/27/2003	16.58	9/18/2003	13.73	11/10/2003	16.34		
122	6/5/2003	22.58	7/28/2003	16.03	9/19/2003	14.13	11/11/2003	16.89		
123	6/6/2003	21.89	7/29/2003	15.32	9/20/2003	14.02	11/12/2003	14.97		
124	6/7/2003	22.24	7/30/2003	15.16	9/21/2003	14.34	11/13/2003	16.48		
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133	6/16/2003	20.54	8/8/2003	27.31	9/30/2003	14.20	11/22/2003	16.99		
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144	6/27/2003	22.21	8/19/2003	18.63	10/11/2003	13.25	12/3/2003	16.09		
145	6/28/2003	21.35	8/20/2003	17.62	10/12/2003	15.22	12/4/2003	16.29		
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153	7/6/2003	16.88	8/28/2003	15.75	10/20/2003	15.33	12/12/2003	31.42		
154	7/7/2003	18.04	8/29/2003	14.92	10/21/2003	15.53	12/13/2003	27 63		
155	7/8/2003	17.65	8/30/2003	14.76	10/22/2003	15.37	12/14/2003	26.27		
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157	7/10/2003	17.53	9/1/2003	14.75	10/24/2003	17.08	12/16/2003	34.59		
158	7/11/2003	17.77	9/2/2003	15.92	10/25/2003	14.46	12/17/2003	40.65		
159	7/12/2003	17.49	9/3/2003	15.23	10/26/2003	15.10	12/18/2003	43.38		
160	7/13/2003	15.87	9/4/2003	16.40	10/27/2003	16.21	12/19/2003	36.31		
161	7/14/2003	16.71	9/5/2003	15.45	10/28/2003	17.12	12/20/2003	32.26		
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163	7/16/2003	16.77	9/7/2003	14.92	10/30/2003	18.82	12/22/2003	29.54		
164	7/17/2003	15.84	9/8/2003	15.03	10/31/2003	17.73	12/23/2003	27.67		
165										

Petition for Review MA Permit MA0101010

Exhibit R

R. Fact Sheet for Draft Permit MA0101010 May 21, 2004.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
1 CONGRESS STREET - SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

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

NPDES PERMIT NO.: **MA0101010**

PUBLIC NOTICE DATE: May 21, 2004

NAME AND ADDRESS OF APPLICANT:

City of Brockton
City Hall
45 School Street
Brockton, MA 02301

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Brockton Advanced Water Reclamation Facility
303 Oak Hill Way
Brockton, Massachusetts 02401

NAME AND ADDRESS OF CO-PERMITTEES

Town of Abington
Sewer Department
350 Summer Street
Abington, MA 02351

Town of Whitman
Department of Public Works
100 Essex Street
P.O. Box 454
Whitman, MA 02382

RECEIVING WATER: **Taunton River Watershed (MA62)**
Salisbury Plain River

CLASSIFICATION: **Class B**

I. Proposed Action, Type of Facility and Discharge Location

The above named applicant has requested that the U.S. Environmental Protection Agency reissue its NPDES permit to discharge into the designated receiving waters, the Salisbury Plain River. The facility is an advanced wastewater treatment facility engaged in the collection and treatment of domestic and industrial wastewater. Two co-permittees, the Towns of Abington and Whitman discharge wastewater to the treatment plant owned and operated by the applicant. The draft permit establishes requirements for

h = Hardness = 50 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor (CF is used to convert total recoverable to dissolved metal)

Chronic Criteria (dissolved) = $\exp\{m_c[\ln(\text{hardness})] + b_c\}$ (CF)

Where: m_c = pollutant-specific coefficient
b_c = pollutant-specific coefficient
h = Hardness = 50 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor (CF is used to convert total recoverable to dissolved metal)

Calculation of acute limit for copper :

$m_a = 0.9422$ $b_a = -1.7$ CF = 0.96

Acute criteria (dissolved) = $\exp\{0.9422[\ln(50)] - 1.7\}$ (.96) = 6.99 ug/l
Acute criteria (Total) = $\exp\{0.9422[\ln(50)] - 1.7\}$ = 7.29

Dilution Factor = 1.02

Effluent Limitation: = 1.02 x 6.99 ug/l = 7.13 ug/l (dissolved)
Total Recoverable = 7.13 / CF = 7.13 / 0.96 = 7.43 ug/l *

The acute (maximum daily), water quality based limitation for Total Recoverable Copper is 7.4 ug/l.

Calculation of chronic limit for copper :

$m_c = 0.8545$ $b_c = -1.7$ CF = 0.96

Chronic criteria (dissolved) = $\exp\{0.8545[\ln(50)] - 1.7\}$ (.96) = 4.96 ug/l
Chronic criteria (Total) = $\exp\{0.8545[\ln(50)] - 1.7\}$ = 5.17

Dilution Factor = 1.02

Effluent Limitation: = 1.02 x 4.96 ug/l = 5.06 ug/l (dissolved)
Total Recoverable = 5.06 / CF = 5.06 / 0.96 = 5.27 ug/l *

The chronic (monthly average), water quality based limitation for Total Recoverable Copper is 5.3 ug/l.

* Inverse conversion factor is used to determine total recoverable metal. EPA Metals Translator : Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA- 823-B-96-007) is used as the basis for using the criteria conversion factor. National guidance requires that permit limits be based on total recoverable metals and not dissolved metals. Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from a dissolved criteria. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in

the receiving water, a default assumption that the translator is equivalent to the criteria conversion factor is used in accordance with the Translator Guidance.

Whole Effluent Toxicity Tests

National studies conducted by the EPA have demonstrated that industrial and domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. Based on the potential for toxicity from domestic and industrial contributions, the state water quality criterion, the level of dilution at the discharge location and in accordance with EPA national and regional policy and 40 C.F.R.122.44(d), the draft permit includes a whole effluent acute toxicity limitation (LC50) and acute biomonitoring requirements. (See "Policy for the Development of Water Quality Based Permit Limitations for Toxic Pollutants", 50 Federal Register 30748, July 24, 1985, and EPA's Technical Support Document for Water Quality Based Toxics Control", September, 1985 and the "Implementation Policy for the Control of Toxic pollutants in Surface Waters", February 23, 1990.)

Pursuant to EPA Region I policy, a discharge having a dilution ratio less than 10 to 1 requires chronic and modified acute toxicity testing at least 4 times per year. An additional two toxicity tests are required when the treatment plant total daily flow exceeds 30 mgd. These two test may be conducted during any month of the year.

The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is measured by toxicity testing including any synergistics effects of pollutants; and (3) pollutants for which there are inadequate analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants

Therefore, based on the potential for toxicity from domestic contributions, the potential for toxicity resulting from industrial contributions, as discussed in the section of the fact sheet addressing pretreatment, the available dilution at the discharge location, water quality standards and in accordance with EPA regulation and policy, the draft permit includes chronic and acute effluent toxicity limitations and monitoring requirements. (See EPA's Technical Support Document for Water Quality-Based Toxics Control, EPA/505/2-90-01).

The Chronic-No Observed Effect Concentration (C-NOEC) limitation in the draft permit prohibits chronic adverse effects (e.g. on survival, growth, and reproduction), when aquatic organisms are exposed to the POTW discharges at the calculated available dilution. The chronic (C-NOEC) whole effluent toxicity limits of I.A.1 was calculated using the in-stream waste concentration ("IWC") of the WTP effluent:

IWC = 1/1.02 x 100 % = 98%

The LC50 limitation prohibits acute effects (lethality to more that 50% of the test organisms when exposed undiluted (100% of effluent) to POTW effluent for a period of time.

Pretreatment Program

The permittee is required to administer a pretreatment program based on the authority granted under 40 CFR § 403 and section 307 of the Clean Water Act. Brockton's pretreatment program received EPA approval on September 28, 1990 and, as a result, appropriate pretreatment program requirements were

incorporated into the previous permit commensurate with that approval and Federal Pretreatment Regulations in effect when the permit was issued.

Since issuance of the previous permit Federal Pretreatment Regulations in 40 CFR §403 were amended in October 1988 and, again in July 1990. Those amendments established new requirements for implementation of pretreatment programs. By reissuing this NPDES permit, the permittee is obligated to modify its pretreatment program to be consistent with current Federal Regulations. Those activities that the permittee must address include, but are not limited to, the following: (1) evaluating local limits; (2) revise its local sewer-user ordinance, as appropriate, to be consistent with Federal Regulations; (3) revise an enforcement response plan: (4) implement a slug control evaluation program; (5) track significant noncompliance for industrial users; and (6) adopt a definition of significant industrial user.

These requirements are necessary to ensure continued compliance with the POTW's permit and its sludge use or disposal practices.

The draft permit requires the permittee to provide EPA in writing within 180 days of the permit's effective date a: (1) technical report analyzing their need to revise local limits; and (2) description of proposed changes to permittee's pretreatment program deemed necessary to assure conformity with current Federal Pretreatment Regulations. These requirements may be new to this draft permit and are commensurate with current EPA New England, pretreatment policy. In addition, the permittee must continue to submit, annually on March 1, a pretreatment report detailing the activities of the program for the twelve month period, 60 days prior to the due date.

Based on the potential for toxicity as a result of industrial discharges to the POTW, and as discussed subsequently, the draft permit includes effluent toxicity limitations and requires the performance of effluent toxicity tests. These tests will assist in assessing the effectiveness of the permittee's pretreatment program and also may be used as a basis for development of or revision of specific numeral pretreatment limits.

Operation and Maintenance of the Sewer System

The City of Brockton, the Towns of Abington and, Whitman each own and operate a portion of the sewer collection system that transports sewage to the wastewater treatment plant where it is treated at the facility. The draft permit therefore includes the Towns of Abington and Whitman as co-permittees for the operation and maintenance of each Towns separate sewer systems. Specifically, the City of Brockton and the two Towns are each required to comply with Part I.C. Unauthorized Discharges, Part I.D. Operation and Maintenance of the Sewer System and, Part I.E. Alternate Power Source of the draft permit for the portions of the collection system it owns and operates.

Inflow/Infiltration Requirements

The draft permit includes requirements for the permittee and co-permittees to control infiltration and inflow (I/I). I/I is extraneous water entering the wastewater collection system through a variety of sources. The permittee and co-permittees shall develop an I/I removal program commensurate with the severity of the I/I in the collection system. In sections of the collection system that have minimal I/I, the control program will logically be scaled down.

Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems.

Chlorine calculation:
Acute chlorine water quality criteria is 19 ug/l.
Chronic chlorine water quality criteria is 11 ug/l.
Design flow dilution factor is 1.02

Average Monthly Total Residual Chlorine Limit = 1.02 x 0.011 mg/l = 0.011 mg/l = 11.22 ug/l

Maximum Daily Total Residual Chlorine Limit = 1.02 x 0.019 mg/l = 0.019 mg/l = 19.38 ug/l

Metals
Certain metals in water can be toxic to aquatic life. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation of the reasonable potential of toxicity on the concentration of metals in the effluent shows there is a reasonable potential of toxicity for copper.

EPA is required to limit any pollutant or pollutant parameter that is or may be discharged at a level that caused, has reasonable potential to cause, or contributes to an excursion above any water quality criterion.

Calculation of reasonable potential for copper:
The copper limits are based on a hardness of the receiving water recorded in the recent toxicity tests and, the National recommended Water Quality Criteria. See Federal Register, December 10, 1998.

Allowable Receiving Water Concentration, C = Criteria (Total Recoverable) x Dilution Factor

Copper:	Acute	C = 7.29 ug/l x 1.02 = 7.44 ug/l which is less than 9.7 ug/l in the effluent concentration of copper averaged from January 2002 to June 2003 as recorded on the discharge monitoring reports. There is a reasonable potential that copper being discharged in the effluent will exceed the water quality criteria.
	Chronic	C = 5.17 ug/l x 1.02 = 5.27 ug/l which is less than 9.7 ug/l in the effluent concentration of copper averaged from January 2002 to June 2003 as recorded on the discharge monitoring reports There is a reasonable potential that copper being discharged in the effluent will exceed the water quality criteria.

Water Quality Criteria for hardness-dependent metals:

Where: m_a = pollutant-specific coefficient
b_a = pollutant-specific coefficient
h = Hardness = 50 mg/l as $CaCO_3$
ln = natural logarithm
CF = pollutant-specific conversion factor (CF is used to convert total recoverable to dissolved metal)

Chronic Criteria (dissolved) = $\exp\{m_a[\ln(\text{hardness})] + b_a\}$ (CF)

here: m_a = pollutant-specific coefficient
b_a = pollutant-specific coefficient

FIGURE 1

City of Brockton, Massach
Wastewater Treatment

Fi
Site Detail

Phosphorus, lbs/day
(May 1 through October 31) 46.9 - 336

Copper, ug/l 0 - 47.5

Whole Effluent Toxicity Test

	Acute Toxicity		Chronic Toxicity			
	LC-50	A-NOEC	C-NOEC Survival	LOEC Survival	C-NOEC Reproduction	LOEC Reproduction
5/13/2003	>100.0%	100.0%	100.0%	>100.0%	50.0%	98.0%
2/11/2003	>100.0%	100.0%	100.0%	>100.0%	100.0%	100.0%
3/5/2002	>100.0%	100.0%	>100.0%	>100.0%	100.0%	100.0%

Table 1
Brockton Advanced Water Reclamation Facility
NPDES MA0101010
Discharge Monitoring Data Summary

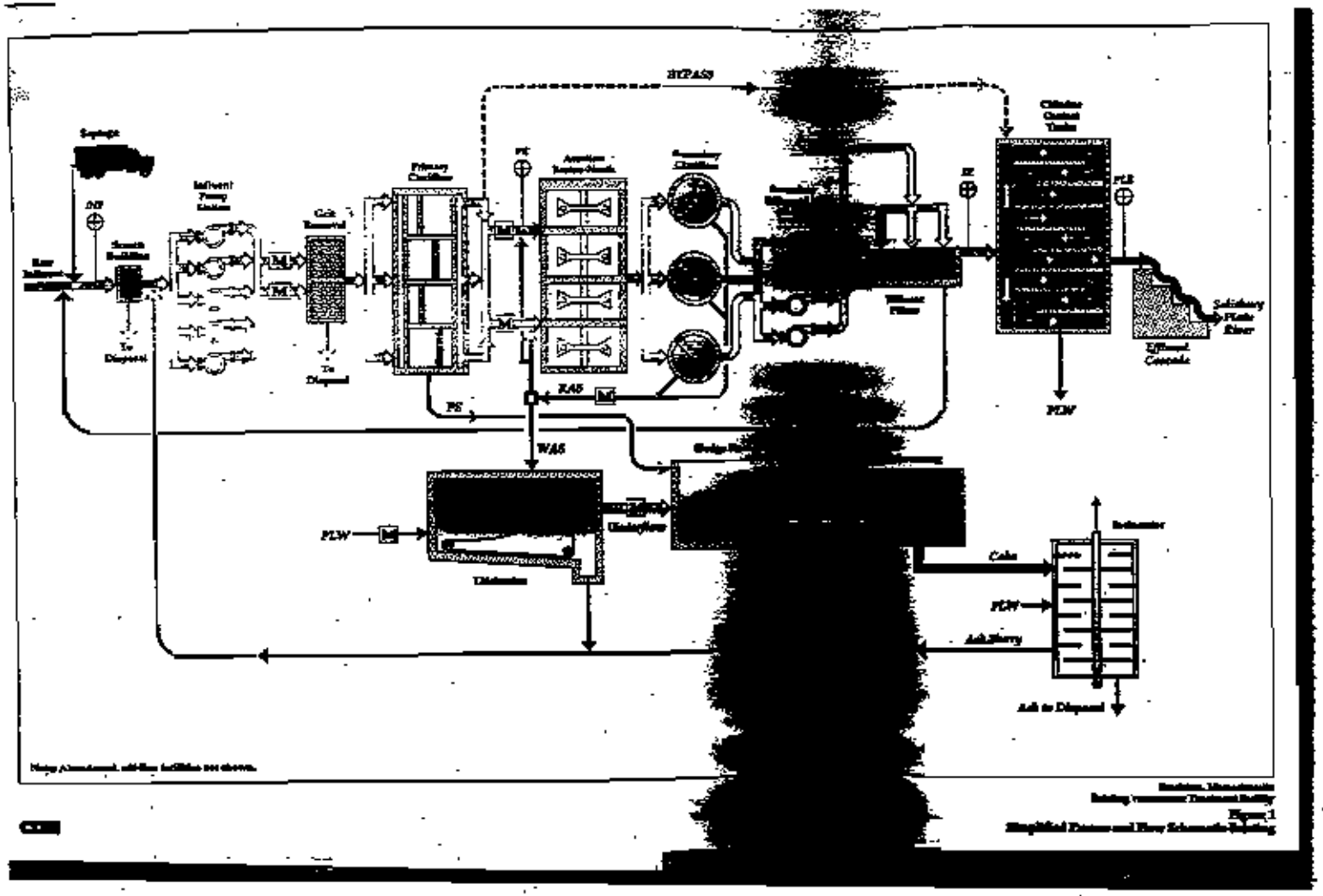
Range between May 2001 and June 2003

Flow, MGD	14.9 - 29.5
Average monthly $CBOD_5$, mg/l	
(May 1 through October 31)	1 - 10
(November 1 through April 30)	6 - 19
Average monthly $CBOD_5$, lbs/day	
(May 1 through October 31)	255 - 2094
(November 1 through April 30)	554 - 2983
TSS, average monthly, mg/l	
(May 1 through October 31)	1 - 29
(November 1 through April 30)	9- 31
TSS, average monthly, lbs/day	
(May 1 through October 31)	164 - 5993
(November 1 through April 30)	1286 - 8086
pH, S.U	6.2 - 8.7
Dissolved Oxygen, mg/l	6.0 - 8.1
Fecal coliform, average monthly cfu's	2.0 - 669
Total Residual Chlorine, average monthly, mg/l	0 - 0.192
NH_3-N, average monthly, mg/l	
(June 1 through October 31)	0.94 - 9.5
(November 1 through November 30)	3.10 - 10.2
(December 1 through April 30)	2.92 - 13.3
(May 1 through May 31)	6.2 - 8.3
NH_3-N, average monthly, lbs/day	
(June 1 through October 31)	114 - 1749
Phosphorus, mg/l	
(May 1 through October 31)	0.3 -1.7

Table1
Brockton WWTP
NPDES Permit # MA0101010
Discharge Monitoring Data

DATE	FLOW MGD Mo. Ave	FLOW MGD Daily Max	DO mg/l Mo. Ave	BOD lbs/day Effluent Mo. Ave	BOD lbs/day Effluent Daily Max	BOD mg/l Effluent Mo. Ave	BOD mg/l Effluent Daily Max
January 2002	18.5	19.8	7.7	1701	2573	11	17
February 2002	18.6	19.3	8.1	1642	2995	11	19
March 2002	21	24	6.3	3193	7913	19	44
April 2002	20.6	27.3					
May 2002	23.4	30.6	6.7	3293	13270	16	52
June 2002	22.5	25	6.0	2042	8031	11	42
July 2002	17.5	20.9	6.4	654	1651	4	10
August 2002	14.9	16.7	6.2	397	530	3	4
September 2002	15.6	18.0	6.6	393	605	2	6
October 2002	15.0	16.9	6.9	345	706	3	5
November 2002	19.8	28.4	7.0	1100	2134	7	11
December 2002	24.8	31.8	7.6	2953	7637	14	34
January 2003	25.2	39.2	7.3	4976	21269	21	66
February 2003	20.0	26.4	8.1	1573	4847	9	22
March 2003	25.2	38.8	7.8	3412	15515	15	48
April 2003	29.5	44.4	7.5	6402	16493	25	52
May 2003	20.2	24.5	7.3	2055	4152	12	22
June 2003	22.1	27.5	7.0	2915	5943	16	27

FIGURE 2



Brockton WWTP
NPDES Permit # MA0101010
Discharge Monitoring Data

DATE	Total P lbs/day Mo Ave	Total P lbs/day Daily Max	Total P mg/l Mo Ave	Total P mg/l Weekly Ave	Total P mg/l Daily Max	BOD Percent Removal Mo. ave	TSS Percent Removal Monthly ave.
January 2002						95	90
February 2002						95	90
March 2002						90	90
April 2002						93	80
May 2002	336	920	1.7	3.0	5.2	90	83
June 2002	106	189	0.6	0.9	1.0	94	90
July 2002	46.9	60.9	0.3	0.4	0.4	98	99
August 2002	67	76	0.55	0.63	0.65	99	98
September 2002	104	134	0.79	0.93	0.95	99	98
October 2002	95	127	0.77	0.98	1.09	99	99
November 2002						96	97
December 2002						92	87
January 2003						86	82
February 2003						95	94
March 2003						89	82
April 2003						80	77
May 2003	137	321	0.8	1.3	1.7	93	94
June 2003	108	170	0.55	0.75	0.75	89	94

Brockton WWTP
NPDES Permit # MA0101010
Discharge Monitoring Data

DATE	pH su Minimum	pH su Max.	TSS lbs/day Effluent Mo. Ave	TSS lbs/day Effluent Daily Max	TSS mg/l Effluent Mo. Ave	TSS mg/l Effluent Daily Max	Fecal Coli. MPN/100ml Mo. Geo Ave	Fecal Coli. MPN/100ml Max
January 2002	6.9	6.9	1941	2383	13	16		
February 2002	6.9	6.9	1956	4414	13	28		
March 2002	6.7	6.7	1884	2752	11	17		
April 2002	6.8	6.8	3798	26382	23	163	61	4640
May 2002	6.6	6.6	5993	26285	29	103	250	2467
June 2002	6.6	6.6	3435	24877	18	127	265	6333
July 2002	6.6	6.6	316	753	2	6	15	50
August 2002	6.5	6.5	352	701	3	6	10	40
September 2002	6.4	6.4	352	655	2	5	14	373
October 2002	6.5	6.5	266	424	2	3	6	255
November 2002	6.5	6.5	610	1660	4	7		
December 2002	6.3	6.3	2604	5450	11	21		
January 2003	6.4	6.4	3805	12761	17	39		
February 2003	6.8	6.8	1291	5067	7	23		
March 2003	6.6	6.6	5939	66744	24	221		
April 2003	6.6	6.6	8086	29597	31	221	669	27700
May 2003	6.8	6.8	1831	3020	11	16	93	930
June 2003	6.7	6.7	1853	3962	10	18	13	2100