CONNECTICUT METHODOLOGY FOR FRESHWATER NUTRIENT MANAGEMENT TECHNICAL SUPPORT DOCUMENT

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INTRODUCTION

Nutrients are an essential component of plant and animal nutrition and are naturally occurring in aquatic systems. However, excessive inputs of nutrients from human sources can disrupt the balance in aquatic systems resulting in anthropogenic enrichment (Figure 1) which can effect recreational and aquatic life uses. Anthropogenic enrichment, as defined in this document, is the 'unnatural' alteration of aquatic systems due to excess nutrient input from humans.

Excessive nutrient enrichment of surface waters is a widespread issue throughout the United States and the world. Connecticut has identified 21freshwater waterbodies on the 2008 Impaired Waters List (CT DEP 2008) for Nutrient/Eutrophication Biological Indicators (Figure 2). These waters were assessed as impaired based on citizen complaints or other anecdotal evidence that nutrient enrichment, or the threat of nutrient enrichment resulting from the rate of development in the watershed, threaten or impair maintenance of aquatic life support or recreational designated uses. As a result of the high percentage of waterbodies listed for nutrient-related impairments in the U.S. according to section 303(d) of the Clean Water Act, the U.S. EPA has targeted nutrient pollution reduction a priority and have encouraged states to adopt numeric nutrient criteria into their Water Quality Standards (Grubbs 2001, Grumbles 2007).

Connecticut's *Water Quality Standards* (CT DEP 2002) do not include numeric criteria for nutrients but rather incorporate narrative policy statements that are applicable to nutrient management. This document presents a scientifically defensible approach to providing a numeric interpretation of Connecticut's current narrative policy statements. This approach adopts a precautionary guided methodology that focuses on mitigating anthropogenic enrichment by providing a site specific target nutrient load that directs implementation.

BACKGROUND AND OBJECTIVES

Phosphorus is the primary limiting nutrient in freshwater systems (Correll 1998, Schindler et al. 2008) and is therefore the current focus for freshwater nutrient criteria development in Connecticut. Excess phosphorus from anthropogenic sources alters plant communities by increasing the growth of plants, encouraging dominance by plant species that are more adaptable to higher nutrient levels, as well as interfering with seed germination and seedling growth by encouraging algal growth which reduces the light to plant leaves and stems and reducing root depth making plants more susceptible to being washed downstream during high flow events

(Mainstone and Parr 2002). The alteration of plant communities in turn alters the composition of other aquatic life communities such as benthic invertebrates and fish that rely on aquatic plant communities for food and habitat.

Phosphorus differs from most other pollutants because there is no threshold concentration that separates aquatic life use or recreational impairment from the natural diversity continuum (Figure 3). This is due to the fact that phosphorus is naturally occurring and highly variable in aquatic systems due to site specific factors. A study conducted on least disturbed streams in CT showed natural variability in phosphorus concentrations within and between streams under low flow conditions (Figure 4) (Bellucci et al. 2009). Median values ranged from 0.004 mg/L to 0.0255 mg/L. Naturally occurring phosphorus produces varying conditions within streams ranging from minimally enriched waters to highly enriched waters. This makes it difficult to establish a scientifically defensible single numeric criterion that is protective of all uses and allows for expression of the natural diversity continuum. The current approach entails shifting the current condition towards a 'pre-colonial' condition, while recognizing that humans are part of the environment (Figures 5 &6). Application of a single numeric criterion could result in a misrepresentation of natural enrichment conditions creating inappropriate targets for nutrient reductions and allowing for significant increases in loadings to minimally enriched water resources before exceeding criteria and triggering management action (Figure 7). In order to define statewide nutrient goals for total phosphorus that are fully protective of uses the approach must account for all excess input of phosphorus to waterbodies. The objective of this approach is to maintain the natural variability of enrichment conditions in CT waters by striving to achieve the best attainable condition.

The best attainable condition is defined as the expected ecological condition provided best management practices are in place for some period of time (Stoddard et al. 2006). This approach is similar in concept to Tiered Aquatic Life (U.S. EPA 2005) in that it is setting realistic numeric management goals for a waterbody that achieve the best possible conditions given today's state of the landscape and resources available. Figure 8 shows the nutrient enrichment gradient demonstrating the result of achieving the BAC through nutrient management. It is conceptually based on the biological condition gradient, which is the foundation of Tiered Aquatic Life (Davies and Jackson 2006). BAC ranges from enrichment levels under a minimally disturbed condition (streams in the absence or very little human disturbance) to least disturbed conditions (the best available enrichment conditions given today's state of the landscape). The BAC is a changing condition that reflects use of the best management practices available at the time to achieve enrichment conditions under normal uses of the land. This is consistent with Connecticut's narrative policies, as discussed in the *Policy Support Document for Phosphorus Criteria* (PSD) (Dunbar and Becker 2008).

METHODOLOGY

Expected conditions are based on the probability of excess phosphorus export from the upstream drainage basin. The expected conditions are defined for the land cover export in the upstream drainage basin. Several studies show a highly significant relationship between nutrient loads and watershed land cover composition (Omernik 1977, Reckhow et al. 1980, Frink 1991). These studies document a distinct difference in the mass of nutrients exported based on dominant land

cover indicating that land cover composition is a good predictor of excess nutrient export risk (Wickham et al. 2003). Connecticut data supports differences in phosphorus export from land uses categories (Figure 9). Figure 9 represents total in-stream phosphorus concentrations samples taken at sites with dominant land cover categories in upstream drainage basin described in Table 1 under varying flow conditions.

NUTRIENT EXPORT ATTRIBUTE	LAND COVER CRITERIA	OTHER LAND COVER CRITERIA
Agriculture	Upstream Drainage Area Contains Greater than 25%	Less than or equal to 15 % Urban, No US WWTPs
Forest	Upstream Drainage Area Contains Greater than or equal to 80 % Forest	No US WWTPs
Urban	Upstream Drainage Area Contains Greater than 25 % Urban,	Less than or equal to 15 % Agriculture, No US WWTPs
Waste Water Treatment Plant	Upstream Drainage Area Contains WWTP	

Table 1: Land Cover Category Classifications Based on (Wickham et al. 2000).

Land cover export composition is grouped in four general categories for this analysis: urban, agriculture, forested and waste water treatment plants (WWTPs). These groups represent significant areas for nutrient management. Water and wetland land cover is included in the forest category because wetlands function like forests by filtering nutrient loads to surrounding stream (Preston and Bedford 1988). Urbanized areas contribute larger quantities of sediment that may be of different composition that the 'natural' underlying sediment in the stream. The sediment deposited from urbanized areas acts as a transport mechanism for nutrients in streams. Urban areas have higher peak flows and lower base flows during the growing season, which also impact sediment and nutrient transport. Crop fertilizer and animal waste from agricultural lands contribute phosphorus to streams during runoff events. Forested areas contribute phosphorus from natural sources such as mineral decomposition and decomposing plant and animal matter. WWTP effluent is a significant component of anthropogenic phosphorus export to streams because it is a concentrated point source. WWTPs contribute approximately 65% of the total phosphorus load to freshwaters in CT. The median in-stream phosphorus concentration is 30 – 80% higher in drainage basins that contain WWTP discharges than drainage basins with other dominant land cover and without WWTP discharges (Figure 9). WWTPs have a great potential to alter the phosphorus balance in a stream because the discharge is often at minimum dilution during the growing season when phosphorus is more likely to be taken up and retained in sediment and biota. Phosphorus exported from WWTPs also tends to be in a highly bioavailable form that can be immediately used by some biota increasing the potential for amplified plant growth within a stream resulting in an altered community (Mainstone and Parr 2002). The level of alteration is dependent on a variety of other habitat factors, such as the level of sediment build up in the stream, impoundments downstream, the amount of canopy cover and surrounding land use.

The land cover definitions in Table 1 were based on the findings of Wickham, 2000 which indicated that there is only a one out of ten chance of exceeding the maximum value for a totally forested condition when nonforest land cover is between 15 and 25 percent. Land cover categories were condensed using the 2002 UCONN Clear Land Use dataset (Version 1) (UCONN CLEAR 2003) and DEP coverage of sewage treatment plants. The eleven 2002 UCONN Clear Land Use categories were condensed into the three land cover groups (Table 2). Land cover grids of the three groups were developed for use in ESRI ArcGIS 9.2 for the analysis.

NUTRIENT EXPORT ATTRIBUTE	GIS DATASET USED TO DEFINE LAND COVER CATEGORY
Agriculture	UCONN Clear 2002 Data Category Other Grasses & Agriculture
Forest	UCONN Clear 2002 Data Categories Deciduous Forest, Coniferous Forest, Water, Non-forested Wetland, Forested Wetland, Tidal wetland, and Utility
Urban	UCONN Clear 2002 Data Categories Developed, Turf & Grass, and Barren
Waste Water Treatment Plant	CT DEP point coverage of waste water treatment plant locations

Table 2: Datasets used to define Land Cover Classifications.

Waterbodies are classified based on their upstream land use composition. Therefore, any particular waterbody is not statically classified, but rather may differ at various points in the watershed based on propotional differences in land use composition in the upstream drainage. As the ratios of different types of land use change the overall risk of excess nutrient export changes (Wickham et al. 2003).

The BAC is calculated by summing the total export under the assumption of conditions with all best management practices (BMPs) in place. The analysis also assumes that currently no BMPs are in place and that BMPs are needed to achieve the BAC. The BAC targets the critical 'growing' season (April through October) when phosphorus is more likely to be taken up by sediment and biomass because of low flow and warmer conditions. During winter months aquatic plants are dormant and flows are higher providing constant flushing of phosphorus through aquatic systems with a less likely chance that it will settle out into the sediment. Limiting the phosphorus export from WWTP effluent (House and Denison 1997, Neal et al. 2000) and land cover offers a targeted management strategy for achieving the best attainable condition within a stream. The export of some phosphorus from WWTPs and other land sources is considered normal use of the land recognizing that humans are part of the environment. The use of BMPs at WWTPs to limit the amount of phosphorus exported in combination with land cover BMPs results in achieving the BAC within a stream.

URBAN, FOREST AND AGRICULTURE BMP EXPORT

Urban, forest and agricultural phosphorus export is prominent during runoff conditions and therefore those conditions were targeted in the analysis. CT DEP Monitoring and Assessment

program and U.S. Geological Survey (USGS) NWIS program average daily total phosphorus and flow discharge data were used to calculate an estimated current phosphorus export from land cover groupings. Four samples taken during the target 'growing season' (April through October) from 1985 – 2007 under varying flow conditions at a site were considered as the minimum data necessary to perform this analysis. The ArcHydro extension for ArcGIS was used to delineate the upstream drainage basin from each sampling site. The land cover grids described above were used in conjunction with the ArcHydro extension for ArcGIS to calculate the percent land cover group for each drainage basin (Figure 10). Those meeting the urban, forest, or agriculture conditions in table 1 were used in the analysis and are displayed in table 3. One site was excluded from the analysis (Clear Brook Near Collinsville) because it had a very small surface drainage basin (0.56 sq. mi.) and is fed primarily by a larger groundwater drainage basin.

Station #	Name	Drainage Area (sq mi)	Percent Forest	Percent Urban	Percent Agriculture	# of Samples	Land Cover Group
1208990	Saugatuck R Nr Redding	20.69	80 %	14 %	6 %	110	Forest
1748	Pendleton Hill Brook	4.01	86 %	5 %	9 %	15	Forest
1120800	Natchaug R At Chaplin	73.10	84 %	7 %	9 %	5	Forest
1208873	Rooster R At Fairfield	10.71	12 %	87 %	1 %	23	Urban
923	Mill River	22.02	60 %	32 %	8 %	4	Urban
1192704	Mattabesset R At Route 37	46.87	45 %	44 %	11 %	36	Urban
1208950	Sasco B Nr Southport	7.38	46 %	39 %	15 %	40	Urban
1184490	Broad B At Broad Brook	15.56	41%	15%	44%	91	Agriculture
1184100	Stony Brook Nr W Suffield	10.53	55%	12%	32%	21	Agriculture

Table 3: Sample Sites Used to Develop Land Cover Export Estimates.

The daily phosphorus yield was calculated for each sample in lbs/acre/day. The logarithm of the daily yield of each sample was plotted against the percent storm change for that day within each land cover grouping. A logarithmic transformation of yield was used to better equalize the variance in the data. The percent storm change is a measure of the percent of the total flow that is attributed to surface runoff. The amount of surface runoff for a particular day is calculated using the hydrograph separation sliding interval method (Sloto and Crose 1996). The method separates the discharge flow attributed to the surface runoff by taking the lowest discharge within a drainage area dependent time interval minus 1 day before and after the day being considered and assigns it to that day as displayed in Figure 11. This was calculated using a spreadsheet model developed by (Cleland 2003).

Forest export was modeled across percent storm change conditions using all samples collected at the forested condition stations (Figure 12). Urban phosphorus export was estimated by modeling the amount of export specifically in the urbanized areas of the urban basins in table 3. This was done by first calculating the portion of drainage area attributed to urbanized area. The remaining portion was assumed to be attributed to forested area. The phosphorus yield for the forested area

portion was estimated using the forest export model and then subtracted from the total sample yield to obtain the daily yield attributed only to urban land cover for each sample. These daily values were then modeled across percent storm change conditions (Figure 13). The same process was conducted to model phosphorus export from agricultural land cover (Figure 14).

The average export coefficients for each land cover under a typical runoff condition were used to estimate current total phosphorus export loads for a drainage basin. A typical runoff condition was estimated at a 20% storm change condition by calculating the average percent storm change after a quarter inch storm. The total phosphorous load from land cover not containing WWTPs after (Reckhow et al. 1980) is:

$$\textbf{Estimated Land Cover P Load} = \sum_{i=1}^{n} A_i c_i$$

Where A is the area for land cover $_i$ and c is the export coefficient at a 20% storm change condition for land cover i. Multiplying the area by the export coefficient and summing all three land cover export estimates equals an estimated seasonal daily average (lbs/day) for the drainage basin as a whole. Estimated daily loads for each drainage basin studied were compared with loads calculated using collected data (Table 4)

Station #	Station Name	Drainage Area (Sq. Mi.)	%Urban	%Forest	%Ag	Estimated Export Coefficient Load (lbs/day)	Actual Total Load (lbs/day)
1608	MIRY BROOK AT YE OLDE RD	3.85	23.37%	68.29%	8.34%	0.83	1.19
1192704	MATTABESSET RIVER AT ROUTE 372 AT EAST BERLIN	46.9	44.11%	44.82%	11.07%	13.69	8.64
1184490	BROAD BROOK AT BROAD BROOK, CT.	15.6	12.09%	41.31%	46.60%	10.12	12.72
1188000	BUNNELL (BURLINGTON) BR NR BURLINGTON, CT	4.2	17.12%	67.45%	15.43%	1.21	1.21
1184100	STONY BROOK NEAR WEST SUFFIELD, CT.	10.5	10.37%	55.03%	34.60%	5.30	4.81
1208990	SAUGATUCK RIVER NEAR REDDING, CT.	20.69	13.86%	79.62%	6.51%	3.59	3.31
1748	PENDELTON HILL BROOK	4.01	5.31%	86.22%	8.46%	0.72	0.29
1193500	SALMON RIVER NEAR EAST HAMPTON	100.63	15.49%	72.77%	11.74%	24.13	15.39

Table 4: Estimated Loads Using Land Cover Export Coefficients (lbs/day) Compared to Actual Loads Using Collected Seasonal Data (lbs/day)

A BMP percent reduction of 60% was applied to urban and agricultural land cover export coefficients to obtain a BMP export coefficient (Table 5). 60% was chosen as an aggressive consistently achievable reduction after review of BMP studies conducted in areas with similar climates to CT (Artuso et al. 1996, Tetra Tech Inc. 2008). A BMP percent reduction is not assigned to the forested condition because it is assumed that forested areas are minimally

influenced by humans, and therefore do not contribute excess phosphorus to waterbodies. However it is expected that forested conditions will be maintained and will not contribute excess phosphorus in the future. The BMP Land Cover Load is calculated using the following equation:

$$\textbf{BMP Land Cover P Load} = \sum_{i=1}^{n} A_i BMPc_i$$

where A is the area for land cover $_i$ and BMPc is the BMP export coefficient at land cover $_i$. Multiplying the BMP land cover export coefficients by the area and summing all together yields the total BAC land cover phosphorus export load for a drainage basin.

Export Coefficient	Average Export Coefficient(lbs/acre/day)	BMP Percent Reduction Used for Current Analysis	Average BMP Export Coefficient (lbs/acre/day)
Urban	$4.33*10^{-4}$	60%	$1.73*10^{-4}$
Forest	$1.04*10^{-4}$	0%	$1.04*10^{-4}$
Agriculture	$19.75*10^{-4}$	60%	$7.9*10^{-4}$

Table 5: BMP Export Coefficients

The total BMP land cover load is derived using 2002 land cover data. Therefore, if land cover within a drainage basin changes in the future the BAC phosphorus load remains the same. Any future land cover change that potentially increases loading will be expected to incorporate additional BMPs that limit that load appropriately. If the BAC load allocation for the watershed is met at full capacity future growth will have to be managed to achieve a no net increase in loading.

WWTP BMP EXPORT

WWTP phosphorus export to waterbodies occurs at discrete points and is dependent on the flow of effluent from the municipalities that contribute to a particular facility. WWTP BMP loads are based on their current estimated percent contribution to the phosphorus load in downstream waterbodies and downstream waterbody's sensitivity to anthropogenic enrichment. Forty-three facilities were included in the analysis. Facilities that discharge directly to estuarine waters or the Connecticut River were not included in the analysis because they are tidally influenced by brackish water and this analysis is focused directly on freshwater systems. Appendix A includes a fact sheet on each facility integrated into the analysis. The fact sheet contains information regarding WWTPs current operation pertaining to phosphous export and BMP loads based on the methodology below. Average phosphorus concentrations and flow rates from available facility data from 2001 – 2007 were used to calculate WWTP current phosphorus loads to waterbodies and are included in Appendix A fact sheets.

A geospatial modeling analysis was completed as an initial step to assigning a BMP Performance Limit to WWTPs. An enrichment factor (EF) that represents the ratio of the current seasonal phosphorus load at the point of complete mixing downstream of the WWTP to the load calculated for that same location from a fully forested upstream watershed with no point sources. The total current load includes the current load from the WWTP and any additional WWTPs upstream plus the estimated load from current land use export. The EF quantifies the cumulative

influence of anthropogenic activity (point and non point) on current loads. The upper third (66%) and lower third (33%) percentiles of enrichment factors at the point of discharge for all WWTPs were used as cutoff points. The upper third percentile cutoff is 34.5 and the lower third percentile cutoff is 8.5. Those WWTP equal to or below the lower third were categorized as low, those in the middle third were categorized as medium, and those in upper third were categorized as high for enrichment.

WWTP's percent contribution at point of complete mixing downstream of the WWTP was determined by calculating the WWTP average seasonal load from 2002 – 2007 and dividing it by the estimated current total in-stream load at the point of discharge. The current total in-stream load was determined using the estimated average export coefficients from the land cover analysis. WWTP contributing greater than 15% were considered high, less than 15 but greater that 5 were considered medium, and those at 5% or below were considered low. The EF and WWTP percent contribution were evaluated within the context of the BMP matrix displayed as Table 6.

Model Matrix	EF > 34.5	8.5 > EF < 34.5	EF < 8.5
%C > 15 %	HIGH	MED	LOW
5% > %C < 15%	MED	MED	LOW
%C < 5%	LOW	LOW	LOW

Table 6: WWTP BMP Model Matrix

Additional factors were considered to evaluate whether the geospatial modeling analysis results should be modified based on best professional judgment. The current average concentration of phosphorus in the discharge was considered because it is indicative of present comparative performance and potential BMP to reduce loads. Average concentrations less than 2 mg/L were considered low, between 2 and 4 mg/L were considered medium and greater than 4 mg/L were considered high. The percent contribution at the nearest downstream dam and distance of that dam from the WWTP was also considered as an indicator of the potential for the WWTP load to contribute to anthropogenic eutrophication of a resource than may not be currently assessed. WWTPs contributing more than 50% of the total load were considered significant. The percent contribution at the nearest downstream segment currently listed as impaired on the CT 303(d) impaired waters list and distance of WWTP to impaired segment was also considered as an indicator of the potential for the WWTP to contribute to impact or impairment. WWTPs contributing more than 2% of the total load were considered significant. Results of a cluster analysis were used to assist in reviewing consistency among facilities. A cluster analysis groups objects according to the characteristics they possess. Objects are grouped based on how similar they are to each other using the characteristics to compare objects. WWTPs were grouped based on their similarity of characteristics that influence in-stream enrichment. These groupings help to elucidate which WWTPs are more likely to influence in-stream enrichment. All variables used in the analysis were standardized and given equal weighting in the analysis. Higher positive WWTP grouping levels represent greater similarity among WWTP enrichment characteristics. WWTPs were assigned a High, Medium/High, Medium, Medium/Low or Low designation based on the grouping and grouping characteristics.

The BMP requirement for the facility assigned by the model matrix (Table 6) was raised or lowered by one level in those cases where compelling reasons were identified during review of the additional factors and the cluster analysis. The enrichment factors considered in the analysis and the final WWTP BMP designations are displayed in Appendix B.

WWTPs with a high designation are given an average BMP performance limit of 0.2 mg/L, medium designations are given 0.7 mg/L and low designations are capped at current levels. BMP treatment levels were established by the Department after consideration of the technical, economic, and institutional feasibility of various types of treatment technologies that are known to be effective in reducing phosphorus in treated domestic wastewater. The Department believes that an average performance level of 0.2 mg/l can be achieved through chemical addition and filtration. The medium BMP performance level is achievable through chemical addition only and the cap at current load should be achievable through continued application of current treatment methods. In the event that loads increase in the future, source controls and possible chemical addition may be needed to maintain loads below the cap.

WWTP BMP loads were calculated by multiplying their assigned BMP average performance limit by their average flow rate:

$$\textbf{BMP WWTP Load} = \textbf{BMP}_{pl}\textbf{Q}_{wwtp}$$

where BMP_{pl} is the BMP average performace limit concentration assigned to a WWTP and Q_{wwtp} is the average WWTP flow rate from 2001 – 2007. Table 7 provides a summary of WWTPs BMP average performance limits and loads.

Facility	Receiving Waterbody	Current Average P Load (lbs/day)	BMP Requirement	BMP Limit (mg/L)	BMP Load (lbs/day)	Percent Reduction
ANSONIA WPCF	Naugatuck River-01	43.32	LOW	cap	43.32	0.00%
BEACON FALLS WPCF	Naugatuck River-02	7.91	LOW	cap	7.91	0.00%
BRISTOL WPCF	Pequabuck River-03	189.33	MED	0.7	52.35	72.35%
CANTON WPCF	Farmington River-04	24.8	LOW	cap	24.8	0.00%
CHESHIRE WPCF	Quinnipiac River-04	88.2	HIGH	0.2	4.06	95.40%
DANBURY WPCF	Limekiln Brook-01	78.51	HIGH	0.2	15.11	80.75%
FARMINGTON WPCF	Farmington River-02	119.01	MED	0.7	24.54	79.38%
GRISWOLD WPCA	Quinebaug River-01	5.52	LOW	cap	5.52	0.00%
KILLINGLY WPCF	Quinebaug River-04	40.64	MED	0.7	18.23	55.14%
LITCHFIELD WPCF	Bantam River-02	13.07	MED	0.7	2.92	77.66%
MANCHESTER WATER & SEWER	Hockanum River-02	110.4	HIGH	0.2	10.57	90.43%
MERIDEN WPCF	Quinnipiac River-02	121.64	MED	0.7	61	49.85%
NAUGATUCK WPCF	Naugatuck River-02	159.97	MED	0.7	28.75	82.03%
NEW CANAAN WPCF	Fivemile River (New Canaan)-03	10.45	HIGH	0.2	1.55	85.17%
NEW HARTFORD WPCF*	Farmington River-04	*	LOW	cap	*	
NEW MILFORD WPCF	Housatonic River-03	2.68	LOW	cap	2.68	0.00%
NEWTOWN WPCF	Pootatuck River-01	2.18	LOW	cap	2.18	0.00%
NORFOLK SEWER DISTRICT	Blackberry River-04	3.45	LOW	cap	3.45	0.00%
NORTH CANAAN WPCF	Blackberry River-01	4.29	LOW	cap	4.29	0.00%
PLAINFIELD NORTH WPCF	Moosup River-01	17.82	MED	0.7	3.86	78.34%

Facility	Receiving Waterbody	Current Average P Load (lbs/day)	BMP Requirement	BMP Limit (mg/L)	BMP Load (lbs/day)	Percent Reduction
PLAINFIELD WPCF	Aspinook Pond	10.51	MED	0.7	2.51	76.12%
PLAINVILLE WPCF	Pequabuck River-01	82.35	MED	0.7	12.21	85.17%
PLYMOUTH WPCF	Pequabuck River-05	28.64	MED	0.7	6.13	78.60%
PUTNAM WPCF	Quinebaug River-04	19.69	MED	0.7	8.41	57.29%
REDDING WPCF	Norwalk River-03a	1.08	MED	0.7	0.29	73.15%
RIDGEFIELD MAIN WPCF C/O OMI	Ridgefield Brook-02	5.99	HIGH	0.2	1.04	82.64%
RIDGEFIELD RTE 7 C/O OMI*	Norwalk River-05	*	LOW	cap	*	
SALISBURY WPCF	Factory Brook-01	7.14	MED	0.7	2.22	68.91%
SEYMOUR WPCF	Naugatuck River-01	41.09	LOW	cap	41.09	0.00%
SIMSBURY WPCF	Farmington River-02	85.99	MED	0.7	13.15	84.71%
SOUTHBURY HERITAGE VILLAGE WPCF*	Pomperaug River	3.43	LOW	cap	5.43**	0.00%
SOUTHINGTON WPCF	Quinnipiac River-04	100	HIGH	0.2	7.53	92.47%
SPRAGUE WPCF	Shetucket River-03	3.11	LOW	cap	3.11	0.00%
STAFFORD WPCA	Willimantic River-05	8.61	LOW	cap	8.61	0.00%
THOMASTON WPCF	Naugatuck River-06	22.68	MED	0.7	5.14	77.34%
THOMPSON WPCF	French River-01	6.29	MED	0.7	2.1	66.61%
TORRINGTON WPCF	Naugatuck River-07	64.73	MED	0.7	30.27	53.24%
UCONN WPCF	Willimantic River-03	23.76	LOW	cap	23.76	0.00%
VERNON WPCF	Hockanum River-05	72.19	HIGH	0.2	6.51	90.98%
WALLINGFORD WATER & SEWER	Quinnipiac River-02	145.16	MED	0.7	31.32	78.42%
WATERBURY WPCF	Naugatuck River-02	539.92	MED	0.7	119.89	77.79%
WILLIMANTIC WPCF	Willimantic River-01	18.63	LOW	cap	18.63	0.00%
WINSTED WPCF	Still River (Colebrook)-02	20.03	MED	0.7	8.06	59.76%

Table 7: Summary of WWTP BMP Average Performance Limits and Loads

* Calculation of cap loads for two small facilities, New Hartford and Ridgefield Rte 7, is not possible due to a lack of sufficient monitoring data. Cap loads for these facilities should be established once monitoring data is available.

** Southbury Heritage Village (HV) WPCF BMP Load includes Southbury Training School WPCF (STS) Load because STS will be redirecting their flow to HV. BMP Load is calculated by multiplying current HV permit limit concentration of 1.0 mg/L by average combined HV and STS flow of 0.65 MGD.

BEST ATTAINABLE CONDITION

The best attainable condition (BAC) for a point on a waterbody represents the sum of the BMP WWTP Load and Land Cover BMP Load:

$$\mathbf{BAC = \sum_{i=1}^{n} BMP\ WWTP\ Load_i + BMP\ Land\ Cover\ Load}$$

where the sum of the BMP Loads for all WWTPs within the upstream drainage basin is added to the BMP Land Cover Load in the upstream drainage basin.

APPLICATION TO NUTRIENT MANAGEMENT IN CT

The BAC is applicable to any freshwater system in CT and sets an aggressive goal towards achieving designated uses. An estimated 63% reduction in total phosphorus load to CT freshwater systems is expected when the management strategy is fully implemented. This includes an estimated 71% reduction in WWTP discharge load and 48% reduction in loading from land use activities contributing to excess phosphorus (Table 8).

Load	Estimated Current Load (lbs/day)	Estimated Criteria Load (lbs/day)	Estimated Percent Reduction
Land Cover Load	1288.34	674.05	48 %
WWTP Load	2361.7	674.5	71.4 %
Total	3650.04	1348.55	63 %

Table 8: Estimated Reduction When Strategy is Fully Implemented

Seasonal loads for WWTPs will be translated into NPDES permits when they come up for renewal. A compliance schedule will be incorporated into the NPDES permit when the permit is reissued. Generally the schedule will provide three years to achieve compliance, but in some, more difficult situations the schedule may be extended for up to five years from the date of reissuance. Although not regulated directly, the Department is actively encouraging municipalities and developers to utilize low impact development techniques to accommodate changes in land use without increasing phosphorus loads to surface waters as a result of non point runoff. Reducing loads from existing municipal storm water systems is being pursued through implementation of storm water general permits. The Department will be focusing efforts to reduce storm water loads in watersheds where monitoring data indicates that current loads exceed the maximum specified in the strategy and installation of best management practices will yield significant reductions in load.

This approach to nutrient management is intended to be an adaptive management approach that can be modified if new technologies are introduced in the future that make it possible to achieve an increased percent reduction and thus lower BAC as explained in the PSD. A Total Maximum Daily Load (TMDL) may supersede the BAC load in areas where a more site-specific goal is needed. The Department is also actively engaged in developing an aquatic life response based numeric criteria for nutrients in freshwaters. If it is found in the future that the current BAC goal is not sufficient to achieve designated uses, the goal will be modified and stakeholders will be expected to meet the more stringent water quality goal.

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FIGURES

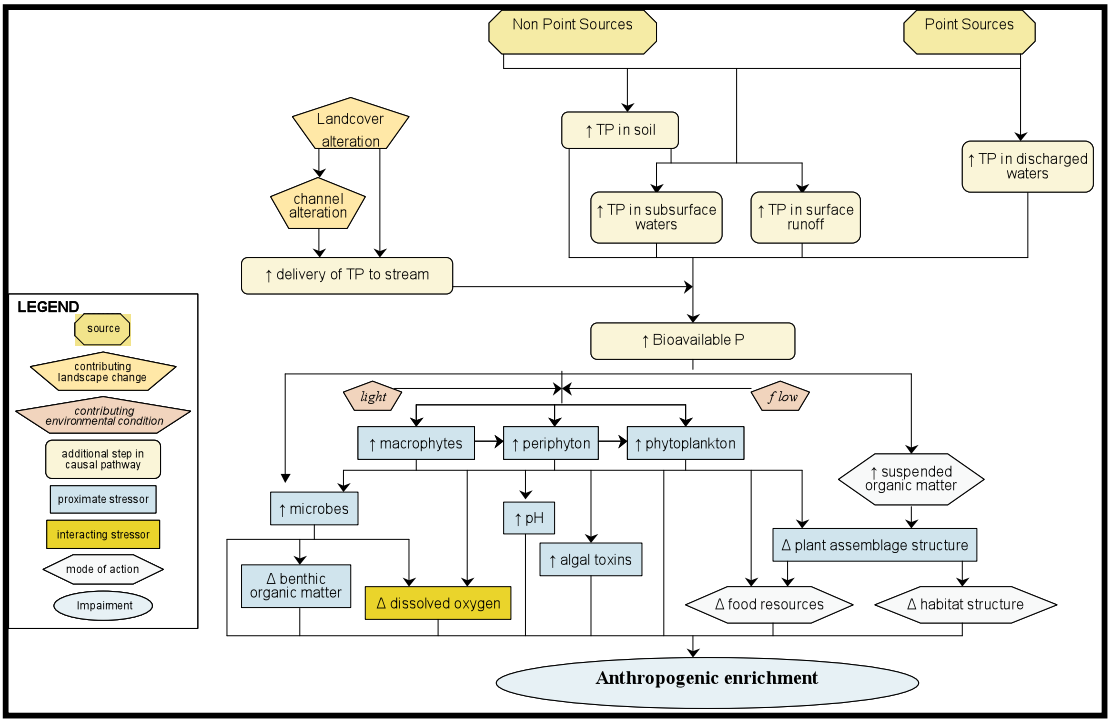


Figure 1. Stressor Identification Pathway modified from EPA (2008)

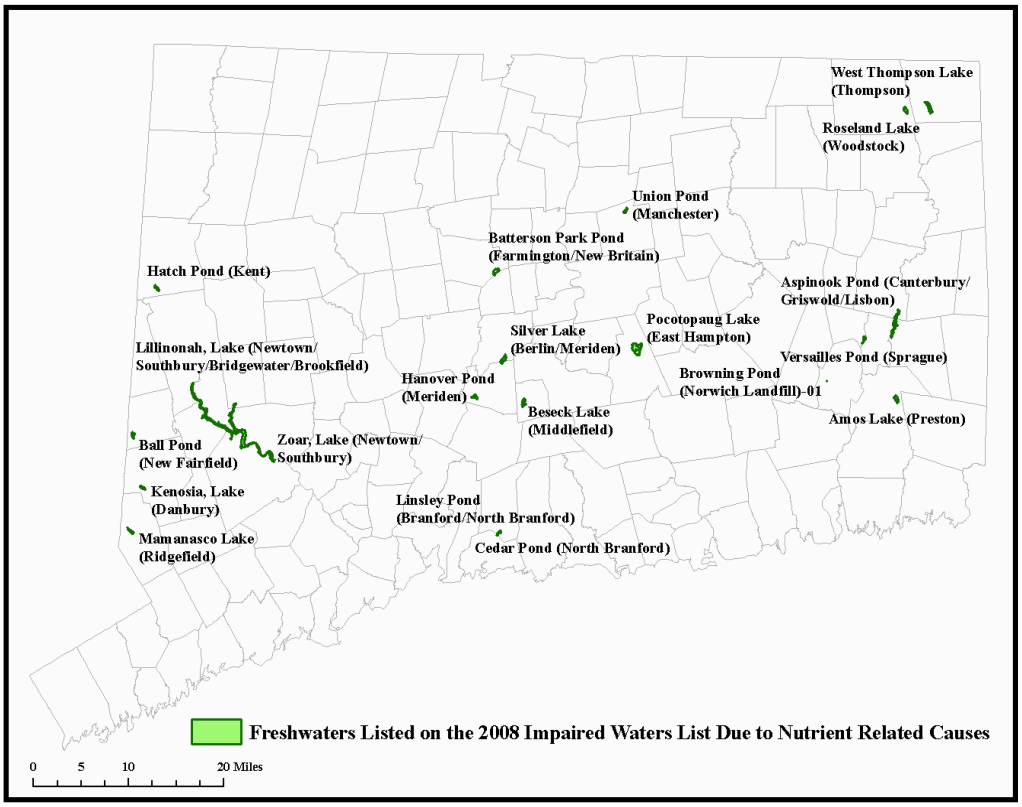


Figure 2. Waterbodies Listed on the CT 2008 Impaired Waters List Due to Nutrient Related Issues (CT DEP, 2008)

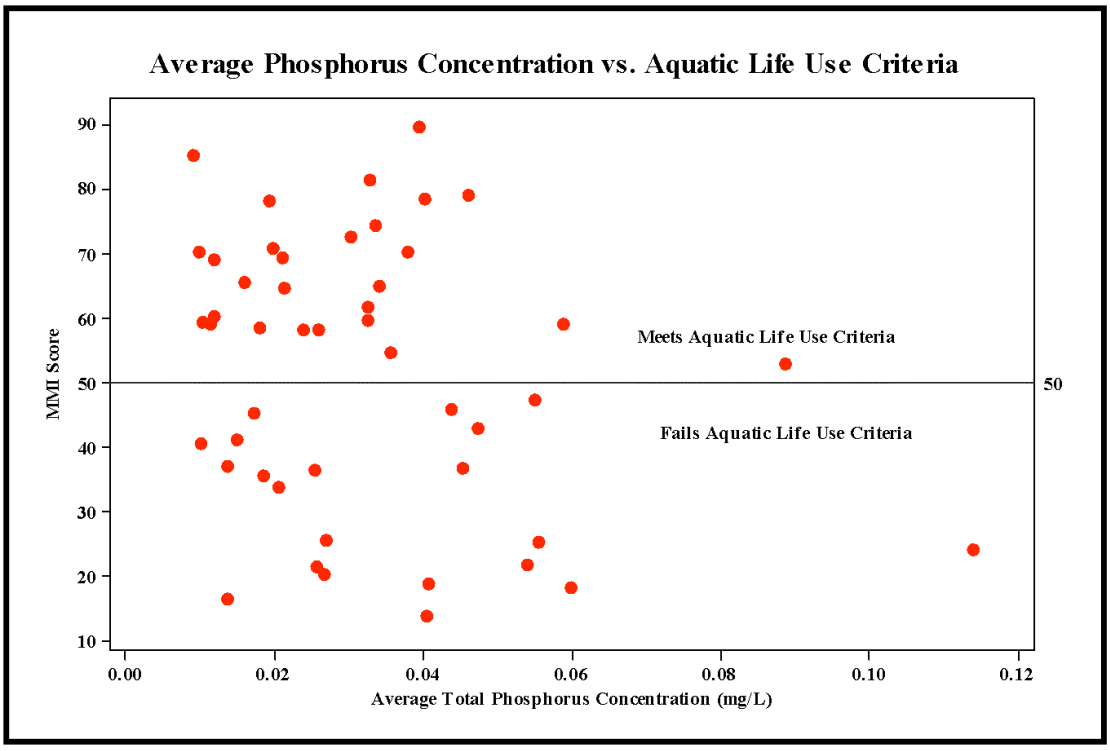


Figure 3. Average Phosphorus Concentrations and Aquatic Life Use Criteria used as a Basis for Assessment at 48 Sites without Sewage Treatment Plant Influence.

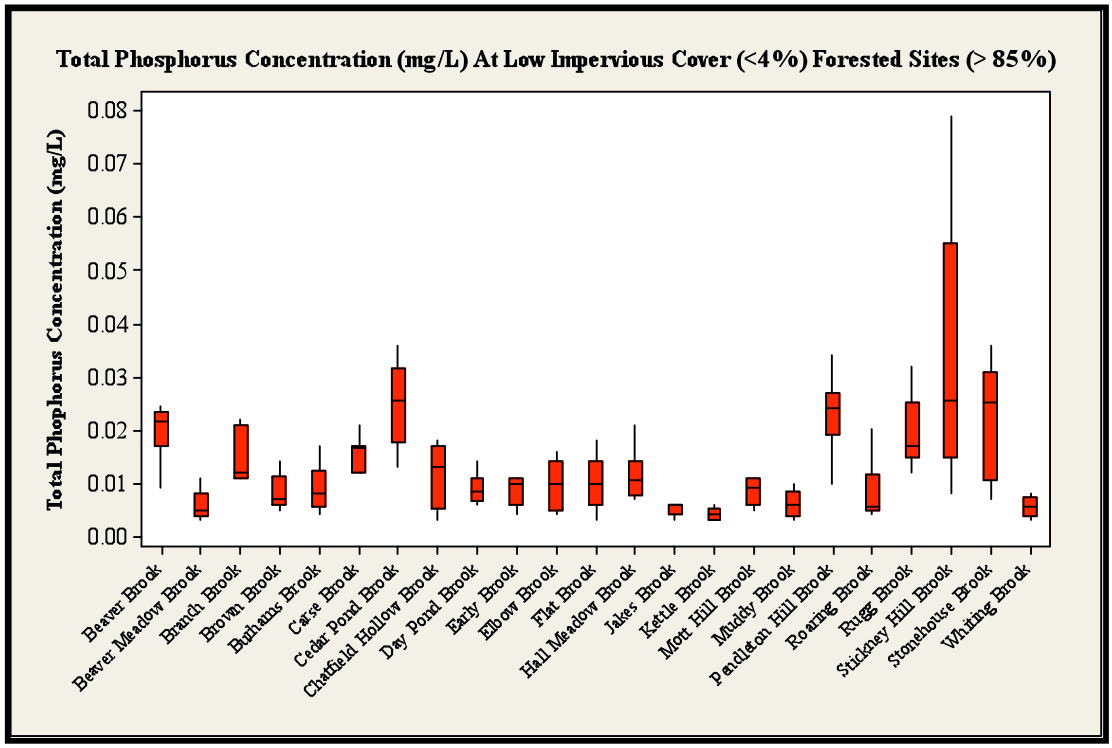


Figure 4. Phosphorus Concentrations under Low Flow Conditions in Small Streams Minimally Influenced by Human Input.

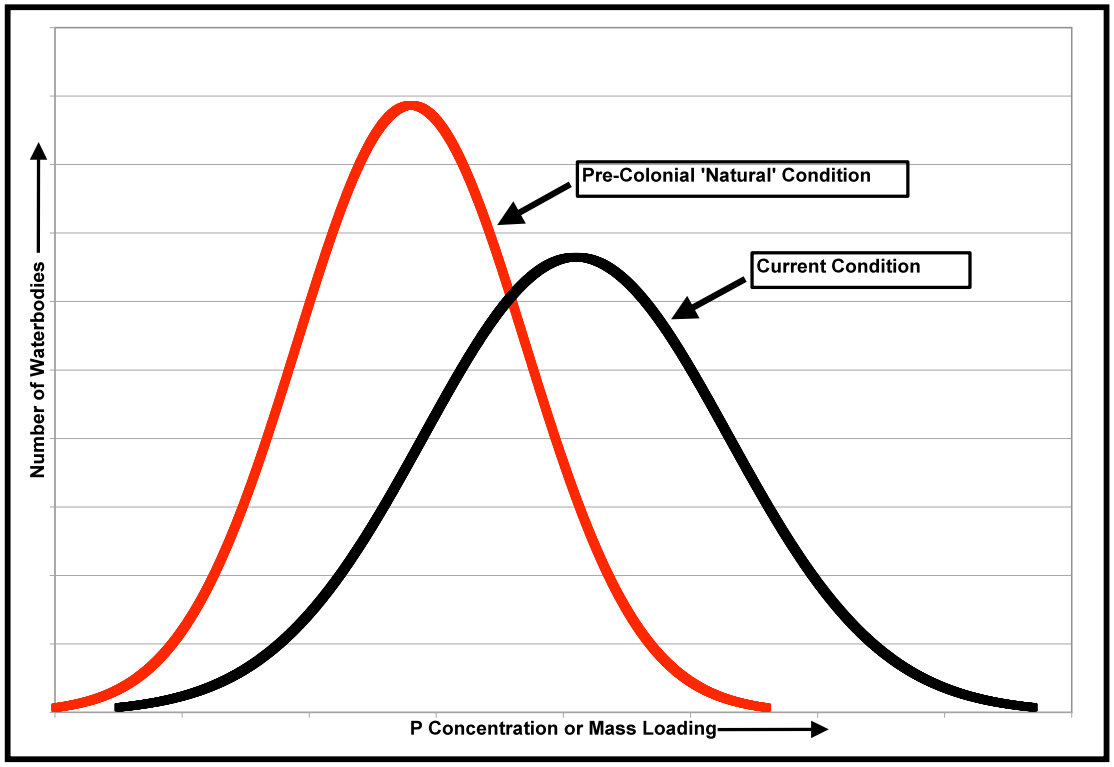


Figure 5. Distribution of Waterbodies relative to Phosphorus enrichment under pre-colonial and current conditions illustrating shift towards greater enrichment due to human influence.

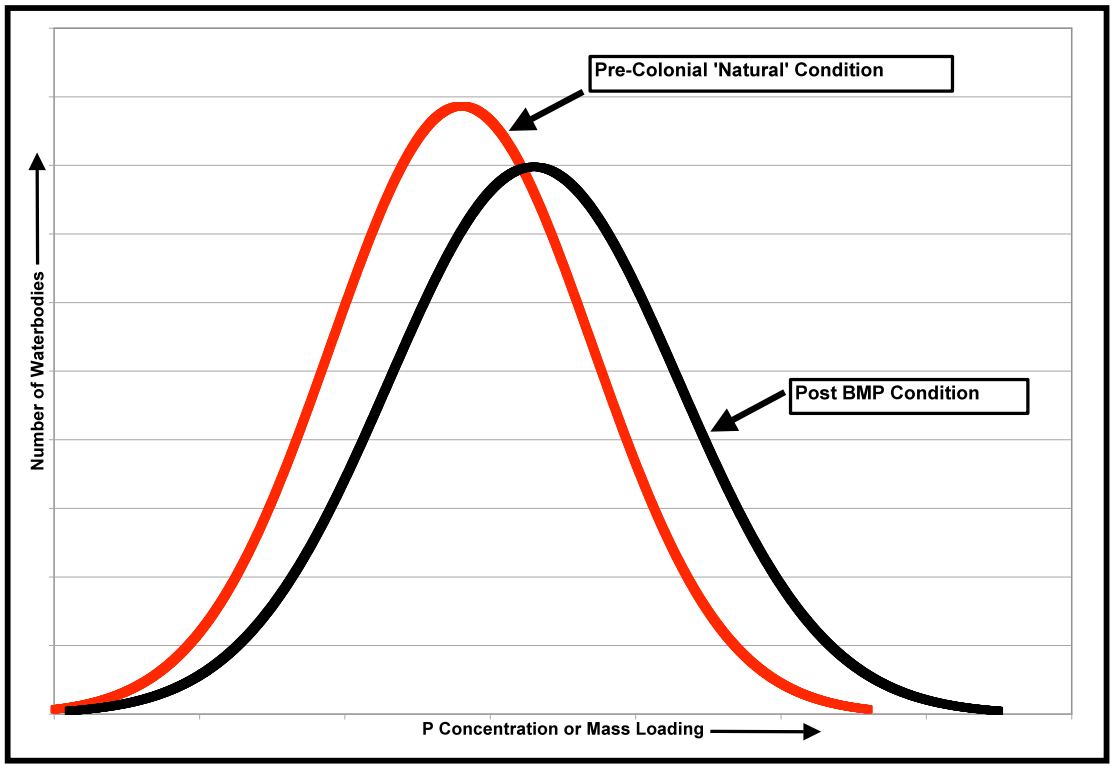


Figure 6. Distribution of Waterbodies relative to Phosphorus enrichment post-implementation of proposed policy illustrating change from pre-colonial 'natural' distribution reflecting man's normal use of the land but retaining normal distribution of conditions.

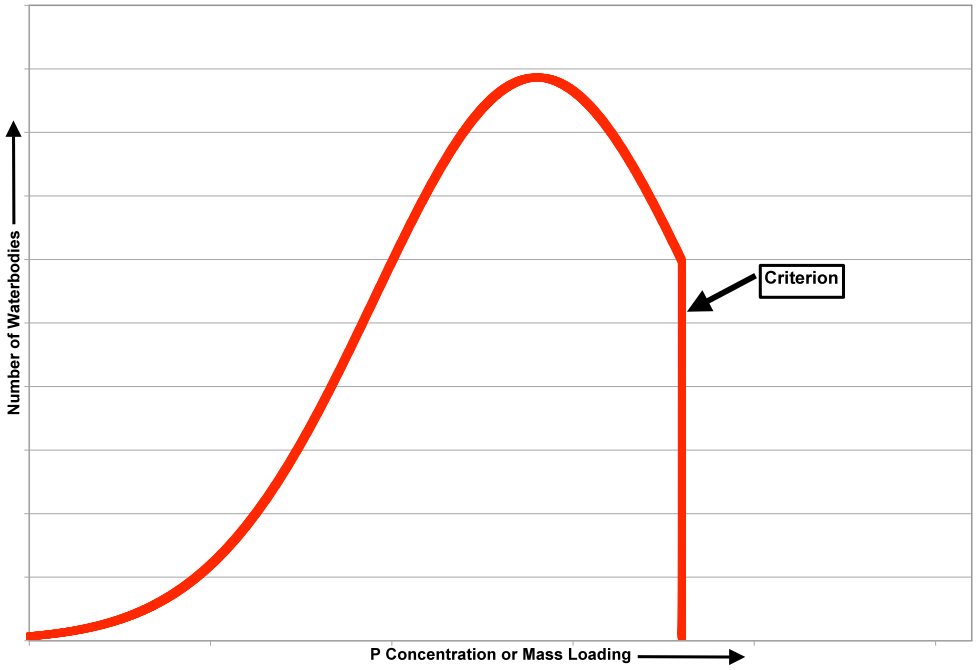


Figure 7. Distribution of Waterbodies relative to Phosphorus enrichment post-implementation of a single numeric criterion illustrating truncated distribution and loss of naturally enriched waterbodies.

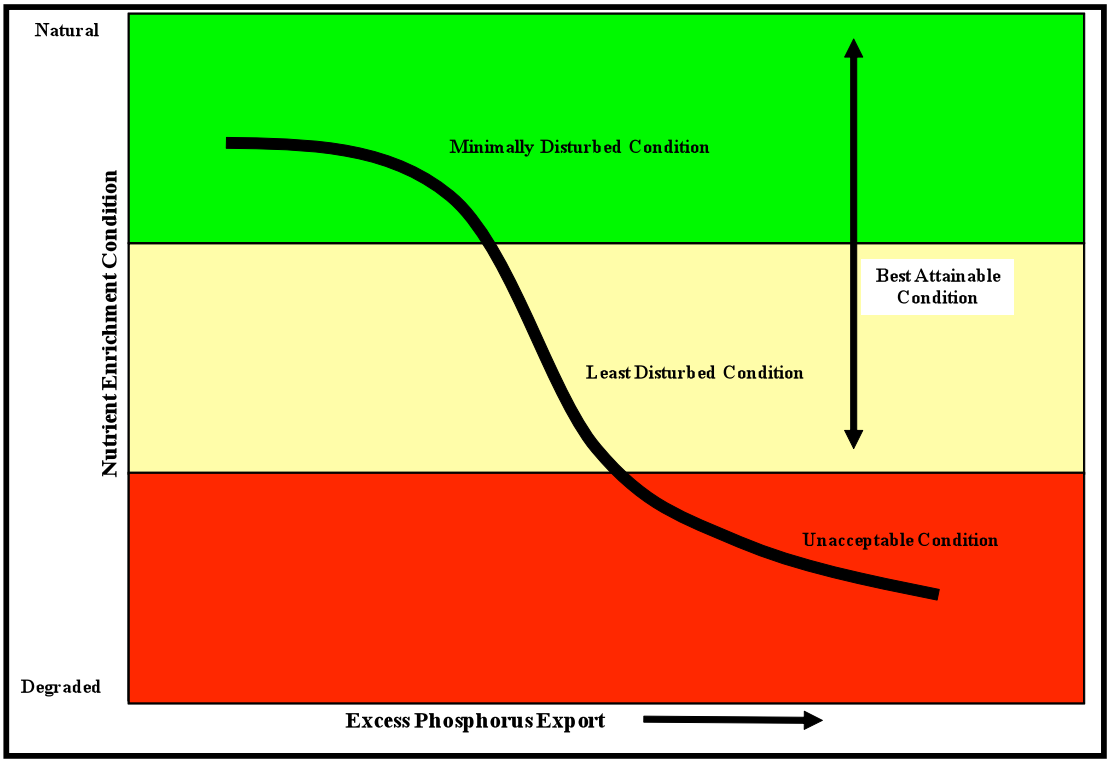


Figure 8. The Nutrient Enrichment Gradient based in Concept on the Biological Condition Gradient (Davies, & Jackson, 2006). The Goal is to Achieve the Best Attainable Condition.

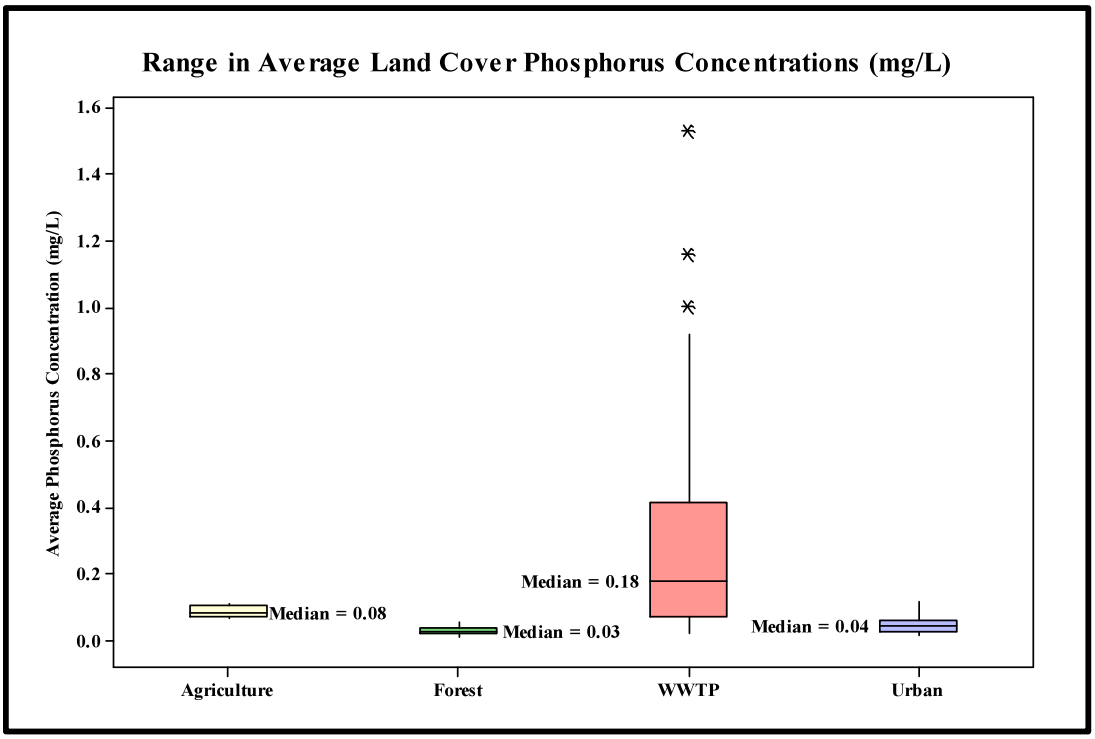


Figure 9. Range of In-Stream Average Phosphorus Concentrations by Dominant Watershed Land Cover

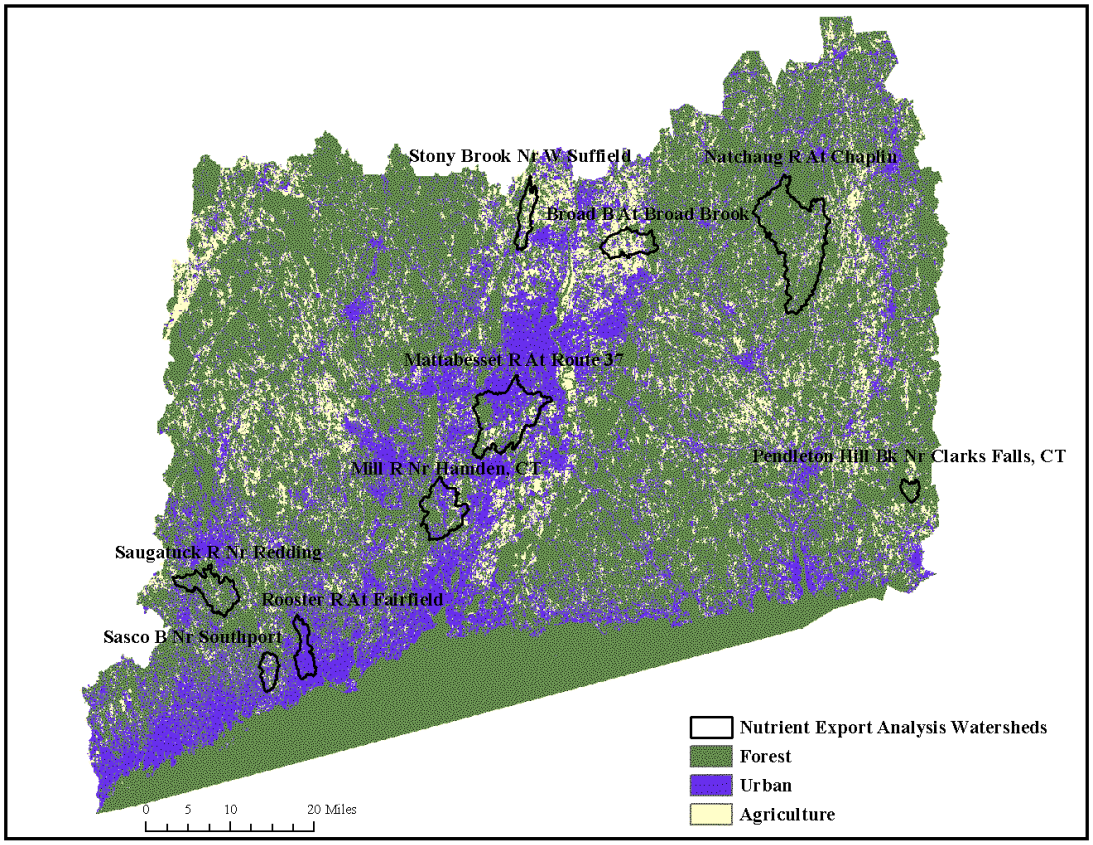


Figure 10. Land Use Groups and Watersheds Used in the Nutrient Export Analysis.

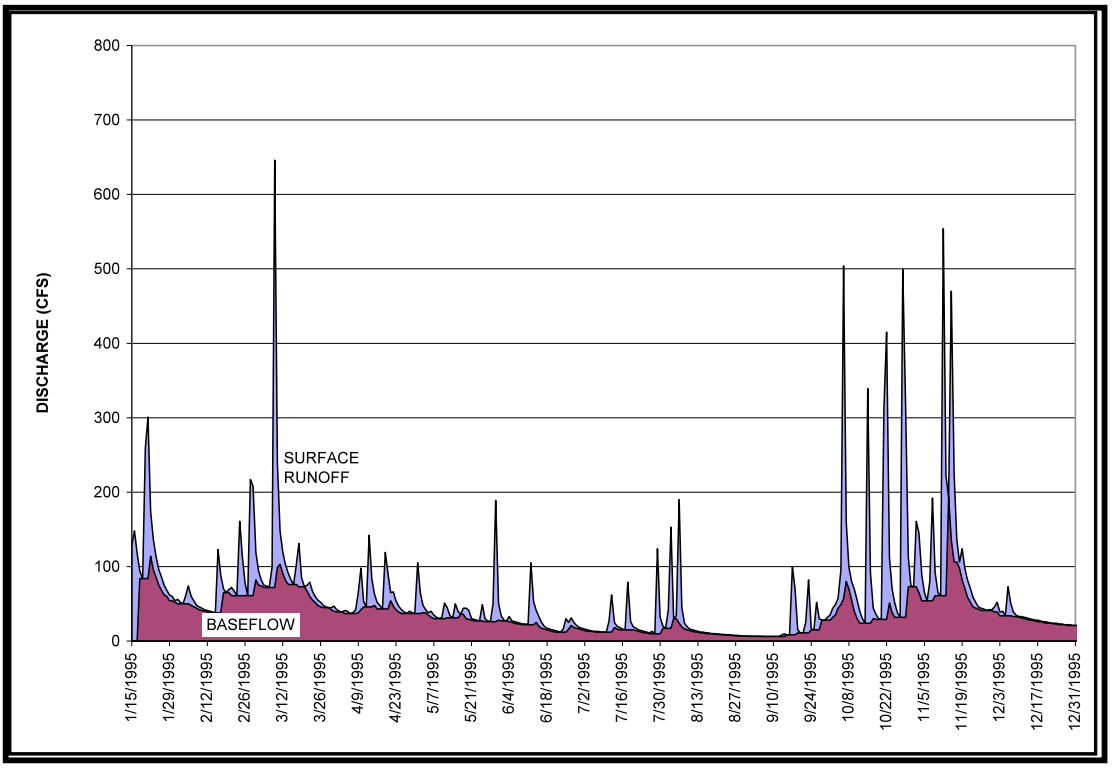


Figure 11. Example of Hydrograph Separation Method Used in Phosphorus Export Analysis.

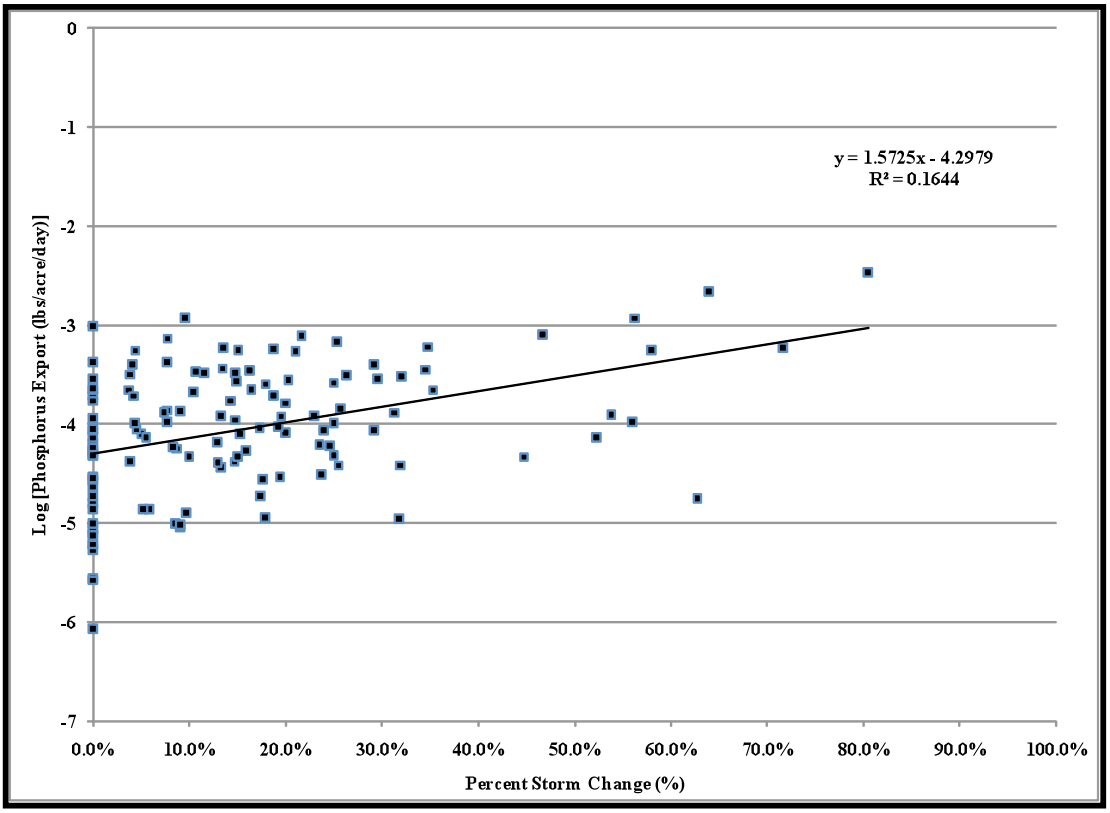


Figure 12. Phosphorus Export From Forest Land Cover Modeled Across Percent Storm Change.

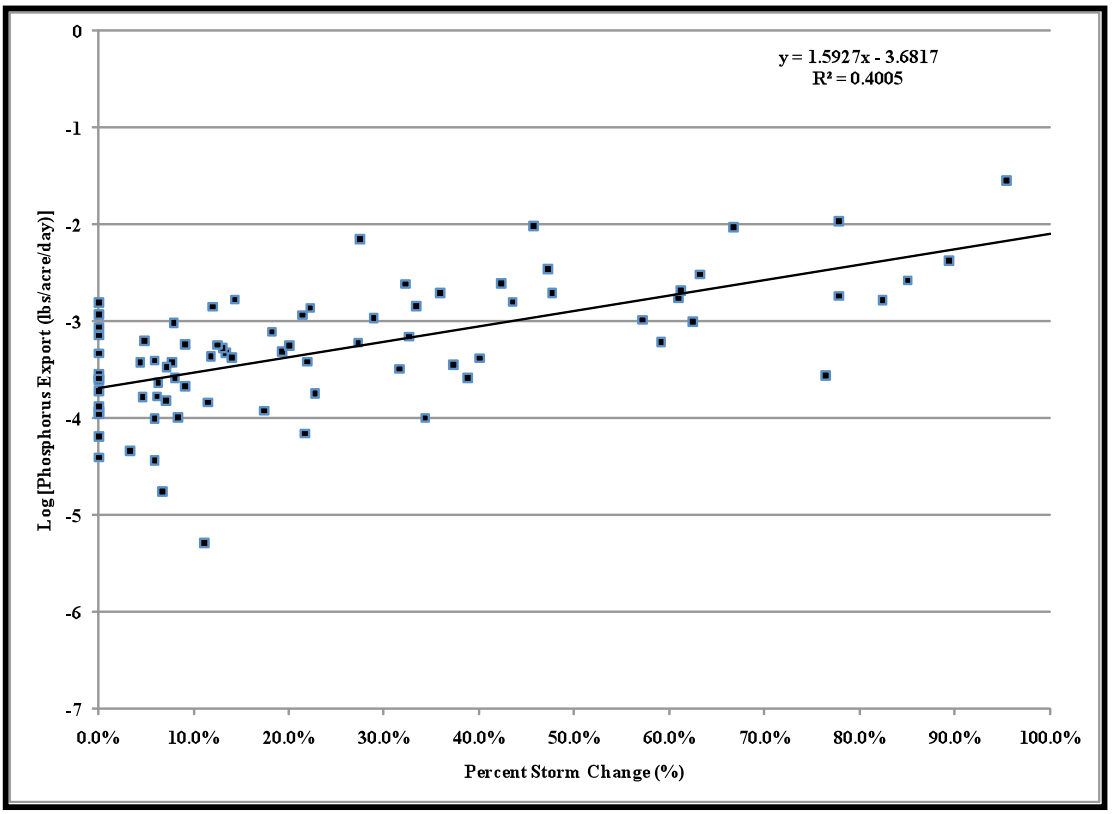


Figure 13. Phosphorus Export From Urban Land Cover Modeled Across Percent Storm Change.

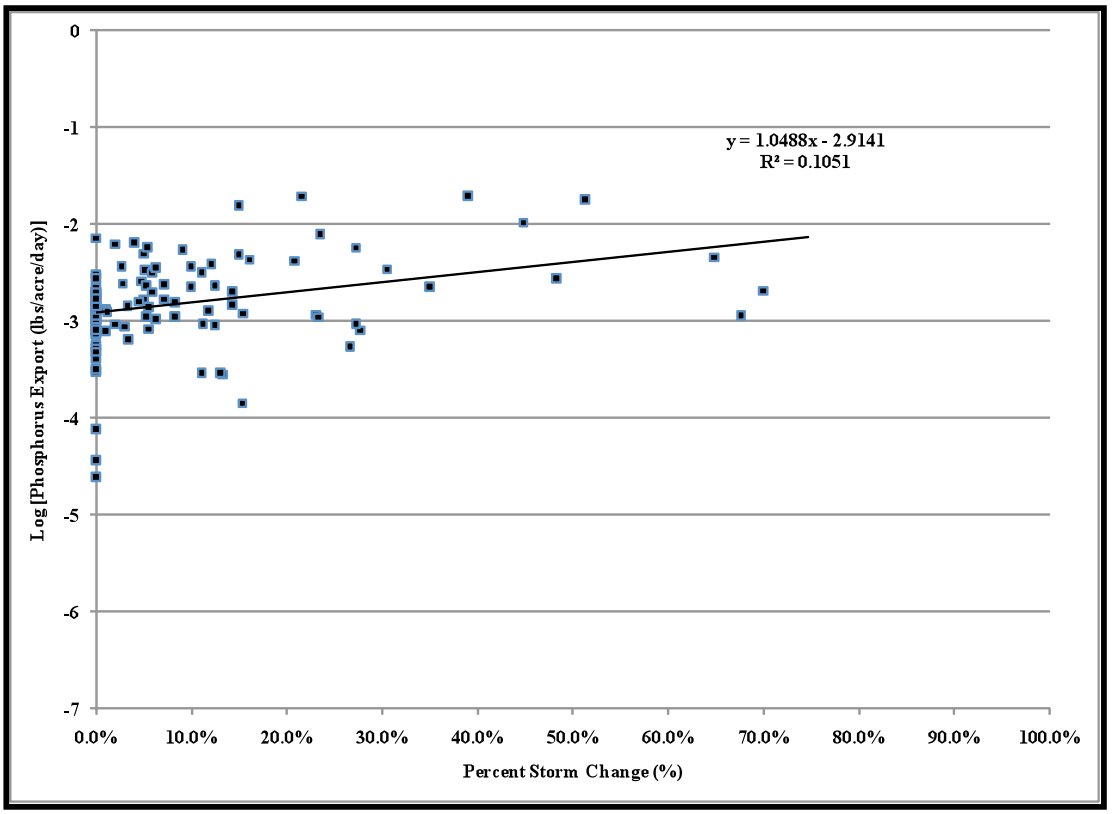


Figure 14. Phosphorus Export From Agriculture Land Cover Modeled Across Percent Storm Change.

Appendix A
WWTP Fact Sheets

* See Table 7 in Main Document for Notes on New Hartford WPCF, Ridgefield Rte 7 C/O OMI, and Southbury Heritage Village WPCF

WWTP PHOSPHORUS FACT SHEET

ANSONIA WPCF

Facility Overview

NPDES #	CT0100013	Permit Expiration Date	6/29/2011
Town	ANSONIA	Design Flow (MGD)	3.50
Receiving Waterbody	Naugatuck River-01	Type of Treatment*	AS, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	2.04
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.89
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	43.32
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	43.32
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 46.33

Total Forested Condition (lbs/day): 20.60

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	19930.31	39.37
Urban	50919.26	22.07
Forest	127414.11	13.24
Total US WWTP	7 (No.)	879.62
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	954.30
Percent Contribution at Point of Concern	5

WWTP PHOSPHORUS FACT SHEET

ANSONIA WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

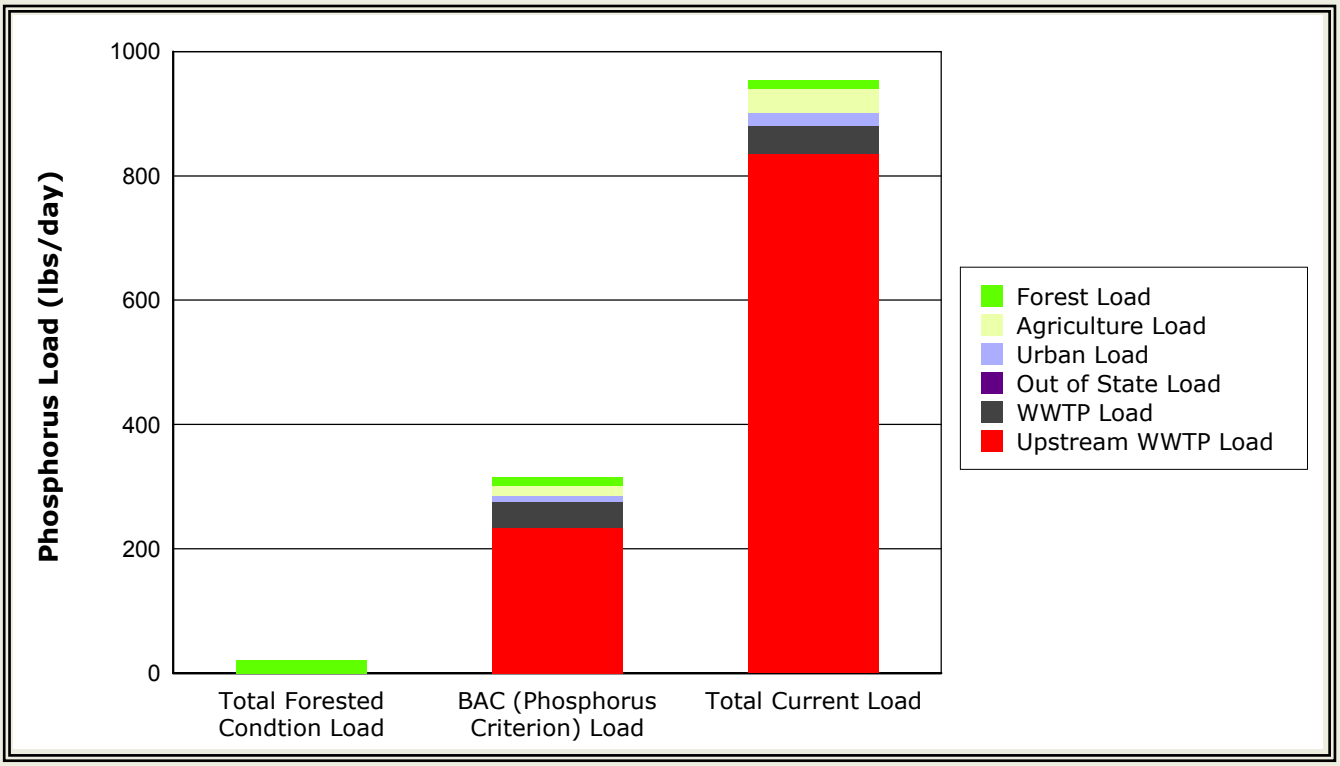
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

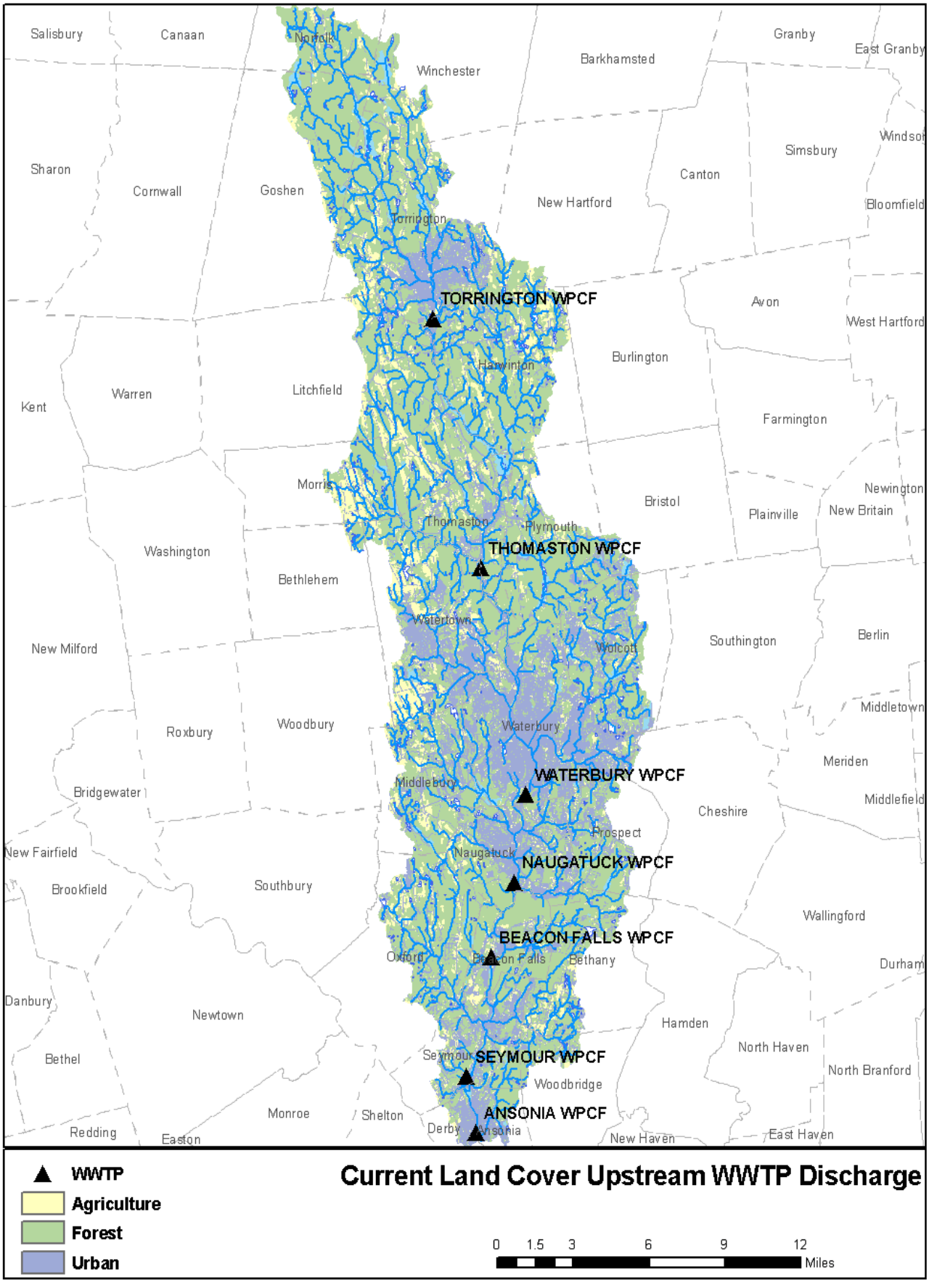
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	19930.31	15.75	60
Urban	50919.26	8.83	60
Forest	127414.11	13.24	0
Total US WWTP	7 (No.)	276.37	69
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	314.19
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	67



WWTP PHOSPHORUS FACT SHEET

ANSONIA WPCF



WWTP PHOSPHORUS FACT SHEET

BEACON FALLS WPCF

Facility Overview

NPDES #	CT0101061	Permit Expiration Date	6/25/2008
Town	BEACON FALLS	Design Flow (MGD)	0.71
Receiving Waterbody	Naugatuck River-02	Type of Treatment*	AS, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.32
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.19
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	7.91
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	7.91
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 48.69

Total Forested Condition (lbs/day): 17.66

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	17470.61	34.51
Urban	43206.06	18.72
Forest	109271.54	11.35
Total US WWTP	5 (No.)	795.21
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	859.79
Percent Contribution at Point of Concern	1

WWTP PHOSPHORUS FACT SHEET

BEACON FALLS WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

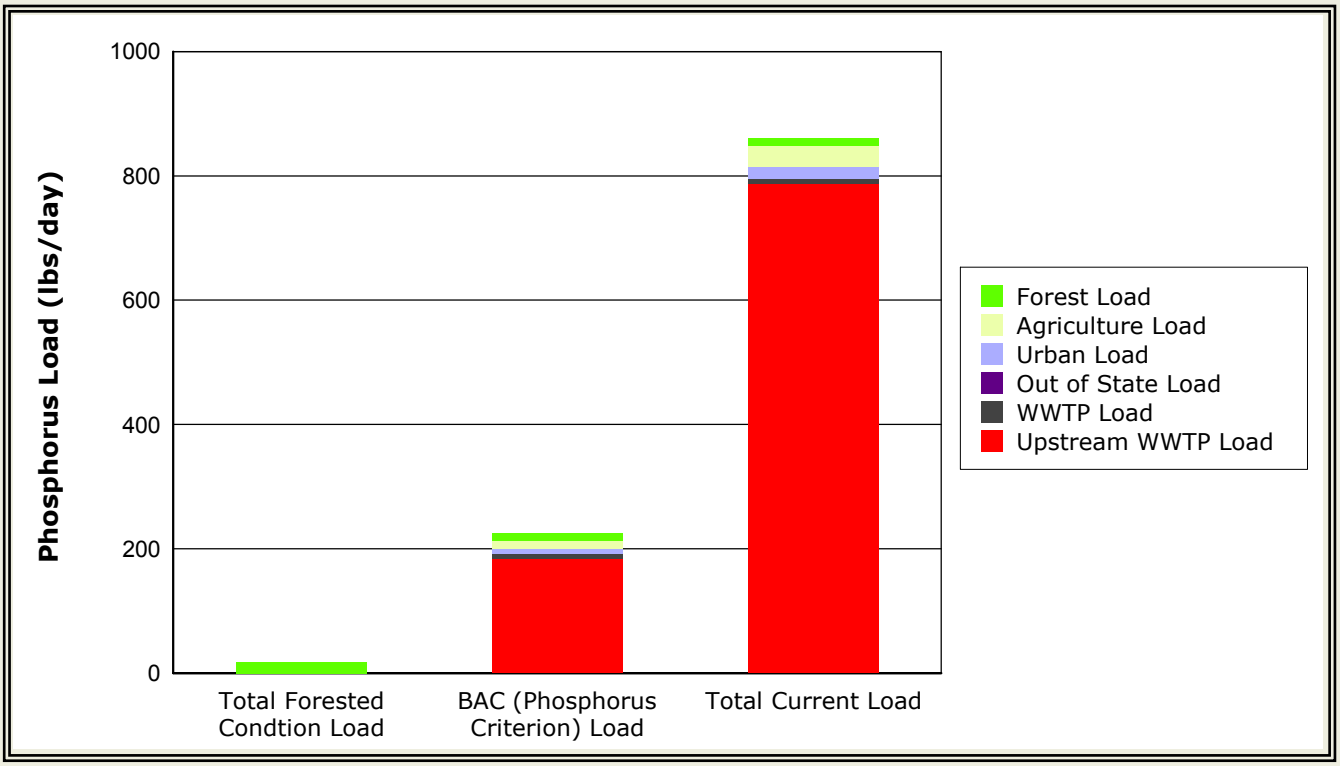
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

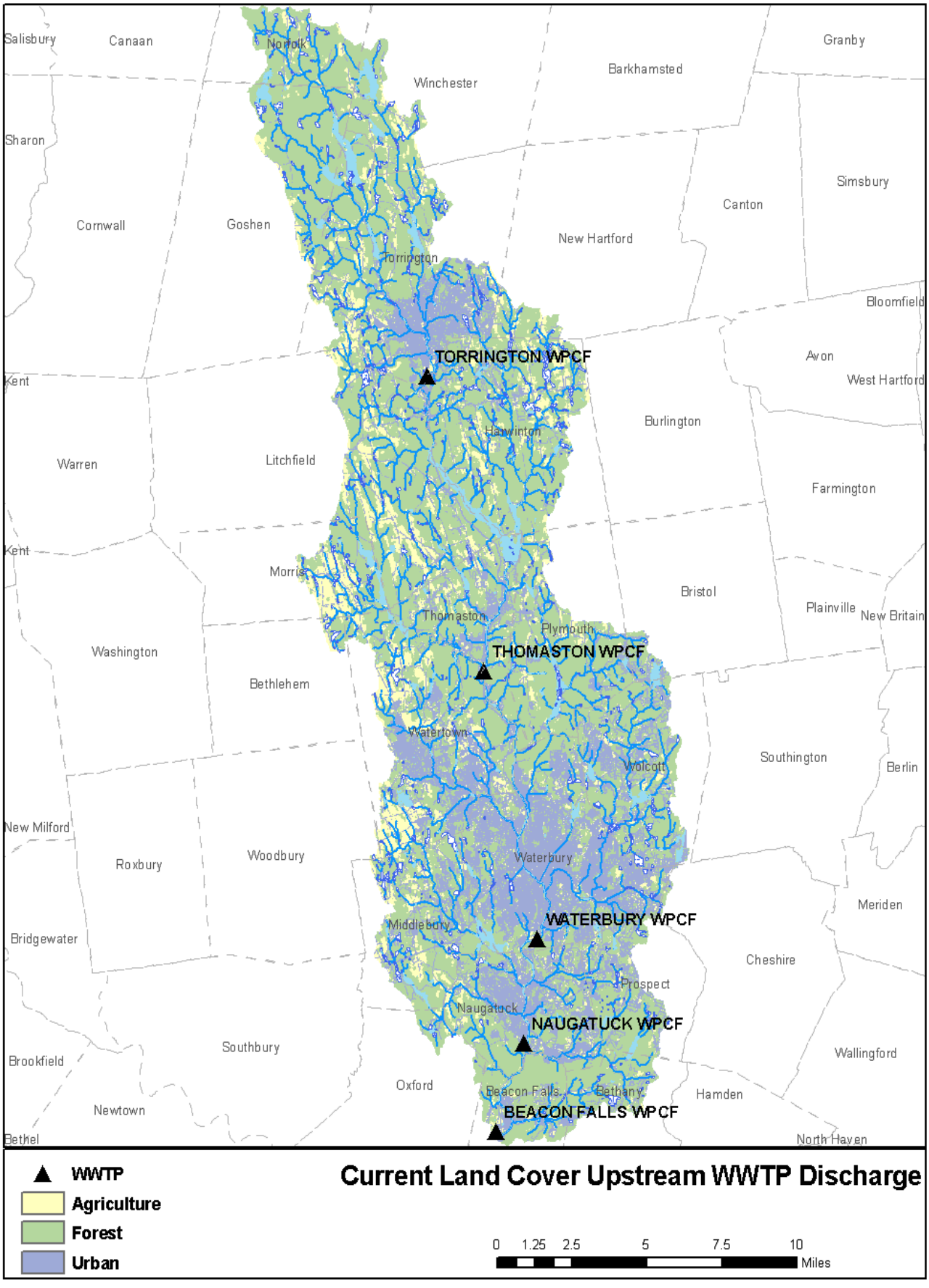
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	17470.61	13.80	60
Urban	43206.06	7.49	60
Forest	109271.54	11.35	0
Total US WWTP	5 (No.)	191.96	76
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	224.60
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	74



WWTP PHOSPHORUS FACT SHEET

BEACON FALLS WPCF



WWTP PHOSPHORUS FACT SHEET

BRISTOL WPCF

Facility Overview

NPDES #	CT0100374	Permit Expiration Date	4/3/2006
Town	BRISTOL	Design Flow (MGD)	10.75
Receiving Waterbody	Pequabuck River-03	Type of Treatment*	AS, AdvTr, Nitr, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	8.96
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.62
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	189.33
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	52.35
Percent Reduction from Current	72
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 75.47

Total Forested Condition (lbs/day): 3.03

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	2457.76	4.86
Urban	10394.08	4.50
Forest	16358.32	1.70
Total US WWTP	2 (No.)	217.97
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	229.03
Percent Contribution at Point of Concern	83

WWTP PHOSPHORUS FACT SHEET

BRISTOL WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	26.71	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	29		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

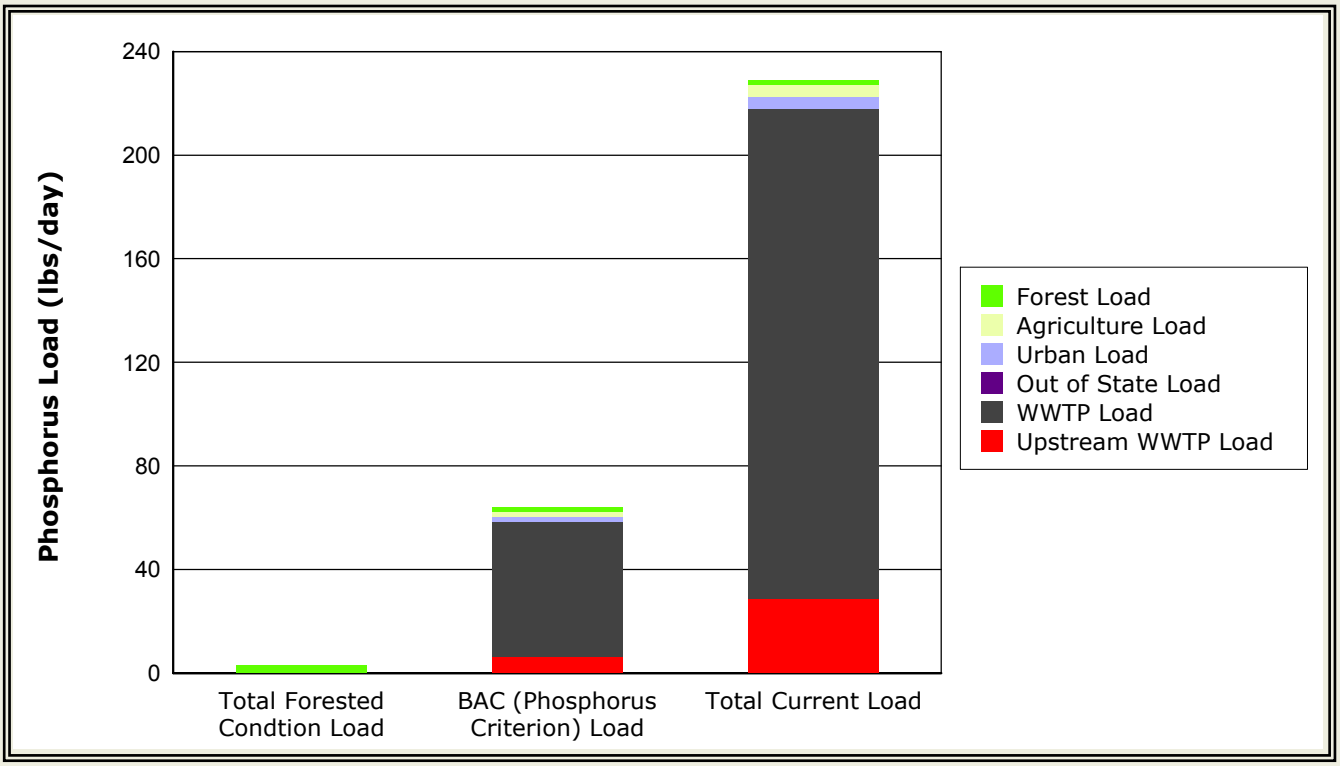
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

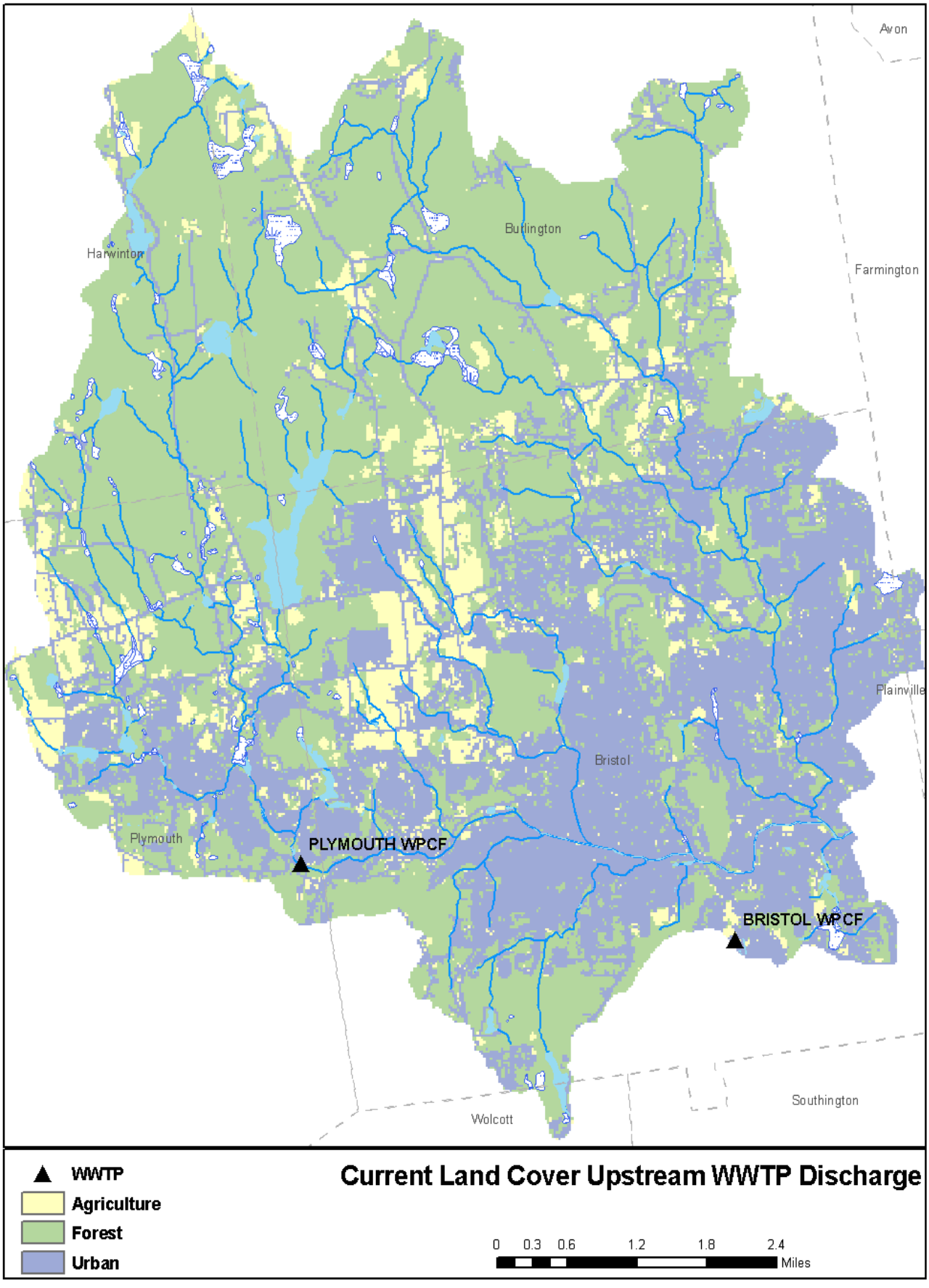
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	2457.76	1.94	60
Urban	10394.08	1.80	60
Forest	16358.32	1.70	0
Total US WWTP	2 (No.)	58.48	73
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	63.92
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	72



WWTP PHOSPHORUS FACT SHEET

BRISTOL WPCF



WWTP PHOSPHORUS FACT SHEET

CANTON WPCF

Facility Overview

NPDES #	CT0100072	Permit Expiration Date	12/30/2007
Town	CANTON	Design Flow (MGD)	0.80
Receiving Waterbody	Farmington River-04	Type of Treatment*	RBC, SFilt, TFilt, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.60
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	5.44
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	24.80
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	24.80
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 4.06

Total Forested Condition (lbs/day): 23.85

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	7746	15.30
Urban	13874.33	6.01
Forest	126218.47	13.11
Total US WWTP	3 (No.)	44.83
Out of State	81951.11	17.57

Total Current Load At Discharge (lbs/day)	96.82
Percent Contribution at Point of Concern	26

WWTP PHOSPHORUS FACT SHEET

CANTON WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	29.18	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	4		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

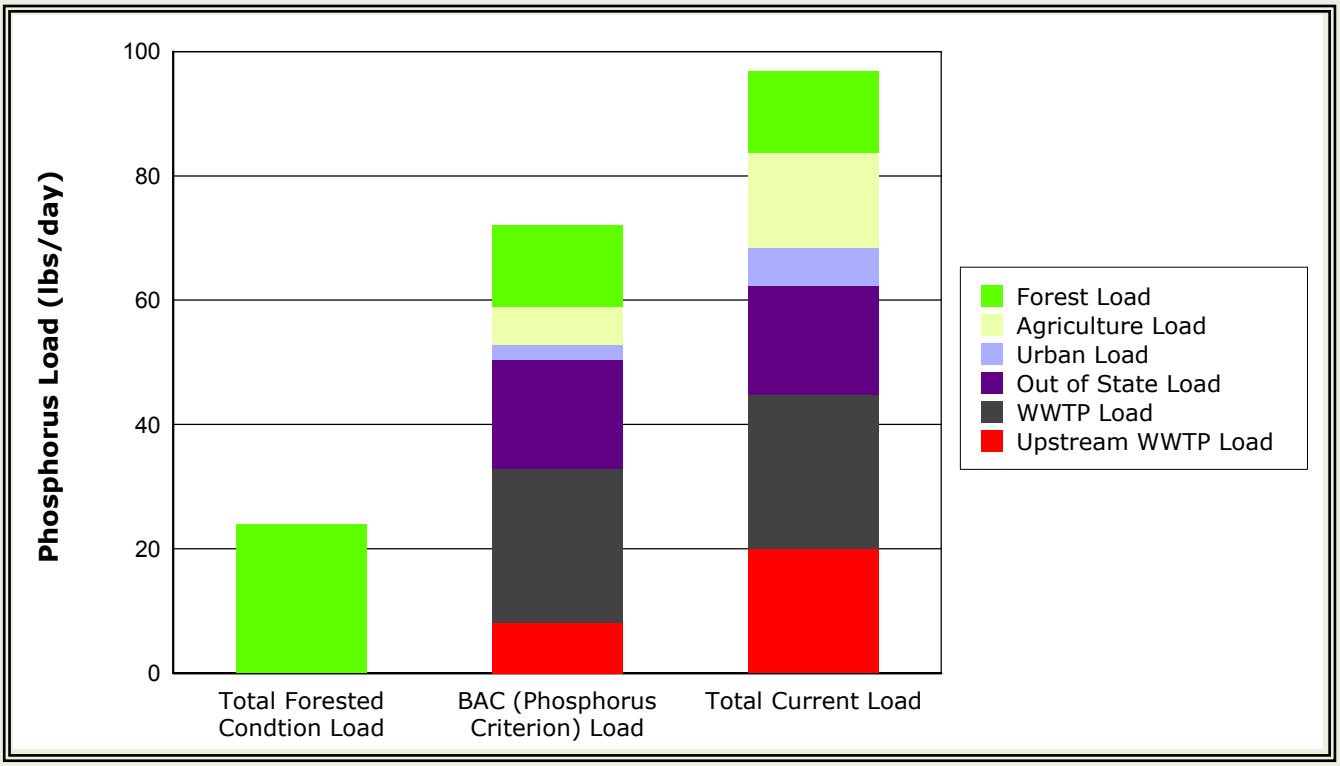
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

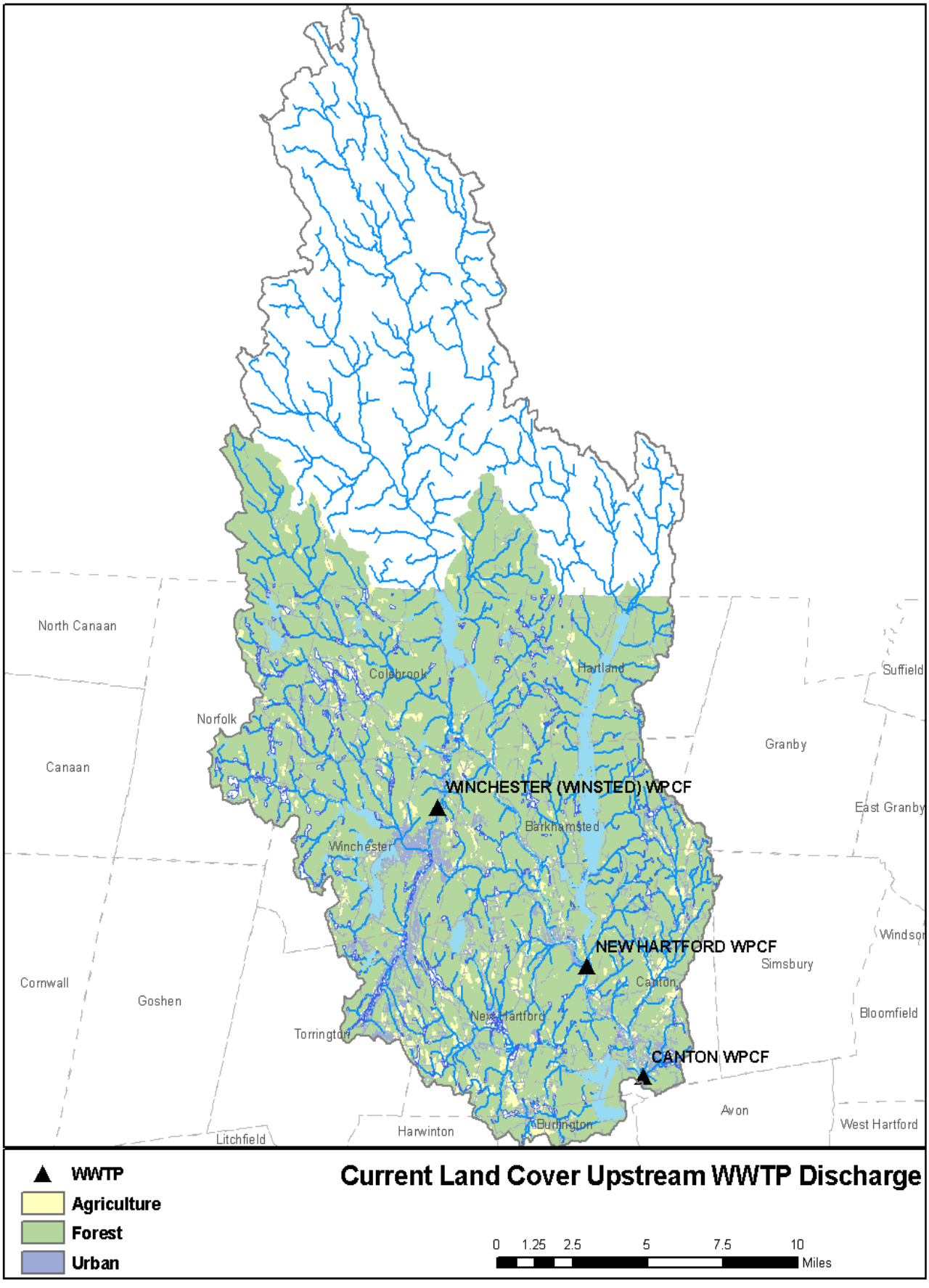
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	7746	6.12	60
Urban	13874.33	2.40	60
Forest	126218.47	13.11	0
Total US WWTP	3 (No.)	32.86	27
Out of State	81951.11	17.57	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	72.06
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	26



WWTP PHOSPHORUS FACT SHEET

CANTON WPCF



WWTP PHOSPHORUS FACT SHEET

CHESHIRE WPCF

Facility Overview

NPDES #	CT0100081	Permit Expiration Date	9/27/2009
Town	CHESHIRE	Design Flow (MGD)	3.50
Receiving Waterbody	Quinnipiac River-04	Type of Treatment*	AS, Nitr, DNitr, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	2.43
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	4.61
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	88.20
Proposed Treatment Performance (mg/L)	0.2
BMP Load Allocation (lbs/day)	4.06
Percent Reduction from Current	95
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 44.56

Total Forested Condition (lbs/day): 4.65

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	4322.17	8.54
Urban	18323.6	7.94
Forest	22062.88	2.29
Total US WWTP	2 (No.)	188.20
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	206.97
Percent Contribution at Point of Concern	43

WWTP PHOSPHORUS FACT SHEET

CHESHIRE WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	1.72	Enrichment Indication Level:	HIGH
Percent Contribution At Nearest Downstream Dam	42		
Distance to Nearest Downstream IW (mi)	1.72		
Percent Contribution At Nearest Downstream IW	42		

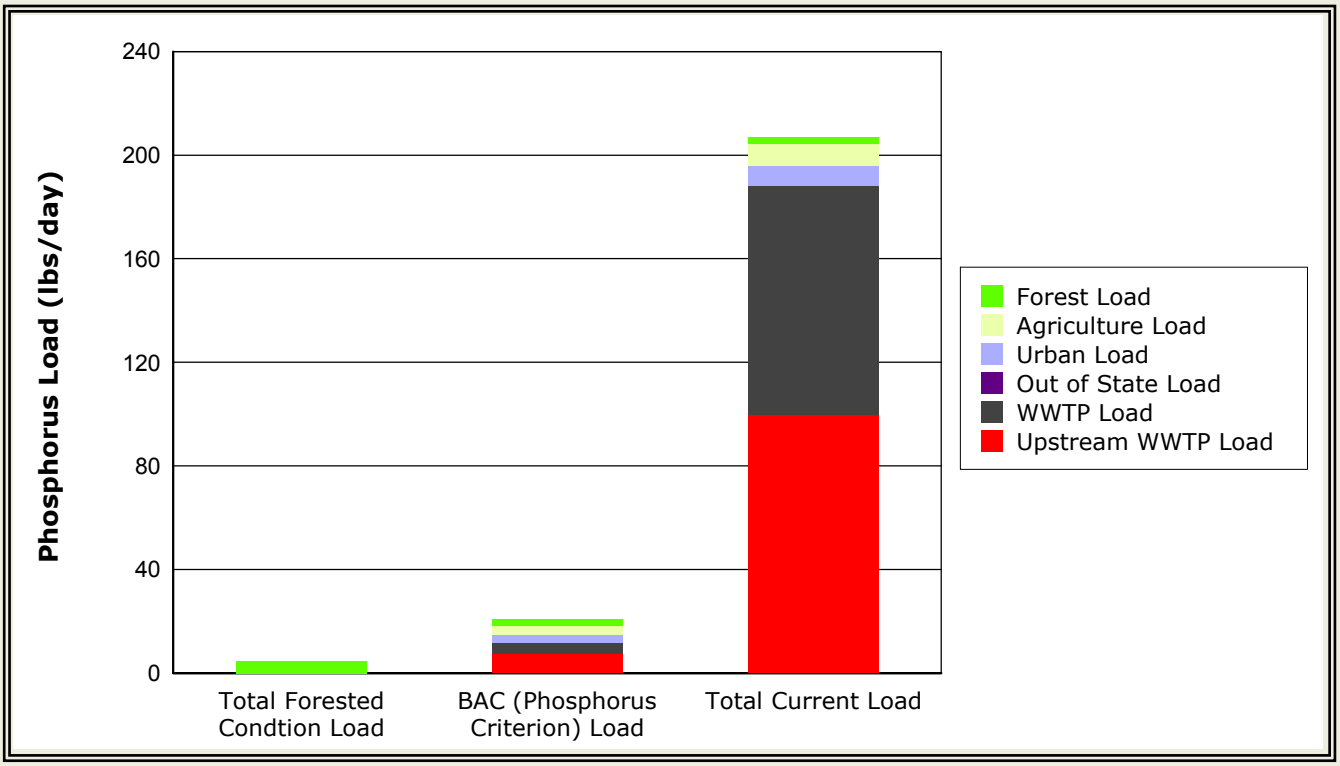
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

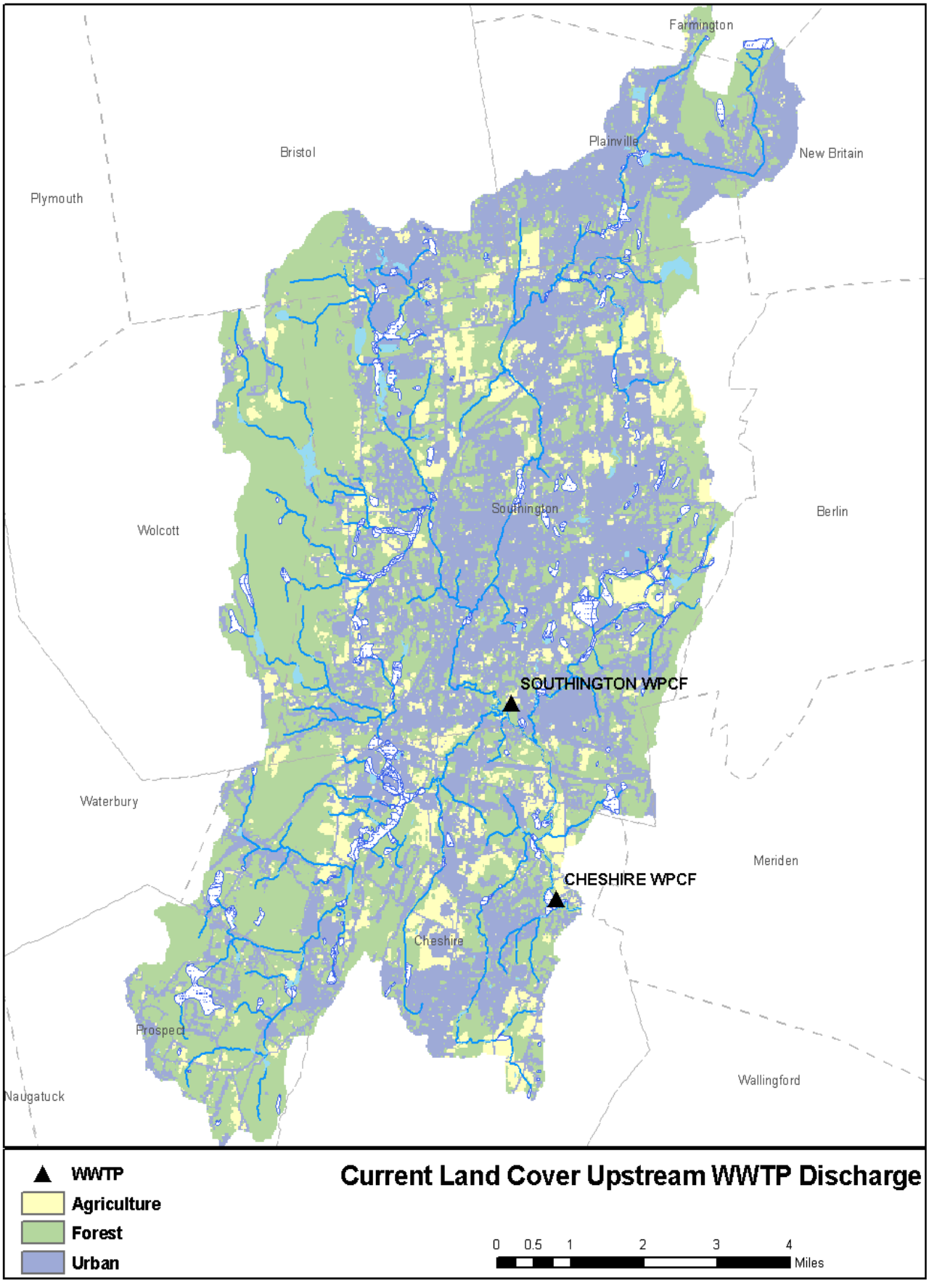
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	4322.17	3.42	60
Urban	18323.6	3.18	60
Forest	22062.88	2.29	0
Total US WWTP	2 (No.)	11.59	94
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	20.48
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	90



WWTP PHOSPHORUS FACT SHEET

CHESHIRE WPCF



WWTP PHOSPHORUS FACT SHEET

DANBURY WPCF

Facility Overview

NPDES #	CT0100145	Permit Expiration Date	2/13/2008
Town	DANBURY	Design Flow (MGD)	15.50
Receiving Waterbody	Limekiln Brook-01	Type of Treatment*	AS, TFilt, AdvTr, Nitr, DNitr, PRem, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	9.05
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.04
Current Phosphorus Treatment Performance (mg/L)	1.0 mg/l Avg Monthly, 1.5 mg/l Daily Limit
Current Average Phosphorus Load (lbs/day) 2001 - 2007	78.51
Proposed Treatment Performance (mg/L)	0.2
BMP Load Allocation (lbs/day)	15.11
Percent Reduction from Current	81
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 89.19

Total Forested Condition (lbs/day): 0.92

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{[\text{Ag}] + [\text{Urban}] + [\text{Forest}] + [\text{Total Upstream WWTP}] + [\text{Out of State}]}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	957.08	1.89
Urban	3141.68	1.36
Forest	4778.3	0.50
Total US WWTP	1 (No.)	78.51
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	82.26
Percent Contribution at Point of Concern	95

WWTP PHOSPHORUS FACT SHEET

DANBURY WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	15.23	Enrichment Indication Level:	HIGH
Percent Contribution At Nearest Downstream Dam	13		
Distance to Nearest Downstream IW (mi)	15.23		
Percent Contribution At Nearest Downstream IW	13		

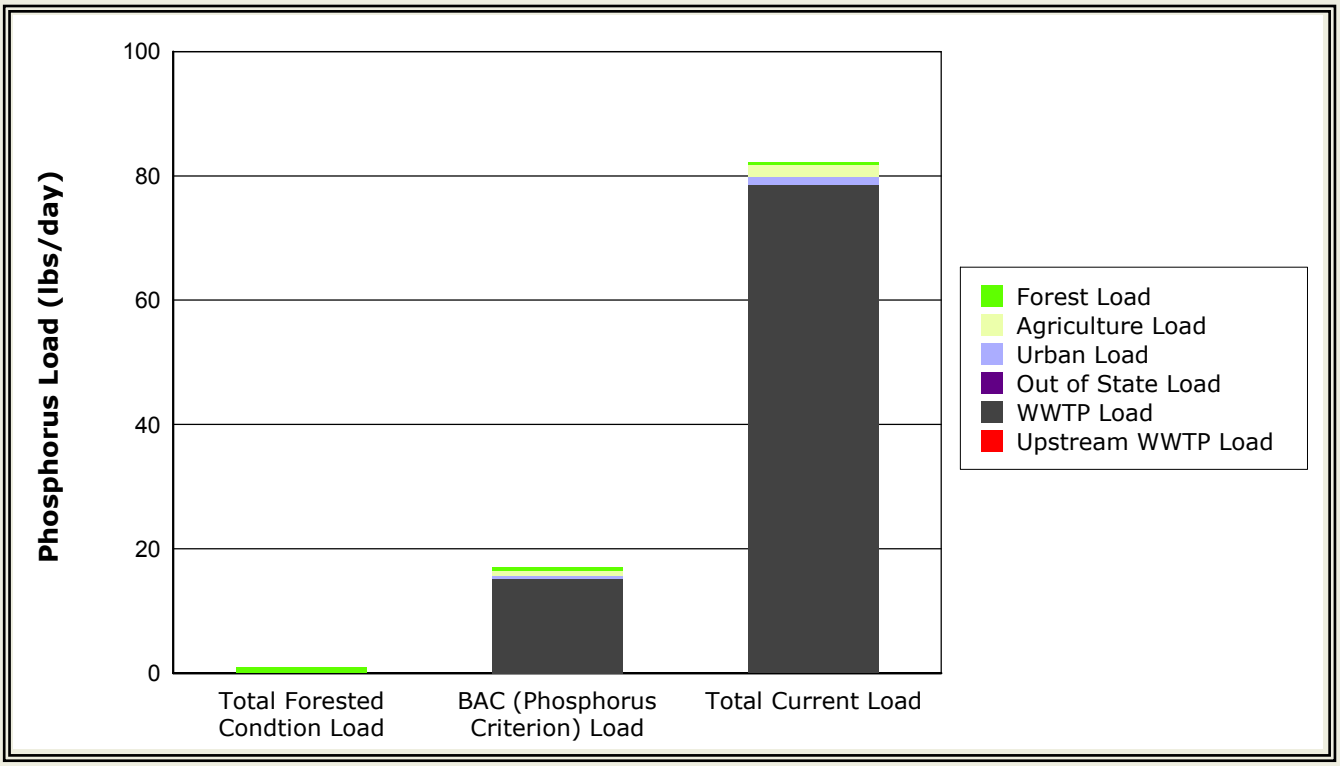
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

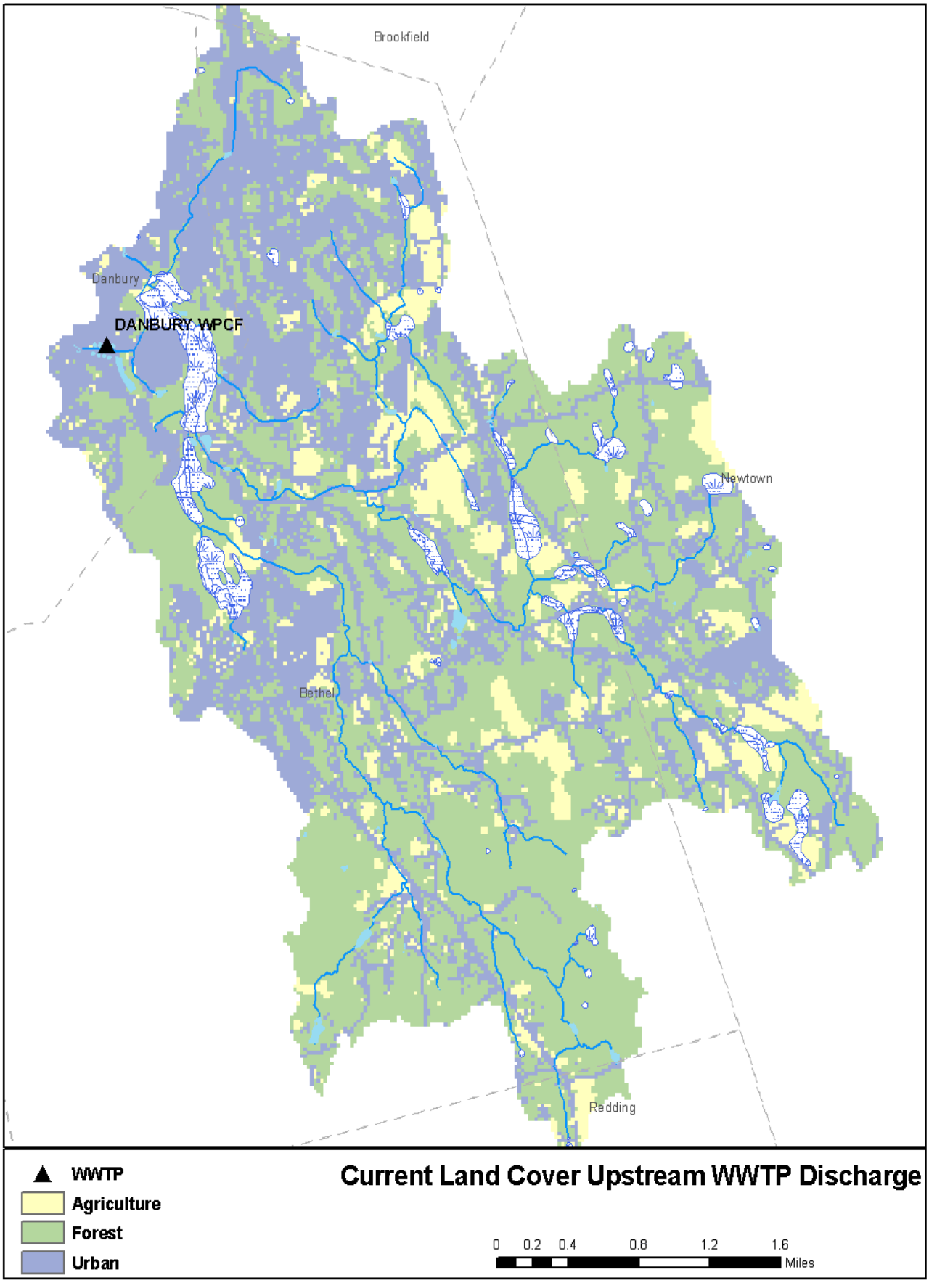
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	957.08	0.76	60
Urban	3141.68	0.54	60
Forest	4778.3	0.50	0
Total US WWTP	1 (No.)	15.11	81
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	16.91
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	79



WWTP PHOSPHORUS FACT SHEET

DANBURY WPCF



WWTP PHOSPHORUS FACT SHEET

FARMINGTON WPCF

Facility Overview

NPDES #	CT0100218	Permit Expiration Date	12/17/2007
Town	FARMINGTON	Design Flow (MGD)	5.65
Receiving Waterbody	Farmington River-02	Type of Treatment*	AS, TFilt, AdvTr, Nitr, DNitr, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	4.20
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.55
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	119.01
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	24.54
Percent Reduction from Current	79
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 18.02

Total Forested Condition (lbs/day): 29.81

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	12393.18	24.48
Urban	33543.56	14.54
Forest	159193.62	16.54
Total US WWTP	7 (No.)	464.16
Out of State	81794.77	17.59

Total Current Load At Discharge (lbs/day)	537.31
Percent Contribution at Point of Concern	22

WWTP PHOSPHORUS FACT SHEET

FARMINGTON WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	18.22	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	18		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

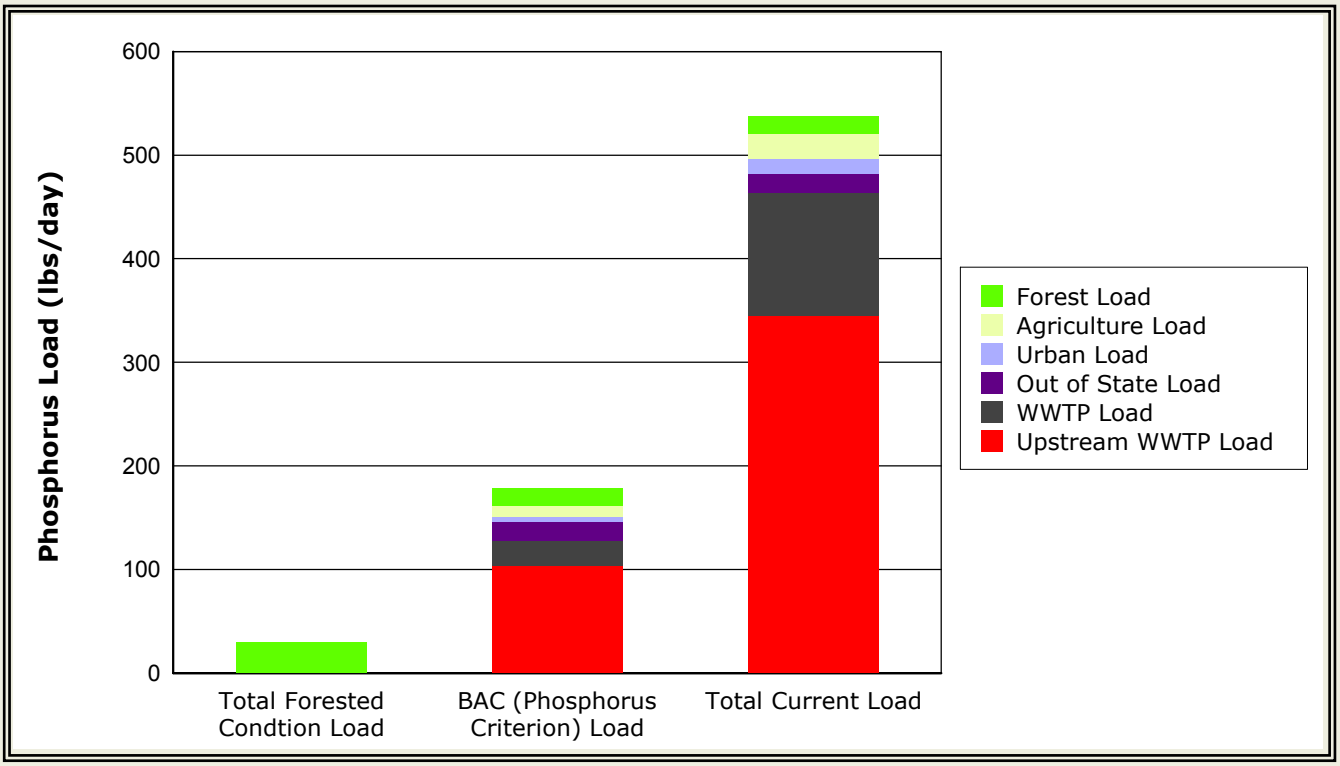
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

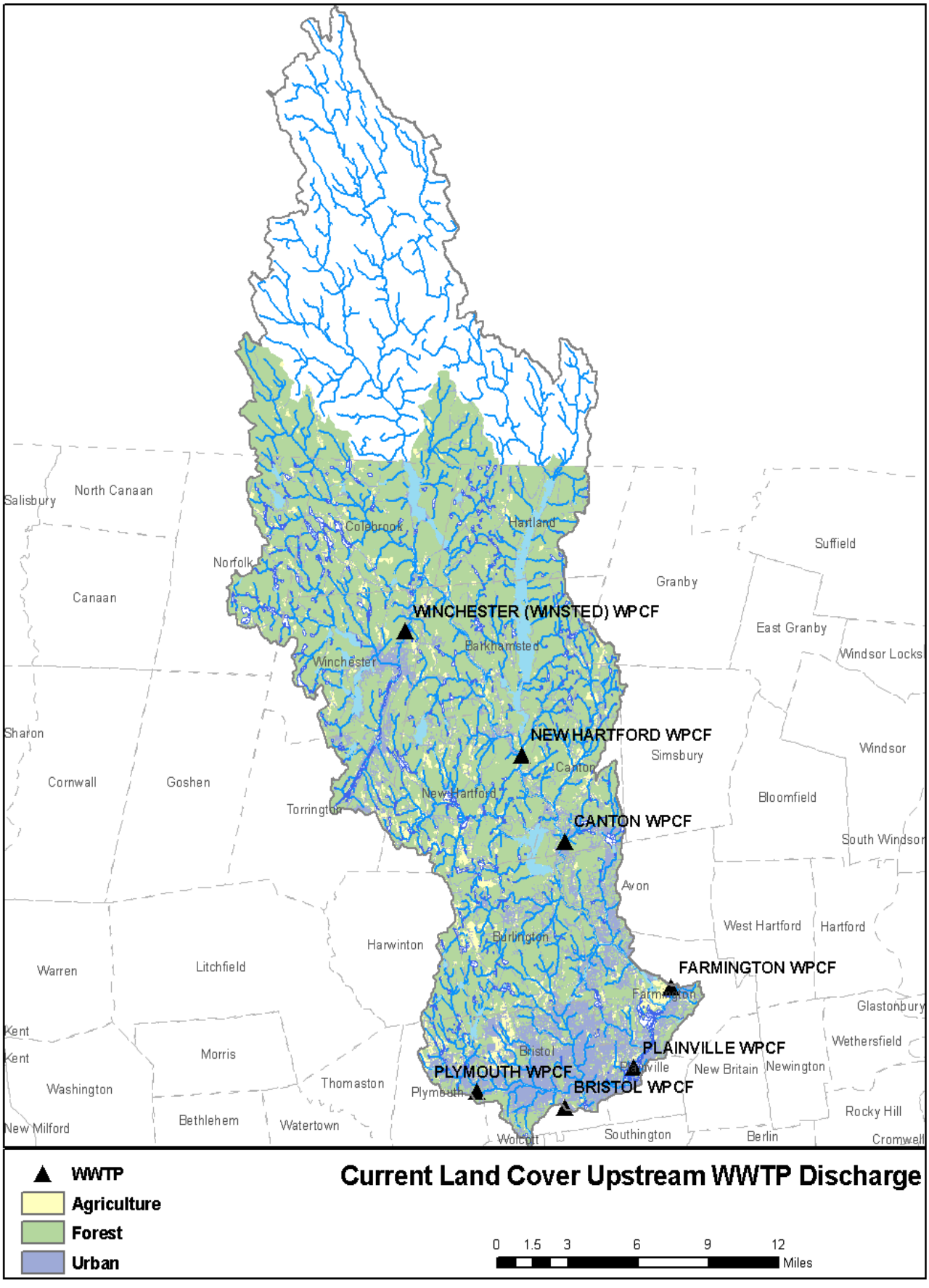
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	12393.18	9.79	60
Urban	33543.56	5.81	60
Forest	159193.62	16.54	0
Total US WWTP	7 (No.)	128.09	72
Out of State	81794.77	17.59	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	177.82
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	67



WWTP PHOSPHORUS FACT SHEET

FARMINGTON WPCF



WWTP PHOSPHORUS FACT SHEET

GRISWOLD WPCA

Facility Overview

NPDES #	CT0100269	Permit Expiration Date	9/17/2009
Town	JEWETT CITY	Design Flow (MGD)	0.50
Receiving Waterbody	Quinebaug River-01	Type of Treatment*	AS, OD,PRem, UV, (Nitr, DNitr capable)

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.31
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.11
Current Phosphorus Treatment Performance (mg/L)	1.0 mg/l Daily Limit
Current Average Phosphorus Load (lbs/day) 2001 - 2007	5.52
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	5.52
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 8.10

Total Forested Condition (lbs/day): 47.22

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	56300.09	111.22
Urban	62397.14	27.04
Forest	327208.46	34.00
Total US WWTP	6 (No.)	100.46
Out of State	159552	109.74

Total Current Load At Discharge (lbs/day)	382.46
Percent Contribution at Point of Concern	1

WWTP PHOSPHORUS FACT SHEET

GRISWOLD WPCA

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

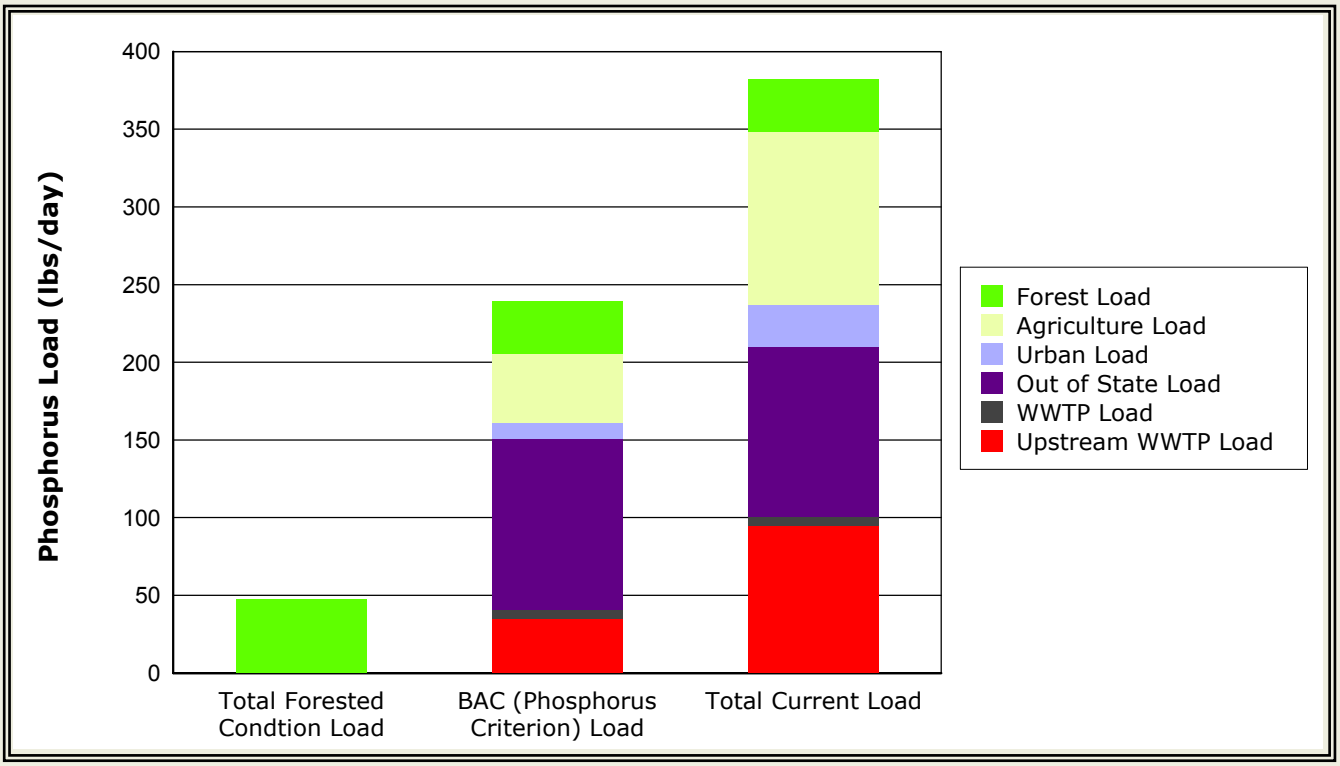
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

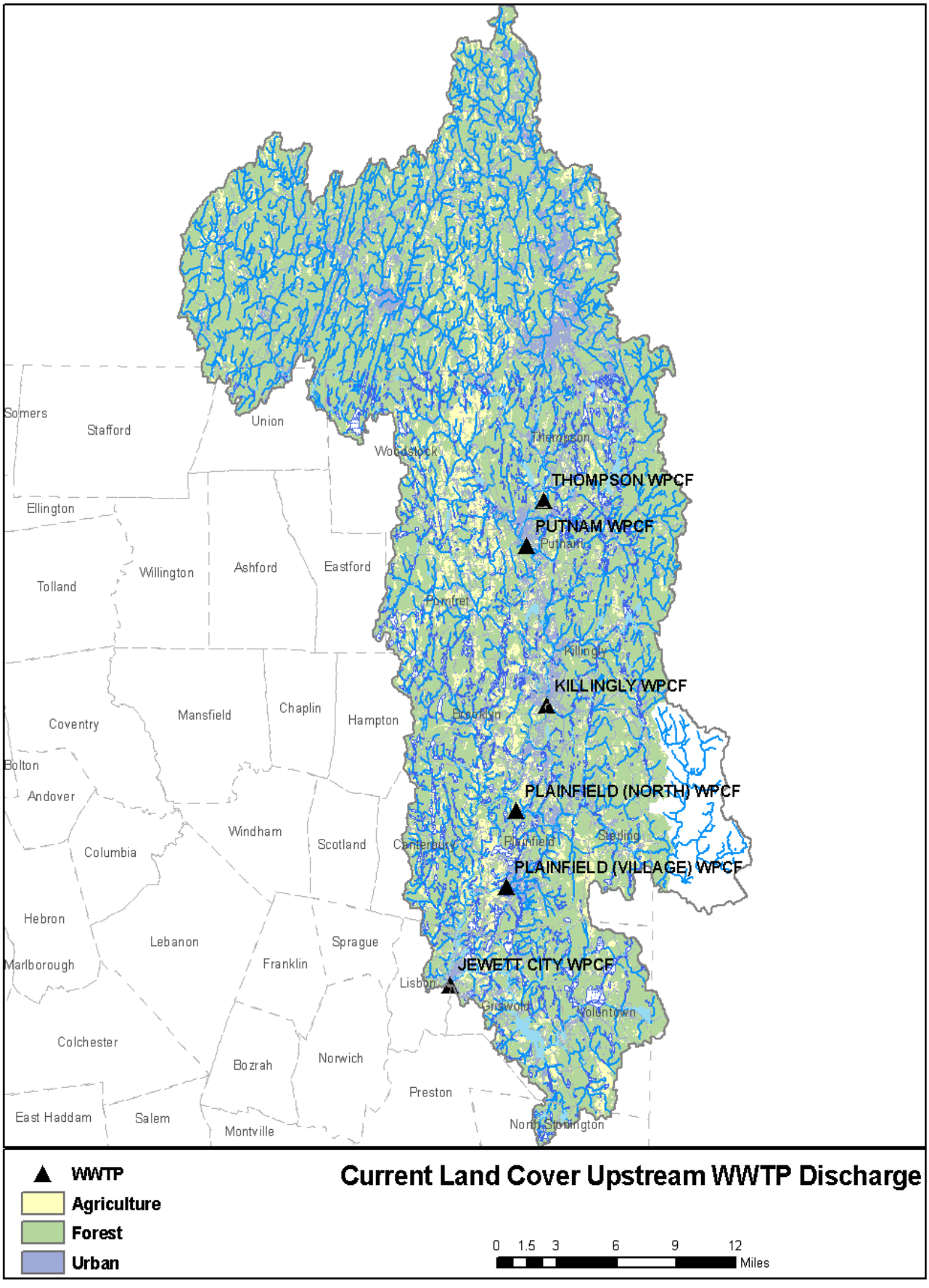
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	56300.09	44.49	60
Urban	62397.14	10.82	60
Forest	327208.46	34.00	0
Total US WWTP	6 (No.)	40.63	60
Out of State	159552	109.74	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	239.68
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	37



WWTP PHOSPHORUS FACT SHEET

GRISWOLD WPCA



WWTP PHOSPHORUS FACT SHEET

KILLINGLY WPCF

Facility Overview

NPDES #	CT0101257	Permit Expiration Date	10/18/2006
Town	DANIELSON	Design Flow (MGD)	8.00
Receiving Waterbody	Quinebaug River-04	Type of Treatment*	AS, DChlor, TFilt

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	3.12
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.58
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	40.64
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	18.23
Percent Reduction from Current	55
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 9.45

Total Forested Condition (lbs/day): 30.41

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	35523.84	70.17
Urban	43112.1	18.68
Forest	213987.28	22.23
Total US WWTP	3 (No.)	66.61
Out of State	159552	109.74

Total Current Load At Discharge (lbs/day)	287.43
Percent Contribution at Point of Concern	14

WWTP PHOSPHORUS FACT SHEET

KILLINGLY WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	15.17	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	13		
Distance to Nearest Downstream IW (mi)	15.17		
Percent Contribution At Nearest Downstream IW	13		

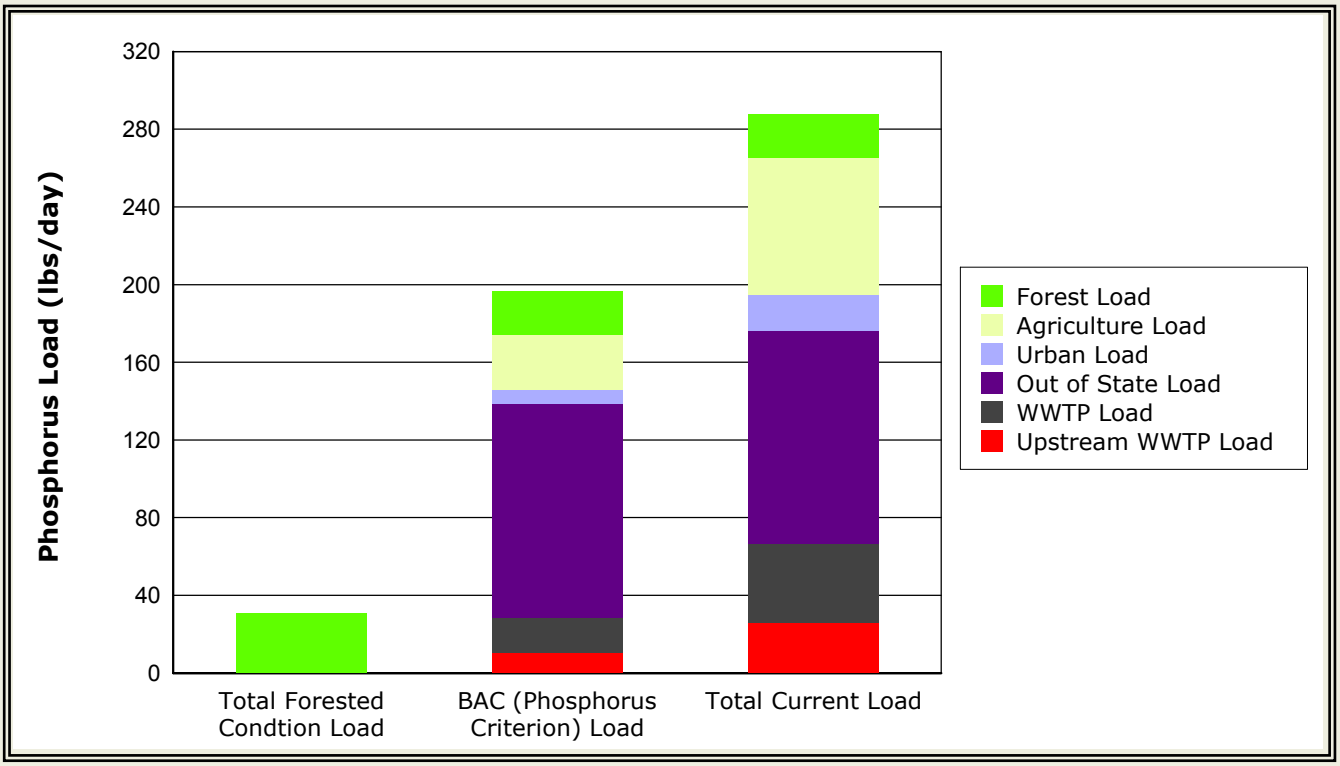
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

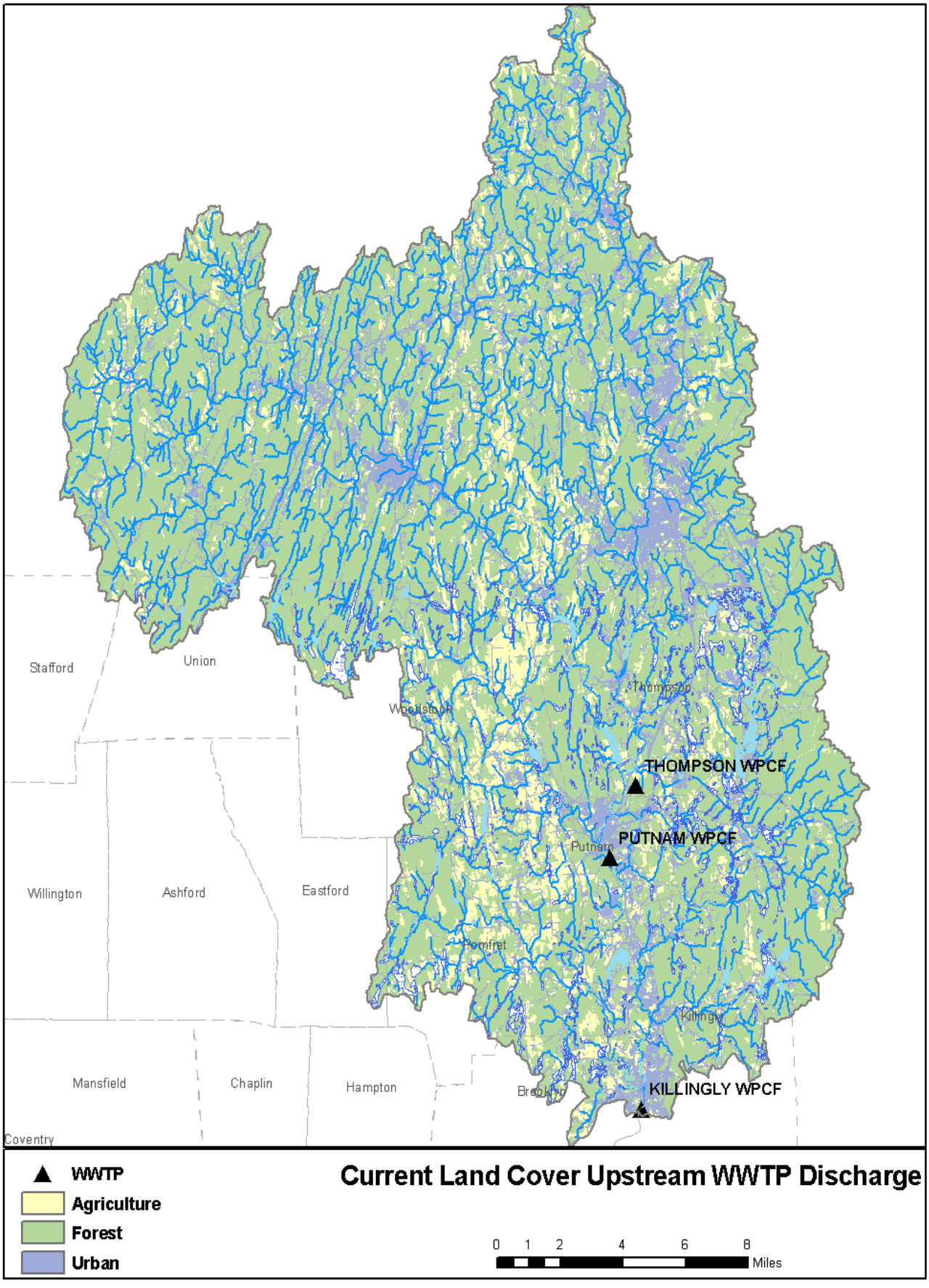
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	35523.84	28.07	60
Urban	43112.1	7.47	60
Forest	213987.28	22.23	0
Total US WWTP	3 (No.)	28.74	57
Out of State	159552	109.74	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	196.25
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	32



WWTP PHOSPHORUS FACT SHEET

KILLINGLY WPCF



WWTP PHOSPHORUS FACT SHEET

LITCHFIELD WPCF

Facility Overview

NPDES #	CT0100803	Permit Expiration Date	9/17/2011
Town	LITCHFIELD	Design Flow (MGD)	0.80
Receiving Waterbody	Bantam River-02	Type of Treatment*	AS, Nitr, DNitr,UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.50
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.29
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	13.07
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	2.92
Percent Reduction from Current	78
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 9.17

Total Forested Condition (lbs/day): 3.02

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	5595.74	11.05
Urban	3490.25	1.51
Forest	20006.29	2.08
Total US WWTP	1 (No.)	13.07
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	27.71
Percent Contribution at Point of Concern	47

WWTP PHOSPHORUS FACT SHEET

LITCHFIELD WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	22.38	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	2		
Distance to Nearest Downstream IW (mi)	22.38		
Percent Contribution At Nearest Downstream IW	2		

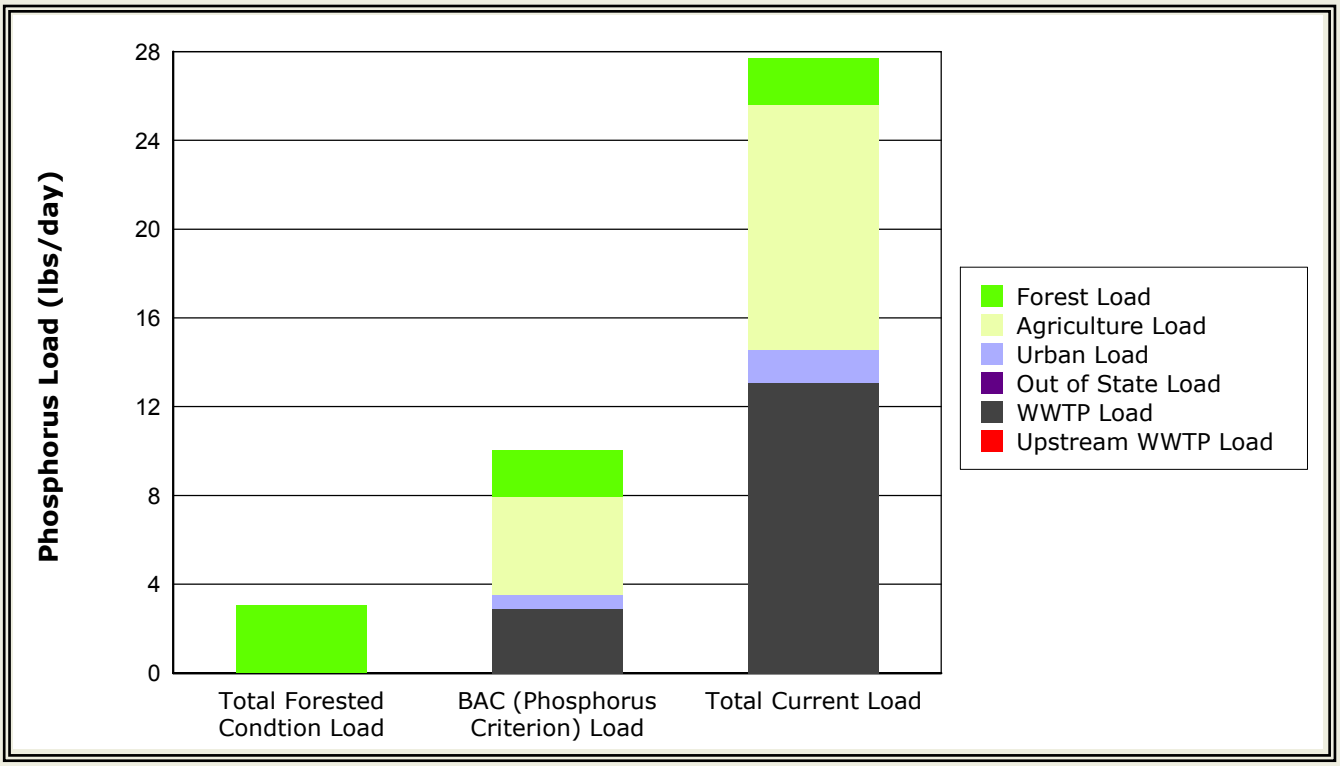
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

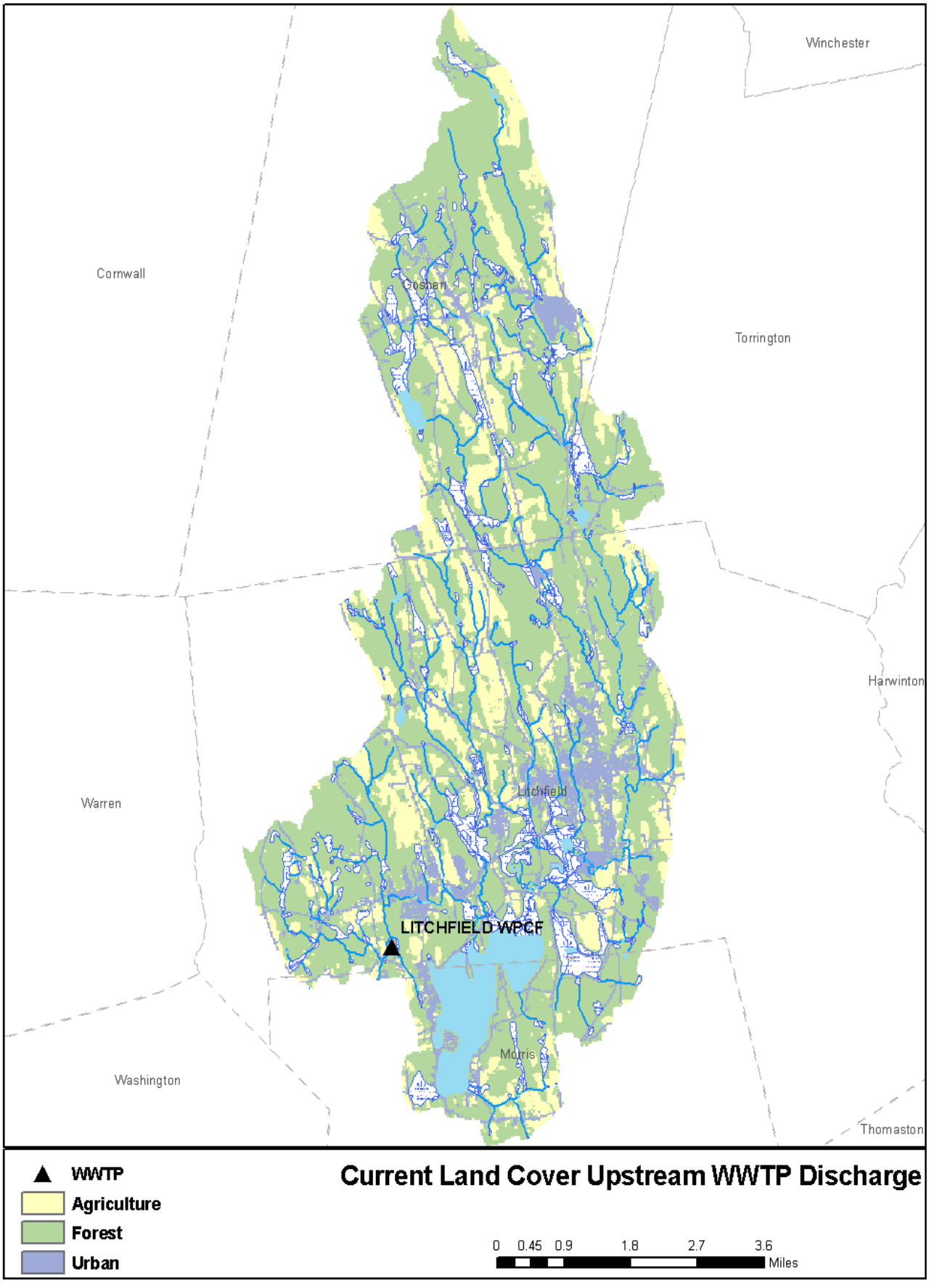
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	5595.74	4.42	60
Urban	3490.25	0.60	60
Forest	20006.29	2.08	0
Total US WWTP	1 (No.)	2.92	78
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	10.02
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	64



WWTP PHOSPHORUS FACT SHEET

LITCHFIELD WPCF



WWTP PHOSPHORUS FACT SHEET

MANCHESTER WATER & SEWER

Facility Overview

NPDES #	CT0100293	Permit Expiration Date	7/20/2011
Town	MANCHESTER	Design Flow (MGD)	8.25
Receiving Waterbody	Hockanum River-02	Type of Treatment*	AS, AdvTr, Nitr, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	6.33
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.15
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	110.40
Proposed Treatment Performance (mg/L)	0.2
BMP Load Allocation (lbs/day)	10.57
Percent Reduction from Current	90
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 42.79

Total Forested Condition (lbs/day): 4.80

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	6296.27	12.44
Urban	18592.66	8.06
Forest	21289.33	2.21
Total US WWTP	2 (No.)	182.59
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	205.30
Percent Contribution at Point of Concern	54

WWTP PHOSPHORUS FACT SHEET

MANCHESTER WATER & SEWER

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	2.98	Enrichment Indication Level:	HIGH
Percent Contribution At Nearest Downstream Dam	54		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

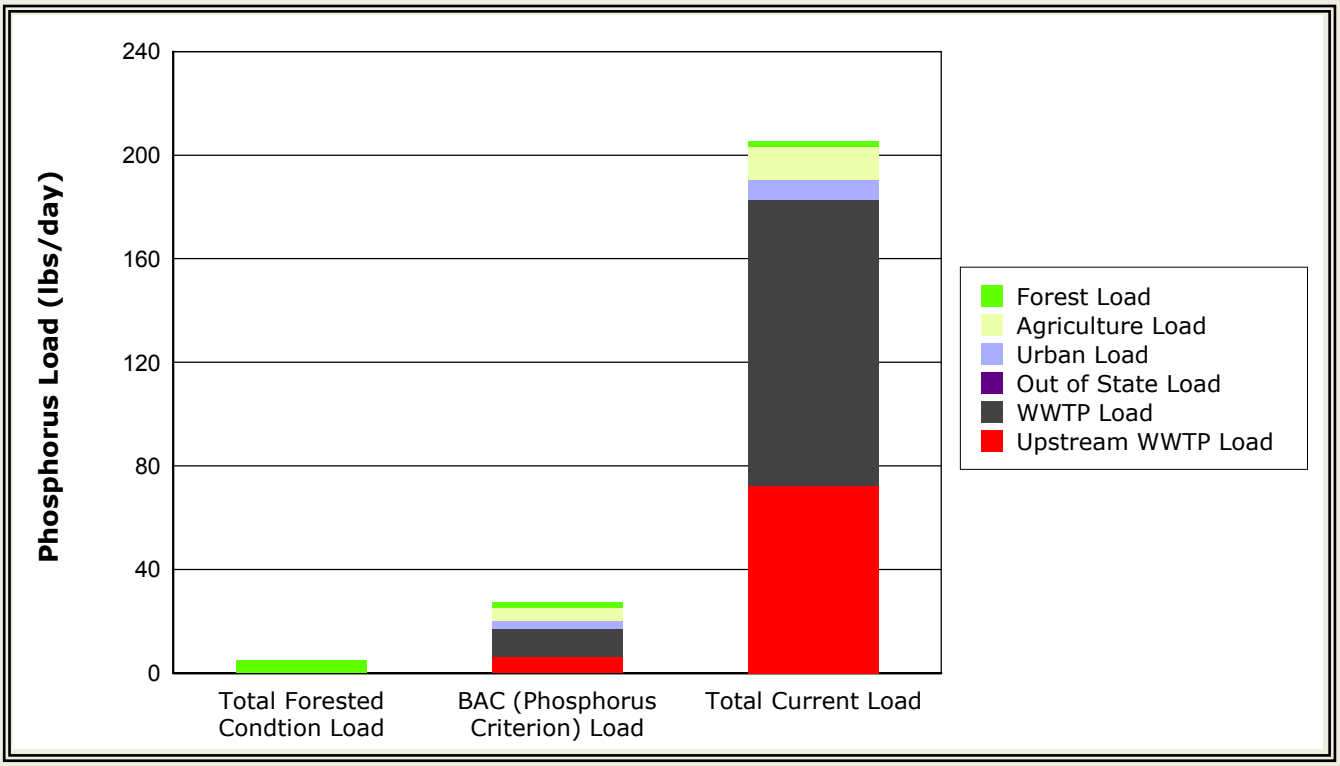
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

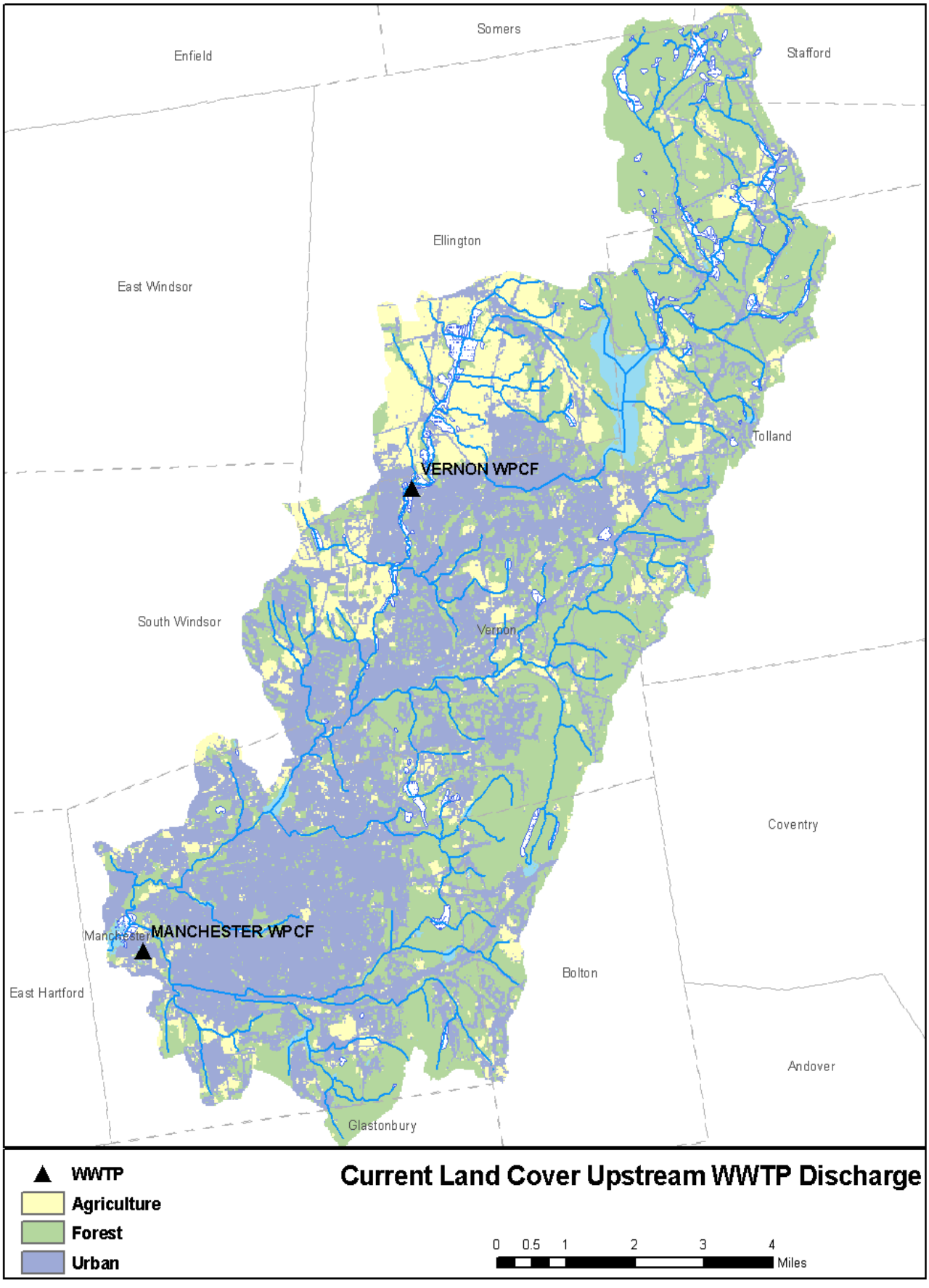
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	6296.27	4.98	60
Urban	18592.66	3.22	60
Forest	21289.33	2.21	0
Total US WWTP	2 (No.)	17.08	91
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	27.49
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	87



WWTP PHOSPHORUS FACT SHEET

MANCHESTER WATER & SEWER



WWTP PHOSPHORUS FACT SHEET

MERIDEN WPCF

Facility Overview

NPDES #	CT0100315	Permit Expiration Date	10/17/2010
Town	MERIDEN	Design Flow (MGD)	11.60
Receiving Waterbody	Quinnipiac River-02	Type of Treatment*	AS, AdvTr, DChlor, Nitr, DNitr

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	10.44
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.47
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	121.64
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	61.00
Percent Reduction from Current	50
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 52.74

Total Forested Condition (lbs/day): 6.37

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	5907.75	11.67
Urban	26617.35	11.53
Forest	28799.2	2.99
Total US WWTP	3 (No.)	309.84
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	336.03
Percent Contribution at Point of Concern	36

WWTP PHOSPHORUS FACT SHEET

MERIDEN WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	3.66	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	36		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

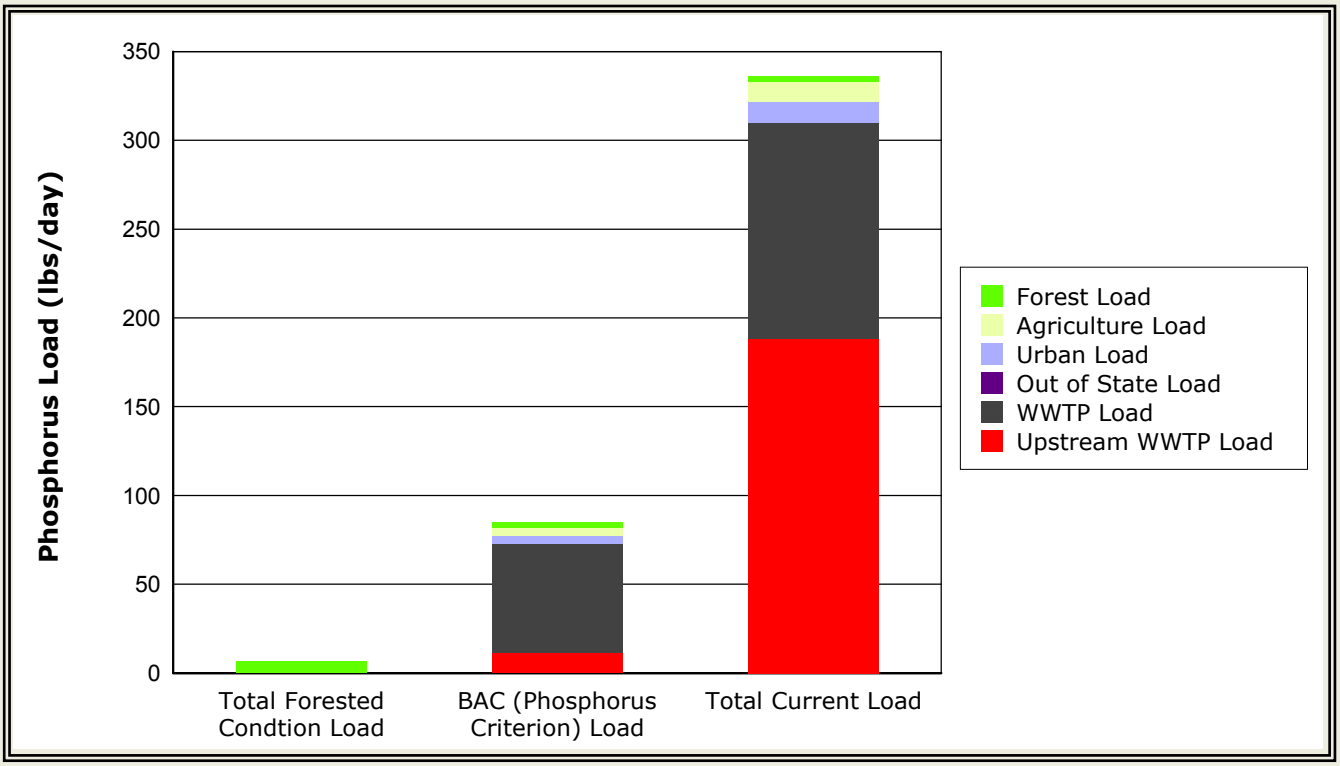
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

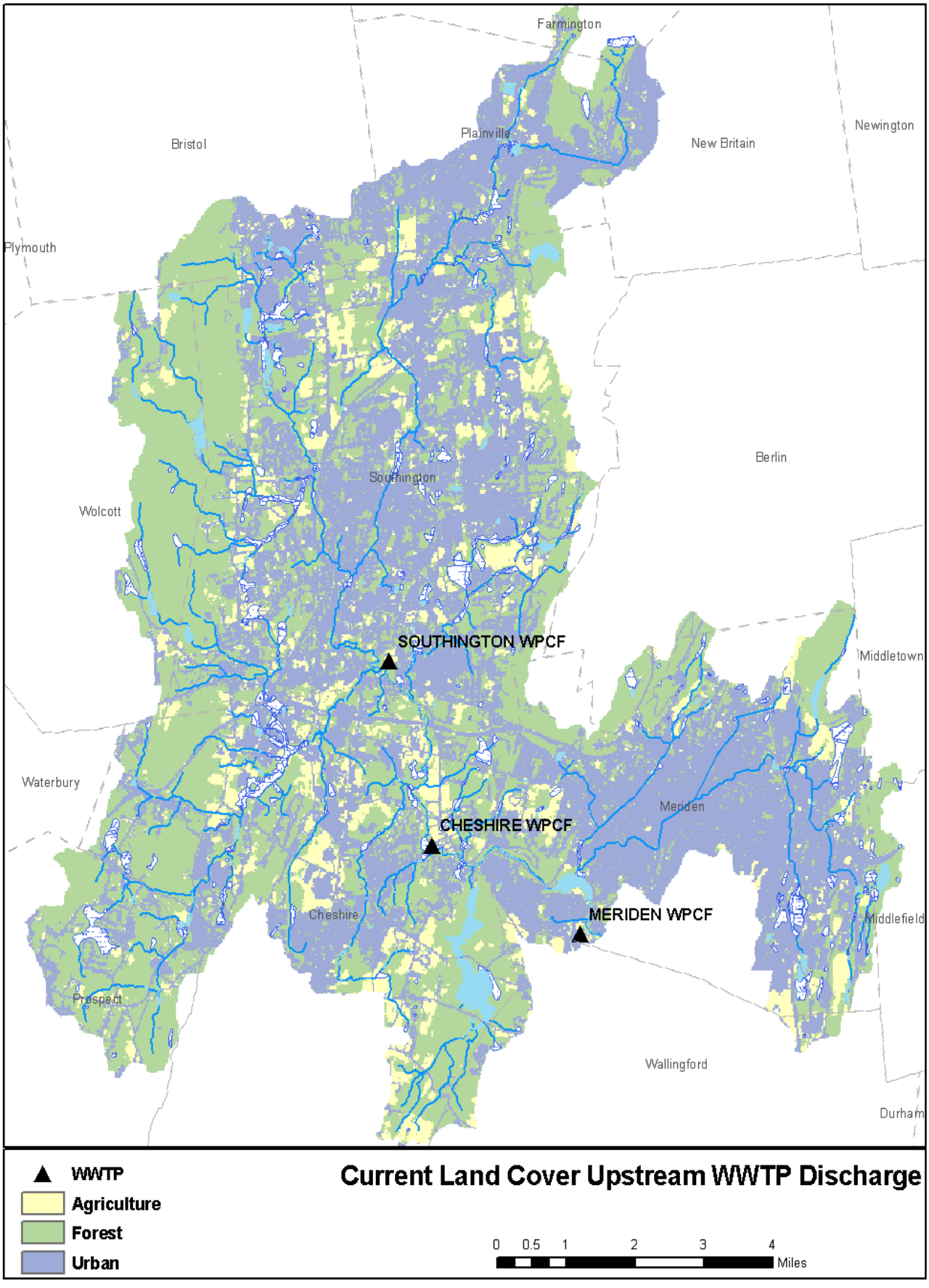
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	5907.75	4.67	60
Urban	26617.35	4.61	60
Forest	28799.2	2.99	0
Total US WWTP	3 (No.)	72.59	77
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	84.86
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	75



WWTP PHOSPHORUS FACT SHEET

MERIDEN WPCF



WWTP PHOSPHORUS FACT SHEET

NAUGATUCK WPCF

Facility Overview

NPDES #	CT0100641	Permit Expiration Date	8/7/2006
Town	NAUGATUCK	Design Flow (MGD)	10.30
Receiving Waterbody	Naugatuck River-02	Type of Treatment*	AS, AdvTr, Nitr, DNitr, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	4.92
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	4.30
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	159.97
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	28.75
Percent Reduction from Current	82
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 52.17

Total Forested Condition (lbs/day): 16.26

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{[\text{Ag}] + [\text{Urban}] + [\text{Forest}] + [\text{Total Upstream WWTP}] + [\text{Out of State}]}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	16873.28	33.33
Urban	40473.78	17.54
Forest	99183.92	10.30
Total US WWTP	4 (No.)	787.29
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	848.46
Percent Contribution at Point of Concern	19

WWTP PHOSPHORUS FACT SHEET

NAUGATUCK WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

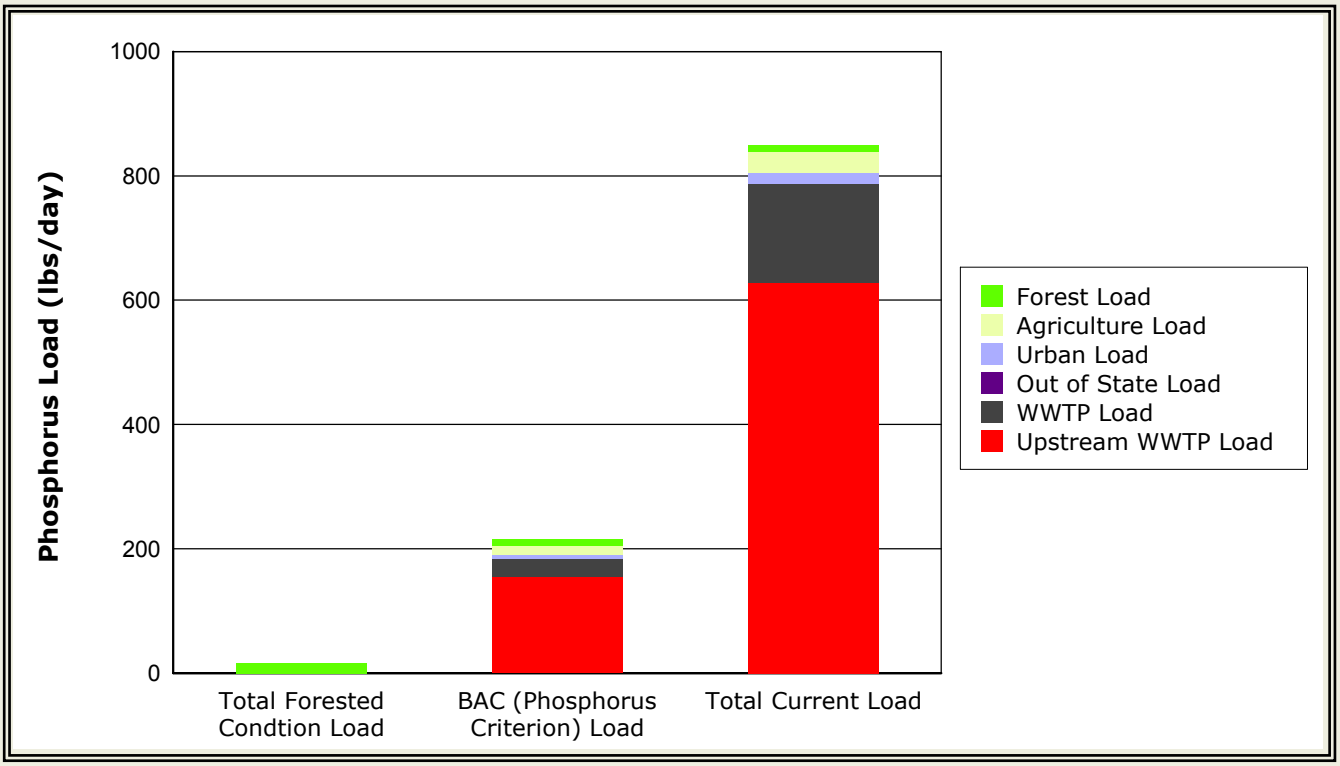
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

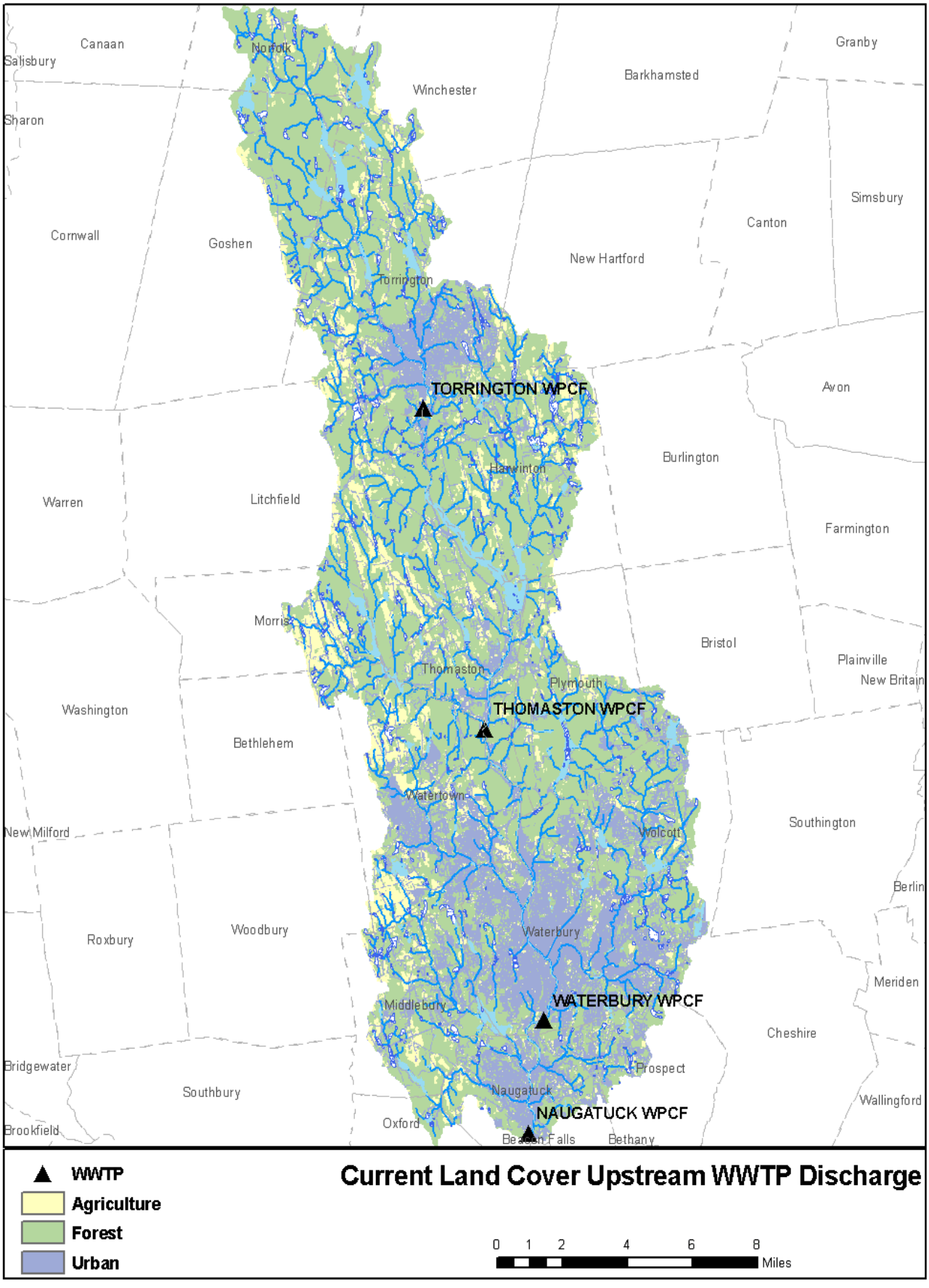
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	16873.28	13.33	60
Urban	40473.78	7.02	60
Forest	99183.92	10.30	0
Total US WWTP	4 (No.)	184.05	77
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	214.70
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	75



WWTP PHOSPHORUS FACT SHEET

NAUGATUCK WPCF



WWTP PHOSPHORUS FACT SHEET

NEW CANAAN WPCF

Facility Overview

NPDES #	CT0101273	Permit Expiration Date	5/15/2005
Town	NEW CANAAN	Design Flow (MGD)	1.70
Receiving Waterbody	Fivemile River (New Can	Type of Treatment*	AS, OD, EA, AdvTr, Nitr, DNitr, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.93
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.42
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	10.45
Proposed Treatment Performance (mg/L)	0.2
BMP Load Allocation (lbs/day)	1.55
Percent Reduction from Current	85
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 35.52

Total Forested Condition (lbs/day): 0.33

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	156.22	0.31
Urban	1928.43	0.84
Forest	1088.04	0.11
Total US WWTP	1 (No.)	10.45
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	11.71
Percent Contribution at Point of Concern	89

WWTP PHOSPHORUS FACT SHEET

NEW CANAAN WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	1.69	Enrichment Indication Level:	HIGH
Percent Contribution At Nearest Downstream Dam	86		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

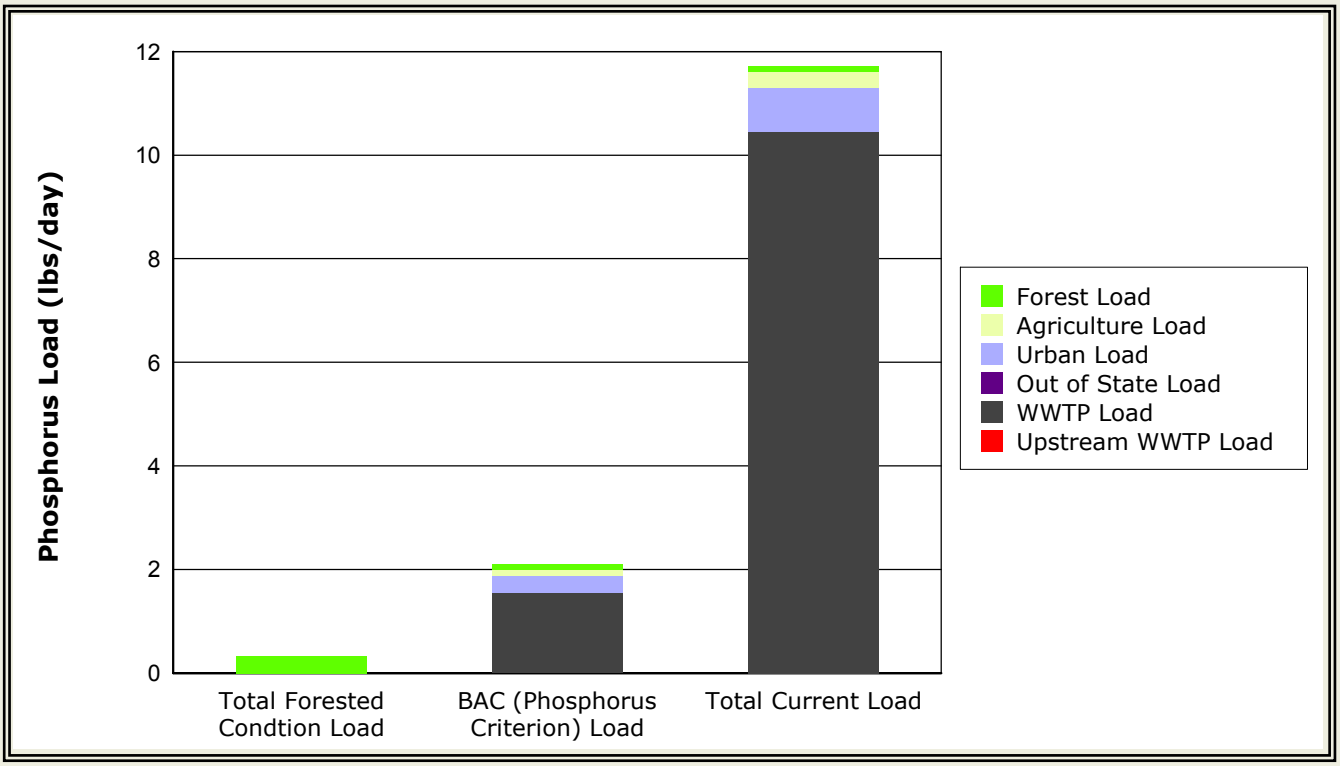
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

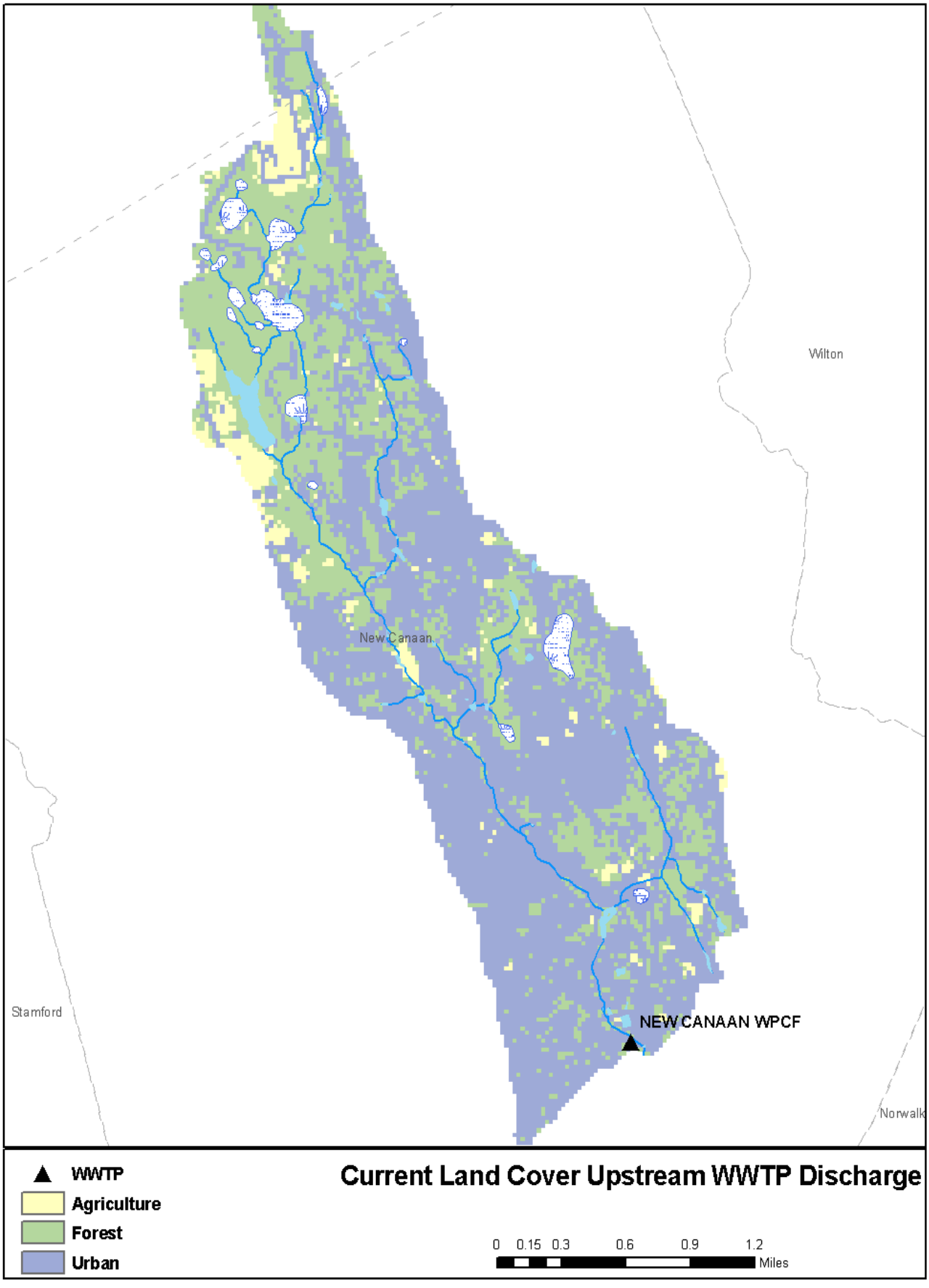
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	156.22	0.12	60
Urban	1928.43	0.33	60
Forest	1088.04	0.11	0
Total US WWTP	1 (No.)	1.55	85
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	2.11
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	82



WWTP PHOSPHORUS FACT SHEET

NEW CANAAN WPCF



WWTP PHOSPHORUS FACT SHEET

NEW HARTFORD WPCF*

Facility Overview

NPDES #	CT0100331	Permit Expiration Date	6/27/2006
Town	NEW HARTFORD	Design Flow (MGD)	0.09
Receiving Waterbody	Farmington River-04	Type of Treatment*	AS, EA

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	0.00
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 3.02

Total Forested Condition (lbs/day): 20.15

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	4461.12	8.81
Urban	9900.98	4.29
Forest	97831.33	10.16
Total US WWTP	2 (No.)	20.03
Out of State	81951.11	17.57

Total Current Load At Discharge (lbs/day)	60.86
Percent Contribution at Point of Concern	

WWTP PHOSPHORUS FACT SHEET

NEW HARTFORD WPCF*

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	
Percent Contribution At Nearest Downstream Dam	
Distance to Nearest Downstream IW (mi)	
Percent Contribution At Nearest Downstream IW	

Enrichment Indication Level: LOW

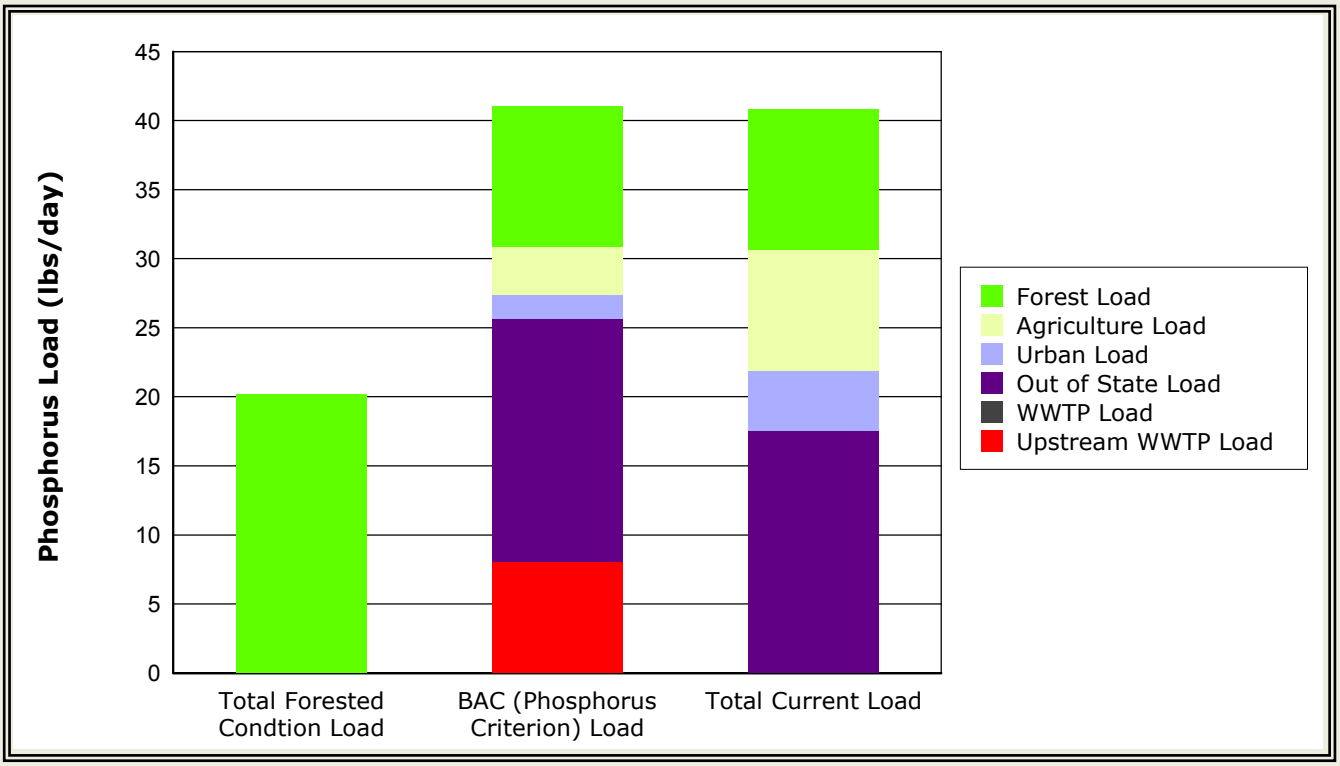
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

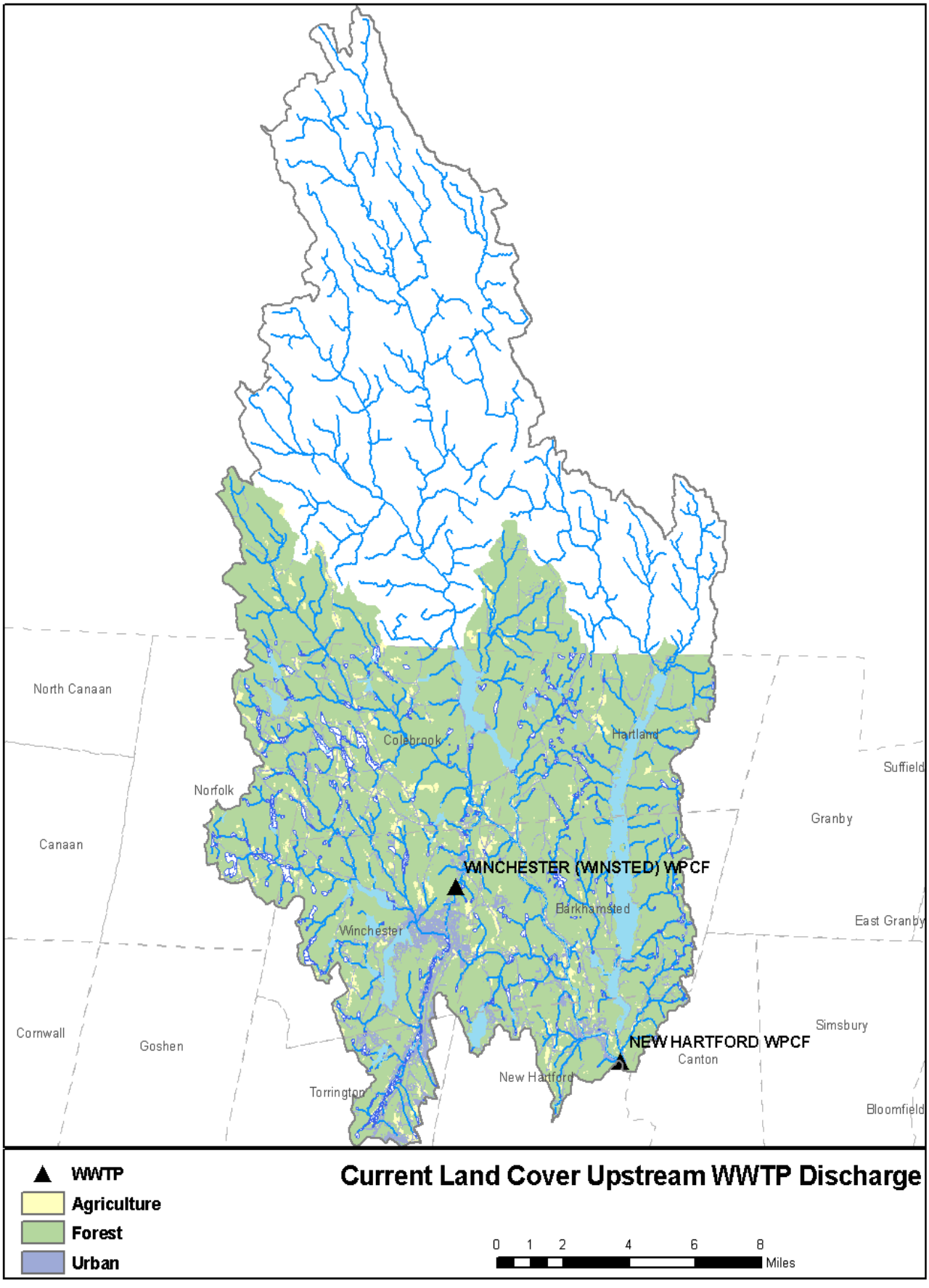
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	4461.12	3.53	60
Urban	9900.98	1.72	60
Forest	97831.33	10.16	0
Total US WWTP	2 (No.)	8.06	60
Out of State	81951.11	17.57	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	**41.04**
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	**33**



WWTP PHOSPHORUS FACT SHEET

NEW HARTFORD WPCF*



WWTP PHOSPHORUS FACT SHEET

NEW MILFORD WPCF

Facility Overview

NPDES #	CT0100391	Permit Expiration Date	10/4/2009
Town	NEW MILFORD	Design Flow (MGD)	1.02
Receiving Waterbody	Housatonic River-03	Type of Treatment*	AS, AdvTr, PRem

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.69
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	0.47
Current Phosphorus Treatment Performance (mg/L)	1.0 mg/l Avg Monthly, 1.5 mg/l Daily Limit
Current Average Phosphorus Load (lbs/day) 2001 - 2007	2.68
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	2.68
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 5.85

Total Forested Condition (lbs/day): 71.85

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	57174.63	112.94
Urban	28658.17	12.42
Forest	264129.41	27.44
Total US WWTP	4 (No.)	17.56
Out of State	320837.14	250.22

Total Current Load At Discharge (lbs/day)	420.58
Percent Contribution at Point of Concern	1

WWTP PHOSPHORUS FACT SHEET

NEW MILFORD WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	2.02	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	2.02		
Percent Contribution At Nearest Downstream IW	0		

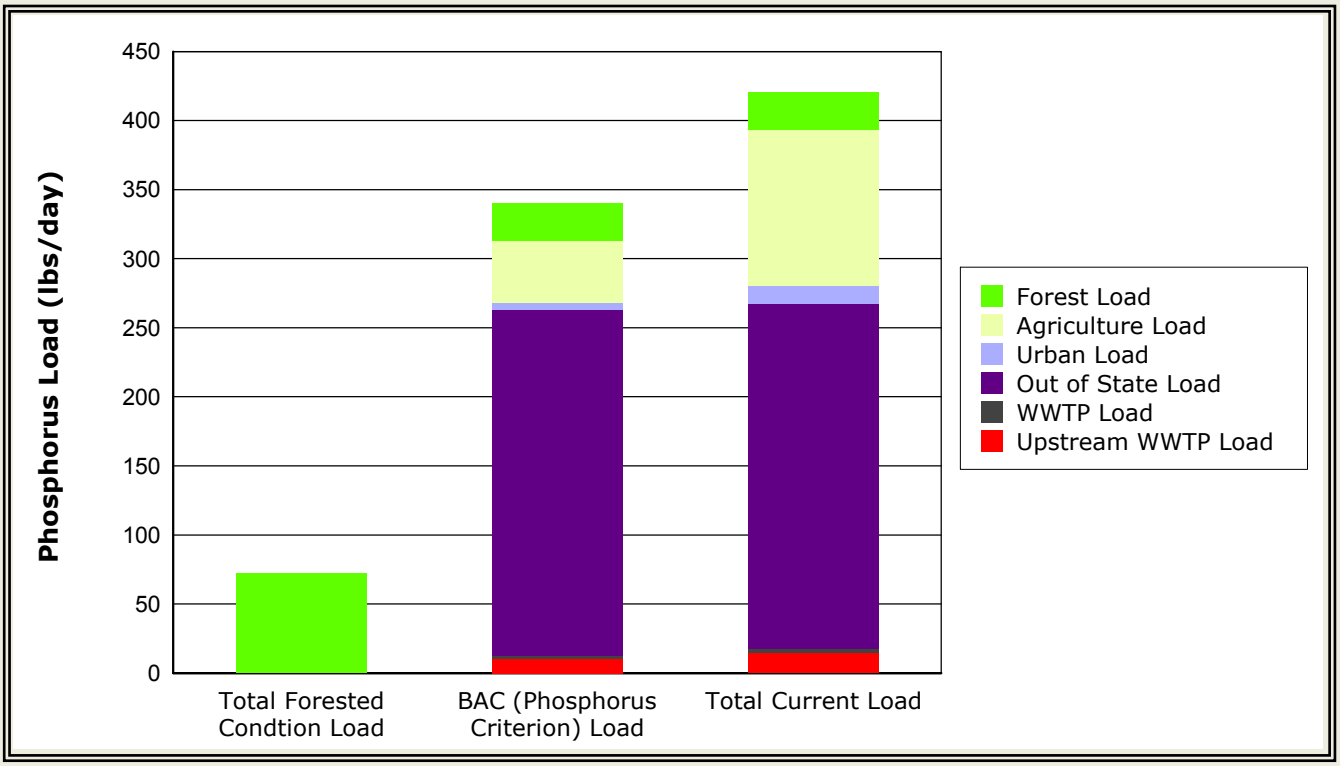
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

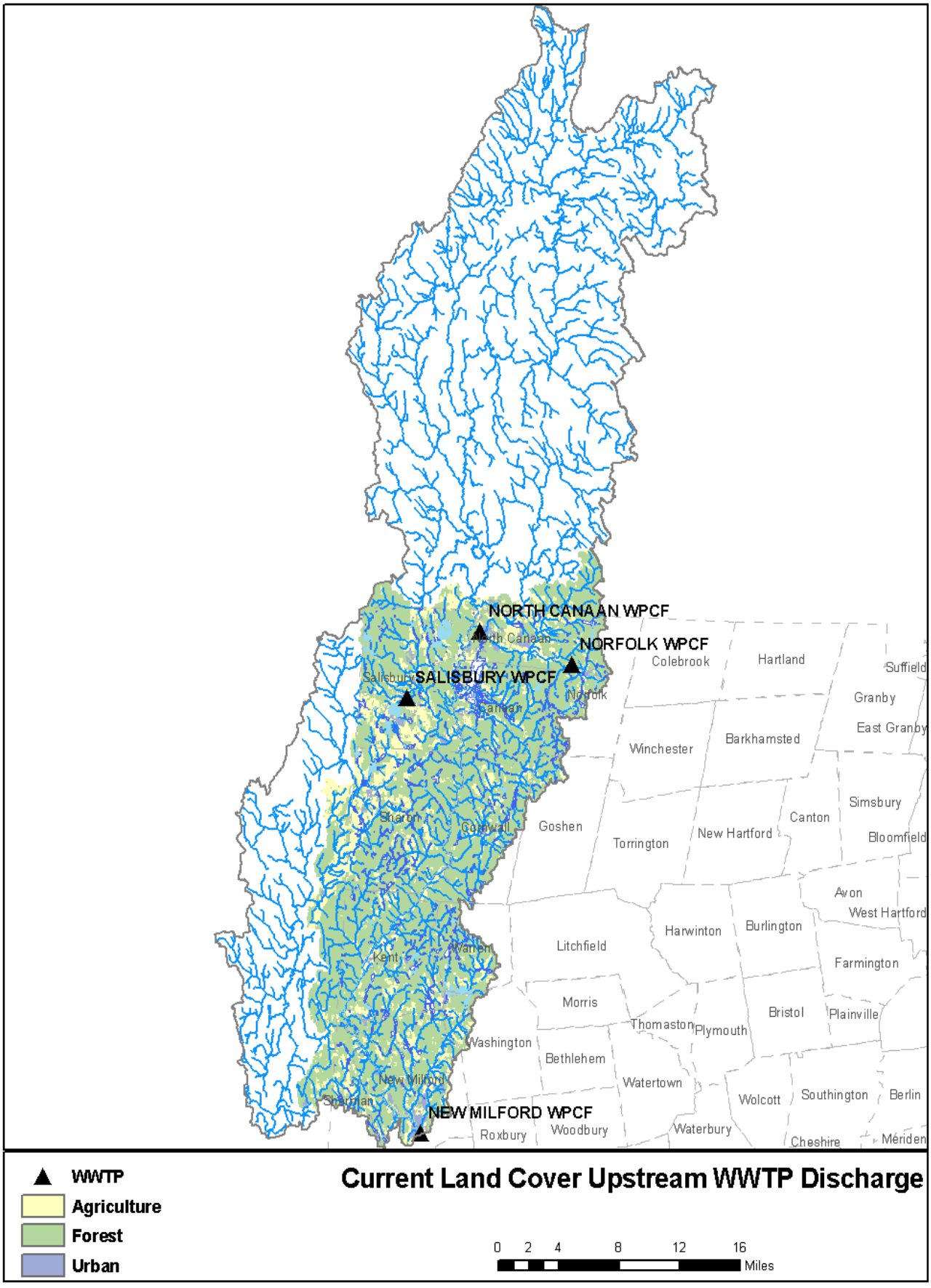
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	57174.63	45.18	60
Urban	28658.17	4.97	60
Forest	264129.41	27.44	0
Total US WWTP	4 (No.)	12.64	28
Out of State	320837.14	250.22	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	340.45
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	19



WWTP PHOSPHORUS FACT SHEET

NEW MILFORD WPCF



WWTP PHOSPHORUS FACT SHEET

NEWTOWN WPCF

Facility Overview

NPDES #	CT0101788	Permit Expiration Date	10/11/2010
Town	NEWTOWN	Design Flow (MGD)	0.93
Receiving Waterbody	Pootatuck River-01	Type of Treatment*	AS, OD, EA, UV,AdvTr, PRem, Nitr, DNitr

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.48
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	0.52
Current Phosphorus Treatment Performance (mg/L)	2.0 mg/l Avg Monthly, 4.0 mg/l Daily Limit
Current Average Phosphorus Load (lbs/day) 2001 - 2007	2.18
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	2.18
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 5.93

Total Forested Condition (lbs/day): 1.61

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	2390.83	4.72
Urban	3870.23	1.68
Forest	9215.04	0.96
Total US WWTP	1 (No.)	2.18
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	9.54
Percent Contribution at Point of Concern	23

WWTP PHOSPHORUS FACT SHEET

NEWTOWN WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	2.22	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	2.22		
Percent Contribution At Nearest Downstream IW	0		

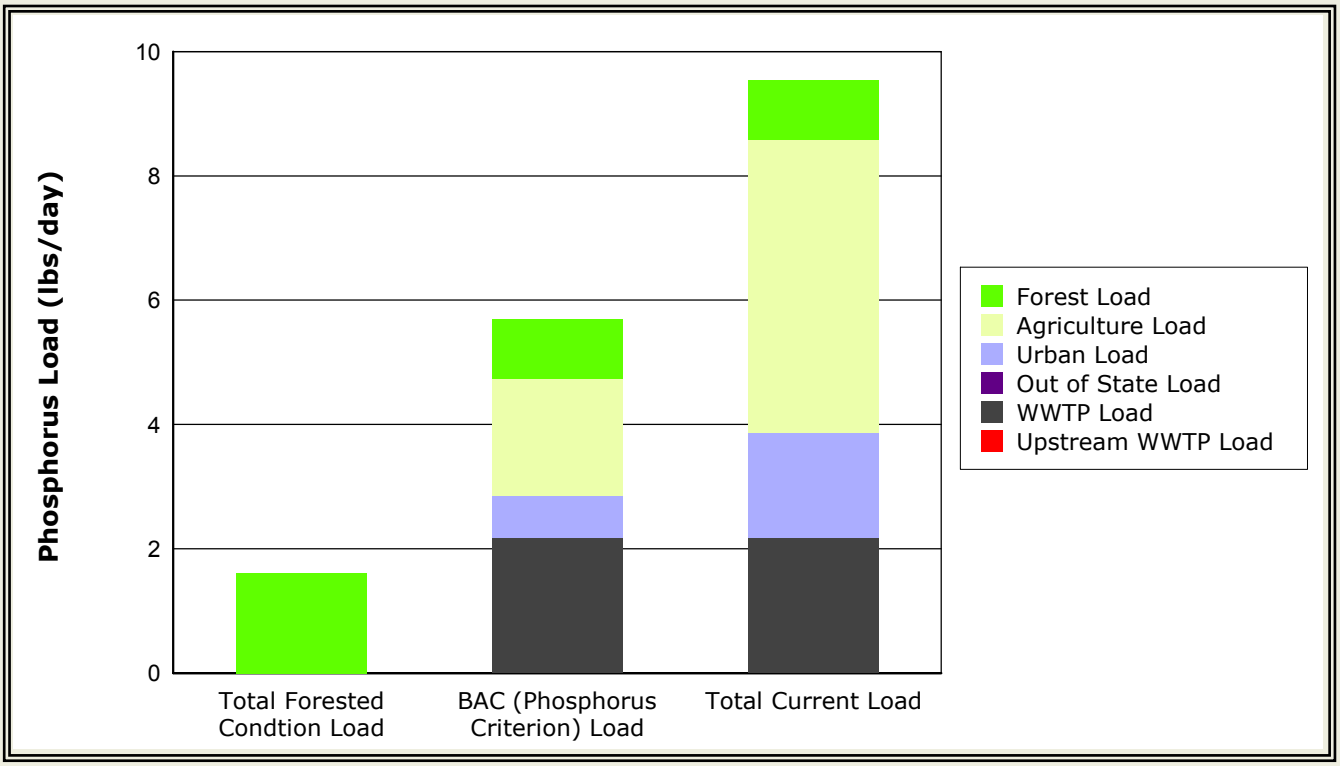
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

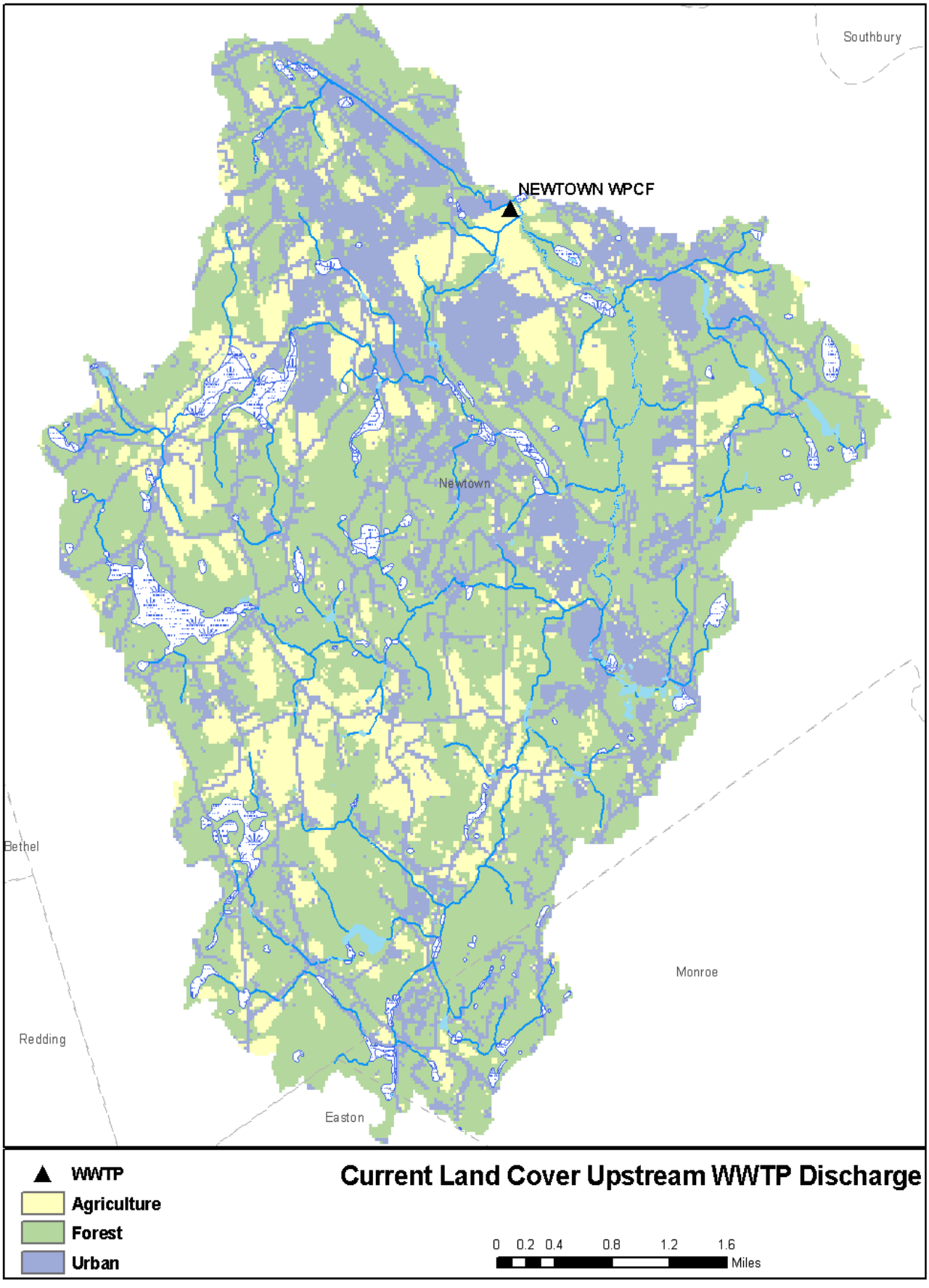
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	2390.83	1.89	60
Urban	3870.23	0.67	60
Forest	9215.04	0.96	0
Total US WWTP	1 (No.)	2.18	0
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	5.70
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	40



WWTP PHOSPHORUS FACT SHEET

NEWTOWN WPCF



WWTP PHOSPHORUS FACT SHEET

NORFOLK SEWER DISTRICT

Facility Overview

NPDES #	CT0101231	Permit Expiration Date	10/4/2009
Town	NORFOLK	Design Flow (MGD)	0.35
Receiving Waterbody	Blackberry River-04	Type of Treatment*	AS, EA, DChlor, SFilt

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.31
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.70
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	3.45
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	3.45
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 7.26

Total Forested Condition (lbs/day): 0.79

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	671.8	1.33
Urban	777.68	0.34
Forest	6192.98	0.64
Total US WWTP	1 (No.)	3.45
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	5.76
Percent Contribution at Point of Concern	60

WWTP PHOSPHORUS FACT SHEET

NORFOLK SEWER DISTRICT

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	4.37	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	26		
Distance to Nearest Downstream IW (mi)	53.41		
Percent Contribution At Nearest Downstream IW	1		

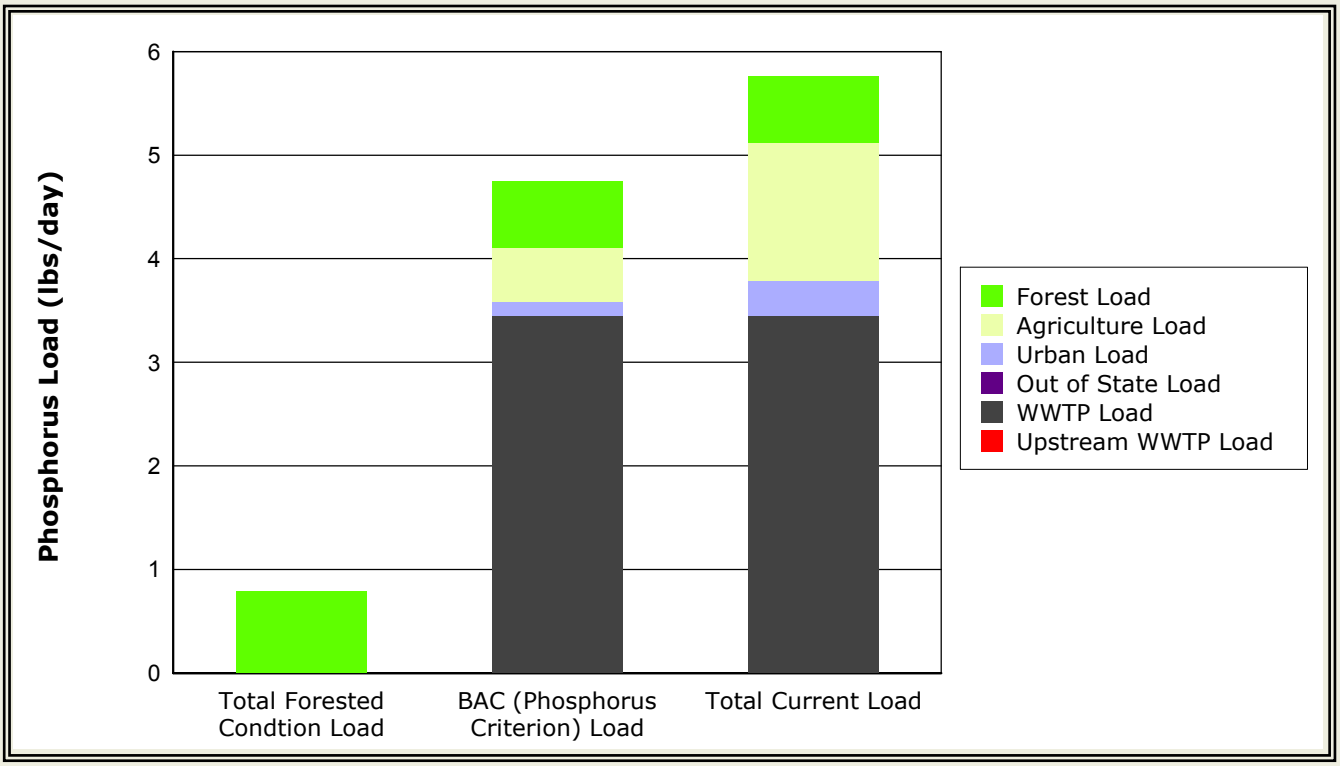
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

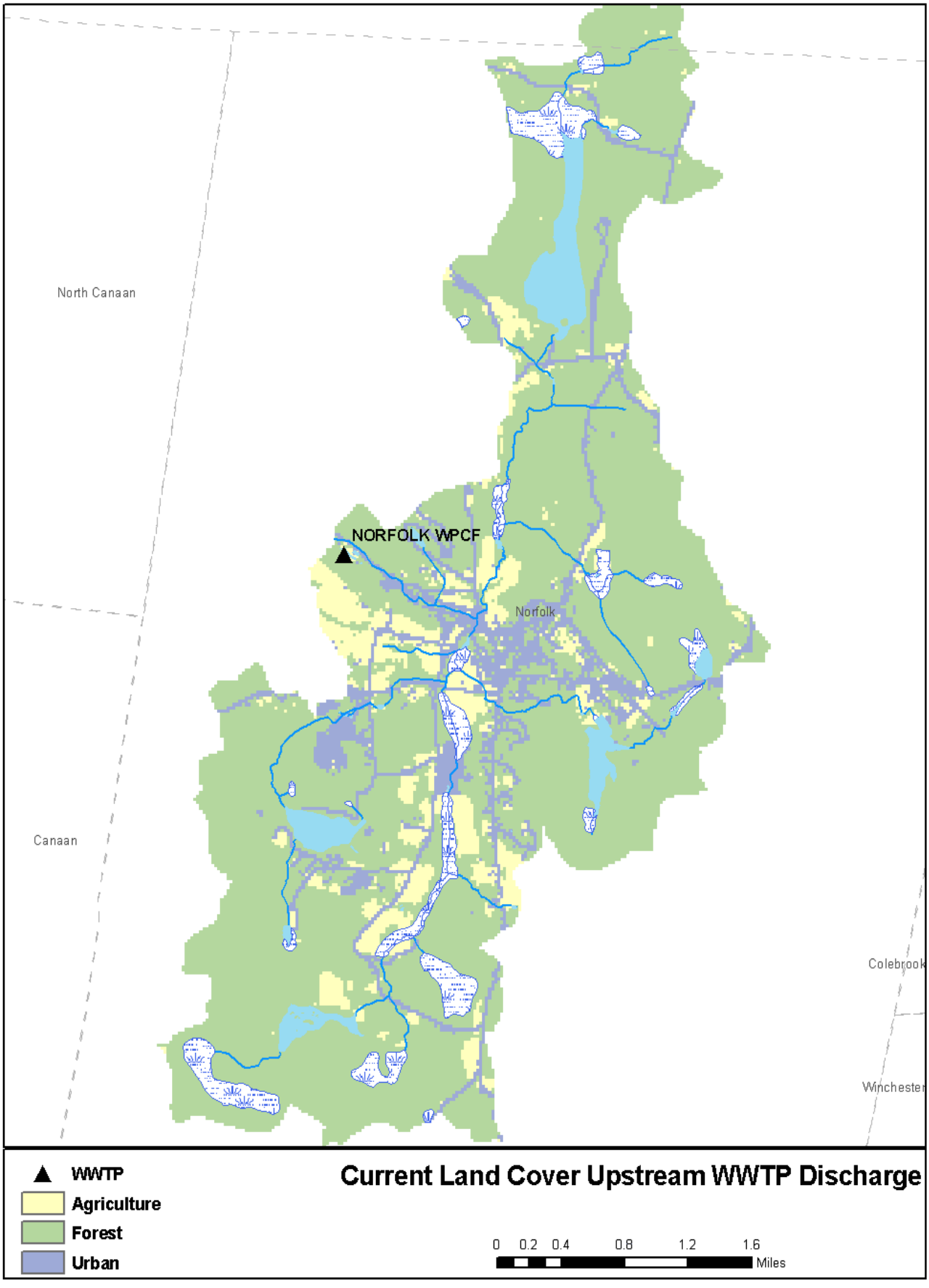
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	671.8	0.53	60
Urban	777.68	0.13	60
Forest	6192.98	0.64	0
Total US WWTP	1 (No.)	3.45	0
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	4.75
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	18



WWTP PHOSPHORUS FACT SHEET

NORFOLK SEWER DISTRICT



WWTP PHOSPHORUS FACT SHEET

NORTH CANAAN WPCF

Facility Overview

NPDES #	CT0100064	Permit Expiration Date	11/10/2009
Town	CANAAN	Design Flow (MGD)	0.40
Receiving Waterbody	Blackberry River-01	Type of Treatment*	AS, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.32
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.88
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	4.29
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	4.29
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 6.30

Total Forested Condition (lbs/day): 3.04

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	3998.18	7.90
Urban	2691.71	1.17
Forest	22563.22	2.34
Total US WWTP	2 (No.)	7.75
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	19.16
Percent Contribution at Point of Concern	22

WWTP PHOSPHORUS FACT SHEET

NORTH CANAAN WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	44.76	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	1		
Distance to Nearest Downstream IW (mi)	44.76		
Percent Contribution At Nearest Downstream IW	1		

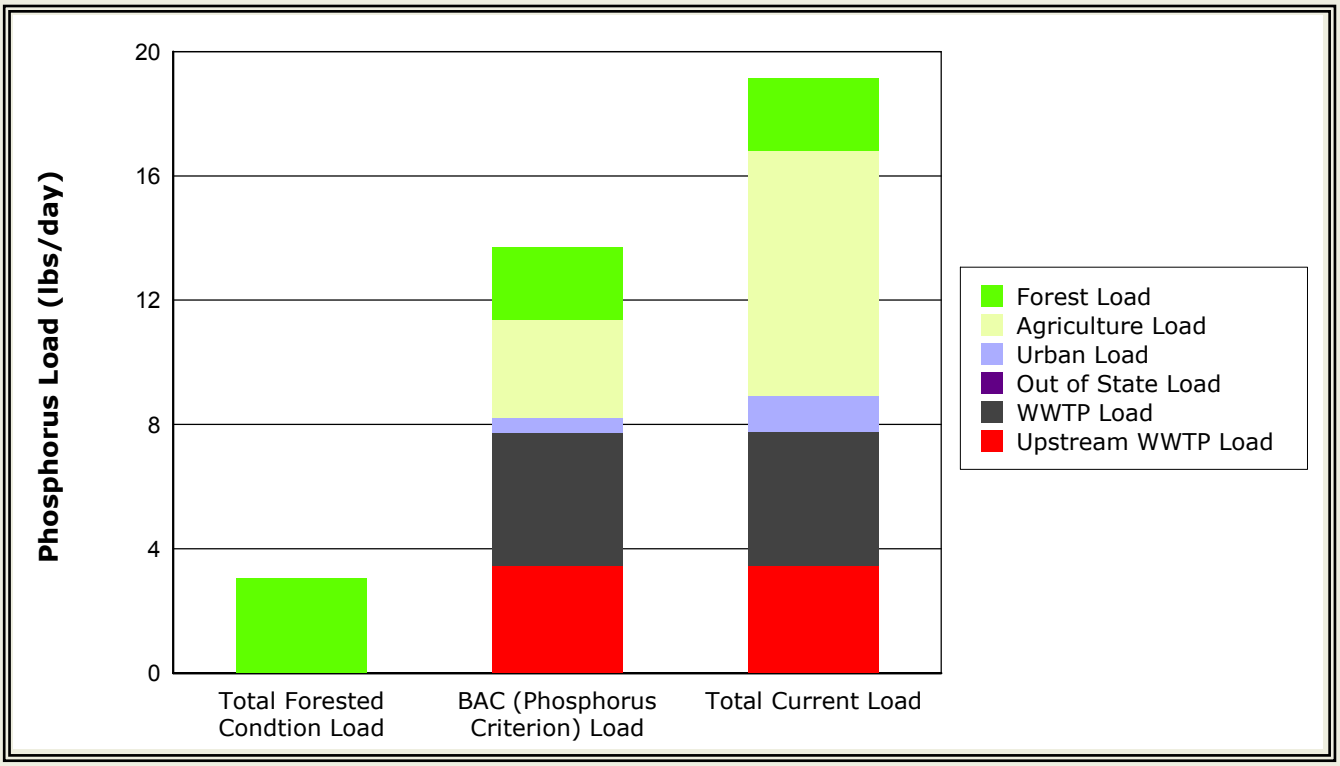
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	3998.18	3.16	60
Urban	2691.71	0.47	60
Forest	22563.22	2.34	0
Total US WWTP	2 (No.)	7.74	0
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	13.71
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	28



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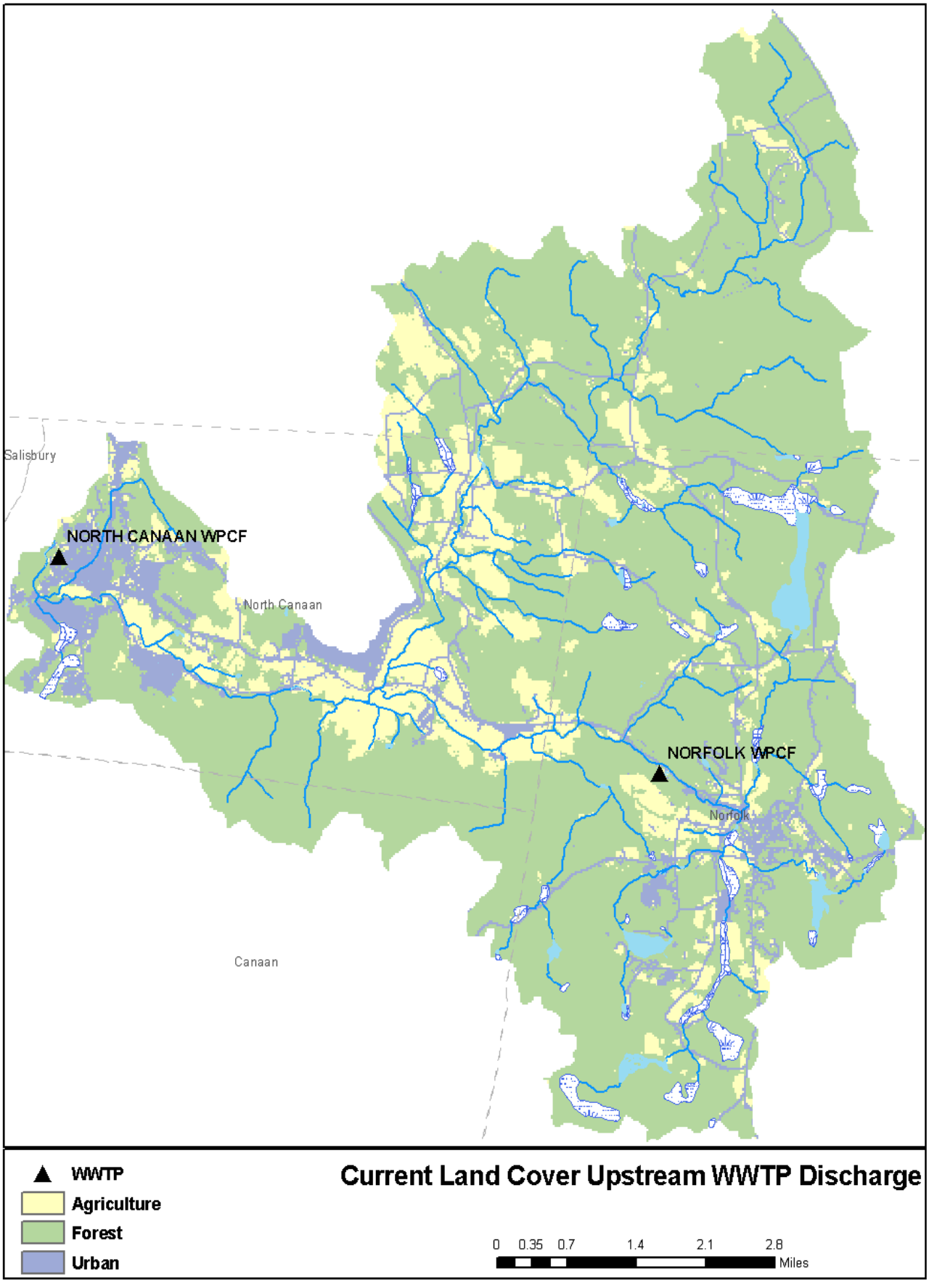
NORTH CANAAN WPCF



WWTP PHOSPHORUS FACT SHEET

PLAINFIELD NORTH WPCF

Facility Overview

NPDES #	CT0100447	Permit Expiration Date	10/17/2010
Town	PLAINFIELD	Design Flow (MGD)	1.08
Receiving Waterbody	Moosup River-01	Type of Treatment*	AS, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.66
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.52
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	17.82
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	3.86
Percent Reduction from Current	78
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 5.94

Total Forested Condition (lbs/day): 5.90

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	5614.94	11.09
Urban	5691.64	2.47
Forest	35293.36	3.67
Total US WWTP	1 (No.)	17.82
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	35.05
Percent Contribution at Point of Concern	51

WWTP PHOSPHORUS FACT SHEET

PLAINFIELD NORTH WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	9.76	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	6		
Distance to Nearest Downstream IW (mi)	9.76		
Percent Contribution At Nearest Downstream IW	6		

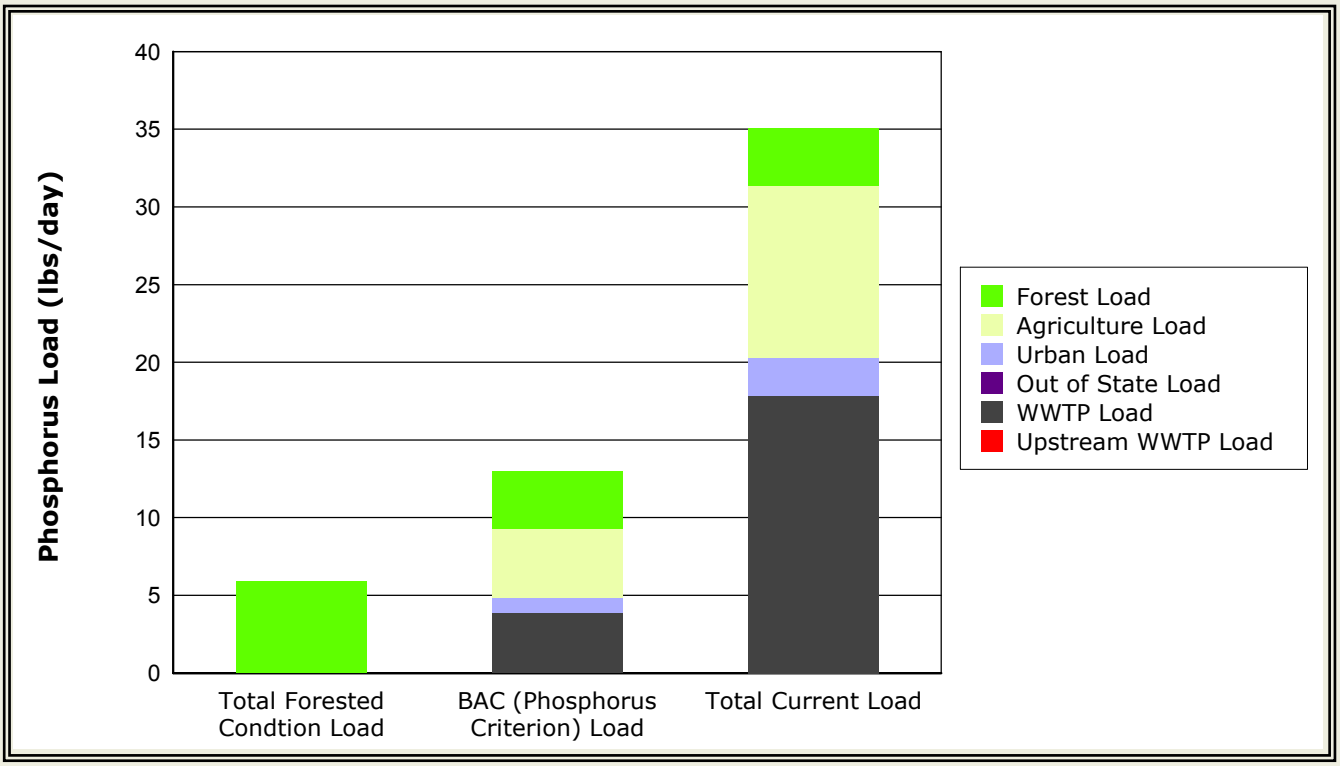
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	5614.94	4.44	60
Urban	5691.64	0.99	60
Forest	35293.36	3.67	0
Total US WWTP	1 (No.)	3.86	78
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	12.96
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	63



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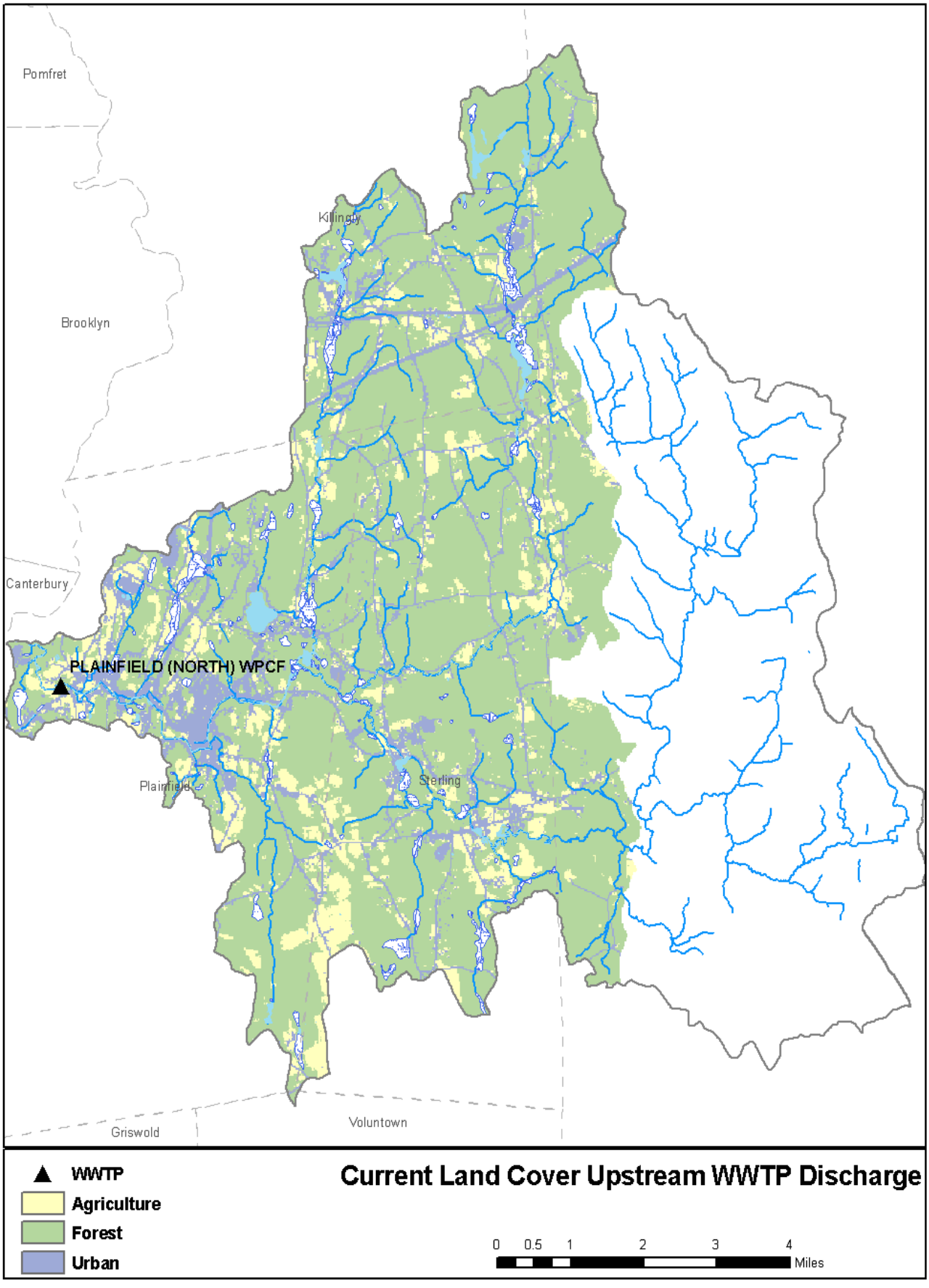
PLAINFIELD NORTH WPCF



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PLAINFIELD WPCF

Facility Overview

NPDES #	CT0100439	Permit Expiration Date	3/14/2006
Town	PLAINFIELD	Design Flow (MGD)	0.71
Receiving Waterbody	Aspinook Pond	Type of Treatment*	AS, EA, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.43
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.13
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	10.51
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	2.51
Percent Reduction from Current	76
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 8.57

Total Forested Condition (lbs/day): 41.68

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	49818.32	98.41
Urban	56196.11	24.35
Forest	286657.01	29.78
Total US WWTP	5 (No.)	94.94
Out of State	159552	109.74

Total Current Load At Discharge (lbs/day)	357.22
Percent Contribution at Point of Concern	3

WWTP PHOSPHORUS FACT SHEET

PLAINFIELD WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	2.12	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	3		
Distance to Nearest Downstream IW (mi)	2.12		
Percent Contribution At Nearest Downstream IW	3		

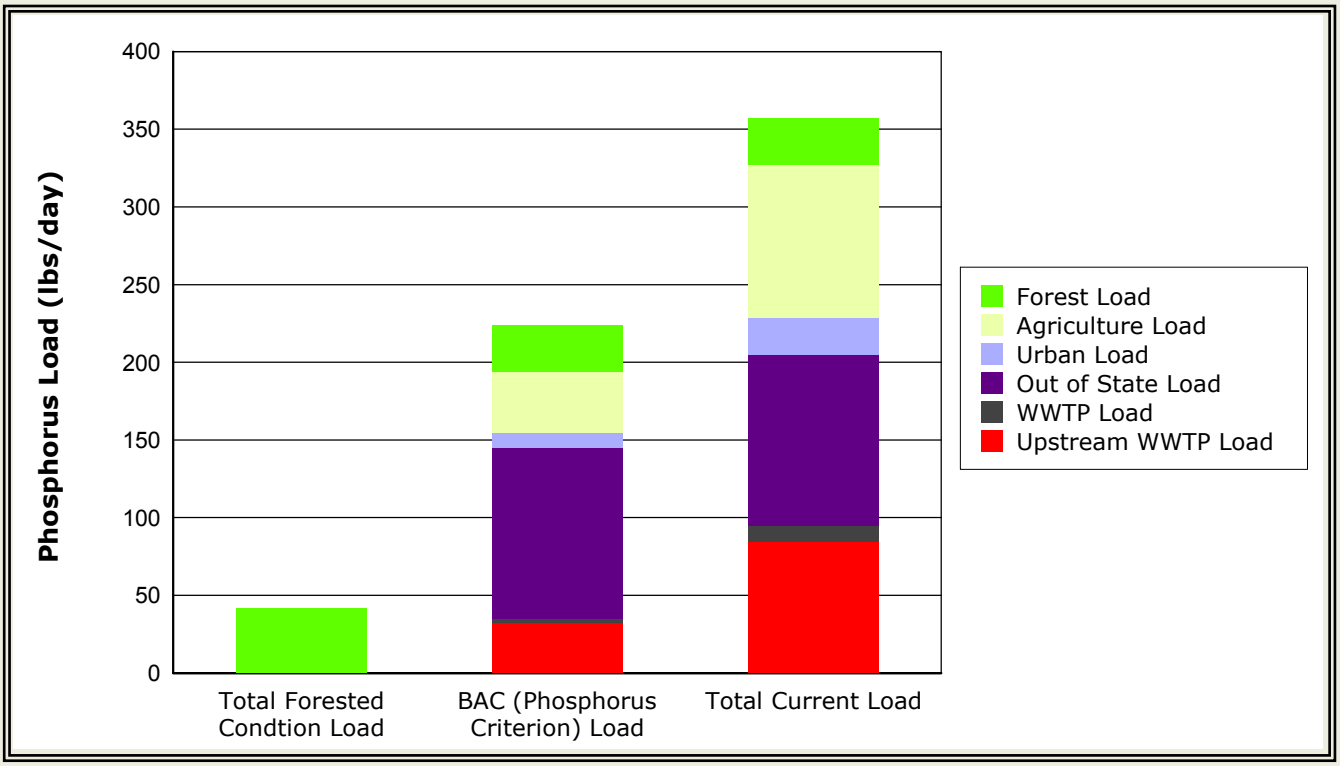
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

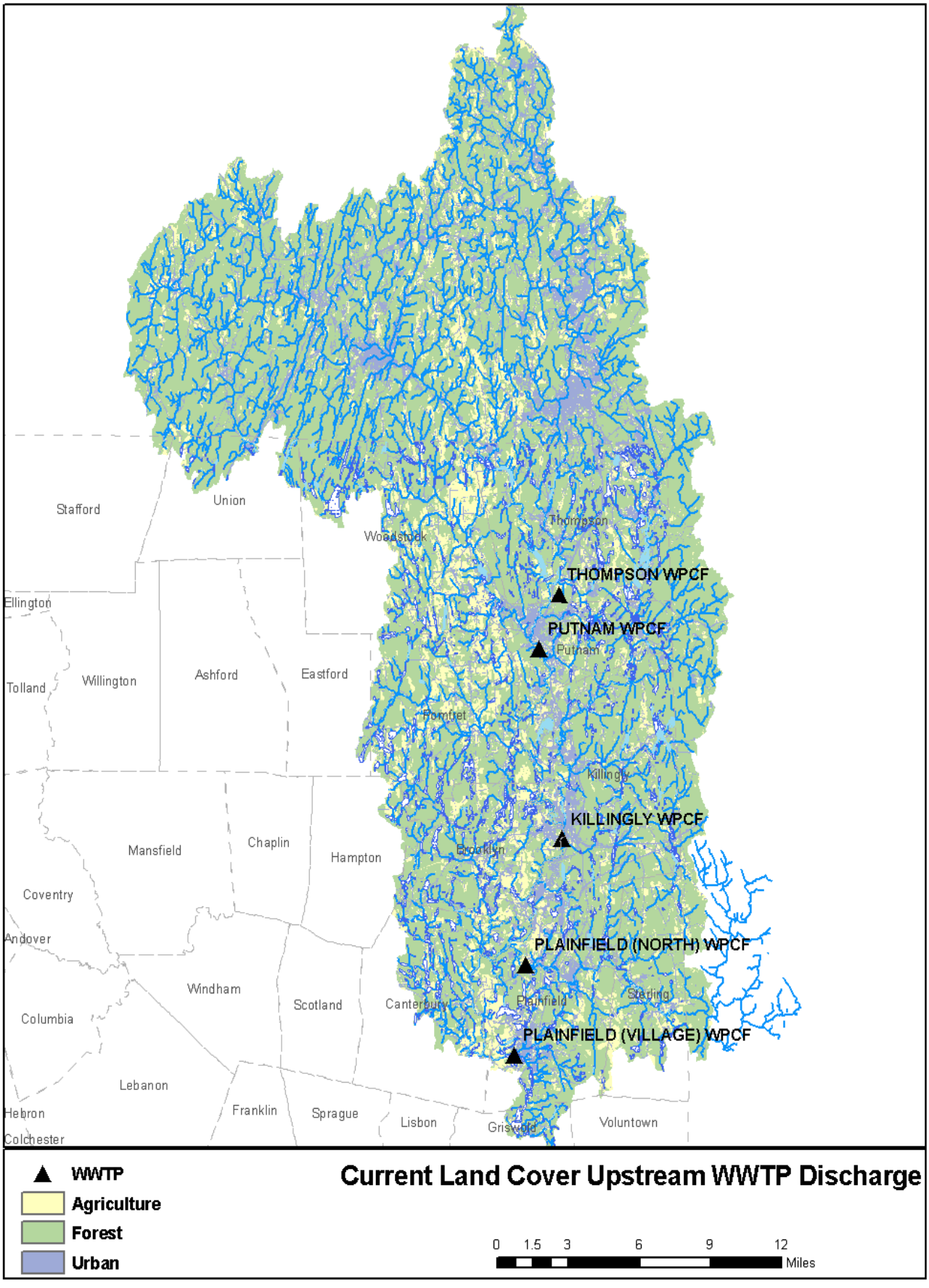
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	49818.32	39.36	60
Urban	56196.11	9.74	60
Forest	286657.01	29.78	0
Total US WWTP	5 (No.)	35.11	63
Out of State	159552	109.74	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	223.73
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	37



WWTP PHOSPHORUS FACT SHEET

PLAINFIELD WPCF



WWTP PHOSPHORUS FACT SHEET

PLAINVILLE WPCF

Facility Overview

NPDES #	CT0100455	Permit Expiration Date	8/30/2010
Town	PLAINVILLE	Design Flow (MGD)	3.80
Receiving Waterbody	Pequabuck River-01	Type of Treatment*	RBC, SFilt, UV, AdvTr, Nitr

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	2.09
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	5.08
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	82.35
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	12.21
Percent Reduction from Current	85
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 95.69

Total Forested Condition (lbs/day): 3.26

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	2613.86	5.16
Urban	11888.8	5.15
Forest	16918.59	1.76
Total US WWTP	3 (No.)	300.32
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	312.39
Percent Contribution at Point of Concern	26

WWTP PHOSPHORUS FACT SHEET

PLAINVILLE WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	23.46	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	12		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

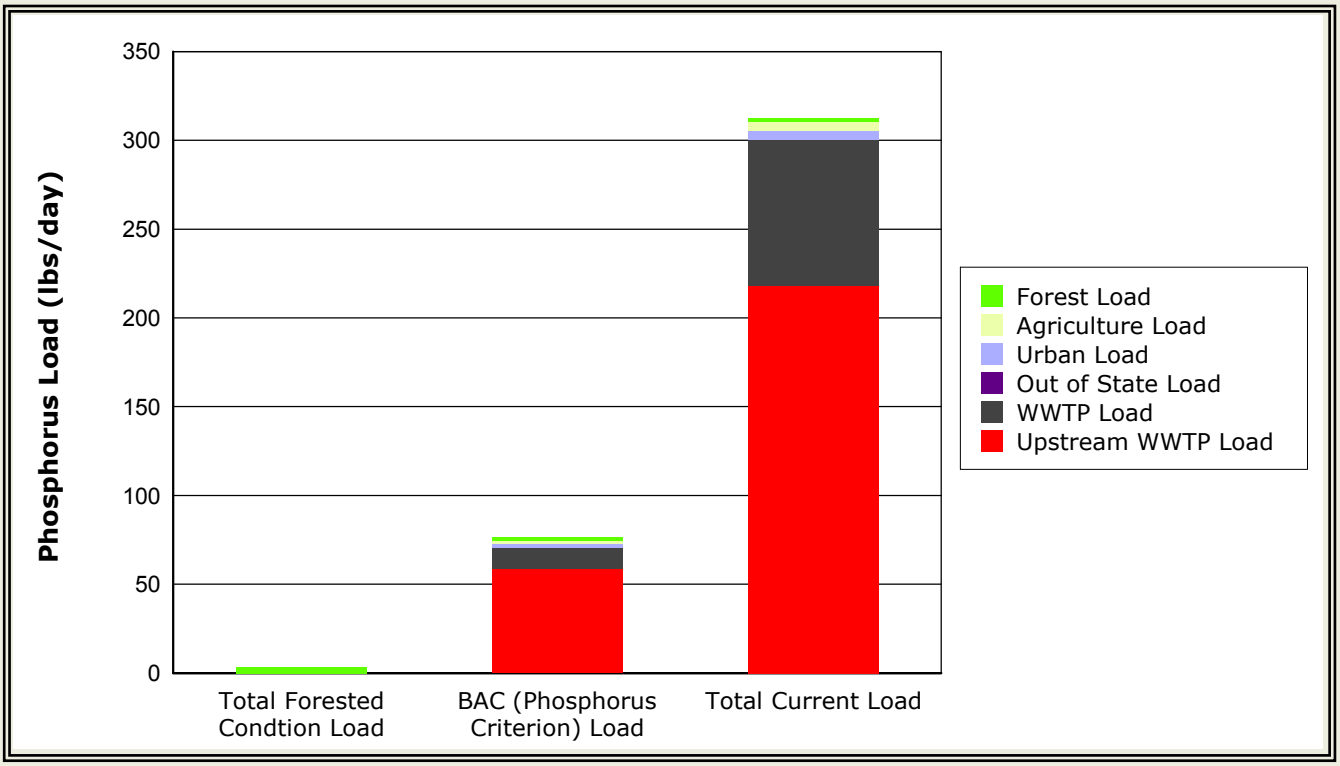
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

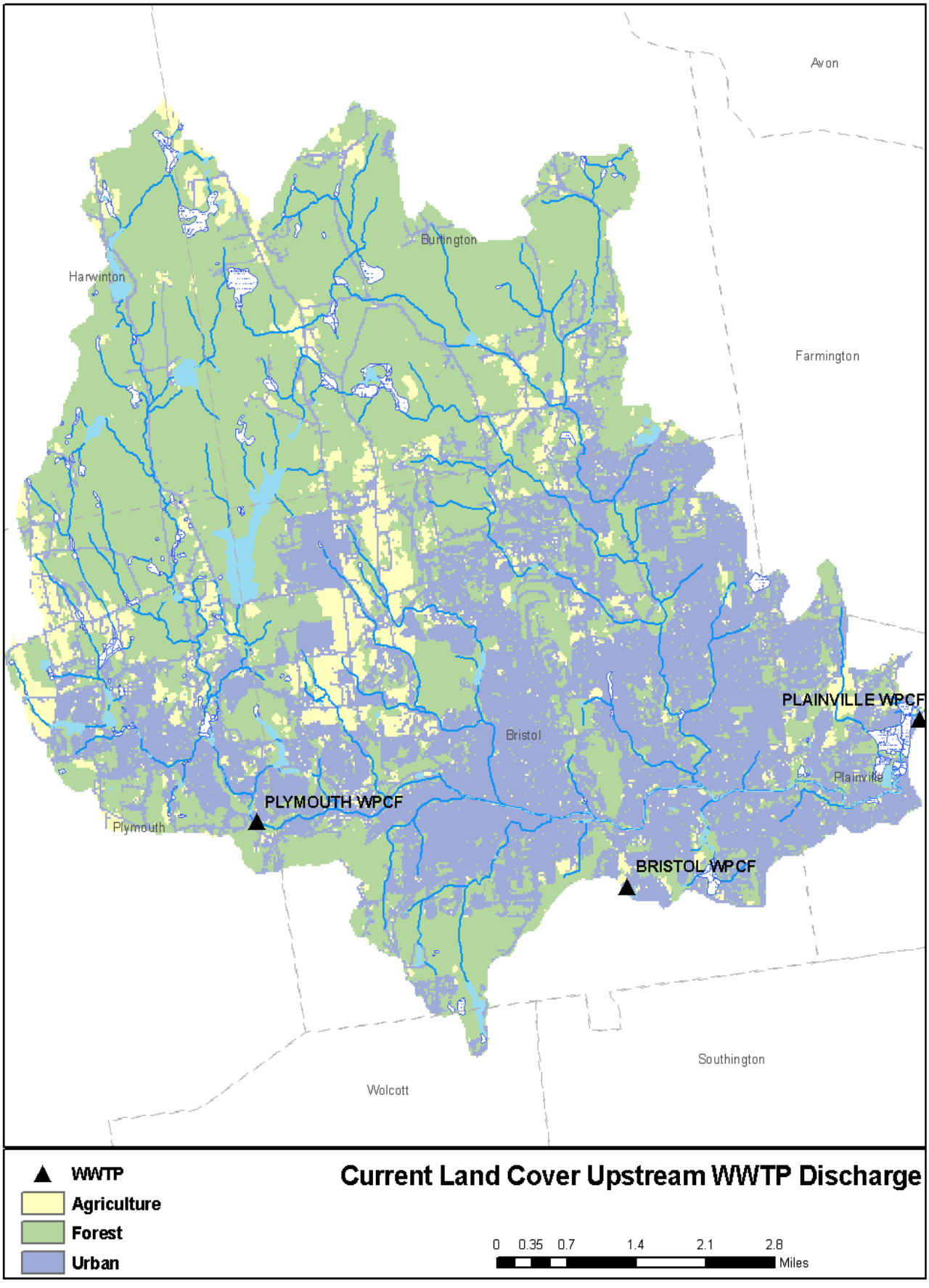
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	2613.86	2.07	60
Urban	11888.8	2.06	60
Forest	16918.59	1.76	0
Total US WWTP	3 (No.)	70.69	76
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	76.58
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	75



WWTP PHOSPHORUS FACT SHEET

PLAINVILLE WPCF



WWTP PHOSPHORUS FACT SHEET

PLYMOUTH WPCF

Facility Overview

NPDES #	CT0100463	Permit Expiration Date	1/31/2011
Town	TERRYVILLE	Design Flow (MGD)	1.75
Receiving Waterbody	Pequabuck River-05	Type of Treatment*	AS, AdvTr, Nitr, DNitr, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	1.05
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.47
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	28.64
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	6.13
Percent Reduction from Current	79
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 31.95

Total Forested Condition (lbs/day): 1.00

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{[\text{Ag}] + [\text{Urban}] + [\text{Forest}] + [\text{Total Upstream WWTP}] + [\text{Out of State}]}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	900	1.78
Urban	1981.38	0.86
Forest	6752.22	0.70
Total US WWTP	1 (No.)	28.64
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	31.98
Percent Contribution at Point of Concern	90

WWTP PHOSPHORUS FACT SHEET

PLYMOUTH WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	32.18	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	4		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

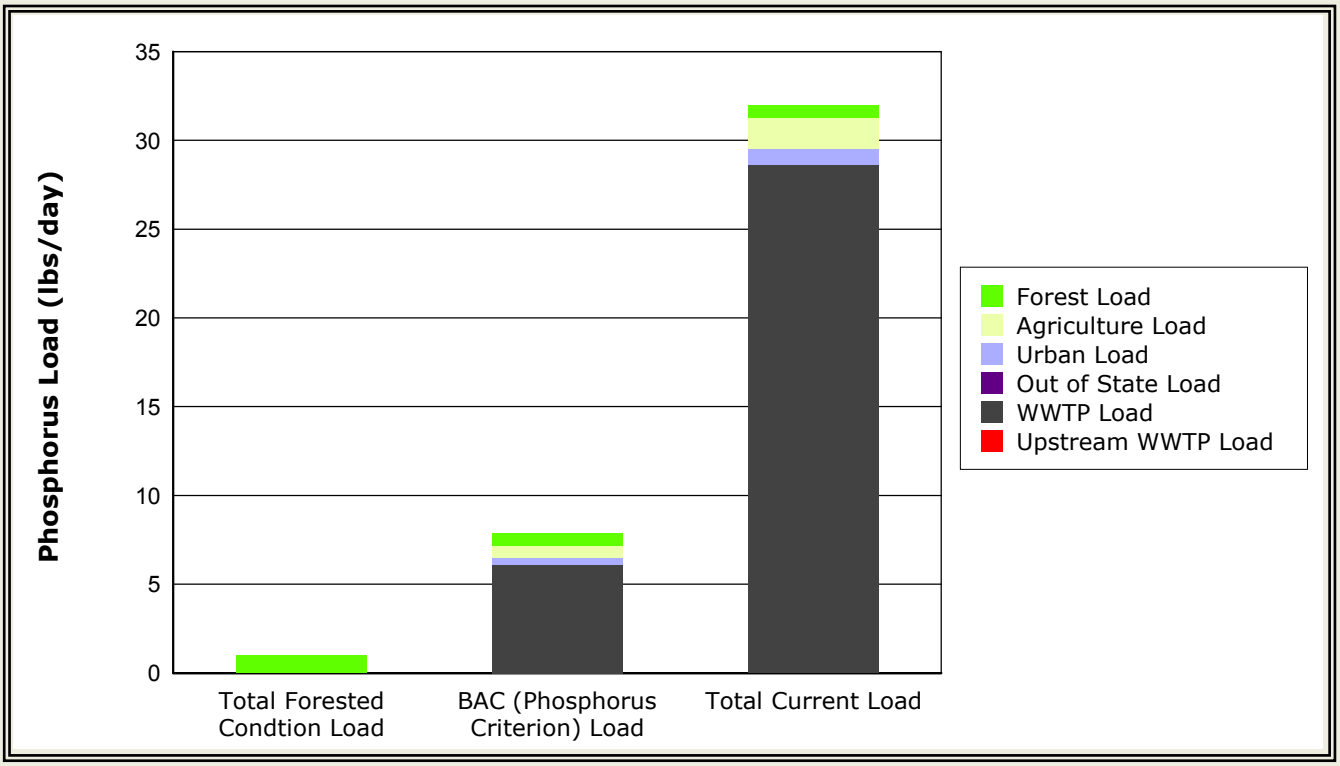
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

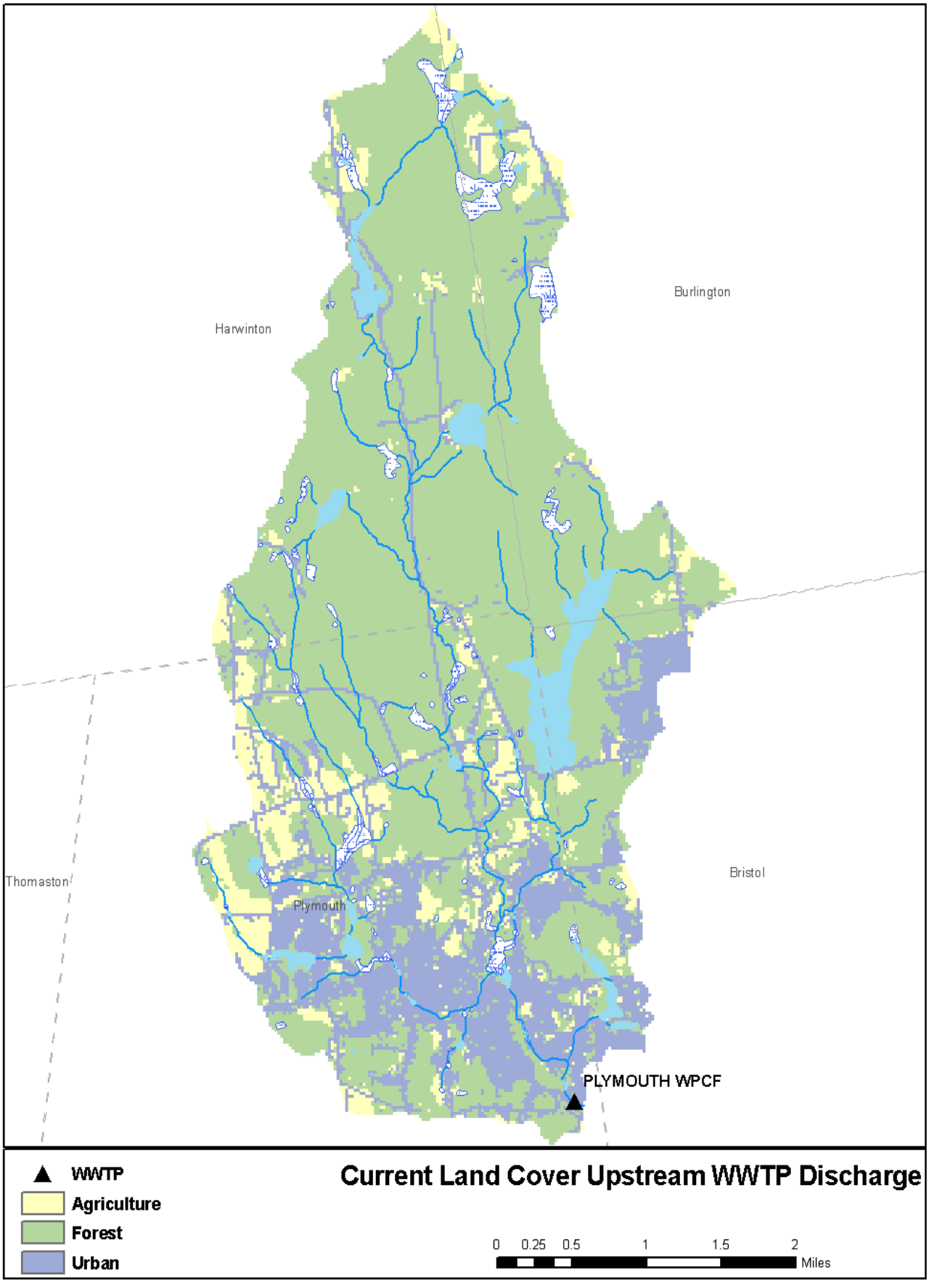
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	900	0.71	60
Urban	1981.38	0.34	60
Forest	6752.22	0.70	0
Total US WWTP	1 (No.)	6.13	79
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	7.88
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	75



WWTP PHOSPHORUS FACT SHEET

PLYMOUTH WPCF



WWTP PHOSPHORUS FACT SHEET

PUTNAM WPCF

Facility Overview

NPDES #	CT0100960	Permit Expiration Date	8/1/2007
Town	PUTNAM	Design Flow (MGD)	2.91
Receiving Waterbody	Quinebaug River-04	Type of Treatment*	AS, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	1.44
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.80
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	19.69
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	8.41
Percent Reduction from Current	57
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 9.90

Total Forested Condition (lbs/day): 21.60

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	24512.14	48.42
Urban	32433.68	14.06
Forest	150931.11	15.68
Total US WWTP	2 (No.)	25.97
Out of State	159552	109.74

Total Current Load At Discharge (lbs/day)	213.87
Percent Contribution at Point of Concern	9

WWTP PHOSPHORUS FACT SHEET

PUTNAM WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	26.83	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	6		
Distance to Nearest Downstream IW (mi)	26.83		
Percent Contribution At Nearest Downstream IW	6		

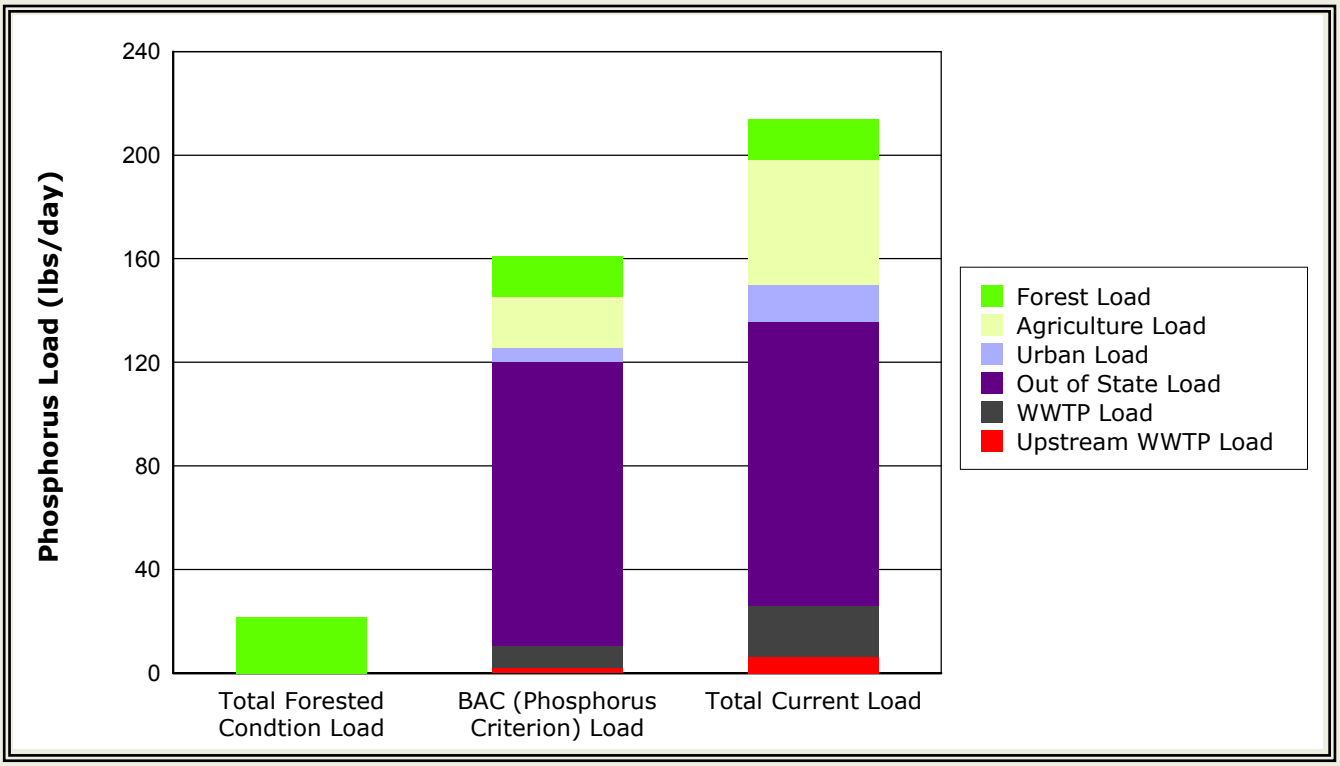
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

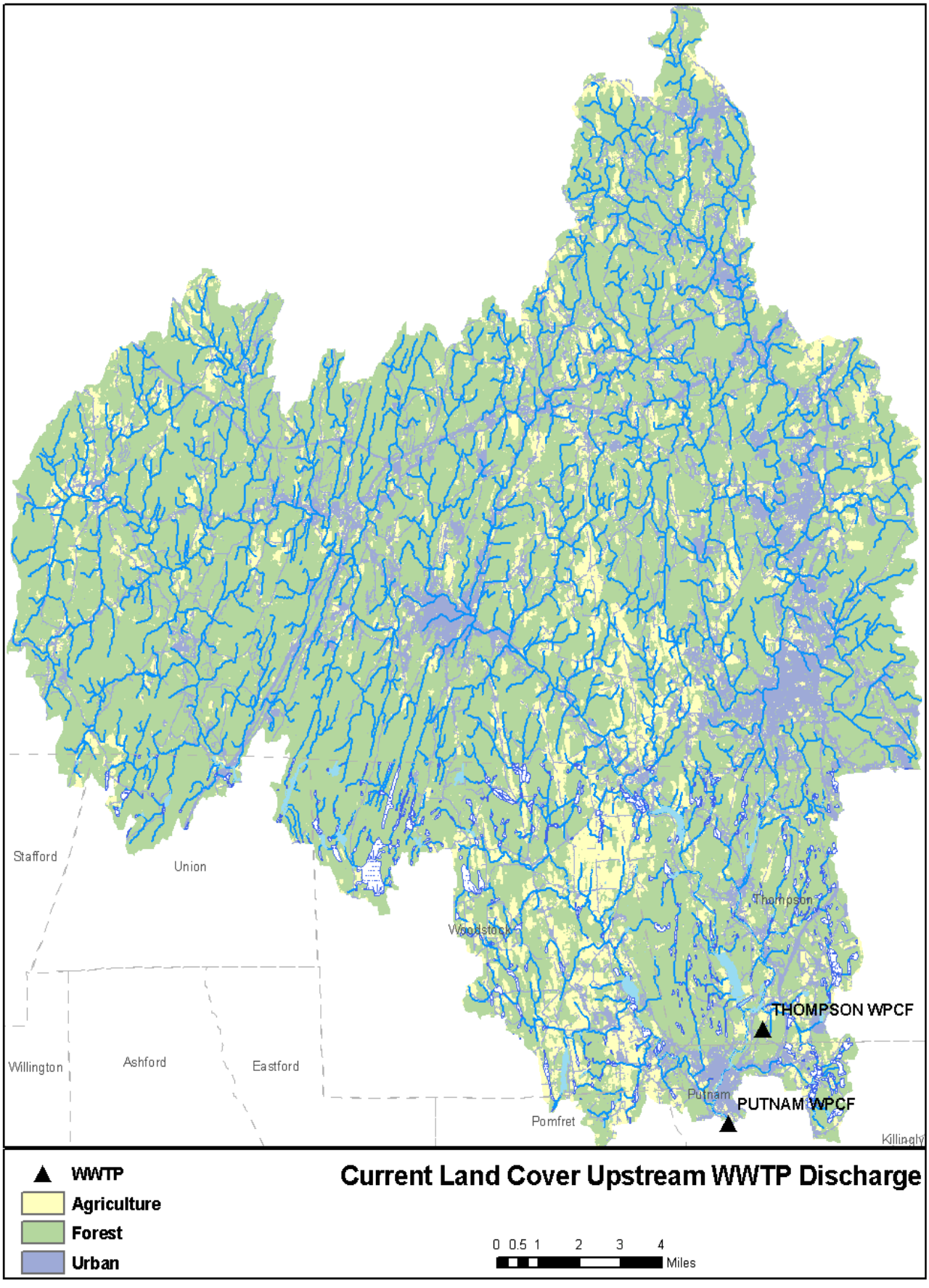
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	24512.14	19.37	60
Urban	32433.68	5.62	60
Forest	150931.11	15.68	0
Total US WWTP	2 (No.)	10.51	60
Out of State	159552	109.74	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	160.92
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	25



WWTP PHOSPHORUS FACT SHEET

PUTNAM WPCF



WWTP PHOSPHORUS FACT SHEET

REDDING WPCF

Facility Overview

NPDES #	CT0101770	Permit Expiration Date	1/27/2008
Town	REDDING	Design Flow (MGD)	0.25
Receiving Waterbody	Norwalk River-03a	Type of Treatment*	SBR, UV, AdvTr, Nitr, DNitr

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.05
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.38
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	1.08
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	0.29
Percent Reduction from Current	73
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 10.18

Total Forested Condition (lbs/day): 0.94

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	368.12	0.73
Urban	2798.77	1.21
Forest	5926.27	0.62
Total US WWTP	3 (No.)	7.07
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	9.63
Percent Contribution at Point of Concern	11

WWTP PHOSPHORUS FACT SHEET

REDDING WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	2.87	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	7		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

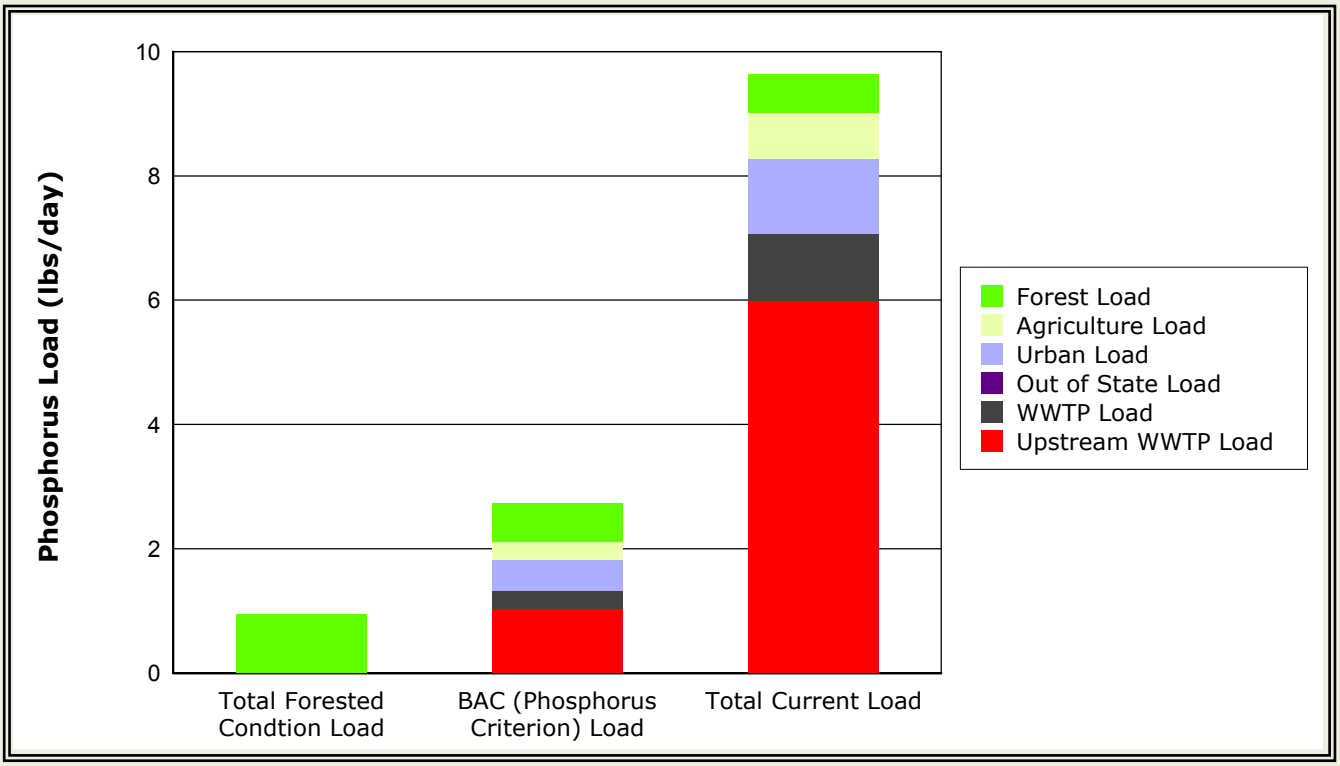
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	368.12	0.29	60
Urban	2798.77	0.49	60
Forest	5926.27	0.62	0
Total US WWTP	3 (No.)	1.33	81
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	2.73
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	72



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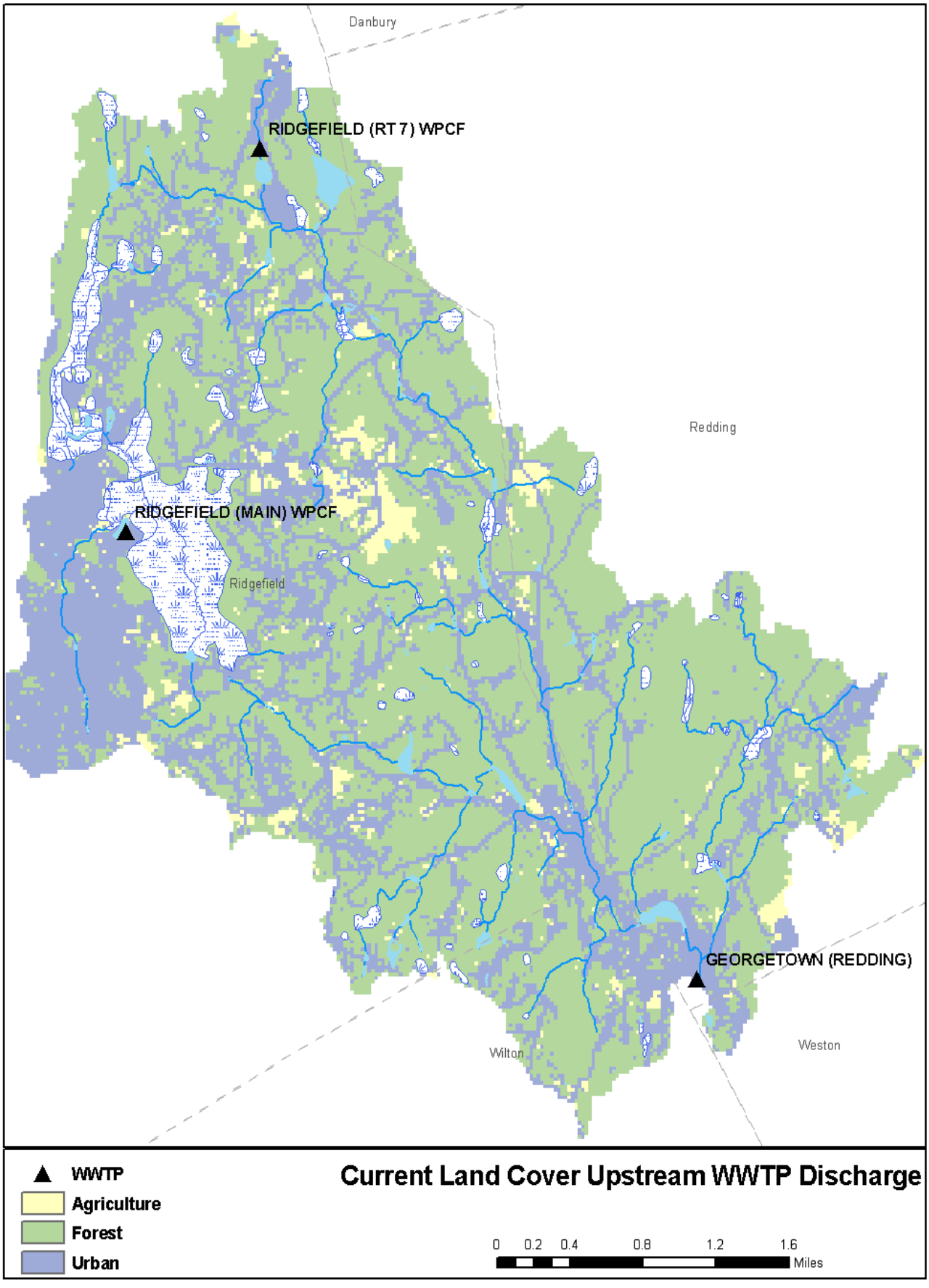
REDDING WPCF



WWTP PHOSPHORUS FACT SHEET

RIDGEFIELD MAIN WPCF C/O OMI

Facility Overview

NPDES #	CT0100854	Permit Expiration Date	9/29/2009
Town	RIDGEFIELD	Design Flow (MGD)	1.00
Receiving Waterbody	Ridgefield Brook-02	Type of Treatment*	AS, AdvTr, Nitr, DNitr, PRem, Sfilt, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.62
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.38
Current Phosphorus Treatment Performance (mg/L)	1.0 mg/l Avg Monthly, 2.0 mg/l Daily Limit
Current Average Phosphorus Load (lbs/day) 2001 - 2007	5.99
Proposed Treatment Performance (mg/L)	0.2
BMP Load Allocation (lbs/day)	1.04
Percent Reduction from Current	83
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 137.99

Total Forested Condition (lbs/day): 0.04

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	28.45	0.06
Urban	160.35	0.07
Forest	239.2	0.02
Total US WWTP	1 (No.)	5.99
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	6.14
Percent Contribution at Point of Concern	98

WWTP PHOSPHORUS FACT SHEET

RIDGEFIELD MAIN WPCF C/O OMI

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	2.04	Enrichment Indication Level:	HIGH
Percent Contribution At Nearest Downstream Dam	89		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

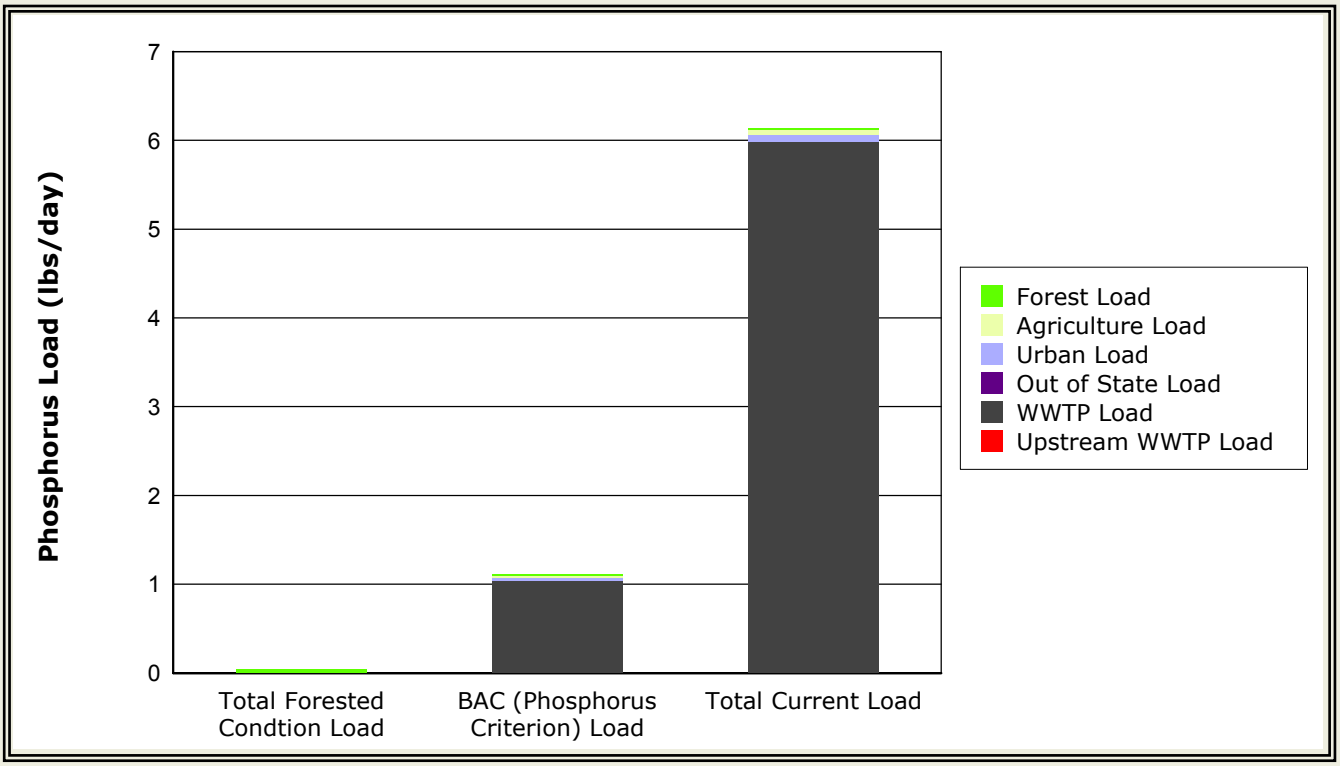
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

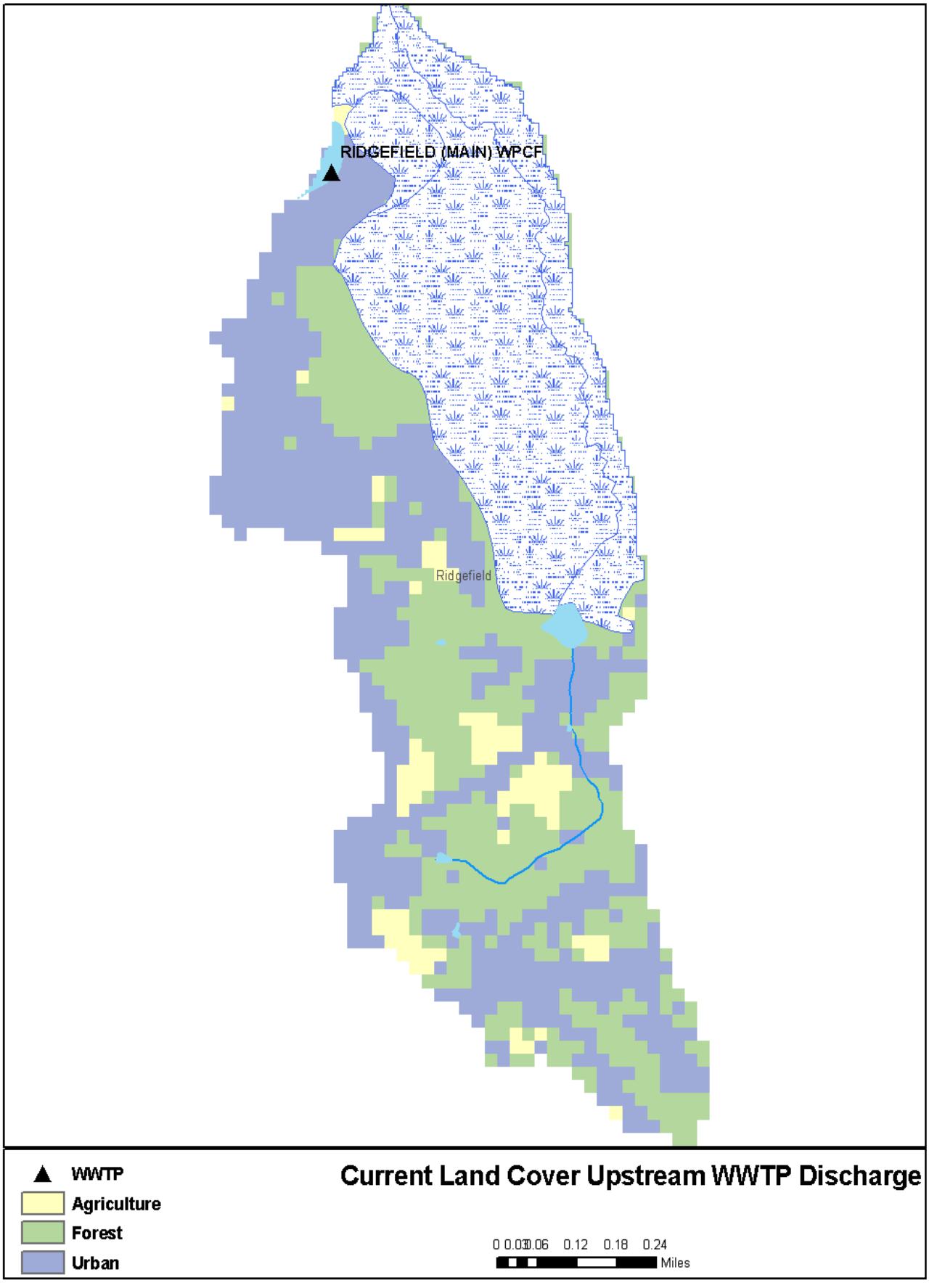
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	28.45	0.02	60
Urban	160.35	0.03	60
Forest	239.2	0.02	0
Total US WWTP	1 (No.)	1.04	83
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	1.11
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	82



WWTP PHOSPHORUS FACT SHEET

RIDGEFIELD MAIN WPCF C/O OMI



WWTP PHOSPHORUS FACT SHEET

RIDGEFIELD RTE 7 C/O OMI*

Facility Overview

NPDES #	CT0101451	Permit Expiration Date	10/4/2009
Town	RIDGEFIELD	Design Flow (MGD)	0.12
Receiving Waterbody	Norwalk River-05	Type of Treatment*	RBC, UV, Nitr

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	0.00
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 2.71

Total Forested Condition (lbs/day): 0.03

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	10.69	0.02
Urban	73.06	0.03
Forest	164.2	0.02
Total US WWTP	1 (No.)	
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	
Percent Contribution at Point of Concern	

WWTP PHOSPHORUS FACT SHEET

RIDGEFIELD RTE 7 C/O OMI*

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	
Percent Contribution At Nearest Downstream Dam	
Distance to Nearest Downstream IW (mi)	
Percent Contribution At Nearest Downstream IW	

Enrichment Indication Level: **LOW**

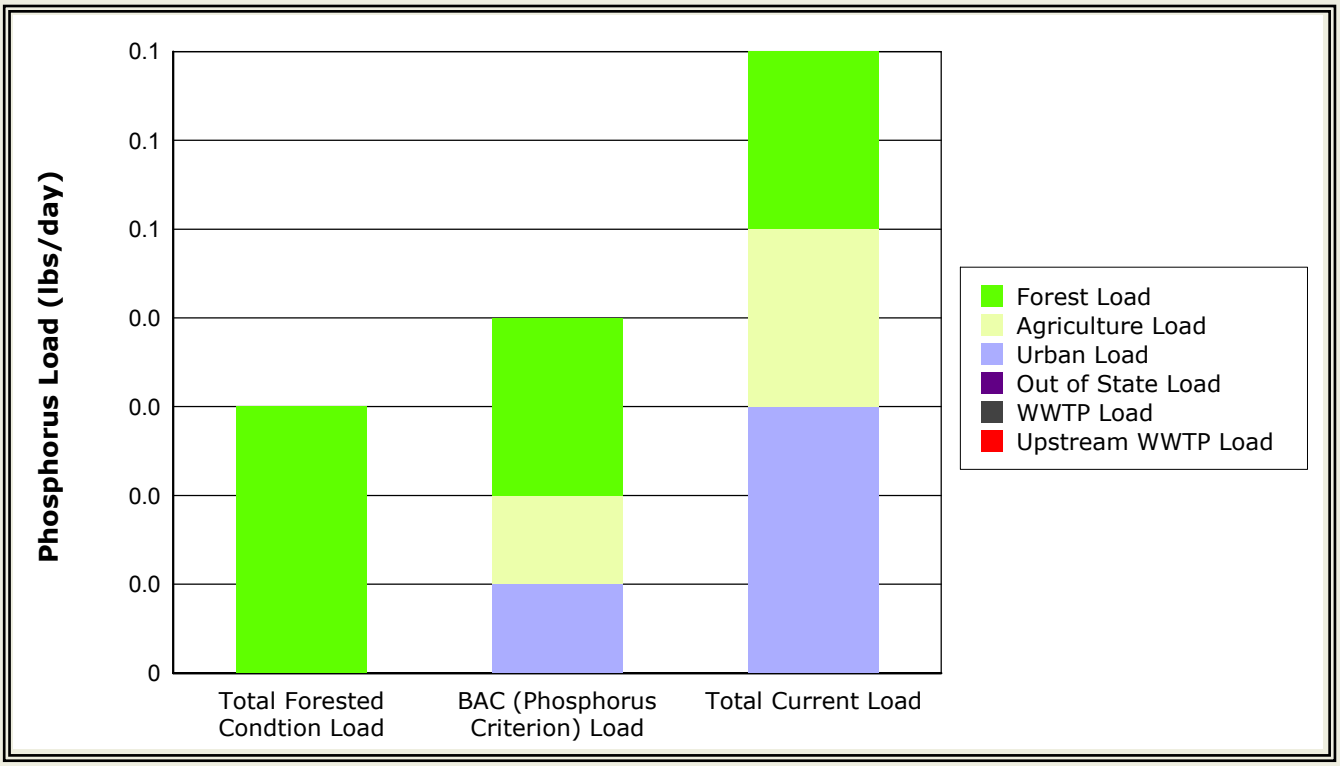
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

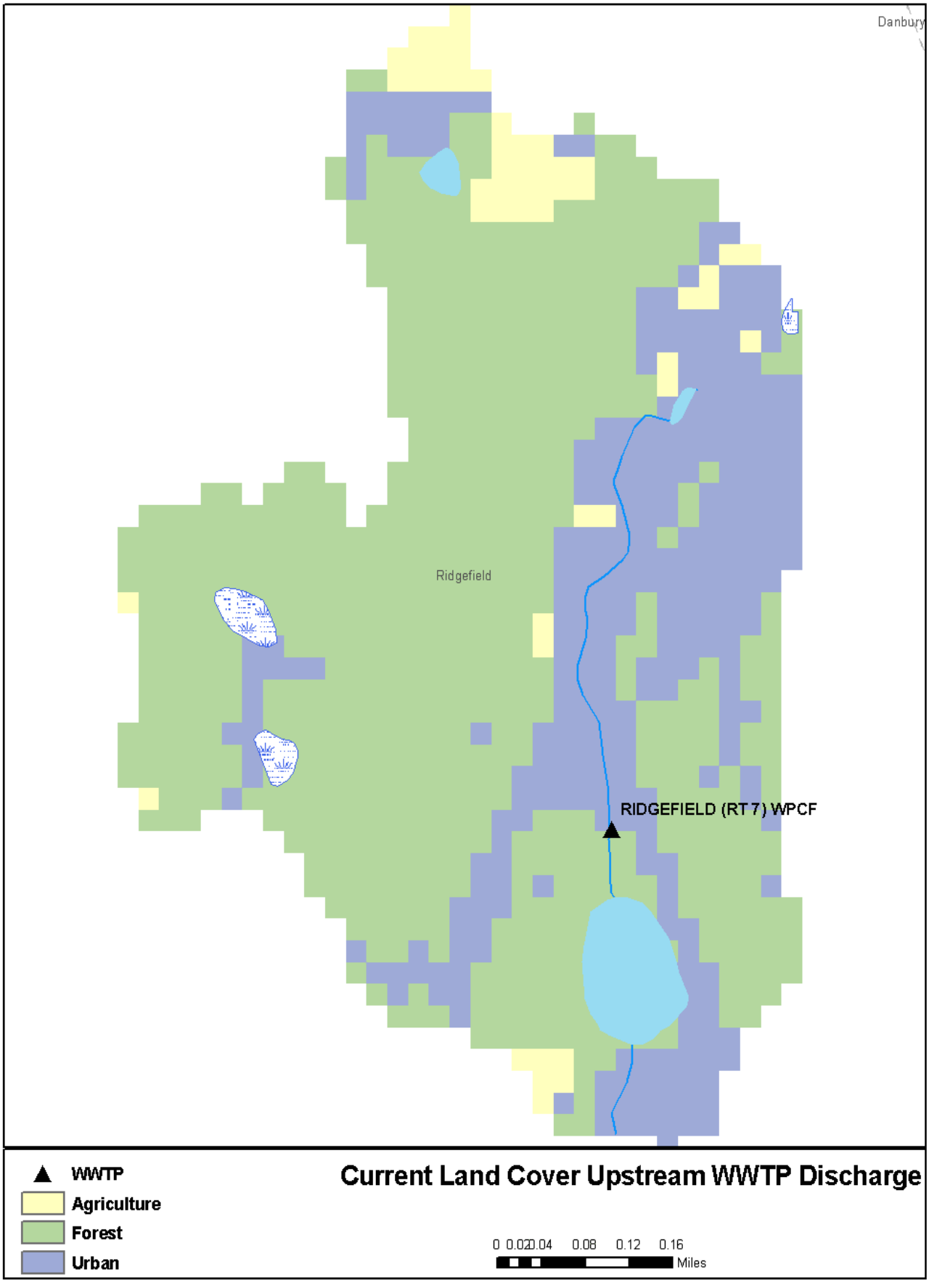
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	10.69	0.01	60
Urban	73.06	0.01	60
Forest	164.2	0.02	0
Total US WWTP	1 (No.)	0.00	
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	**0.04**
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	



WWTP PHOSPHORUS FACT SHEET

RIDGEFIELD RTE 7 C/O OMI*



WWTP PHOSPHORUS FACT SHEET

SALISBURY WPCF

Facility Overview

NPDES #	CT0100498	Permit Expiration Date	9/27/2009
Town	SALISBURY	Design Flow (MGD)	0.67
Receiving Waterbody	Factory Brook-01	Type of Treatment*	AS, SFilt, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.38
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.40
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	7.14
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	2.22
Percent Reduction from Current	69
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 19.75

Total Forested Condition (lbs/day): 0.45

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	619.37	1.22
Urban	586.26	0.25
Forest	3154.81	0.33
Total US WWTP	1 (No.)	7.14
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	8.94
Percent Contribution at Point of Concern	80

WWTP PHOSPHORUS FACT SHEET

SALISBURY WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	5.86	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	44		
Distance to Nearest Downstream IW (mi)	44.15		
Percent Contribution At Nearest Downstream IW	1		

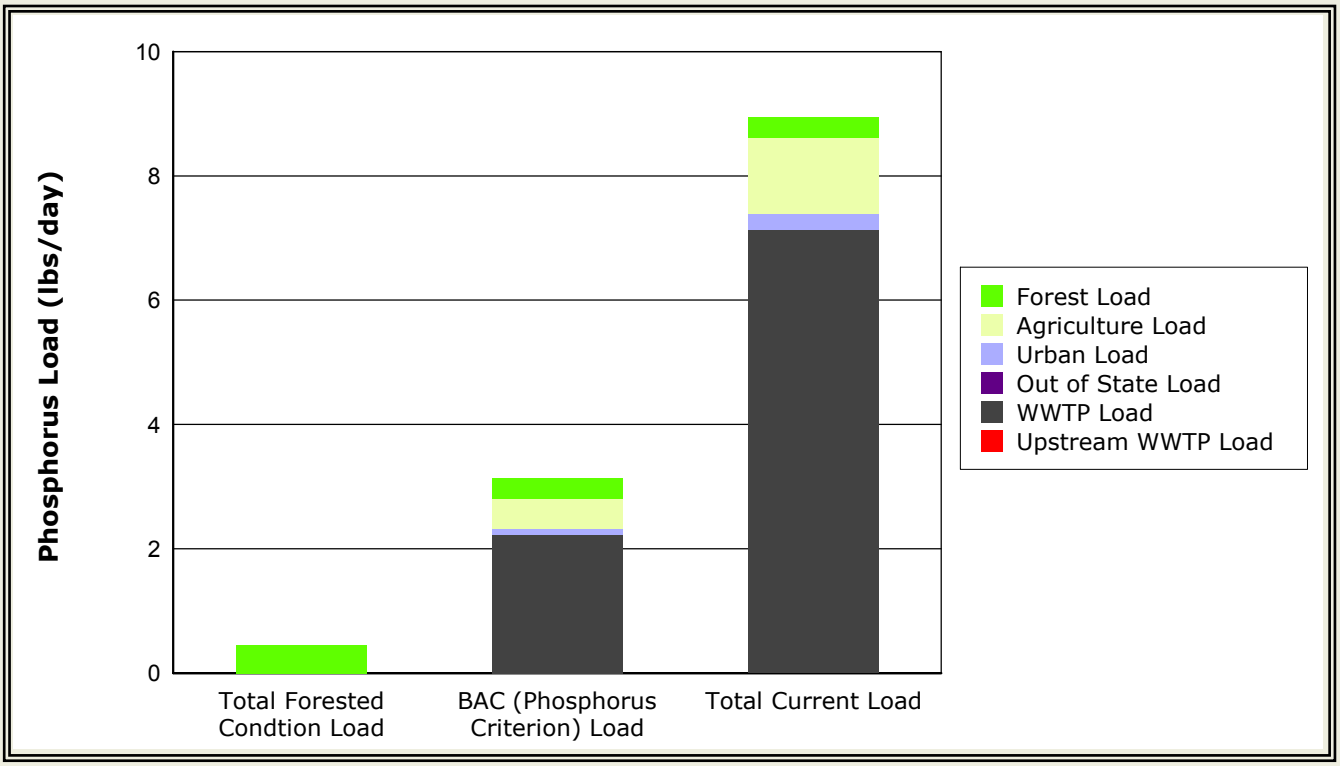
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	619.37	0.49	60
Urban	586.26	0.10	60
Forest	3154.81	0.33	0
Total US WWTP	1 (No.)	2.22	69
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	3.14
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	65



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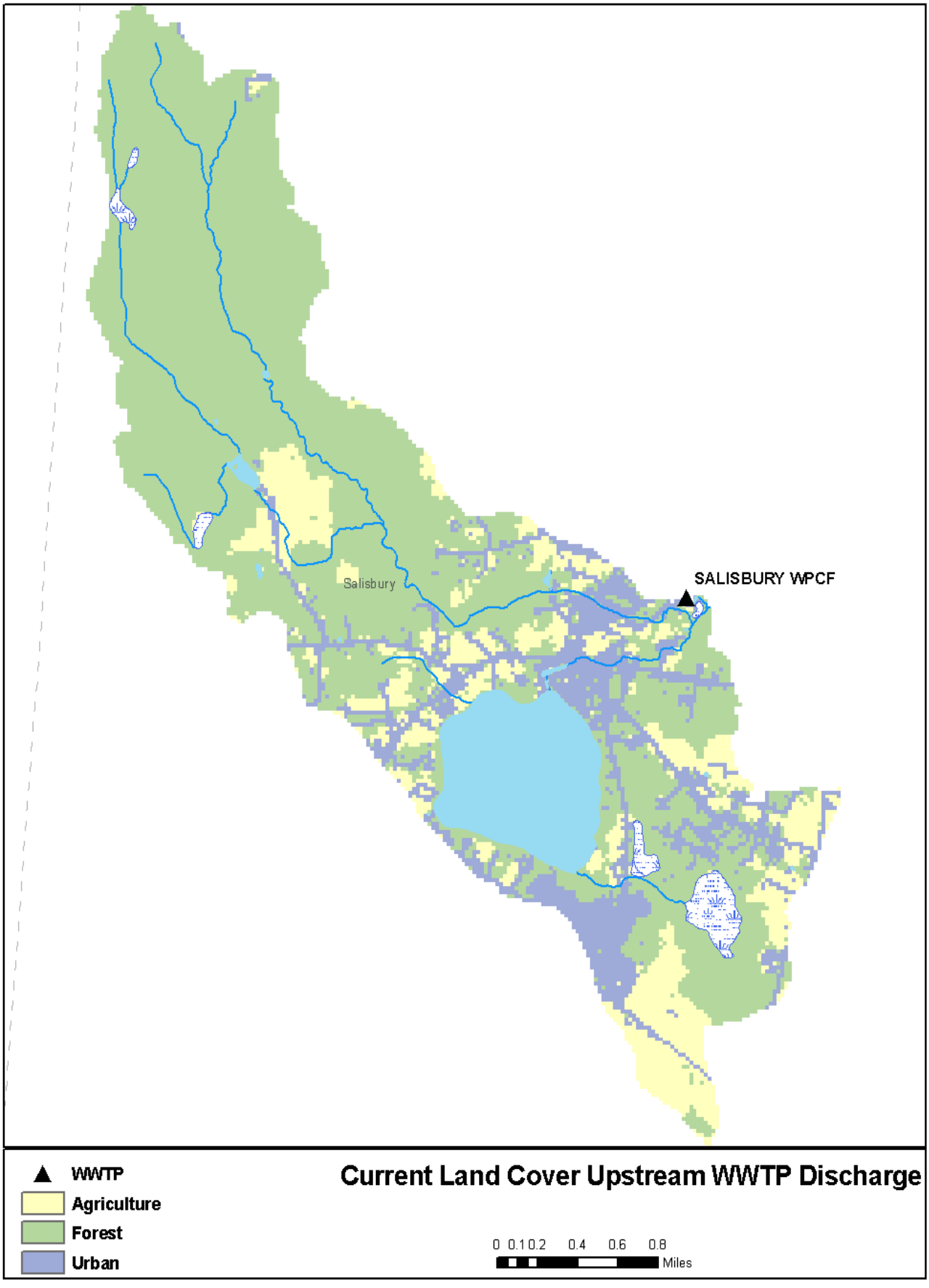
SALISBURY WPCF



WWTP PHOSPHORUS FACT SHEET

SEYMOUR WPCF

Facility Overview

NPDES #	CT0100501	Permit Expiration Date	3/14/2010
Town	SEYMOUR	Design Flow (MGD)	2.93
Receiving Waterbody	Naugatuck River-01	Type of Treatment*	AS, Nitr, DNitr, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	1.29
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.98
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	41.09
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	41.09
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 45.36

Total Forested Condition (lbs/day): 20.04

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	19644.92	38.81
Urban	48699.14	21.10
Forest	124560.62	12.94
Total US WWTP	6 (No.)	836.30
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	909.15
Percent Contribution at Point of Concern	5

WWTP PHOSPHORUS FACT SHEET

SEYMOUR WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

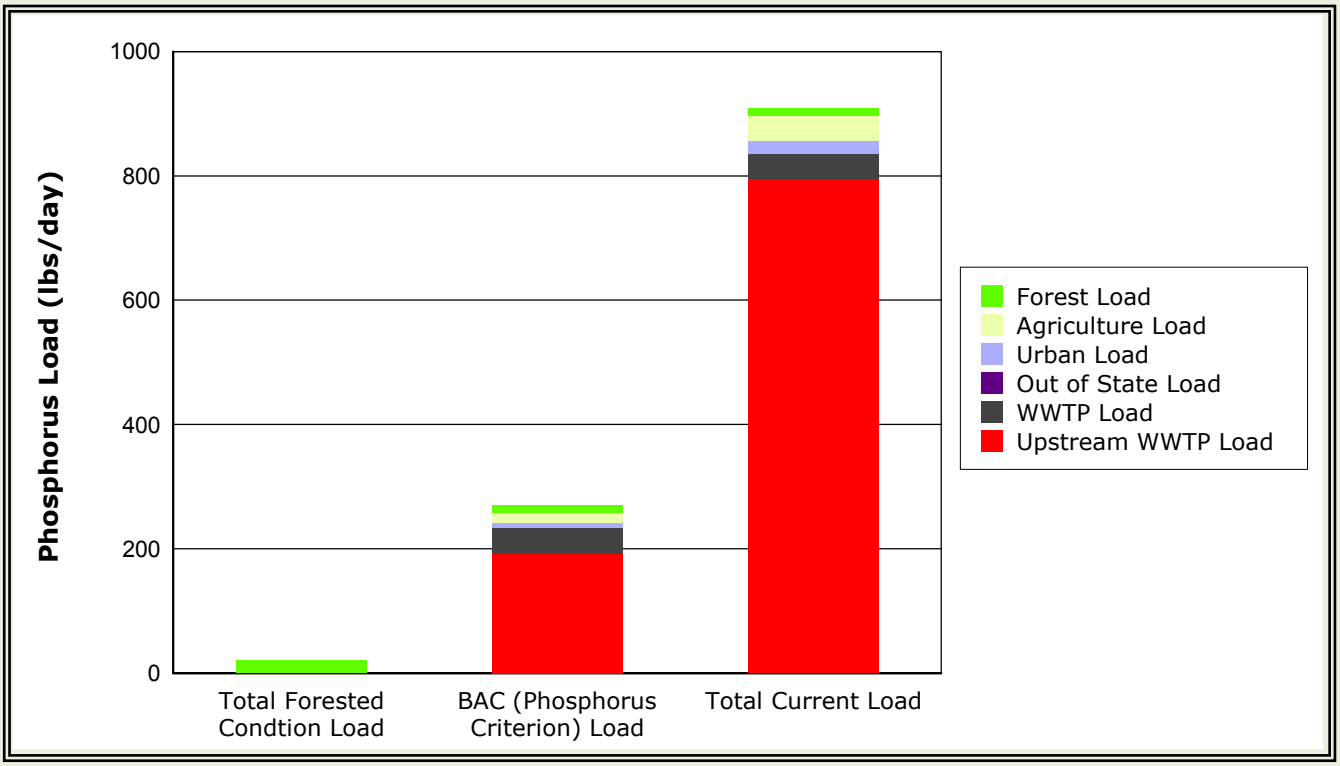
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

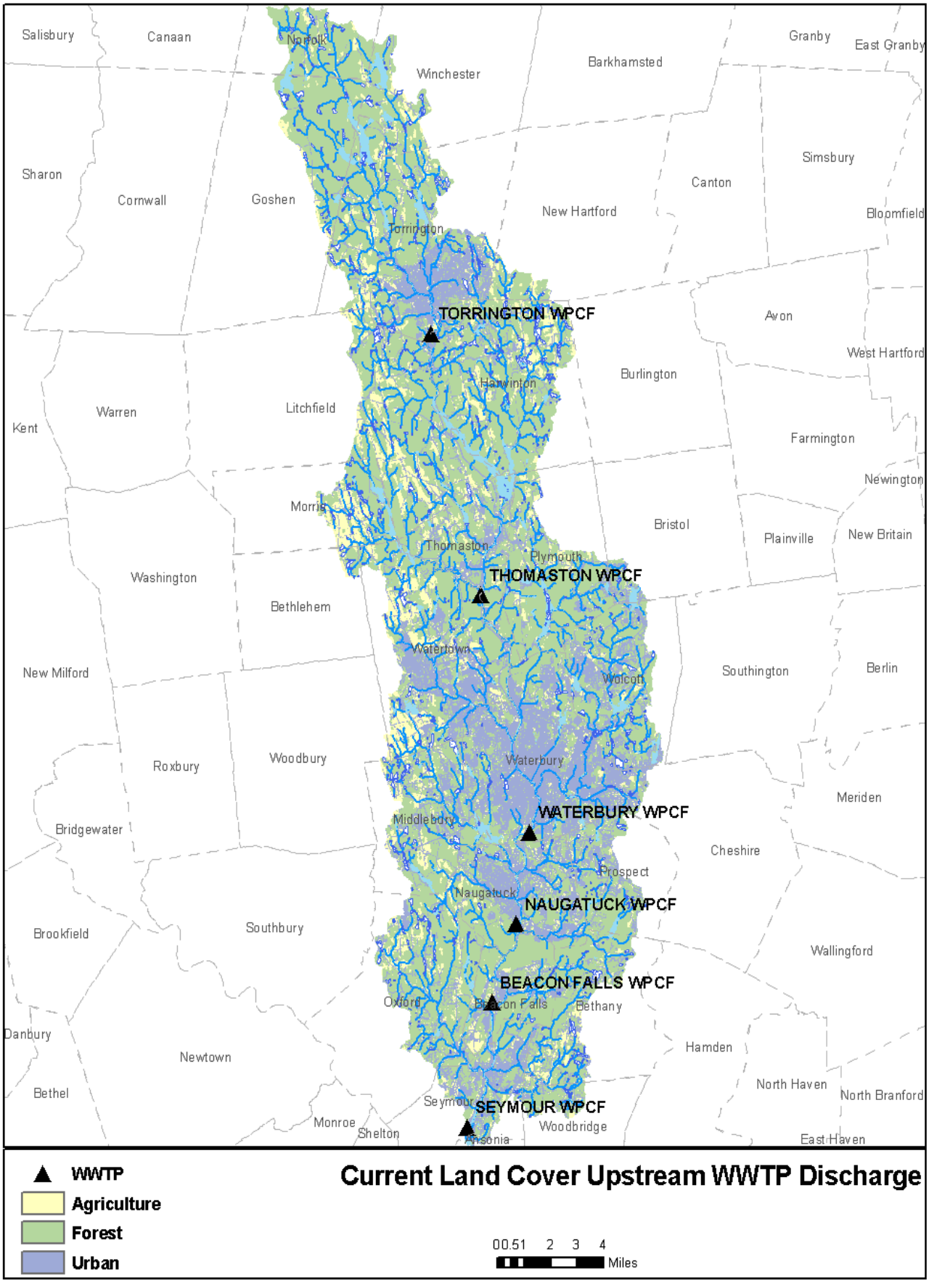
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	19644.92	15.52	60
Urban	48699.14	8.44	60
Forest	124560.62	12.94	0
Total US WWTP	6 (No.)	233.05	72
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	269.95
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	70



WWTP PHOSPHORUS FACT SHEET

SEYMOUR WPCF



WWTP PHOSPHORUS FACT SHEET

SIMSBURY WPCF

Facility Overview

NPDES #	CT0100919	Permit Expiration Date	2/21/2010
Town	SIMSBURY	Design Flow (MGD)	2.85
Receiving Waterbody	Farmington River-02	Type of Treatment*	AS, OD, Nitr, DNitr, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	2.25
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	4.57
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	85.99
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	13.15
Percent Reduction from Current	85
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 19.24

Total Forested Condition (lbs/day): 33.04

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	15763.79	31.14
Urban	42790.44	18.54
Forest	177680.82	18.46
Total US WWTP	8 (No.)	550.15
Out of State	81951.11	17.59

Total Current Load At Discharge (lbs/day)	635.88
Percent Contribution at Point of Concern	14

WWTP PHOSPHORUS FACT SHEET

SIMSBURY WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	5.13	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	13		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

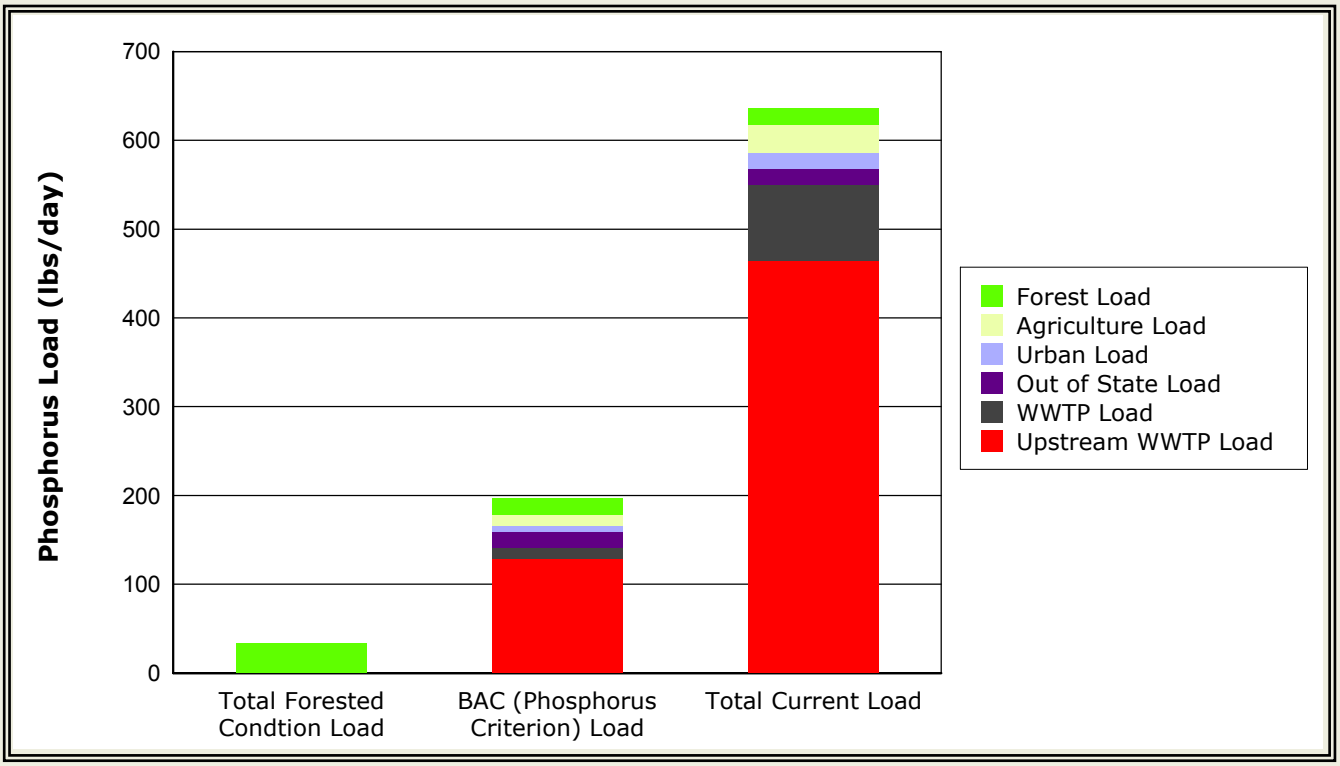
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	15763.79	12.46	60
Urban	42790.44	7.42	60
Forest	177680.82	18.46	0
Total US WWTP	8 (No.)	141.24	74
Out of State	81951.11	17.59	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	197.17
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	69



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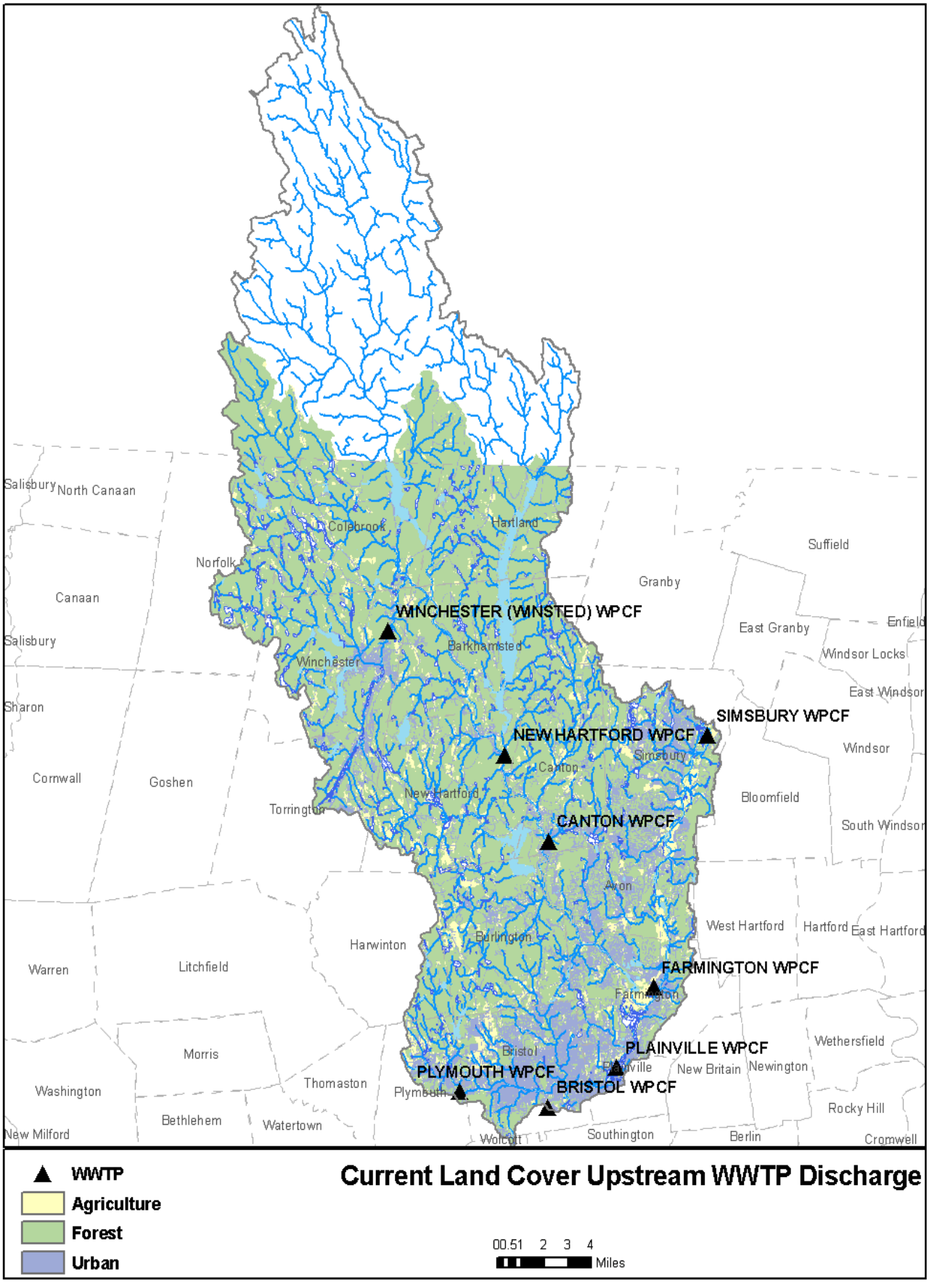
SIMSBURY WPCF



WWTP PHOSPHORUS FACT SHEET

SOUTHBURY HERITAGE VILLAGE WPCF*

Facility Overview

NPDES #	CT0101133	Permit Expiration Date	10/4/2009
Town	SOUTHBURY	Design Flow (MGD)	0.78
Receiving Waterbody	Pomperaug River	Type of Treatment*	AS, Nitr, DNitr, PRem

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.43
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	0.96
Current Phosphorus Treatment Performance (mg/L)	1.0 mg/l Avg Monthly, 1.5 mg/l Daily Limit
Current Average Phosphorus Load (lbs/day) 2001 - 2007	3.43
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	5.43
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 7.84

Total Forested Condition (lbs/day): 5.02

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	11406.07	22.53
Urban	6390.89	2.77
Forest	30533.29	3.17
Total US WWTP	1 (No.)	10.92
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	39.39
Percent Contribution at Point of Concern	28

WWTP PHOSPHORUS FACT SHEET

SOUTHBURY HERITAGE VILLAGE WPCF*

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	5.64	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	1		
Distance to Nearest Downstream IW (mi)	5.64		
Percent Contribution At Nearest Downstream IW	1		

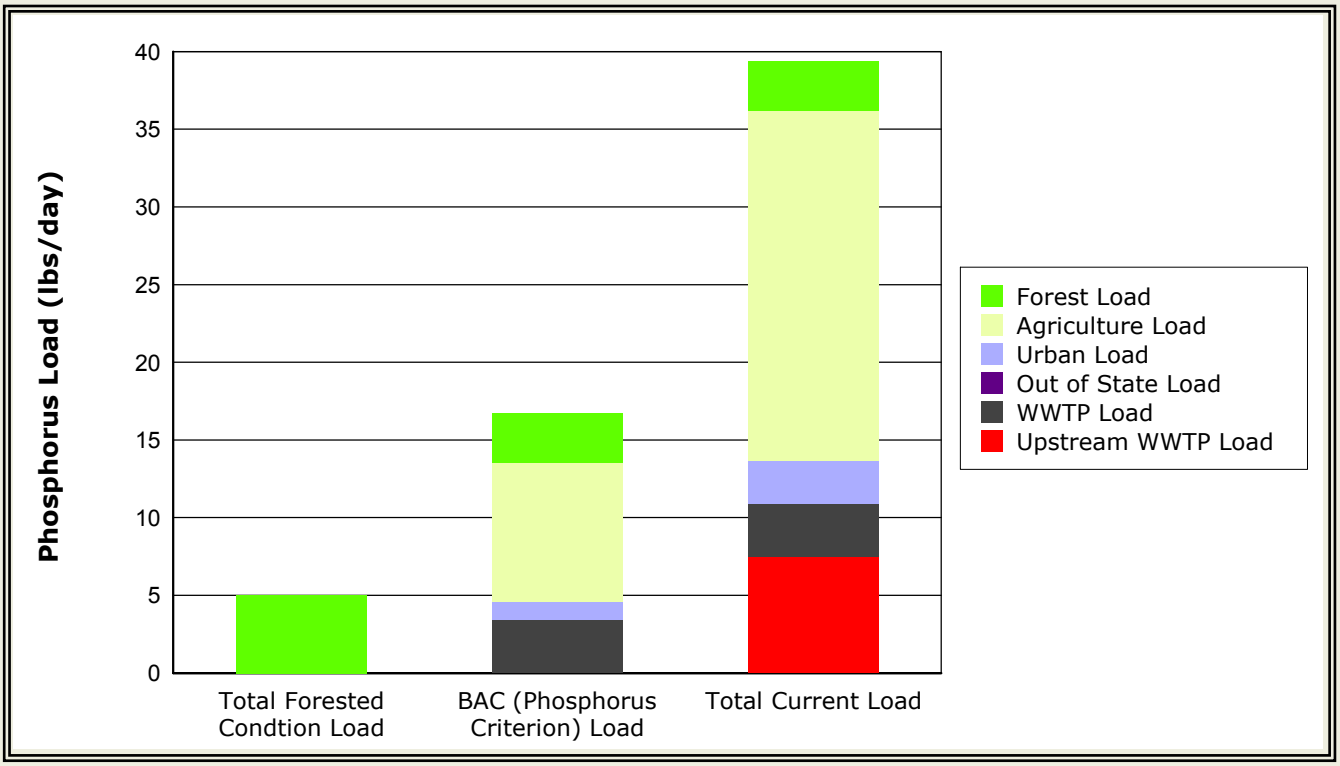
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

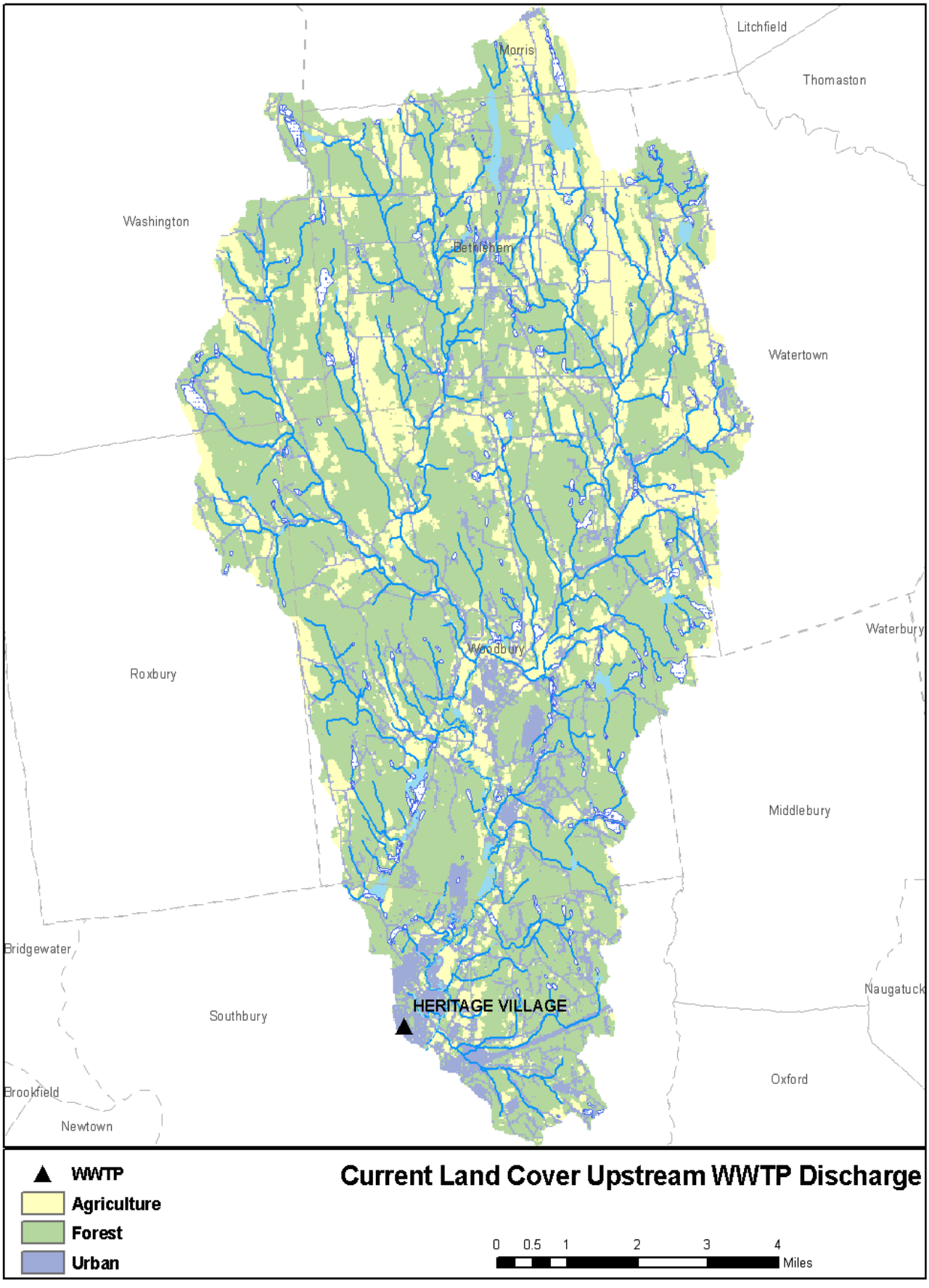
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	11406.07	9.01	60
Urban	6390.89	1.11	60
Forest	30533.29	3.17	0
Total US WWTP	1 (No.)	5.43	50
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	18.72
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	52



WWTP PHOSPHORUS FACT SHEET

SOUTHBURY HERITAGE VILLAGE WPCF*



WWTP PHOSPHORUS FACT SHEET

SOUTHINGTON WPCF

Facility Overview

NPDES #	CT0100536	Permit Expiration Date	11/8/2009
Town	SOUTHINGTON	Design Flow (MGD)	7.40
Receiving Waterbody	Quinnipiac River-04	Type of Treatment*	AS, AdvTr, TFilt, UV, Nitr

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	4.51
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.74
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	100.00
Proposed Treatment Performance (mg/L)	0.2
BMP Load Allocation (lbs/day)	7.53
Percent Reduction from Current	92
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 30.54

Total Forested Condition (lbs/day): 3.75

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	3234.36	6.39
Urban	14592.25	6.32
Forest	18294.66	1.90
Total US WWTP	1 (No.)	100.00
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	114.61
Percent Contribution at Point of Concern	87

WWTP PHOSPHORUS FACT SHEET

SOUTHINGTON WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	5.85	Enrichment Indication Level:	HIGH
Percent Contribution At Nearest Downstream Dam	48		
Distance to Nearest Downstream IW (mi)	5.85		
Percent Contribution At Nearest Downstream IW	48		

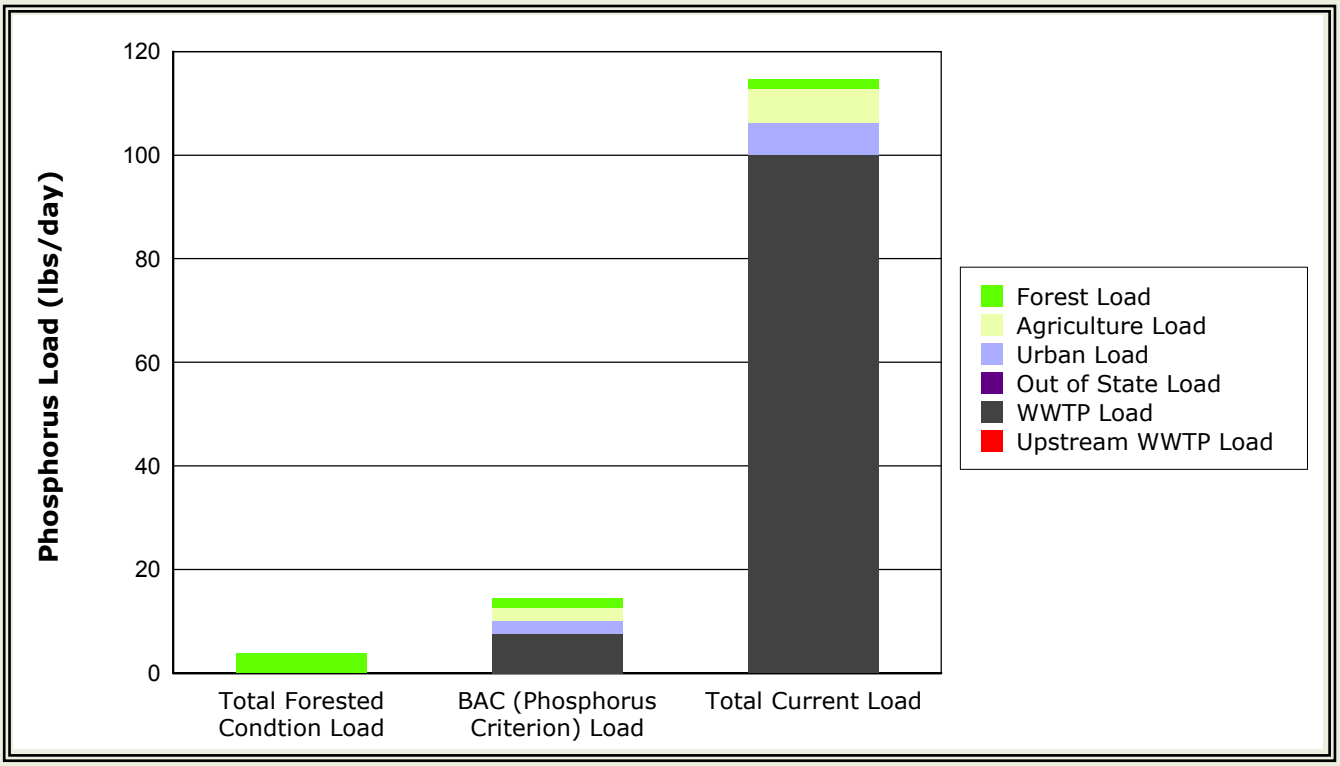
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

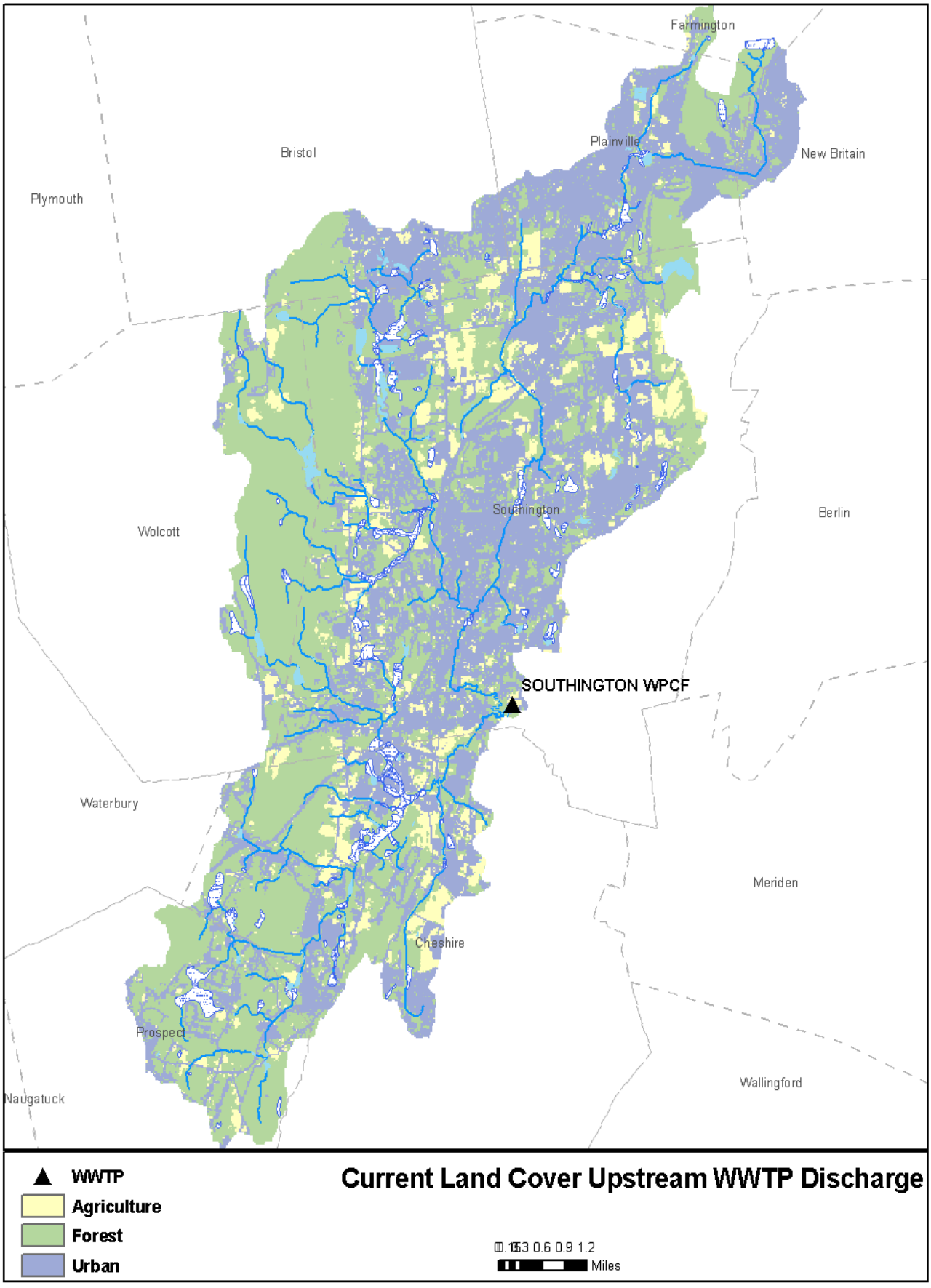
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	3234.36	2.56	60
Urban	14592.25	2.53	60
Forest	18294.66	1.90	0
Total US WWTP	1 (No.)	7.53	92
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	14.52
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	87



WWTP PHOSPHORUS FACT SHEET

SOUTHINGTON WPCF



WWTP PHOSPHORUS FACT SHEET

SPRAGUE WPCF

Facility Overview

NPDES #	CT0100978	Permit Expiration Date	12/22/2010
Town	Baltic	Design Flow (MGD)	0.40
Receiving Waterbody	Shetucket River-03	Type of Treatment*	AS, EA

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.17
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.68
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	3.11
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	3.11
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 5.22

Total Forested Condition (lbs/day): 30.84

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	34152.88	67.47
Urban	36632.15	15.87
Forest	226061.93	23.49
Total US WWTP	4 (No.)	54.11
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	160.94
Percent Contribution at Point of Concern	2

WWTP PHOSPHORUS FACT SHEET

SPRAGUE WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

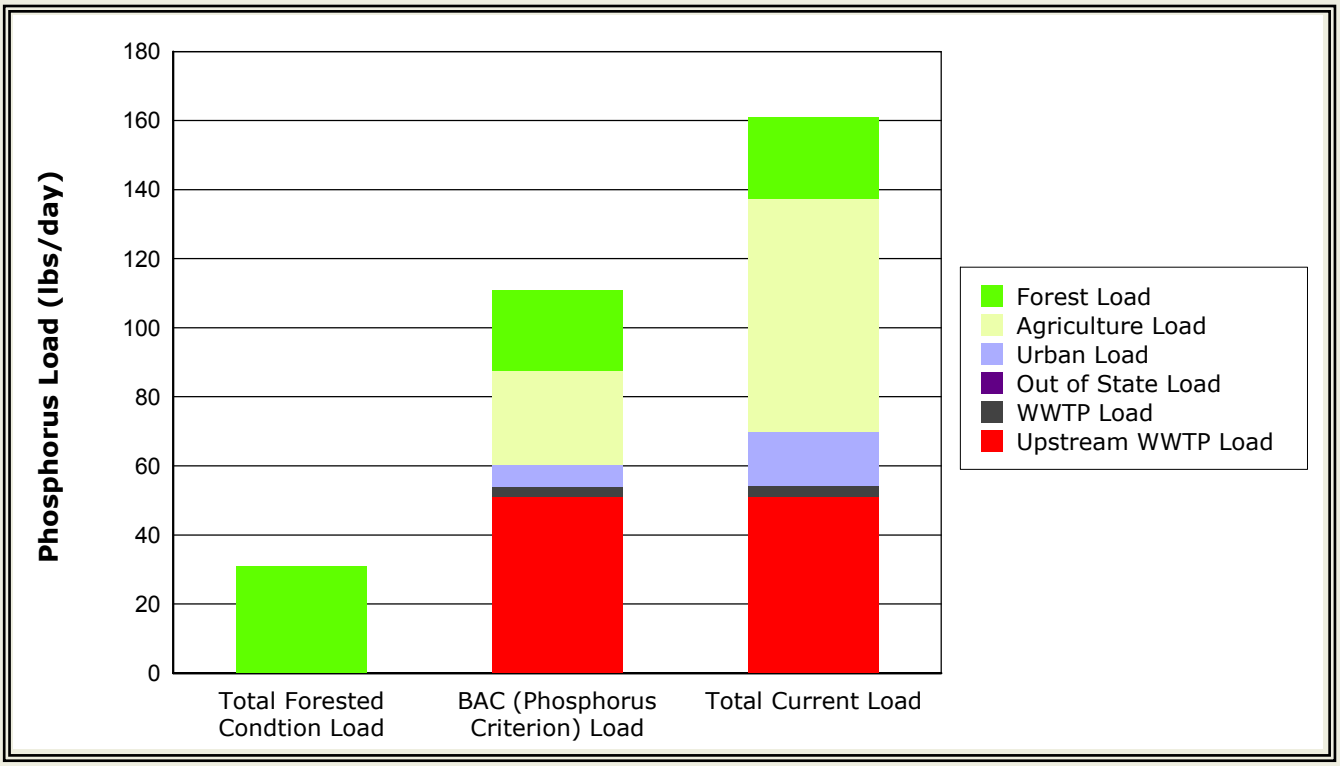
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

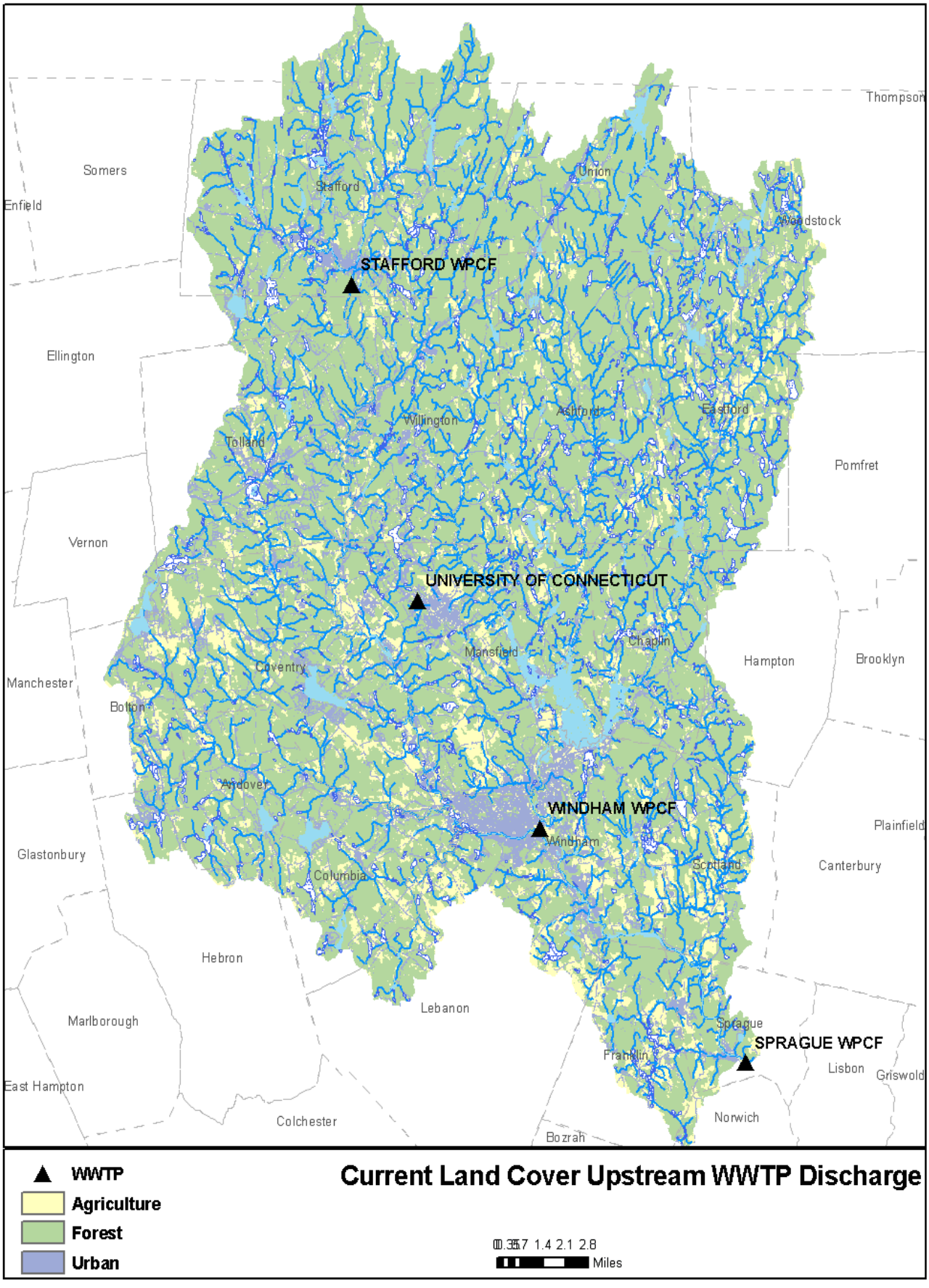
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	34152.88	26.99	60
Urban	36632.15	6.35	60
Forest	226061.93	23.49	0
Total US WWTP	4 (No.)	54.11	0
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	110.94
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	31



WWTP PHOSPHORUS FACT SHEET

SPRAGUE WPCF



WWTP PHOSPHORUS FACT SHEET

STAFFORD WPCA

Facility Overview

NPDES #	CT0101214	Permit Expiration Date	2/6/2012
Town	STAFFORD SPRINGS	Design Flow (MGD)	2.00
Receiving Waterbody	Willimantic River-05	Type of Treatment*	AS, UV, Anthrocyte Filters

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	1.49
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	0.71
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	8.61
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	8.61
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 4.96

Total Forested Condition (lbs/day): 3.51

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{[\text{Ag}] + [\text{Urban}] + [\text{Forest}] + [\text{Total Upstream WWTP}] + [\text{Out of State}]}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	2145.92	4.24
Urban	3972.46	1.72
Forest	27706.19	2.88
Total US WWTP	1 (No.)	8.61
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	17.45
Percent Contribution at Point of Concern	49

WWTP PHOSPHORUS FACT SHEET

STAFFORD WPCA

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	14.19	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	32		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

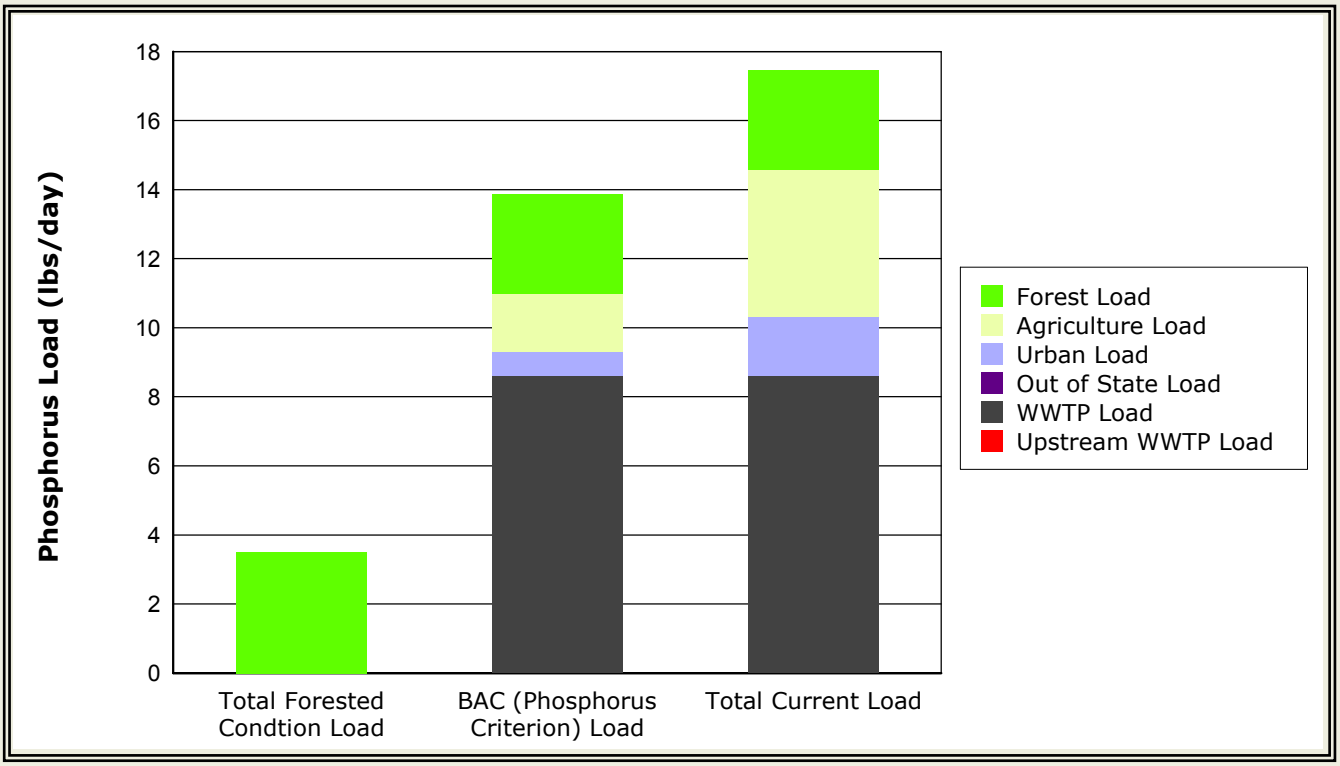
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

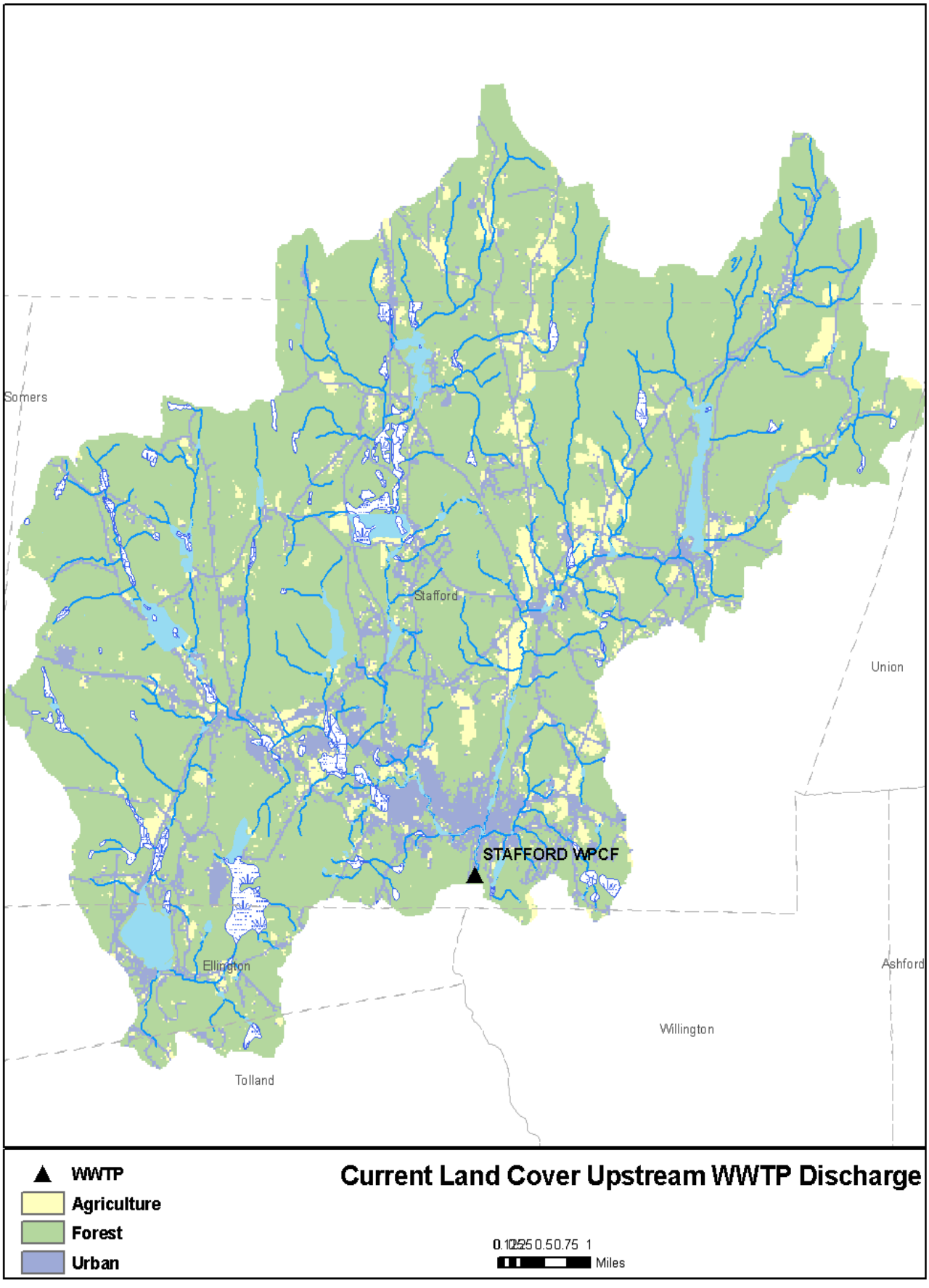
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	2145.92	1.70	60
Urban	3972.46	0.69	60
Forest	27706.19	2.88	0
Total US WWTP	1 (No.)	8.61	0
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	13.88
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	20



WWTP PHOSPHORUS FACT SHEET

STAFFORD WPCA



WWTP PHOSPHORUS FACT SHEET

THOMASTON WPCF

Facility Overview

NPDES #	CT0100781	Permit Expiration Date	9/27/2011
Town	THOMASTON	Design Flow (MGD)	1.38
Receiving Waterbody	Naugatuck River-06	Type of Treatment*	SBR, AdvTr, UV, Nitr, DNitr

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.88
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.29
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	22.68
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	5.14
Percent Reduction from Current	77
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 15.46

Total Forested Condition (lbs/day): 7.29

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	7654.2	15.12
Urban	11060.2	4.79
Forest	51427.77	5.34
Total US WWTP	2 (No.)	87.41
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	112.66
Percent Contribution at Point of Concern	20

WWTP PHOSPHORUS FACT SHEET

THOMASTON WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

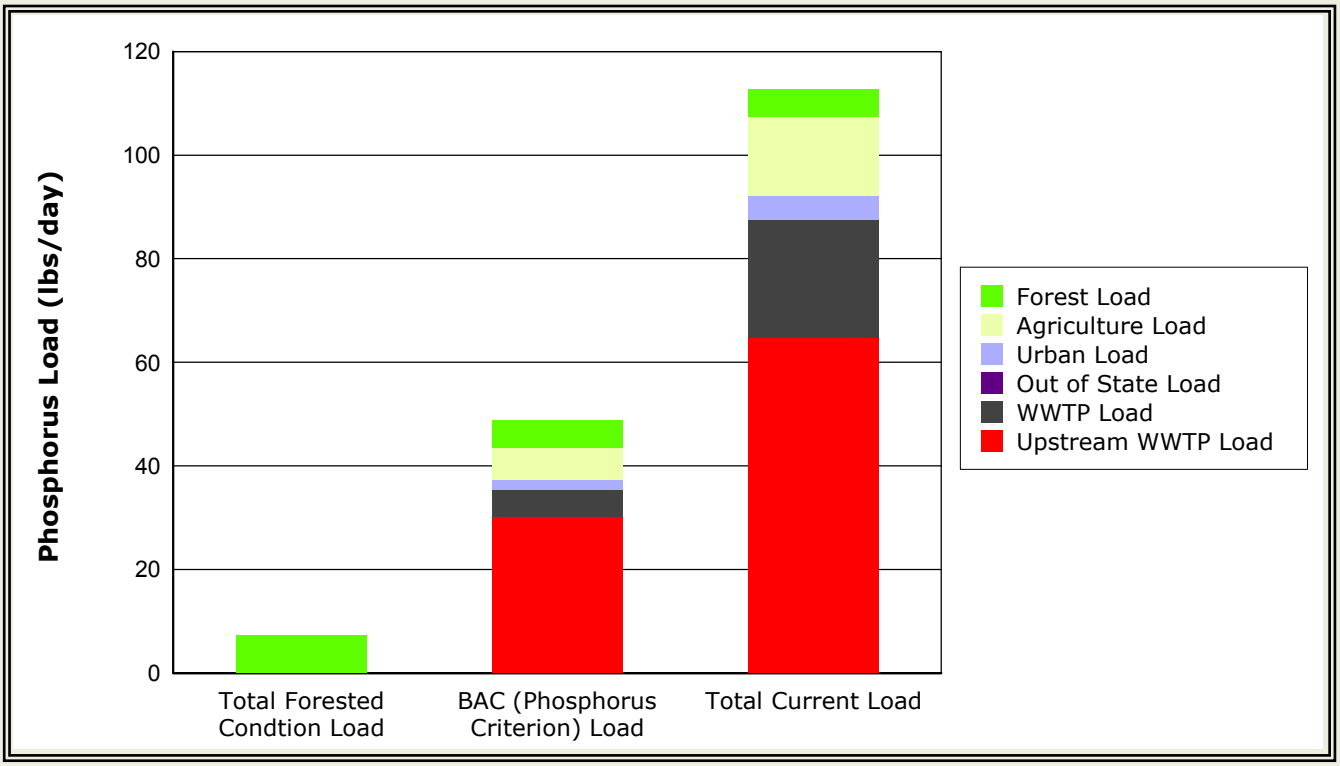
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

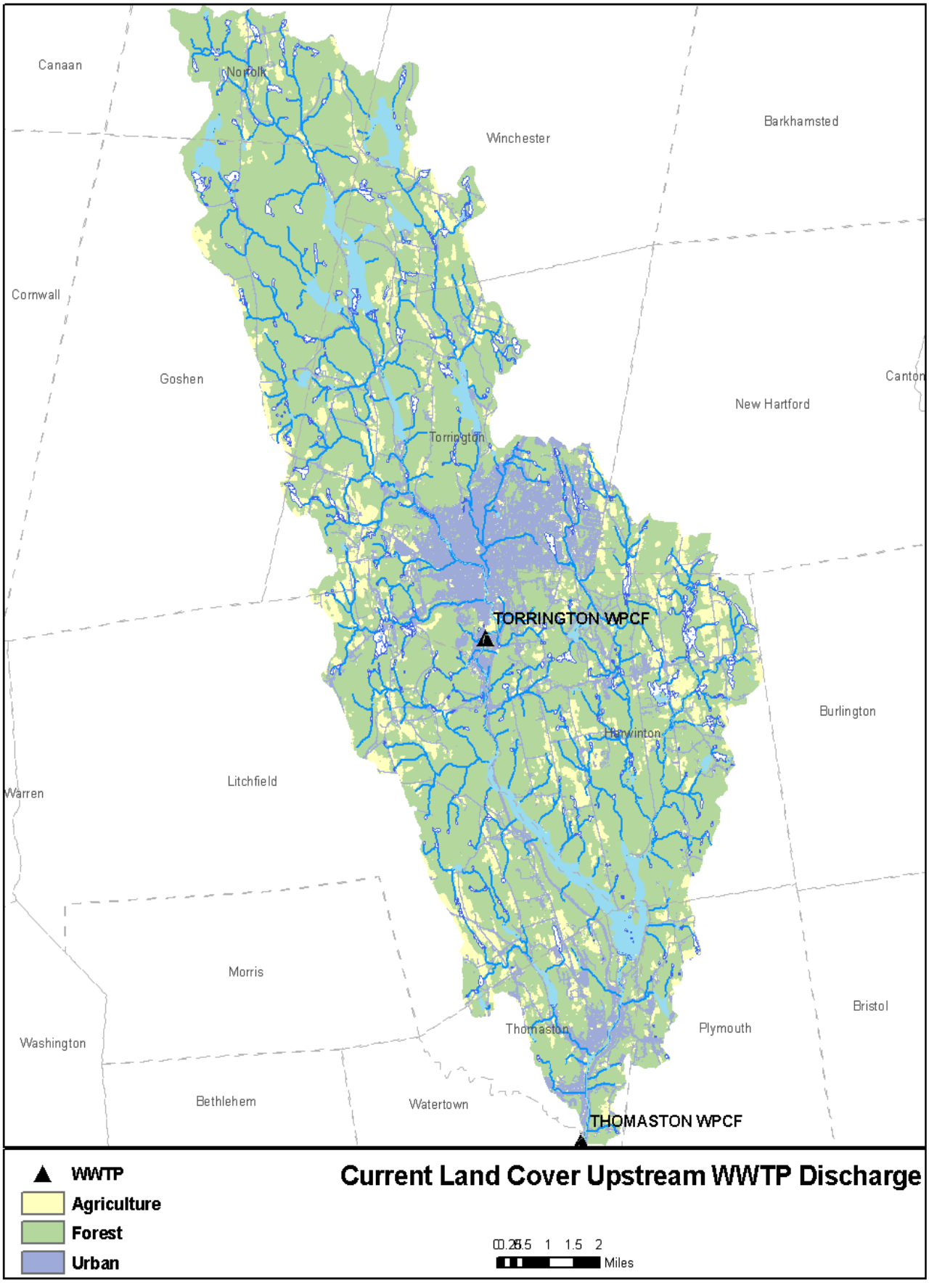
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	7654.2	6.05	60
Urban	11060.2	1.92	60
Forest	51427.77	5.34	0
Total US WWTP	2 (No.)	35.41	59
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	48.72
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	57



WWTP PHOSPHORUS FACT SHEET

THOMASTON WPCF



WWTP PHOSPHORUS FACT SHEET

THOMPSON WPCF

Facility Overview

NPDES #	CT0100706	Permit Expiration Date	9/27/2011
Town	THOMPSON	Design Flow (MGD)	1.36
Receiving Waterbody	French River-01	Type of Treatment*	AS, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	0.36
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.32
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	6.29
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	2.10
Percent Reduction from Current	67
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 11.92

Total Forested Condition (lbs/day): 7.45

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	7093.97	14.01
Urban	14974.94	6.49
Forest	49582.97	5.15
Total US WWTP	1 (No.)	6.29
Out of State	59629	56.78

Total Current Load At Discharge (lbs/day)	88.72
Percent Contribution at Point of Concern	7

WWTP PHOSPHORUS FACT SHEET

THOMPSON WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	30.31	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	2		
Distance to Nearest Downstream IW (mi)	30.31		
Percent Contribution At Nearest Downstream IW	2		

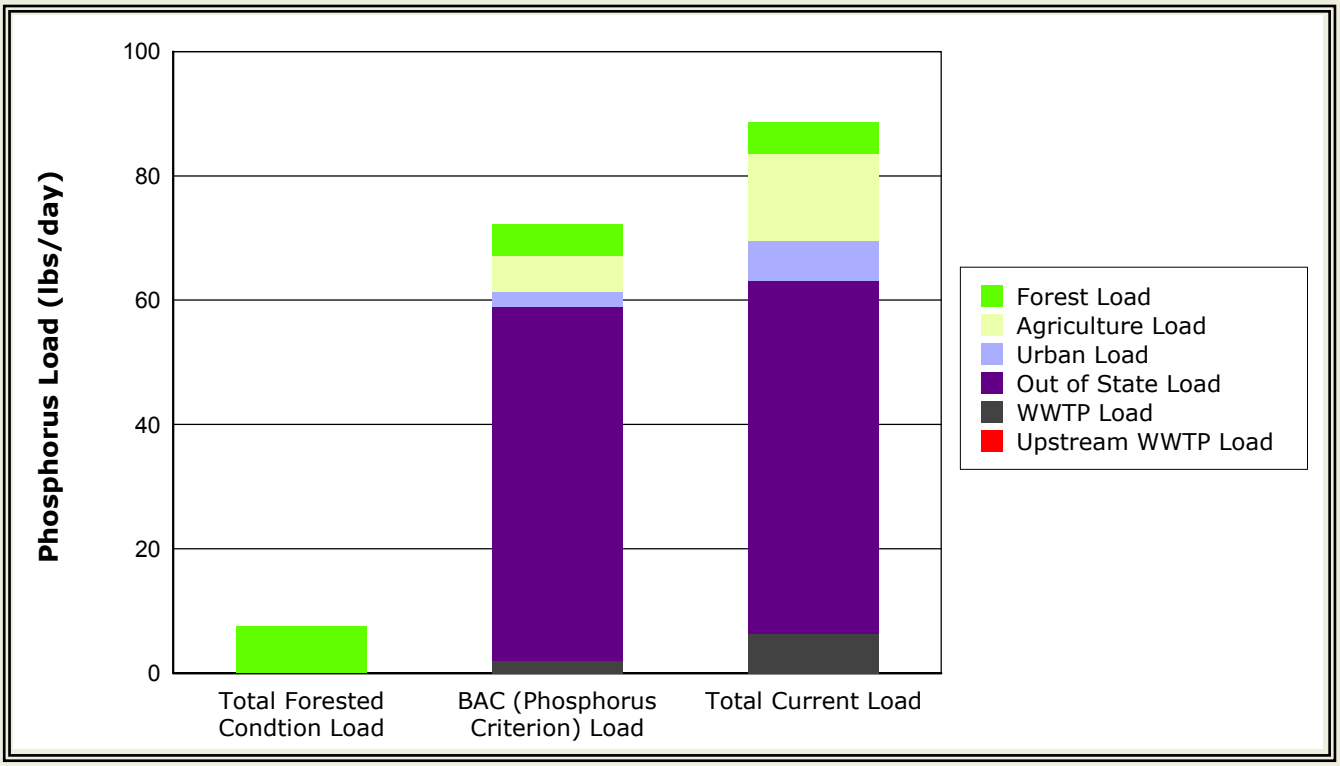
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

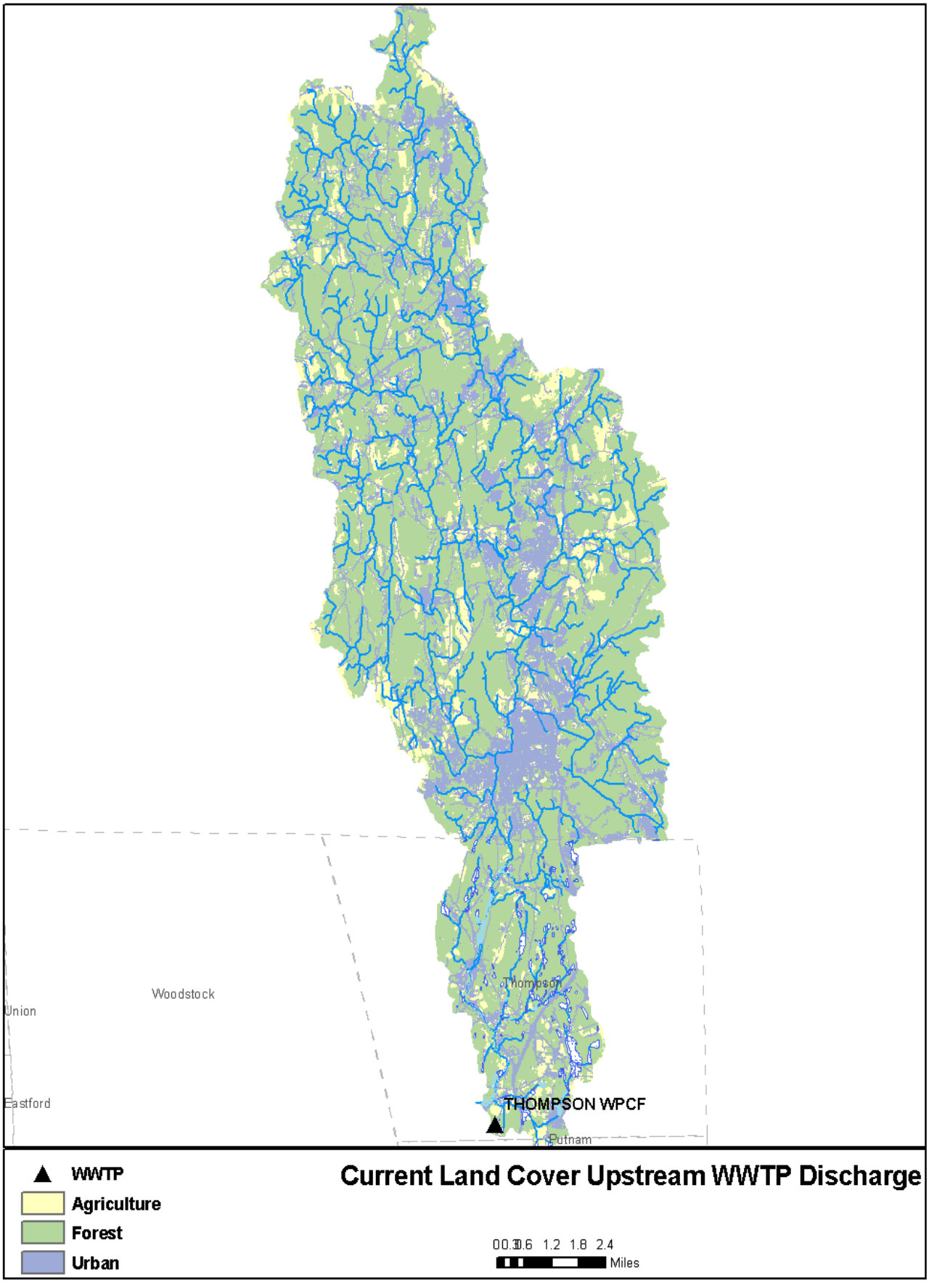
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	7093.97	5.61	60
Urban	14974.94	2.60	60
Forest	49582.97	5.15	0
Total US WWTP	1 (No.)	2.10	67
Out of State	59629	56.78	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	72.24
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	19



WWTP PHOSPHORUS FACT SHEET

THOMPSON WPCF



WWTP PHOSPHORUS FACT SHEET

TORRINGTON WPCF

Facility Overview

NPDES #	CT0100579	Permit Expiration Date	8/13/2011
Town	TORRINGTON	Design Flow (MGD)	7.00
Receiving Waterbody	Naugatuck River-07	Type of Treatment*	AS, AdvTr, Nitr, DNitr, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	5.18
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.68
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	64.73
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	30.27
Percent Reduction from Current	53
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 20.99

Total Forested Condition (lbs/day): 3.63

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	3241.52	6.40
Urban	5521.69	2.39
Forest	26194.13	2.72
Total US WWTP	1 (No.)	64.73
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	76.24
Percent Contribution at Point of Concern	85

WWTP PHOSPHORUS FACT SHEET

TORRINGTON WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

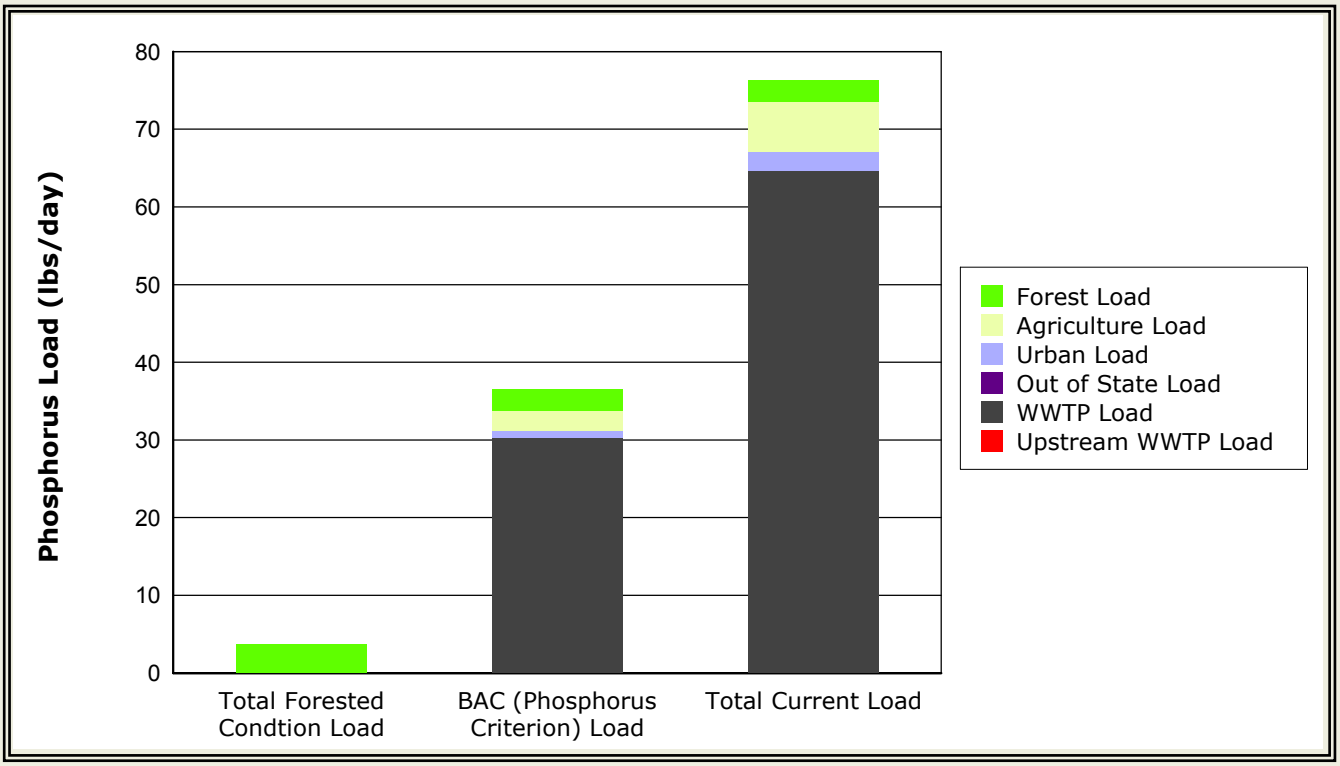
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

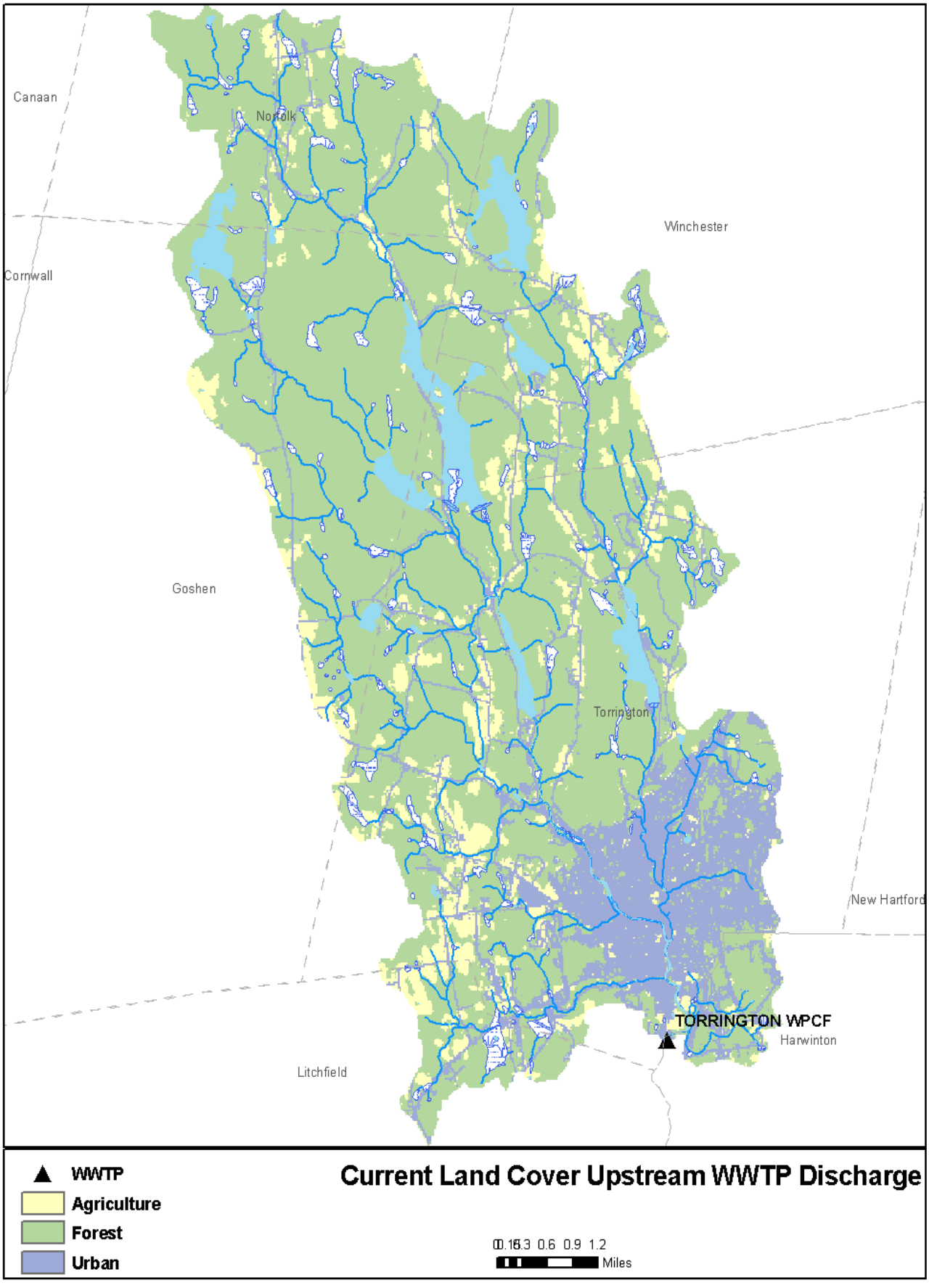
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	3241.52	2.56	60
Urban	5521.69	0.96	60
Forest	26194.13	2.72	0
Total US WWTP	1 (No.)	30.27	53
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	36.51
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	52



WWTP PHOSPHORUS FACT SHEET

TORRINGTON WPCF



WWTP PHOSPHORUS FACT SHEET

UCONN WPCF

Facility Overview

NPDES #	CT0101320	Permit Expiration Date	11/12/2011
Town	STORRS	Design Flow (MGD)	3.00
Receiving Waterbody	Willimantic River-03	Type of Treatment*	AS, ADvTr, OD, Nitr, DNitr, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	1.27
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.45
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	23.76
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	23.76
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 7.22

Total Forested Condition (lbs/day): 7.36

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	5564.91	10.99
Urban	9216.15	3.99
Forest	56082.34	5.83
Total US WWTP	2 (No.)	32.37
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	53.18
Percent Contribution at Point of Concern	45

WWTP PHOSPHORUS FACT SHEET

UCONN WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

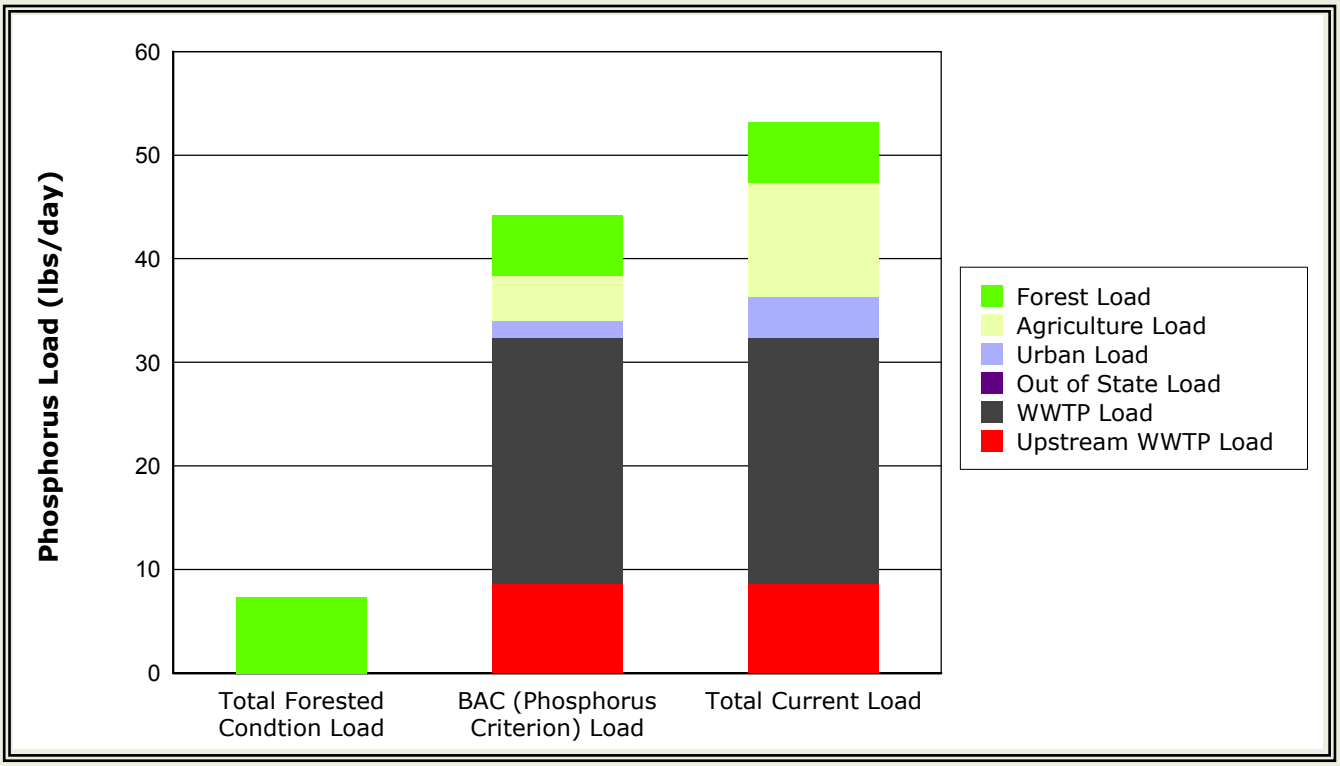
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

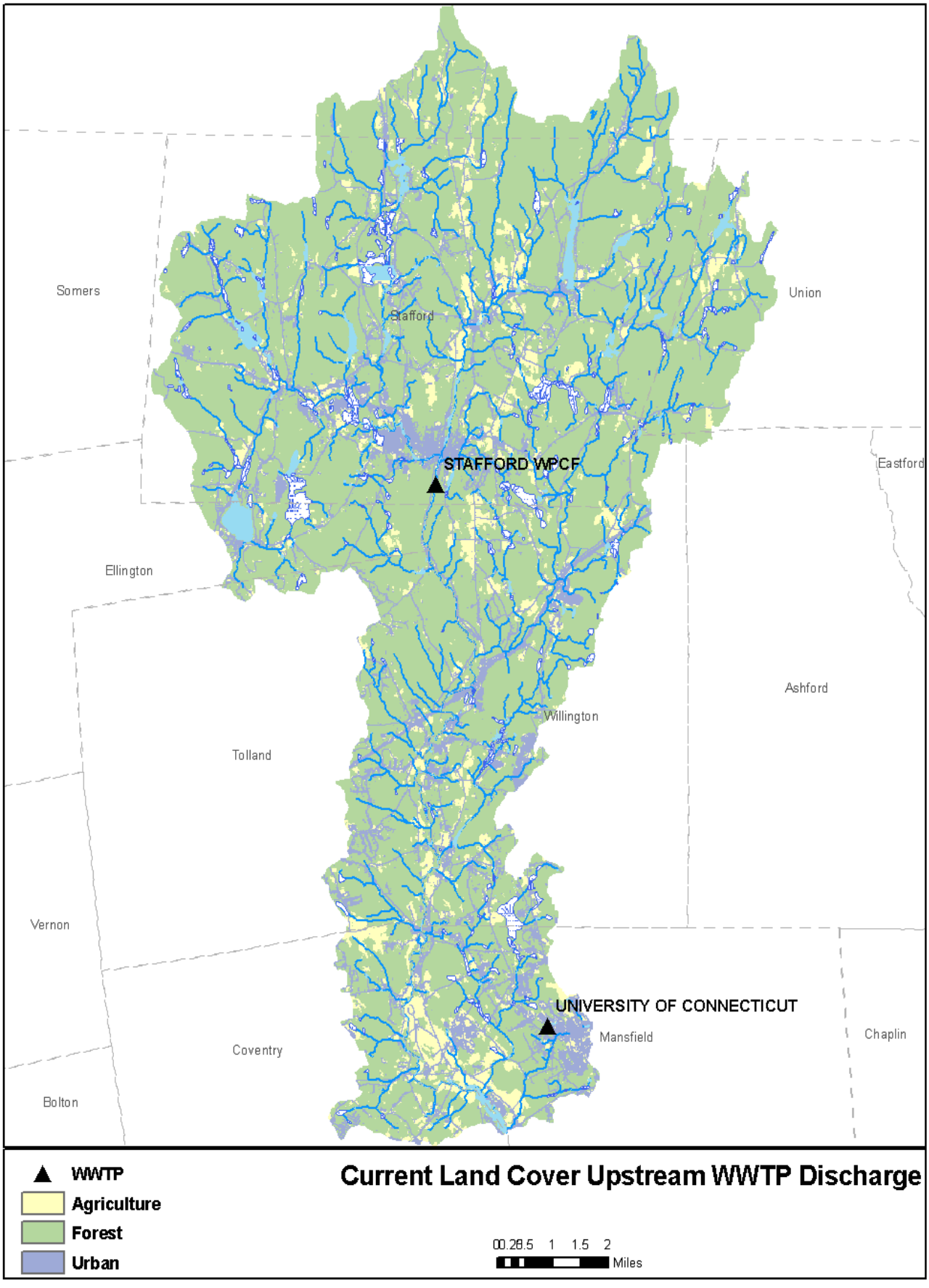
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	5564.91	4.40	60
Urban	9216.15	1.60	60
Forest	56082.34	5.83	0
Total US WWTP	2 (No.)	32.37	0
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	44.20
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	17



WWTP PHOSPHORUS FACT SHEET

UCONN WPCF



WWTP PHOSPHORUS FACT SHEET

VERNON WPCF

Facility Overview

NPDES #	CT0100609	Permit Expiration Date	2/17/2009
Town	VERNON	Design Flow (MGD)	7.10
Receiving Waterbody	Hockanum River-05	Type of Treatment*	PAC, AdvTr, Nitr, SFilt, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	3.90
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	2.30
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	72.19
Proposed Treatment Performance (mg/L)	0.2
BMP Load Allocation (lbs/day)	6.51
Percent Reduction from Current	91
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 47.85

Total Forested Condition (lbs/day): 1.71

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	3691.85	7.29
Urban	3437.58	1.49
Forest	9352.86	0.97
Total US WWTP	1 (No.)	72.19
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	81.94
Percent Contribution at Point of Concern	88

WWTP PHOSPHORUS FACT SHEET

VERNON WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	5.44	Enrichment Indication Level:	HIGH
Percent Contribution At Nearest Downstream Dam	81		
Distance to Nearest Downstream IW (mi)	5.44		
Percent Contribution At Nearest Downstream IW	81		

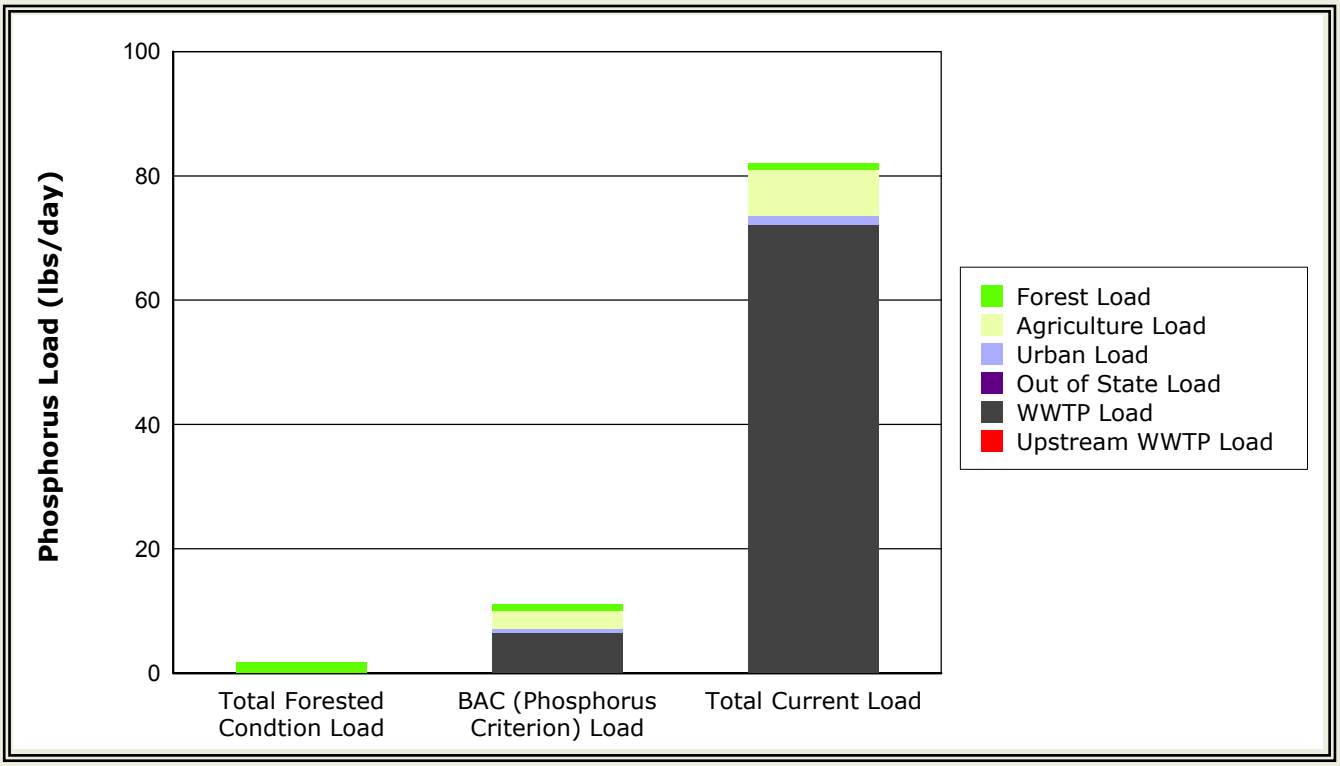
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	3691.85	2.92	60
Urban	3437.58	0.60	60
Forest	9352.86	0.97	0
Total US WWTP	1 (No.)	6.51	91
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	11.00
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	87



WWTP PHOSPHORUS FACT SHEET

VERNON WPCF

WWTP PHOSPHORUS FACT SHEET

WALLINGFORD WATER & SEWER

Facility Overview

NPDES #	CT0100617	Permit Expiration Date	12/27/2010
Town	WALLINGFORD	Design Flow (MGD)	8.00
Receiving Waterbody	Quinnipiac River-02	Type of Treatment*	RBC, UV, Nitr, DNitr, AdvTr

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	5.36
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.46
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	145.16
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	31.32
Percent Reduction from Current	78
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 65.70

Total Forested Condition (lbs/day): 7.40

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	7010.25	13.85
Urban	33145.54	14.36
Forest	31107.16	3.23
Total US WWTP	4 (No.)	455.00
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	486.44
Percent Contribution at Point of Concern	30

WWTP PHOSPHORUS FACT SHEET

WALLINGFORD WATER & SEWER

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

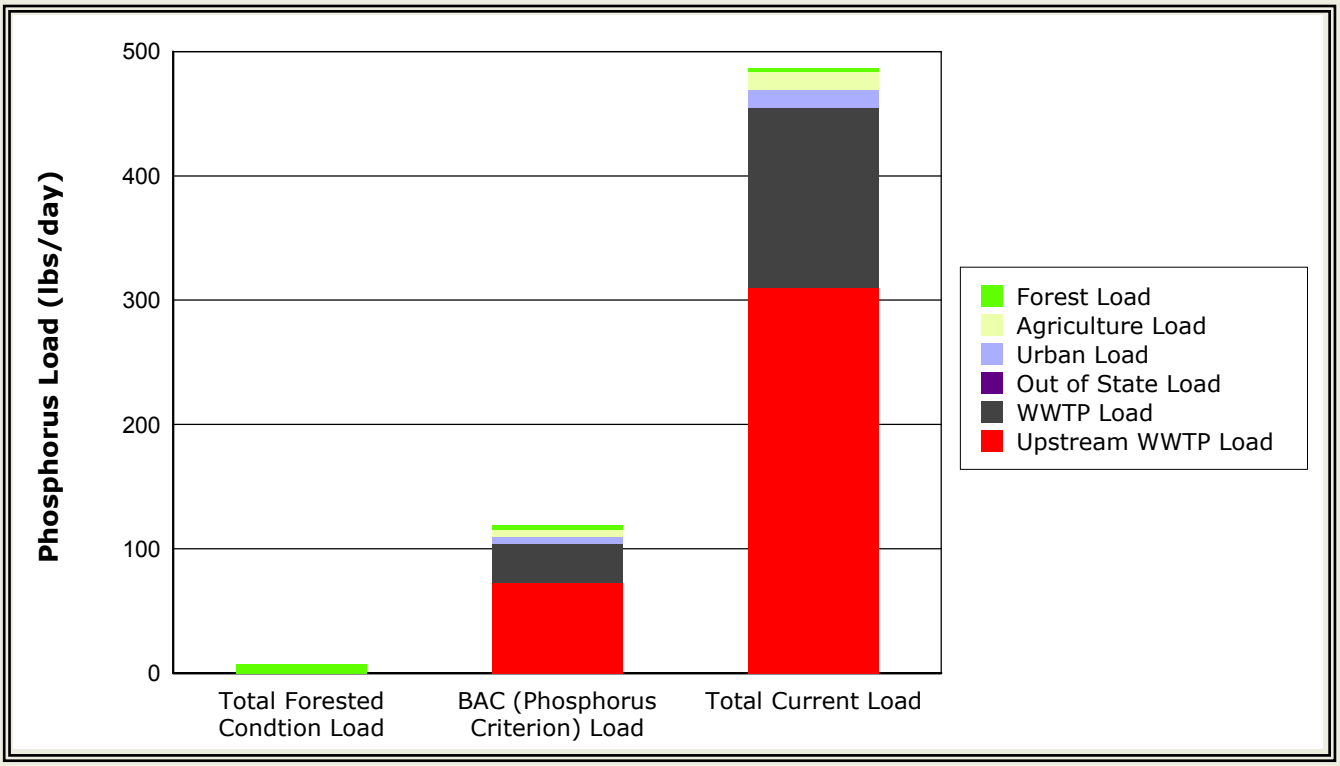
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

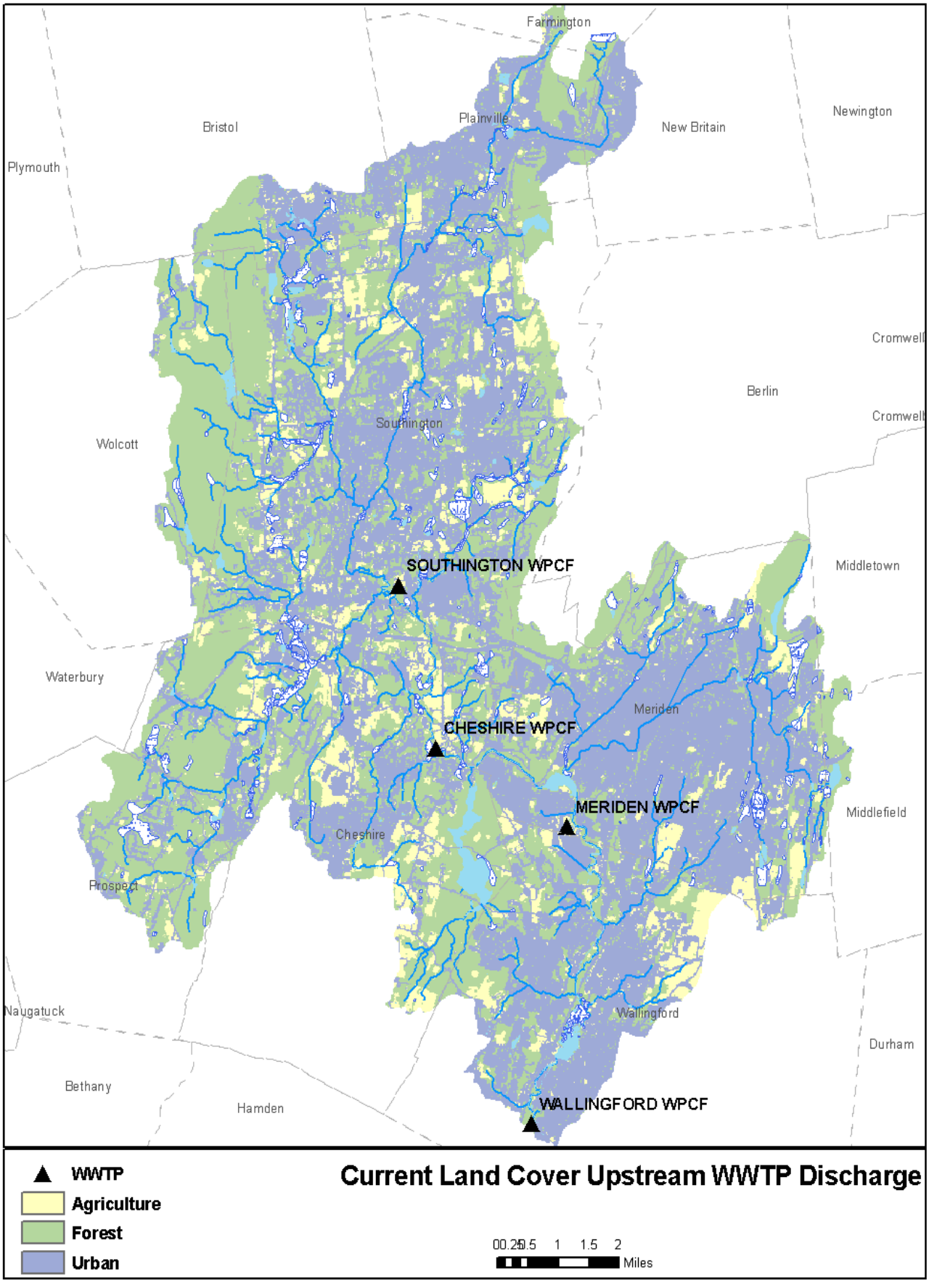
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	7010.25	5.54	60
Urban	33145.54	5.75	60
Forest	31107.16	3.23	0
Total US WWTP	4 (No.)	103.91	77
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	118.43
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	76



WWTP PHOSPHORUS FACT SHEET

WALLINGFORD WATER & SEWER



WWTP PHOSPHORUS FACT SHEET

WATERBURY WPCF

Facility Overview

NPDES #	CT0100625	Permit Expiration Date	12/14/2005
Town	WATERBURY	Design Flow (MGD)	27.00
Receiving Waterbody	Naugatuck River-02	Type of Treatment*	AS, AdvTr, Nitr, DNitr, UV

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	20.52
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	3.19
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	539.92
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	119.89
Percent Reduction from Current	78
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 48.94

Total Forested Condition (lbs/day): 13.87

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	14355.24	28.36
Urban	32585.11	14.12
Forest	86545.58	8.99
Total US WWTP	3 (No.)	627.32
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	678.79
Percent Contribution at Point of Concern	80

WWTP PHOSPHORUS FACT SHEET

WATERBURY WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

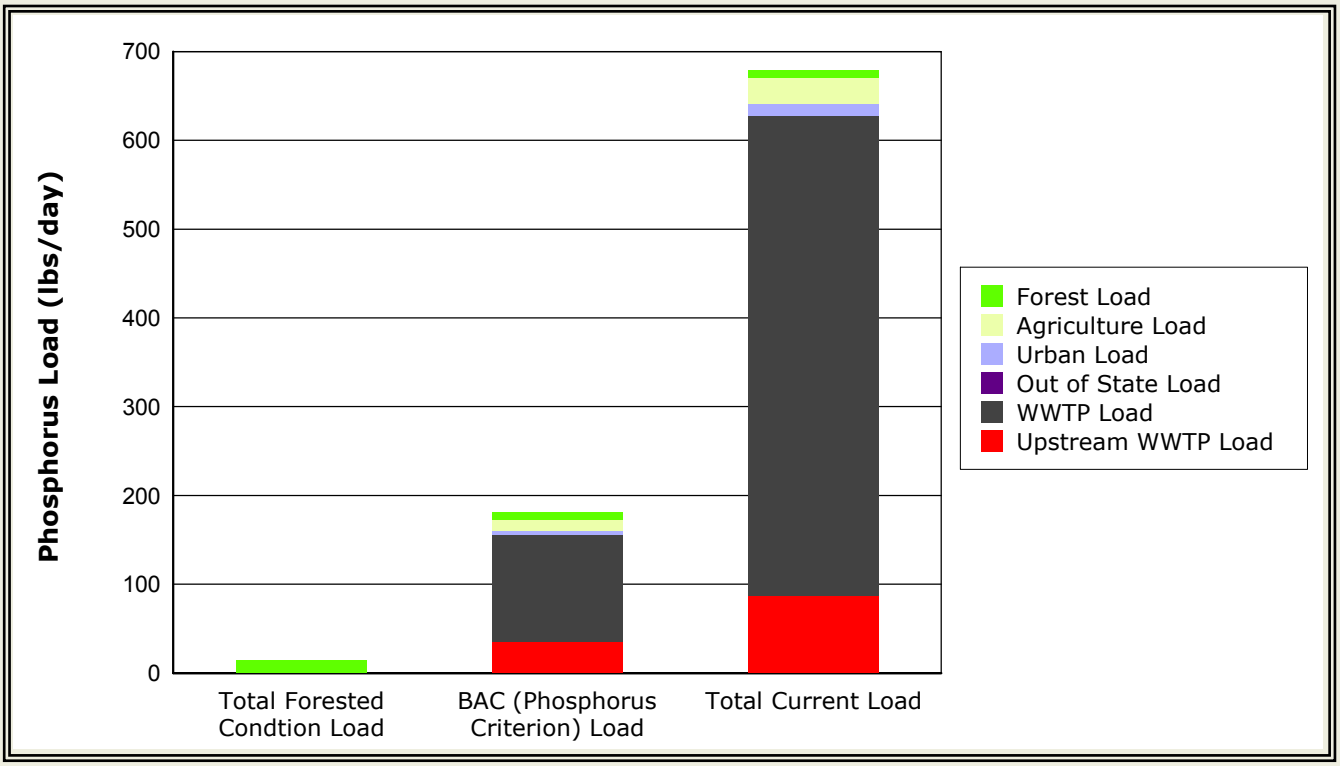
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

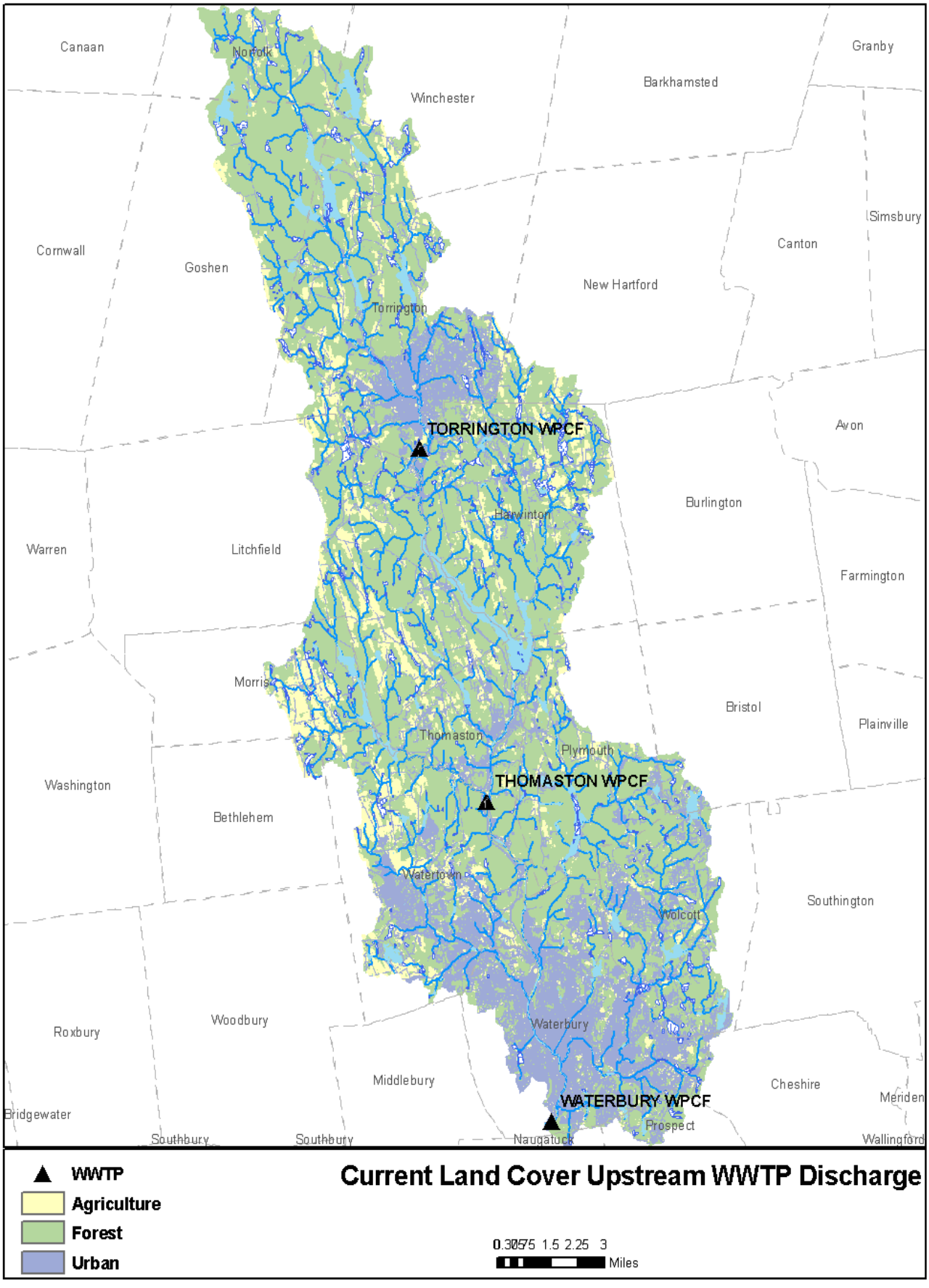
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	14355.24	11.34	60
Urban	32585.11	5.65	60
Forest	86545.58	8.99	0
Total US WWTP	3 (No.)	155.30	75
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	181.28
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	73



WWTP PHOSPHORUS FACT SHEET

WATERBURY WPCF



WWTP PHOSPHORUS FACT SHEET

WILLIMANTIC WPCF

Facility Overview

NPDES #	CT0101001	Permit Expiration Date	3/14/2010
Town	WILLIMANTIC	Design Flow (MGD)	5.50
Receiving Waterbody	Willimantic River-01	Type of Treatment*	AS, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	2.42
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	0.95
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	18.63
Proposed Treatment Performance (mg/L)	cap
BMP Load Allocation (lbs/day)	18.63
Percent Reduction from Current	0
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 5.18

Total Forested Condition (lbs/day): 26.69

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	26707.3	52.76
Urban	32015.97	13.87
Forest	198215.88	20.59
Total US WWTP	3 (No.)	51.00
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	138.22
Percent Contribution at Point of Concern	13

WWTP PHOSPHORUS FACT SHEET

WILLIMANTIC WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	Null	Enrichment Indication Level:	LOW
Percent Contribution At Nearest Downstream Dam	0		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

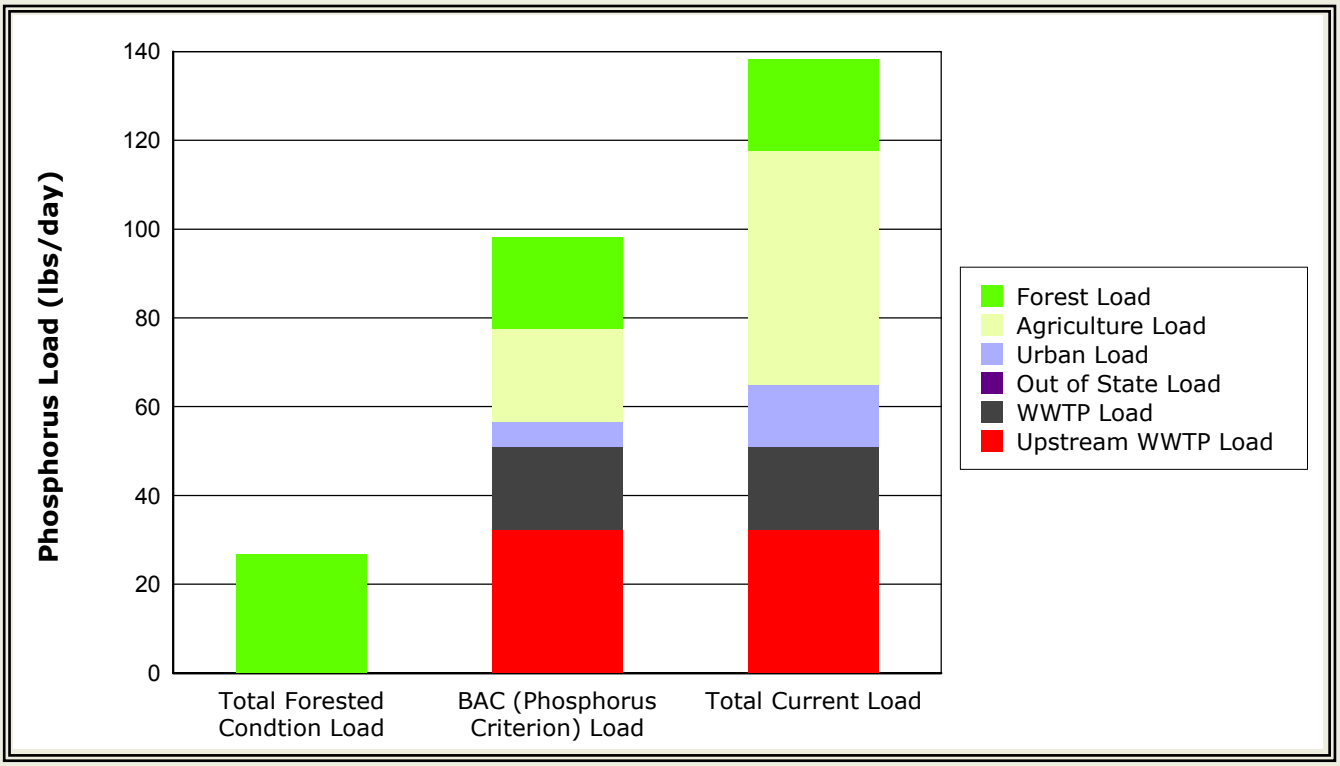
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

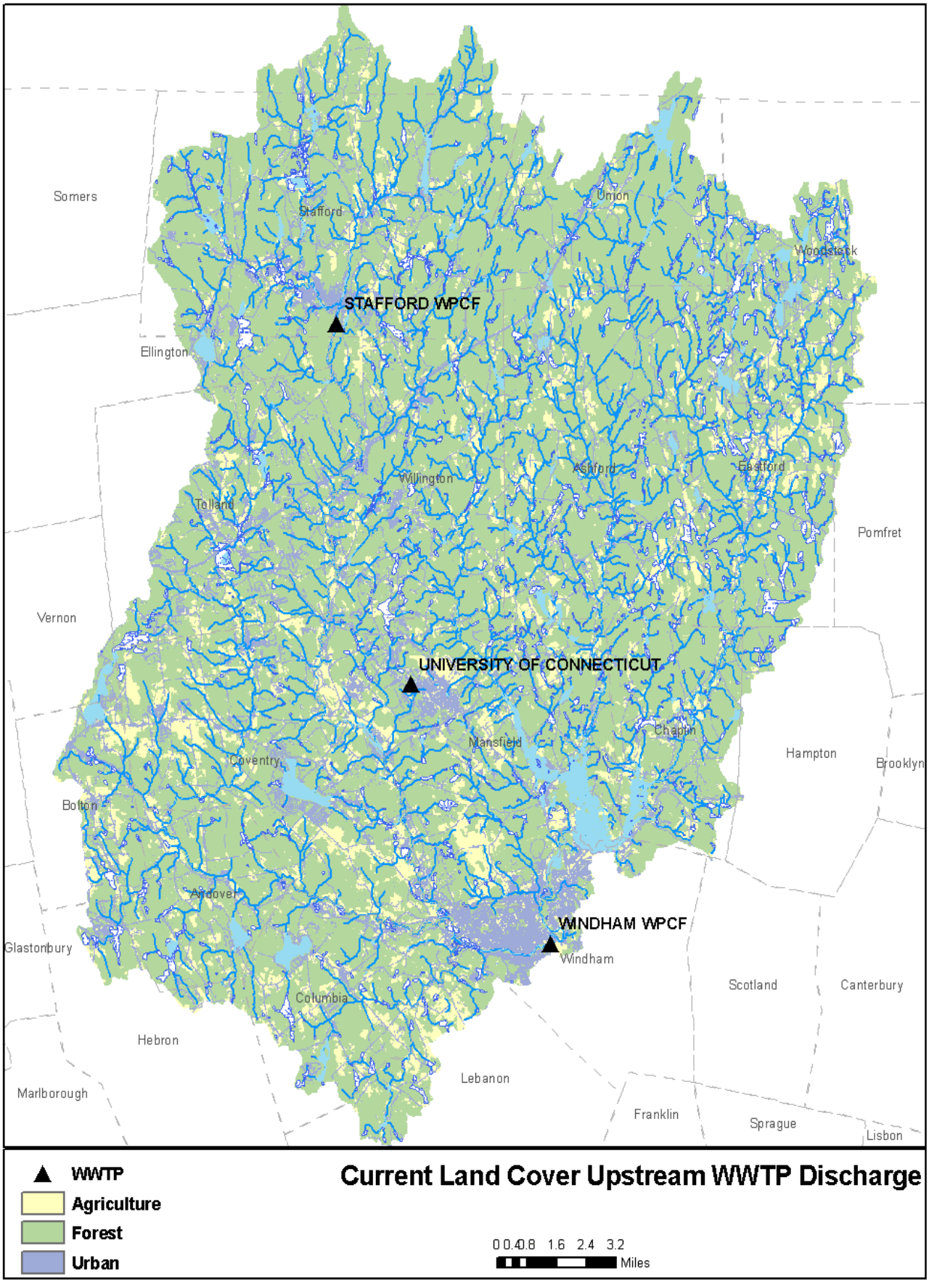
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	26707.3	21.10	60
Urban	32015.97	5.55	60
Forest	198215.88	20.59	0
Total US WWTP	3 (No.)	51.00	0
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	98.24
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	29



WWTP PHOSPHORUS FACT SHEET

WILLIMANTIC WPCF



WWTP PHOSPHORUS FACT SHEET

WINSTED WPCF

Facility Overview

NPDES #	CT0101222	Permit Expiration Date	10/17/2010
Town	WINSTED	Design Flow (MGD)	3.50
Receiving Waterbody	Still River (Colebrook)-02	Type of Treatment*	AS, AdvTr, Nitr, DChlor

* AS = activated sludge, RBC = rotating biological contractor system, SBR = sequencing batch reactor system, EA = extended aeration, OD = oxidation ditch, DChlor = dechlorination, UV = ultraviolet disinfection, AdvTr = advanced treatment, Nitr = nitrification DNitr = denitrification, PRem = phosphorous removal, PAC = powdered activated carbon system, Sfilt = sand filter, TFilt = trickling filter

Current and Proposed Seasonal Phosphorus

Current Average Flow (MGD) 2001 - 2007	1.38
Current Average Phosphorus Concentration (mg/L) 2001 - 2007	1.87
Current Phosphorus Treatment Performance (mg/L)	No Phosphorus Treatment At This Time
Current Average Phosphorus Load (lbs/day) 2001 - 2007	20.03
Proposed Treatment Performance (mg/L)	0.7
BMP Load Allocation (lbs/day)	8.06
Percent Reduction from Current	60
Expected WWTP Compliance Date	

Enrichment Factor At Point of Discharge

$$\text{Enrichment Factor} = \frac{\text{Total Current Load At Discharge}}{\text{Total Forested 'Natural' Condition Load}}$$

Enrichment Factor: 9.38

Total Forested Condition (lbs/day): 2.85

Estimated WWTP Percent Contribution At Point of Discharge =

$$\frac{\text{Current WWTP Load}}{\text{[Ag] + [Urban] + [Forest] + [Total Upstream WWTP] + [Out of State]}}$$

Nutrient Export Attribute	Watershed Area (acres)	Estimated Load (lbs/day)
Agriculture	1353.99	2.67
Urban	3987.58	1.73
Forest	22097.14	2.30
Total US WWTP	1 (No.)	20.03
Out of State	0	0.00

Total Current Load At Discharge (lbs/day)	26.73
Percent Contribution at Point of Concern	75

WWTP PHOSPHORUS FACT SHEET

WINSTED WPCF

Other Enrichment Factors

Distance to Nearest Downstream Dam (mi)	46.58	Enrichment Indication Level:	MED
Percent Contribution At Nearest Downstream Dam	3		
Distance to Nearest Downstream IW (mi)	Null		
Percent Contribution At Nearest Downstream IW	0		

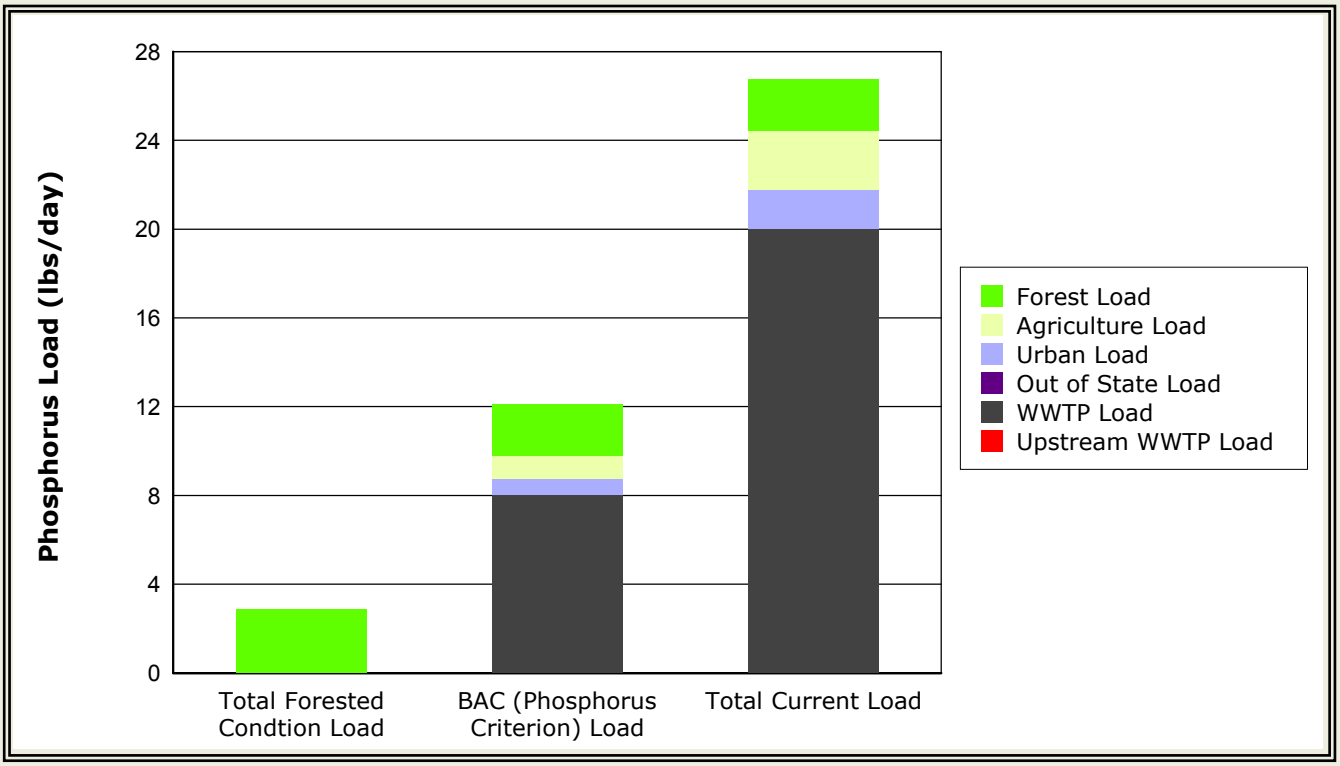
Best Attainable Condition (Phosphorus Criterion) At Point of Discharge

Best Attainable Condition (Phosphorus Criterion) =

[BMP Ag] + [BMP Urban] + [BMP Forest] + [BMP Total Upstream WWTP] + [Out of State]

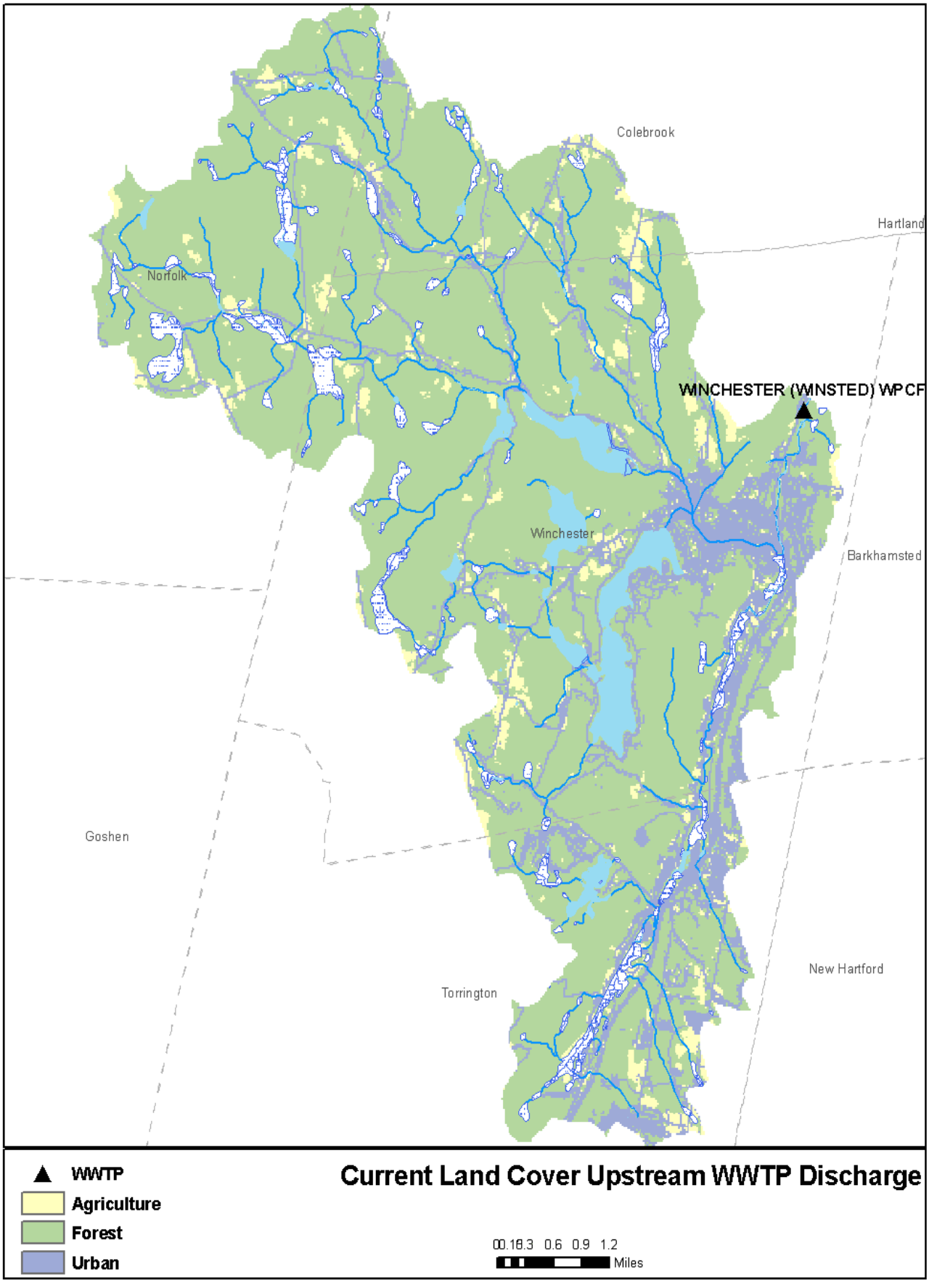
Nutrient Export Attribute	Watershed Area (acres)	BMP Load (lbs/day)	Percent Reduction from Current Load
Agriculture	1353.99	1.07	60
Urban	3987.58	0.69	60
Forest	22097.14	2.30	0
Total US WWTP	1 (No.)	8.06	60
Out of State	0	0.00	0

Best Attainable Condition (Phosphorus Criterion) At Point of Concern (lbs/day)	12.12
Percent Reduction in Current Total Load to Meet Phosphorus Criterion At Point of Concern	55



WWTP PHOSPHORUS FACT SHEET

WINSTED WPCF



Appendix B

WWTP Enrichment Factor Analysis and BMP Designations

Willimantic Basin Group	Geospatial Modelling Analysis				Other Factors Considered / BPJ Analysis								BMP
Facility	Enrichment Factor	Percent Contribution At Discharge	BMP Requirement Based on Modeling Analysis		STP Current Average Phosphorus Concentration (mg/L)	Distance to Nearest DS Dam (mi)	Percent Contribution At Nearest DS Dam	Distance to Nearest DS IW (mi)	Percent Contribution At Nearest DS IW	Cluster Analysis Grouping	BPJ Adjustment		FINAL PROPOSED BMP REQUIREMENT
STAFFORD WPCA	4.96	49.33	LOW		0.71	14.19	0.32	Null	0.00	MED/HIGH	no		LOW
UCONN WPCF	7.22	44.68	LOW		2.45	Null	0.00	Null	0.00	LOW	no		LOW
WILLIMANTIC WPCF	5.18	13.48	LOW		0.95	Null	0.00	Null	0.00	LOW	no		LOW

LOW level BMP for Stafford is functional equivalent to a MED BMP based on average P concentration in discharge.

Quinnebaug Basin Group	Geospatial Modelling Analysis				Other Factors Considered / BPJ Analysis								BMP
Facility	Enrichment Factor	Percent Contribution At Discharge	BMP Requirement Based on Modeling Analysis		STP Current Average Phosphorus Concentration (mg/L)	Distance to Nearest DS Dam (mi)	Percent Contribution At Nearest DS Dam	Distance to Nearest DS IW (mi)	Percent Contribution At Nearest DS IW	Cluster Analysis Grouping	BPJ Adjustment		FINAL PROPOSED BMP REQUIREMENT
GRISWOLD WPCA	8.10	1.44	LOW		2.11	Null	0.00	Null	0.00	LOW	no		LOW
SPRAGUE WPCF	5.22	1.93	LOW		2.68	Null	0.00	Null	0.00	LOW	no		LOW
PLAINFIELD WPCF	8.57	2.94	LOW		3.13	2.12	0.03	2.12	0.03	MED	up one		MED
PLAINFIELD NORTH WPCF	5.94	50.85	LOW		3.52	9.76	0.06	9.76	0.06	MED/LOW	up one		MED
PUTNAM WPCF	9.90	9.20	MED		1.80	26.83	0.06	26.83	0.06	MED/LOW	no		MED
THOMPSON	11.92	7.09	MED		2.32	30.31	0.02	30.31	0.02	MED/LOW	no		MED
KILLINGLY WPCF	9.45	14.14	MED		1.58	15.17	0.13	15.17	0.13	MED/LOW	no		MED

Plainfield, Plainfield North, and Killingly "up one" due to 3%, 6%, 13% enrichment contribution to a listed water.

Farmington Basin Group	Geospatial Modelling Analysis				Other Factors Considered / BPJ Analysis								BMP
Facility	Enrichment Factor	Percent Contribution At Discharge	BMP Requirement Based on Modeling Analysis		STP Current Average Phosphorus Concentration (mg/L)	Distance to Nearest DS Dam (mi)	Percent Contribution At Nearest DS Dam	Distance to Nearest DS IW (mi)	Percent Contribution At Nearest DS IW	Cluster Analysis Grouping	BPJ Adjustment		FINAL PROPOSED BMP REQUIREMENT
BRISTOL WPCF	75.47	82.67	HIGH		2.62	26.71	0.29	Null	0.00	MED/HIGH	down one		MED
PLAINVILLE WPCF	95.69	26.36	HIGH		5.08	23.46	0.12	Null	0.00	MED	down one		MED
FARMINGTON WPCF	18.02	22.15	MED		3.55	18.22	0.18	Null	0.00	MED	no		MED
PLYMOUTH WPCF	31.95	89.56	MED		3.47	32.18	0.04	Null	0.00	MED	no		MED
SIMSBURY WPCF	19.24	13.52	MED		4.57	5.13	0.13	Null	0.00	MED	no		MED
WINSTED WPCF	9.38	74.94	MED		1.87	46.58	0.03	Null	0.00	MED	no		MED
NEW HARTFORD													LOW
CANTON WPCF	4.06	25.61	LOW		5.44	29.18	0.04	Null	0.00	MED	no		LOW

Bristol and Plainville down one because no impact on a listed water, downstream dam is over 20 mi away, New Hartford small, currently capped under anti-deg provision.

Hockanum Basin Group	Geospatial Modelling Analysis				Other Factors Considered / BPJ Analysis								BMP
Facility	Enrichment Factor	Percent Contribution At Discharge	BMP Requirement Based on Modeling Analysis		STP Current Average Phosphorus Concentration (mg/L)	Distance to Nearest DS Dam (mi)	Percent Contribution At Nearest DS Dam	Distance to Nearest DS IW (mi)	Percent Contribution At Nearest DS IW	Cluster Analysis Grouping	BPJ Adjustment		FINAL PROPOSED BMP REQUIREMENT
MANCHESTER WATER & SEWER	42.79	53.78	HIGH		2.15	2.98	0.54	Null	0.00	MED/HIGH	no		HIGH
VERNON WPCF	47.85	88.10	HIGH		2.30	5.44	0.81	5.44	0.81	HIGH	no		HIGH

Manchester HIGH BMP rating due to high (>50%) contribution to downstream impoundment highly likley to be assessed as impaired and listed in future

Quinnipiac Basin Group	Geospatial Modelling Analysis				Other Factors Considered / BPJ Analysis								BMP
Facility	Enrichment Factor	Percent Contribution At Discharge	BMP Requirement Based on Modeling Analysis		STP Current Average Phosphorus Concentration (mg/L)	Distance to Nearest DS Dam (mi)	Percent Contribution At Nearest DS Dam	Distance to Nearest DS IW (mi)	Percent Contribution At Nearest DS IW	Cluster Analysis Grouping	BPJ Adjustment		FINAL PROPOSED BMP REQUIREMENT
CHESHIRE WPCF	44.56	42.61	HIGH		4.61	1.72	0.42	1.72	0.42	HIGH	no		HIGH
MERIDEN WPCF	52.74	36.20	HIGH		1.47	Null	0.00	Null	0.00	MED	down one		MED
SOUTHINGTON WPCF	30.54	87.25	MED		2.74	5.85	0.48	5.85	0.48	HIGH	up one		HIGH
WALLINGFORD WATER & SEWER	65.70	29.84	HIGH		3.46	Null	0.00	Null	0.00	MED	down one		MED

Meriden and Wallingford down one due to no impact on listed water; Southington up one due to high contribution to listed water.

Housatonic Basin Group	Geospatial Modelling Analysis				Other Factors Considered / BPJ Analysis								BMP
Facility	Enrichment Factor	Percent Contribution At Discharge	BMP Requirement Based on Modeling Analysis		STP Current Average Phosphorus Concentration (mg/L)	Distance to Nearest DS Dam (mi)	Percent Contribution At Nearest DS Dam	Distance to Nearest DS IW (mi)	Percent Contribution At Nearest DS IW	Cluster Analysis Grouping	BPJ Adjustment		FINAL PROPOSED BMP REQUIREMENT
DANBURY WPCF	89.19	95.44	HIGH		1.04	15.23	0.13	15.23	0.13	HIGH	no		HIGH
LITCHFIELD WPCF	9.17	47.16	MED		3.29	22.38	0.02	22.38	0.02	MED/LOW	no		MED
NEW MILFORD WPCF	5.85	0.64	LOW		0.47	2.02	0.00	2.02	0.00	MED/LOW	no		LOW
NORFOLK SEWER DISTRICT	7.26	59.96	LOW		1.70	4.37	0.26	53.41	0.01	MED/LOW	no		LOW
NORTH CANAAN WPCF	6.30	22.39	LOW		1.88	44.76	0.01	44.76	0.01	MED/LOW	no		LOW
SALISBURY WPCF	19.75	79.82	MED		2.40	5.86	0.44	44.15	0.01	MED/LOW	no		MED
SOUTHBURY HERITAGE VILLAGE WPCF	7.84	27.71	LOW		0.96	5.64	0.01	5.64	0.01	MED/LOW	no		LOW
NEWTOWN WPCF	5.93	22.89	LOW		0.52	2.22	0.00	2.22	0.00	MED/LOW	no		LOW

No change in initial ranking; High P conc at Litchfield and high enrichment contribution (44%) at nearby (6mi) DS dam at Salisbury are concerns.

Naugatuck Basin Group	Geospatial Modelling Analysis				Other Factors Considered / BPJ Analysis								BMP
Facility	Enrichment Factor	Percent Contribution At Discharge	BMP Requirement Based on Modeling Analysis		STP Current Average Phosphorus Concentration (mg/L)	Distance to Nearest DS Dam (mi)	Percent Contribution At Nearest DS Dam	Distance to Nearest DS IW (mi)	Percent Contribution At Nearest DS IW	Cluster Analysis Grouping	BPJ Adjustment		FINAL PROPOSED BMP REQUIREMENT
ANSONIA WPCF	46.33	4.54	LOW		2.89	Null	0.00	Null	0.00	MED	no		LOW
BEACON FALLS WPCF	48.69	0.92	LOW		3.19	Null	0.00	Null	0.00	MED	no		LOW
NAUGATUCK WPCF	52.17	18.85	HIGH		4.30	Null	0.00	Null	0.00	MED	down one		MED
SEYMOUR WPCF	45.36	4.52	LOW		3.98	Null	0.00	Null	0.00	MED	no		LOW
THOMASTON WPCF	15.46	20.13	MED		3.29	Null	0.00	Null	0.00	LOW	no		MED
TORRINGTON WPCF	20.99	84.89	MED		1.68	Null	0.00	Null	0.00	MED	no		MED
WATERBURY WPCF	48.94	79.54	HIGH		3.19	Null	0.00	Null	0.00	MED	down one		MED

Naugatuck and Waterbury down one due to no impact on 303(d) listed water or downstream impoundment sensitive to euthrophication.

Norwalk Basin Group	Geospatial Modelling Analysis				Other Factors Considered / BPJ Analysis								BMP
Facility	Enrichment Factor	Percent Contribution At Discharge	BMP Requirement Based on Modeling Analysis		STP Current Average Phosphorus Concentration (mg/L)	Distance to Nearest DS Dam (mi)	Percent Contribution At Nearest DS Dam	Distance to Nearest DS IW (mi)	Percent Contribution At Nearest DS IW	Cluster Analysis Grouping	BPJ Adjustment		FINAL PROPOSED BMP REQUIREMENT
NEW CANAAN WPCF	35.52	89.26	HIGH		1.42	1.69	0.86	Null	0.00	MED/HIGH	no		HIGH
REDDING WPCF	10.18	11.23	MED		3.38	2.87	0.07	Null	0.00	MED	no		MED
RIDGEFIELD Rt7													LOW
RIDGEFIELD MAIN WPCF C/O OMI	137.99	97.55	HIGH		1.38	2.04	0.89	Null	0.00	MED/HIGH	no		HIGH

New Canaan and Ridgefield Main are retained at HIGH due to high contribution (86%, 89%) at downstream dam likely to be assessed as impaired in future, Ridgefield Rte 7 very small, often no surface water flow, little data, capped at current load.