

Implementation of Hybrid Wetland Treatment Technology in the Northern Everglades Watershed

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Chapter I: Technical Report Sites 1-3, 5-9

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List of Abbreviations

Alum - aluminum sulfate

BAT – Best Available Technology

cfs - cubic feet per second

C:N – carbon to nitrogen ratio

DO – dissolved oxygen

DOP – dissolved organic phosphorus

ET - evapotranspiration

FAV – floating aquatic vegetation

(F)DEP – (Florida) Department of Environmental Protection

FDOT – (Florida) Department of Transportation

HRT – hydraulic retention time

HWTT – Hybrid Wetland Treatment Technology

LR – limerock

Mgal – million gallons

N - nitrogen

NO_x – nitrate + nitrite nitrogen as N

NPP – Net Primary Productivity

P - phosphorus

PP – particulate phosphorus

PAC - polyaluminum chloride

SAV – submerged aquatic vegetation

SRP – soluble reactive phosphorus

TAl – total aluminum

TKN – total Kjeldahl nitrogen

TN – total nitrogen = $\text{TKN} + \text{NO}_x\text{-N}$

TON – total organic nitrogen = $\text{TKN} - \text{ammonia-N}$

TP – total phosphorus

VC – vegetated compartment

Introduction

The reduction of phosphorus (P) loads to Lake Okeechobee from the watershed represents a formidable challenge. In order to meet the lake's P load reduction targets, hundreds of tons of P inputs must be curtailed each year. Water managers propose to accomplish this reduction by deploying a combination of Best Management Practices, "Edge of Field" treatment systems, and "Regional" treatment systems. A review (SWET, 2001) of Dairy "Best Available Treatment Technologies" (BAT) concluded that chemical treatment is likely to play a key role in reducing P inputs to the lake.

Because the operating (i.e., chemical) costs for removing a significant fraction of the inflow P load to the lake will be quite high, it is extremely important to identify and implement techniques for increasing the efficiency of chemical use. The Hybrid Wetland Treatment Technology (HWTT) concept was developed with the intent of harnessing and integrating the strengths of both wetland and chemical treatment technologies. The goal of HWTT systems is to provide the effectiveness and reliability of chemical treatment systems for P removal; to utilize the wetland vegetation to the maximum extent possible to minimize chemical amendment use; to eliminate the need for off-site disposal of residual floc materials; and to facilitate the removal of nitrogen (N) species.

HWTT systems are comprised of vegetated zones (primarily with floating and/or submerged macrophytes) and non-vegetated zones that utilize internal floc recycling as well as the drying of floc material with subsequent re-introduction into the treatment train. Chemical coagulants are added to the front-end of the system, which is equipped with one or more deep zones to capture and store the resulting chemical flocs. A fundamental concept of the HWTT is that the floc material resulting from coagulant addition remains at least temporarily viable and can be "re-used" for additional P removal. Both passive and active re-use of floc material can be practiced in a HWTT system. Passive re-use refers to the accumulation of viable flocs on plant roots and stems that are situated near the front-end and mid-regions of the system. Active re-use refers to the periodic re-suspension of settled floc. Re-use is achieved by exposing existing viable flocs within the system, in either an active or passive manner, to "untreated parcels" of water. Coagulants typically are dosed

to the front end of the HWTT only intermittently, such that untreated parcels of water pass through into the HWTT system at selected time intervals. The HWTT includes intellectual property represented by several US Patents.

Overview of Project Activities

This report describes the water treatment performance of seven HWTT systems, six of these located in the northern Lake Okeechobee watershed, during the 2015-2016 project period. Three of the HWTT facilities were constructed in 2008: of these, two systems are being utilized to treat tributaries (Nubbin Slough and Mosquito Creek) to Lake Okeechobee, and the third, which drains to the Indian River Lagoon, treats citrus (Ideal Grove) runoff (Watershed Technologies, 2008). In 2009, two additional HWTT systems were designed and constructed in the Lemkin Creek watershed and are being utilized to treat tributary waters from Wolff Ditch and Lemkin Creek/FDOT Ditch sub-basins. Construction of Phase I of the sixth facility, the Grassy Island HWTT system, was completed in mid-2011. Phase II construction was completed in June 2012, providing for a total of 20 cfs system capacity. Optimization of Phase II operations continued from July through October 2012. Phase III construction (pump station enhancements, and expansion of the western components to 15 cfs) of the Grassy facility spanned most of the 2012-13 project year, and was completed in June 2013. These enhancements allow for a maximum treatment capacity of 30 cfs. Early in 2015, construction of an additional HWTT facility was completed. This facility is located in Martin County, FL, and treats Bessey Creek waters prior to input into the coastal lagoon.

As part of our HWTT system performance assessments, grab samples of inflow and outflow water were collected at each of the HWTT facilities, and continuous inflow data were obtained from on-site instrumentation. Near the end of this monitoring period, we initiated floc removal/tilling at a subset of facilities. At this same time, outflow region limerock beds were installed at the Nubbin, Mosquito and Grassy facilities to improve quality of the outflow waters.

Detailed Treatment Performance of the Operational HWT Systems

Site 1: Nubbin Slough Tributary Treatment HWT Facility

The period of record for this facility includes July 2015 – November 2015 and June of 2016. The 1.55-acre Nubbin Slough HWT system is located at Davie Dairy (Figure 1). This retrofitted system had been constructed early in 2008, utilizing some of the infrastructure that previously was deployed as part of a Dairy “Best Available Technology” (BAT) project.



Figure 1. The Nubbin Slough HWT system looking toward the north. The mixing chamber and inflow manifold are at the northeast corner of the pond, and the outflow riser is at the southwest corner (left foreground). The inflow region limerock bed is situated to the right of the pond. Early in 2015, an additional limerock bed (not shown in this photo) was installed at the system outflow, adjacent to the outflow riser.

Alkalinity levels in the Nubbin Slough waters are low, which necessitates either the use of buffer in conjunction with alum additions or the use of a polyaluminum chloride (PAC)

compound. PAC compounds were utilized during operations of the Davie Dairy BAT chemical treatment system, but they proved ineffective for P removal in that system. During 2008 and 2009, sodium aluminate was utilized in conjunction with alum during HWTT operations; however, the aluminate compound is difficult to store and deploy. Prior to the wet season of 2010, we therefore designed and deployed a limerock bed to provide buffering prior to alum additions. Early in 2015, an additional limerock bed was deployed at the outflow region, to further buffer (increase pH and alkalinity) of system outflow waters (Figure 2).



Figure 2. The inflow region (left) and outflow region (right) limerock beds at the Nubbin Slough HWTT facility.

During the July 2015 – June 2016 reporting period the overall average effective alum dosing rate for the Nubbin Slough HWTT system was 12.8 mg Al/L, with monthly average dose ranging from 11.9 to 15.0 mg Al/L. During the period from December 2015 through May 2016 system operation was suspended due to lack of funding. The facility was restarted and treatment system operations were resumed at the beginning of June 2016. Daily system flow status is provided in the Chapter II appendices.

Grab samples of inflow water were collected for chemical analyses from the HWTT diversion weir (system inflow) while system outflow samples were collected at the HWTT pond outflow structure. Samples were analyzed for total phosphorus (TP), alkalinity, pH,

color, conductivity and turbidity on a weekly basis. Water samples were also analyzed for nitrate + nitrite N ($\text{NO}_x\text{-N}$) and TKN on a biweekly basis; total N (TN) was calculated as the sum of NO_x and TKN. Water chemistry data for the July 2015 – June 2016 monitoring period are presented in Figure 3 through Figure 10.

TP concentrations in the Nubbin HWTW inflow stream varied from 484 to 1580 $\mu\text{g/L}$ and averaged 812 $\mu\text{g/L}$ (median = 787 $\mu\text{g/L}$). Several high values early in the period were associated with low system hydraulic loading. Outflow TP concentrations were always substantially lower than inflow concentrations, and ranged from 26 to 518 $\mu\text{g/L}$, while averaging 142 $\mu\text{g/L}$ (median = 115 $\mu\text{g/L}$). Both inflow and outflow TP have declined (on average) compared to the previous monitoring period (July 2014 – June 2015). From the beginning of the period through September 16, 2015, outflow TP averaged 110 $\mu\text{g/L}$, then increased abruptly to 518 $\mu\text{g/L}$ on September 23, 2015. There was a steady decline thereafter, to 43 $\mu\text{g/L}$ by November 18. This same short-term trend was not observed in the inflow TP. The same spike in outflow TP on September 23, 2016 was also observed on that date for color and turbidity; both of which increased approximately five-fold. This is likely due to a period of high rainfall that occurred from September 3 – September 18, 2015. During that period, rainfall gauges at the Nubbin Slough HWTW facility recorded 4.47 inches of rain. Overall, there was no detectable trend in outflow TP during the monitoring period.

With few exceptions, outflow alkalinity levels were lower than inflow. Inflow alkalinity ranged from 23 to 86 mg/L , and averaged 41 mg/L over the entire monitoring period (Figure 4). This is approximately 30% lower than inflow alkalinity measured in the previous monitoring period. Outflow alkalinity closely followed the temporal pattern of inflow alkalinity (though lower). Outflow alkalinity ranged from 10 to 145 mg/L and averaged 36 mg/L over the course of the monitoring period. Mean outflow alkalinity for the two monitoring periods was nearly identical, in spite of lower average inflow alkalinity during this monitoring period. This likely reflects the effectiveness of the limerock bed installed at the system outflow in 2015. Inflow pH varied from 6.0 to 6.9 and averaged 6.4 during the monitoring period (Figure 5). There was no clear difference between inflow and

outflow pH, with outflow pH averaging 6.4 and ranging from 5.7 to 7.3. A comparison of inflow and outflow samples for this monitoring period reveals no significant difference between inflow and outflow pH (paired t-test; $p=0.54$). Even though mean inflow pH during this monitoring period was the same as the previous period, average outflow pH has risen compared to the last period. Again, this is most likely due to the buffering effect of the limerock bed.

Inflow color was considerably greater than outflow color over the monitoring period, ranging from 263 to 732 PCU (mean = 426 PCU) (Figure 6). Inflow color generally increased over the July – September 2015 period, with a maximum value occurring on September 23, 2015. On this same date, outflow color also spiked, from 88 PCU on September 16 to 622 PCU on September 23. As noted previously, this is probably due to a large rain event that occurred just prior to this sample date. Outflow color averaged 164 PCU and ranged from 42 PCU to 622 PCU. The average inflow and outflow color was very similar to average values for the previous reporting period.

As was observed in the 2014 – 2015 monitoring period, the temporal pattern of inflow and outflow showed close week-to-week agreement, with outflow conductivity almost always slightly higher than inflow (Figure 7). Inflow conductivity averaged 398 $\mu\text{S}/\text{cm}$, whereas outflow conductivity averaged 503 $\mu\text{S}/\text{cm}$. Conductivity was highest at the beginning of the monitoring period and generally declined over the period to 300 – 400 $\mu\text{S}/\text{cm}$ by late June 2016.

Inflow turbidity averaged 2.1 NTU and ranged from 1.0 to 5.6 NTU, thus variability was quite low compared to the 2014 – 2015 period (Figure 8). During that period, spikes in turbidity from 30 to nearly 50 NTU were recorded. Outflow turbidity was much more variable than inflow, ranging from 1.1 to 23.0 NTU, and almost always greater than inflow turbidity. As noted with other parameters, there was a large spike in outflow turbidity on September 23, 2015, and this was probably related to previous heavy rainfall.

The TN concentrations during this monitoring period were lower than those observed in 2014 – 2015. During the 2014 – 2015 period, greater TN concentrations in the inflow were

associated with dry season months and for this monitoring period most of those months were not sampled. TN concentration was always greater at the inflow, compared to the outflow, and ranged from 1.63 to 5.30 mg/L (average = 2.94 mg/L) (Figure 9). Outflow concentration closely tracked inflow concentrations. Outflow TN averaged 2.04 mg/L and ranged from 0.40 to 4.67 mg/L.

On average, NO_x accounted for a relatively high proportion of TN in both inflow (18%) and outflow (27%) streams. Thus, $\text{NO}_x\text{-N}$ accounts for a substantial proportion of TN in the system, and this was also found during the 2014 – 2015 period. Average inflow and outflow $\text{NO}_x\text{-N}$ were the same; 0.59 mg/L, and the temporal patterns were also very similar (Figure 10). It thus appears that $\text{NO}_x\text{-N}$ is mostly passing through the system unaffected. As previously reported, the absence of a shallow vegetated zone in the Nubbin facility contributes to the poorer N removal performance at this site. Inflow NO_x concentrations ranged from ≤ 0.016 mg/L (MDL) to 1.9 mg N/L, while outflow NO_x concentration ranged from ≤ 0.016 to 1.2 mg N/L.

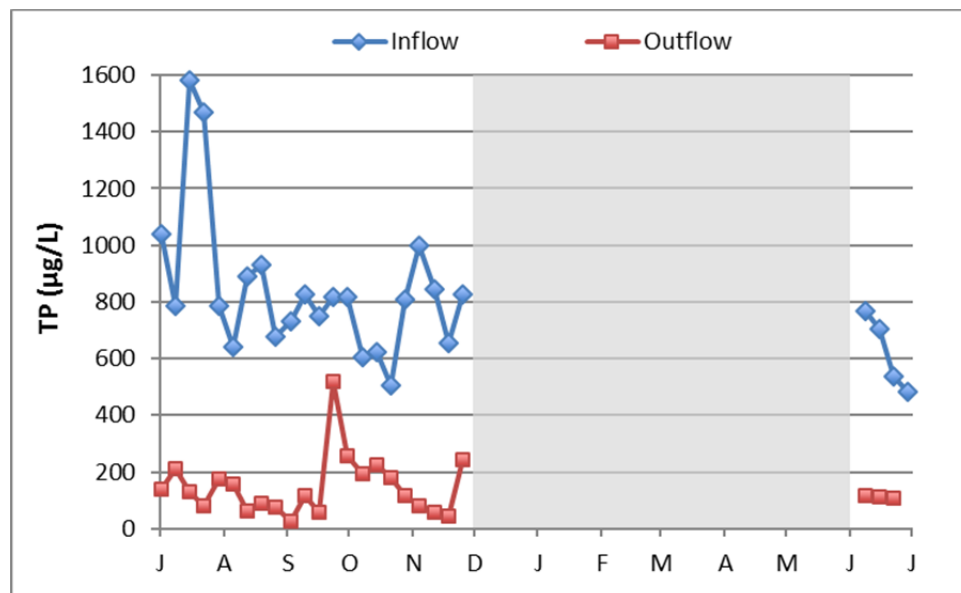


Figure 3. TP concentration in the inflow and outflow streams at the Nubbin Slough HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

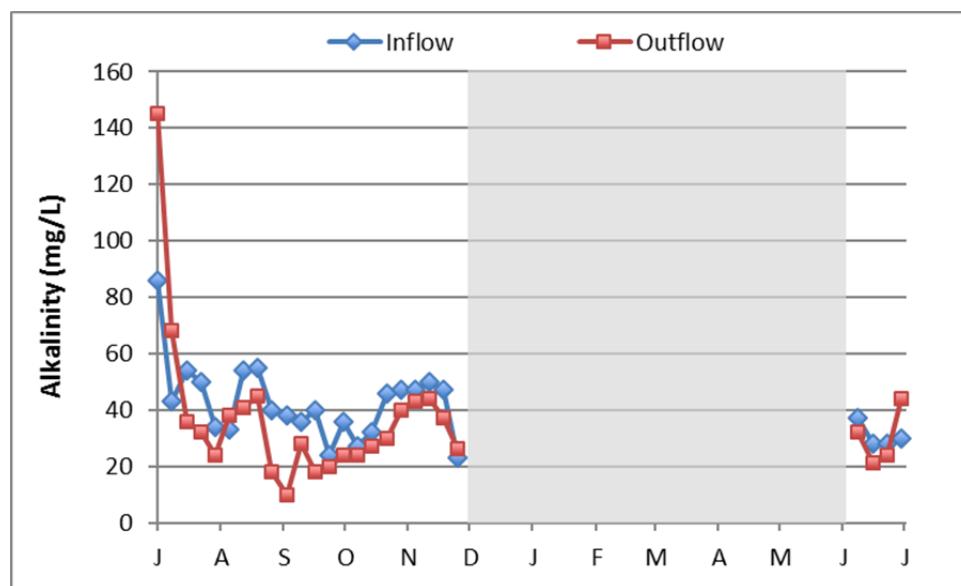


Figure 4. Alkalinity in the inflow and outflow streams at the Nubbin Slough HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

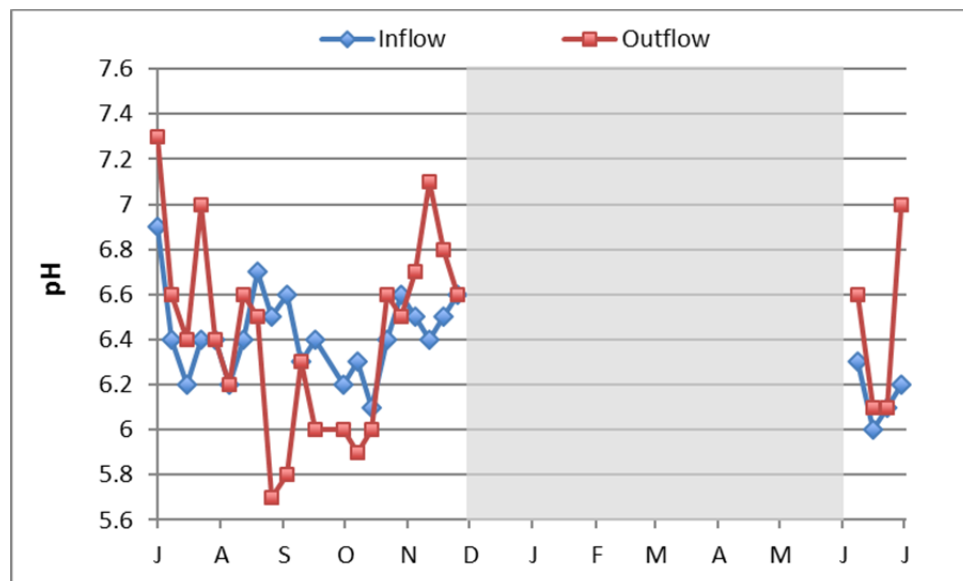


Figure 5. pH in the inflow and outflow streams at the Nubbin Slough HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

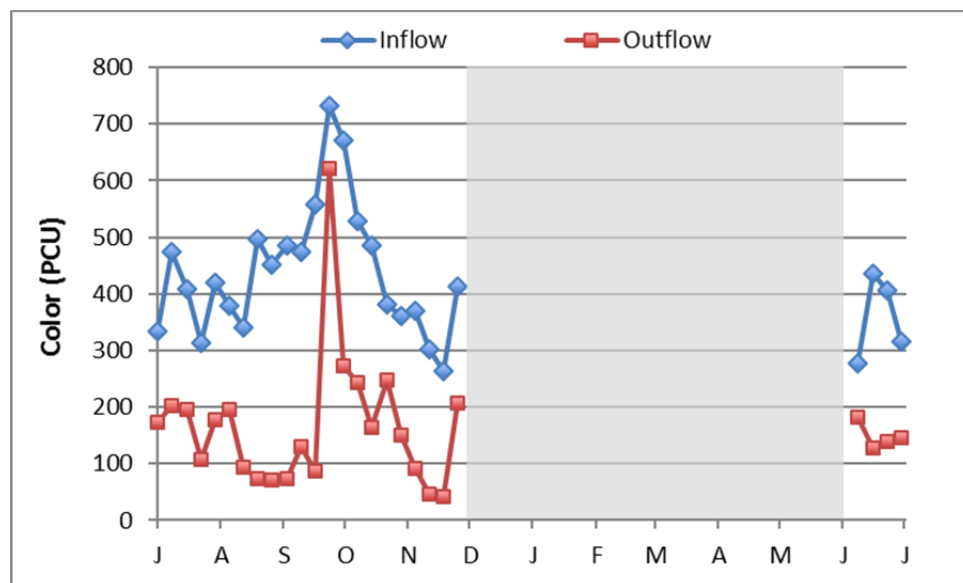


Figure 6. Color in the inflow and outflow streams at the Nubbin Slough HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

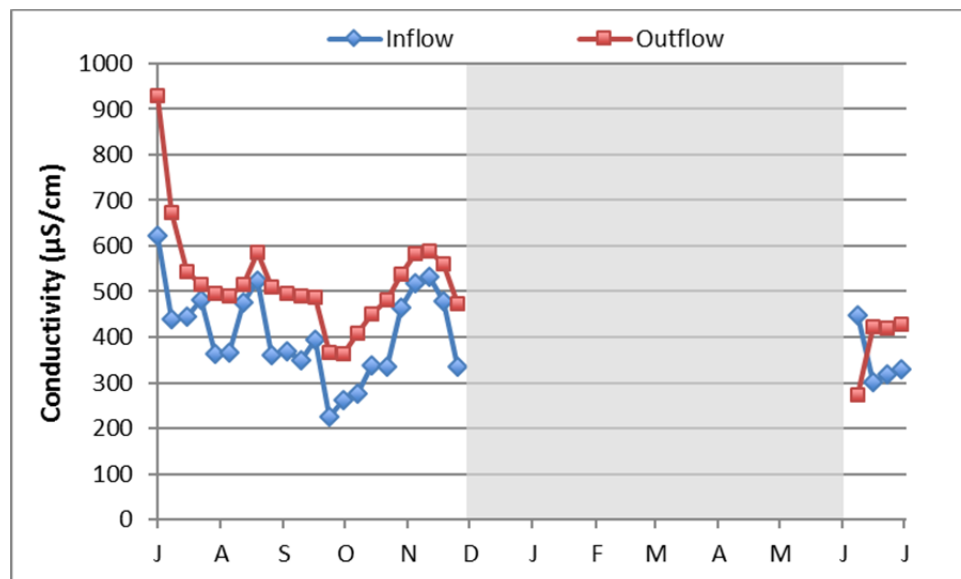


Figure 7. Conductivity in the inflow and outflow streams at the Nubbin Slough HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

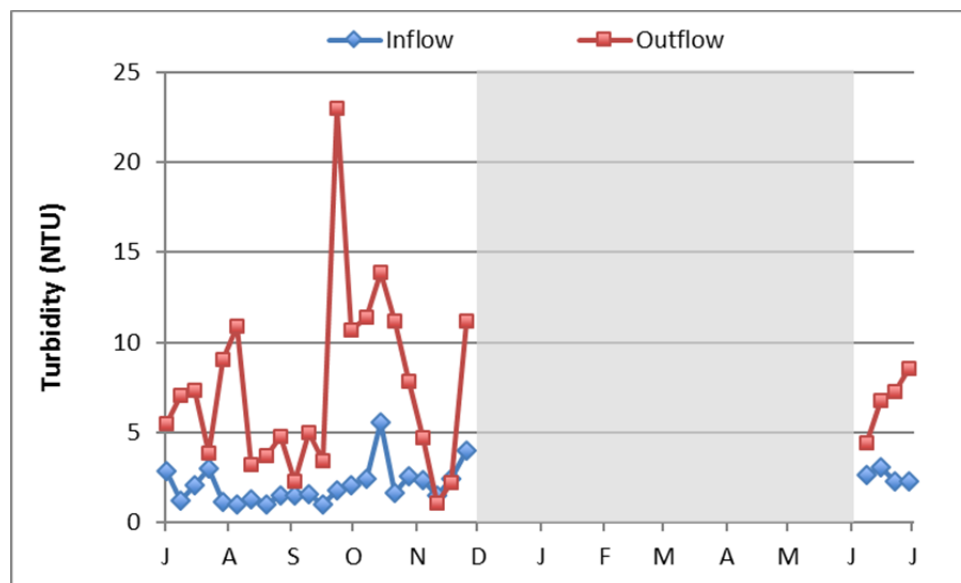


Figure 8. Turbidity in the inflow and outflow streams at the Nubbin Slough HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

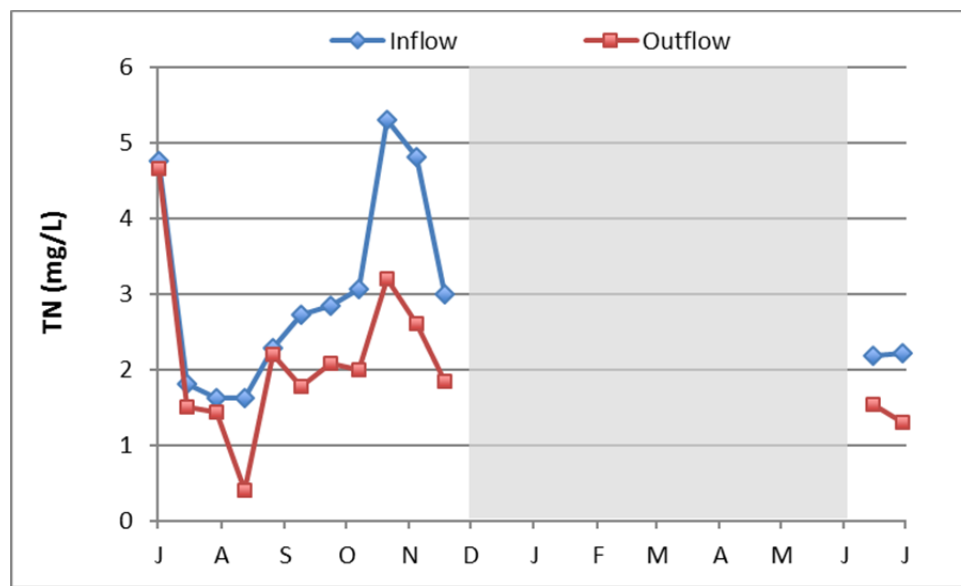


Figure 9. TN in the inflow and outflow streams at the Nubbin Slough HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

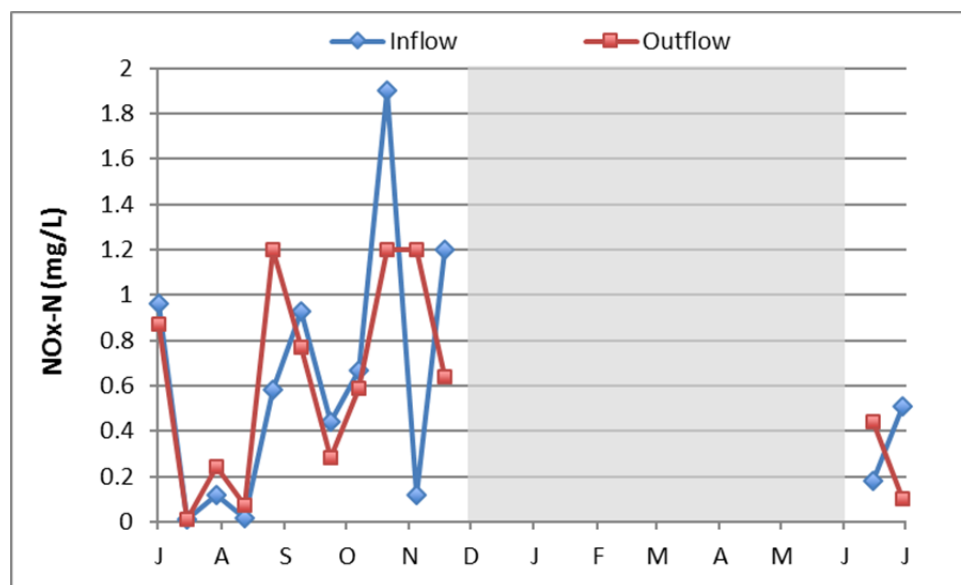


Figure 10. NO_x-N in the inflow and outflow streams at the Nubbin Slough HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

Total monthly flow volumes treated in the Nubbin HWT system during the POR ranged from 18.8 million gallons (Mgal) in November 2015 and June 2016 to 45.4 Mgal in

September 2015 (Figure 11). Mean monthly flow volume, excluding the non-operational period of December 2015 – May 2016, was 28.0 Mgal, while total flow treated by the Nubbin Slough HWTT system during the POR was 168.1 Mgal.

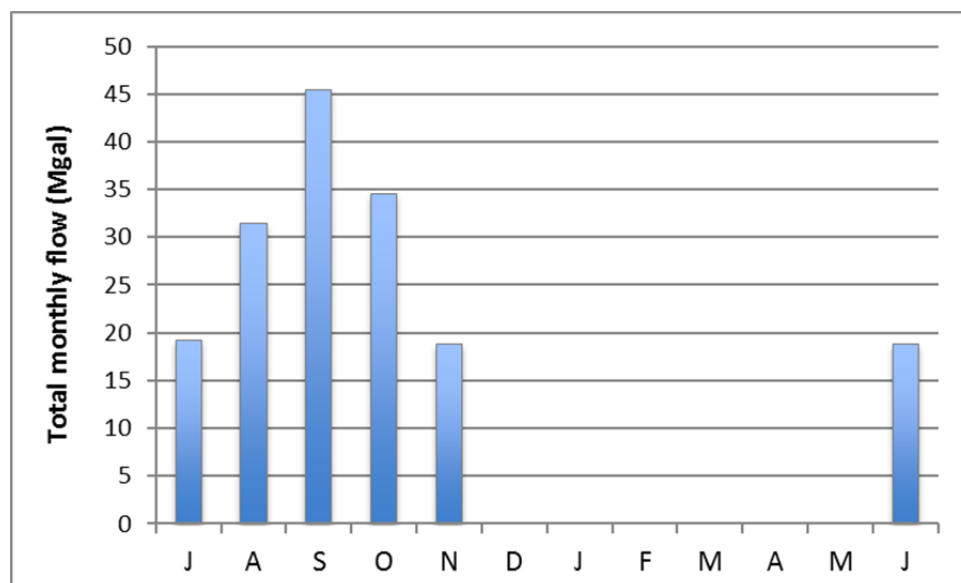


Figure 11. Total monthly flow treated by the Nubbin Slough HWTT system during the 2015-2016 POR. The facility was not operational during the period December 2015 – May 2016.

Site 2: Ideal #2 Grove HWTT Facility

The Ideal #2 Grove HWTT site is situated within an irrigated citrus grove in western St. Lucie County. The small canal to the north of the treatment system (“North Canal”) serves as a collector ditch for grove runoff and groundwater. Due to fertilizer usage in the grove, the water in the collection canals is nutrient-enriched. A large regional canal (the “Rim Ditch”) immediately west of the grove site serves as a pumped supply of water to the canal that runs along the south side (“South Canal”) of the treatment facility. This relatively large canal carries Rim Ditch water from west to east, and then a lateral canal flows about 0.5 miles north to a grove irrigation pump, which feeds water into drip irrigation emitters throughout the grove.

The Ideal Grove HWTT system consists of a 0.7-acre pond, equipped with both shallow and deep zones, that was initially divided into equal size parallel flow paths with a flexible boom and barrier (Figure 12). This configuration facilitated the comparative demonstration of different components of HWTT including amendment types and doses, as well as various operational schemes (e.g. different hydraulic loading rates, intermittent dosing, etc.) during the first two years of operation. The shallow zone is stocked with floating macrophytes, in this case water hyacinth (*Eichhornia crassipes*) (Figure 13 and Figure 14). The deep zones contain several species of submerged aquatic vegetation (SAV), including some that were stocked (e.g., *Najas guadalupensis*) and others (*Hydrilla verticillata*) that colonized from the adjacent inflow farm canal.



Figure 12. Aerial photo of the Ideal Grove HWTT facility.



Figure 13. The outflow region of the Ideal Grove HWT facility.



Figure 14. Attachment of coagulant flocs to the roots of the floating plants in the shallow zone of the Ideal Grove HWT system.

The two treatment flow paths in the Ideal Grove HWTT system have been operated as a single (combined) flow path, beginning in April 2010. During the July 2015 – June 2016 reporting period, the combined system received intermittent (typically 50% of operational time) dosing of alum. The mean effective alum dose for the monitoring period was 11.3 mg Al/L, while monthly average effective dose ranged from 11.0 to 12.9 mg Al/L. During the period from December 2015 through May 2016 system operation was suspended due to lack of funding. The facility was re-started and treatment system operations were resumed at the beginning of June 2016. Daily system flow status is provided in the Chapter II appendices.

Grab samples of water were collected for routine monitoring, from the pond inflow (pumped from the North Canal), and from the northern (A) outflow culvert. Samples were analyzed for total phosphorus (TP), alkalinity, pH, color, conductivity and turbidity on a weekly basis. Water samples were also analyzed for nitrate + nitrite N ($\text{NO}_x\text{-N}$) and TKN on a biweekly basis; total N (TN) was calculated as the sum of NO_x and TKN. Water chemistry data for the July 2015 – June 2016 monitoring period are presented in Figure 15 through Figure 22.

As observed in previous years, TP concentration in the Ideal HWTT inflow stream exhibited a high level of variability during the course of the monitoring period, ranging from 47 to 3880 $\mu\text{g/L}$, while averaging 1345 $\mu\text{g/L}$ (Figure 15). This is a higher inflow mean concentration, compared to the 2014 – 2015 period, though maximum values were nearly identical. Outflow TP averaged 34 $\mu\text{g/L}$ and ranged from 13 to 78 $\mu\text{g/L}$. The Ideal HWTT system is consistently attenuating very high and variable inflow TP loads. Inflow and outflow TP were not correlated ($r^2 = 0.14$), indicating that the system is capable of consistently achieving low outflow concentrations in spite of a great deal of variation in inflow concentration.

Inflow alkalinity was slightly lower for this monitoring period, averaging 137 mg/L, and ranging from 72 to 209 mg/L (Figure 16). Outflow alkalinity was consistently approximately 50 mg/L lower than inflow. Like the Nubbin Slough HWT, outflow alkalinity followed the temporal pattern of the inflow closely, with the exception of the final four samples in June 2016. This might be an artifact of system start-up and equilibration after a long period of inactivity. For the entire monitoring period, outflow alkalinity ranged from 32 to 163 mg/L and averaged 85 mg/L. Inflow pH displayed a decreasing trend during July-August, from 8.0 on July 1, 2015 down to 6.6 by August 8, 2015 (Figure 17). This mid-summer trend was also observed in the 2014-2015 monitoring period. Average inflow and outflow pH were identical for the inflow and outflow samples; 7.0 pH units. As with the Nubbin Slough HWT, there was not a significant difference between inflow and outflow pH (paired t-test; $p=0.21$). Inflow pH did exhibit greater variability, ranging from 6.4 to 8.0, while outflow pH ranged from 6.6 to 7.6.

As in the 2014 – 2015 monitoring period, inflow color ranged widely, from 121 to 738 PCU, and averaged 392 PCU (Figure 18). Highest values were associated with late summer and early fall. Color in the outflow stream was, with the exception of one sample, always considerably lower than inflow color. Relative to inflow color, outflow color showed little variability over the period, ranging from 56 to 290 PCU (average = 110 PCU).

Highest conductivities were observed during July and August (Figure 19). This is in contrast to the 2014 – 2015 monitoring period, where high conductivities were associated with dry season months. This discrepancy in temporal conductivity trends is an artifact of the absence of sampling during most of the dry season. Inflow conductivity ranged from 183 to 1740 $\mu\text{S}/\text{cm}$ and averaged 891 $\mu\text{S}/\text{cm}$, while outflow conductivity ranged from 182 to 1800 $\mu\text{S}/\text{cm}$ and averaged 994 $\mu\text{S}/\text{cm}$. Outflow conductivity closely followed temporal inflow conductivity patterns. Inflow turbidity was quite variable throughout the monitoring period, with extremely high levels measured mid to late August 2015 (Figure 20). A similar spike in turbidity was also observed at approximately the same time in the 2014 – 2015 period. Inflow turbidity averaged 9.6 NTU and ranged from 1.0 to 75.4 NTU. Outflow turbidity was highly variable during the 2014 wet season, but much lower and less

variable during the dry season. The overall range of outflow turbidity levels was 1.0 – 4.8 NTU, while the mean value was 2.4 NTU. Variability in outflow turbidity was much lower for this monitoring period, compared to the previous period. Attenuation of turbidity within the Ideal HWTT contrasts sharply with the net increase between inflow and outflow turbidity at the Nubbin Slough facility. Efficient turbidity removal in the Ideal system can be attributed to the presence of a shallow vegetated zone in the back end of that system.

The Ideal HWTT system consistently and substantially reduced TN (Figure 21). Inflow concentrations were high August through September and ranged from 1.61 – 5.72 mg/L, averaging 3.47 mg/L. Outflow TN concentrations were greatly reduced compared to inflow TN, and ranged from 1.01 – 1.98 mg/L, averaging 1.47 mg/L. It is likely that the shallow vegetated zone in the Ideal HWTT allowed more entrapment of TN associated with particulate material suspended in the water column, compared to the deeper Nubbin Slough and Mosquito Creek systems. Inflow and outflow NO_x concentrations were low during the monitoring period, generally accounting for less than 1 percent of TN, on average (Figure 22). There did not appear to be a consistent pattern with respect to the effect of this HWTT on NO_x-N concentration. Inflow NO_x concentrations ranged from <0.016 to 0.22 mg N/L and averaged 0.03 mg N/L. Outflow NO_x concentrations ranged from <0.016 to 0.08 mg N/L and averaged 0.02 mg N/L.

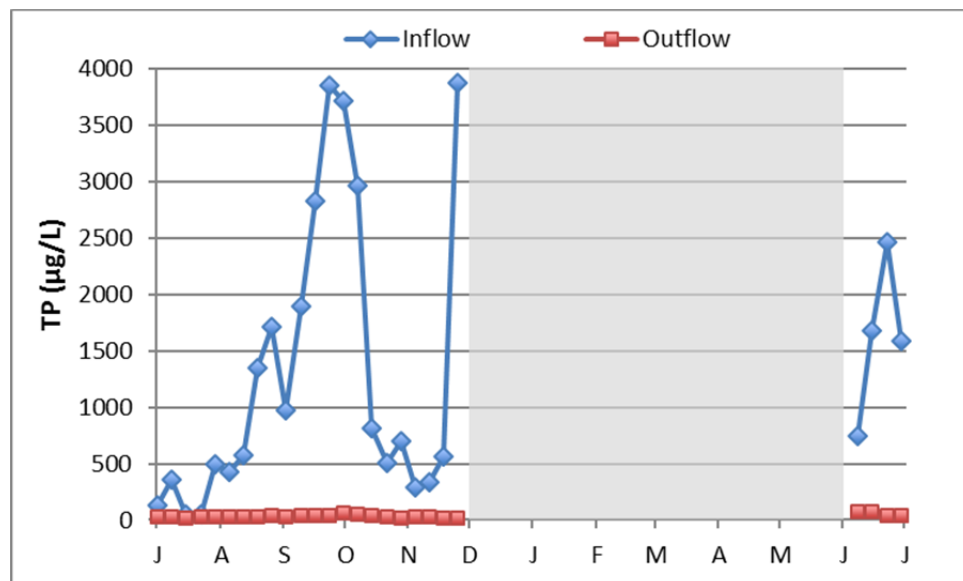


Figure 15. TP concentration in the inflow and outflow streams at the Ideal #2 Grove HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

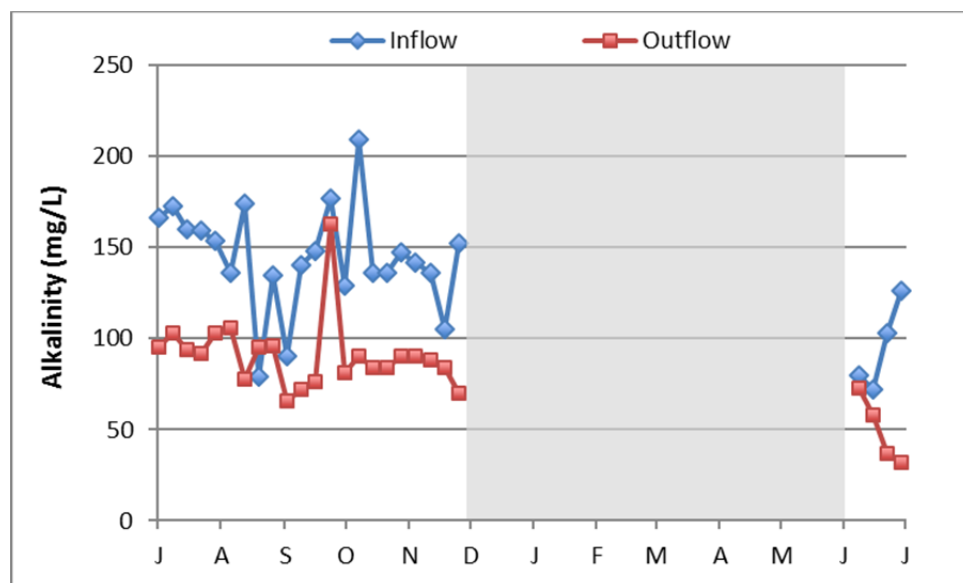


Figure 16. Alkalinity in the inflow and outflow streams at the Ideal #2 Grove HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

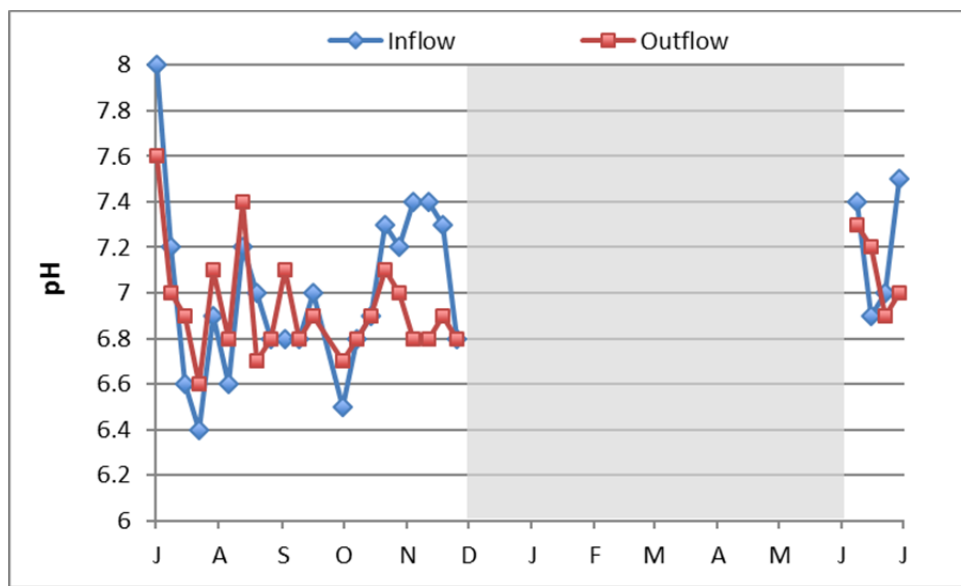


Figure 17. pH in the inflow and outflow streams at the Ideal #2 Grove HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

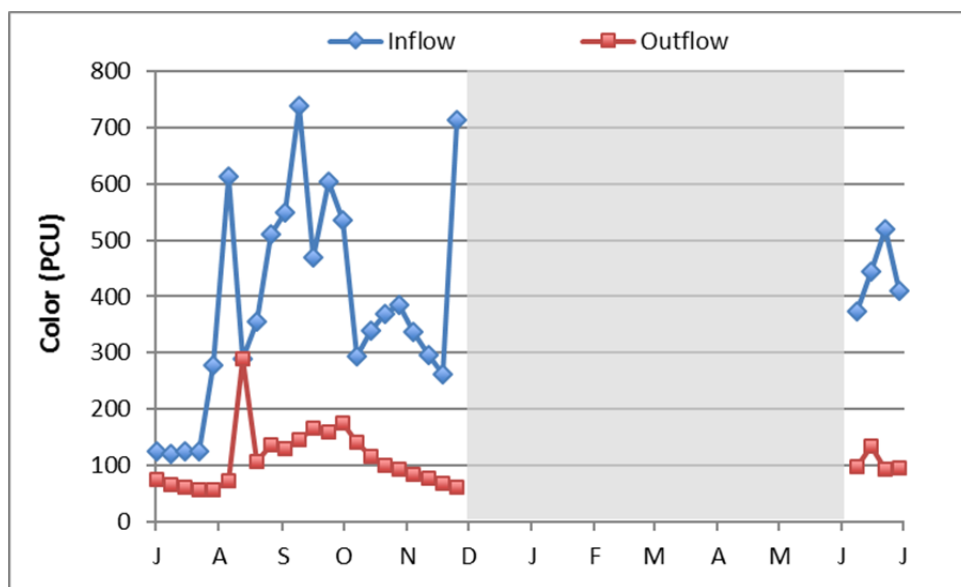


Figure 18. Color in the inflow and outflow streams at the Ideal #2 Grove HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

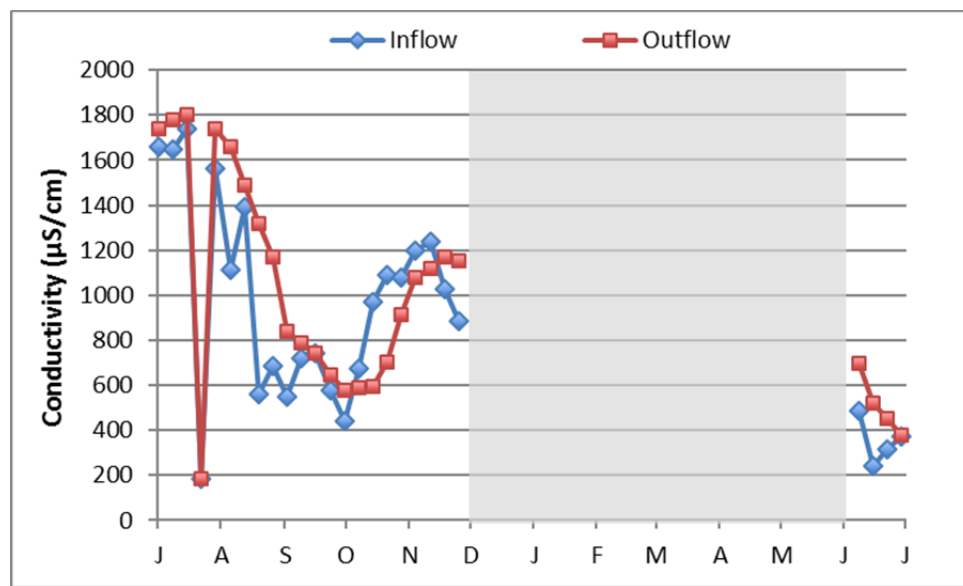


Figure 19. Conductivity in the inflow and outflow streams at the Ideal #2 Grove HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

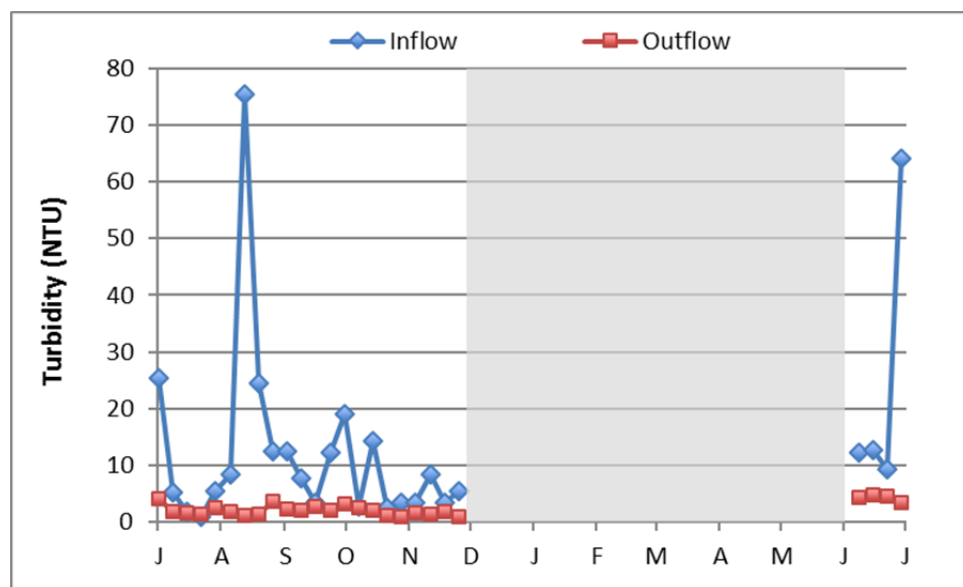


Figure 20. Turbidity in the inflow and outflow streams at the Ideal #2 Grove HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

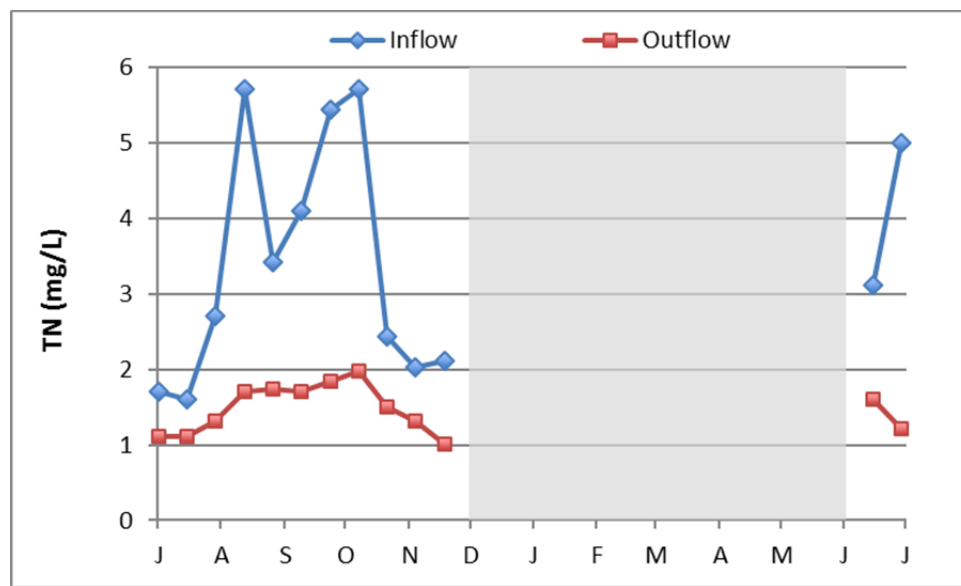


Figure 21. TN in the inflow and outflow streams at the Ideal #2 Grove HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

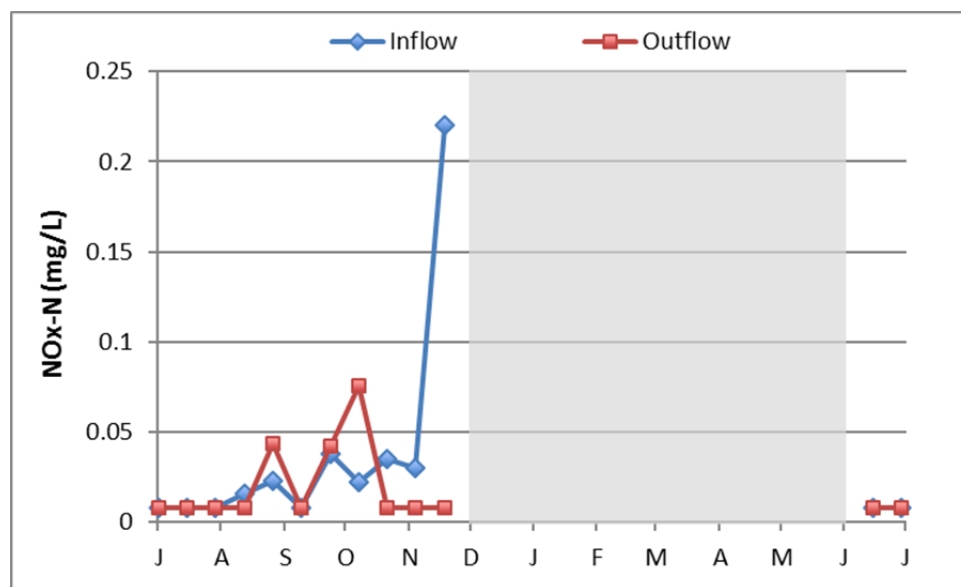


Figure 22. NO_x-N in the inflow and outflow streams at the Ideal #2 Grove HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

Total monthly flow volumes treated in the Ideal HWT system during the POR ranged from 0.7 Mgal in July 2015 to 2.3 Mgal in June 2016 (Figure 23). Mean monthly flow volume,

excluding the non-operational period of December 2015 – May 2016, was 1.7 Mgal, while total flow treated by the Ideal HWTT system during the POR was 10.0 Mgal.

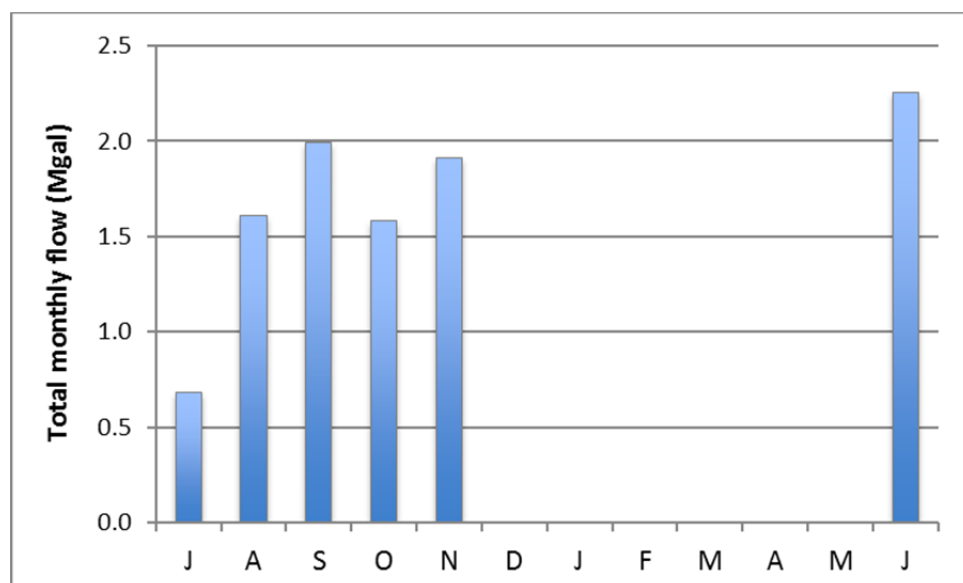


Figure 23. Total monthly flow treated by the Ideal #2 Grove HWTT system during the 2015-2016 POR. The facility was not operational during the period December 2015 – May 2016.

Site 3: Mosquito Creek Tributary Treatment HWTT Facility

In 2008, a HWTT facility was constructed on Larson Dairy property, adjacent to Mosquito Creek. The facility consists of one large (1.3 acre) HWTT system and one small (0.44 acre) system (Figure 24). Early in 2015, a limerock bed was added to the back end of the system, to facilitate buffering of outflow waters (Figure 25).



Figure 24. Aerial photo of the HWTT facilities at Mosquito Creek.

The large HWTT facility (“large pond”) was operational during the July 2015 – June 2016 project assessment period, while the small system was kept off-line. Alum was dosed on an intermittent feed basis. Monthly averages of effective alum dose ranged from 9.8 to 13.5 mg Al/L, while the overall mean effective alum dose was 11.7 mg Al/L. During the period from December 2015 through May 2016 system operation was suspended due to lack of funding. The facility was re-started and treatment system operations were resumed at the beginning of June 2016. Daily system flow status is provided in the Chapter II appendices.



Figure 25. Outflow region limerock bed installed at the Mosquito Creek HWT in early 2015.

Grab samples of water were collected for routine monitoring at the system inflow (Mosquito Creek) and the large pond outflow. Samples were analyzed for total phosphorus (TP), alkalinity, pH, color, conductivity and turbidity on a weekly basis. Water samples were also analyzed for nitrate + nitrite N ($\text{NO}_x\text{-N}$) and TKN on a biweekly basis; total N (TN) was calculated as the sum of NO_x and TKN. During the period in which the system was off-line, monitoring at the pond outflow was suspended, while routine collection of Mosquito Creek (“inflow”) samples continued. Water chemistry data for the July 2015 – June 2016 monitoring period are presented in Figure 26 through Figure 33.

The overall TP concentration range for the 2015 – 2016 period was similar to that seen in the previous period, with inflow TP ranging from 2733 to 1870 $\mu\text{g/L}$, while concentrations

averaged 684 $\mu\text{g/L}$ (Figure 26). TP in outflow was always much lower than inflow, as well as much less variable. Outflow TP averaged 119 mg/L and ranged from 22 to 270 mg/L. On average, this is a reduction of 14 $\mu\text{g/L}$ compared to the previous monitoring period. Note that the system was not operated from December 2015 through May 2016, thus overall comparisons between monitoring periods should be viewed with some caution. However, the TP in the outflow over this interval during the previous monitoring period was lower than the rest of the period, thus it is likely that average outflow concentration for the entire 2015 – 2016 monitoring period would have been even lower than reported above had data been collected December 2015 through May 2016.

Inflow alkalinity was generally higher than outflow alkalinity and averaged 87 mg/L (range 46 – 223 mg/L) (Figure 27). Both inflow and outflow alkalinity were highly variable. Outflow alkalinity, though lower, closely followed the temporal pattern of inflow alkalinity. Outflow alkalinity was on average 38 mg/L less than inflow alkalinity. Outflow alkalinity averaged 49 mg/L and ranged from 16 to 149 mg/L. Inflow pH ranged from 6.5 to 7.2 and averaged 6.9 during the monitoring period (Figure 28). Outflow pH averaged 6.6 and ranged from 6.0 to 7.4. This is a 0.4 unit increase compared to the 2014 - 2015 and probably reflects the effect of the new limerock bed on increasing outflow pH.

As was reported in 2014 – 2015, there appears to be a relationship between color and TP, and outflow color levels mostly varied in proportion to inflow color during the majority of the monitoring period (Figure 29). With the exception of one sample, outflow color was always less than inflow color. Inflow color ranged from 127 to 716 PCU and averaged 385 PCU, a very similar result to that seen for 2014 - 2015. Color in the outflow stream ranged from 37 to 376 PCU and averaged 160 PCU.

Outflow conductivity was generally higher than inflow. (Figure 30). From late September through early November, conductivity steadily increased for both inflow and outflow. As with alkalinity, temporal patterns in alkalinity at the inflow were closely followed (though higher) at the outflow. Mean inflow conductivity was 420 $\mu\text{S/cm}$, while the mean outflow conductivity was 475 $\mu\text{S/cm}$. Inflow conductivity ranged from 186 to 777 $\mu\text{S/cm}$ and

outflow conductivity ranged from 267 to 792 $\mu\text{S}/\text{cm}$. Like the Nubbin Slough HWTT, turbidity at the system outflow was almost always greater (Figure 31). The overall range of inflow turbidity was 0.8 to 23.4 NTU, while the mean value was 3.6 NTU. Outflow turbidity ranged from 1.1 to 14.5 and averaged 7.2 NTU.

Inflow TN concentration was generally less than 4 mg/L during the monitoring period, but briefly spiked to 15.10 mg/L in September (Figure 32). This spike was completely absent in the outflow. The overall range for inflow TN was 2.10 to 15.10 mg/L, with a mean of 3.60 mg/L. The Mosquito HWTT system effectively removed TN on a consistent basis during the monitoring period. Outflow TN concentrations ranged from 1.12 to 2.95 mg/L, and averaged 1.84 mg/L. Both mean inflow and mean outflow TN concentrations were quite similar to those observed in 2014 – 2015. Concentrations of NO_x were generally slightly greater in the outflow (Figure 33). NO_x concentrations for both inflow and outflow were lower in this monitoring period compared to the 2014 – 2015 period. Temporal changes in inflow NO_x were closely followed at the outflow. During the August 2015 through November 2015 period, increases in inflow NO_x were anomalously amplified in the outflow. The cause of this is unknown. Inflow NO_x ranged from <0.016 to 0.52 mg N/L in the inflow stream and 0.034 to 0.750 mg N/L in the outflow stream. Mean inflow and outflow concentrations of NO_x were 0.184 and 0.332 mg N/L, respectively. NO_x represented a relatively high proportion of TN in both the inflow (7 percent) and outflow (18 percent) streams. During the 2014 – 2015 monitoring period NO_x comprised 17 percent of TN in the inflow and 29 percent of TN in the outflow streams. Thus, the proportion TN that is in organic form has increased over the two periods. As previously reported, the absence of a shallow SAV zone in the Mosquito Creek facility probably serves to limit N removal performance at this site.

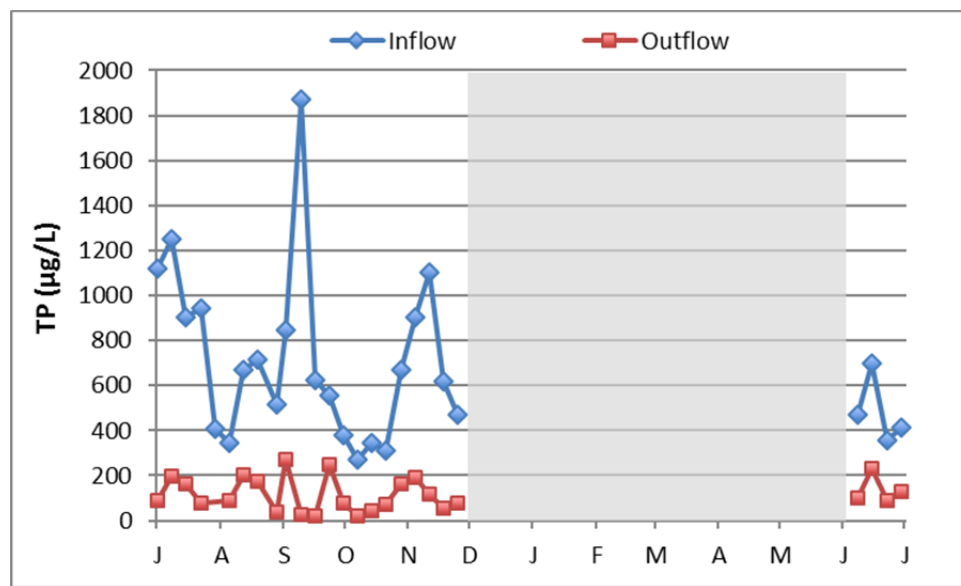


Figure 26. TP concentration in the inflow and large pond outflow streams at the Mosquito Creek Tributary Treatment HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

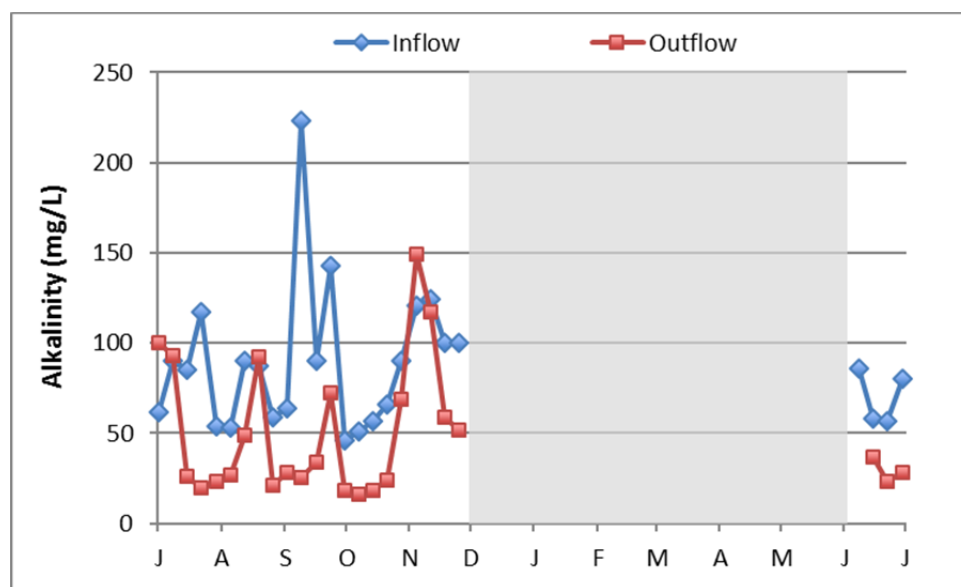


Figure 27. Alkalinity in the inflow and large pond outflow streams at the Mosquito Creek Tributary Treatment HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

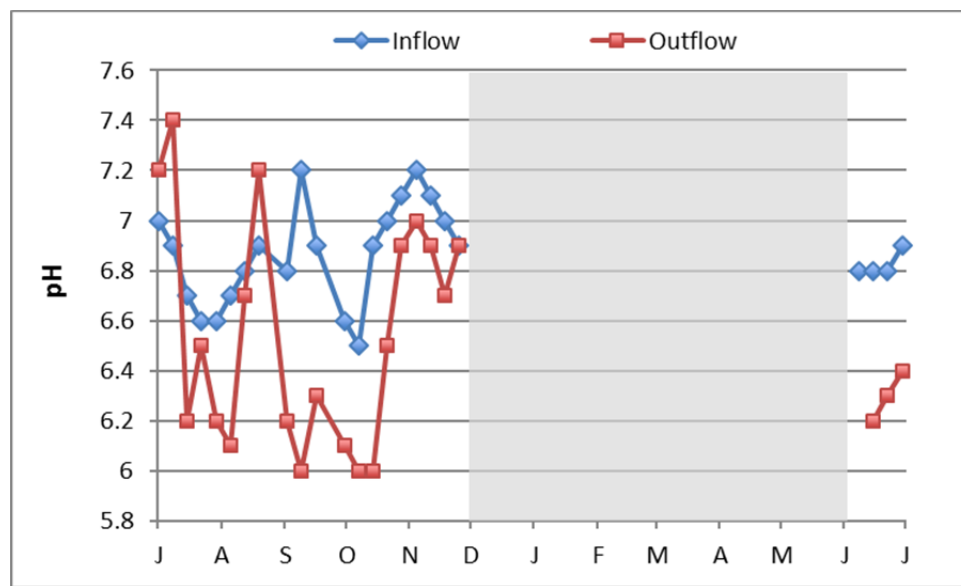


Figure 28. pH in the inflow and large pond outflow streams at the Mosquito Creek Tributary Treatment HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

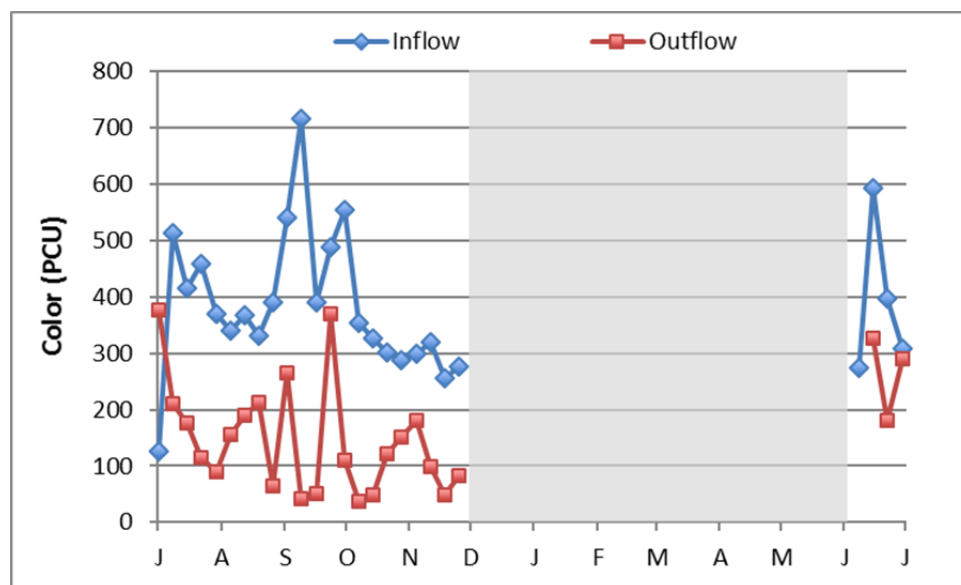


Figure 29. Color in the inflow and large pond outflow streams at the Mosquito Creek Tributary Treatment HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

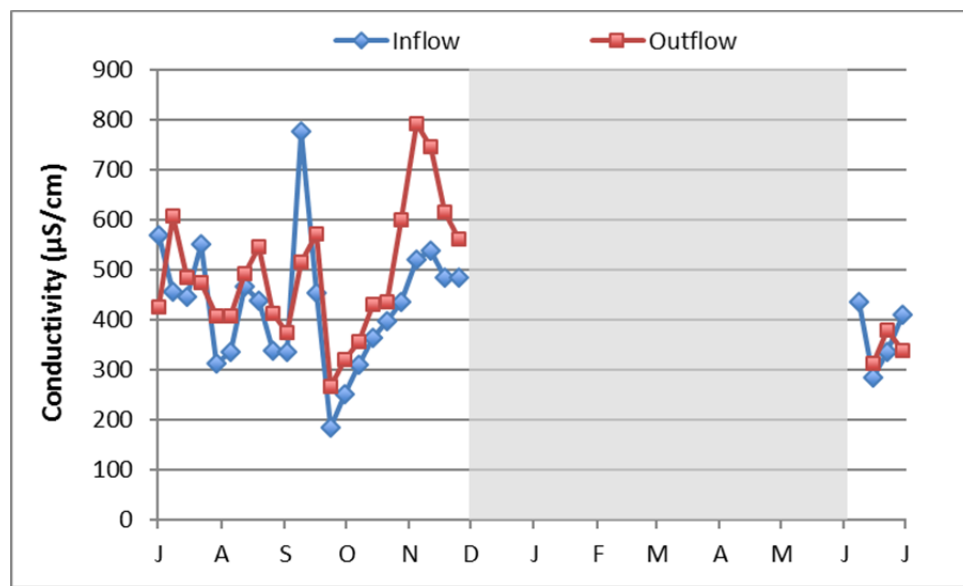


Figure 30. Conductivity in the inflow and large pond outflow streams at the Mosquito Creek Tributary Treatment HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

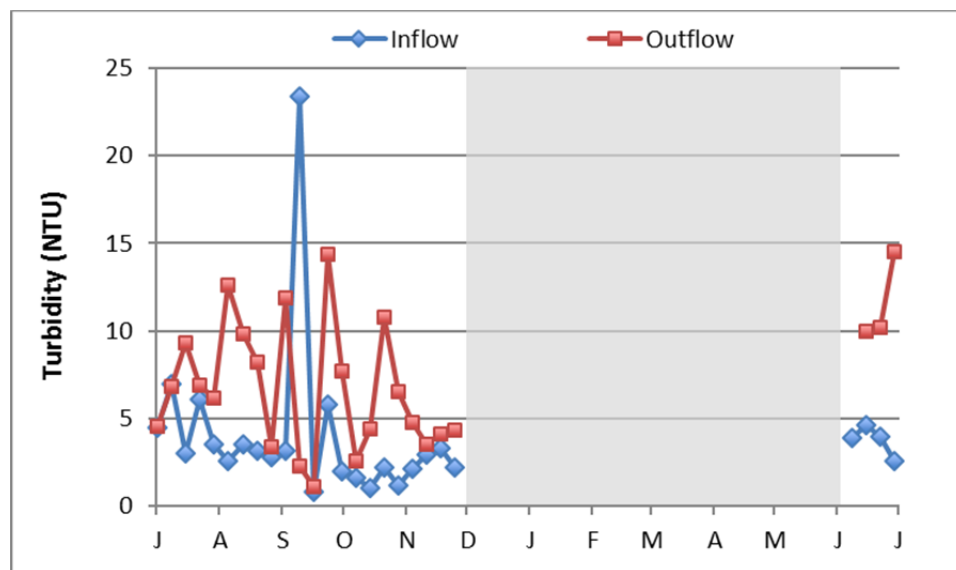


Figure 31. Turbidity in the inflow and large pond outflow streams at the Mosquito Creek Tributary Treatment HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.



Total monthly flow volumes treated in the Mosquito Creek HWTT system during the POR ranged from 19.5 Mgal in July to 46.0 Mgal in September (Figure 34). Mean monthly flow volume, excluding the non-operational period of December 2015 – May 2016, was 35.5 Mgal, while total flow treated by the Mosquito Creek HWTT system during the POR was 213.3 Mgal.

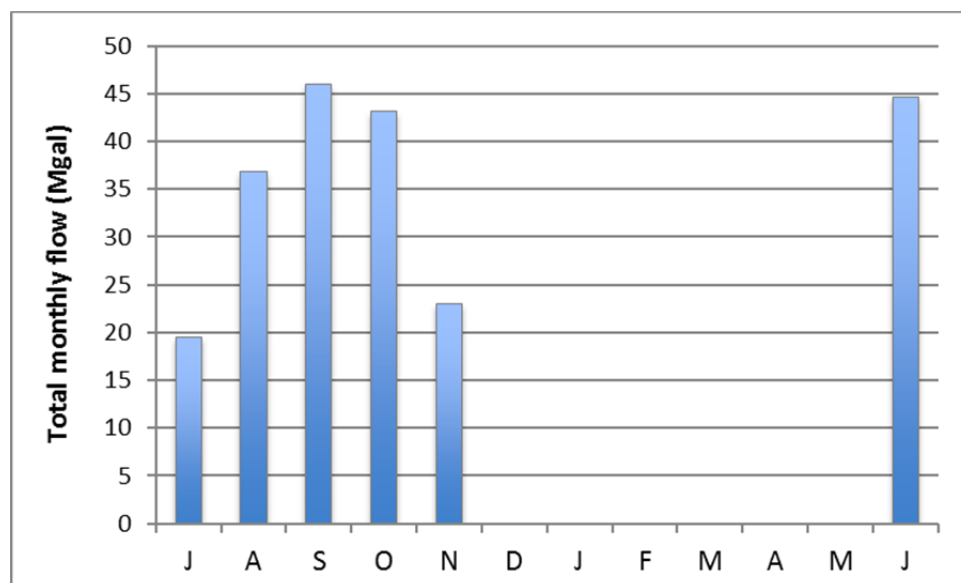


Figure 34. Total monthly flow treated by the Mosquito Creek Tributary Treatment HWTT system during the 2015-2016 POR. The facility was not operational during the period December 2015 – May 2016.

Sites 5 and 6: Lemkin Creek and Wolff Ditch HWTT Facilities

During 2009, Watershed Technologies, LLC constructed and began operating two HWTT systems (“Lemkin and Wolff”) on a District-owned parcel in Okeechobee County, Florida. The project parcel was operated as a shell rock pit for many years before being purchased by the District, and it consisted mainly of two ponds. The Site 5 HWTT facility treats water from the Lemkin Creek, and the Site 6 HWTT facility treats water from Wolff Ditch. The two HWTT systems each consist of an amendment dosing system, a deep settling region with active and passive floc recycle, and a back-end SAV polishing pond. The Wolff HWTT system is the larger of the two facilities, with a 4.0 acre floc contact/settling pond and 1.0

acre SAV pond, and is designed to treat maximum flows of up to 20 cfs. The Lemkin system is comprised of a 2.0 acre contact/settling pond and a 0.4 acre SAV pond, with a 5 cfs maximum treatment capacity. Treated water from the SAV ponds is discharged through culverts to the 27-acre South Pond. Overflow from the South Pond discharges to a restored “Isolated Wetland” to the south. Effluent from the Isolated Wetland discharges to Lemkin Creek over the existing concrete weir. The general layout for the facilities is shown in Figure 35.

The 65-acre isolated wetland located downstream of the Lemkin/Wolff HWTT system’s 27-acre south pond is the receiving water body of the Lemkin/Wolff HWTT system. The isolated wetland is a separate wetland restoration project (permit #EE-47-0254574-001). It is not managed for treatment under the HWTT permit nor is it managed by the HWTT operator. However, sampling results from upstream (required by the Lemkin HWTT permit) and downstream (as requested by SFWMD) monitoring sites show the isolated wetland provides additional treatment of the Lemkin/Wolff system effluent.



Figure 35. Aerial photo of the Lemkin (FDOT) and Wolff HWTT facilities.

Both the Lemkin and Wolff HWT systems received alum dosing on an intermittent basis. The resulting effective alum dose for the Lemkin system ranged from 2.7 to 5.5 mg Al/L, and averaged 3.7 mg Al/L, during the monitoring period. The effective alum dose for the Wolff system ranged from 3.9 to 4.4 mg Al/L, and averaged 4.1 mg Al/L, during the monitoring period. During the period from December 2015 through May 2016 system operation was suspended due to lack of funding. The facility was re-started and treatment system operations were resumed at the beginning of June 2016. Daily system flow status is provided in the Chapter II appendices.

Water chemistry monitoring at the Lemkin and Wolff facilities was conducted on a weekly or biweekly basis for the duration of the reporting period. Grab samples for routine monitoring were collected at the system inflows (Lemkin and Wolff ditch intakes) and SAV pond outflows. In addition, routine monitoring was conducted downstream at the outflows of the South Pond and Isolated Wetland. Samples were analyzed for total phosphorus (TP) soluble reactive P (SRP), pH and conductivity on a weekly basis. Water samples were also analyzed for dissolved organic P (DOP=TSP-SRP, where TSP is total soluble P), particulate P (PP=TP-TSP), alkalinity, color, turbidity, nitrate + nitrite N ($\text{NO}_x\text{-N}$), ammonia-N, and TKN on a biweekly basis. Total N (TN) was calculated as the sum of $\text{NO}_x\text{-N}$ and TKN. Total aluminum (Al) and sulfate (SO_4) also were monitored biweekly, for permit compliance purposes. Routine water chemistry data for the July 2015 – June 2016 monitoring period are presented in the following sections. Additional data, related to compliance monitoring, are presented later in this report.

Routine Monitoring Site 5 (Lemkin HWT Facility)

Inflow TP concentrations in the Lemkin system steadily increased from approximately 50 $\mu\text{g/L}$ early in the period, to a maximum value for the period of 605 $\mu\text{g/L}$ on September 23, 2015 (Figure 36). The maximum value in the outflow (383 $\mu\text{g/L}$) also occurred on this date. Overall, inflow TP concentrations averaged 222 $\mu\text{g/L}$ (min = 44 $\mu\text{g/L}$), which is slightly

lower than the 2014 – 2015 period. Outflow TP concentration averaged 65 µg/L, which is almost double that observed 2014 - 2015. This is largely due to a single, very high outflow value in late September. The overall range of outflow TP concentrations was 19-383 µg/L.

As was the case for the 2014 – 2015 period, inflow SRP maintains a nearly constant proportionality to TP ($r^2=0.99$) (Figure 37). Least-squares regression analysis of influent water for the July 2015 – June 2016 period shows that SRP is typically 88% of TP, less a constant 39 µg/L. The same analysis on the outflow water is hampered by considerable “left-censored” data, or values that were below limit of detection, however, the proportionality between TP and SRP was still high. Inflow SRP averaged 126 µg/L and ranged from 10 to 463 µg/L, while outflow from the SAV pond averaged 16 µg/L and ranged from below detection to 237 µg/L. Interestingly, when both TP and SRP in the inflow increased dramatically late in the POR, there was little or no increase in other phosphorus fractions at the outflow. For that June 2016 period, SRP represented 79% of TP. Thus, the system appears to have been very effective at removing SRP during June 2016 month, and not as effective in September 2015.

With the exception of a September 23, 2015 spike, inflow DOP concentrations for 2015 – 2016 POR were similar to those observed for 2014 – 2015 (Figure 38). Inflow DOP ranged from 13 to 123 µg/L and averaged 37 µg/L. Outflow concentrations of DOP were always lower than inflow concentrations and averaged 12 µg/L, while ranging from 6 to 34 µg/L. Inflow PP concentrations averaged 26 µg/L and ranged from 15 to 67 µg/L. (Figure 39). Outflow PP concentrations were on average greater than inflow concentrations (mean = 36 µg/L), and ranged from 10 to 112 µg/L during the monitoring period. For six of the thirteen sampling events, outflow PP was greater than inflow PP.

Alkalinity levels in the Lemkin HWT inflow stream tended to increase for the period June through November 2015 (Figure 40). As in the 2014 – 2015 POR, outflow alkalinity levels were slightly lower than inflow alkalinity during the majority of the monitoring period. Inflow alkalinity averaged 180 mg/L and ranged from 118 to 242 mg/L, while outflow alkalinity averaged 155 mg/L and ranged from 100 to 196 mg/L. There was no clear

pattern in either inflow or outflow pH, nor was there a consistent difference in pH between inflow and outflow (Figure 41). Inflow pH averaged 7.2, ranging from 7.0 to 7.6. Outflow pH averaged 7.4, and ranged from 6.9 to 7.7. Means and ranges of pH for this monitoring period were quite similar to the 2014 – 2015 period.

Color concentration in the inflow and outflow stream was greatest during August – September 2015, then declined through December 2015 (Figure 42). Inflow color averaged 132 PCU and ranged from 79 to 229 PCU. Outflow color was almost always lower than the inflow stream. Outflow color averaged 99 PCU and ranged from 39 to 229 PCU. Overall, color values for this POR were very similar to those observed for the September 2014 through June 2015 period. Inflow and outflow conductivity levels were nearly identical throughout the period, exhibiting a gradual decrease over this POR (Figure 43). Inflow conductivity averaged 843 $\mu\text{S}/\text{cm}$ and ranged from 612 to 1110 $\mu\text{S}/\text{cm}$, while outflow conductivity averaged 836 $\mu\text{S}/\text{cm}$ and ranged from 649 to 1030 $\mu\text{S}/\text{cm}$. Outflow turbidity was generally greater than inflow turbidity (Figure 44). Outflow turbidity levels were somewhat greater than inflow levels, averaging 3.4 and 2.3 NTU, respectively. Outflow turbidity ranged from 2.2 to 6.1 NTU, while inflow turbidity ranged from 0.8 to 4.6 NTU. Means and ranges of both inflow and outflow for this POR were very similar to the 2014 – 2015 monitoring period.

Inflow TN concentrations were typically low in comparison to inflow TN at other HWT sites (Figure 45). Mean inflow TN concentration was 1.81 mg/L, while concentrations ranged from 1.31 to 2.99 mg/L. TN concentrations were nearly always slightly lower at the outflow than in the inflow stream. Outflow TN concentration averaged 1.57 mg/L and ranged from 1.21 to 3.18 mg/L. NO_x concentrations were relatively low in both inflow and outflow streams, with outflow NO_x concentrations being greater than inflow during almost all of the period (Figure 46). Inflow NO_x concentration averaged 0.022 mg N/L and ranged from ≤ 0.016 to 0.086 mg N/L, and outflow concentrations averaged 0.055 mg N/L with a range of ≤ 0.016 to 0.090 mg N/L. It was somewhat atypical that both inflow and outflow NO_x were below detection for all samples collected in June 2016. As pointed out in the previous report, NO_x represent a very small fraction of TN entering the HWT. Despite the

net export of NO_x from the Lemkin system, a consistent net removal of TN has been achieved.

The overall mean inflow TAl concentration for the current period was $37 \mu\text{g/L}$, a value almost 10-fold lower than found in the previous POR (Figure 47). As explained in the previous report, an operational problem caused temporarily high TAl at the inflow sampling station, and it was quickly resolved. Inflow TAl ranged from $9 - 143 \mu\text{g/L}$. Outflow TAl concentrations averaged $585 \mu\text{g/L}$, increased during August 2015, and then increased again in June 2016 to a maximum value of $943 \mu\text{g/L}$. The minimum value of TAl at the outflow was $383 \mu\text{g/L}$. Sulfate levels in the inflow and outflow stream generally declined over the POR. Inflow sulfate ranged from 21 to 137 mg/L and averaged 61 mg/L . Sulfate was almost always greater in the outflow stream and closely followed the temporal pattern of the inflow. Outflow sulfate ranged from 55 to 156 mg/L and averaged 89 mg/L .

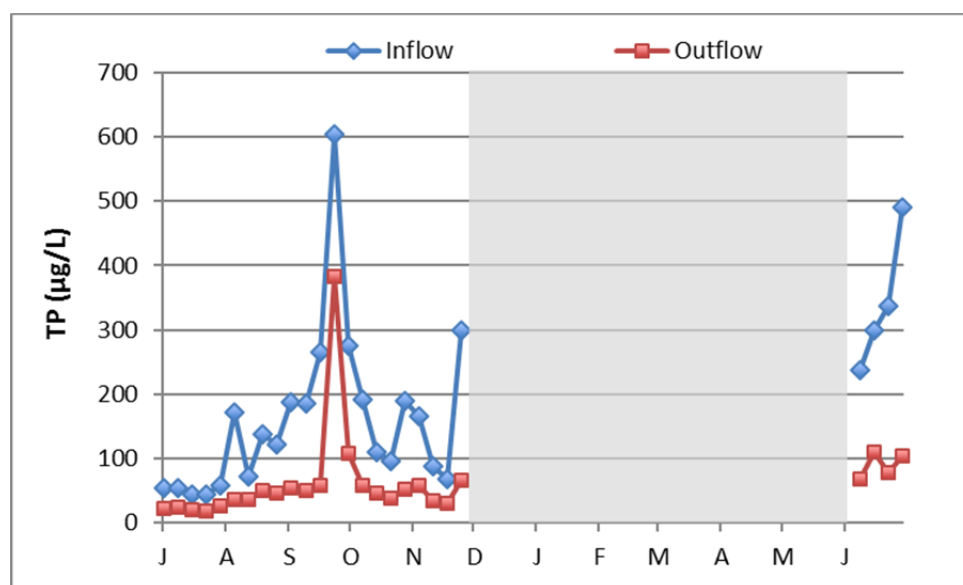


Figure 36. TP concentration in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

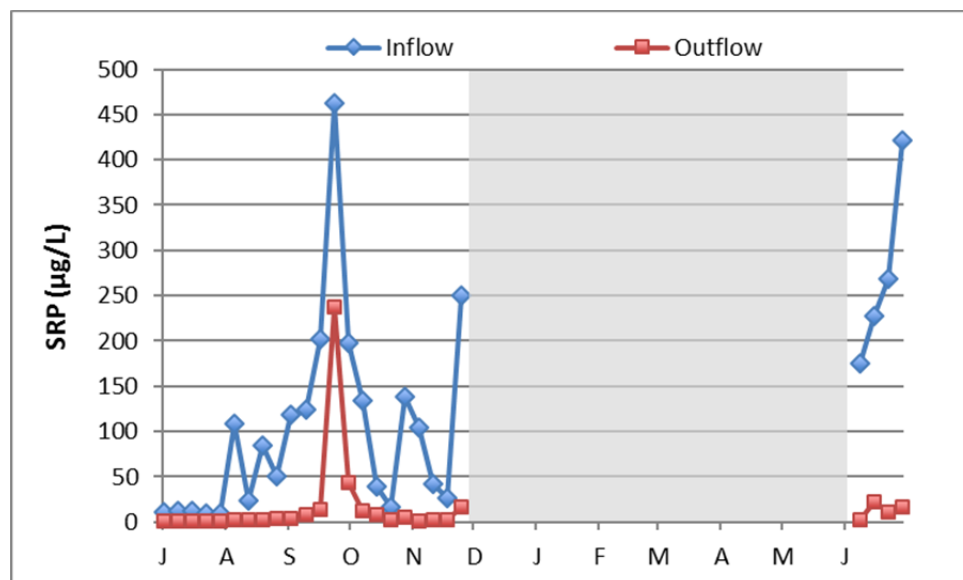


Figure 37. SRP concentration in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

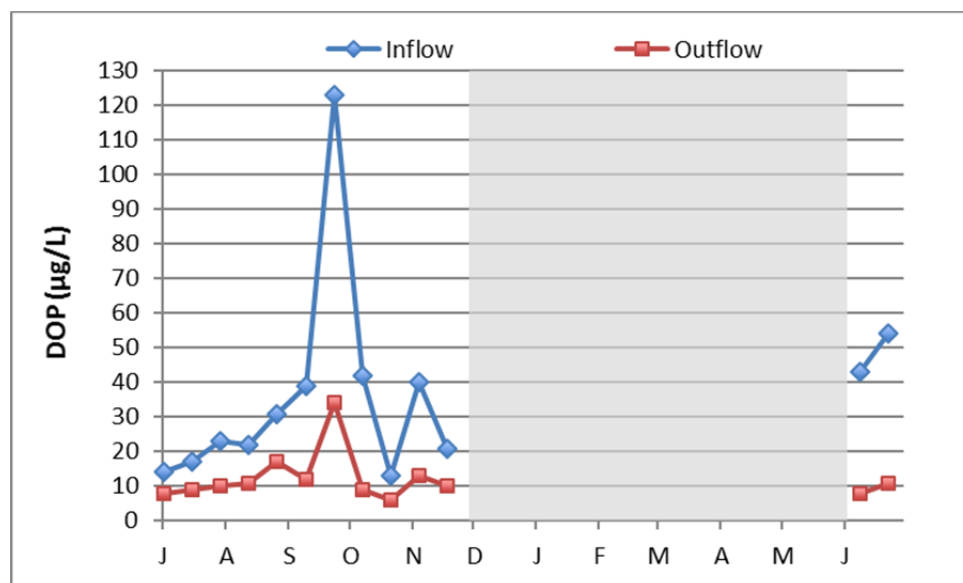


Figure 38. DOP concentration in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

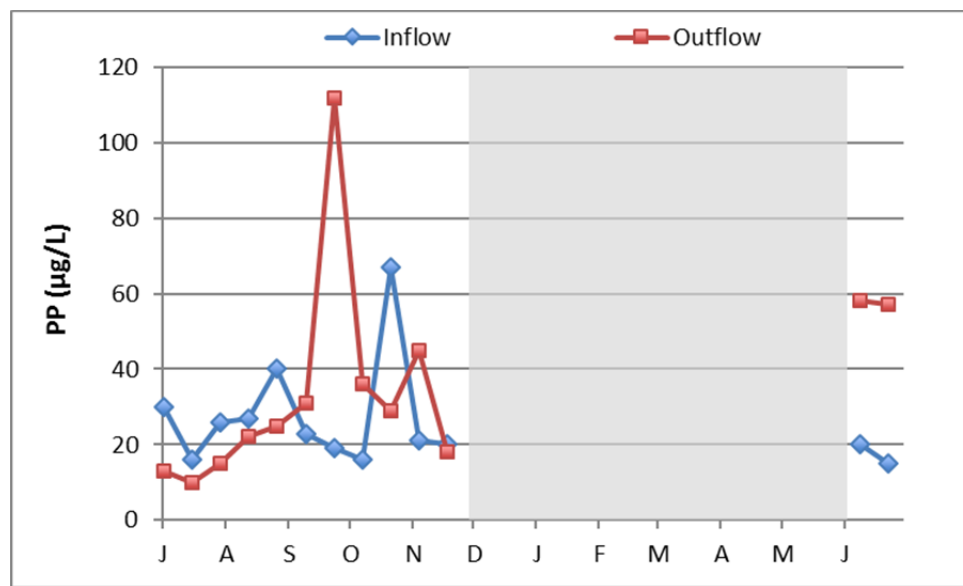


Figure 39. PP concentration in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

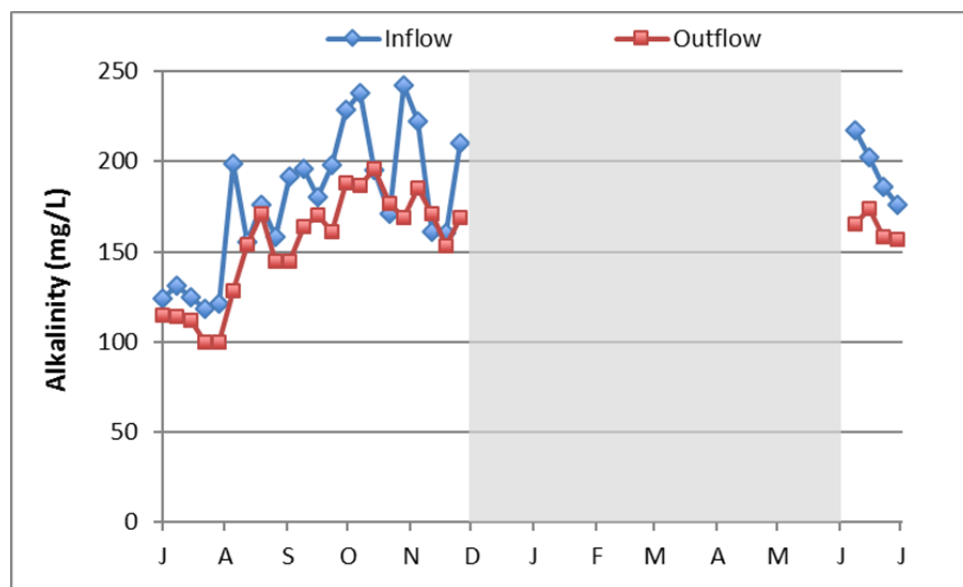


Figure 40. Alkalinity in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

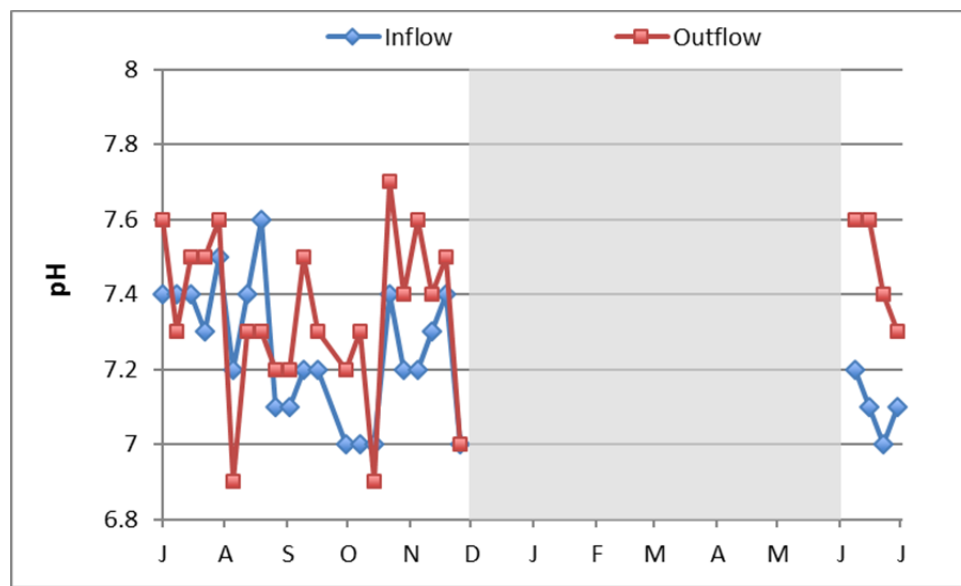


Figure 41. pH in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

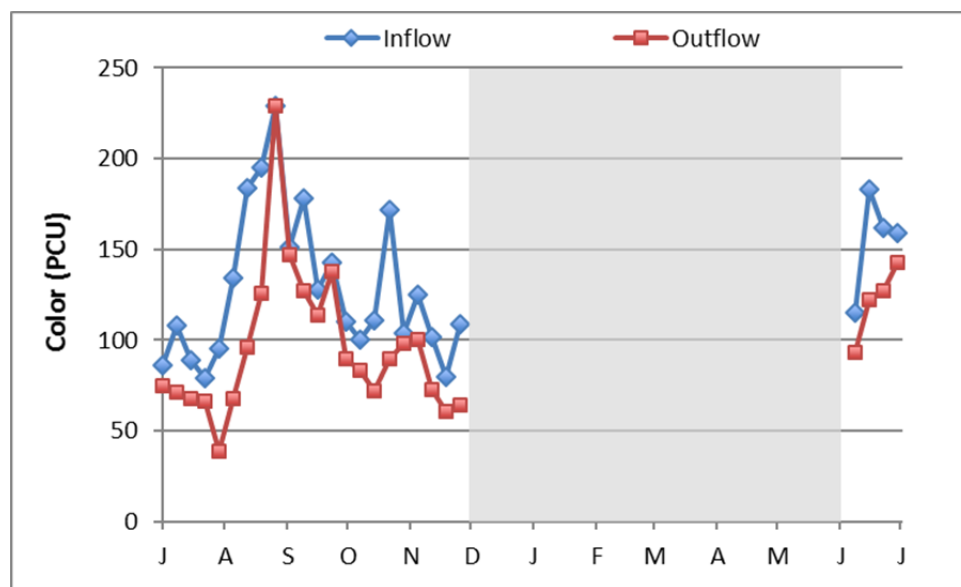


Figure 42. Color in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

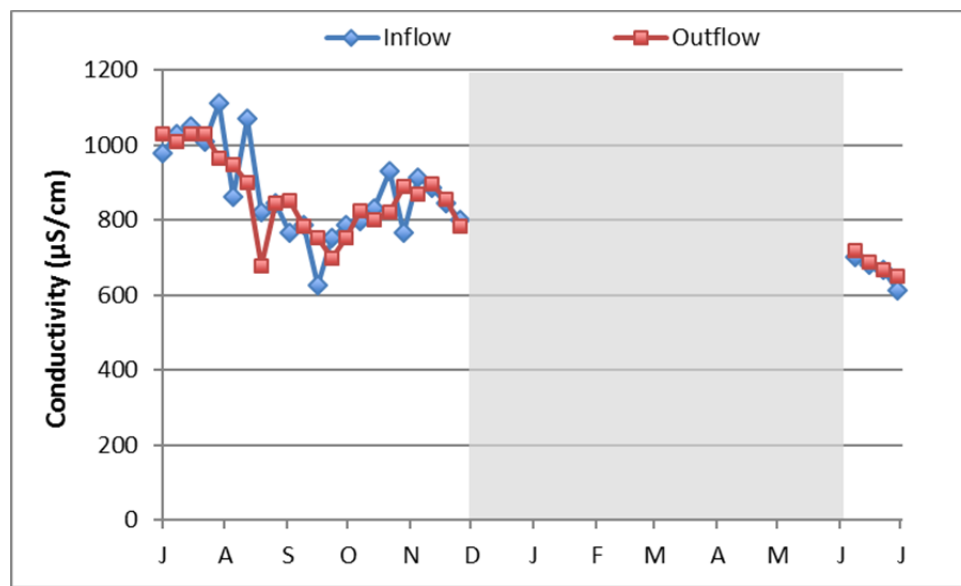


Figure 43. Conductivity in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

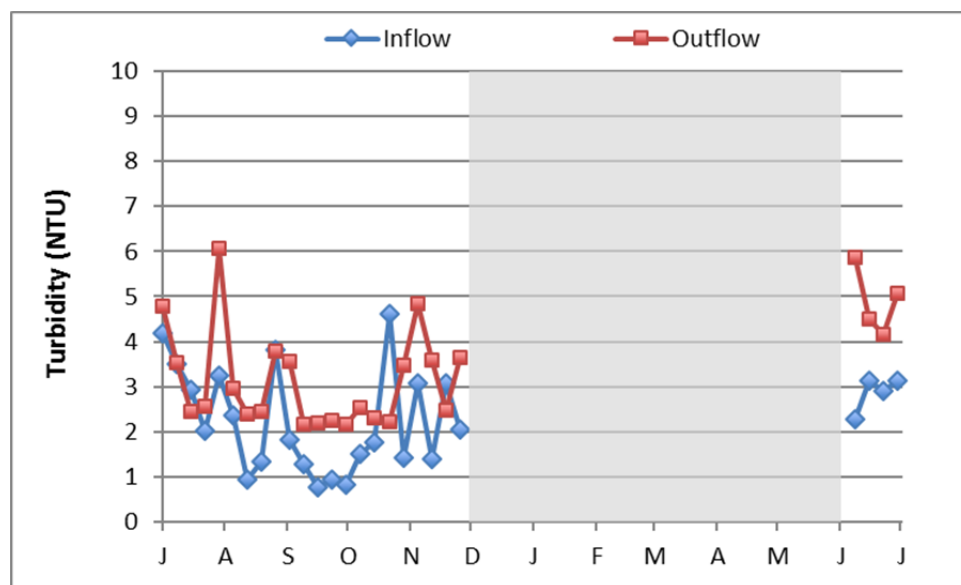


Figure 44. Turbidity in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

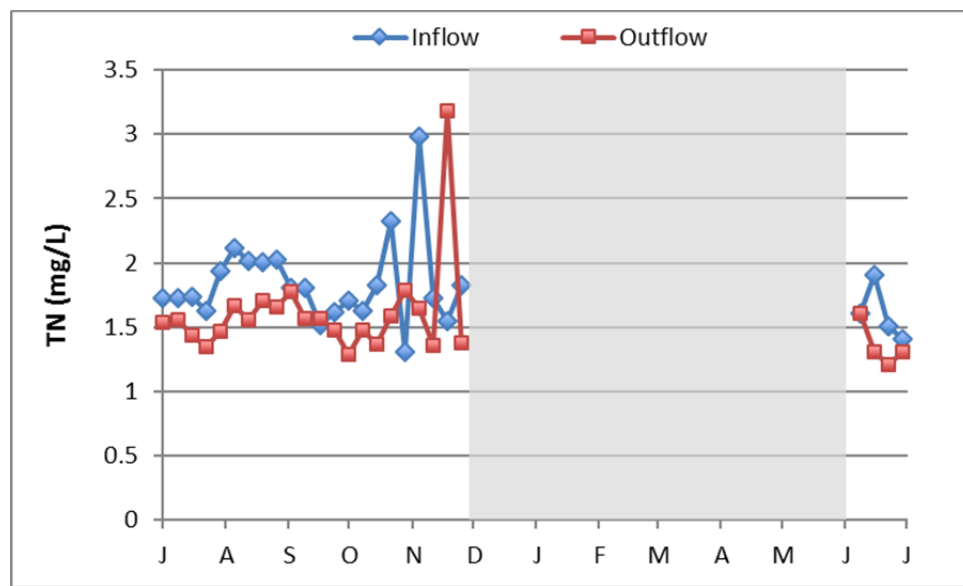


Figure 45. TN concentration in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

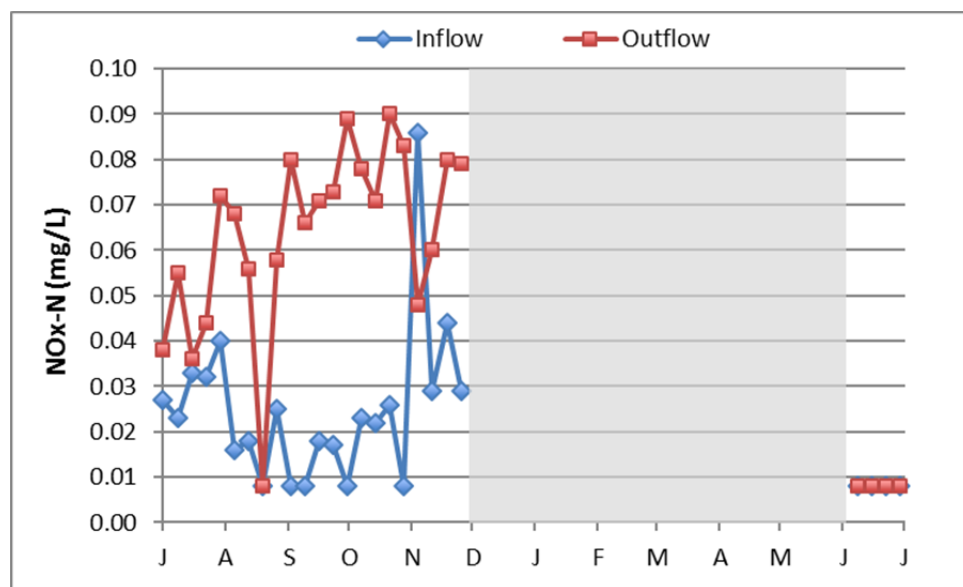


Figure 46. NO_x-N concentration in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

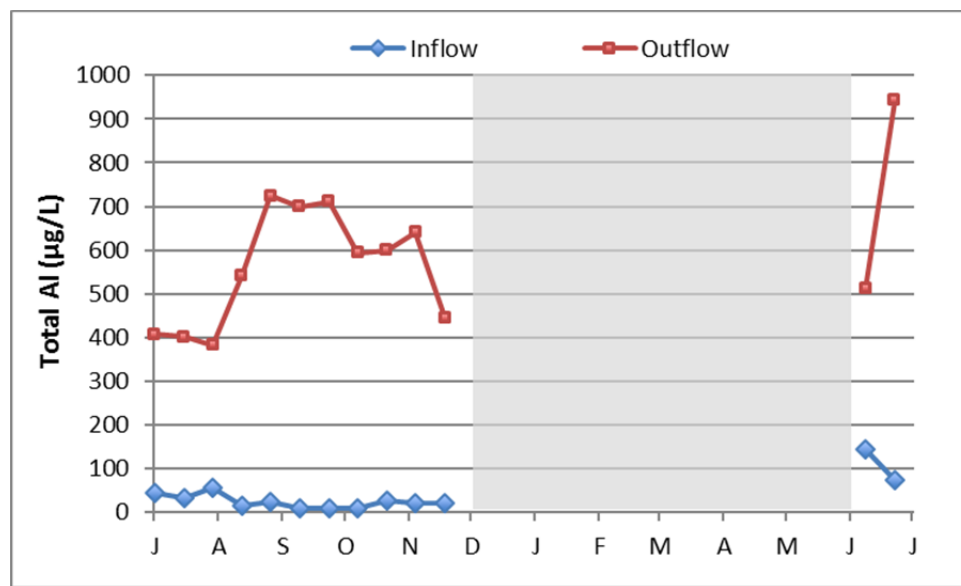


Figure 47. Total Al concentration in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

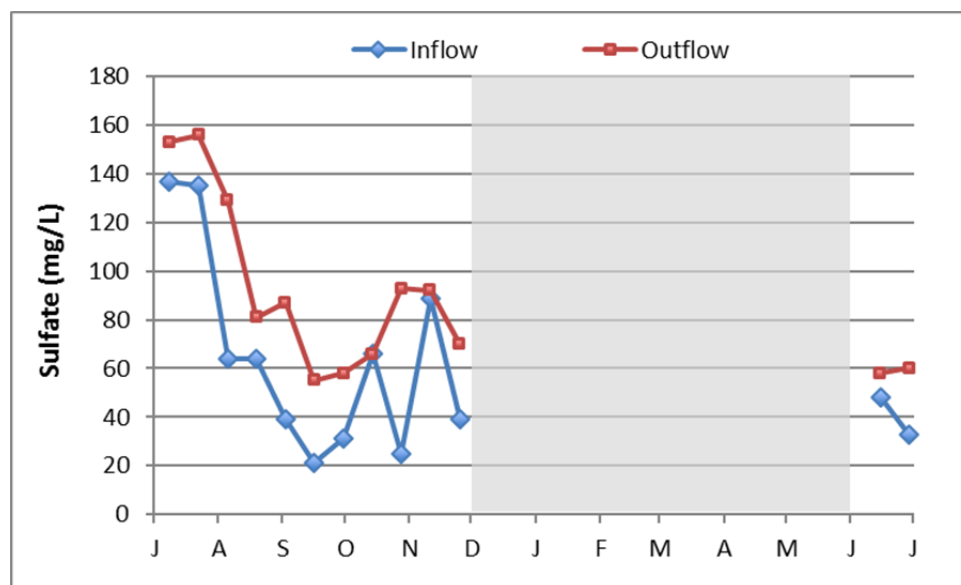


Figure 48. Sulfate concentration in the inflow stream (FDOT Ditch) and SAV outflow stream of the Site 5 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

Total monthly flow volumes treated in the Lemkin Creek HWTT system during the POR ranged from 33.5 Mgal in July to 50.0 Mgal in September (Figure 34). Mean monthly flow

volume, excluding the non-operational period of December 2015 – May 2016, was 41.8 Mgal, while total flow treated by the Lemkin Creek HWTT system during the POR was 250.9 Mgal.

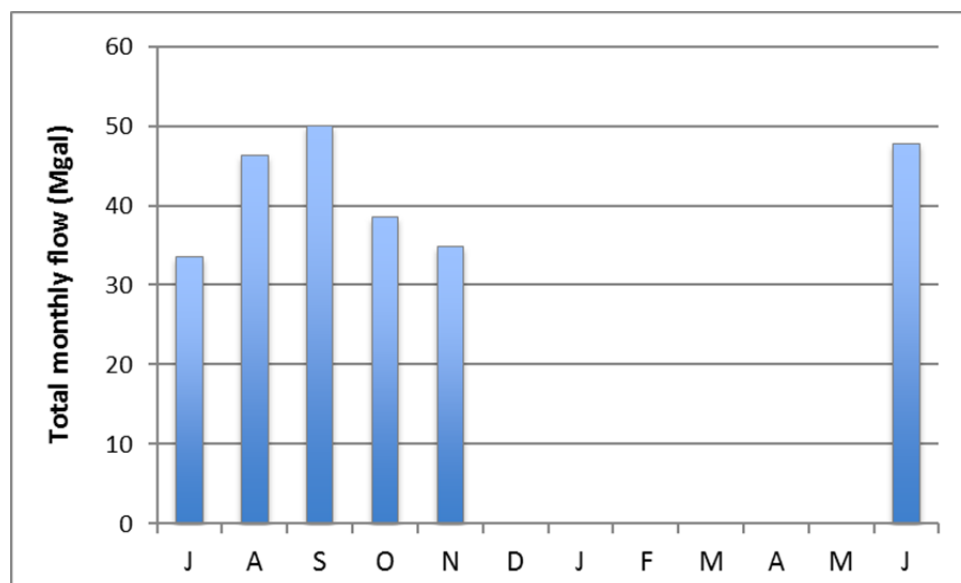


Figure 49. Total monthly flow treated by the Lemkin Creek (Site 5) HWTT system during the 2015-2016 POR. The facility was not operational during the period December 2015 – May 2016.

Routine Monitoring Site 6 (Wolff HWTT Facility)

Except for several very high TP concentrations in mid to late September and again in late November, inflow TP was typically between 50 to 100 µg/L (Figure 50). For the entire monitoring period, concentrations of TP at the inflow ranged from 44 to 316 µg/L and averaged 100 µg/L. Very high inflow TP observed in mid to late September also caused outflow TP to increase over 2-fold. Outflow TP averaged 34 µg/L and ranged from 19 to 120 µg/L. From early October through the end of the POR, outflow TP was quite stable, with an average value of 31 µg/L. As was the case for the 2014 – 2015 sampling period, there was a very high correlation between inflow TP and SRP ($r^2=0.95$). The same relationship was not as strong for outflow TP vs. SRP ($r^2=0.86$). As mentioned for the

Lemkin Creek outflow, there were many Wolff Canal HWTt outflow values that were below detection (18 of 26 values), and this weakened the correlation between TP and SRP. The relationship between TP and SRP was very similar to that found for Lemkin Creek inflow samples. Regression analysis of influent water shows that SRP is typically 79% of TP, less a constant 38 µg/L. Inflow SRP concentrations ranged widely, from ≤2 to 202 µg/L, while the overall mean value was 40 µg/L. Inflow SRP levels were particularly low (mean = 2 µg/L) during July 2016 (Figure 51). Outflow SRP concentrations ranged as high as 35 µg/L during September 2015, but were mostly extremely low, typically below detection (≤2 µg/L), for this monitoring period. The overall mean concentration of SRP in the Wolff outflow was 3 µg/L.

Trends in outflow DOP closely followed inflow DOP, with outflow DOP always lower than inflow (Figure 52). Inflow DOP concentrations ranged from 12 to 65 µg/L and averaged 23 µg/L during the monitoring period. Outflow DOP concentrations were almost always ≤10 µg/L. The overall mean concentration of DOP at the outflow was 8 µg/L, while the range was 5 to 13 µg/L. Particulate P concentration generally declined over the period in the inflow stream (Figure 53). With the exception of the September 23, 2015 sample, inflow PP was always greater than outflow PP. Inflow PP averaged 38 µg/L and ranged from 9 to 56 µg/L, while outflow PP concentrations averaged 24 µg/L and ranged from 12 to 74 µg/L.

Alkalinity levels in both the Wolff HWTt inflow and outflow streams generally increased from the beginning of the POR through late November 2015 (Figure 54). With the exception of the final sample in June 2016, inflow alkalinity always exceeded outflow alkalinity. Inflow alkalinity averaged 170 mg/L and ranged from 141 to 223 mg/L, while outflow alkalinity was slightly lower overall, averaging 145 mg/L and ranging from 127 to 161 mg/L. Inflow and outflow pH varied considerably spanning a range of approximately 0.4 pH units (Figure 55). Mean inflow pH was 7.3, while values ranged from 7.0 to 7.7. Outflow pH averaged 7.5 and ranged from 7.0 to 7.8.

Color levels in both the inflow and outflow generally increased from the beginning of the POR through September 23, 2015, then declined (Figure 56). This contrasts with the 2014 –

2015 period, where color was at a maximum during July and August. For the current period, color was always lower at the outflow, and outflow color trended very closely with inflow color. Inflow color averaged 146 PCU and ranged from 93 to 275 PCU, while outflow color averaged 88 PCU and ranged from 46 to 174 PCU. As was the case during the 2014 – 2015 period, conductivity levels were similar in the inflow and outflow streams throughout the monitoring period (Figure 57). Inflow conductivity averaged 865 $\mu\text{S}/\text{cm}$ and ranged from 506 to 1010 $\mu\text{S}/\text{cm}$, while outflow conductivity averaged 881 $\mu\text{S}/\text{cm}$ and ranged from 770 to 992 $\mu\text{S}/\text{cm}$. Turbidity levels were very similar in the inflow and outflow streams (Figure 58). Turbidity levels declined for the early POR through October 2015, then began to increase. Inflow turbidity ranged from 1.4 to 5.4 NTU and averaged 3.0 NTU, while outflow turbidity ranged from 1.7 to 6.1 NTU and averaged 3.1 NTU.

Total N concentrations in the inflow and outflow streams were relatively constant over this POR and showed minor variability compared to other parameters (Figure 59). Inflow TN was almost always greater than outflow TN, indicating a consistent net removal of nitrogen. Mean inflow TN concentration was 1.64 mg/L, while concentrations ranged from 1.21 to 2.12 mg/L. Outflow TN concentration averaged 1.36 mg/L and ranged from 1.21 to 1.73 mg/L. These results are very similar to values report for the 2014 – 2015 period. NO_x concentrations were quite low in both inflow and outflow streams throughout the period, and were also lower than the 2014 – 2015 period (Figure 60). Inflow NO_x concentrations ranged from ≤ 0.016 to 0.038 mg N/L and averaged 0.017 mg N/L, while outflow NO_x ranged from ≤ 0.016 to 0.055 mg N/L and averaged 0.019 mg N/L, indicating no net reduction in NO_x concentrations. However, NO_x has been shown to be a very minor component of TN in the Wolff system, usually accounting for less than two percent of TN in the inflow and outflow streams.

Concentration of total Al in the Wolff HWTT inflow stream was relatively consistent, ranging from 9 to 108 $\mu\text{g}/\text{L}$ and averaged 35 $\mu\text{g}/\text{L}$, a result very similar to the previous period (Figure 61). Mean outflow TAl concentration was 371 $\mu\text{g}/\text{L}$, while the overall range was a low of 237 and a maximum value of 672 $\mu\text{g}/\text{L}$ on September 23, 2015. Sulfate concentrations in both the inflow and outflow streams generally declined over the period

(Figure 62). As in the previous period, outflow sulfate concentrations were generally 20-30 mg/L higher than inflow sulfate concentrations. Inflow sulfate concentrations averaged 74 mg/L and ranged from 30 to 102 mg/L, while outflow sulfate averaged 103 mg/L and ranged from 78 to 128 mg/L. From the beginning of the period to the final sample on June 29, 2016, inflow sulfate declined from 92.5 mg/L to 30 mg/L.

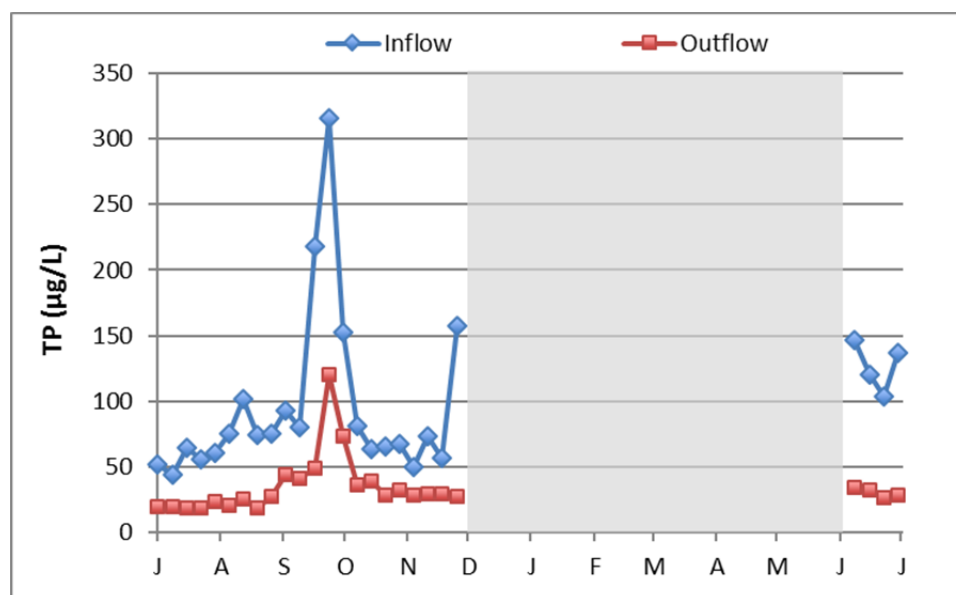


Figure 50. TP concentration in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

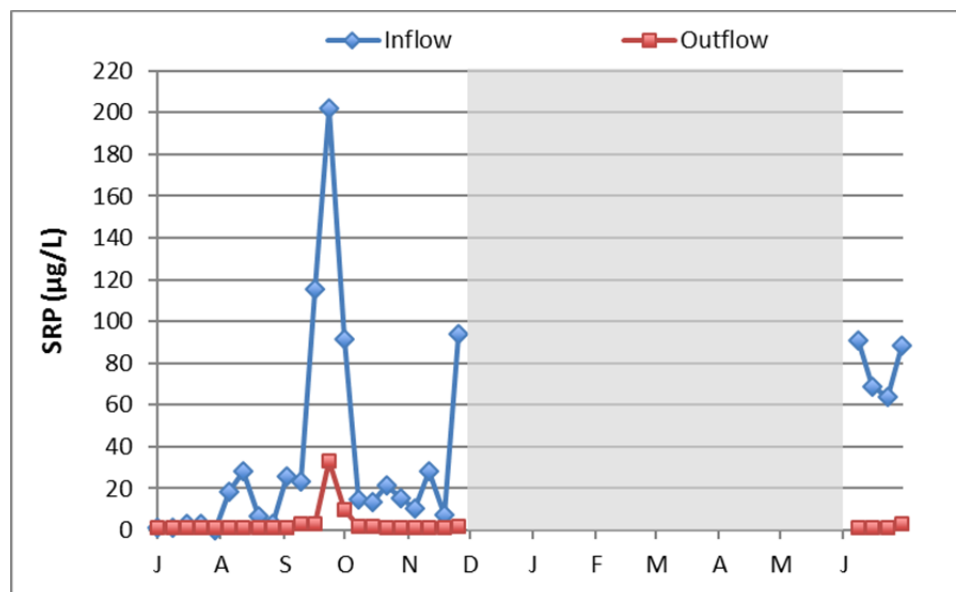


Figure 51. SRP concentration in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

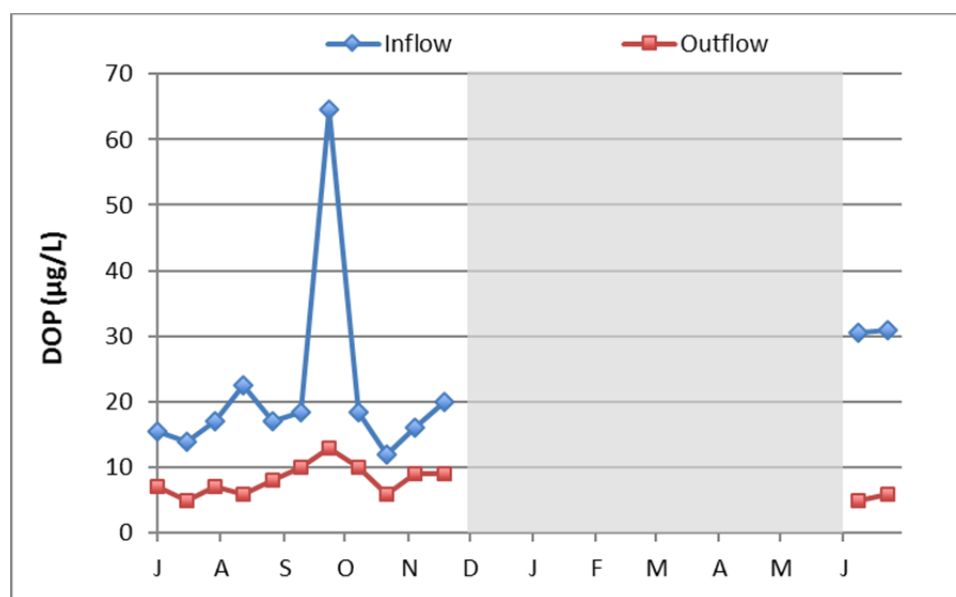


Figure 52. DOP concentration in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

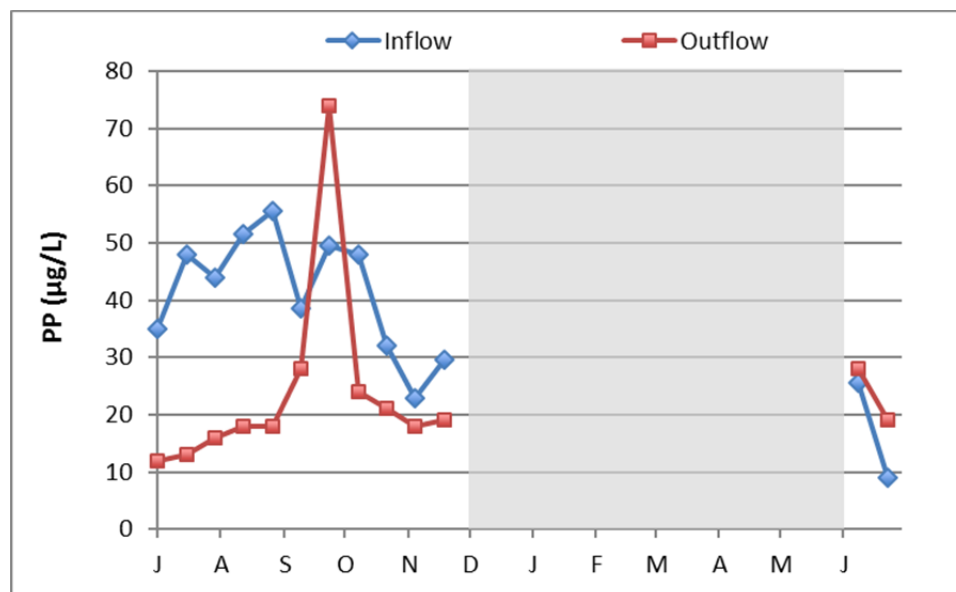


Figure 53. PP concentration in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

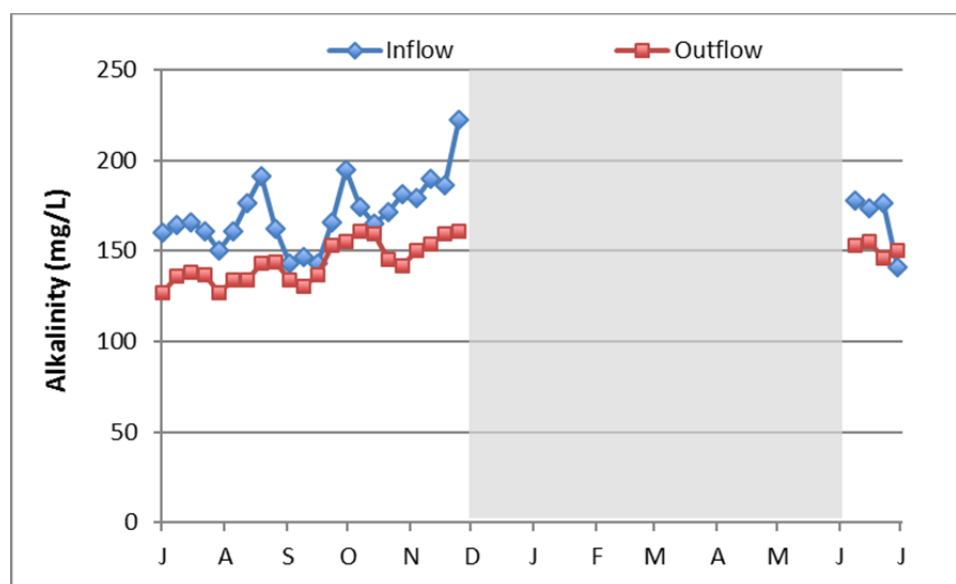


Figure 54. Alkalinity in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.



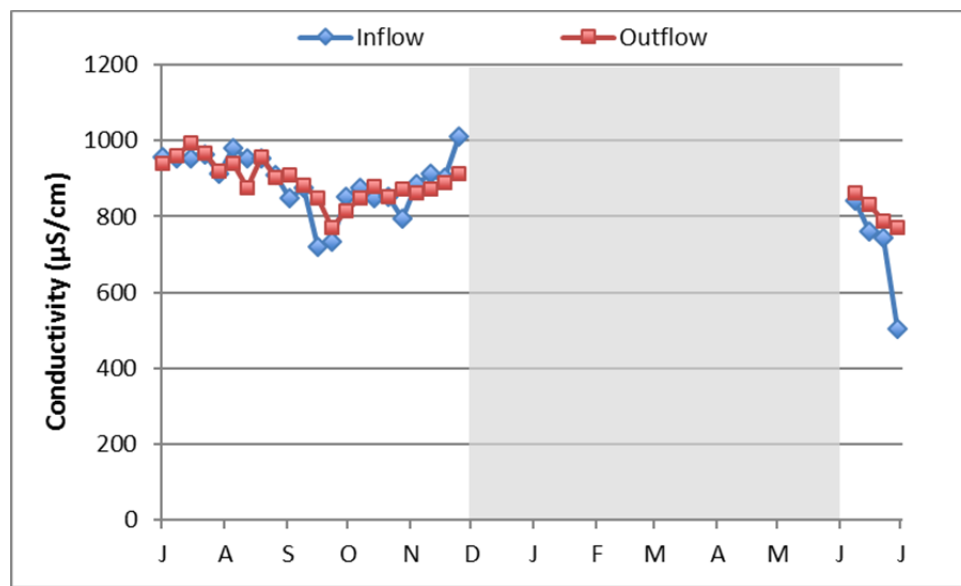


Figure 57. Conductivity in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

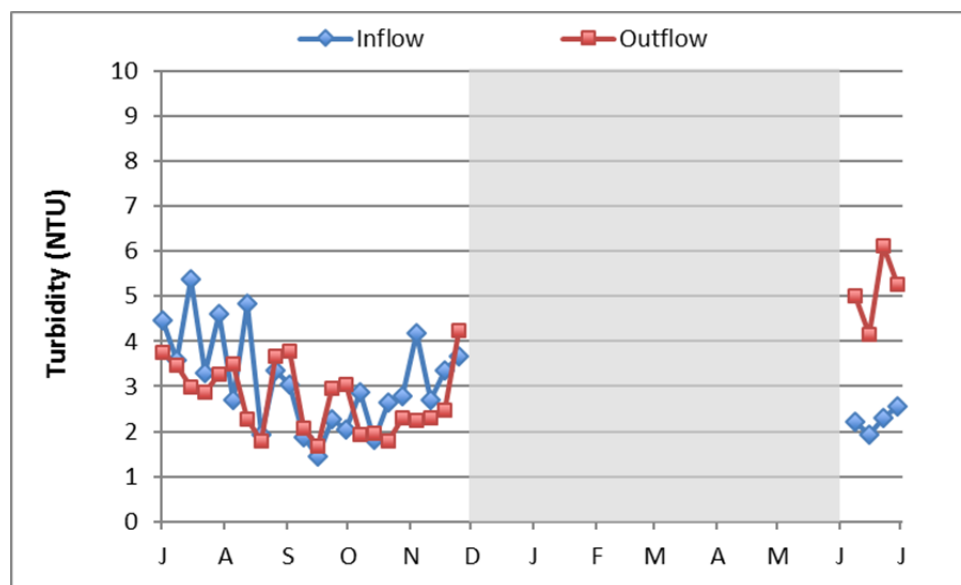


Figure 58. Turbidity in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.



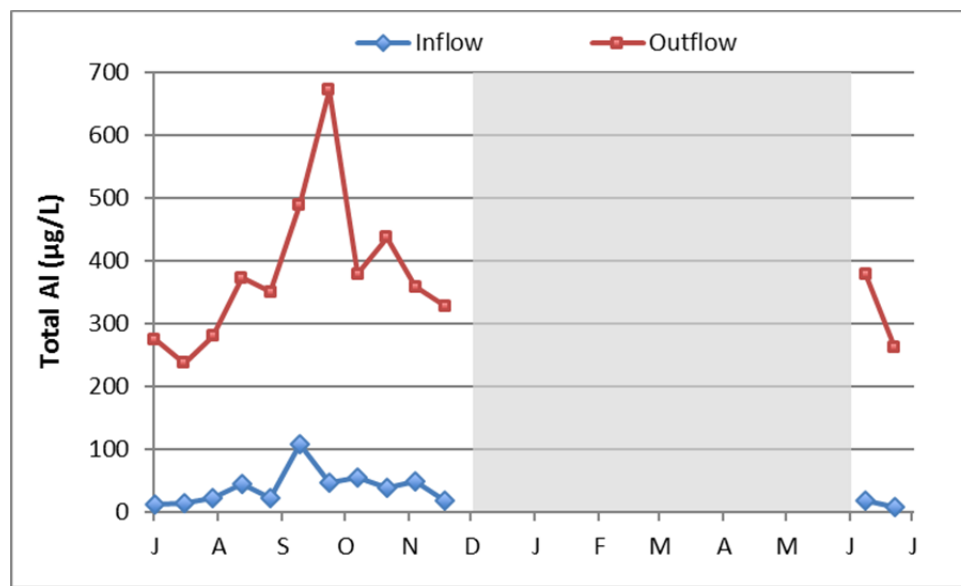


Figure 61. Total Al concentration in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

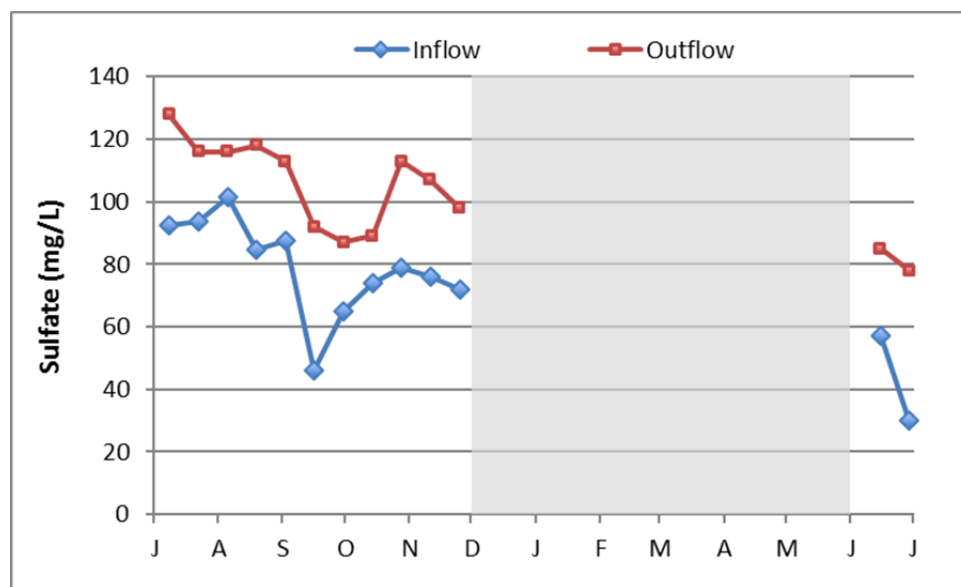


Figure 62. Sulfate concentration in the inflow stream (Wolff Ditch) and SAV outflow stream of the Site 6 HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

Total monthly flow volumes treated in the Wolff Ditch HWTT system during the POR ranged from 29.7 Mgal in June 2016 to 193.3 Mgal in September 2015 (Figure 63). Mean monthly flow volume, excluding the non-operational period of December 2015 – May 2016, was 91.8 Mgal, while total flow treated by the Wolff Ditch HWTT system during the POR was 550.8 Mgal.

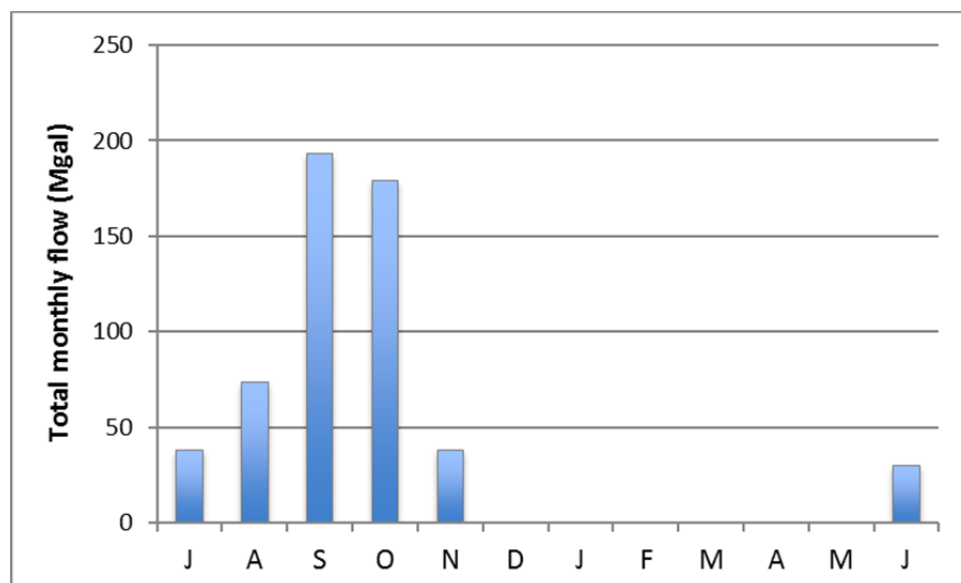


Figure 63. Total monthly flow treated by the Wolff Ditch (Site 6) HWTT system during the 2015-2016 POR. The facility was not operational during the period December 2015 – May 2016.

Routine Monitoring at the South Pond and Isolated Wetland Outflows

Elevated TP concentrations at the south pond outflow during late September reflect the high TP concentrations in the Wolff HWTT outflow stream at that time (Figure 64). For that period, attenuation of TP within the south pond resulted in a further reduction in concentration of approximately 70 µg/L. In general, there was a slightly increasing trend in outflow TP over the period. South pond outflow TP averaged 25 µg/L and ranged from 17 to 53 µg/L. As was the case in the previous monitoring period, TP concentrations at the wetland outflow were relatively stable, while maintaining an even lower outflow concentration within the range of 12-21 µg/L for the duration of the monitoring period.

Overall mean TP concentration was 25 µg/L for the south pond and 15 µg/L for the isolated wetland.

SRP concentrations in both the south pond and wetland were non-detectable (≤ 2 µg/L) during the majority of sampling events (overall means ≤ 2 µg/L) (Figure 65). No evidence of the September 23, 2015 increase in south pond outflow TP was observed for SRP. That “spike” in TP represented an approximately 30 µg/L increase in TP, and apparently consisted almost entirely of PP, as discussed below. Mean SRP concentrations at the south pond and wetland outflows were both below the limit of detection (≤ 2 µg/L). The highest value observed for both the inflow and outflow was 3 µg/L, thus both the south pond and isolated wetland are maintaining extremely low SRP concentrations. DOP concentrations were similar in the south pond and wetland throughout the period, ranging from 3 to 9 and 2 to 12 µg/L, respectively (Figure 66). Mean DOP concentrations during the monitoring period were 6 µg/L for both south pond and wetland. As was observed for the previous sampling period, particulate P represented the predominant fraction of TP in the south pond and wetland. The only remaining trace of the September 23, 2015 spike in TP is a 25 µg/L spike in PP on the same date. The temporal pattern of PP in the south pond outflow closely followed the temporal pattern of PP in the Wolff ditch SAV outflow (Figure 67). On average, treatment in the south pond removed only an additional 5 µg/L of PP. PP concentrations in the south pond averaged 19 µg/L and ranged from 9 to 43 µg/L, while PP in the wetland averaged 8 µg/L and ranged from 5 to 12 µg/L.

Alkalinity levels followed similar trends in the south pond and isolated wetland, with an increase in alkalinity observed from the beginning of the period, through late November 2015 (Figure 68). Alkalinity was generally lower in the wetland than in the south pond. Values ranged from 122 to 163 mg/L in the south pond, compared to a range of 85 to 162 mg/L in the isolated wetland. Mean alkalinity in the south pond was 141 mg/L, while the mean value for the wetland was 128 mg/L. pH at the south pond outflow generally declined, from 8.4 at the beginning of the period of record, to 7.0 in late November 2015 (Figure 69). By late June 2016, it had increased to 8.5. As in the previous period, pH was

consistently lower in the wetland, where values ranged from 7.0 to 8.0 and averaged 7.5. In comparison, pH in the south pond ranged from 7.0 to 8.6 and averaged 8.0.

Color declined in July, then began a steady increase with maximum values reached in late September 2015, and then declined through late November (Figure 70). During the previous reporting period, color concentrations at both the south pond and isolated wetland outflows increased during July and August, and subsequently decreased through September. For this sampling period, that pattern seems to have been delayed one month, perhaps reflecting differences in rainfall patterns for the two periods. Color was consistently lower in the isolated wetland; mean color concentrations in the south pond and wetland were 88 and 69 PCU, respectively. Values ranged from 43 to 123 PCU in the south pond and 33 to 109 in the wetland. Conductivity levels were very similar for the south pond and isolated wetland, and generally declined over the POR, in both the south pond and isolated wetland (Figure 71). Conductivity in the south pond ranged from 693 to 1010 $\mu\text{S}/\text{cm}$ and averaged 877 $\mu\text{S}/\text{cm}$, while levels in the wetland ranged from 622 to 1040 $\mu\text{S}/\text{cm}$ and averaged 871 $\mu\text{S}/\text{cm}$. Turbidity in the wetland was always lower than in the south pond, due to enhanced settling of particulates and decreased light availability for phytoplankton growth in the wetland (Figure 72). South pond turbidity ranged from 2.5 to 9.2 NTU and averaged 4.6 NTU during the course of the monitoring period. Turbidity in the isolated wetland outflow ranged from 0.7 to 3.5 NTU and averaged 1.6 NTU.

TN levels in the south pond and wetland were confined to a relatively narrow range of concentrations during the monitoring period, with concentrations being slightly lower overall in the wetland, a result also seen in the previous period (Figure 73). TN concentrations in the south pond ranged from 0.97 to 1.71 mg/L and averaged 1.39 mg/L, compared to a range of 1.11 to 2.01 mg/L and mean of 1.29 mg/L for the isolated wetland. With the exception of one relatively high sample (7/29/2015 – 0.094 mg N/L) concentrations of NO_x were quite low in both the south pond and wetland; levels were most often below detection (Figure 74). With the exception of the previously mentioned sample, maximum values of NO_x were less than 0.023 mg N/L in the south pond and wetland throughout the monitoring period.

Total Al in the south pond outflow fluctuated from a minimum of 155 $\mu\text{g/L}$ to a maximum of 319 $\mu\text{g/L}$, with a mean value of 213 $\mu\text{g/L}$. Total Al at the wetland outflow was lower in comparison, ranging from 25 to 238 $\mu\text{g/L}$ and averaging 126 $\mu\text{g/L}$ during the monitoring period (Figure 75). Sulfate concentrations, measured in the south pond outflow showed a steady increase from 91 to 140 mg/L in the previous sampling period, then a decline in this period from 140 mg/L to 79 mg/L by late June 2016. Overall, sulfate average concentration was 106 mg/L (Figure 76).

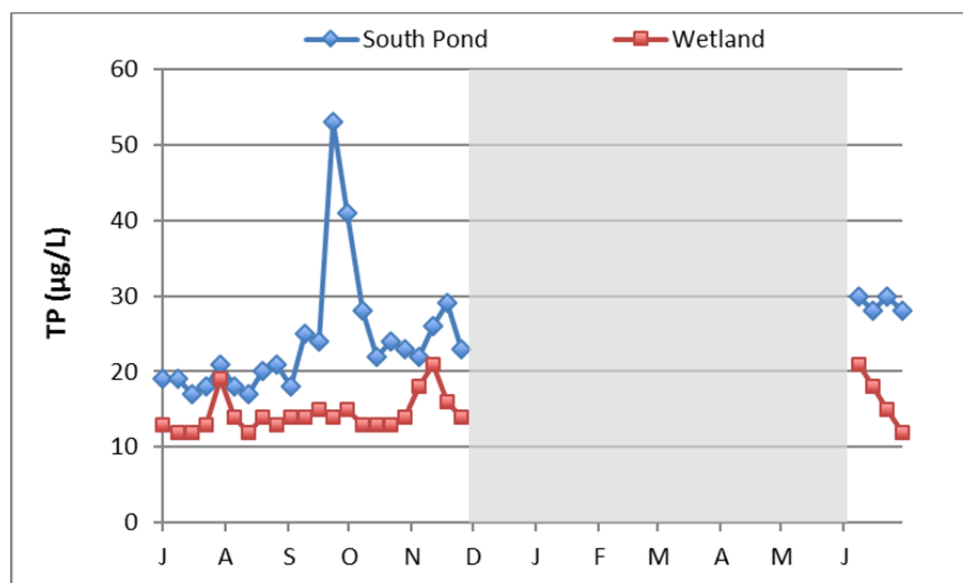


Figure 64. TP concentration in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

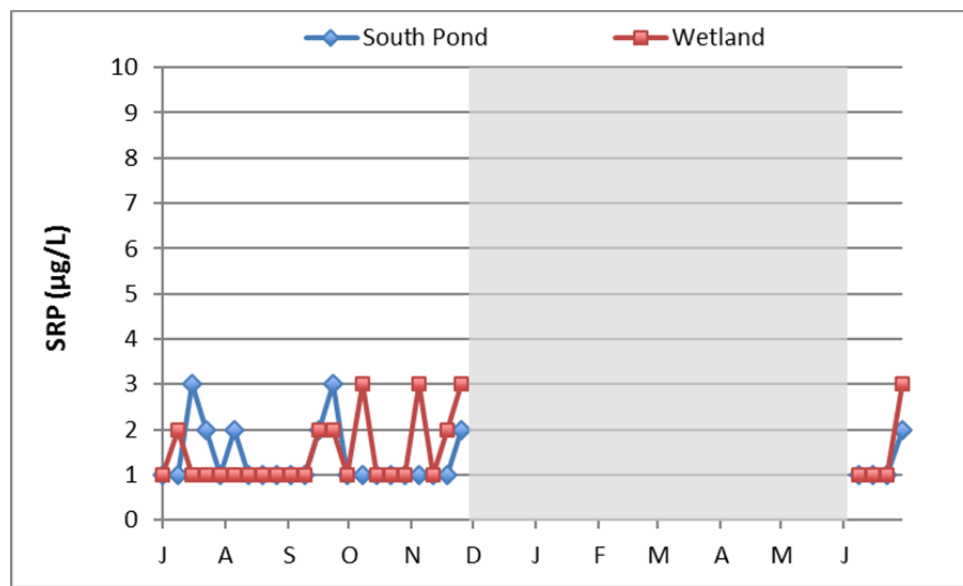


Figure 65. SRP concentration in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

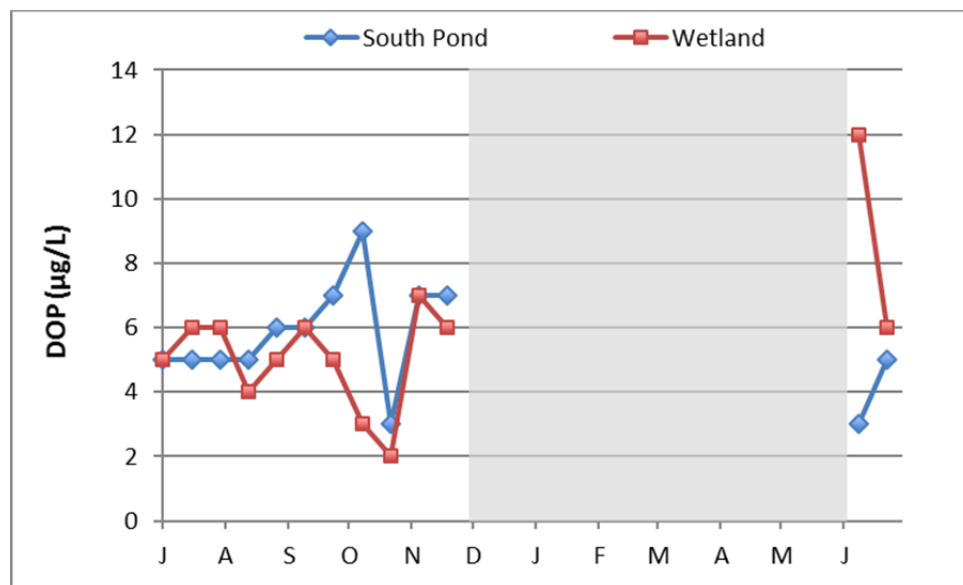


Figure 66. DOP concentration in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

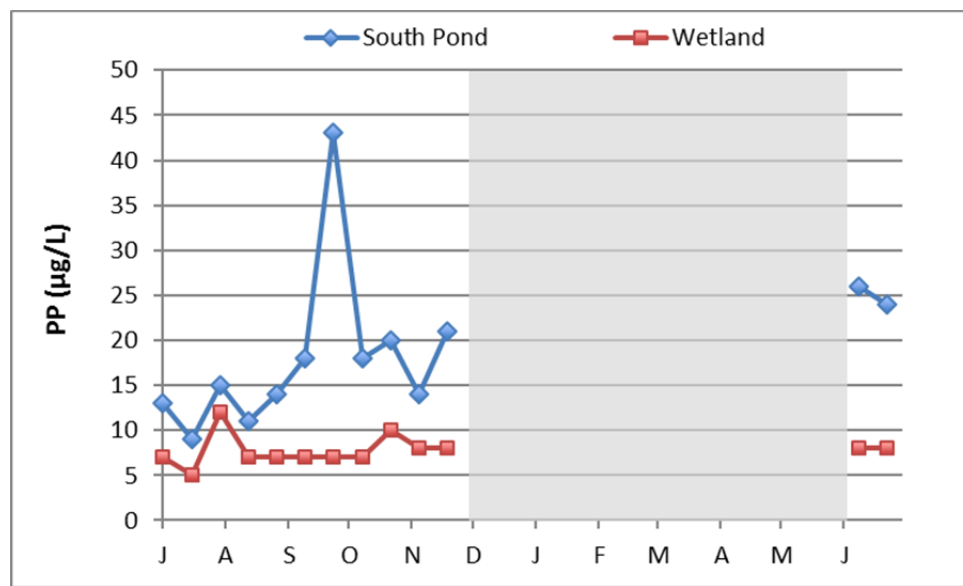


Figure 67. PP concentration in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

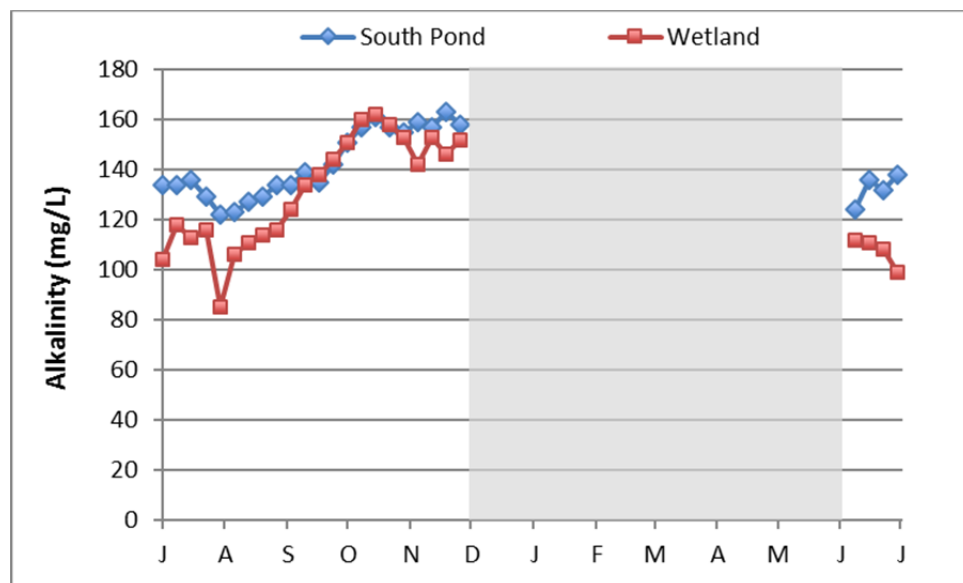


Figure 68. Alkalinity in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

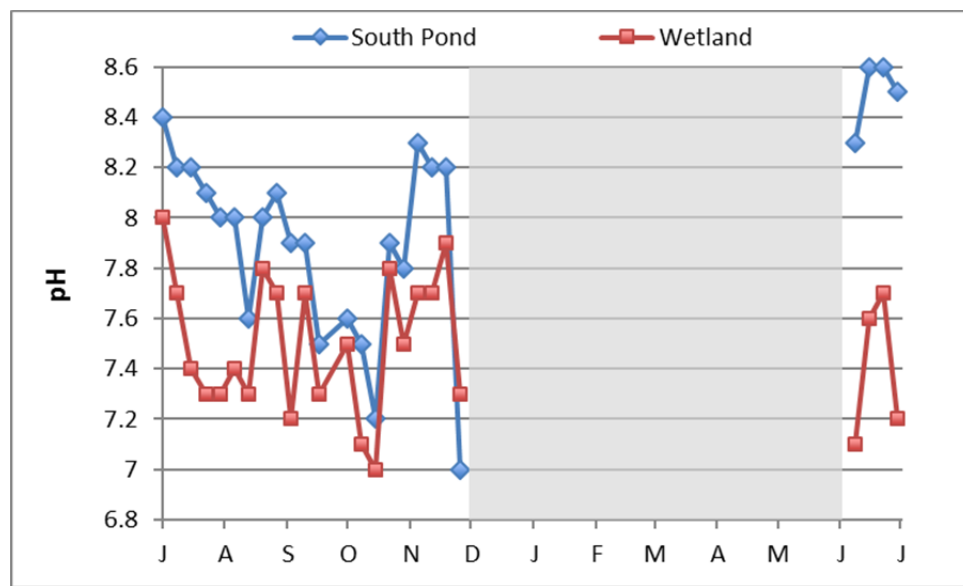


Figure 69. pH in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

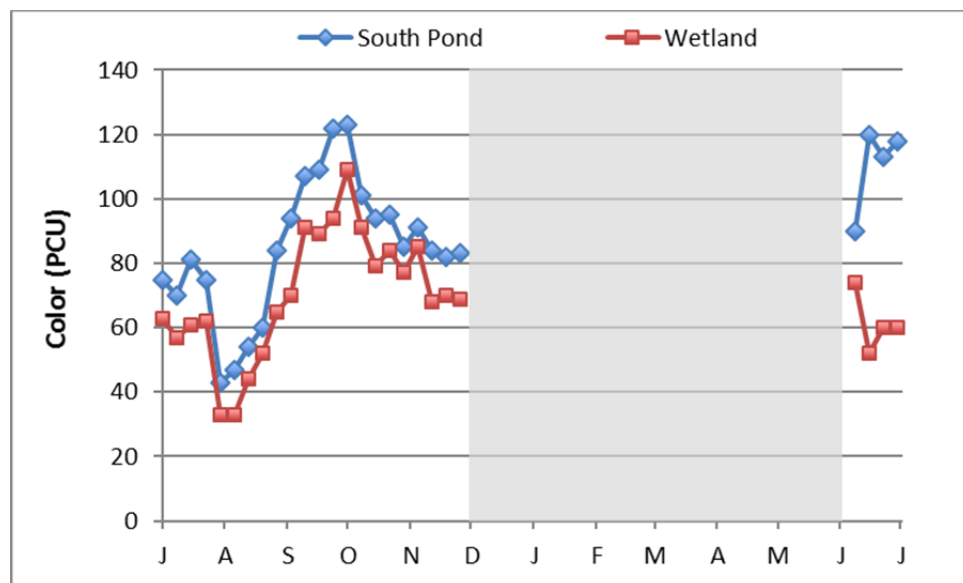


Figure 70. Color in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

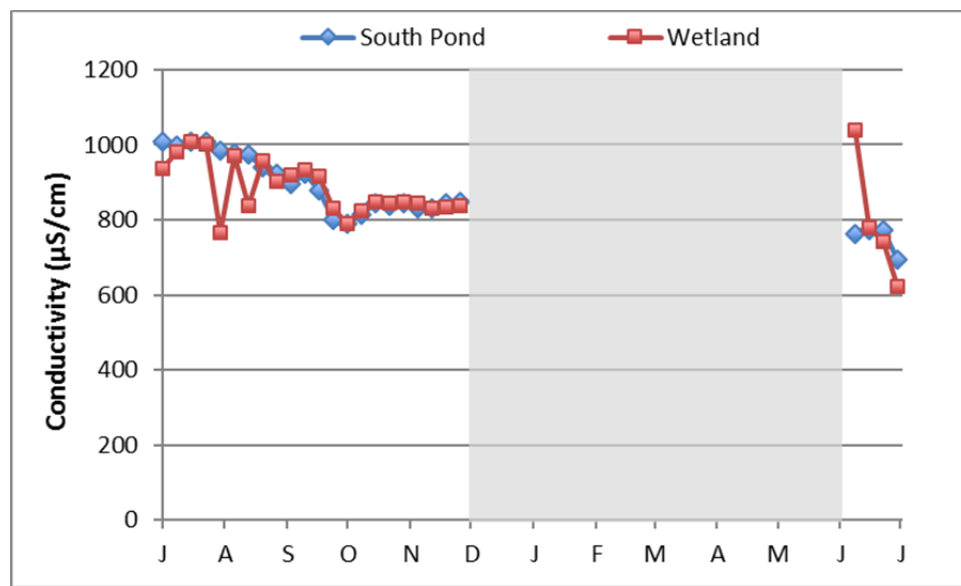


Figure 71. Conductivity in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

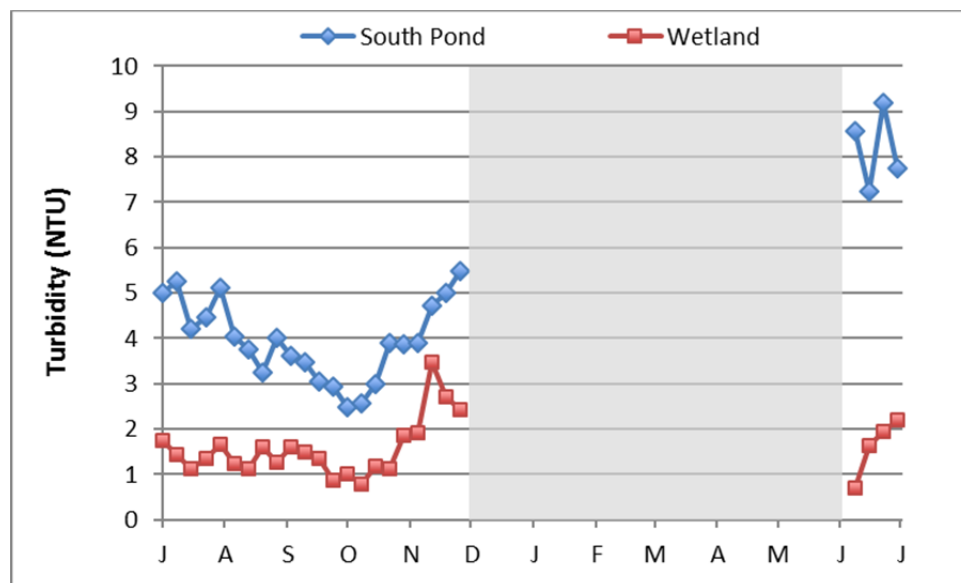


Figure 72. Turbidity in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

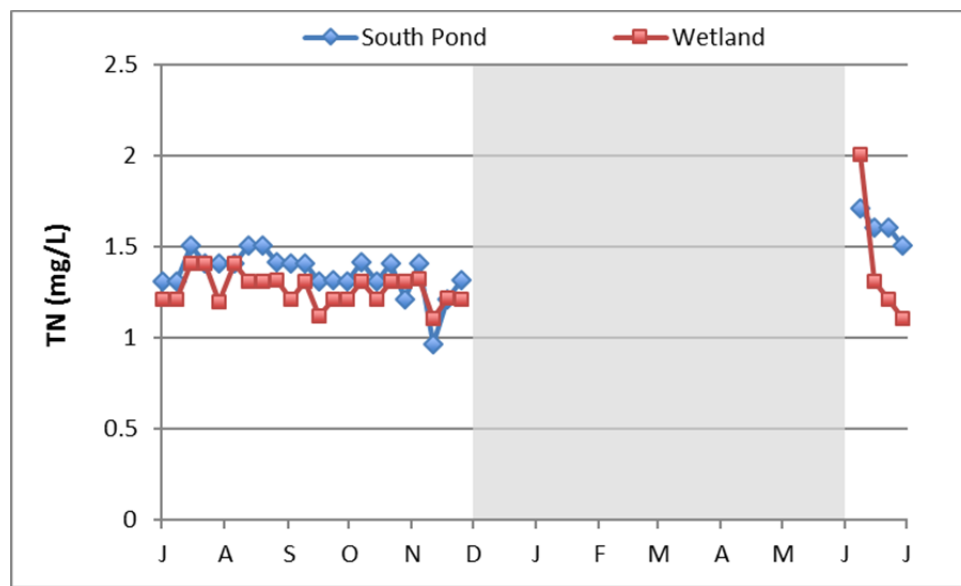


Figure 73. TN concentration in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

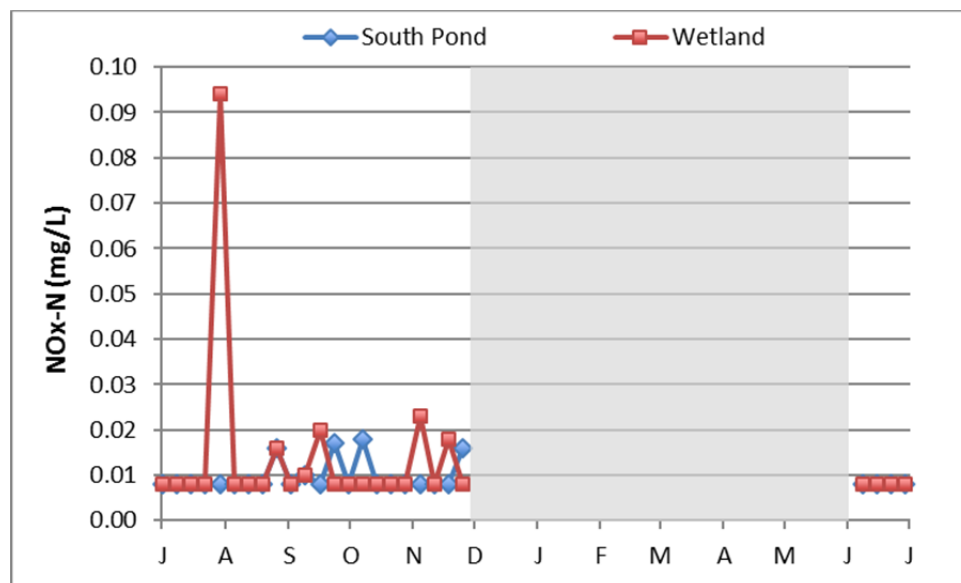


Figure 74. NO_x-N concentration in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

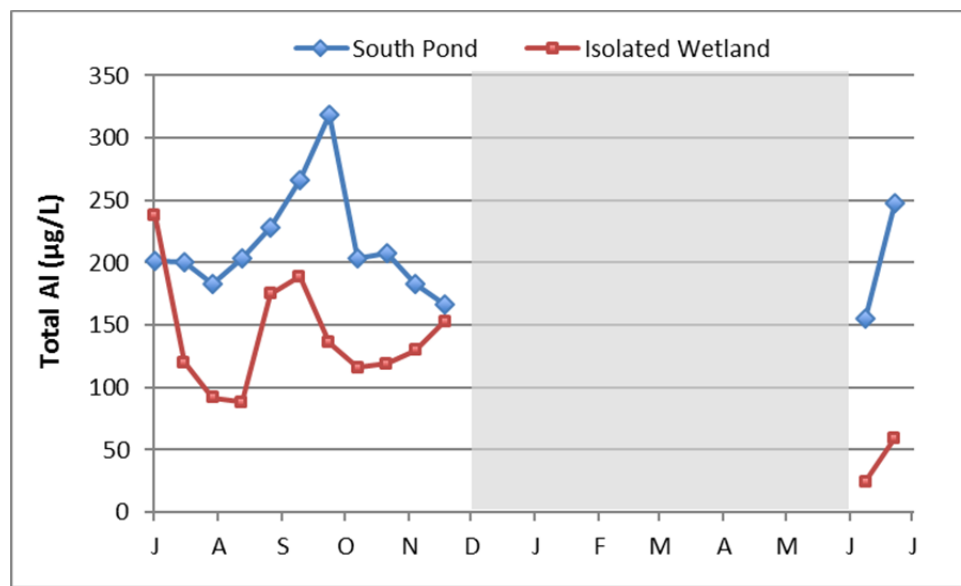


Figure 75. Total Al concentration in the outflow stream of the South Pond and Isolated Wetland, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

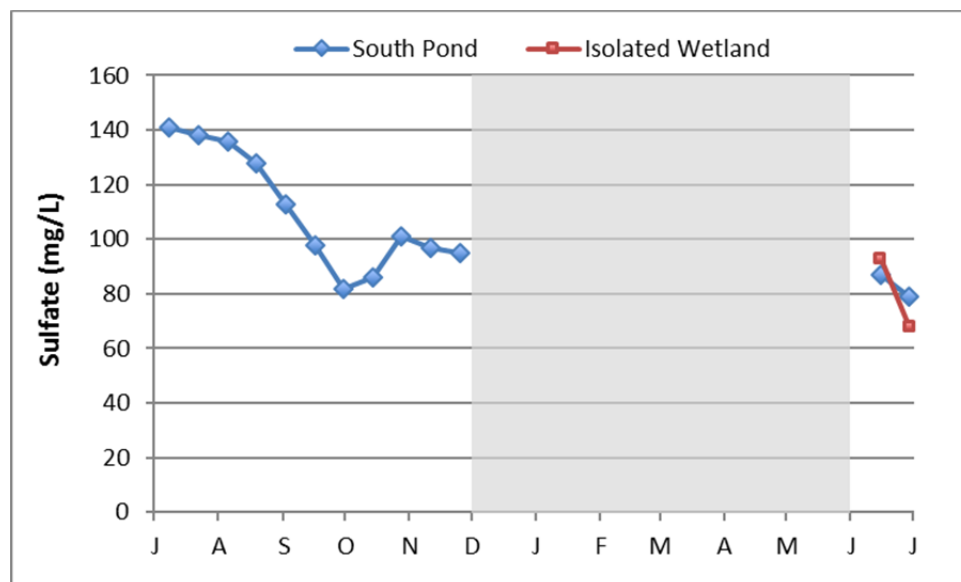


Figure 76. Sulfate concentration in the outflow stream of the South Pond, downstream from the Site 5 and Site 6 HWTT systems, during the 2015-2016 POR. Shaded area indicates the non-operational period.

Site 7: Grassy Island HWTT Facility

In 2011, we constructed a full-scale (10 cfs) Hybrid Wetland Treatment Technology (HWTT) facility on the District owned Grassy Island parcel north of the City of Okeechobee. The project site is part of a large parcel of land (see Section 20, Township 36 South, Range 35 East) adjacent to Taylor Creek, north of the location of the creek passage under US Hwy 441. An aerial photo of the Phase I HWTT facility (now designated as the “eastern flow path”) is shown in Figure 77. Briefly, the design for the HWTT facility is as follows. Water pumped from Taylor Creek flows first through a limerock bed, after which it is dosed with coagulant and fed into one of three plastic-lined contact chambers. The contact chambers overflow into a settling pond, and then into an adjacent FAV pond. The final unit process is a SAV pond, which ultimately discharges back into Taylor Creek downstream of the inflow pump station location. Figure 78 through Figure 81 show the major facility components of the eastern flow path.

Phase III construction (pump station enhancements, and expansion of the western components to 15 cfs) was completed in June 2013, providing a total system capacity of 30 cfs. Early in 2015, outflow region limerock beds were installed in the eastern and western SAV ponds to provide additional system buffering. A photo of the Phase III Grassy Island HWTT facility, which includes both the eastern and western flow paths, is shown in Figure 82.

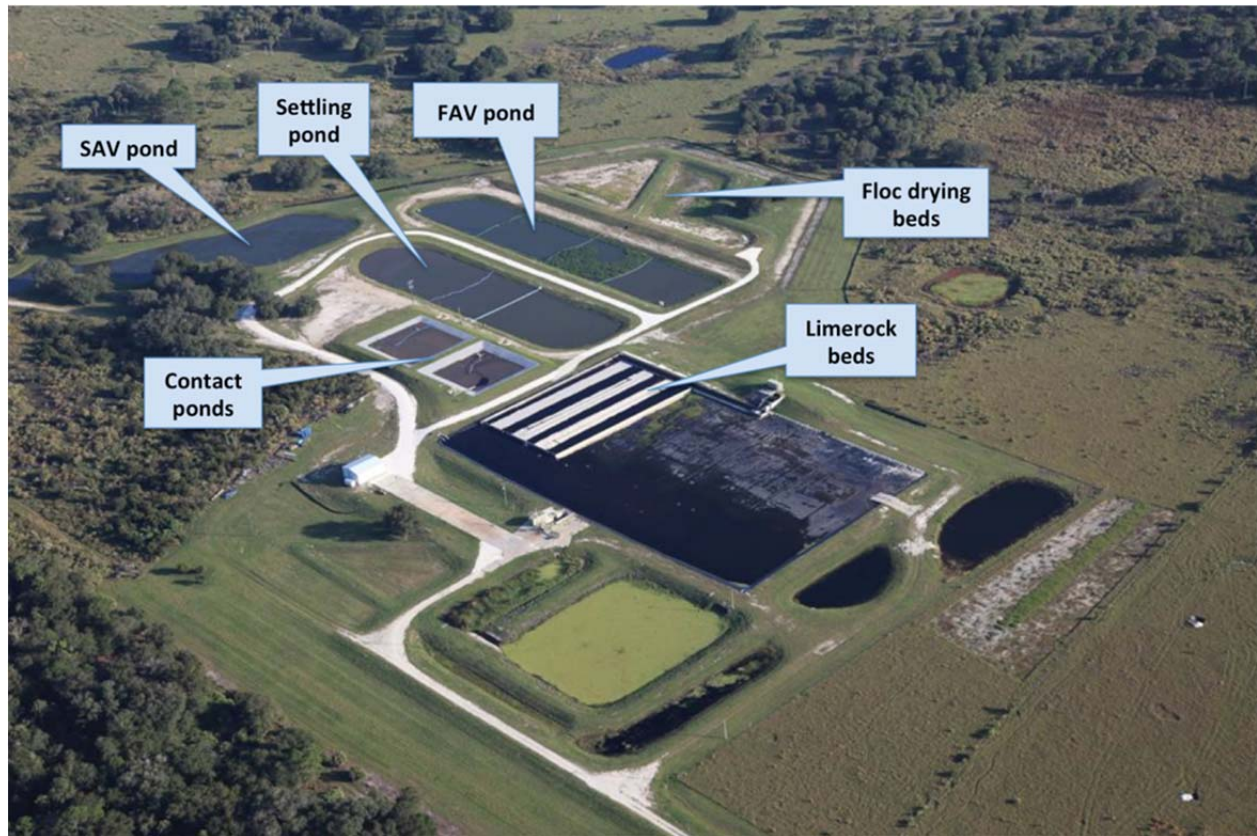


Figure 77. Aerial view of the Phase I Grassy Island HWT facility. These components now comprise the “eastern flow path”.



Figure 78. The limerock bed component of the Grassy HWTT facility.



Figure 79. The eastern Grassy HWTT settling pond, with floating “floc line” that conveys wet floc from the contact ponds to the drying bed.



Figure 80. The eastern Grassy HWT facility FAV pond with three floating vegetation booms.



Figure 81. The eastern Grassy HWTT facility SAV pond (top), with the limerock bed (bottom) that was installed early in 2015.



Figure 82. Photo of the final build-out of the Phase III Grassy Island HWT facility, completed in June 2013. Taylor Creek is at the bottom of the photo.

During the current period, the Grassy Island HWT system received dosing of alum on an intermittent basis. This provided an overall effective alum dose of 10.5 mg Al/L, and monthly means ranging from 9.2 to 13.4 mg Al/L. In addition to alum, PAC was used as a secondary coagulant via intermittent dosing. This provided an effective PAC dose with an overall mean of 2.4 mg Al/L and a monthly range from 1.4 to 5.1 mg Al/L during the current period.

During the period from December 1, 2015 through May 17, 2016 system operation was suspended due to lack of funding. The facility was re-started May 18, 2016, and treatment system operations were resumed. Daily system flow status is provided in the Chapter II appendices.

HWTT system inflow and outflow water samples were collected via grab sampling for chemical analyses on a weekly or biweekly basis. Samples were analyzed for total phosphorus (TP) soluble reactive P (SRP), pH and turbidity, on a weekly basis. Water samples were also analyzed for dissolved organic P (DOP=TSP-SRP, where TSP is total soluble P), particulate P (PP=TP-TSP), alkalinity, color, conductivity, nitrate + nitrite N ($\text{NO}_x\text{-N}$), ammonia-N, and TKN on a biweekly basis. Total N (TN) was calculated as the sum of NO_x and TKN. Total aluminum (Al) and sulfate (SO_4) also were monitored biweekly, for permit compliance purposes. Water chemistry data for the July 2015 – June 2016 monitoring period are presented in Figure 83 through Figure 96. Additional data, related to compliance monitoring, are presented later in this report.

Inflow TP concentrations in the Grassy Island HWTT system were generally highest during the 2015 wet season, but were also quite variable throughout the monitoring period (Figure 83). Inflow TP ranged from 331 to 932 $\mu\text{g/L}$ and averaged 486 $\mu\text{g/L}$ and were overall greater than in the previous monitoring period. Outflow TP concentrations were almost always less than 100 $\mu\text{g/L}$, averaging 37 $\mu\text{g/L}$ and ranging from 6 to 153 $\mu\text{g/L}$. Inflow SRP concentration was highly correlated ($r=0.96$) with inflow TP, as SRP was the predominant P fraction in the inflow stream (Figure 84). Maximum SRP concentrations were measured during June. Mean inflow SRP was 372 $\mu\text{g/L}$, while concentrations ranged from 226 to 768 $\mu\text{g/L}$. Outflow samples were consistently quite low, with nine of 28 samples outflow samples below the limit of detection (≤ 2 $\mu\text{g/L}$). The maximum outflow SRP concentration was 20 $\mu\text{g/L}$ and the mean was 6 $\mu\text{g/L}$.

Inflow DOP concentrations declined from the beginning of the period through the end of November, with a large increase in June 2016 (Figure 85). Inflow DOP concentrations ranged from 33 to 104 $\mu\text{g/L}$ and averaged 61 $\mu\text{g/L}$, while outflow DOP ranged from ≤ 2 to 10 $\mu\text{g/L}$ and averaged 6 $\mu\text{g/L}$. Inflow PP concentrations were stable through November 2105, but increased dramatically in late June 2016 (Figure 86). For all except two samples, outflow PP was much less than inflow PP. Much higher outflow PP concentrations were seen on September 25, 2015 and again on June 15, 2016. The overall range in inflow PP

concentration was 12 to 106 µg/L, compared with a range of <2 to 132 µg/L in the outflow stream. Mean PP levels were 50 and 24 µg/L at the system inflow and outflow, respectively.

Alkalinity exhibited a generally increasing trend from early in the period through the end of November, with declines in June 2016 (Figure 87). Inflow alkalinity ranged from 31 to 117 mg/L and averaged 65 mg/L. With one exception, alkalinity levels were lower in the outflow stream, with less temporal variability, than in the inflow water. Mean outflow alkalinity was 31 mg/L, while levels ranged from 10 to 63 mg/L. Both inflow and outflow pH trended in similar fashion to inflow alkalinity, with outflow pH slightly lower in general than inflow pH (Figure 88). Inflow pH averaged 6.8 and ranged from 6.4 to 7.7, while outflow pH averaged 6.6 and ranged from 6.0 (during a single sampling event) to 7.1.

Inflow and outflow color mostly varied independently (Figure 89). Inflow color declined from the beginning of the POR through November, whereas outflow color was mostly stable. The mean inflow color concentration was 535 PCU, with values ranging from 222 to 962 PCU during the monitoring period. Outflow color levels reflected a high level of color removal by the Grassy HWTT system. Values ranged from 23 to 295 PCU and averaged 84 PCU during the course of the monitoring period. Conductivity in both the inflow and outflow streams exhibited an overall increasing trend during the monitoring period, but with declines in June 2016 that were similar to those observed in June 2015 (Figure 90). The sharp decrease in color at the end of the monitoring period coincided with a mid-June spike in inflow TP, possibly due to a flush of stormwater runoff in upstream areas of the watershed. Outflow conductivity was generally slightly higher than inflow conductivity. Mean conductivity levels were 380 and 428 µS/cm, respectively, in the inflow and outflow streams. Overall ranges for inflow and outflow conductivity were 207 to 569 and 237 to 635 µS/cm, respectively. Turbidity levels were much more variable in the system inflow, most notably from the beginning of the period through November 2015, while outflow turbidity levels were elevated primarily during early September 2015, but were relatively low and stable during the remainder of the monitoring period (Figure 91). Mean inflow turbidity was 8.2 NTU, while values ranged from 3.8 to 15.5 NTU. Outflow turbidity averaged 2.6 NTU and ranged from 0.7 to 9.5 NTU.

Inflow and outflow TN were stable throughout the monitoring period, with only a few values that departed significantly from the mean values at the respective monitoring locations. (Figure 92). Outflow TN concentrations were always lower than inflow TN, reflecting a high level of N removal in the Grassy HWTT system. Mean TN concentrations at the inflow and outflow were 2.61 and 1.17 mg/L, respectively, reflecting a 55% average reduction in TN. Inflow TN ranged from 1.48 to 3.50 mg/L, while outflow TN ranged from 0.93 to 2.02 mg/L. There was a very large and conspicuous increase in inflow NO_x concentrations from the beginning of the POR through late October, with a decline thereafter (Figure 93). Outflow NO_x followed this trend very closely. Given that phosphorus fractions were either stable or declined in this period, the cause of the dramatic increase in NO_x probably merits further investigation. Removal of NO_x in this HWTT and others has been low, and in some cases there has actually been an increase in NO_x within the system. This may be due to accumulation of settled nitrogeous organic matter that undergoes decay and mineralization, release of ammonia, and then subsequent nitrification in the aerobic water column to NO_x. Inflow NO_x concentrations ranged from 0.023 to 0.940 mg N/L and averaged 0.367 mg N/L. Outflow NO_x concentrations ranged from 0.251 to 0.570 mg N/L and averaged 0.251 mg N/L. Ammonia-N concentrations at the inflow exhibited a slight downward trend prior to a spike in concentration during late December and early January (Figure 94). Note that a lack of significantly increasing ammonia-N does not preclude the possibility that substantial nitrification is taking place. The kinetics of nitrification could be rapid enough that appreciable ammonia-N accumulation in the water column does not occur. Outflow ammonia-N concentrations were substantially lower than inflow concentrations during the course of the monitoring period. Mean inflow and outflow ammonia-N concentrations were 0.232 and 0.045 mg N/L, respectively. Inflow concentrations ranged from 0.079 to 0.824 mg N/L, while outflow concentrations ranged from 0.006 to 0.307 mg/L.

Total Al and sulfate were monitored in the Grassy HWTT inflow and outflow streams, in association with the use of aluminum sulfate (alum) and polyaluminum chloride (PAC) as coagulants. Inflow total Al (TAl) concentrations ranged from 151 to 428 µg/L and averaged 260 µg/L during the monitoring period (Figure 95). Outflow TAl concentrations were

significantly elevated on two sample dates; September 2, 2015 and June 15, 2016. Dissolved organic matter (measured as color) tends to inhibit floc formation, and may have been a contributing factor to elevated outflow TAl in these cases. Effects of color and alkalinity on TAl levels are addressed in greater detail in the Discussion section of this report. The overall range of outflow TAl concentrations was 72 to 2480 µg/L, with a mean of 621 µg/L (median = 124 µg/L). There was no apparent trend in sulfate concentration over this period of record. Outflow sulfate concentration though always greater, closely followed the temporal pattern of inflow sulfate concentration (Figure 96). Inflow sulfate concentrations averaged 27 mg/L and ranged from 15 to 48 mg/L. Outflow sulfate concentrations averaged 81 mg/L and ranged from 53 to 119 mg/L.

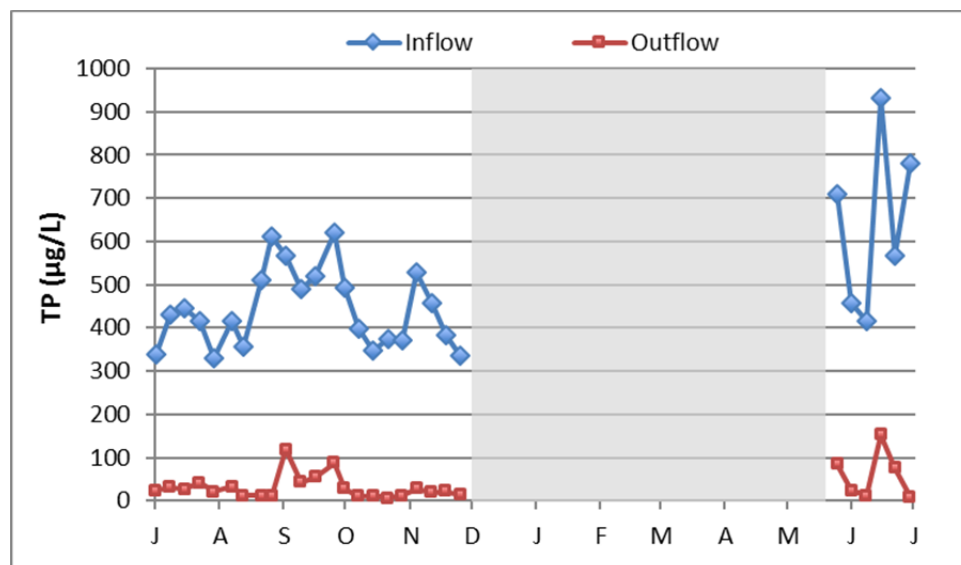


Figure 83. TP concentration in the inflow and outflow streams at the Grassy Island HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

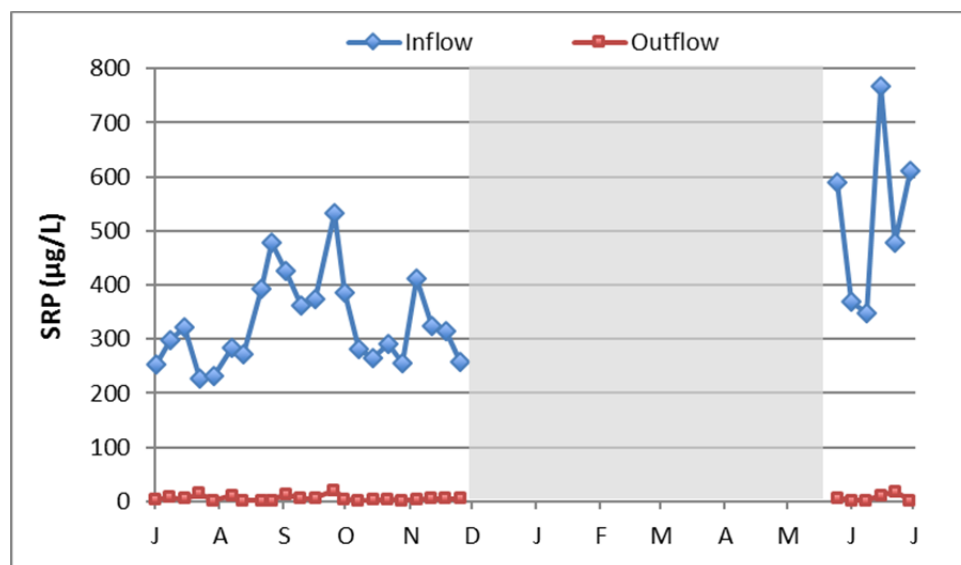


Figure 84. SRP concentration in the inflow and outflow streams at the Grassy Island HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

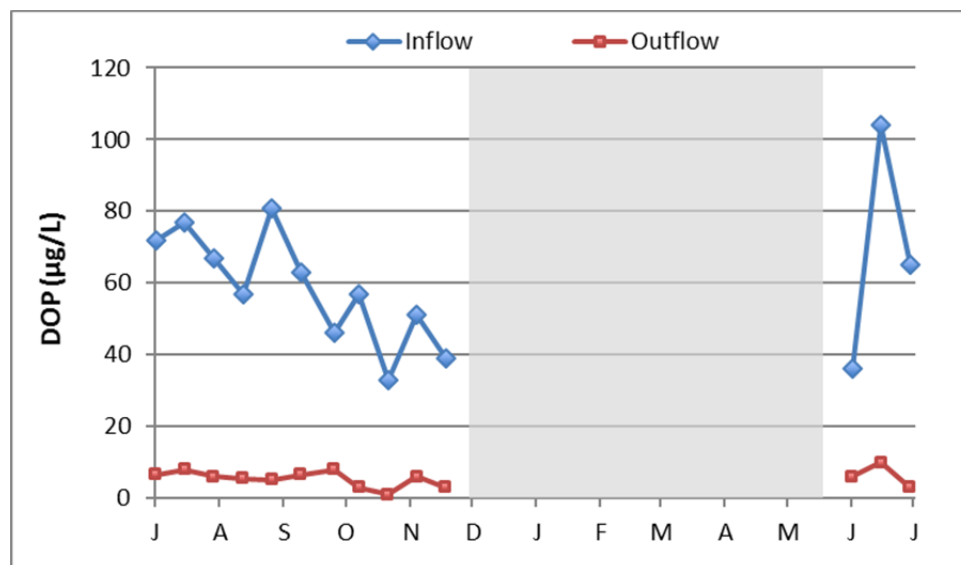


Figure 85. DOP concentration in the inflow and outflow streams at the Grassy Island HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

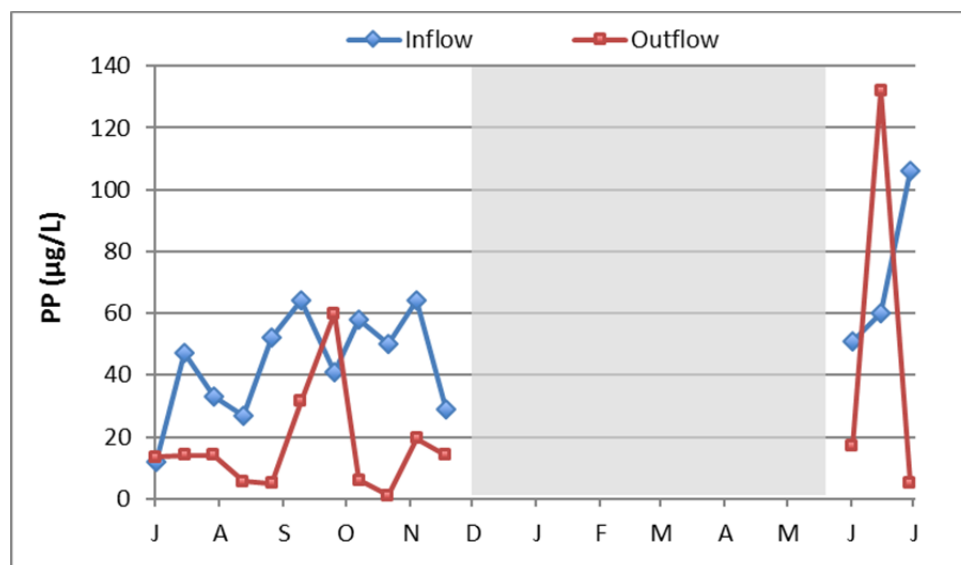


Figure 86. PP concentration in the inflow and outflow streams at the Grassy Island HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

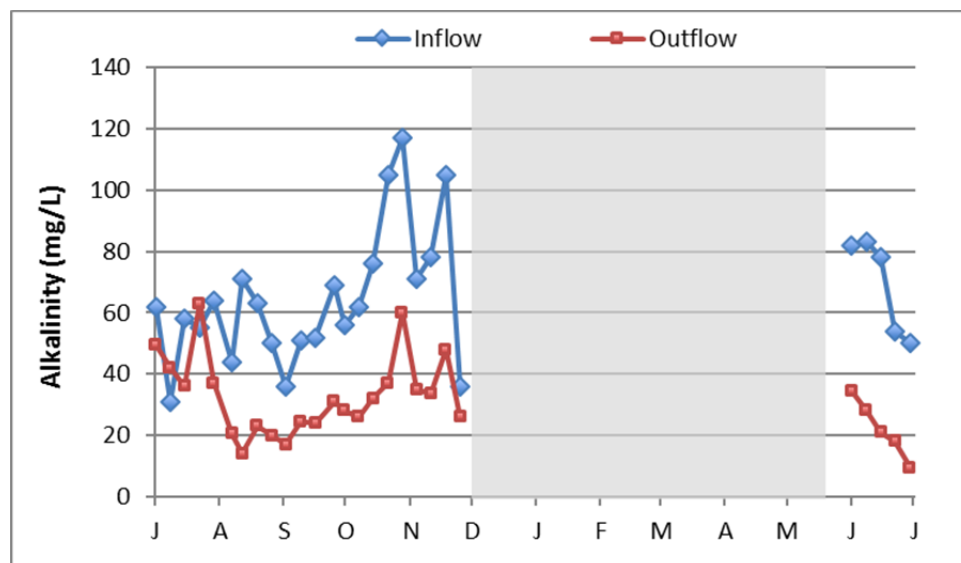


Figure 87. Alkalinity in the inflow and outflow streams at the Grassy Island HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

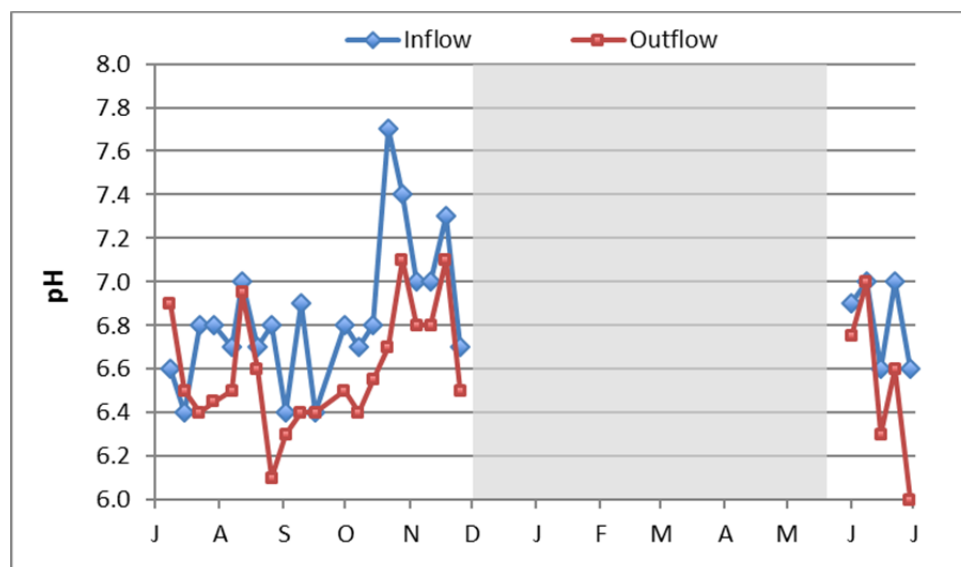


Figure 88. pH in the inflow and outflow streams at the Grassy Island HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

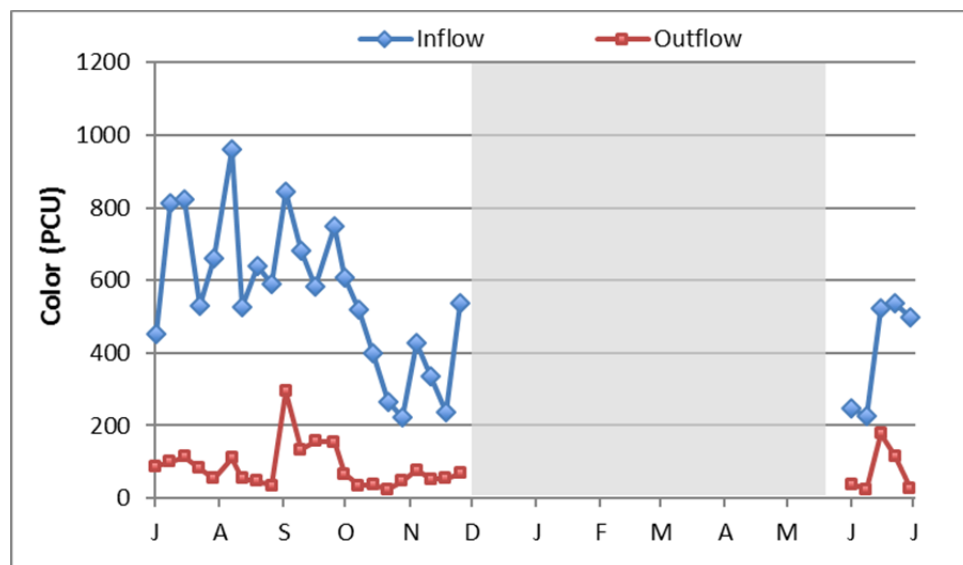


Figure 89. Color in the inflow and outflow streams at the Grassy Island HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

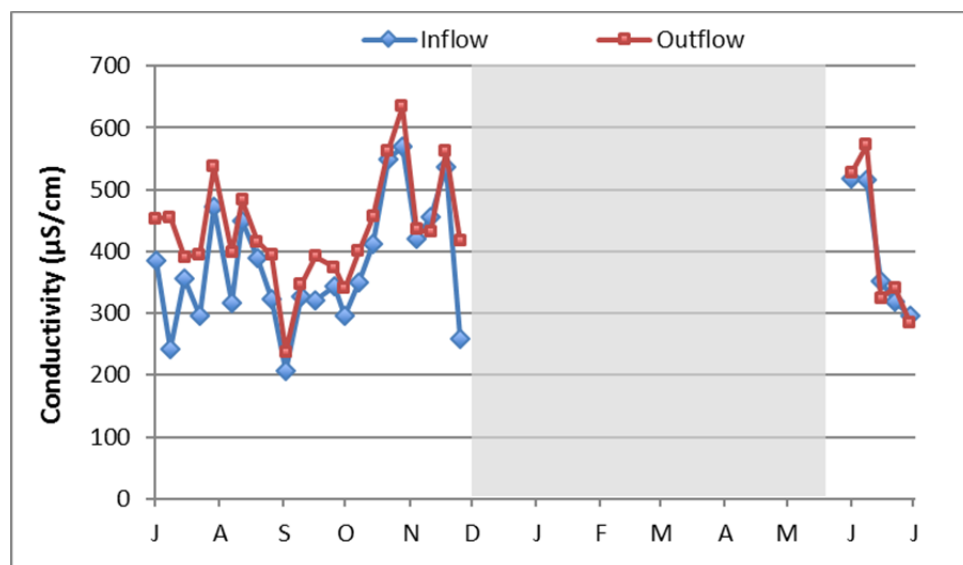


Figure 90. Conductivity in the inflow and outflow streams at the Grassy Island HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

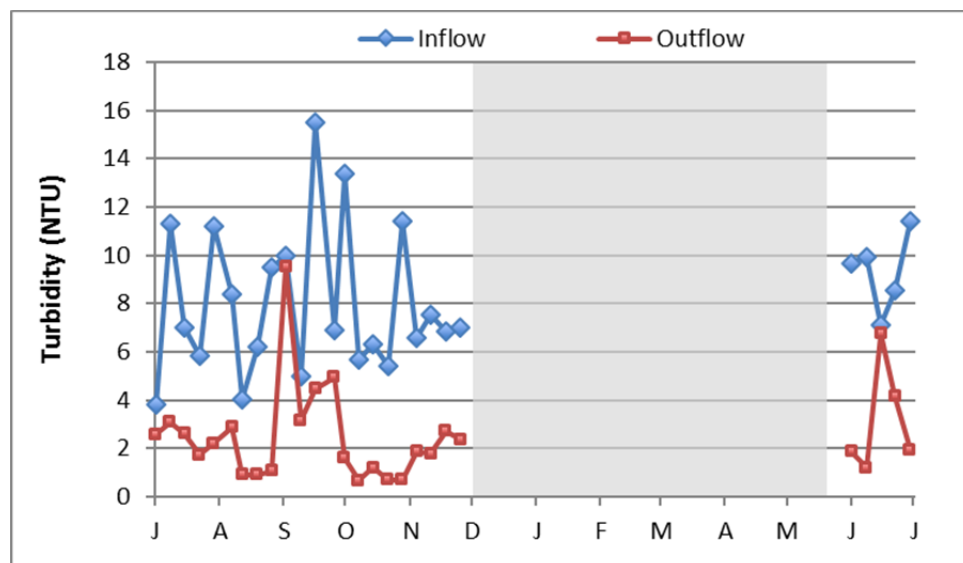


Figure 91. Turbidity in the inflow and outflow streams at the Grassy Island HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

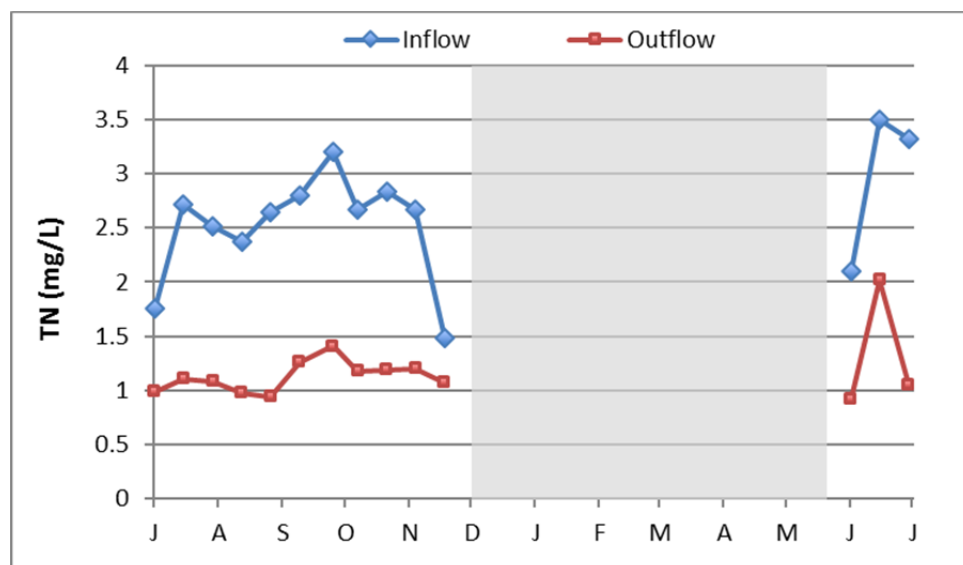


Figure 92. TN concentration in the inflow and outflow streams at the Grassy Island HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

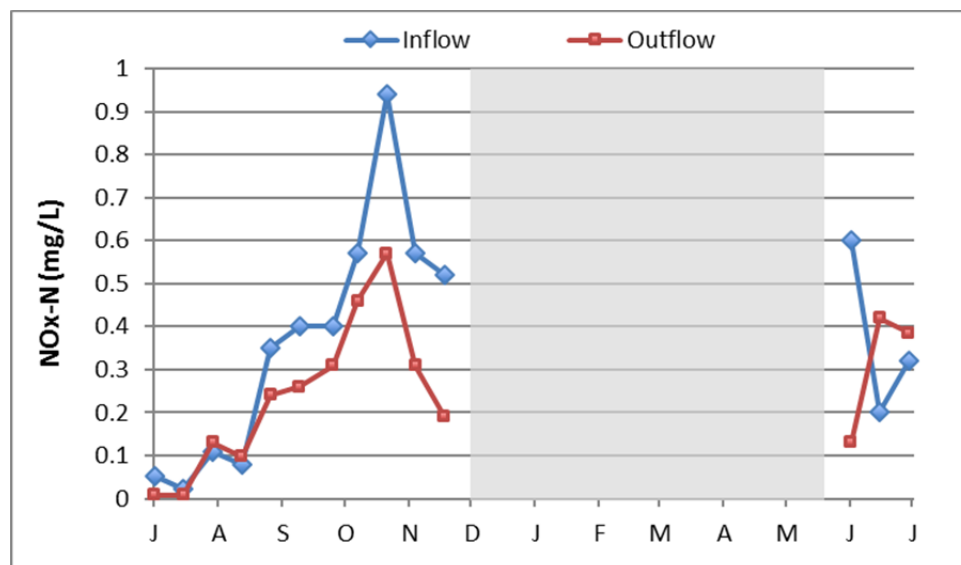


Figure 93. NO_x-N concentration in the inflow and outflow streams at the Grassy Island HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

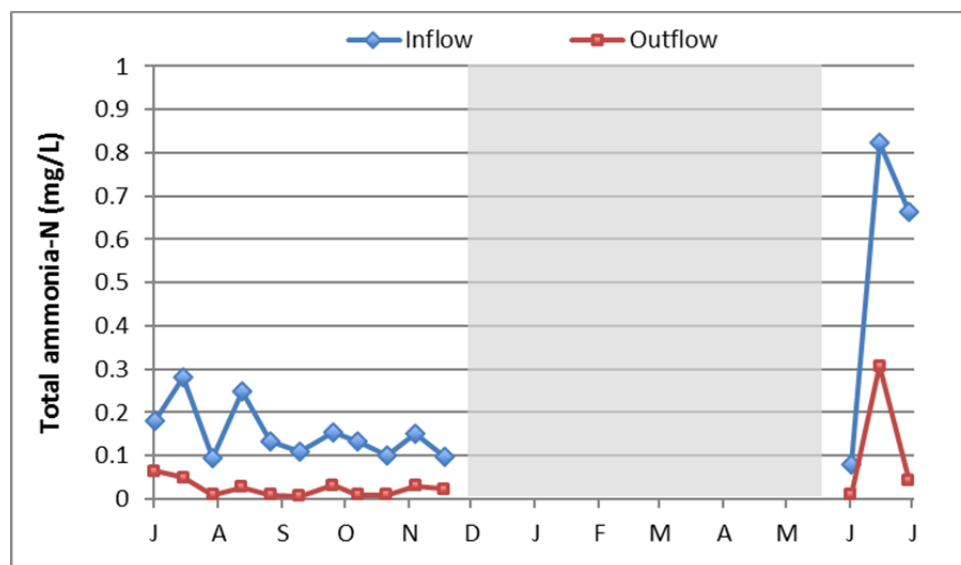


Figure 94. Ammonia-N concentration in the inflow and outflow streams at the Grassy Island HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

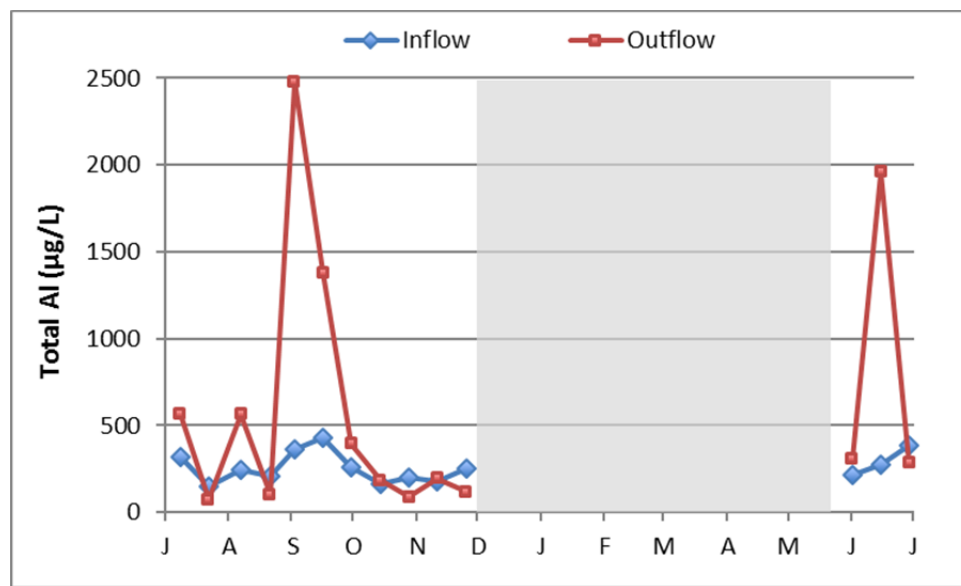


Figure 95. Total Al concentration in the inflow and outflow streams at the Grassy Island HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

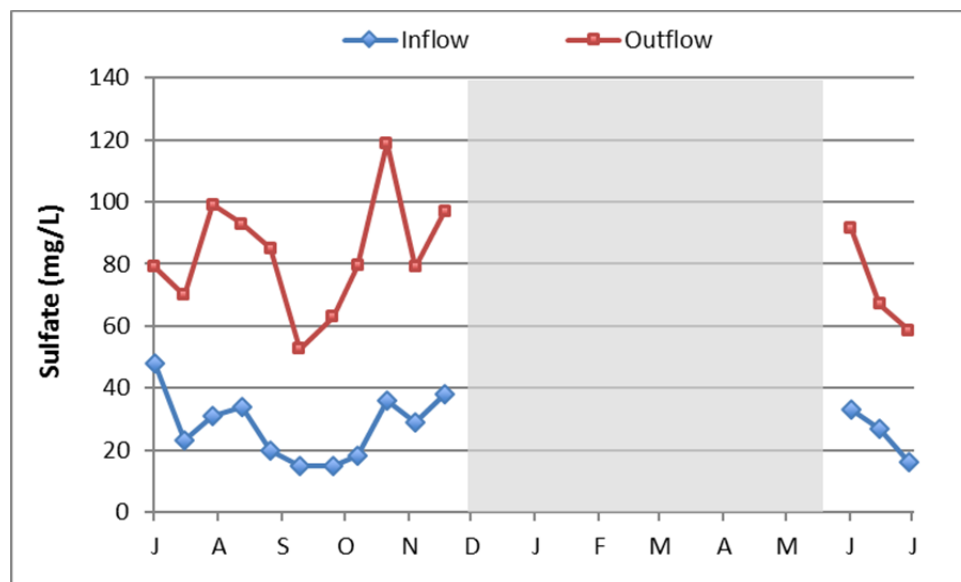


Figure 96. Sulfate concentration in the inflow and outflow streams at the Grassy Island HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

Total monthly flow volumes treated in the Grassy Island HWT system during the POR ranged from 72.2 Mgal in May 2016 to 452.3 Mgal in September 2015 (Figure 97). Mean monthly flow volume, excluding the non-operational period of December 2015 – April 2016, was 235.9 Mgal, while total flow treated by the Grassy HWT system during the POR was 1651 Mgal.

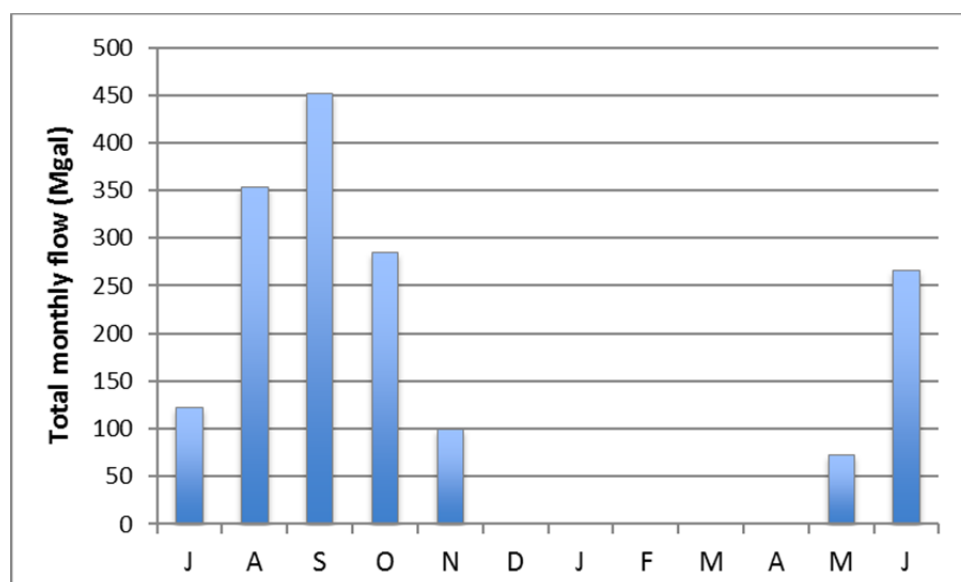


Figure 97. Total monthly flow treated by the Grassy Island (Site 7) HWT system during the 2015-2016 POR. The facility was not operational during the period December 2015 – mid-May 2016.

Site 8: Bessey Creek HWT Facility

The Bessey Creek HWT system (Site #8) is located south of Citrus Boulevard, approximately one mile north of SR 714 in Martin County, on twenty-three acres of county-owned land within Section 10, Township 38 South, Range 40 East. The HWT system is situated within the western portion of the Western Palm City Corridor (WPCC), formally designated as a wetland treatment system serving 305 acres of the Bessey Creek Watershed. A schematic of the HWT system layout is shown in Figure 98, and an aerial view of the mid and outflow regions of the facility is shown in Figure 99.

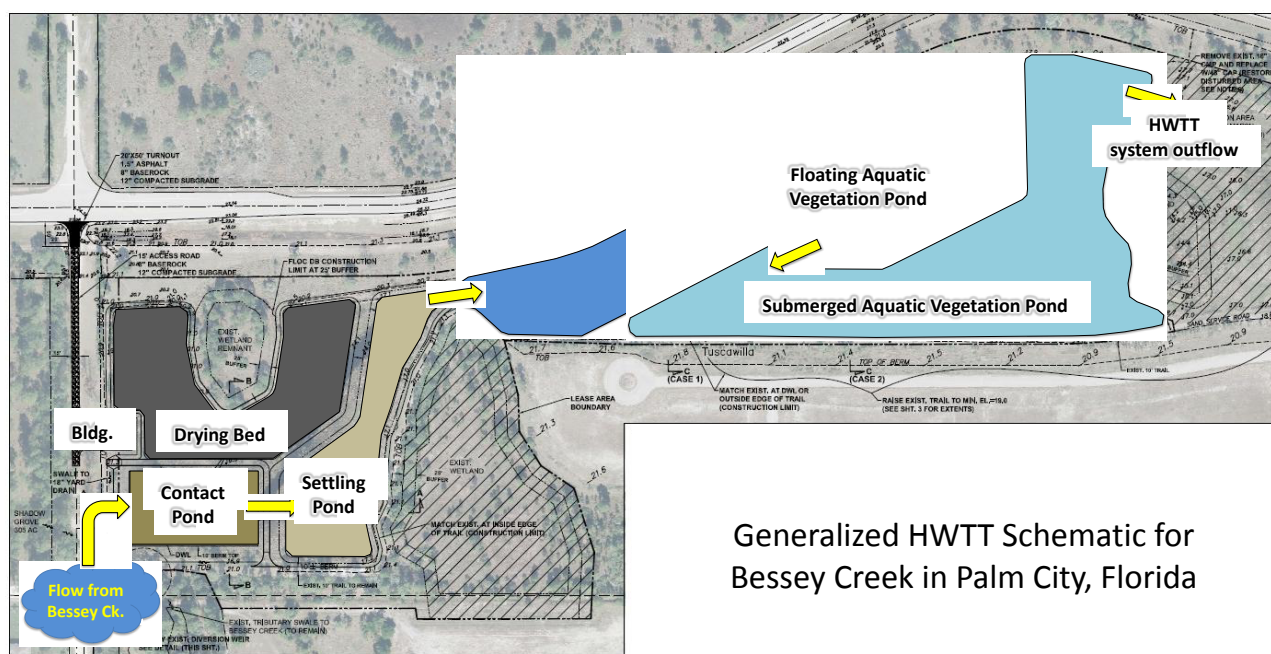


Figure 98. Schematic of the Bessey Creek HWT facility.

The project consists of a 20 cfs pump station and conveyance connection for incoming flows, chemical storage tanks and equipment shelter with a concrete foundation, pipes, valves, fittings and appurtenances for coagulant metering and dosing. Following dosing, water passes through contact ponds, a settling pond, and back-end FAV and SAV ponds before being discharged to the downstream marsh. The system has the ability to receive

water from Bessey Creek at a rate equal to or less than the real-time creek flow. Construction of the project was completed early in 2015, and pumping and treatment of creek waters was initiated in March 2015.

During the current period of July 2015 – June 2016, the Bessey Creek HWTT system received dosing of alum, at monthly mean rates ranging from 7.5 to 14.1 mg Al/L, and an overall mean of 11.1 mg Al/L. In addition, PAC was used as a supplemental coagulant, at monthly mean dosing rates up to 4.7 mg Al/L, and an overall period mean rate of 1.9 mg Al/L. During the period from December 2015 through May 2016 system operation was suspended due to lack of funding. The facility was re-started and treatment system operations were resumed at the beginning of June 2016. Daily system flow status is provided in the Chapter II appendices.

HWTT system inflow and outflow water samples were collected via grab sampling for chemical analyses on a weekly or biweekly basis.

Samples were analyzed for total phosphorus (TP), soluble reactive P (SRP), color, pH and turbidity, on a weekly basis. Dissolved organic P ($DOP = TSP - SRP$, where TSP is total soluble P), particulate P ($PP = TP - TSP$), alkalinity and conductivity were analyzed on a weekly basis through mid-April, then analyzed biweekly thereafter. Water samples were also analyzed for nitrate + nitrite N (NO_x-N), ammonia-N, and TKN on a weekly or biweekly basis. Total N (TN) was calculated as the sum of NO_x and TKN. Total aluminum (Al) and sulfate (SO_4) also were monitored biweekly, beginning in late April. Water chemistry data for the March – June 2015 monitoring period are presented in Figure 100 through Figure 113.



Figure 99. Aerial photo of the mid and outflow regions of the Bessey Creek HWTT system. Floc drying bed and settling ponds are shown in the foreground, and FAV and SAV ponds are visible in the top center of photo.

Inflow TP concentrations at the Bessey Creek HWTT system were generally in the range of 150 to 250 $\mu\text{g/L}$ for the current period, and showed little season-related variability (Figure 100). Values ranged from 114 to 406, while the mean inflow TP concentration was 196 $\mu\text{g/L}$. These value are quite similar to those observed in the 2014 – 2015 POR. Outflow TP concentrations were always substantially lower than inflow TP. Outflow TP ranged from 12 to 80 $\mu\text{g/L}$ and averaged 29 $\mu\text{g/L}$ during the monitoring period. Inflow SRP showed a general increase from the beginning of the period through late November 2015. Inflow SRP concentrations averaged 55 $\mu\text{g/L}$ and ranged from 15 to 116 $\mu\text{g/L}$, while outflow SRP averaged 2 $\mu\text{g/L}$ and ranged from ≤ 2 to 20 $\mu\text{g/L}$ (Figure 101). There was no apparent relationship between inflow and outflow SRP. Also, there was no relationship between TP and SRP for the inflow stream ($r^2 = 0.01$). The relationship for the outflow stream was

better ($r^2 = 0.85$), however this is largely a consequence of several high outliers exerting excessive influence on the relationship.

As with other forms of phosphorus, outflow DOP was always considerably lower than inflow DOP (Figure 102). If the spike in DOP that occurred on September 2, 2015 is omitted, DOP accounted for 18% of TP, on average. Inflow DOP concentrations ranged from 11 to 119 $\mu\text{g/L}$, while outflow DOP ranged from ≤ 2 to 9 $\mu\text{g/L}$. Mean inflow and outflow DOP concentrations for the monitoring period were 43 and 4 $\mu\text{g/L}$, respectively. As was the case for the 2014 – 2015 monitoring period, PP accounted for the largest fraction of TP in the system inflow stream (Figure 103). Inflow PP concentrations averaged 120 $\mu\text{g/L}$ and ranged from 44 to 343 $\mu\text{g/L}$. Concentrations of PP were always much lower in the outflow stream, ranging from ≤ 2 to 66 $\mu\text{g/L}$ and averaging 18 $\mu\text{g/L}$.

Alkalinity levels at the system inflow showed two peaks; one in mid-July, and another in early November (Figure 104). Inflow alkalinity ranged from 43 to 162 mg/L , and averaged 88 mg/L . Outflow alkalinity was always less than inflow alkalinity. The peaks in inflow alkalinity mentioned above were either absent or greatly attenuated in the outflow stream. The overall mean alkalinity at the system outflow was 39 mg/L and ranged from 15 to 56 mg/L . pH followed a similar trend to alkalinity, in both the inflow and outflow streams (Figure 105). With the exception of the beginning of the period, outflow pH closely followed inflow pH. From the beginning of the period through August 5, 2015, inflow pH averaged 7.1, whereas outflow pH was significantly lower, averaging 6.3. For the entire period, inflow pH ranged from 6.0 to 7.6 and averaged 6.7. Mean outflow pH for the entire period was 6.2, ranging from 5.8 to 7.0.

Color showed a very dramatic increase on September 2, 2015, increasing from 50 to ultimately 450 PCU on September 24, 2015 (Figure 106). This spike in color was greatly attenuated at the outflow. Inflow color ranged from 50 to 450 PCU, while outflow color ranged from 10 to 75 PCU. Color was effectively reduced in the Bessey HWT system, from a mean inflow level of 199 PCU to a mean outflow level of 31 PCU. Conductivity was similar at the system inflow and outflow, and declined during the monitoring period (Figure 107).

Conductivity was almost always slightly greater at the system outflow. Inflow conductivity ranged from 188 to 532 $\mu\text{S}/\text{cm}$ and averaged 344 $\mu\text{S}/\text{cm}$ while outflow conductivity ranged from 287 to 527 $\mu\text{S}/\text{cm}$ and averaged 390 $\mu\text{S}/\text{cm}$. Inflow turbidity increased 4-fold from the beginning of the period through November 10, 2015, then rapidly declined (Figure 108). Except for two occasions (in June 2016), outflow turbidity was lower than inflow turbidity. Inflow turbidity averaged 13.6 NTU, compared with the mean outflow turbidity level of 6.6 NTU. Inflow turbidity ranged from 6.5 to 38.4 NTU, while outflow turbidity ranged from 1.8 to 15.9 NTU.

TN concentrations were always reduced in the Bessey HWT system (Figure 109). Inflow TN ranged from 1.02 to 2.21 mg/L and averaged 1.57 mg/L during the monitoring period. Outflow TN concentrations ranged from 0.52 to 1.01 mg/L, while the mean outflow concentration was 0.67 mg/L. This is very similar to the average and range observed for TN at the outflow during the 2014 – 2015 period. Inflow $\text{NO}_x\text{-N}$ showed a somewhat similar temporal pattern to SRP and turbidity, increasing from the beginning of the period through mid-October (Figure 110). $\text{NO}_x\text{-N}$ concentrations were generally low, and accounted for on average 3.8% of $\text{NO}_x\text{-N}$ in the inflow. $\text{NO}_x\text{-N}$ ranged from ≤ 0.016 to 0.150 mg N/L, and averaged 0.060 mg N/L, at the system inflow. Outflow $\text{NO}_x\text{-N}$ ranged from ≤ 0.016 to 0.170 mg N/L and averaged 0.050 mg N/L. Unlike some of the other HWT systems, $\text{NO}_x\text{-N}$ was not consistently greater at the outflow. Ammonia-N concentrations increased dramatically from the beginning of the period through mid-October in a pattern similar to increases in color, $\text{NO}_x\text{-N}$ and turbidity (Figure 111). Inflow ammonia-N concentrations ranged from 0.01 to 0.230 mg N/L and averaged 0.097 mg N/L. Outflow ammonia-N concentrations were always below the limit of detection (≤ 0.010 mg/L).

Inflow TAl concentration during the monitoring period ranged from 72 to 529 $\mu\text{g}/\text{L}$ and averaged 168 $\mu\text{g}/\text{L}$. Outflow TAl levels were generally below 600 $\mu\text{g}/\text{L}$, though a single sample on June 16, 2016, shortly after the system restart, measured 2050 $\mu\text{g}/\text{L}$. Outflow TAl concentration ranged from 172 to 2050 $\mu\text{g}/\text{L}$, and averaged 563 $\mu\text{g}/\text{L}$, which is approximately 50% of the average outflow TAl value observed in the 2014 – 2015 period. Sulfate in the inflow stream ranged from 4 to 19 mg/L, and averaged 9 mg/L (Figure 113).

Outflow sulfate concentrations declined over this POR, ranging from 37 to 111 mg/L and averaging 73 mg/L.

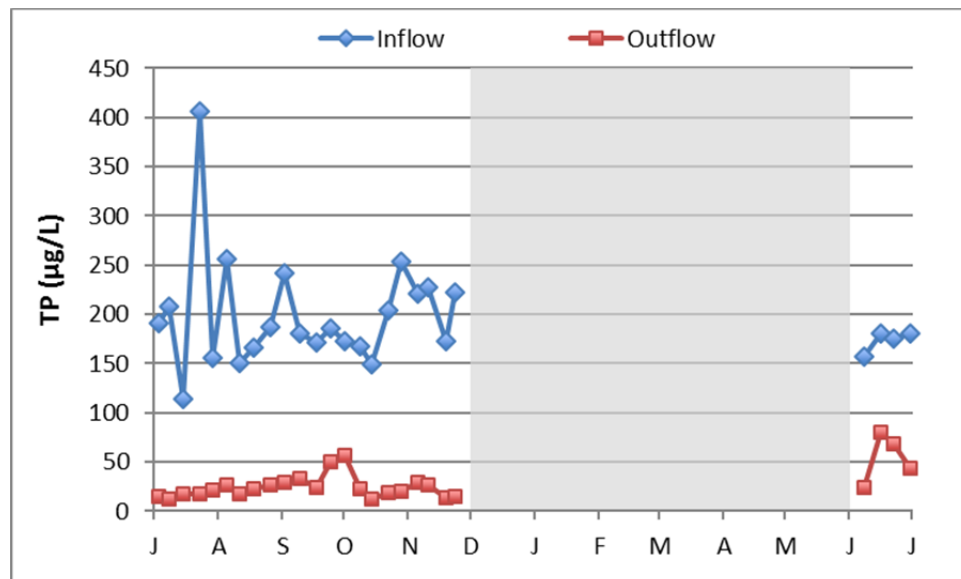


Figure 100. TP concentration in the inflow and outflow streams at the Bessey Creek HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

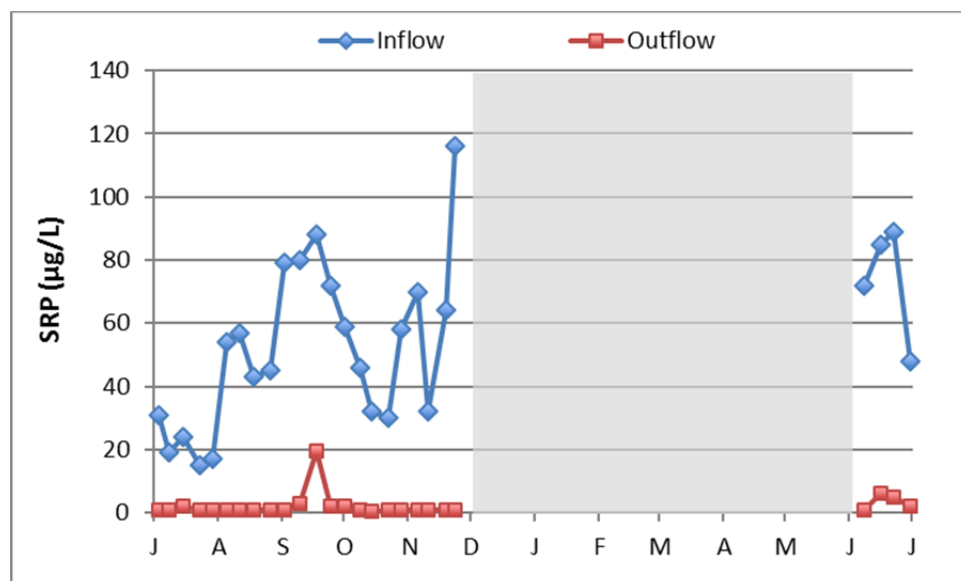


Figure 101. SRP concentration in the inflow and outflow streams at the Bessey Creek HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

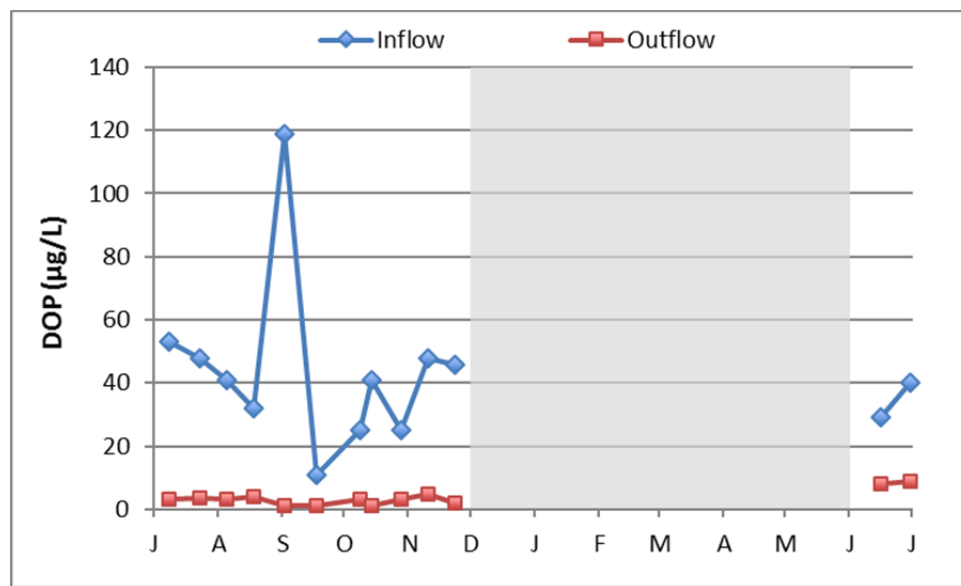


Figure 102. DOP concentration in the inflow and outflow streams at the Bessey Creek HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

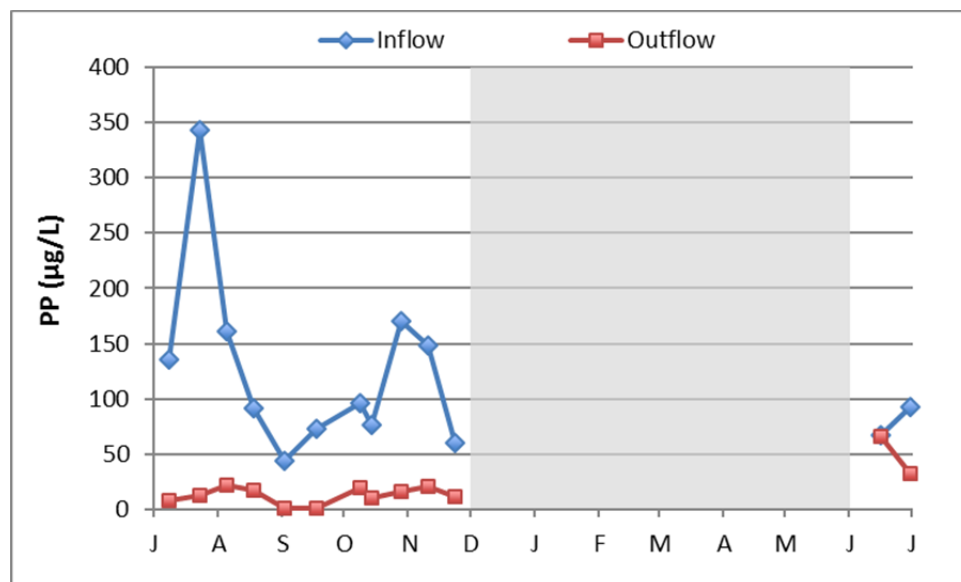


Figure 103. PP concentration in the inflow and outflow streams at the Bessey Creek HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

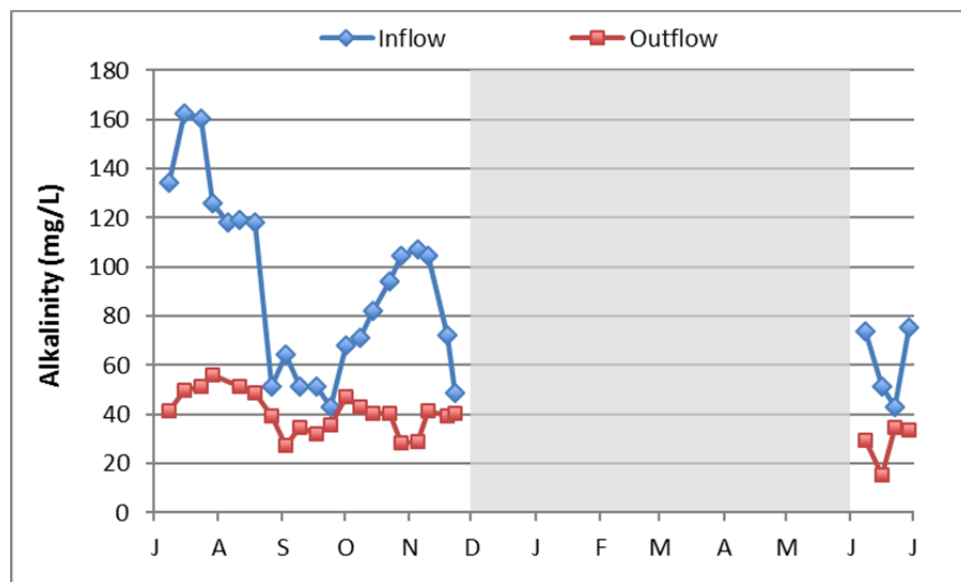


Figure 104. Alkalinity in the inflow and outflow streams at the Bessey Creek HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

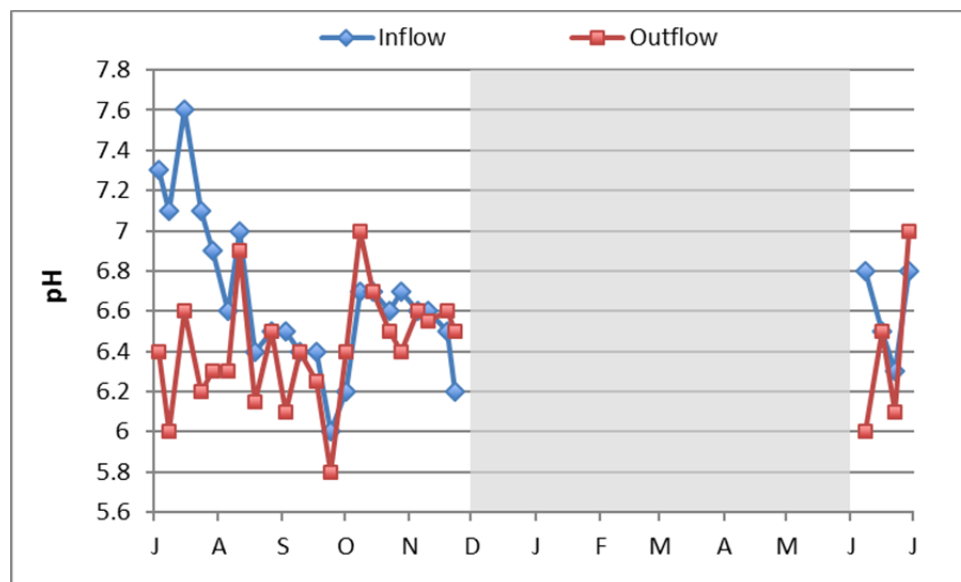


Figure 105. pH in the inflow and outflow streams at the Bessey Creek HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

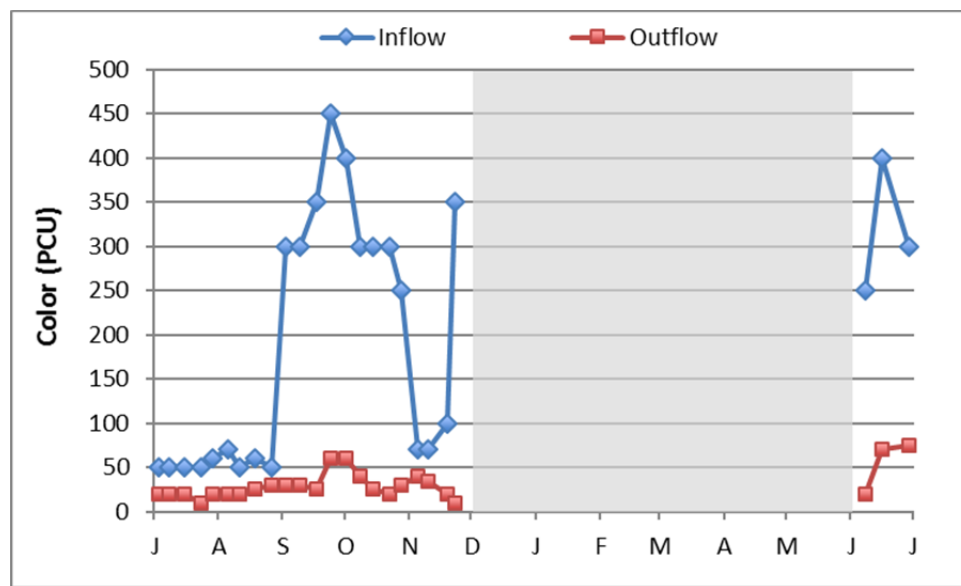


Figure 106. Color in the inflow and outflow streams at the Bessey Creek HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

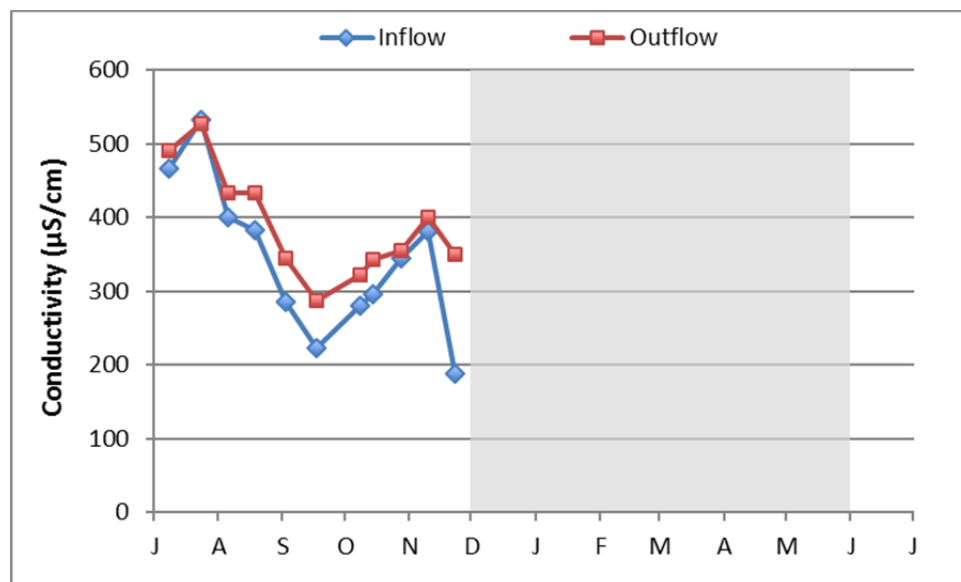


Figure 107. Conductivity in the inflow and outflow streams at the Bessey Creek HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

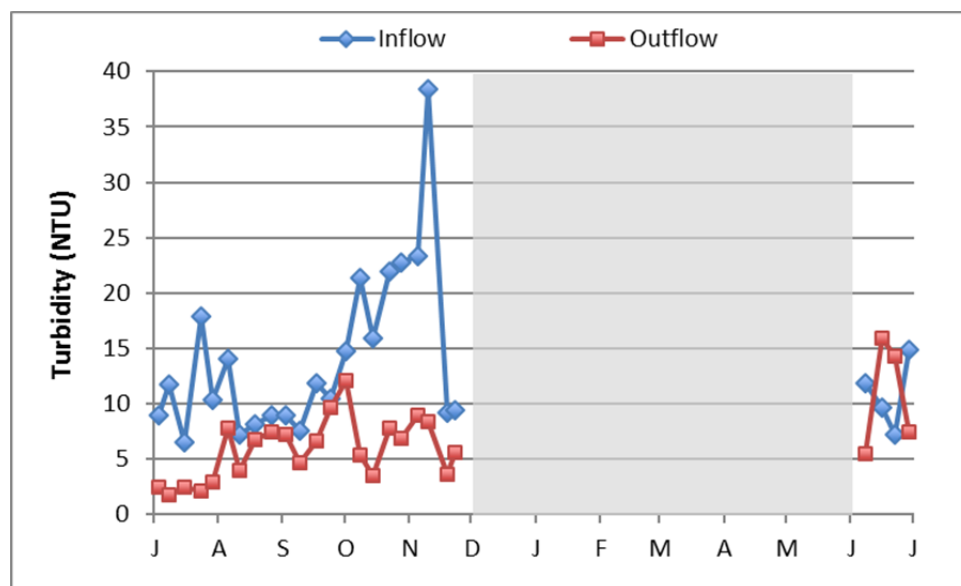


Figure 108. Turbidity in the inflow and outflow streams at the Bessey Creek HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

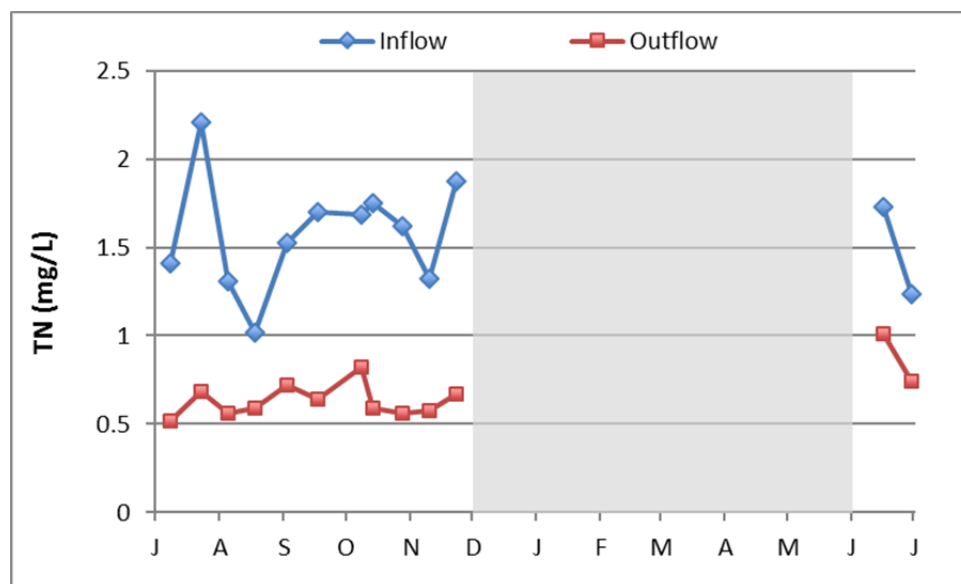


Figure 109. TN concentration in the inflow and outflow streams at the Bessey Creek HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

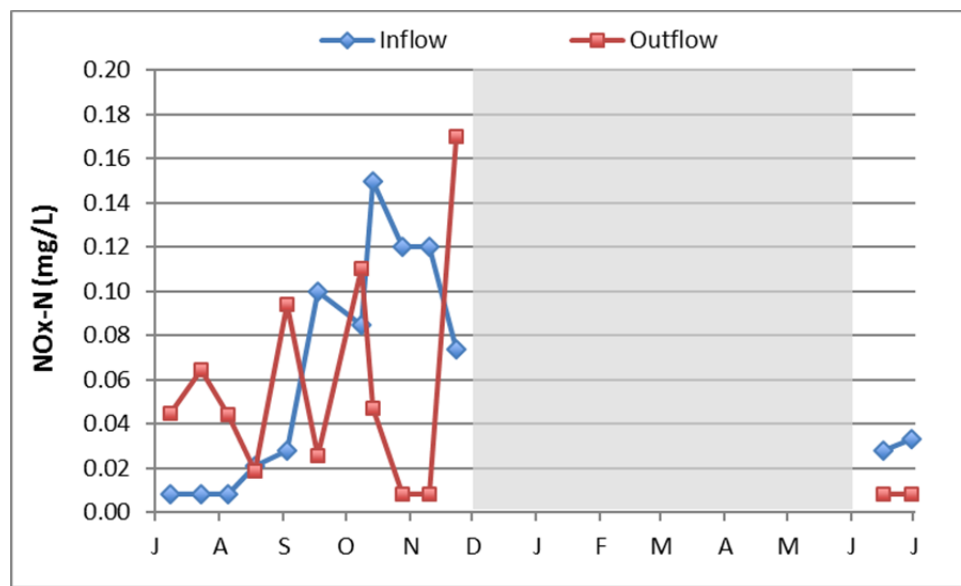


Figure 110. NO_x-N concentration in the inflow and outflow streams at the Bessey Creek HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

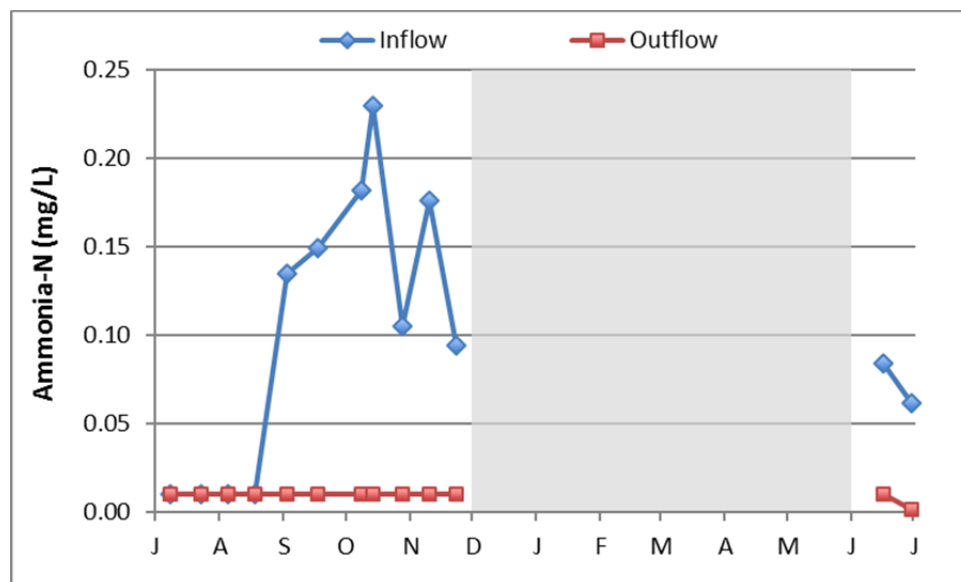


Figure 111. Ammonia-N concentration in the inflow and outflow streams at the Bessey Creek HWTT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

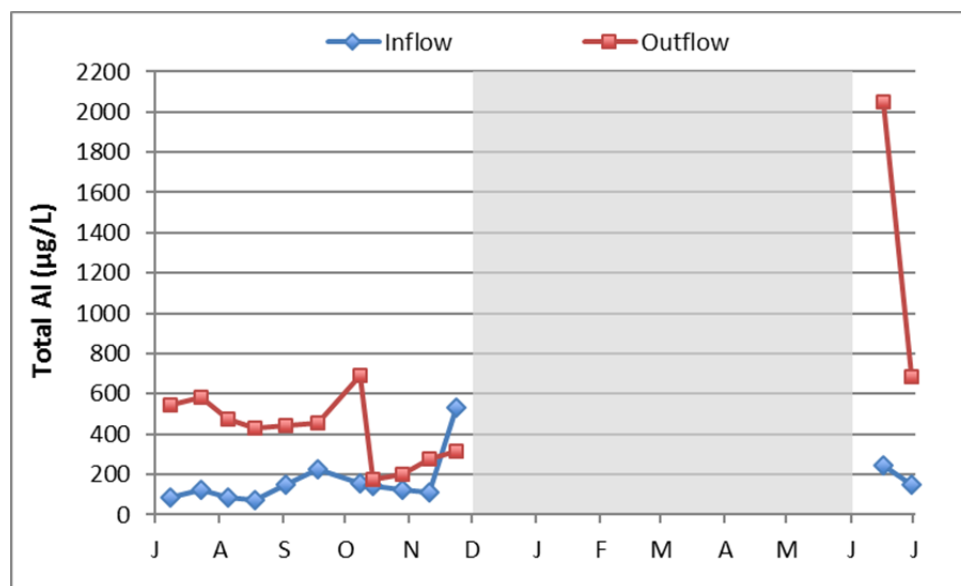


Figure 112. Total Al concentration in the inflow and outflow streams at the Bessey Creek HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

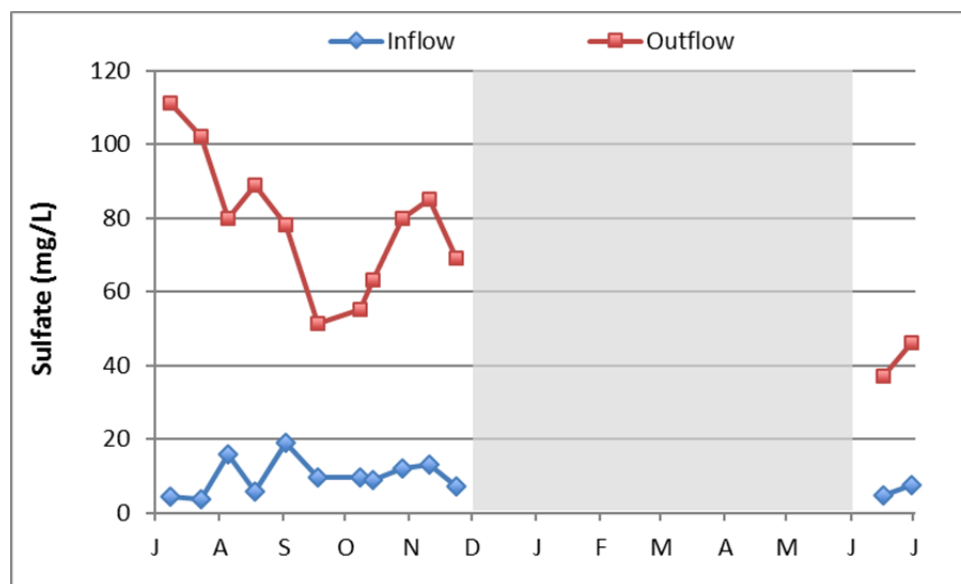


Figure 113. Sulfate concentration in the inflow and outflow streams at the Bessey Creek HWT system during the 2015-2016 POR. Shaded area indicates the non-operational period.

Total monthly flow volumes treated in the Bessey Creek HWT system during the POR ranged from 3.9 Mgal in July to 92.1 Mgal in September (Figure 114). Mean monthly flow volume, excluding the non-operational period of December 2015 – May 2016, was 51.6 Mgal, while total flow treated by the Bessey Creek HWT system during the POR was 309.6 Mgal.

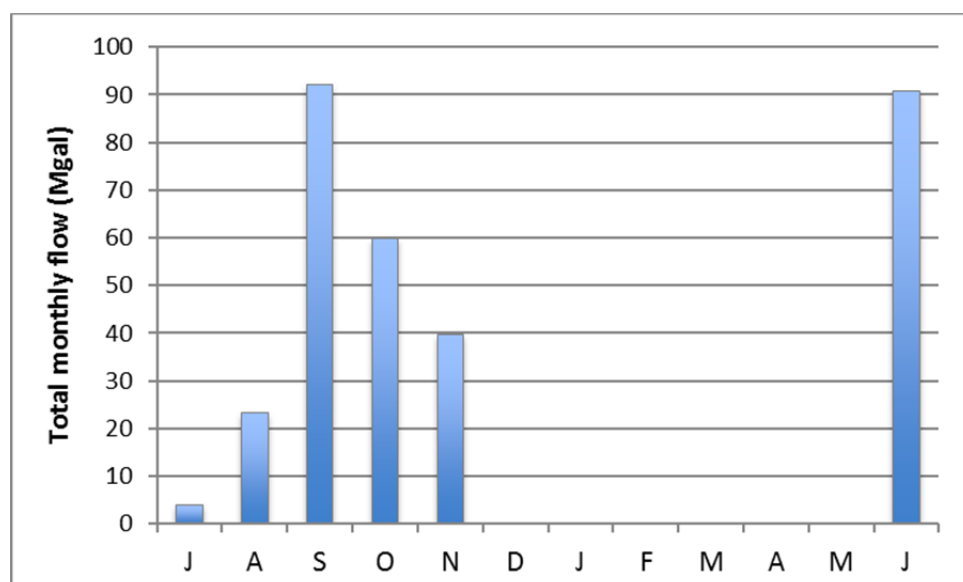


Figure 114. Total monthly flow treated by the Bessey Creek (Site 8) HWT system during the 2015-2016 POR. The facility was not operational during the period December 2015 – May 2016.

Site 9: Danforth Creek HWTT Facility

The Danforth Creek HWTT system (Site #9) is situated on nine acres of land adjacent to an existing 11-acre storm-water project (referred to as Danforth Creek Phase I STA) owned by Martin County. The site lies within Section 23, Township 38S, Range 40E, encompassing Tract 35 of the Palm City Farms Subdivision.

As with the nearby Bessey Creek HWTT facility, the Danforth HWTT system contains two parallel contact ponds, a settling pond, and downstream FAV and SAV wetlands (Figure 115). The inflow pump station can provide a maximum flow of 25 cfs from the existing Phase I STA. The outflow from the HWTT facility is discharged just downstream of the STA outflow weir. It is estimated that the HWTT facility will be able to treat approximately 35% to 55% of the total annual runoff originating from an estimated 2,300 acres of urban and agricultural land located upstream of the project site.

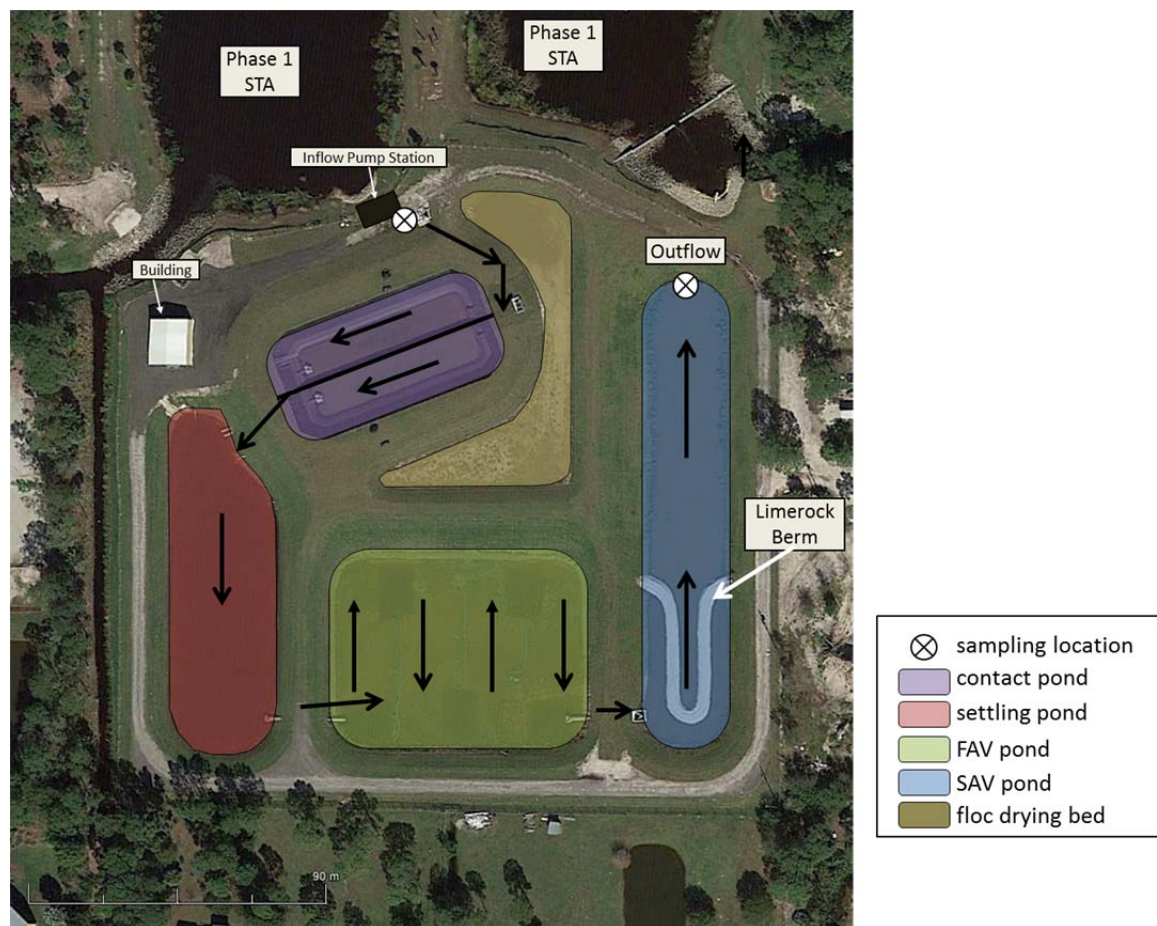


Figure 115. Schematic of the Danforth HWT facility.

The field inspection for system functionality and site acceptance for the Danforth Creek HWT facility was conducted on April 28, 2016. Upon completion in April 2016, the site was placed on temporary inactive status during Project Periods 10, 11, and 12 due to lack of funding. During this time, drainage improvements were made to convey off-project groundwater seepage away from the south bank of the project's submerged aquatic vegetation (SAV) pond. Additionally, undesirable aquatic vegetation that had invaded the floc drying bed and floating aquatic vegetation (FAV) pond was herbicided during this period. During June, the facility was initialized and water quality tests of inflow waters to the site were conducted.

In early June, a temporary diesel pump was deployed to commence filling of the system with Danforth Creek waters. Since a principal goal of this initialization effort was to flood the FAV and SAV ponds with nutrient-laden waters to promote macrophyte standing crop expansion, these waters were not dosed with coagulants. Floating and submerged macrophyte species were inoculated during this period (Figure 116), with species selection based partly on availability of plants within the watershed and on the findings of a mesocosm study performed previously at Danforth Creek by WTLLC. Due to the plant inoculation activities at the facility, coagulant optimization trials for Danforth Creek waters were performed using laboratory jar tests on Danforth Creek waters. A total of 3.6 million gallons of Danforth Creek waters were pumped into the HWT facility through June 30, 2016, and 900 gallons of alum were delivered on-site during this period.



Figure 116. Stocking of additional vegetation in the FAV pond during Period 12.

HWT system inflow water samples were collected via grab sampling for chemical analyses on a weekly basis during June 2016. As previously discussed, there was no water treatment or system outflow during this time. Samples were analyzed for total phosphorus (TP) soluble reactive P (SRP), pH, alkalinity, color and turbidity on a weekly basis. Nitrate + nitrite N ($\text{NO}_x\text{-N}$), ammonia-N, and TKN were analyzed on a biweekly basis. Total N (TN) was calculated as the sum of NO_x and TKN. Water samples collected on 6/16/16 were also analyzed for dissolved organic P ($\text{DOP}=\text{TSP}-\text{SRP}$, where TSP is total soluble P) and particulate P ($\text{PP}=\text{TP}-\text{TSP}$), as well as total Al and sulfate. Water chemistry data for June 2016 is presented in (Figure 117 through Figure 122).

TP concentrations in the Danforth HWT inflow stream ranged from 168 to 312 $\mu\text{g/L}$ and averaged 219 $\mu\text{g/L}$ during the June 2016 monitoring period (Figure 117). SRP accounted for 48 percent of TP in the sample collected on 6/16/16, while DOP and PP represented 14 and 38 percent of TP, respectively. Alkalinity ranged from 133 to 182 mg/L , averaging 157 mg/L , during the June monitoring period (Figure 118), while pH averaged 7.0 and ranged from 6.6 to 7.3 (Figure 119). Mean color concentration was 300 PCU, while levels ranged from 250 to 350 PCU (Figure 120). Turbidity in the inflow stream ranged from 12.4 to 38.2 NTU and averaged 22.5 NTU (Figure 121).

TN concentrations in samples collected on June 16 and 30 were 1.83 and 1.35 mg/L , respectively, yielding a mean concentration of 1.59 mg/L for the June sampling events (Figure 122). $\text{NO}_x\text{-N}$ and ammonia-N concentrations averaged 0.04 and 0.12 mg/L across two June sampling events. Inorganic N ($\text{NO}_x + \text{ammonia-N}$) accounted for only 8 and 14 percent of TN in the samples collected on June 16 and 30, respectively. Thus, the vast majority of N in the inflow stream was in the form of organic N.

In addition to nutrients, concentrations of Al and sulfate were measured in the inflow stream on June 16. Total Al concentration for that sampling event was 171 $\mu\text{g/L}$, while sulfate concentration on the same date was 7.9 mg/L .

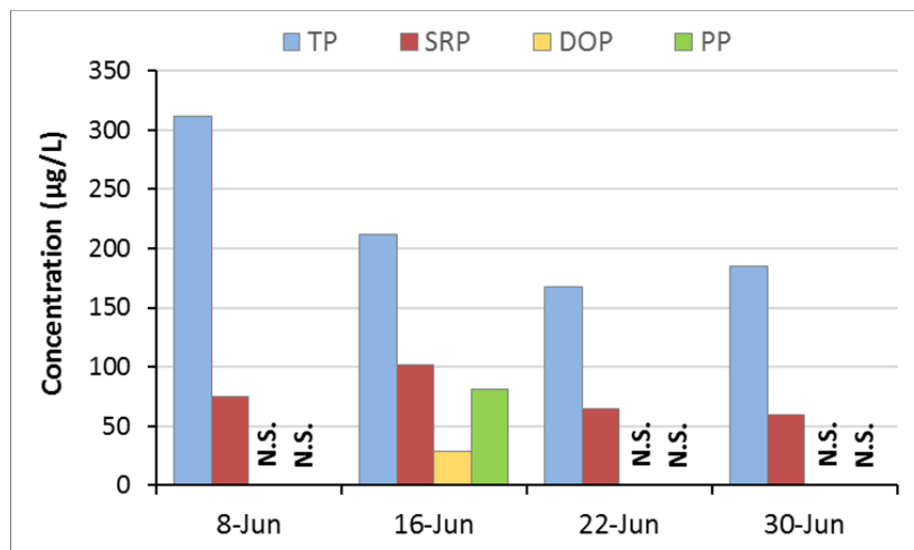


Figure 117. Concentration of TP, SRP, DOP and PP in the inflow stream at the Danforth Creek HWT system during June 2016. N.S. = no sample collected.

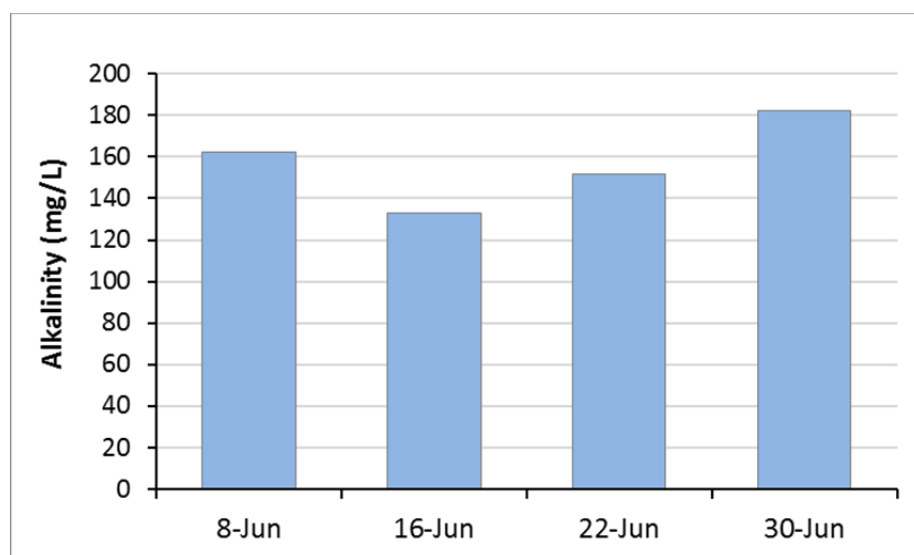


Figure 118. Alkalinity in the inflow stream at the Danforth Creek HWT system during June 2016.

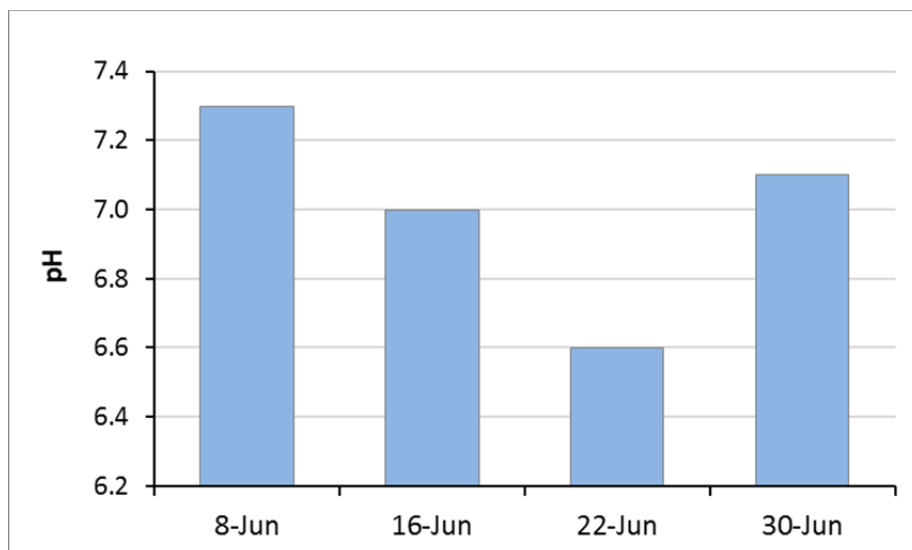


Figure 119. pH in the inflow stream at the Danforth Creek HWT system during June 2016.

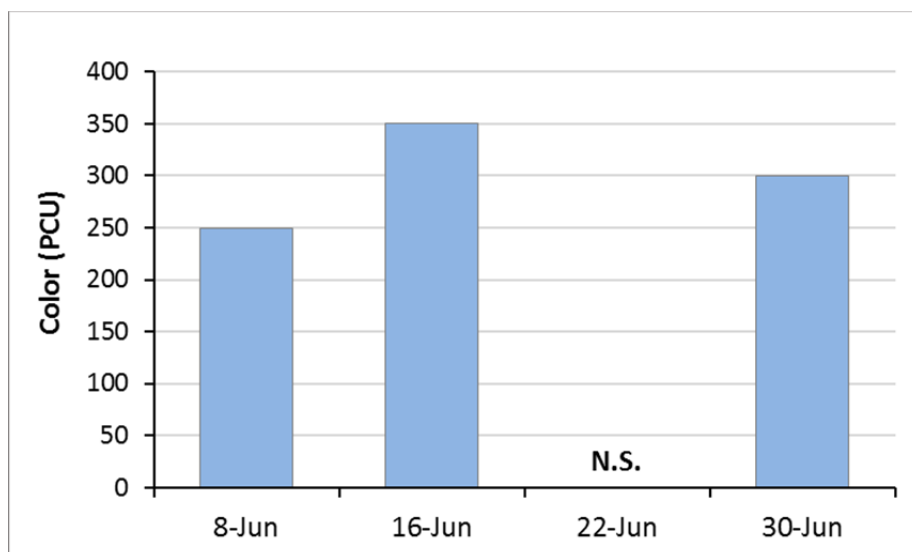


Figure 120. Color in the inflow stream at the Danforth Creek HWT system during June 2016. N.S. = no sample collected.

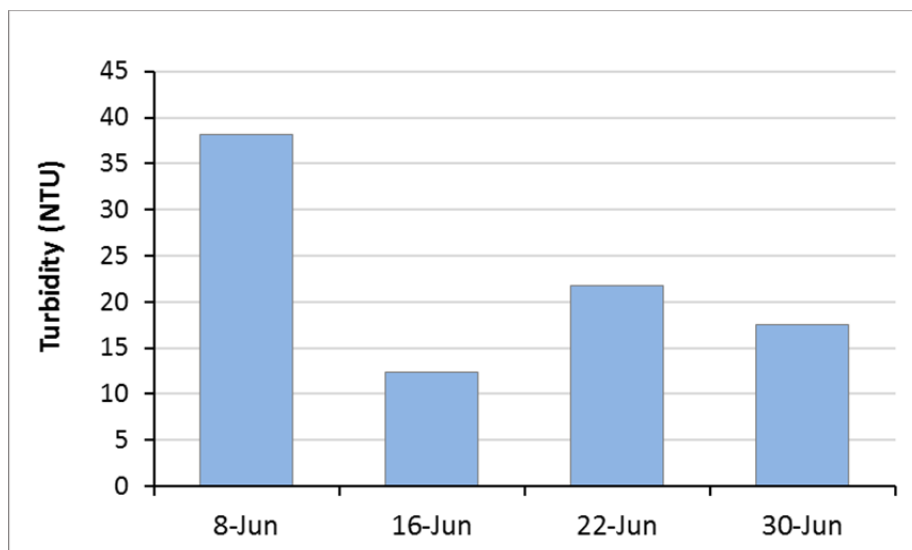


Figure 121. Turbidity in the inflow stream at the Danforth Creek HWTT system during June 2016.

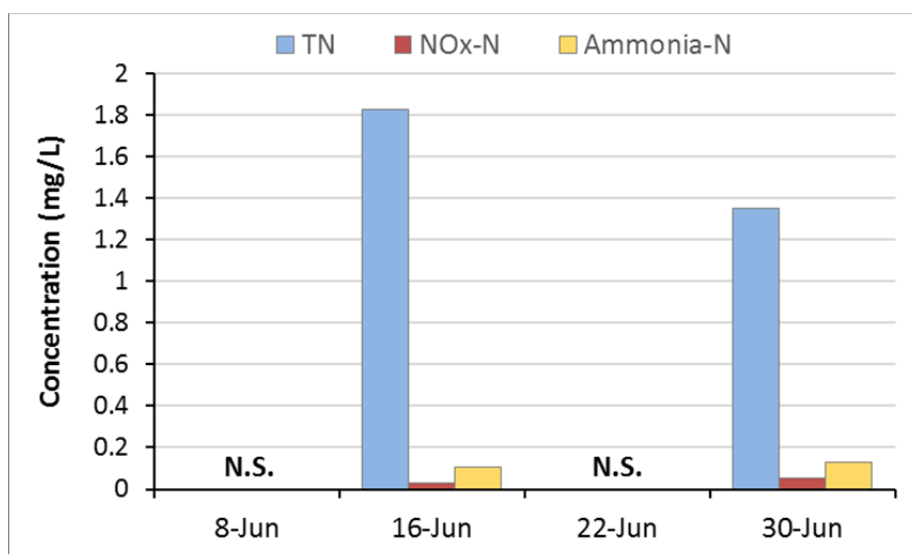


Figure 122. Concentrations of TN, NOx-N and ammonia-N in the inflow stream at the Danforth Creek HWTT system during June 2016. N.S. = no sample collected.

Response of Danforth Creek Waters to Chemical Amendments

Since the HWTT system combines both chemical and biological treatment components, it is important to define the effectiveness of the coagulant “alum”, and the optional addition of polyaluminum chloride (PAC), in treating Danforth Creek waters. Prior experience at other HWTT sites has shown that system performance may be significantly affected by changes in water chemistry associated with fluctuating stream flows, often requiring modifications in the type or dosing rate of coagulant. The use of bench-scale reactors (“jar tests”) provides a rapid, cost-effective means to test the efficacy of different types and doses of coagulants for removal of constituents such as P and color, while maintaining optimal levels of alkalinity and pH.

A jar test was conducted in June 2016 to evaluate the effectiveness of alum (aluminum sulfate) for use in the HWTT treatment system. Testing was conducted using source water from Danforth Creek, collected at the HWTT project site on 6/14/16. Two-liter stirred reactors, filled with untreated (“raw”) source water, were amended with alum at doses equivalent to 7, 9, 11, 13, 15 or 17 mg Al/L (final solution concentration of Al). Immediately after coagulant addition, each reactor was “flash” mixed for 30 seconds and then slow mixed for 10 minutes to maximize floc formation. After one hour settling time (no stirring) the supernatant solution (treated water) was sampled for analysis of the following parameters: alkalinity, pH, color, total phosphorus (TP), and total aluminum (TAI). Final concentrations of these constituents were compared with the initial (raw water) concentrations to evaluate the treatment efficiency as a function of coagulant dose.

Optimal floc formation and settling was observed at alum doses ≥ 13 mg Al/L. Alkalinity decreased from 108 mg/L in raw water to 51 mg/L in the supernatant solution at the 13 mg Al/L dose, while lower levels resulted from successively higher doses. The minimum alkalinity (33 mg/L) occurred at the highest alum dose of 17 mg Al/L (Figure 123). A concomitant decrease in pH (Figure 124) was observed with increasing alum dose, ranging from a pH of 7.08 in raw water to 6.28 at the 13 mg Al/L alum dose, to 6.00 at the highest alum dose of 17 mg Al/L.

TP concentration exhibited a substantial decrease in response to alum addition (Figure 125). TP removal exceeded 90 percent at alum doses of 11 mg Al/L and greater, although some residual color was present at the 11 mg Al/L dose. The initial (untreated water) TP concentration of 115 µg/L was reduced to 10, 6, 4 and 4 µg/L, respectively, at alum doses of 11, 13, 15 and 17 mg Al/L. Color removal was similar to TP removal, with the exception of an increase in color at the lowest alum dose (Figure 126). Color removal exceeded 80 percent at alum doses ≥ 13 mg Al/L, as the initial color concentration of 362 PCU was reduced to a minimum level of 49 PCU (86 percent removal) at an alum dose of 15 mg Al/L.

Total Al concentrations were measured in the supernatant solution following settling of the alum floc. In a full-scale alum treatment system, export of suspended floc particles (micro-floc), and consequently, export of Al, can potentially occur as a result of incomplete floc formation and/or floc settling. As demonstrated in this jar test, optimal floc production corresponded to efficient removal of TP and color. It was also shown that TAl in the supernatant solution (treated water) decreased with increasing floc quality, as the alum dose increased from 7 to 15 mg Al/L (Figure 127). At the highest dose of 17 mg Al/L, TAl concentration was slightly higher than at 15 mg Al/L, reflecting addition of alum in excess of the optimum dose. The slight increase in TAl at this dose was accompanied by decreases in pH and alkalinity.

At our other HWTT facilities, we have noted that the dramatic temporal swings in inflow water chemistry can have a marked effect on the dose responses for various coagulant types (e.g., alum and polyaluminum chloride). Alkalinity, one of the key parameters for good alum floc formation, was present at a relatively low concentration (compared with an annual average of ca. 200 mg/L for the Danforth HWTT inflow site) during this test. Nevertheless, efficient TP removal was achieved while maintaining acceptable levels of alkalinity and pH in the treated water. Previous coagulant testing, during the dry season regime of high alkalinity in Danforth Creek (alkalinity levels of 214-236 mg/L at the Danforth HWTT inflow site), indicated that it is unlikely that supplemental coagulants such as polyaluminum chloride (PAC) will be required for effective P removal by the HWTT system.

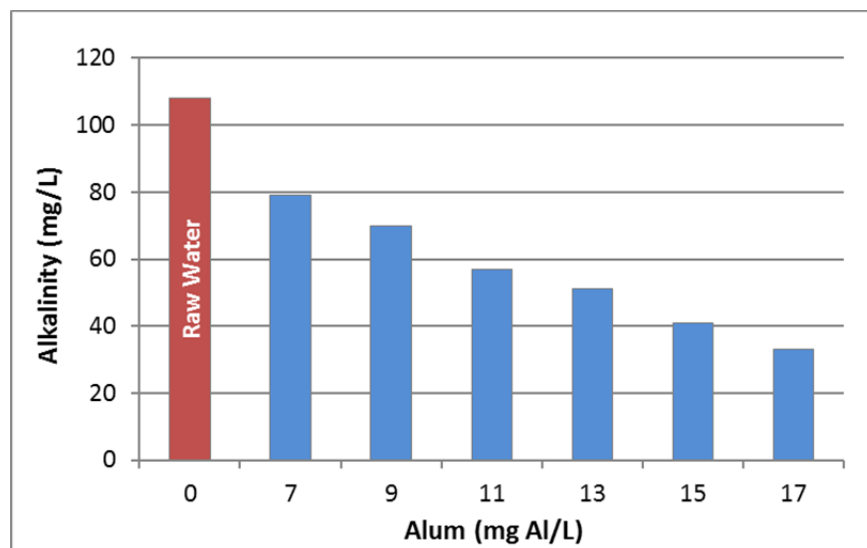


Figure 123. Alkalinity in reactor vessels filled with untreated (“raw”) water from Danforth Creek at the HWTT project site and amended with alum at a range of doses. Testing was conducted during June 2016.

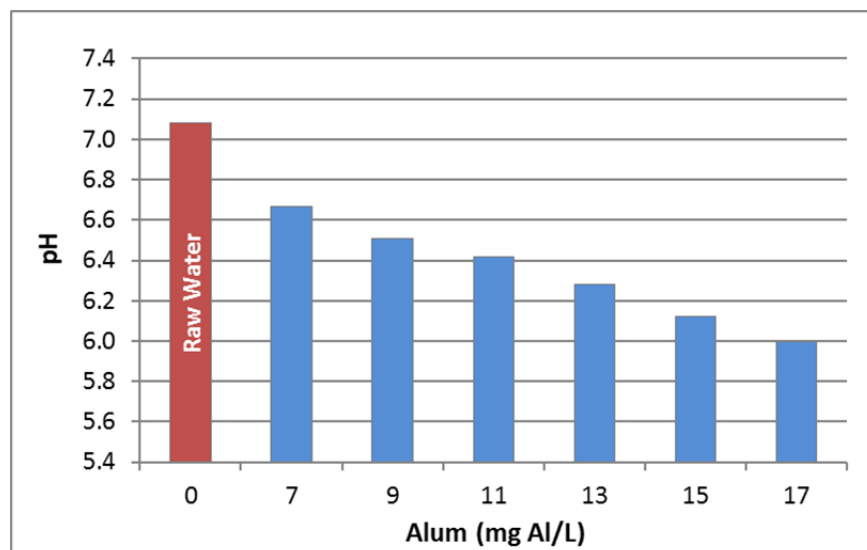


Figure 124. pH in reactor vessels filled with untreated (“raw”) water from Danforth Creek at the HWTT project site and amended with alum at a range of doses. Testing was conducted during June 2016.

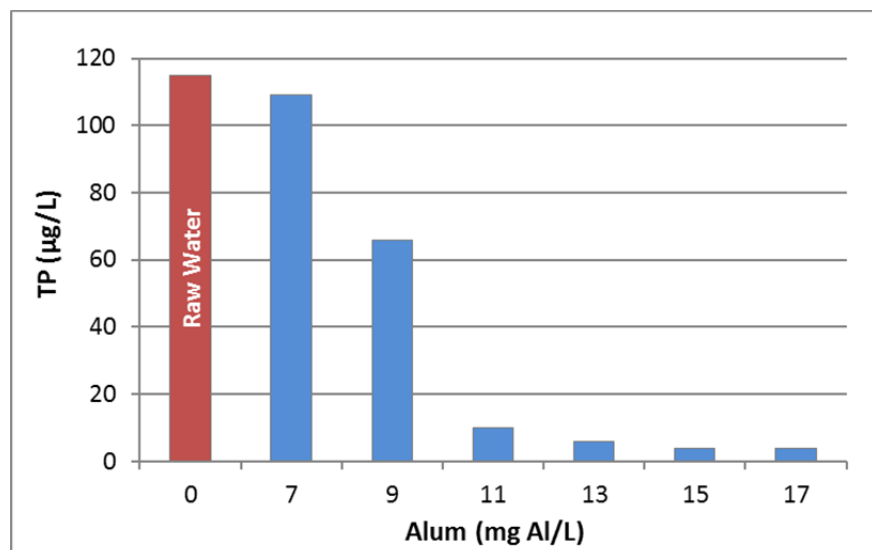


Figure 125. TP concentration in reactor vessels filled with untreated (“raw”) water from Danforth Creek at the HWTT project site and amended with alum at a range of doses. Testing was conducted during June 2016.

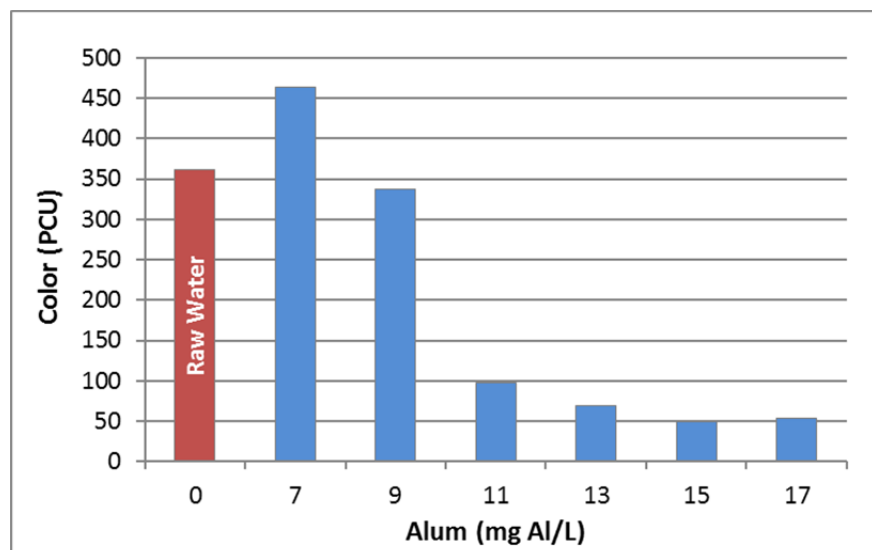


Figure 126. Color concentration in reactor vessels filled with untreated (“raw”) water from Danforth Creek at the HWTT project site and amended with alum at a range of doses. Testing was conducted during June 2016.

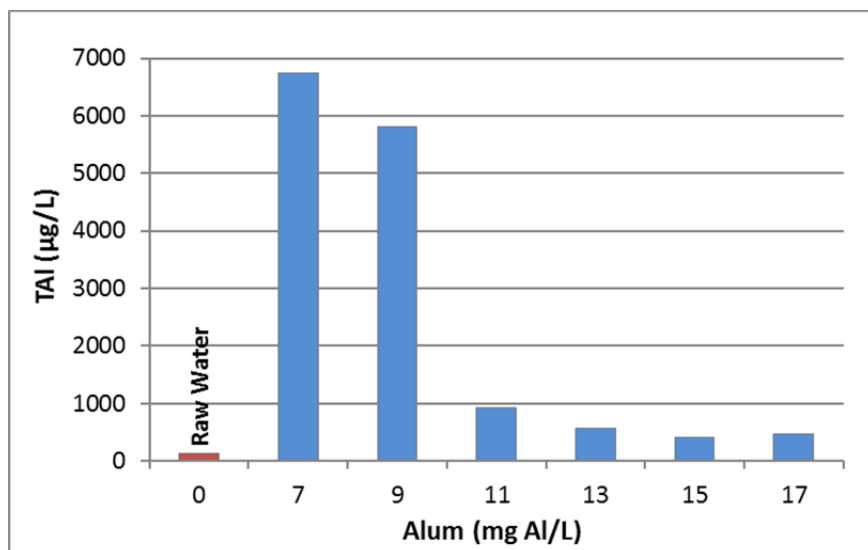


Figure 127. Total aluminum (TAI) concentration in reactor vessels filled with untreated (“raw”) water from Danforth Creek at the HWTT project site and amended with alum at a range of doses. Testing was conducted during June 2016.

Permit Monitoring Data Summary

Monitoring at system inflows and outflows was conducted on a prescribed basis at the Lemkin Creek and Grassy Island HWTT sites, in compliance with FDEP permits #-0254574-004 (issued December 1, 2014) and #0259591-008 (issued February 19, 2016), respectively. Results of these activities are presented in the following sections.

Monitoring at Lemkin Creek HWTT Inflow and Outflow Sites

Monitoring of system inflows and outflows at the Lemkin (FDOT) and Wolff HWTT facilities for compliance with permit No. 0254574-004 was conducted during the period July 2015 – June 2016. Locations of the sampling stations included in the permit monitoring program are provided in Figure 128 and Table 1. Comprehensive results of compliance monitoring at these facilities are routinely submitted according to the provisions of the permit. Inflow and outflow summary statistics for those permit monitoring parameters for which water quality standards have been developed and listed in FAC 62-302.530 are presented below (Table 2).

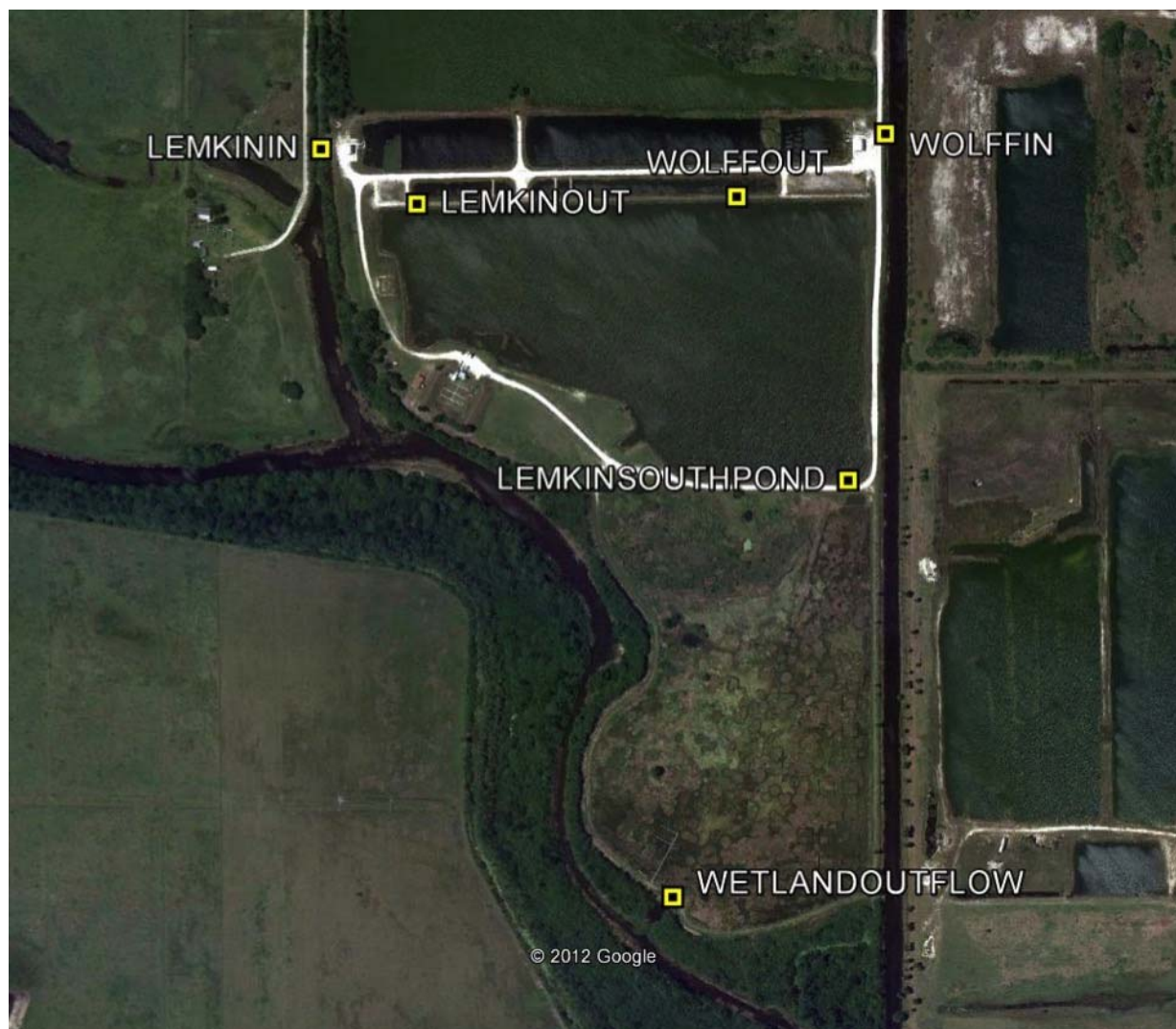


Figure 128. Map of Lemkin/Wolff HWT sampling stations. Note that the wetland outflow is not a permit monitoring station, and its location is shown for reference only.

Table 1. Lemkin/Wolff HWT sampling stations included in monitoring program.

Station ID	Description	Latitude ¹	Longitude ¹
WOLFFIN	Inflow to the Wolff Ditch HWT	271155.12	805118.27
WOLFFOUT	Outflow from the Wolff Ditch HWT	271153.03	805123.80
LEMKININ	Inflow to the Lemkin Creek HWT	271154.61	805139.24
LEMKINOUT	Outflow from the Lemkin Creek HWT	271152.79	805135.67
LEMKINSOUTH POND	Inflow to the wetland downstream of HWT	271143.65	805119.68

Note 1. Coordinates reference the WGS84 datum (in DDMMSS.SS format).

Table 2. Comparison of Lemkin/Wolff HWTt permit monitoring results with numeric water quality standards for Class III fresh waters, for the period July 1, 2015 – June 30, 2016.

Parameter	Statistic	Wolff Inflow	Wolff Outflow	Lemkin Inflow	Lemkin Outflow	South Pond	Numeric Standard (per 62-302.530 FAC)
pH	min	7.0	7.0	7.0	6.9	7.0	natural background ± 1 unit, $6.0 < \text{pH} < 8.5$
	mean	7.3	7.5	7.2	7.4	8.0	
	max	7.7	7.8	7.6	7.7	8.6	
Temperature ($^{\circ}\text{C}$)	min	22.8	22.7	21.1	22.3	22.6	≤ 5 degrees above natural background
	mean	29.2	29.7	27.0	29.1	29.3	
	max	32.7	33.5	32.7	33.4	32.9	
Alkalinity (mg CaCO_3/L)	min	148	138	124	108	132	20 mg/L (minimum)
	mean	177	150	189	162	146	
	max	224	168	260	204	164	
Specific Conductance ($\mu\text{S}/\text{cm}$)	min	546	734	591	613	726	Greater of 50% above background or 1275
	mean	876	886	846	845	881	
	max	1033	1018	1098	1055	1039	
Turbidity (NTU)	min	1.1	1.9	1.6	1.7	2.3	≤ 29 NTU above natural background
	mean	2.6	2.8	2.3	3.0	3.9	
	max	4.0	4.9	2.9	6.4	7.3	

Monitoring at Grassy Island HWTt Inflow and Outflow Sites

Monitoring of system inflows and outflows at the Grassy Island HWTt facility for compliance with permit No. 0259591-008 was conducted during the period July 2015-June 2016. Locations of the sampling stations included in the permit monitoring program are provided in Figure 129. Comprehensive results of compliance monitoring at this facility are routinely submitted according to the provisions of the permit. Inflow and outflow summary statistics for those permit monitoring parameters for which water quality standards have been developed and listed in FAC 62-302.530 are presented below (Table 3).

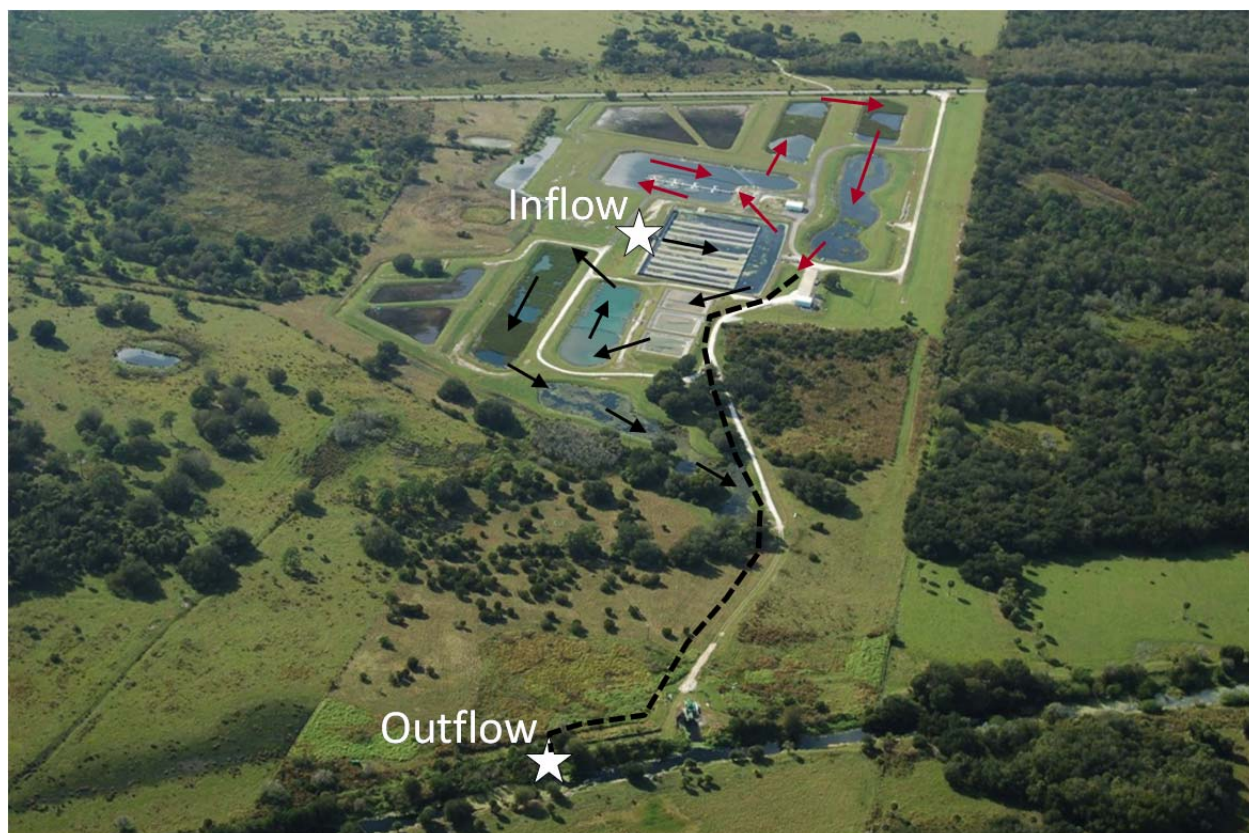


Figure 129. Aerial view of Grassy Island HWT facility showing locations of inflow and outflow monitoring stations and water flow path (arrows).

Table 3. Comparison of Grassy HWT permit monitoring results with numeric water quality standards for Class III fresh waters, for the period July 1, 2015 – June 30, 2016.

Parameter	Statistic	Grassy Inflow	Grassy Outflow	Numeric Standard (per 62-302.530 FAC)
pH	min	6.4	6.0	natural background ± 1 unit, $6.0 < \text{pH} < 8.5$
	mean	6.8	6.6	
	max	7.7	7.1	
Temperature ($^{\circ}\text{C}$)	min	19.4	21.0	≤ 5 degrees above natural background
	mean	26.9	27.9	
	max	30.4	32.2	
Alkalinity (mg CaCO_3/L)	min	31	6	20 mg/L (minimum)
	mean	62	30	
	max	119	60	
Specific Conductance ($\mu\text{S}/\text{cm}$)	min	217	241	Greater of 50% above background or $1275 \mu\text{S}/\text{cm}$
	mean	349	402	
	max	571	627	
Dissolved Oxygen (mg/L)	min	0.30	3.17	5.0 mg/L (minimum)
	mean	3.94	5.90	
	max	6.74	7.30	
Total arsenic ($\mu\text{g}/\text{L}$)	min	N.D.*	N.D.*	50 $\mu\text{g}/\text{L}$
	mean	0.79	N.D.*	
	max	1.29	0.79	

* N.D. = below method detection limit (MDL) of $0.61 \mu\text{g}/\text{L}$

Effluent and Coagulant Toxicity Testing for the Grassy Island Facility

Chronic toxicity testing for Grassy Island HWTT effluent

Chronic effluent toxicity testing was conducted for the Grassy Island HWTT facility to demonstrate compliance with effluent limitations, as specified in Attachment 2 of FDEP Permit #0259591-008 (*Routine Monitoring of Chronic Effluent Toxicity Testing Requirements*). Testing was performed by Grove Scientific & Engineering Co. in Orlando, Florida and Marinco Bioassay Laboratory in Sarasota, FL.

Prior to the current reporting period (July 2015 – June 2016), chronic effluent toxicity testing was conducted on 19 occasions (over five reporting periods) following initiation of full-scale operation of the Grassy HWTT facility. During the current period one additional chronic effluent toxicity test was conducted on 9/15/15. Follow-up testing was conducted on 10/6/15 and 10/13/15, as discussed below. Results for tests during the current period, and the prior tests presented in earlier project reports, are shown in Table 4 and Table 5.

Table 4 shows inhibition concentrations (IC25) of Grassy HWTT effluent (Grassy Out) using fathead minnow (*Pimephales promelas*) and water flea (*Ceriodaphnia dubia*) test organisms. Also included in this table are test results for samples collected at the Grassy inflow site (“Grassy In”). These samples were included in the tests for screening purposes, and are not required by the facility permit. The IC25 is defined as the concentration of toxicant that would cause a 25% reduction in mean young per female or in growth for the test population.

For all tests during these monitoring periods the IC25 was greater than 100% effluent, with the exception of the 2/10/15 effluent test for fathead minnow (FM) growth. For that test period, results for the Grassy inflow sample also yielded an IC25 of <100%, hence, it is possible that growth inhibition observed for the Grassy effluent was a function of inflow water chemistry. The toxicity laboratory reported a high variability between replicates in effluent concentrations from 12.5% to 100% while the controls and the 6.25% effluent had 100% survival; indicating pathogen interference. There was also a growth observed around the organisms’ gills in the affected replicates; also indication of a pathogen interference.

Note that an IC25 level <100% was also determined for the Grassy inflow sample collected on 2/11/14. Test results for 9/15/15 indicated an IC25 level of 16.9% for *Ceriodaphnia* reproduction, although the reason for this uncharacteristic result is unknown. Subsequent re-testing for this parameter on 10/6 and 10/13/15 resulted in IC25 levels of >100%.

Table 5 shows non-observable effects concentrations (NOEC) for the same organisms. The NOEC is defined as the highest concentration of toxicant to which organisms are exposed in a full life-cycle or partial life-cycle (short-term) test, that causes no observable adverse effects on the test organisms (i.e., the highest concentration of toxicant in which the values for the observed responses are not statistically significantly different from the controls). For all tests during these monitoring periods, there were no observable effects on the test organism population at an effluent concentration strength of 100%, that is, the NOEC was 100% effluent. The only test result showing possible adverse effects was the Grassy inflow sample collected on 2/11/14, which also resulted in an IC25 of <100%.

In summary, results of all but two (2/10/15 and 9/15/15) of the chronic effluent toxicity tests conducted across all monitoring periods indicated full compliance with effluent limitations specified in the Grassy Island HWT operational permit, while IC25 <100% was reported for two tests of the influent stream (on 2/11/14 and 2/10/15). Furthermore, follow-up effluent testing after “failed” tests were in compliance with the specified effluent limitations.

Table 4. Inhibition concentrations (IC25) for fathead minnow and water flea test organisms as determined by chronic effluent toxicity testing of the Grassy Island HWT facility outflow stream. "Grassy In" is a screening sample and not part of the permit requirements.

Test Date ¹	Station	FM Growth (Eff) ²	CD Reproduction (Eff) ³
7/26/11	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
8/23/11	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
9/20/11	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
12/13/11	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
3/6/12	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
9/18/12	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
12/4/12	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
3/12/13	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
6/25/13	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
9/17/13	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
12/10/13	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
1/14/14	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
2/11/14	Grassy In ⁴	73.5%	>100%
	Grassy Out ⁵	>100%	>100%
5/28/14	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
8/19/14	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
11/10/14	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
2/10/15	Grassy In ⁴	88.1%	>100%
	Grassy Out ⁵	43.7%	>100%
3/30/15	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	>100%
6/9/15	Grassy In ⁴	>100%	>100%

Test Date ¹	Station	FM Growth (Eff) ²	CD Reproduction (Eff) ³
	Grassy Out ⁵	>100%	>100%
9/15/15	Grassy In ⁴	>100%	>100%
	Grassy Out ⁵	>100%	16.9%
10/6/15	Grassy In ⁴	n.p. ⁶	>100%
	Grassy Out ⁵	n.p. ⁶	>100%
10/13/15	Grassy In ⁴	n.p. ⁶	>100%
	Grassy Out ⁵	n.p. ⁶	>100%
¹ Initial date of the seven day test. ² FM: <i>Pimephalus promelas</i> (fathead minnow) ³ CD: <i>Ceriodaphnia dubia</i> (water flea) ⁴ Test concentration: 0 and 100% ⁵ Test concentration: 0%, 100%, 50%, 25%, 12.5%, & 6.25% ⁶ n.p. = test not performed Note: FDEP evaluated the 2/10/15 test results, and suggested the observed toxic effects were due to a pathogen interference			

Table 5. Non-observable effects concentrations (NOEC) for fathead minnow and water flea test organisms as determined by chronic effluent toxicity testing of the Grassy Island HWT facility outflow stream.

Test Date ¹	Station	FM Growth (Eff) ²	CD Reproduction (Eff) ³
7/26/11	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
8/23/11	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
9/20/11	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
12/13/11	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
3/6/12	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
9/18/12	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
12/4/12	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
3/12/13	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
6/25/13	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
9/17/13	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
12/10/13	Grassy In ⁴	100%	100%

Test Date ¹	Station	FM Growth (Eff) ²	CD Reproduction (Eff) ³
	Grassy Out ⁵	100%	100%
1/14/14	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
2/11/14	Grassy In ⁴	<100% ⁶	100%
	Grassy Out ⁵	100%	100%
5/28/14	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
8/19/14	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
11/10/14	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
2/10/15	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
3/30/15	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
6/9/15	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%
9/15/16	Grassy In ⁴	100%	100%
	Grassy Out ⁵	100%	100%

¹ Initial date of the seven day test.

² FM: *Pimephalus promelas* (fathead minnow)

³ CD: *Ceriodaphnia dubia* (water flea)

⁴ Test concentration: 0 and 100%

⁵ Test concentration: 0%, 100%, 50%, 25%, 12.5%, & 6.25%

⁶ a significant difference (P=0.05) water determined between survival, growth, reproduction, or fecundity in 100% or IWC, and control. See laboratory reports for further details.

Analysis of metals in alum floc and fish tissue in Grassy HWTT settling pond

The Grassy Island FDEP Permit #0259591-008 (Specific Condition #21) requires post-startup monitoring of the metals content of settled flocs and mosquitofish (*Gambusia holbrooki*) in the HWTT settling pond, as well as mosquitofish in Taylor Creek. As of 6/30/16, a total of 16 monitoring events has been conducted across multiple reporting periods, including monitoring events on 8/3/15 and 11/9/15. Samples of floc and mosquitofish were collected at three locations within the settling pond, and mosquitofish were collected (triplicate samples) in Taylor Creek at one upstream and one downstream location. The “upstream” site is upstream of the system intake structure, at a location unaffected by the HWTT discharge. The “downstream” site, was recently added as of the 5/27/15 sampling event, is located within 150 meters of the outflow structure.

Although the permit specifies collection of three fish samples in Taylor Creek, fewer samples were collected on some occasions (including no samples on 8/13/12, 11/12/12 and 12/9/13) due to the scarcity of fish (possibly due to the channelized nature of the creek in this area). The floc and fish samples were analyzed for a suite of metals, which included arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg) and lead (Pb). All analyses were performed by Brooks Rand Laboratories in Seattle, Washington.

Analytical results from all monitoring events through June 2016 are presented in Figure 130 and Figure 131. Metals concentrations in mosquitofish from the floc settling pond have been comparable to or less than concentrations in fish collected from Taylor Creek during the majority of the sampling events (Figure 130). Tissue concentrations of Cd and Cr were frequently below detection limits. For all sampling events, fish tissue metals concentrations in both the settling pond and Taylor Creek were substantially lower than corresponding predator protection limits recognized by USFWS (Giggleman and Lewis, 2002) (Table 6).

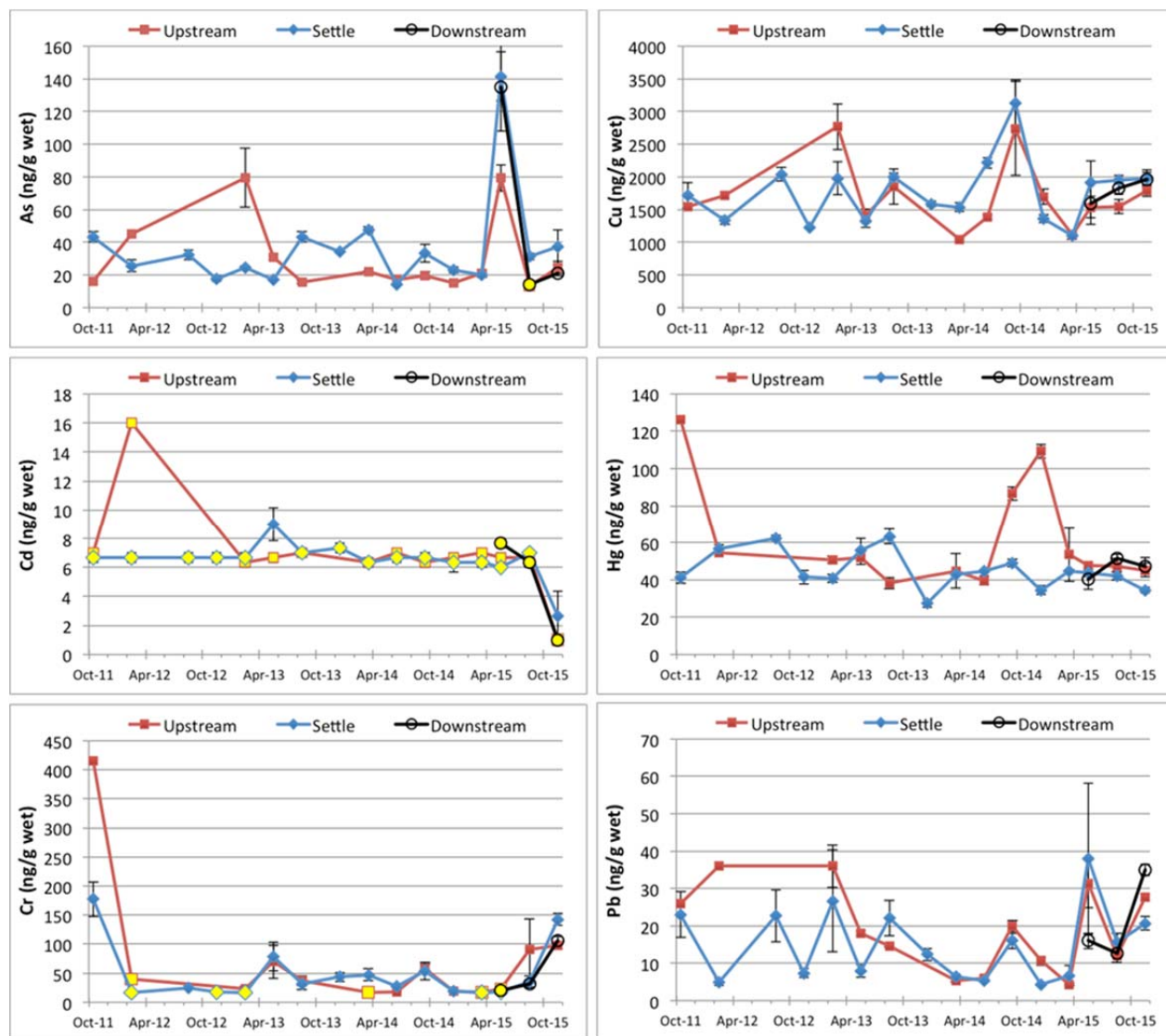


Figure 130. Total recoverable metal concentrations in *Gambusia* (ng/g wet) collected during sampling events from October 2011 – November 2015 in the Grassy HWT settling pond and Taylor Creek, upstream and downstream of the Grassy HWT facility.

We were unsuccessful in capturing fish from Taylor Creek during the 8/13/12, 11/12/12 and 12/9/13 sampling events. Values represent mean and SE of triplicate samples. MDL values are shown where concentrations were non-detectable (data points with yellow fill).

Table 6. Predator protection limits for tissue metal concentrations in prey fish, as cited by USFWS in Giggelman and Lewis (2002).

Analyte	Predator protection limit (ng/g wet)	Reference ¹
As	30000	Eisler (1988a)
Cd	500	Irwin (1988)
Cr	880	Eisler (1986a) ²
Cu	300000	NRC (1980)
Hg	100	Eisler (1987)
Pb	50000	NRC (1980)

¹References cited in Giggelman and Lewis, 2002 (USFWS).

²Cr guidance value of 4 mg/kg dry wt. was converted to wet wt. basis using mean total solids value of 22% for fish collected in Grassy pond.

Results of the analysis of bottom sediments (settled floc) in the Grassy HWTT settling pond (Figure 131) demonstrate that concentrations of all of the metals analyzed are consistently low relative to corresponding threshold effect (TEC) and probable effect (PEC) concentrations levels developed for sediments in Florida inland (fresh) waters (Table 7). It should be noted that apparent spikes in As, Cd and Cr during the 5th sampling event were an artifact of the relatively high MDL reported for those dates by the contract laboratory. The high MDLs, in turn, were caused by the low solids content of the submitted wet floc. For the most part, As and Cd concentrations have been below laboratory detection limits, while concentrations of Cr, Cu, Hg and Pb have been measurable, but considerably lower than TEC levels.

Overall, the analysis of metals in alum floc in the Grassy settling pond provides clear evidence that the use of alum coagulant in the HWTT system has not resulted in accumulation of harmful levels of As, Cd, Cr, Cu Hg or Pb in residual floc and sediments. Furthermore, analysis of metals in *Gambusia* tissue shows no indication of significant bioaccumulation of these metals relative to predator protection limits reported by USFWS.

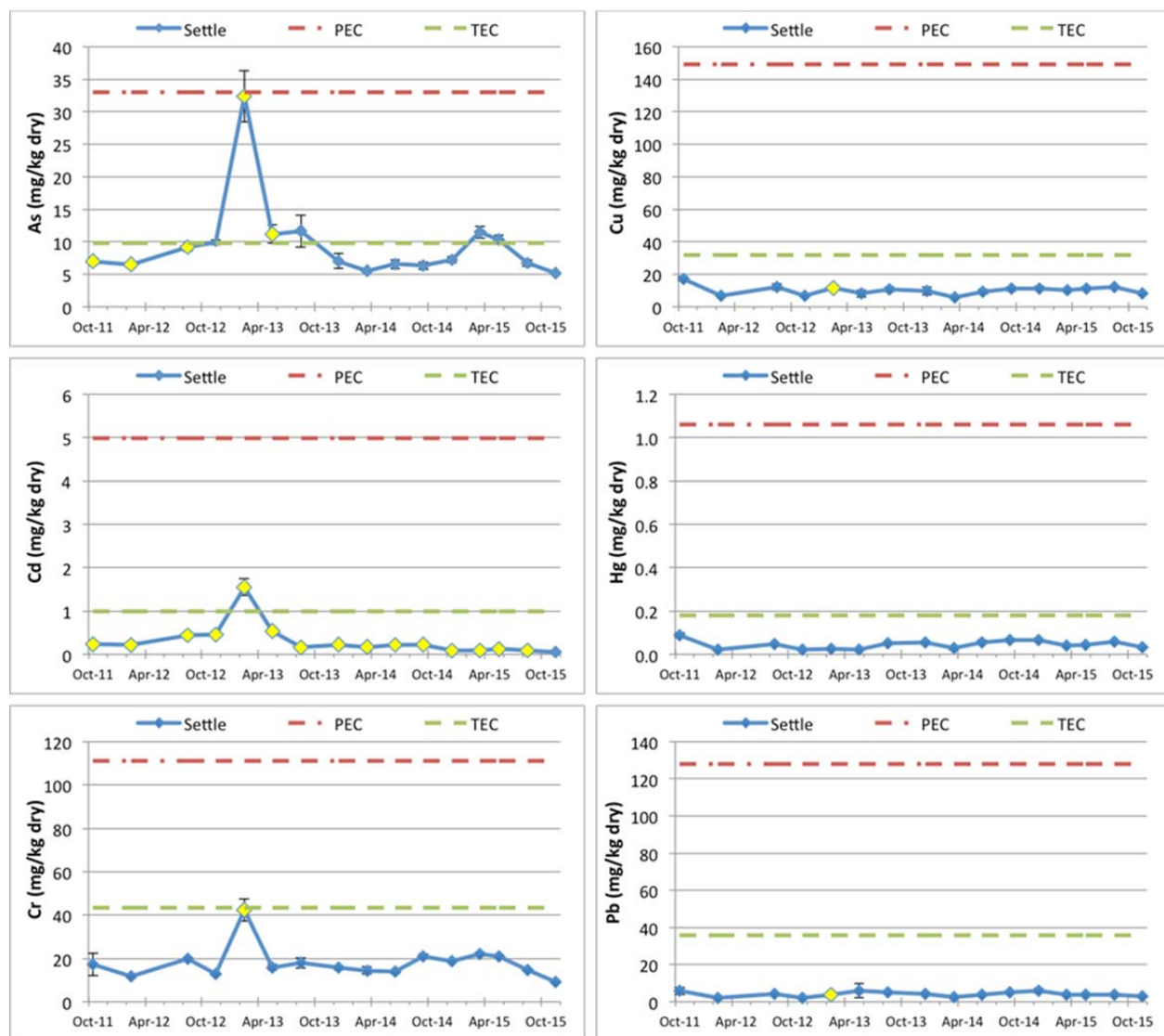


Figure 131. Total recoverable metal concentrations in floc (mg/kg dry) collected during sampling events from October 2011 – November 2015 in the Grassy HWT settling pond. Values represent mean and SE of triplicate samples. MDL values are shown where concentrations were non-detectable (data points with yellow fill).

Table 7. Numerical sediment quality assessment guidelines (mg/kg dry wt.) for selected metals in Florida inland waters (MacDonald et al., 2003). TEC = threshold effect concentration; PEC = probable effect concentration.

Metal	PEC	TEC
As	33	9.79
Cd	4.98	0.99
Cr	111	43.4
Cu	149	31.6
Hg	1.06	0.18
Pb	128	35.8

Effluent and Coagulant Toxicity Testing for the Lemkin Creek Facility

Chronic toxicity testing for Lemkin Creek HWTT effluent

The Lemkin HWTT facility has undergone four quarterly chronic testing events (January, March, June and September 2015) using *Ceriodaphnia dubia* (water flea) and *Pimephales promelas* (fathead minnow). For all events, the LC50 test met permit requirements for both species; however, the IC25 test did not meet the requirements for *C. dubia* in January, March and September, and for *P. promelas* in March. The appropriate follow-up tests for each event were performed.

It should be noted that several of the tests performed incorporate one or two additional screening sites (designated as 'In' or 'SAV-In'). Because these stations were not required as part of the permit, the tests therefore were performed on dilutions of only 0 and 100%. The tests performed at the outflow station (designated as 'SAV Out' or 'Out') underwent the full test in accordance with the permit.

A summary of the test results is provided below.

The January 2015 chronic toxicity test was performed on Lemkin HWTT inflow and outflow waters beginning 1/12/15. The results of this test passed at both locations except the IC25 using *C. dubia* on the outflow waters (Table 8 and Table 9). Per permit

requirements, two additional IC25 tests using *C. dubia* were performed. For the two additional tests a third sampling location (SAV-In) was added to potentially help isolate the source of the toxicity. The SAV-In station is located downstream of the chemical dosing location but upstream of the HWTT discharge (outflow) (Figure 132).

The IC25 *C. dubia* results of the first follow-up test, initiated on 2/2/15, passed for the Inflow and SAV-In locations but failed at the Outflow location. The results of the second test, initiated on 2/9/15, passed for all locations (Table 8).

All of the laboratory reports for the chronic toxicity test described have previously been submitted to FDEP.

The March 2015 chronic toxicity test was performed at the Lemkin HWTT facility on March 30, 2015 (Figure 132). While the LC50 passed at all locations, the passing requirements for IC25 were not met for either species at the outflow location (Table 8 and Table 9). Per permit requirements, two follow-up IC25 tests using *C. dubia* and *P. promelas* were performed. In addition to the standard follow-up testing, at the suggestion of the toxicity testing laboratory, two additional tests also were performed to further investigate the possible reasons for failure. The first is an algal ID test that was performed on the inflow waters to identify the presence of cyanobacteria that could potentially be toxic, affecting the survival of the *C. dubia*. The second test was a Pathogen Interference Reduction (PIR) test to help determine if a pathogen was affecting the survival of *P. promelas*. Both of these additional tests were performed on the first follow-up test only. For the second follow-up test the intermediate sampling location (SAV-In) was added to help isolate the source of the toxicity (Figure 132).

The IC25 *C. dubia* results of the first follow-up test, initiated on 4/20/15, passed for the Inflow but failed at the Outflow location. The results of the second test, initiated on 4/27/15, passed for Inflow but failed at the SAV In and Outflow locations (Table 8). The Algal ID test, performed on inflow and outflow waters collected on 4/20/15, indicated the presence of potentially toxic cyanobacteria in both waters. At the inflow, the total cell count was 9,788 cells/mL, with the dominant group consisting of Cyanobacteria (89%). The total

cell count at the outflow location (Figure 133) was 21,170 cells/ml with the dominant group consisting of Cyanobacteria (52%) and Chlorophyta (46%). Total numbers of potentially toxic cyanobacteria were 37 and 23% of the total cell count at the inflow and outflow waters, respectively.

The IC25 *P. promelas* tests passed the requirements for both follow-up tests (Table 8). In addition, during these follow-up tests, the toxicity testing laboratory did not observe any of the previous indicators that a pathogen interference was detected (i.e, fuzzy cotton-like growth observed on the dead organisms in the affected replicates; and high variability between replicates).

The June 2015 chronic toxicity test was performed at the Lemkin HWTT facility on June 9, 2015 (Figure 132). The permit requirements for both LC50 and IC25 were met for both species at the outflow location (Tables 8 and Table 9). Note that one of the screening stations (SAV In) reported IC25<100% for *C. dubia*.

All of the laboratory reports for the chronic toxicity test described have previously been submitted to FDEP.

The September 2015 chronic toxicity test was performed on Lemkin HWTT inflow and outflow waters beginning 9/15/15. The results of this test passed at both locations except the IC25 using *C. dubia* on the outflow waters (Tables 8 and Table 9). Per permit requirements, two additional IC25 tests using *C. dubia* were performed. The IC25 *C. dubia* results for both follow-up tests, initiated on 10/6/15 and 10/13/15, passed for all locations (Table 8).

All of the laboratory reports for the chronic toxicity test described have previously been submitted to FDEP.

Chronic toxicity testing for Wolff HWTT Facility

Similar to the Lemkin HWTT described in the previous section, the Wolff HWTT facility has undergone four quarterly chronic testing events (December 2014 and March, June and

September 2015) using *Ceriodaphnia dubia* (water flea) and *Pimephales promelas* (fathead minnow) (Figure 132). For all events, the LC50 and IC25 test met permit requirements for both species (Table 10 and Table 11). However, it should be noted that the location 'Wolff In' (a screening location) did not pass the *C. dubia* IC25 test during the March 2015 event (Table 10).

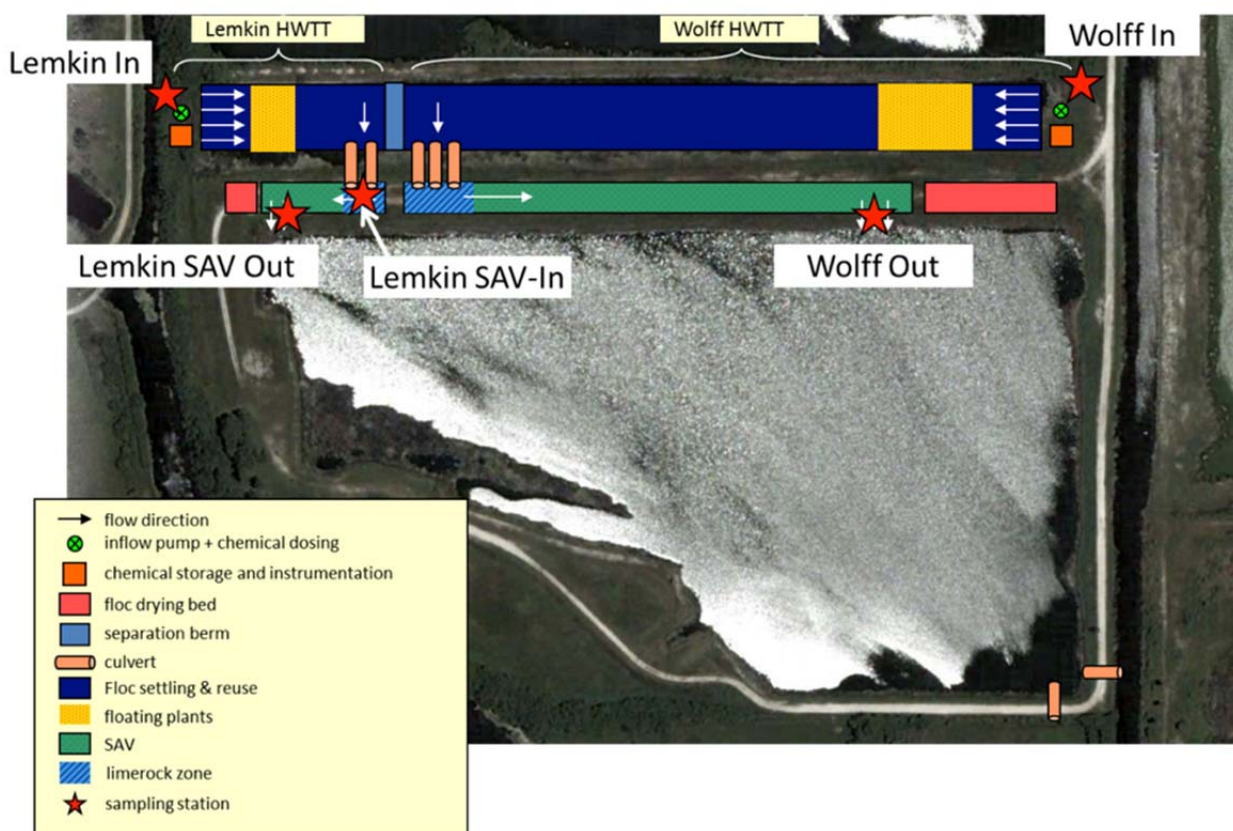


Figure 132. Map depicting the locations (red stars) of the chronic toxicity testing locations at both the Lemkin and Wolff HWT facilities.

Table 8. Results from the IC25 chronic toxicity test for *C. dubia* and *P. promelas* on waters collected at the Lemkin HWTT facility during January 2015 through October 2016. Screening sites, not required by permit, are designated with an “*”.

Date	Station ID	<i>C. dubia</i>	<i>P. promelas</i>	<i>P. promelas</i> (PIR)
January 12, 2015	Lemkin In*	>100%	>100%	NA
	Lemkin SAV Out	11.1%	>100%	NA
February 2, 2015 “follow-up test”	Lemkin In*	>100%	NA	NA
	Lemkin SAV In*	>100%	NA	NA
	Lemkin SAV Out	83.0%	NA	NA
February 9, 2015 “follow-up test”	Lemkin In*	>100%	NA	NA
	Lemkin SAV In*	>100%	NA	NA
	Lemkin SAV Out	>100%	NA	NA
March 30, 2015	Lemkin In*	>100%	>100%	NA
	Lemkin SAV In*	77.3%	NA	NA
	Lemkin SAV Out	89.5%	50.2%	NA
April 21, 2015 “follow-up test”	Lemkin In*	>100%	>100%	>100%
	Lemkin SAV Out	56.7%	>100%	>100%
April 27, 2015 “follow-up test”	Lemkin In*	>100%	>100%	NA
	Lemkin SAV In*	72.7%	>100%	NA
	Lemkin SAV Out	85.8%	>100%	NA
June 9, 2015	Lemkin In*	>100%	>100%	NA
	Lemkin SAV In*	66.0%	>100%	NA
	Lemkin SAV Out	>100%	>100%	NA
September 15, 2015	Lemkin In*	>100%	>100%	NA
	Lemkin SAV Out	28.7%	>100%	NA
October 6, 2015 “follow-up test”	Lemkin In*	>100%	NA	NA
	Lemkin SAV Out	>100%	NA	NA
October 13, 2015 “follow-up test”	Lemkin In*	>100%	NA	NA
	Lemkin SAV Out	>100%	NA	NA

Table 9. Non-observable effects concentrations (NOEC) for fathead minnow and water flea test organisms as determined by chronic effluent toxicity testing of the Lemkin HWT facility outflow stream. Screening sites, not required by permit, are designated with an “*”.

Test Date ¹	Station	FM Growth (Eff) ²	CD Reproduction (Eff) ³
January 12, 2015	Lemkin In*	100%	100%
	Lemkin SAV Out	100%	100%
February 2, 2015 “follow-up test”	Lemkin In*	100%	100%
	Lemkin SAV In*	100%	100%
	Lemkin SAV Out	100%	100%
February 9, 2015 “follow-up test”	Lemkin In*	100%	100%
	Lemkin SAV In*	100%	100%
	Lemkin SAV Out	100%	100%
March 30, 2015	Lemkin In*	100%	100%
	Lemkin SAV In*	100%	100%
	Lemkin SAV Out	100%	100%
April 21, 2015 “follow-up test”	Lemkin In*	100%	100%
	Lemkin SAV Out	100%	100%
April 27, 2015 “follow-up test”	Lemkin In*	100%	100%
	Lemkin SAV In*	100%	100%
	Lemkin SAV Out	100%	100%
June 9, 2015	Lemkin In*	100%	100%
	Lemkin SAV In*	100%	100%
	Lemkin SAV Out	100%	100%
September 15, 2015	Lemkin In*	100%	100%
	Lemkin SAV Out	100%	100%
October 6, 2015 “follow-up test”	Lemkin In*	100%	100%
	Lemkin SAV Out	NA	100%
October 13, 2015 “follow-up test”	Lemkin In*	NA	100%
	Lemkin SAV Out	NA	100%
¹ Initial date of the seven day test. ² FM: <i>Pimephalus promelas</i> (fathead minnow) ³ CD: <i>Ceriodaphnia dubia</i> (water flea)			

Table 10. Results from the IC25 chronic toxicity test for *C. dubia* and *P. promelas* on waters collected at the Wolff HWTT facility during December 2014 through September 2015. Screening sites, not required by permit, are designated with an “*”.

Date	Station ID	<i>C. dubia</i>	<i>P. promelas</i>
December 8, 2014	Wolff In*	>100%	>100%
	Wolff Out	>100%	>100%
March 30, 2015	Wolff In*	84.4%	>100%
	Wolff SAV Out	>100%	>100%
June 9, 2015	Wolff In*	>100%	>100%
	Wolff SAV Out	>100%	>100%
September 15, 2015	Wolff In*	>100%	>100%
	Wolff Out	>100%	>100%

Table 11. Non-observable effects concentrations (NOEC) for fathead minnow and water flea test organisms as determined by chronic effluent toxicity testing of the Wolff HWTT facility outflow stream. Screening sites, not required by permit, are designated with an “*”.

Test Date	Station	FM Growth (Eff) ²	CD Reproduction (Eff) ³
December 8, 2014	Wolff In*	100%	100%
	Wolff Out	100%	100%
March 30, 2015	Wolff In*	100%	100%
	Wolff SAV Out	100%	100%
June 9, 2015	Wolff In*	100%	100%
	Wolff SAV Out	100%	100%
September 15, 2015	Wolff In*	100%	100%
	Wolff Out	100%	100%

¹ Initial date of the seven day test.
² FM: *Pimephalus promelas* (fathead minnow)
³ CD: *Ceriodaphnia dubia* (water flea)



Figure 133. Photo depicting filamentous algae in the outflow region of the Lemkin SAV pond.

Discussion

For decades, chemical treatment systems and treatment wetlands have been utilized independently for treating wastewaters and surface waters. Due to their low land area requirements, chemical treatment systems often are utilized in urban settings. However, these systems have moderate to high operating costs due to their continuous consumption of chemicals (i.e., coagulant, buffers, coagulant aids). In chemical treatment systems the pollutant removal efficiency (and outflow concentration) is controlled largely by inflow pollutant concentrations, chemical characteristics of the water (alkalinity, color, turbidity) and the coagulant dose. In these systems, pollutants are removed from the water column by adsorption to, or incorporation into, a chemical floc that settles to the bottom of a pond or clarifier. The floc is periodically removed from the system, dried, and typically transported to another site for land application or disposal, often at a relatively high cost. While extremely effective for removing many water pollutants such as P, chemical treatment is less effective for removing other constituents, such as dissolved inorganic nitrogen (N) species.

In contrast to chemical treatment systems, treatment wetlands occupy a much larger area (footprint), and differ markedly with respect to contaminant removal efficiencies. For example, wetlands are quite effective (on an areal basis) at removing inorganic N species, but require large amounts of land for effective P removal (DeBusk et al., 2005). Pollutant removal in treatment wetlands is usually controlled by manipulating system hydraulic residence time (HRT) (i.e., footprint) (Kadlec and Wallace, 2009), and to a lesser extent, the type(s) of dominant vegetation. Unlike chemical treatment systems, pollutant removal in treatment wetlands is accomplished through both transformations and sequestration. For example, constituents such as N and carbon (C) typically are transformed within treatment wetlands, with a portion liberated as gaseous forms and the remainder sequestered in the sediments. Other constituents, such as P and heavy metals, rely solely on sediment sequestration (burial) as an ultimate removal mechanism. Extremely large treatment wetlands, termed Stormwater Treatment Areas (STAs), have been constructed throughout south Florida for reducing P levels in runoff. Depending on environmental conditions, P in

wetland sediments that is associated with either recalcitrant organic matter, or bound to metal (iron, calcium and particularly, aluminum) compounds in the sediments, can remain permanently sequestered. Environmental perturbations, such as system drydown and reflooding, can result in the release of sediment P associated with organic matter, thereby impairing the long-term removal efficiency.

The HWTT concept was developed with the intent of harnessing and integrating the strengths of both wetland and chemical treatment technologies. HWTT systems are comprised of vegetated zones (primarily with floating and/or submerged macrophytes) and non-vegetated zones, and utilize internal floc recycling as well as the drying of floc material with subsequent re-introduction into the treatment train. Chemical coagulants are added to the front-end of the system, which is equipped with one or more deep zones to capture and store the resulting chemical flocs. A fundamental concept of the HWTT is that the floc material resulting from coagulant addition remains at least temporarily viable, and can be “re-used” for additional P removal. Findings from the present study demonstrate that the HWTT configuration offers a superior alternative to conventional chemical treatment systems and STAs for treatment of Northern Everglades runoff. Key attributes of this technology, as demonstrated by current and previous investigations, are as follows:

- HWTT systems can achieve low outflow TP concentrations
- HWTT systems provide effective nitrogen removal
- HWTT systems provide efficient floc management alternatives
- HWTT systems are economical, and further minimization of coagulant use may be attainable for Northern Everglades sub-basins

The optimization plan for HWTT system operations is intended to maximize phosphorus removal in the most cost effective manner. Since chemical coagulant (aluminum sulfate or alum) accounts for a significant portion of operational costs, many strategies for minimizing its use (thereby limiting excessive aluminum outflow concentrations) have been incorporated into the design and operation of HWTT systems, such as:

- optimization of the chemical coagulant dosage

- active reuse of flocculants in the contact pond
- passive reuse of flocculants in the floating aquatic vegetation pond

Monitoring results from the most recent reporting period (July 1, 2015 through June 29, 2016) reflect the high efficiency of HWT systems for treatment of waters with widely varying chemical characteristics and P loads. In addition, these results provide clear evidence of the sustainability and long-term P removal capacity of these systems.

All of the HWT systems continued to provide effective removal of TP during the July 2015-June 2016 monitoring period. In particular, the Ideal Grove, Grassy Island and Bessey Creek systems were exemplary in this regard, despite extremely variable inflow TP concentrations at these sites. Arranged in descending order of % reduction in inflow TP, flow-weighted mean inflow TP concentrations were reduced from 1842 to 39 µg/L (98% reduction) at the Ideal facility, 501 to 42 µg/L (92% reduction) at both Grassy and Bessey, 232 to 26 µg/L (89% reduction) at Lemkin, 547 to 102 µg/L (81% reduction) at Mosquito, 125 to 27 µg/L (79% reduction) at Wolff, and 773 to 173 µg/L (78% reduction) at the Nubbin facility. With the exception of the Nubbin Slough HWT (removal declined slightly), percent removal on a flow-weighted mean basis improved compared to the previous monitoring period.

Total N concentration was effectively reduced in all of the HWT systems during the monitoring period. Mean inflow TN concentration ranged from 1.57 mg/L at the Bessey Creek HWT facility to 3.60 mg/L at the Mosquito Creek facility. The lowest mean outflow TN concentration (0.67 mg/L) was observed at the Bessey Creek HWT system, which achieved an average reduction in TN concentration of 57 percent. N removal in this system appears to be enhanced by the shallow SAV zone, which provides an extended HRT in the back end of the system. The Ideal Grove HWT system, which also incorporates a back-end SAV zone, achieved an average TN reduction of 58 percent, from a mean concentration of 3.47 mg/L at the inflow to 1.47 mg/L in the outflow stream, a result very similar to the previous monitoring period. Lower percent reduction of TN was observed at the Lemkin and Wolff HWT facilities (13 and 17 percent, respectively), owing to the relatively low

inflow concentration at both sites. Mean outflow TN concentrations at both Lemkin and Wolff (1.57 and 1.36 mg/L, respectively), however, were comparable to outflow TN at the Ideal facility. As was found for the 2014 – 2015 monitoring period, mean outflow TN concentrations were highest for Nubbin Slough (2.04 mg/L) and Mosquito Creek (1.85 mg/L), the two HWT systems lacking a shallow vegetated zone. Nevertheless, reductions in mean TN concentrations were favorable at both sites: 31 and 49 percent at Nubbin and Mosquito Creek, respectively. This represents an improvement in TN removal compared to the 2014 – 2015 period. The recently constructed Bessey HWT system achieved both a relatively high reduction in TN concentration (57%) and a very low mean outflow concentration of TN (0.67 mg/L). Though the mean outflow concentration is nearly identical to the previous period, reduction in TN improved by 7%.

Inflow water chemistry at several of the HWT sites exhibited a typically high degree of variability during the reporting period, due to both seasonal trends and short-term fluctuations. Short-term temporal changes in inflow water chemistry are likely caused by a combination of interrelated factors. These may include dilution of dissolved constituents from rainfall and resulting increases in streamflow, increased particulate load during major rain events, variable loading of P and other constituents in the watershed, accelerated transport (flushing) of these constituents from watershed soils to receiving streams during rain events (counteracting dilution effects), and antecedent rainfall levels.

Wide fluctuations in water chemistry have presented a challenge to maintaining a consistently high level of TP removal, and have adversely affected the efficiency of the coagulation process, and subsequently the export of total Al (as “micro-flocs”) from the system. For example, high levels of color (indicative of dissolved organic matter) tend to create problems with floc formation. Large spikes in color were periodically observed, particularly under high stream flow conditions, in the inflow stream at all of the HWT inflows during the monitoring period. Maximum color levels for the POR approached 1000 PCU; for example, a color concentration of 962 PCU was measured in the Grassy Island HWT inflow stream during August 2015.

Elevated outflow Al concentrations in the Grassy Island HWTT outflow during early September 2015 may have been associated with the high levels of color in the inflow stream. However, as previously noted, other chemical parameters in the Taylor Creek inflow water can potentially interfere with floc formation. As commonly observed during the operation of the Grassy HWTT system, increased flow in Taylor Creek, and in the Grassy HWTT system, during the wet season is often accompanied by increases in inflow water TP and color, and a substantial drop in alkalinity, all of which are detrimental to the effectiveness of the HWTT system chemical coagulation process. It is important to note that the increased flow *per se* does not present a problem for the HWTT process; for example, outflow TAl concentration at Grassy decreased as relatively high flow rates persisted throughout September and well into October [Figure 134]. On the other hand, the decreasing trend in outflow TAl following the early September spike coincided with a decrease in inflow color concentration and an increase in inflow alkalinity (Figure 134). At the Lemkin and Wolff “high alkalinity” sites, inflow color concentration appeared to be associated with the large fluctuation in outflow TAl during the same time period. During the upcoming operational year, efforts will be continued to understand (and control) the factors that lead to micro-floc formation and TAl export in the HWTT facilities.

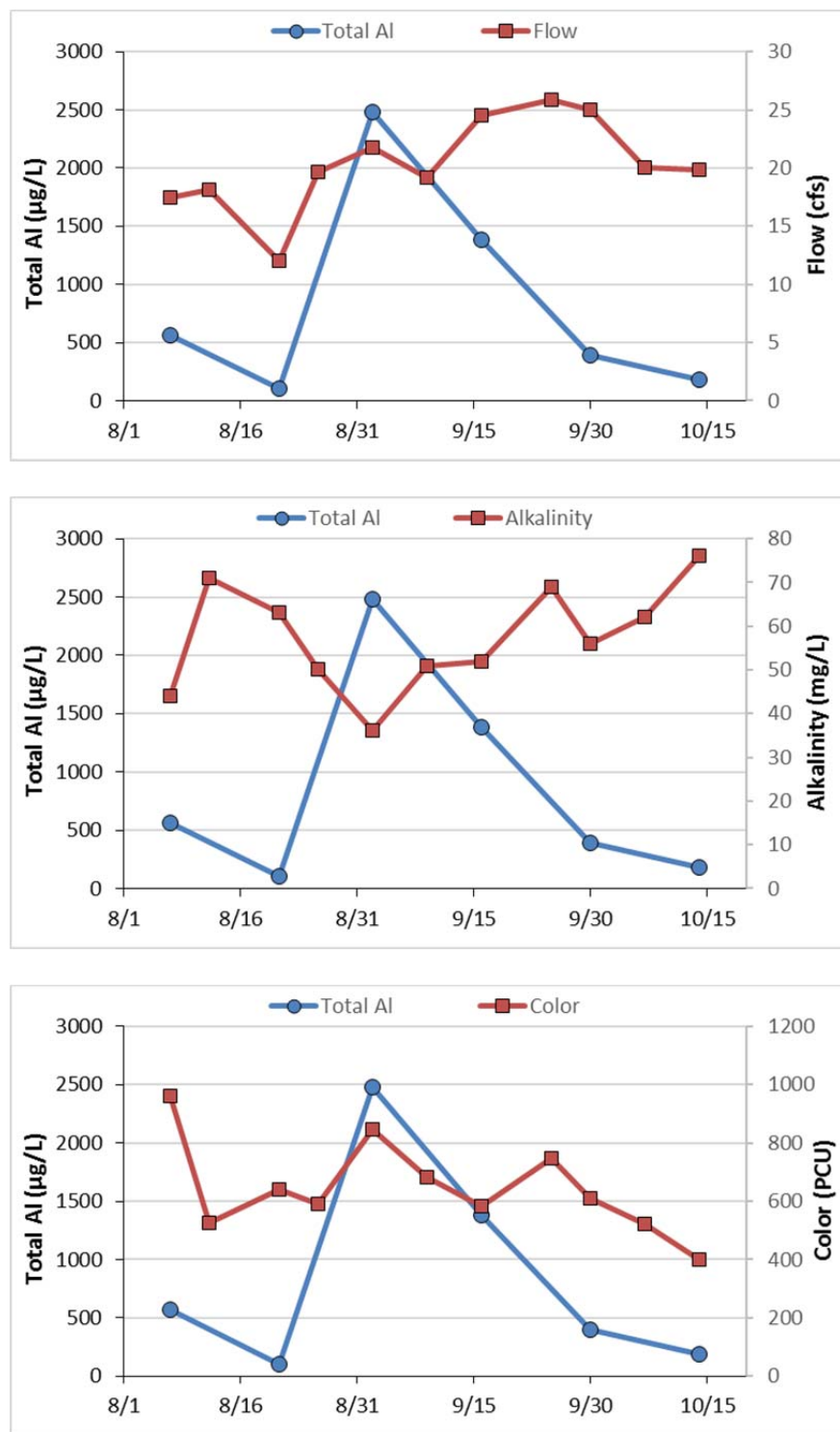


Figure 134. Total Al concentration in the Grassy HWTT outflow stream during the wet season period 8/7-10/14/15, compared with weekly average of daily mean flows (top), and inflow concentrations of alkalinity (middle) and color (bottom).

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Implementation of Hybrid Wetland Treatment Technology in the Northern Everglades Watershed

Deliverable #19: Final Report

Chapter II: Performance Measures Phosphorus & Nitrogen Removal, Economic Analyses, and Environmental & Ancillary Benefits Sites 1-10

Prepared for:
**Florida Department of Agriculture and Consumer Services
(FDACS)**

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Glossary of Acronyms

Al:	Aluminum
ATS:	Algal Turf Scrubber
cfs:	Cubic Feet per Second
EOF:	Edge of Farm
FAV:	Floating Aquatic Vegetation
FDEP:	Florida Department of Environmental Protection
FT:	foot
FWM:	Flow Weighted Mean
GFI:	ground-fault interrupter
gpm:	gallons per minute
hp:	horsepower
HWTT:	Hybrid Wetland Treatment Technology
HRT:	Hydraulic Retention Time
lbs:	Pounds
µg/L:	Micrograms per Liter
mg/L:	Milligrams per Liter
NO _x :	Nitrate + Nitrite
N:	Nitrogen
O&M:	Operations and Maintenance
P:	Phosphorus
PAC:	Polyaluminum Chloride
PP:	Particulate Phosphorus
POR:	Period of Record
PV:	Present Value
SAV:	Submerged Aquatic Vegetation
SFWMD:	South Florida Water Management District
STA's:	Stormwater Treatment Areas
TMDL:	Total Maximum Daily Load
TN:	Total Nitrogen
TP:	Total Phosphorus
VFD:	Variable Frequency Drive

Executive Summary Chapter II

Table 1 provides a comparative summary of key parameters for the Hybrid Wetland Treatment Technology (HWTT) operational systems. The Table is linked to an Excel Spreadsheet, which can be accessed by clicking on the image. The data is stored in a table format, and the drop down menus can be used to sort by specific parameters to perform both horizontal and vertical analyses over time for all sites. Additional data is available in the Parameter Menu.

Since the current period of record (POR) relates to a partial period that was not chronologically continuous, costs could not be reliably tabulated to utilize for the Cost/Benefit calculations. Expense data is available by quarter, and a split partial period coupled with sites on temporary inactive status would necessitate unreasonable assumptions and rely upon non-representative values. The total current year costs are shown in the cost data by site within this Report; however, the Cost/Benefit values are based upon Fiscal Year 2016-2017 expenses. The Cost/Benefit calculations, therefore, represent rough approximations based upon various projections; the values will not be included in historically reported data and represent broad measures of performance for the current PORs. The projected values show an improvement in the Cost/Benefit at all sites except Nubbin Slough and Wolff Ditch. As Bessey Creek is in the optimization phase, a Cost/Benefit was not calculated for the current POR. Cost/Benefit calculations for N removal effectiveness were also calculated for Grassy Island under the same assumptions.

The extent to which water quality and flow data were affected by the split partial period, which coincided with the wet season, cannot be quantified. The total phosphorus (TP) flow weighted mean (FWM) percent removal improved at all sites except Nubbin Slough. The TP FWM inflow concentrations varied at each site relative to the previous POR. Capacity utilization improved at Nubbin Slough, Wolff Ditch, and Grassy Island and remained approximately the same at Mosquito Creek. The significant increase at Grassy Island was largely due to the addition in capacity.

All sites met the Peninsula Florida Numeric Nutrient Criteria (NNC) for phosphorus (P) concentration. Regarding the NNC for nitrogen (N) concentrations, all sites met the

criterion except Nubbin Slough and Mosquito Creek, which have two of the highest N inflow levels. Total P mass removal decreased at all sites (excluding Lemkin Creek), as expected, given the abbreviated time period. Conversely, P removal per day increased or remained static corresponding to wet season activity. The data comparisons are only relevant for general contrasts given the disparities in PORs.

In a report prepared by Hazen and Sawyer (Hazen and Sawyer, 2014), Cost/Benefit values were tabulated for water remediation projects in St. Lucie and Martin Counties, and the data has been compared to the HWTT statistics in this Final Report based upon the previous POR. Performance measurements for the HWTT systems are considerably lower than the Cost/Benefit values for St. Lucie and Martin Counties, including median and high and low calculations for TP, TN, and TP and TN combined.

The locations of the HWTT systems are depicted in Figure 1 together with area Rain Stations and Regional and HWTT watersheds. The associated thirty-year average regional rainfall and the current contract period data are presented in Table 2, as compared to HWTT site capacity and TP removal. Rainfall for the period ranged from a low of 117% at Nubbin Slough to a high of 143% at Grassy Island versus the thirty-year average. Extrapolations of rainfall and system utilization are not necessarily valid due to the shortened current POR, which also spanned the wet season. The rainfall for the current POR is also shown in the table to provide a more relevant set of data for comparative purposes.

Table 1. Key Parameters Sites 1-3, 5-7.

Double click image to open Excel Spreadsheet File. Use drop-down menus to select sort by site and/or desired parameters. Please note that additional data and periods are available in the Parameter drop-down menu.

Key Parameters Sites 1-3, 5-7									
Periods 1-8 (See Notes & Assumptions)									
*Projected Full Capacity Utilization									
Site	Parameter	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Column8	
Nubbin Slough	Cost/Benefit \$/lb. PV*	\$33	\$30	\$ 30	\$ 34	\$ 72	\$ 24	\$ 32	
Nubbin Slough	FWM TP Conc. In µg/L	794	792	819	775	799	1,011	773	
Nubbin Slough	FWM TP Conc. Out µg/L	73	109	231	169	247	179	173	
Nubbin Slough	% Change TP Conc. In vs. Out	91%	86%	72%	78%	69%	82%	78%	
Ideal Grove	Cost/Benefit \$/lb. PV*	\$85	\$108	\$ 163	\$ 67	\$ 67	\$ 79	\$ 56	
Ideal Grove	FWM TP Conc. In µg/L	258	347	421	623	862	814	1,842	
Ideal Grove	FWM TP Conc. Out µg/L	16	50	19	24	48	56	39	
Ideal Grove	% Change TP Conc. In vs. Out	94%	86%	96%	96%	94%	93%	98%	
Mosquito Creek	Cost/Benefit \$/lb. PV*	\$69	\$80	\$ 98	\$ 123	\$ 88	\$ 58	\$ 56	
Mosquito Creek	FWM TP Conc. In µg/L	345	506	435	541	640	621	547	
Mosquito Creek	FWM TP Conc. Out µg/L	61	149	85	118	150	142	102	
Mosquito Creek	% Change TP Conc. In vs. Out	82%	70%	81%	78%	77%	77%	81%	
Lemkin Creek	Cost/Benefit \$/lb. PV*	\$261	\$359	\$ 259	\$ 283	\$ 169	\$ 234	\$ 112	
Lemkin Creek	Cost/Benefit \$/lb. PV So. Pond*				\$ 264	\$ 145	\$ 203	\$ 83	
Lemkin Creek	Cost/Benefit \$/lb. PV So. Pond Cost Avoidance*						\$ 191	\$ 76	
Lemkin Creek	FWM TP Conc. In µg/L	85	76	87	85	101	132	232	
Lemkin Creek	FWM TP Conc. Out µg/L	30	22	31	24	\$ 29	\$ 42	\$ 70	
Lemkin Creek	% Change TP Conc. In vs. Out	64%	71%	64%	71%	71%	68%	70%	
Lemkin Creek	% Change TP In vs. Out So. Pond				76%	83%	79%	89%	
Wolff Ditch	Cost/Benefit \$/lb. PV*	\$51	\$252	\$ 114	\$ 105	\$ 115	\$ 95	\$ 104	
Wolff Ditch	Cost/Benefit \$/lb. PV So. Pond*				\$ 82	\$ 109	\$ 75	\$ 80	
Wolff Ditch	Cost/Benefit \$/lb. PV So. Pond Cost Avoidance*						\$ 65	\$ 66	
Wolff Ditch	FWM TP Conc. In µg/L	114	44	95	156	146	156	125	
Wolff Ditch	FWM TP Conc. Out µg/L	28	23	35	52	\$ 24	\$ 62	\$ 41	
Wolff Ditch	% Change TP Conc. In vs. Out	75%	48%	63%	66%	83%	61%	67%	
Wolff Ditch	% Change TP In vs. Out So. Pond				85%	88%	77%	79%	
Grassy Island	Cost/Benefit \$/lb. PV*		\$91	\$ 90	\$ 61	\$ 59	\$ 71	\$ 52	
Grassy Island	FWM TP Conc. In µg/L		575	327	442	490	411	501	
Grassy Island	FWM TP Conc. Out µg/L		165	27	50	93	40	42	
Grassy Island	% Change TP Conc. In vs. Out		71%	92%	89%	81%	90%	92%	

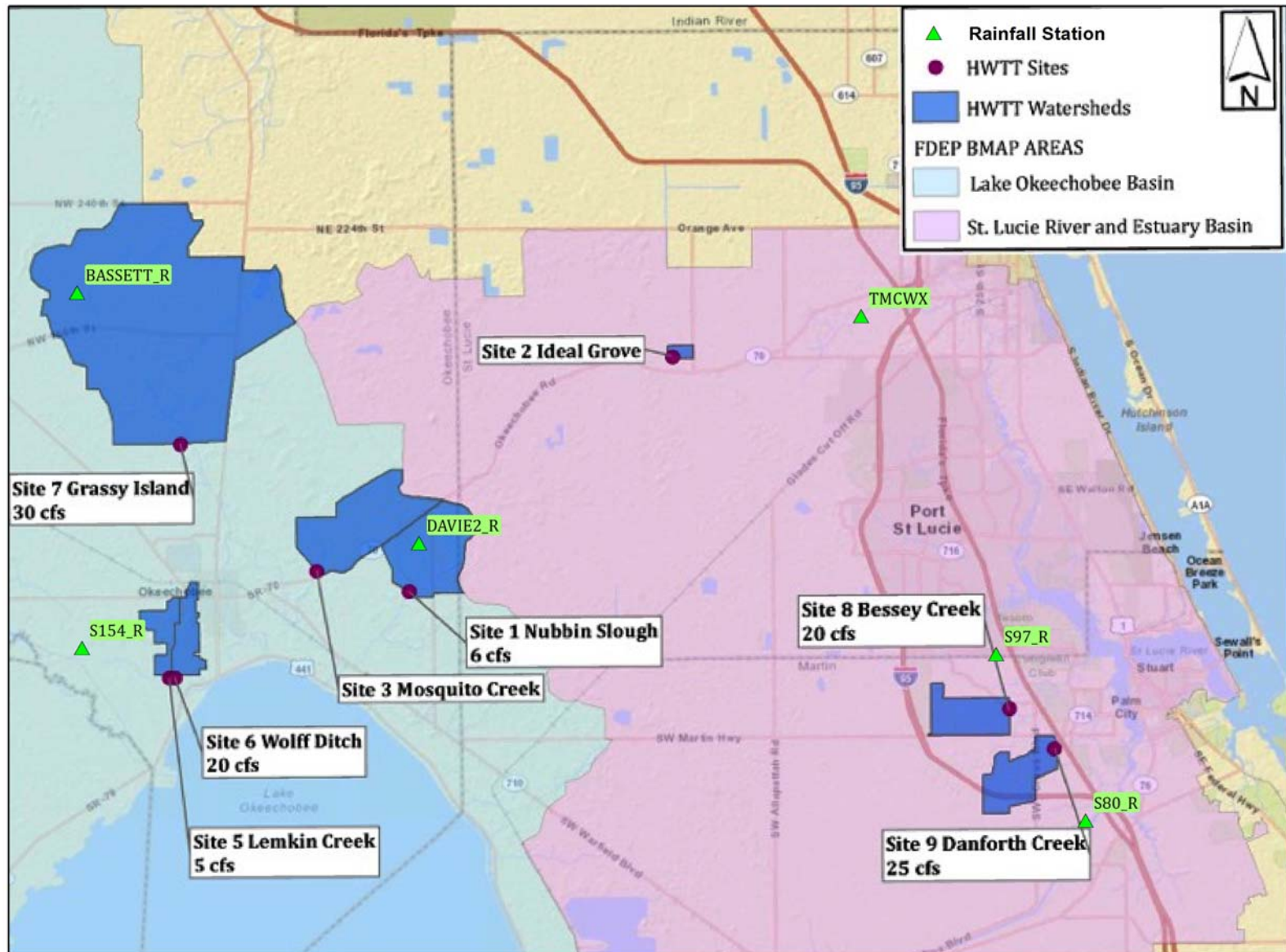


Figure 1. Project Site Map including Rain Stations and Watersheds.

Table 2. Average and POR Regional Rainfall and HWTT Site Capacity and TP Removal.

Site No.	Site Name	Rain Station Note 1	Historical Annual Average Rainfall (in) Note 2	Total Average Rainfall (in) Note 3	FY 2016- 2017 Rainfall as % of Historical	POR Average Rainfall (in) Note 4	HWTT - Design Capacity cubic feet per second	HWTT - % Capacity Utilization for POR	HWTT - TP Removed for POR (lbs.)
1	Nubbin Slough	Davie2 R	44.19	51.56	116.7%	27.10	7.4	21%	826
2	Ideal Grove	TMCWX	54.16	69.51	128.3%	34.95	1.3	8%	126
3	Mosquito Creek	Davie2 R	44.19	51.56	116.7%	27.10	6	31%	880
5	Lemkin Creek*	S154 R	44.19	56.51	127.9%	32.13	5	42%	416
6	Wolff Ditch*	S154 R	44.19	56.51	127.9%	32.13	20	24%	336
7	Grassy Island	Bassett R	44.19	63.31	143.3%	39.27	30	45%	6,350
8	Bessey Creek	S97_R	51.467	65.09	126.5%	38.76	20	14%	475
Notes:									
1. Rain stations are monitored and maintained by SFWMD.									
2. Historical annual average rainfall based on 30 years (1981-2010) as reported by SFWMD for Lake Okeechobee and Martin/St. Lucie regions.									
3. Total: 7/1/15-6/30/16; Total rainfall for period of record obtained via SFWMD's Dbhydro database.									
4. POR average rainfall relates to PORs as defined 7/1/15-11/30/15 and June 2016. Total rainfall for period of record obtained via SFWMD's Dbhydro database.									
*Includes South Pond.									

Operating Data and Performance

HWT is a complete system that integrates the best aspects of chemical and wetland treatment technologies. A primary means of analyzing the technical capabilities of this system is through study of its effectiveness in removing P and N. A complete discussion of detailed operating conditions and sampling results of other water quality characteristics is contained within the Chapter I Technical Section of this Final Report.

Covered Sites, Data Period, Methodology, & Records

Chapter II of this Final Report covers the following operational HWT sites: Nubbin Slough (Site 1), Ideal Grove (Site 2), Mosquito Creek (Site 3), Lemkin Creek (Site 5), Wolff Ditch (Site 6), Grassy Island (Site 7), and Bessey Creek (Site 8). These seven facilities are referred to as “operational sites or operational systems”. Three additional sites, Danforth Creek (Site 9), Deep Creek (Site 10), and Trout Lake (Site 4) remained in an inactive status during the period.

Bessey Creek commenced operations in March 2015 and is in the optimization phase. The data presented within this Final Report relates to the POR from 07/01/15 through 11/30/15 and the month of June 2016 (183 days) for Sites 1-3, 5, 6, and 8 and from 07/01/15 through 11/30/15 and from May 18, 2016, through June 30, 2016, (197 days) for Site 7. As of December 1, 2015, all facilities (except Grassy Island which was back on-line May 18, 2016, through a Contract Amendment), were shut-down and placed in a temporary inactive status through May 31, 2016, due to lack of funding; during this inactive period, the sites were inspected and maintained as necessary. The performance of the facilities was generally negatively affected as they were brought on-line after the extended inactive period. The current period is also referred to as Period 8. References to the covered period will be assumed unless specified otherwise.

Flow is measured and recorded daily for operational days; P concentrations, both in and out, are sampled in accordance with the Operations & Maintenance (O&M) Plan and linearly interpolated for daily estimates. Detailed daily records and activities are included by site in the accompanying Appendices. Data from previous contracts are also presented;

however, comparisons to other periods may be skewed due to differences in the length of the periods and changes in capacity.

Operating Statistics

Table 3 provides a comparative summary of operating performance statistics for the HWTT systems for Period 8. (Comparable schedules from previous Final Reports have been compiled in an Excel table for information purposes in Appendix I. Drop down menus are available for horizontal and vertical analyses.) References in this document to “average flow-weighted” are equivalent to FWM. The chart also includes a summary of several operational day statistics defined as follows:

1. # Days in Period – represents the days covered in the reporting period or POR.
2. # Days On-Line – represents the days the facility was on-line and available to operate regardless of flow capacity.
3. # Days On-Line Flow > 0 – represents the days included in Item 2 above in which flow was available to treat.
4. # Days in Period Flow >0 less Non-Controllable Downtime – represents the days covered in the period (Item 1 above) where flow was available to treat, less days the system was not operating for reasons outside the control of Watershed Technologies. Specific examples of non-controllable downtime include construction of limerock beds and power outages. Conversely, floc removal is considered to be a controllable occurrence since it is part of the HWTT process.
5. % Days On-Line vs. Available Days – Item 3 divided by Item 4 above.

Each of the data categories enumerated in the table provides varying means of analyzing operations during the period. All sites except Mosquito Creek (at 99%) were on-line and available to treat 100% of the time when flow was available, excluding any non-controllable down-time. The percentage calculation does not measure capacity utilization, as there is no consideration for the actual quantity or level of flow.

Table 3. Comparative Performance Statistics for Operational Sites Period 8 Current POR.

SUMMARY TP PERFORMANCE & COMPARISON													
Sites 1-3, 5-8													
Site	Average Daily Flow gpm (2)	Average Inflow Conc. (1)	Average Outflow Conc. (1)	lbs. of TP Removed per Day (2)	Facility Size cfs	% Capacity Utilization Based on Flow	Facility Purpose	# Days in Period (3)	# Days in POR (3)	# Days On-Line	# Days On-Line Flow > 0.0000	# Days in Period Flow > 0.0000 Less Non- Controllable Down Time	% Days On-Line vs. Available Days (4)
Nubbin Slough	691	773	173	4.89	7.40	21%	Remove P & N in cost-effective & environmentally sound manner.	366	183	169	169	169	100%
Ideal Grove	44	1842	39	0.79	1.30	8%	Remove P & N in cost-effective & environmentally sound manner.	366	183	165	160	160	100%
Mosquito Creek	846	547	102	5.00	6.00	31%	Remove P & N in cost-effective & environmentally sound manner.	366	183	176	176	177	99%
Lemkin Creek	952	232	70	1.52	5.00	42%	Remove P & N in cost-effective & environmentally sound manner; provide flow to downstream wetlands.	366	183	183	183	183	100%
Wolff Ditch	2176	125	41	1.91	20.00	24%	Remove P & N in cost-effective & environmentally sound manner; provide flow to downstream wetlands.	366	183	176	176	176	100%
Grassy Island	6003	501	42	33.25	30.00	45%	Remove P & N in cost-effective & environmentally sound manner & provide lower input concentrations to downstream waters.	366	197	191	191	191	100%
Bessey Creek	1235	223	26	2.73	20.00	14%	Remove P & N in cost-effective & environmentally sound manner.	366	183	174	174	174	100%
Notes:	(1) Flow Weighted in µg/L			(3) See text for scheduled shut-down periods									
	(2) Average per on-line flow day			(4) Excludes No Flow Days & Non-Controllable Downtime									

Phosphorus Removal Effectiveness

HWTT can achieve low mean outflow TP concentrations in Northern Everglades' sub-basins. There are presently two Total Maximum Daily Load (TMDL) numeric TP limits for Lake Okeechobee and its watershed (Sites 1, 3, 5-7 and used as proxy for Site 2) and a separate TP TMDL for Bessey Creek (Site 8). The first TMDL for all Class III tributary waters in the Lake Okeechobee Basin is the mean annual target of 113 micrograms per Liter ($\mu\text{g/L}$), adopted by the United States Environmental Protection Agency (USEPA) June, 2008; the second limit for all combined surface waters entering Lake Okeechobee is 105 metric tons (applicable to Sites 1, 3, 5-7 and used as proxy for Site 2). The latter load is functionally equivalent to approximately 40 $\mu\text{g/L}$ TP Lake inflow concentration. The target TMDL limit for Bessey Creek is 81 $\mu\text{g/L}$ based on the State TMDL for the St. Lucie Basin. The Peninsula Florida NNC for P concentration is 120 $\mu\text{g/L}$ (Sites 1-3, 5-8) based on the annual geometric mean not to be exceeded more than once in any three-year period.

Total Phosphorus Total Maximum Daily Load

Table 4 compares the percentage of TP FWM inflow concentration on an interpolated daily basis meeting the TMDL versus the percentage of TP FWM outflow concentration on an interpolated basis attaining the TMDL after HWTT processing. (Comparable schedules from previous Final Reports have been compiled in an Excel table for information purposes in Appendix II. Drop down menus are available for horizontal and vertical analyses.) All sites attained the Tributary TMDL except Nubbin Slough; the physical configuration at Nubbin Slough is a factor in performance for that site. One-hundred percent of the outflow samples at Bessey Creek, Lemkin Creek South Pond, Wolff Ditch South Pond, and Ideal Grove met the standard during the PORs; Wolff Ditch met the TMDL 99% of the time; Grassy Island 96%; Lemkin Creek 93%, Mosquito Creek 56%, and Nubbin Slough for 44% of the samples. Based on South Pond data, Lemkin Creek and Wolff Ditch met the more stringent Lake TMDL. For the NNC, all sites attained the criteria for the PORs as shown in Table 5 and graphically in Figure 2. TMDL performance measures from previous periods are also shown in Appendix I for information purposes.

The HWTT system P outflow levels have previously been described to be far lower than those attained by Stormwater Treatment Areas (STA's) or other technologies north of Lake Okeechobee. A detailed comparison would require examination of numerous factors at all sites, which is beyond the scope of this Report. In addition to higher outflow TP levels, the percentage removal efficiencies for the wetland and algal technologies were markedly lower than those of the HWTT systems. Further, the percentage TP removal efficiencies of HWTT exceeded those of the conventional chemical technologies, despite the coagulant minimization techniques incorporated in the HWTT systems.

Table 4. Percent of Inflow & Outflow Concentration Attaining TP TMDL's Period 8.

% of Interpolated Data Attaining TMDL (See Note)										
Site	Flow Weighted Mean Inflow Concentration in µg/L	Flow Weighted Mean Outflow Concentration in µg/L	Tributary TMDL**	Lake TMDL ***	Tributary TMDL Met for FWM Outflow Concentration	Lake TMDL Met for FWM Outflow Concentration	% Data Points Inflow Concentration Meeting Tributary TMDL	% Data Points Outflow Concentration Meeting Tributary TMDL	% Data Points Inflow Concentration Meeting Lake TMDL	% Data Points Outflow Concentration Meeting Lake TMDL
Nubbin Slough	773	173	113	40	NO	NO	0%	44%	0%	2%
Ideal Grove	1,842	39	113	40	YES	YES	0%	100%	0%	70%
Mosquito Creek	547	102	113	40	YES	NO	0%	56%	0%	12%
Lemkin Creek	232	70	113	40	YES	NO	32%	93%	0%	31%
Lemkin Creek SP*	232	26	113	40	YES	YES	32%	100%	0%	94%
Wolff Ditch	125	41	113	40	YES	NO	69%	99%	0%	80%
Wolff Ditch SP*	125	27	113	40	YES	YES	69%	100%	0%	94%
Grassy Island	501	42	113	40	YES	NO	0%	96%	0%	74%
Bessey Creek	223	26	81	N/A	YES	N/A	0%	100%	N/A	N/A
Note: Includes Linear Interpolation between Actual Measurements for On-Line Flow Days. *Includes South Pond **Tributary TMDL for Lake Okeechobee Sites 1,3,5-7 (assumed for Site 2); TMDL for St. Lucie Basin Site 8 ***Lake TMDL for Lake Okeechobee Sites 1,3,5-7 (assumed for Site 2)										

Table 5. HWTT Sites Attaining the TP Peninsula Florida NNC for Phosphorus Current PORs.

% of Data Attaining NNC				
Site	Geometric Mean Inflow Concentration in µg/L	Geometric Mean Outflow Concentration in µg/L	Numeric Nutrient Criteria**	NNC Met for Average Outflow Concentration
Nubbin Slough	781	116	120	YES
Ideal Grove	788	31	120	YES
Mosquito Creek	608	93	120	YES
Lemkin Creek	145	50	120	YES
Lemkin Creek SP*	145	24	120	YES
Wolff Ditch	88	31	120	YES
Wolff Ditch SP*	88	24	120	YES
Grassy Island	467	24	120	YES
Bessey Creek	213	25	120	YES
*Includes South Pond **Peninsula Florida NNC Sites 1-3, 5-8				

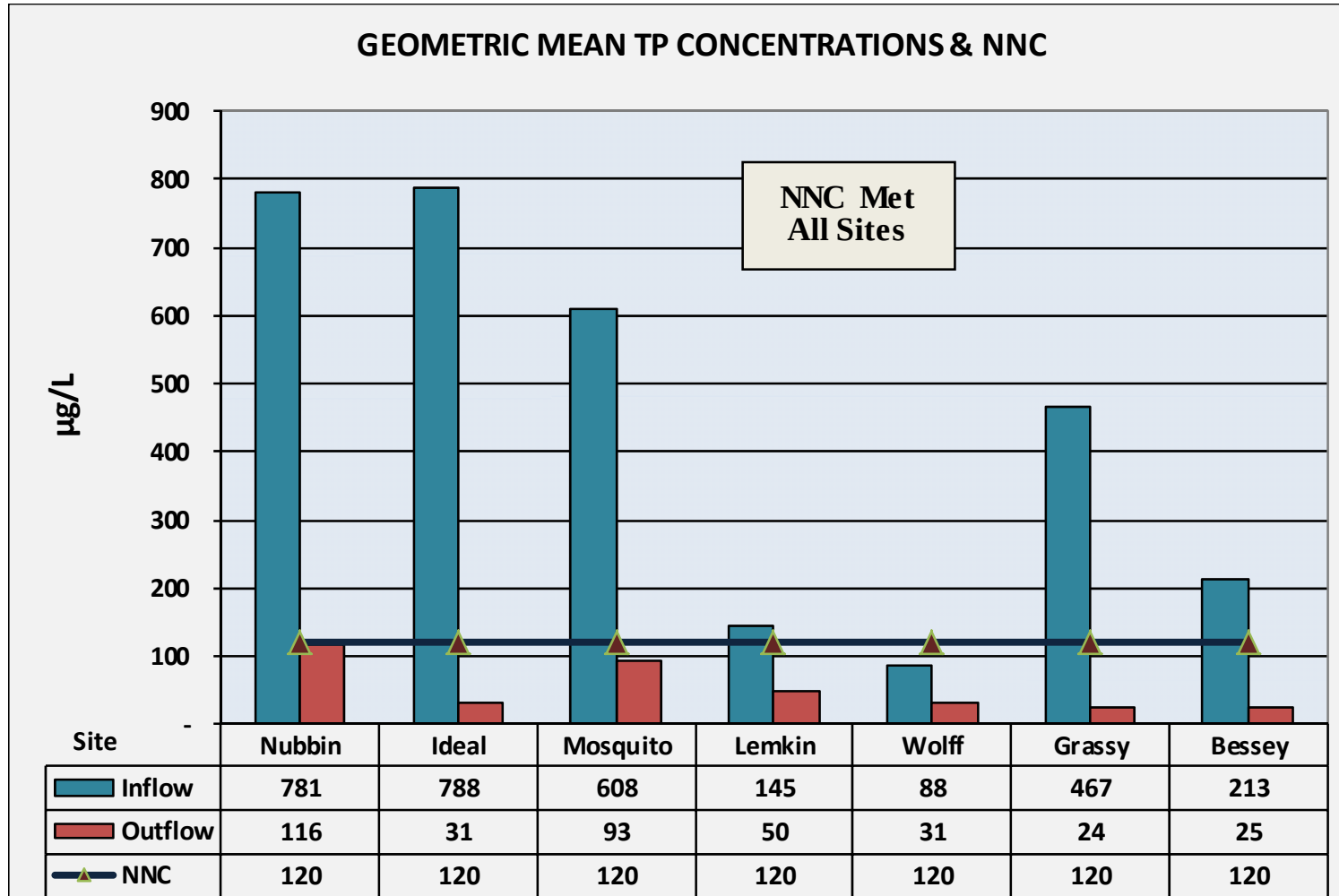


Figure 2. Geometric Mean TP Concentrations versus NNC at HWTT Sites Current PORs.

Water Quality Characteristics & HWT Components

Values of other water quality characteristics, which can have a significant impact on P removal, are summarized in Table 6 together with TP and flow. Please refer to Chapter I for a complete discussion of the effect of these parameters on the results of operations. The HWT components installed at the individual sites, which may be constrained due to pre-existing conditions and other factors, likewise influence the P removal effectiveness; a listing of the components is shown in Table 7.

During the current POR, net export of nitrate + nitrite (NO_x) occurred at Mosquito Creek, where mean outflow concentration was 80% higher than mean inflow concentration, while mean inflow and outflow NO_x concentrations were nearly identical at Nubbin Slough, indicating no net retention or export. Nubbin Slough and Mosquito Creek are the two facilities that lack a shallow vegetated zone at the back end of the system, and arithmetic mean outflow NO_x concentrations were highest at those sites (arithmetic mean concentrations of 0.59 and 0.33 milligrams (mg) N/L, respectively). Although there was a net export of NO_x at the Lemkin and Wolff facilities, both of which include a shallow vegetated zone, the difference between inflow and outflow mean concentrations was quite small, i.e., 0.033 and 0.003 mg N/L, respectively, and arithmetic mean outflow NO_x concentrations were less than 0.06 mg N/L, representing only a small fraction of TN. All of the systems achieved a net reduction of TN, with arithmetic mean inflow concentrations ranging from 1.64 mg/L at Wolff Ditch to 3.10 mg/L at Mosquito Creek and arithmetic mean outflow concentrations ranging from 0.78 mg/L at Bessey Creek to 1.94 mg/L at Nubbin Slough. (Arithmetic means and FWM values will differ for the same set of data.)

Table 6. Summary of Water Quality Characteristics.

TP FWM all sites; TN FWM Grassy Island; mean inflow and outflow all other parameters; refer to text for complete discussion.

Inflow & Outflow Water Quality Characteristics - All Sites*												
	Site 1 Nubbin Slough			Site 2 Ideal Grove			Site 3 Mosquito Creek					
Period Presented	7/1/15 - 11/30/15 & 6/01/16 - 6/30/16			7/1/15 - 11/30/15 & 6/01/16 - 6/30/16			7/1/15 - 11/30/15 & 6/01/16 - 6/30/16					
	Inflow	Outflow	% Change	Inflow	Outflow	% Change	Inflow	Outflow	% Change			
TP (µg/L) FWM	773	173	-78%	1842	39	-98%	547	102	-81%			
pH	6.4	6.4	1%	7.0	7.0	-1%	6.9	6.5	-5%			
Alkalinity (mg/L)	41	36	-12%	137	85	-38%	87	49	-44%			
Color (PCU)	426	164	-62%	392	110	-72%	385	160	-58%			
Turbidity (NTU)	2.1	7.3	241%	13.7	2.4	-83%	4.0	7.2	82%			
Conductivity (µS/cm)	398	503	26%	891	994	12%	420	475	13%			
TKN (mg/L)	2.35	1.46	-38%	3.44	1.45	-58%	3.42	1.52	-56%			
NOx (mg/L)	0.587	0.585	0%	0.033	0.019	-44%	0.184	0.332	80%			
TN (mg/L) FWM	2.71	1.81	-33%	3.05	1.39	-54%	3.10	1.94	-37%			
Treatment Volume (MG)		168.1			10.0			214.3				
	Site 5 Lemkin Creek			Site 6 Wolff Ditch			Site 7 Grassy Island			Site 8 Bessey Creek		
Period Presented	7/1/15 - 11/30/15 & 6/01/16 - 6/30/16			7/1/15 - 11/30/15 & 6/01/16 - 6/30/16			7/1/15 - 11/30/15 & 5/18/16 - 6/30/16			7/1/15 - 11/30/15 & 6/01/16 - 6/30/16		
	Inflow	Outflow	% Change	Inflow	Outflow	% Change	Inflow	Outflow	% Change	Inflow	Outflow	% Change
TP (µg/L) FWM	232	26	-89%	125	27	-79%	501	42	-92%	501	42	-92%
SRP (µg/L)	126	16	-87%	40	3	-93%	372	6	-98%	55	2	-96%
DOP (µg/L)	37	12	-67%	23	8	-66%	61	5	-91%	43	14	-69%
PP (µg/L)	26	36	39%	38	24	-37%	50	24	-51%	120	11	-91%
pH	7.2	7.4	2%	7.3	7.5	2%	6.8	6.6	-4%	6.7	6.4	-3%
Alkalinity (mg/L)	180	155	-14%	170	145	-15%	65	30	-54%	88	39	-55%
Color (PCU)	132	99	-25%	146	88	-40%	535	85	-84%	199	31	-84%
Turbidity (NTU)	2.3	3.4	46%	3.0	3.1	4%	8.2	2.6	-68%	13.6	6.4	-53%
Conductivity (µS/cm)	843	836	-1%	865	881	2%	380	422	11%	344	390	13%
TKN (mg/L)	1.78	1.52	-15%	1.62	1.35	-17%	2.25	0.92	-59%	1.51	0.62	-59%
NOx (mg/L)	0.022	0.055	147%	0.016	0.019	18%	0.367	0.251	-31%	0.06	0.050	-17%
TN (mg/L) FWM	1.77	1.44	-19%	1.64	1.40	-15%	2.73	1.21	-56%	1.73	0.78	-55%
Total Al (µg/L)	37	585	1471%	35	371	951%	260	621	138%	168	563	235%
Treatment Volume (MG)		250.9			551.5			1651.1			309.6	
*TP & TN FWM; all other parameters arithmetic means; Lemkin Creek & Wolff Ditch include South Pond for TP & TN												

Table 7. Installed HWTTC Components & Coagulants by System.

HWTTC	Site 1 Nubbin Slough	Site 2 Ideal Grove	Site 3 Mosquito Creek	Site 5 Lemkin Creek	Site 6 Wolff Ditch	Site 7 Grassy Island	Site 8 Bessey Creek
Components Installed							
Buffering: Limerock Front End	Y	N	Y	N	N	Y	N
Buffering: Chemical	N	N	Y	N	N	Y	Y
Mixing Chamber	Y	Y	Y	Y	Y	Y	Y
Mixing Chamber <i>in situ</i>	N	N	N	N	N	Partial	N
Intermittent Dosing	N	Y	N	Y	Y	Y	Y
Wet-Floc Recycling	Y	Y	Y	Y	Y	Y	Y
Dry Floc Recycling	N	N	N	N	N	N	N
Wet-Floc Settling Area	Y	Y	Y	Y	Y	Y	Y
Floc Drying Bed	Y	N	Partial	Y	Y	Y	Y
Floc Disposal via Tilling	N	Y	Y	N	N	N	N
FAV Pond	Y	Y	Y	Y	Y	Y	Y
Buffering: Limerock Back End	Y	N	Y	Y	Y	Y	Y
SAV Pond	N	Y	N	Y	Y	Y	Y
Coagulants							
Alum	Y	Y	Y	Y	Y	Y	Y
Polyaluminum chloride	N	N	N	N	N	Y	Y

Total Phosphorus Mass Removal

As discussed under Covered Sites, Data Period, Methodology, & Records, the data presented within this Final Report relates to a partial period of operations as sites were placed in a temporary inactive status due to lack of funding. Data comparisons with prior periods are therefore distorted. Figure 3 depicts the reduction in TP lbs. per day for the seven HWTTC operational facilities. (Note that capacity increased at Grassy Island compared to the prior contract period.) Flows were generally available at all sites for the PORs, consistent with historical patterns. Overall, inflow TP mass was highest concurrent with an increase in flow, with peaks occurring during the period. Load reduction (reported as interpolated lbs. per day) was as follows: Nubbin Slough was 4.9 (6.3 prior contract period); Ideal Grove was 0.8 (0.6 prior contract period); Mosquito Creek was 5.0 (5.0 prior contract period); Lemkin Creek was 1.5 (1.1 prior contract period); Wolff Ditch was 1.9 (1.3 prior contract period); Grassy Island was 33.2 (14.6 prior contract period, the increase in part attributed to a change in capacity during the current year); and Bessey Creek was 2.7 during the optimization phase. Figure 4 shows the interpolated total lbs. of P removed. The values are

as follows: Nubbin Slough – 826 lbs. (2,088 prior contract period); Ideal Grove – 126 lbs. (195 prior contract period); Mosquito Creek – 880 lbs. (1,653 prior contract period); Lemkin Creek - 279 lbs. (380 prior contract period); Wolff Ditch - 336 lbs. (466 prior contract period); Grassy Island – 6,350 lbs. (5,248 lbs. prior contract period at lower permitted capacity) and Bessey Creek – 475 lbs. (initialization and grow-in prior contract period). The current removal rate for all systems combined was 9,272 lbs. (10,030 lbs. prior contract period; different PORs, number of sites, and permitted capacities).

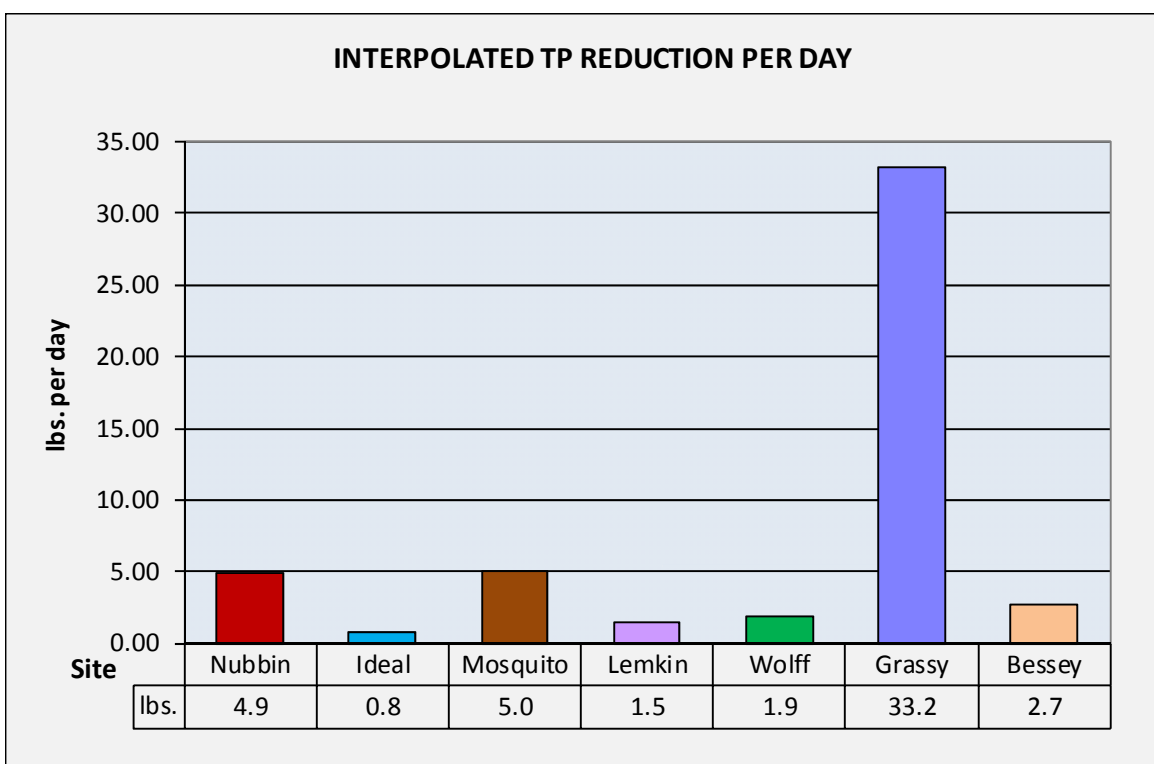


Figure 3. Load Reduction by Site per day.

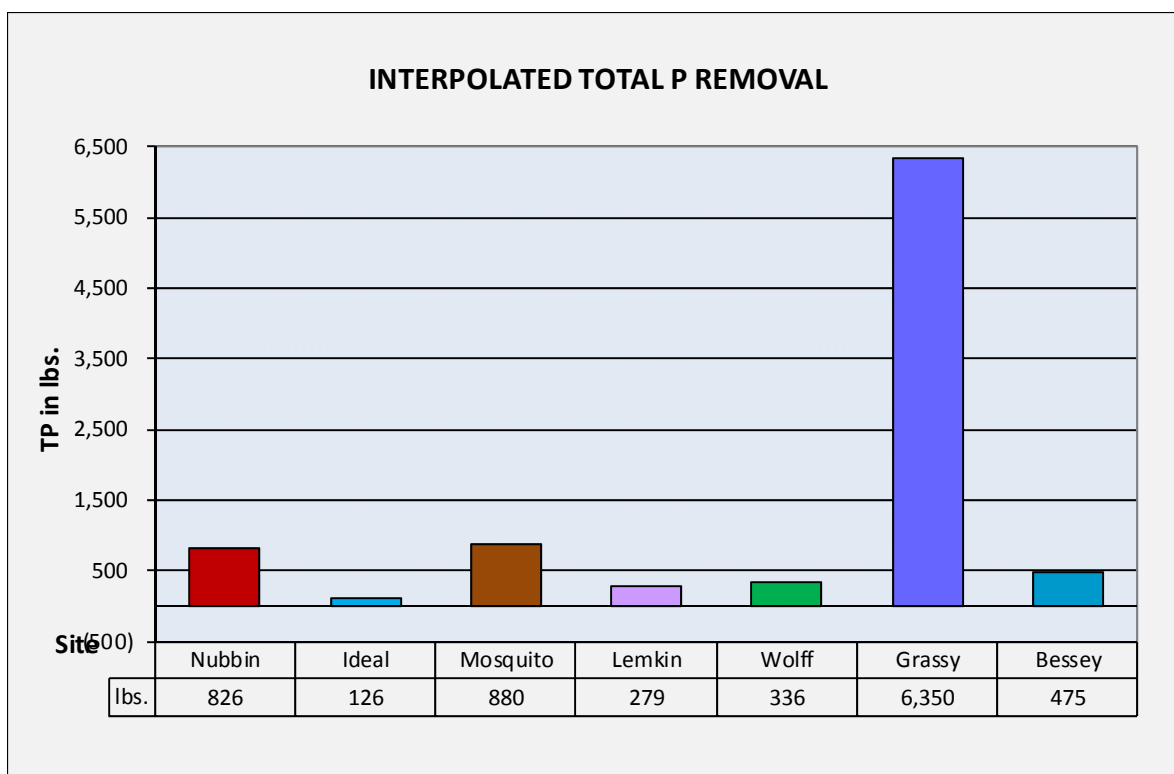


Figure 4. Total P Load Reduction by Site.

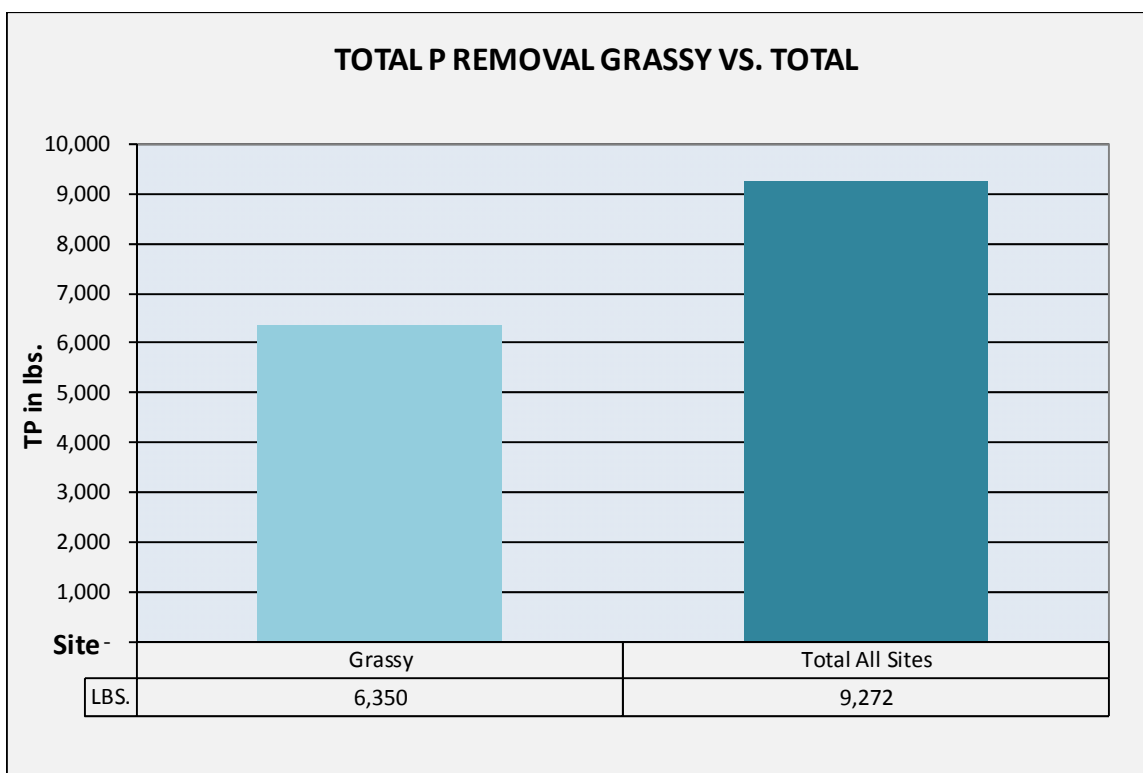


Figure 5. Total P Load Reduction Sites 1-3, 5-6, Grassy and all sites combined.

Interpolated TP mass inflow versus outflow and percent reduction by site for the period is illustrated in Figure 6. Nubbin Slough produced a 78% reduction between TP mass inflow and outflow (83% prior contract period); Ideal Grove resulted in a 98% reduction (93% prior contract period); Mosquito Creek operated at a 81% reduction (77% prior contract period); Lemkin Creek experienced a 65% reduction (71% prior contract period); TP was reduced by 62% at Wolff Ditch (60% prior contract period); Grassy Island TP reduction was 92% (91% prior contract period); and Bessey Creek TP reduction was 83% (initialization and grow-in prior contract period). The Nubbin HWT facility P removal effectiveness is influenced by the lack of mid-region or outflow region shallow zones that limit the proliferation and/or particle filtration effectiveness of back-end vegetation communities. TP flow-weighted concentration and percent reductions (Figure 7) were the same as the TP mass removal percentages except for Lemkin Creek (70% versus 65%), Wolff Ditch (67% versus 62%), and Bessey Creek (88% versus 83%). A number of factors affect P removal performance and the relative differences among sites as discussed herein and in Chapter I of this Final Report.

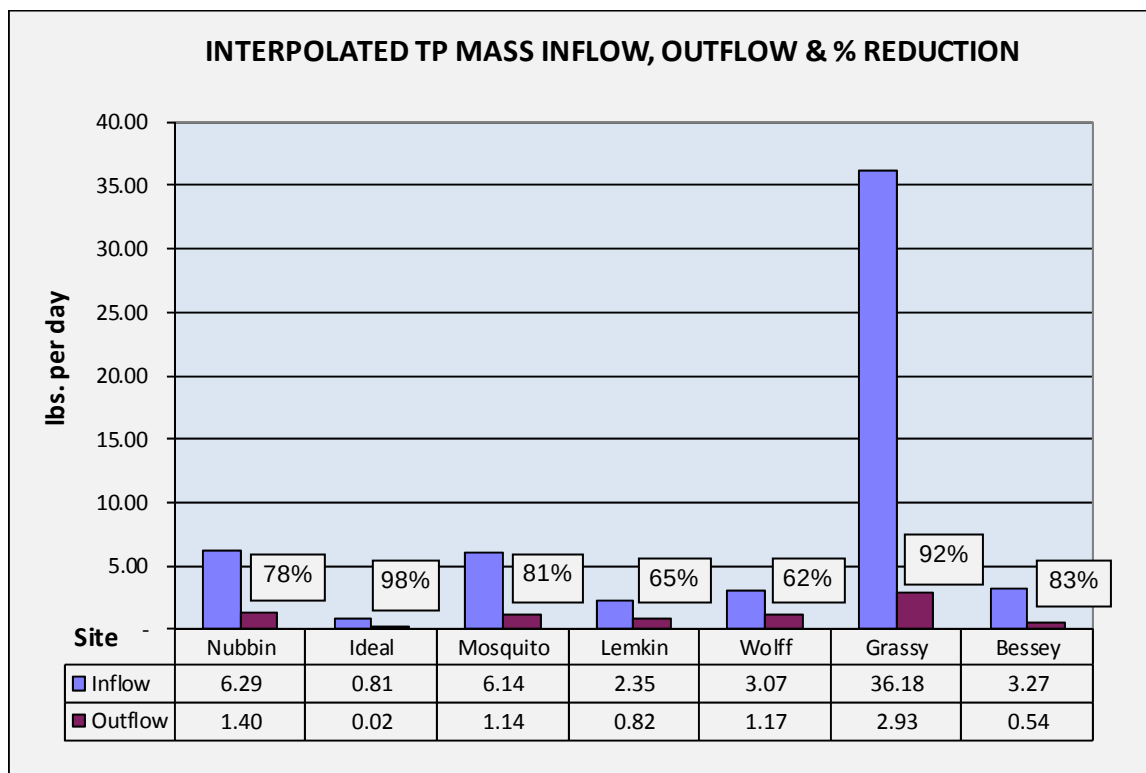


Figure 6. TP Mass Inflow & Outflow and % Load Reduction by Site.

Total Phosphorus Flow-Weighted Mean Concentrations

TP FWM concentration reductions (Figure 7) were the same as the TP mass removal percentages with the exception of Lemkin Creek (70% versus 65%), Wolff Ditch (67% versus 62%), and Bessey Creek (88% versus 83%). The Grassy Island facility with mid-range FWM TP inflow levels of 501 µg/L produced the second highest TP concentration removal percentage (92%). Ideal Grove presented the highest TP inflow levels of 1,842 µg/L and attained the highest removal rate (98%). The lowest TP inflow levels was at Wolff Ditch with a FWM TP inflow concentrations of 125 µg/L and the lowest removal rate of 67%. Although Bessey Creek TP FWM TP inflow concentration is the second lowest of the sites, an 88% removal rate was achieved during this optimization period. Nubbin Slough measured the second greatest FWM TP inflow concentration at 773 µg/L and a removal rate of 78% (facility lacks a shallow vegetated zone). Mosquito Creek presented the third highest FWM TP inflow concentration at 547 µg/L and an 81% reduction in TP. The Bessey Creek facility was initialized on March 8, 2015, and was in the grow-in and initial optimization phases for the remainder of the prior period through June 30, 2015. During that time, FWM inflow mean TP concentrations were 213 µg/L and FWM TP outflow concentrations were 20 µg/L for a 91% reduction.

Figure 8 depicts reductions in TP FWM concentrations incorporating the South Pond P data samples for Lemkin Creek and Wolff Ditch outflow volumes. (It is not possible to separate the South Pond P data between Lemkin Creek and Wolff Ditch; the input data for the two sites are not combined to maintain the individual system integrities. The method employed provides a rough comparison of the impact of the South Pond on performance). These two facilities were sited primarily to supply needed hydration for the downstream wetland via the South Pond, a factor which provides a significant cost benefit that has been quantified and reflected in supplementary Cost/Benefit values for the two side-by-side facilities within the Cost Avoidance Lemkin Creek & Wolff Ditch Section of this Chapter. During construction, Watershed Technologies made several material improvements to the South Pond, including weir relocation, elevation adjustments, piping additions, and general maintenance. Weekly grab samples are taken and laboratory analyses are prepared and tabulated, together with inflow measurements to the adjacent wetland. The submerged

aquatic vegetation (SAV) community from the dual HWT facilities has expanded into the South pond shallow zone, providing additional filtration. Using data from the South Pond for Lemkin Creek and Wolff Ditch, the removal performance improves significantly. Lemkin TP FWM concentration outflow decreased from 70 to 26 µg/L and Wolff Ditch declined from 41 to 27µg/L, representing an 89% and 79% reduction in TP levels at Lemkin Creek and Wolff Ditch, respectively.

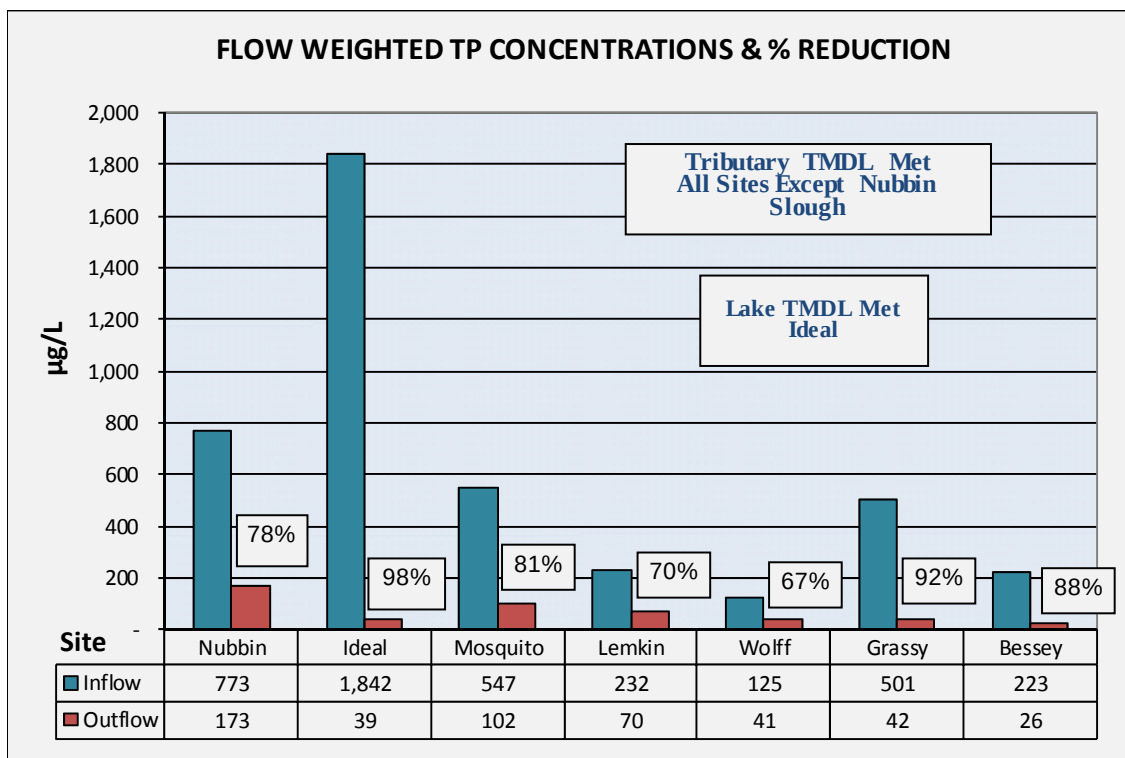


Figure 7. TP FWM Concentrations and % Reduction by Site.

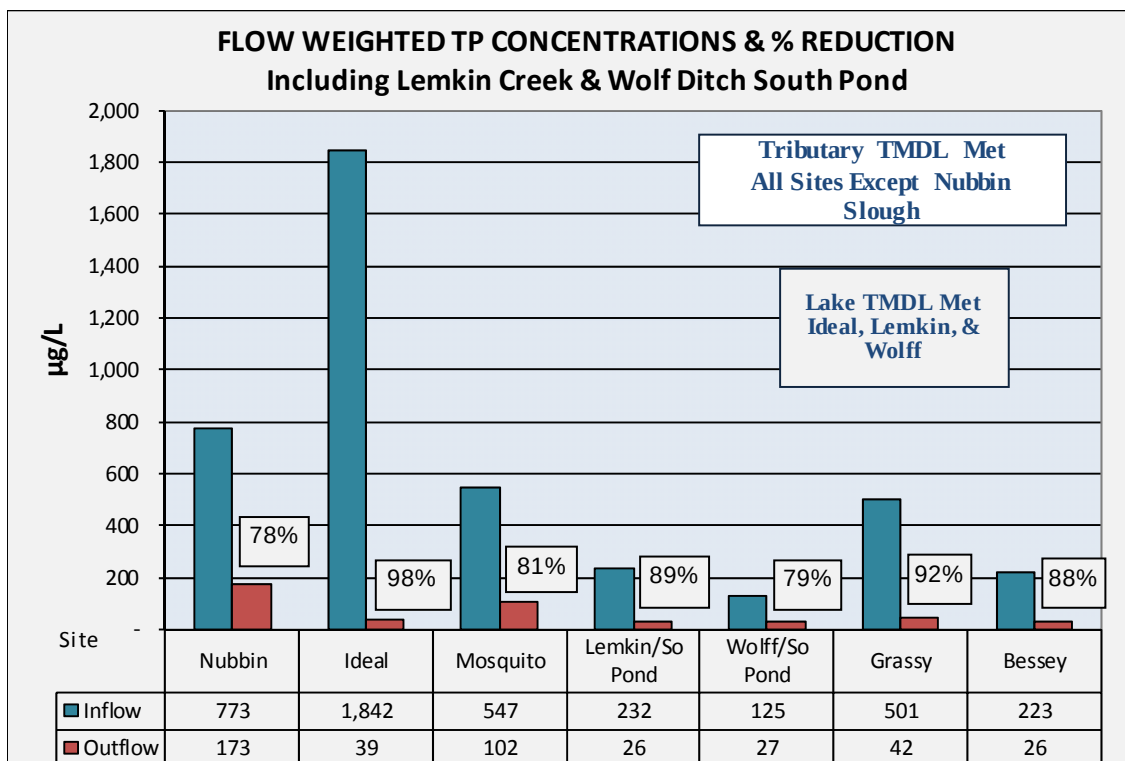


Figure 8. TP FWM Concentrations and % Reduction by Site including South Pond at Lemkin Creek and Wolff Ditch.

Figure 9 illustrates the cumulative TP FWM concentrations and percent reductions for each of the seven operational systems. The periods of record vary according to start date and other activities as noted in the table below; certain data has been excluded due to changes in flow configurations, early demonstration projects, and availability of measurements between contract periods. Grassy Island includes the optimization period. The average percentage reductions in concentrations improved or remained the same for all sites except Nubbin Slough compared to the previous period. The South Pond outflow concentration data has been used for Lemkin Creek and Wolff Ditch values commencing July 1, 2012.

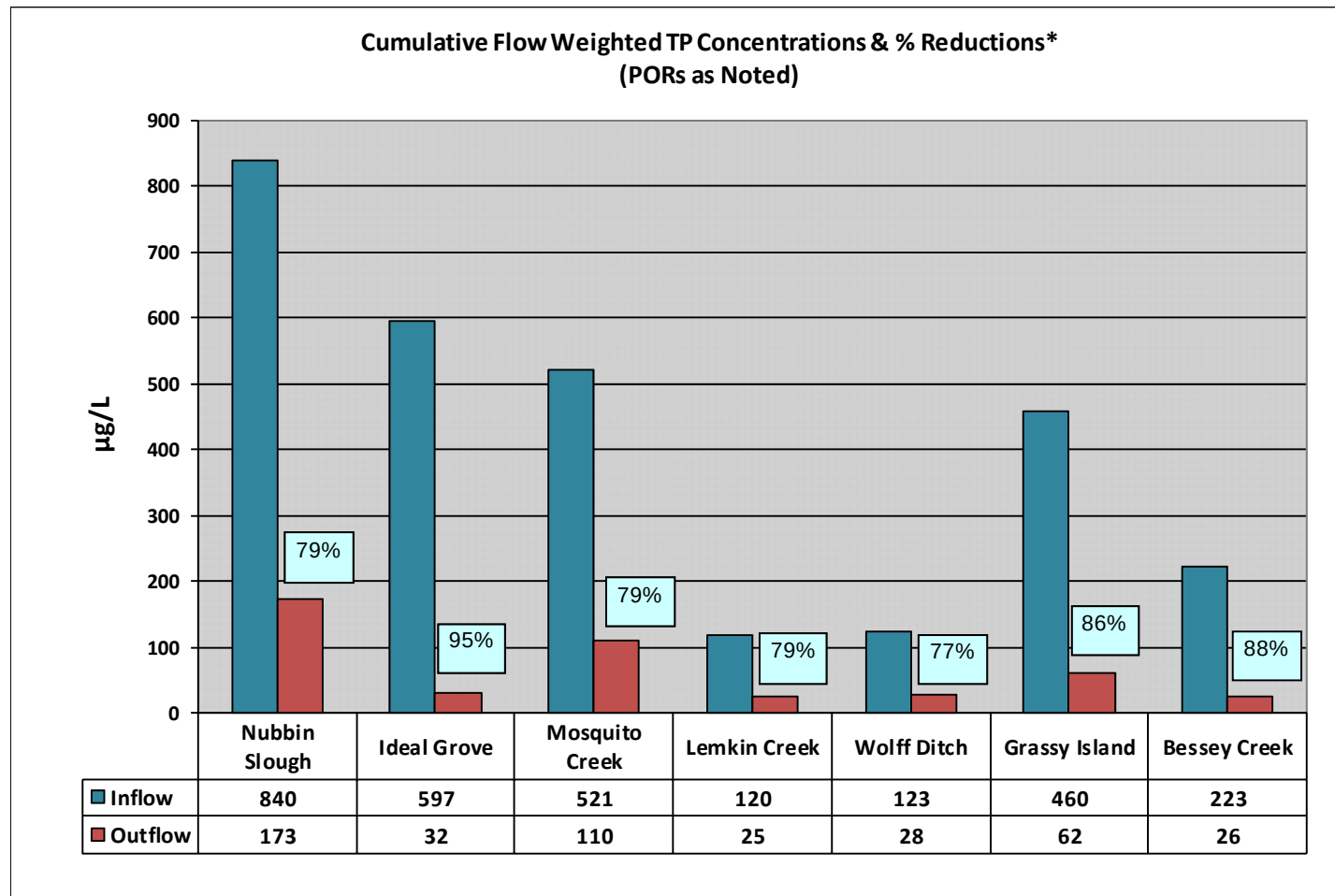


Figure 9. Cumulative TP FWM Concentrations and % Reductions by Site with PORs as noted. See text for assumptions.

*South Pond outflow concentrations included as of 07/01/12					
POR: Start date corresponds to commencement of HWT optimization or operational periods.					
11/21/08 - 06/30/16* Nubbin Slough, Ideal Grove & Mosquito Creek					
03/09/10 - 06/30/16* Lemkin Creek & Wolff Ditch					
07/11/11 - 06/30/16* Grassy Island (Off-Line for Construction 03/15/12 - 07/01/12 & 05/13)					
03/08/15 - 06/30/16* Bessey Creek					
*Facilities inactive 12/01/15 - 5/31/16 Sites 1-3, 5-7; Grassy inactive 12/01/15 - 5/17/16					

Nitrogen Removal Effectiveness

HWTT can achieve low mean outflow TN concentrations in Northern Everglades' sub-basins. As cited in 62-302.531 Florida Administrative Code (FAC) (Numeric Interpretations of Narrative Nutrient Criteria) (FAC, 2013), the TN threshold for streams in Peninsular Florida, which is applicable to all HWTT sites, is 1.54 mg/L based on the annual geometric mean not to be exceeded more than once in any three-year period. To demonstrate the effectiveness of the HWTT systems in N removal and comparisons to the established criteria, N data has been summarized for all sites. Rough estimates for Cost/Benefit values based upon the same assumptions for P performance are shown under the Projected Cost/Benefit Values Section of this Chapter.

TN was effectively reduced in all of the HWTT systems during the period. All sites except Nubbin Slough and Mosquito Creek met the FAC nutrient limit for N during the PORs, depicted graphically in Figure 10 and as itemized in Table 8. The inflow TN geometric mean ranged from 1.64 mg/L at the Wolff Ditch HWTT facility (South Pond) to 3.15 mg/L at Ideal Grove. The lowest TN geometric mean outflow values were observed at the Bessey Creek (.66 mg/L) and Grassy Island (1.14 mg/L) HWTT systems; N removal appears to be enhanced by the shallow SAV zone at Grassy Island, which provides an extended hydraulic retention time (HRT) in the back end of the system. The Ideal Grove system, which also incorporates a back-end SAV zone, achieved an average TN reduction of 54%, from a geometric mean of 3.15 mg/L at the inflow to 1.44 mg/L in the outflow stream. Lower percent reductions of TN were observed at the Lemkin and Wolff HWTT facilities (22% and 16%, respectively), due in part to the relatively low inflow concentration at both sites. Outflow TN at both Lemkin and Wolff (both at 1.38 mg/L), however, were comparable to outflow TN at the Ideal facility, which produced a 54% rate of TN removal.

The quantity of N removal by site is shown in Figure 11. A total of 30,646 lbs. of N were removed at all sites with 21,634 lbs. from Grassy Island, followed by Mosquito Creek at 3,171 lbs., and 2,258 lbs. at Bessey Creek. The TN average daily mass inflow and outflows are depicted in Figure 12. Inflow values were highest at Grassy Island (196.8 lbs.), followed by Wolff Ditch at 43.8 lbs., and Mosquito Creek with 36.0 lbs. per day (Figure 12). The

percentage removal rate (Figure 13) was greatest at Grassy Island (58%), with Ideal Grove second highest (57%), and Bessey Creek third in performance (54%).

The TN FWM percentage removal rates by site are shown in Figure 14. The TN average daily mass reduction varies somewhat from the TN average daily mass removal; however, only Bessey Creek and Ideal change in relative ranking. The order of performance removal based on TN FWMs is Grassy Island 56%, Bessey Creek 55%, Ideal Grove 54%, Mosquito Creek 37%, Nubbin Slough 33%, Lemkin Creek South Pond 19%, and Wolff Ditch South Pond 15%.

One-hundred % of the TN outflow samples met the FAC nutrient limit at Bessey Creek compared to 37% of the inflow values; 93% of Grassy Island outflow data points attained the TN NNC versus 7% of the inflow values; Wolff Ditch and Lemkin Creek achieved 88% and 86% of the outflow; whereas, 34% and 7% of inflow samples met the criteria, respectively. None of the inflow data points for Nubbin Slough, Ideal Grove, and Mosquito Creek met the NNC; 31%, 45%, and 32% of the outflow samples achieved the NNC following HWT processing, respectively, for these sites. The data is summarized in Table 8.

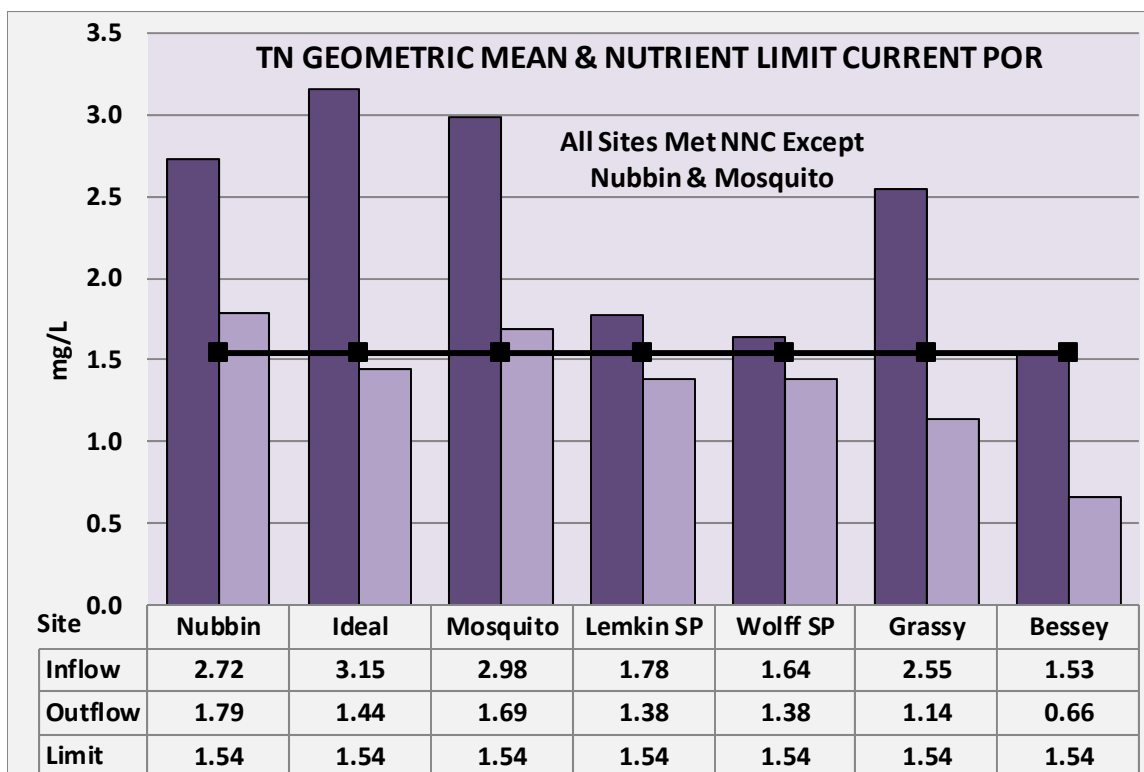


Figure 10. TN Geometric Mean and Nutrient Limit by Site.

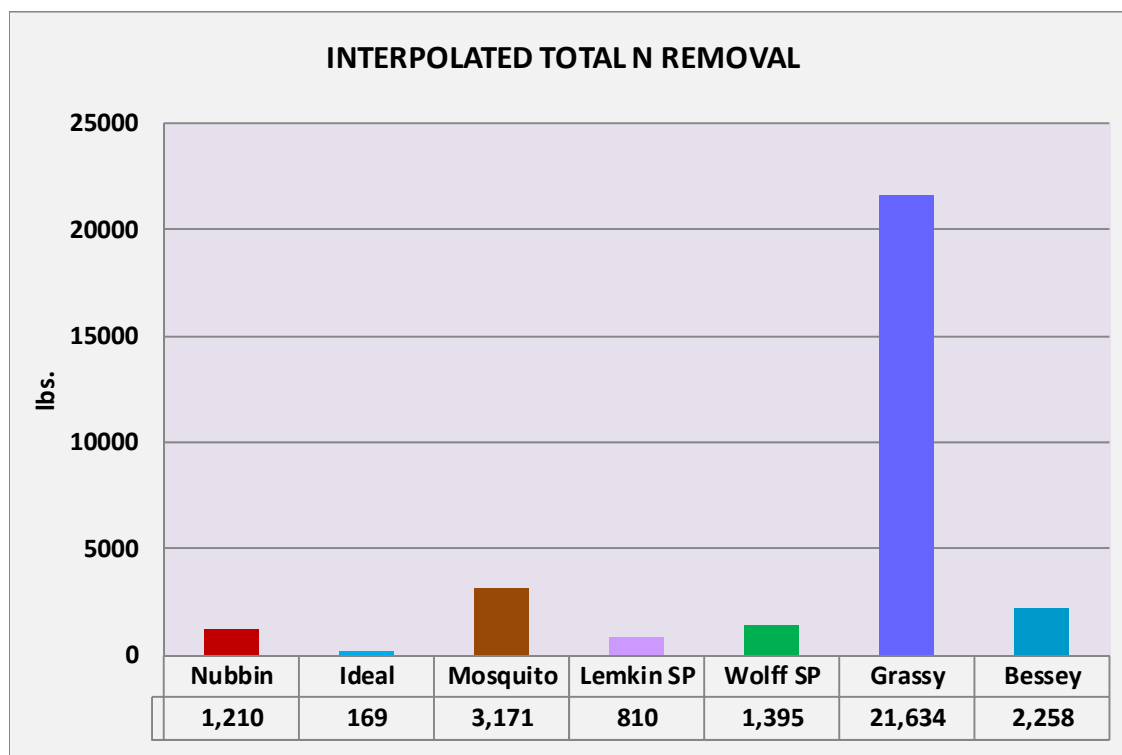


Figure 11. TN Removal by Site.

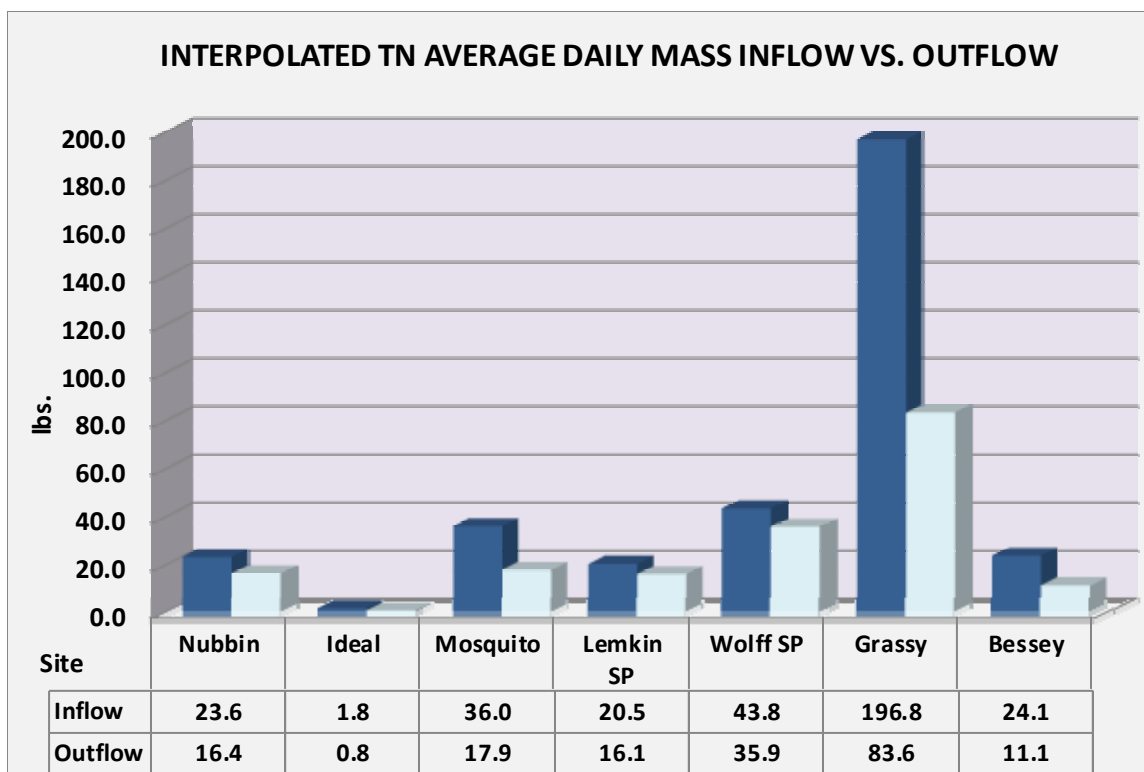


Figure 12. TN Mass Inflow & Outflow and % Load by Site.

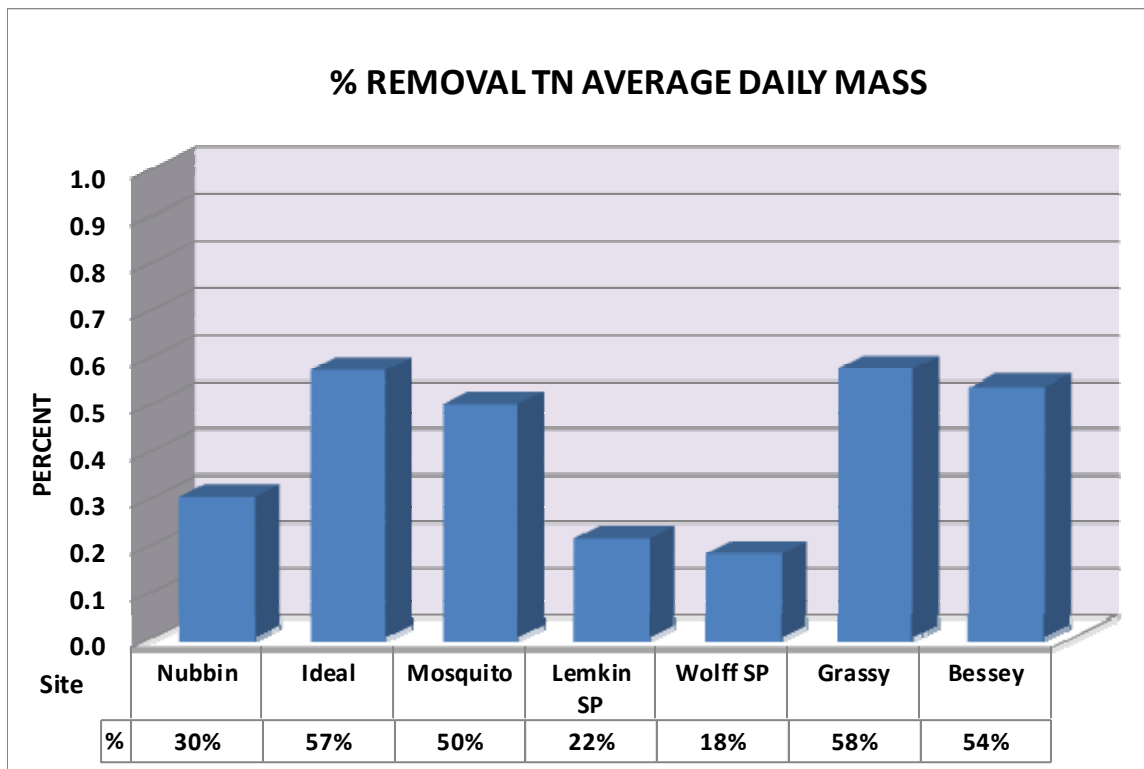


Figure 13. TN Average Daily Mass % Removal by Site.

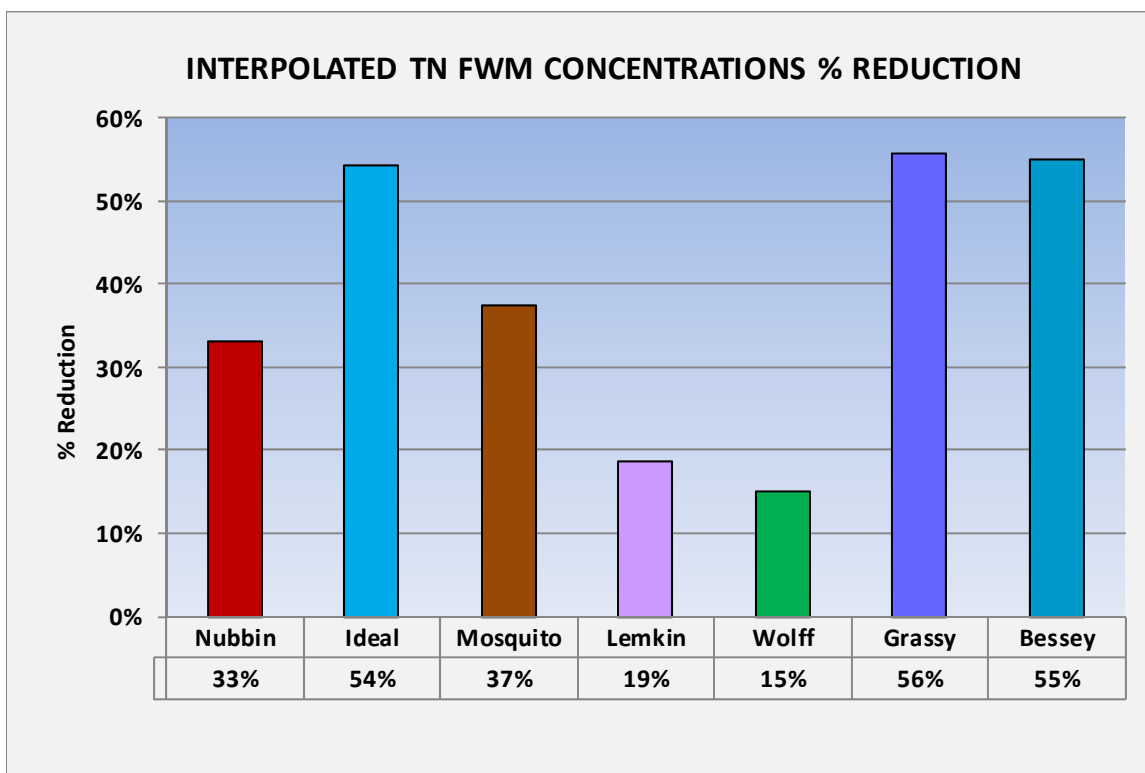


Figure 14. TN FWM % Reduction by Site.

Table 8. % Interpolated Data Inflow and Outflow Attaining TN NNC by Site.

% of Interpolated Data Attaining NNC (See Notes)						
Total Nitrogen						
Site	Geometric Mean Inflow in mg/L	Geometric Mean Outflow in mg/L	Peninsula Florida TN NNC	NNC Met for Outflow Geometric Mean	% Data Points Inflow Meeting NNC	% Data Points Outflow Meeting NNC
Nubbin Slough	2.72	1.79	1.54	NO	0%	31%
Ideal Grove	3.15	1.44	1.54	YES	0%	45%
Mosquito Creek	2.98	1.69	1.54	NO	0%	32%
Lemkin Creek SP*	1.78	1.38	1.54	YES	7%	86%
Lemkin Creek SP*	1.78	1.38	1.54	YES	7%	86%
Wolff Ditch SP*	1.64	1.38	1.54	YES	34%	88%
Wolff Ditch SP*	1.64	1.38	1.54	YES	34%	88%
Grassy Island	2.55	1.14	1.54	YES	7%	93%
Bessey Creek	1.53	0.66	1.54	YES	37%	100%
Note: Includes Linear Interpolation between Actual Measurements for On-Line Flow Days. *Includes South Pond; Lemkin Creek and Wolff Ditch calculated for South Pond only.						

Coliform Removal Effectiveness

The effectiveness of the removal of coliforms for the Bessey Creek facility was analyzed for this report. The standard for Florida Class 3 Water Quality Criteria for Fecal Coliform Bacteria is measured in units as follows: Number per 100 ml (Most Probable Number (MPN) or Membrane Filter (MF)). The MPN or MF counts shall not exceed a monthly average of 200, nor exceed 400 in 10% of the samples, nor exceed 800 on any one day. Monthly averages shall be expressed as geometric means based on a minimum of 10 samples taken over a 30 day period. The samples for Bessey Creek are summarized in Figure 15. The percentage reduction in the inflow geometric mean count of versus the outflow ranged from 54% to 88% during the three months tested; all months met the MPN.

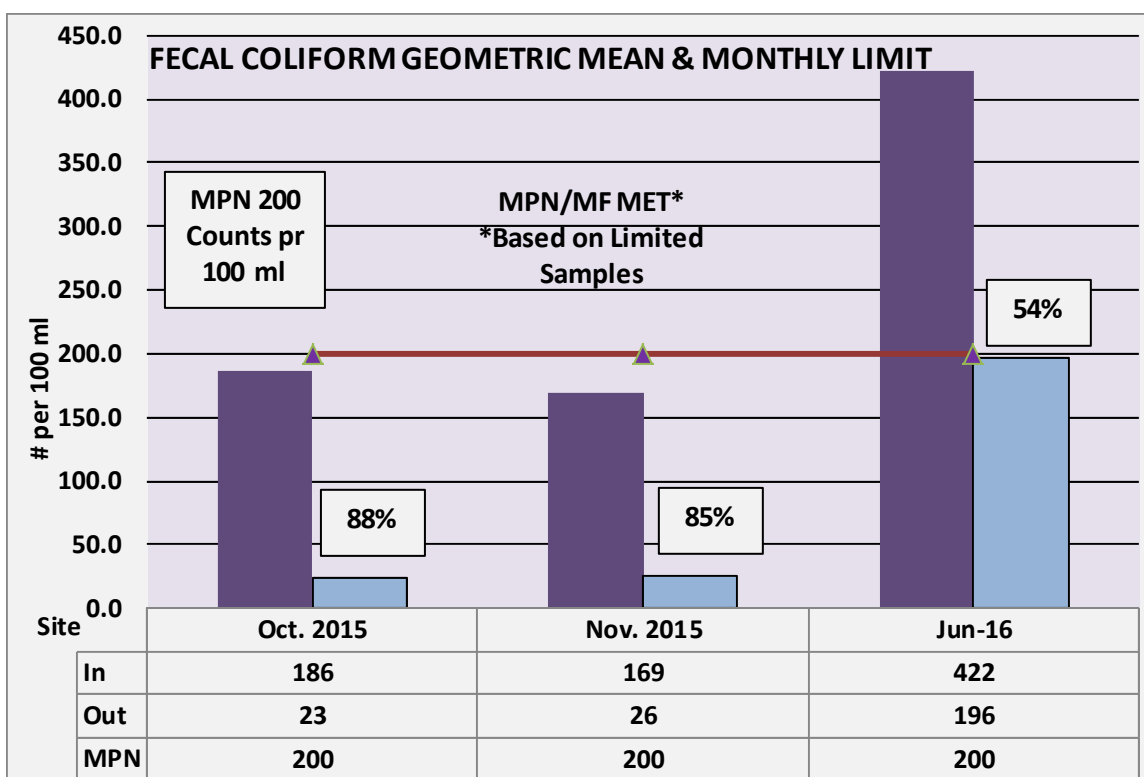


Figure 15. Fecal coliform Geometric Mean & Monthly Limit Bessey Creek.

Capacity Utilization & Flow Availability

Capacity utilization ranged from a low of 8% (Ideal Grove) to a high of 45% (Grassy Island) during the PORs (Figure 16), with flows generally available at all sites for the period. Although low water levels may allow for system operations, they were sufficiently below plant treatment capacities for the majority of the POR, so as to adversely impact overall TP removal. Flows are depicted graphically in Figure 17 (daily in cubic feet per second {cfs}) and Figure 18 (total). The values represent inflow measurements to the HWT facilities, which are not necessarily indicative of flow levels in the treated water bodies. Grassy Island presented the highest flows for the seven systems, followed by the Wolff Ditch, Bessey Creek, and Lemkin Creek facilities. Daily average flows compared to facility capacity are shown in the Site Specific Data Section of this Chapter.

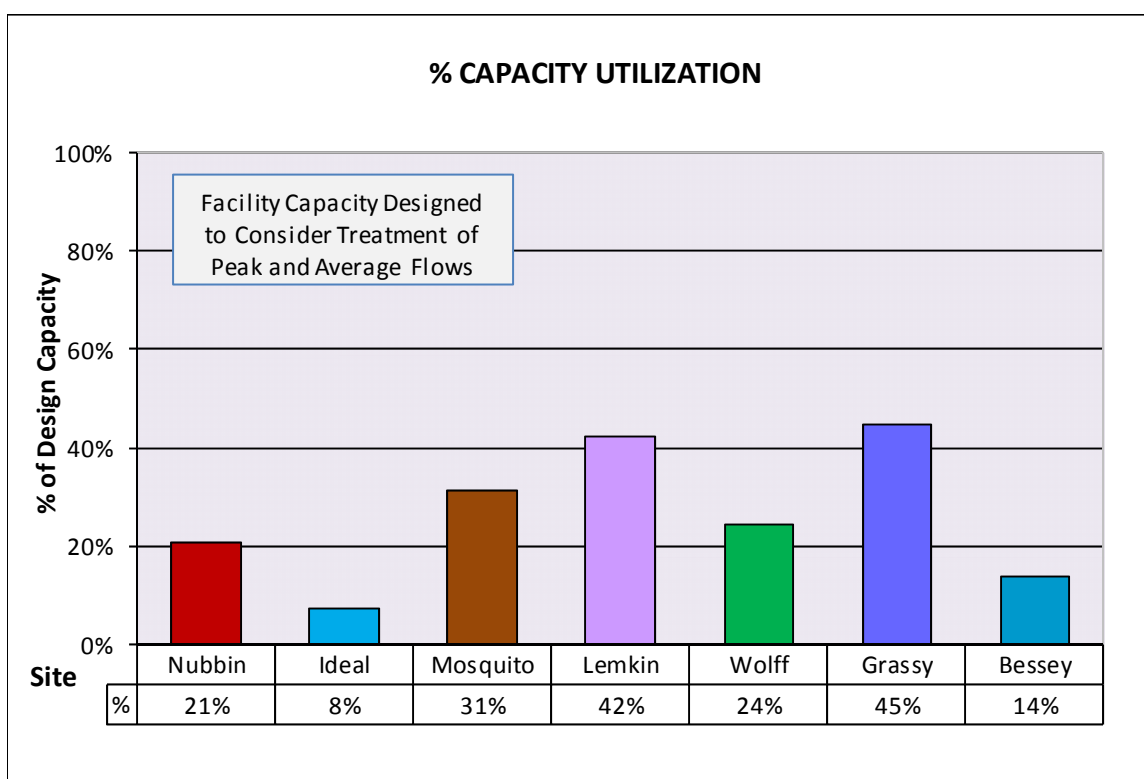


Figure 16. Utilization of facility capacity by Site.

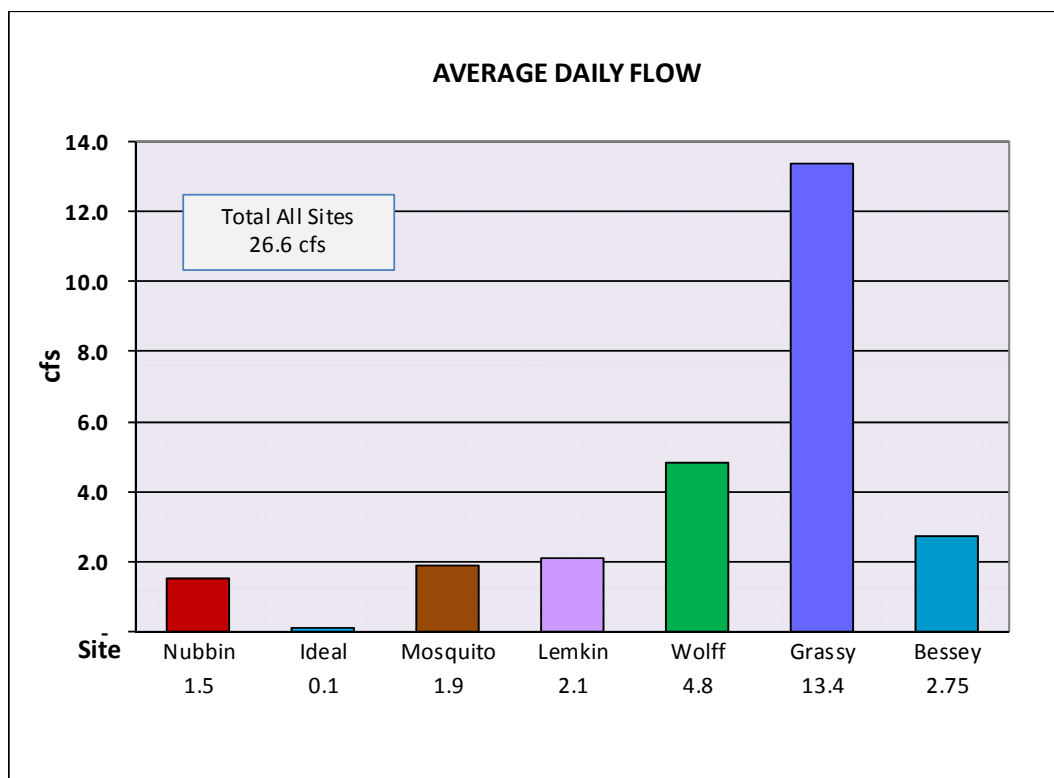


Figure 17. Average daily flow by Site and total daily all HWT systems.

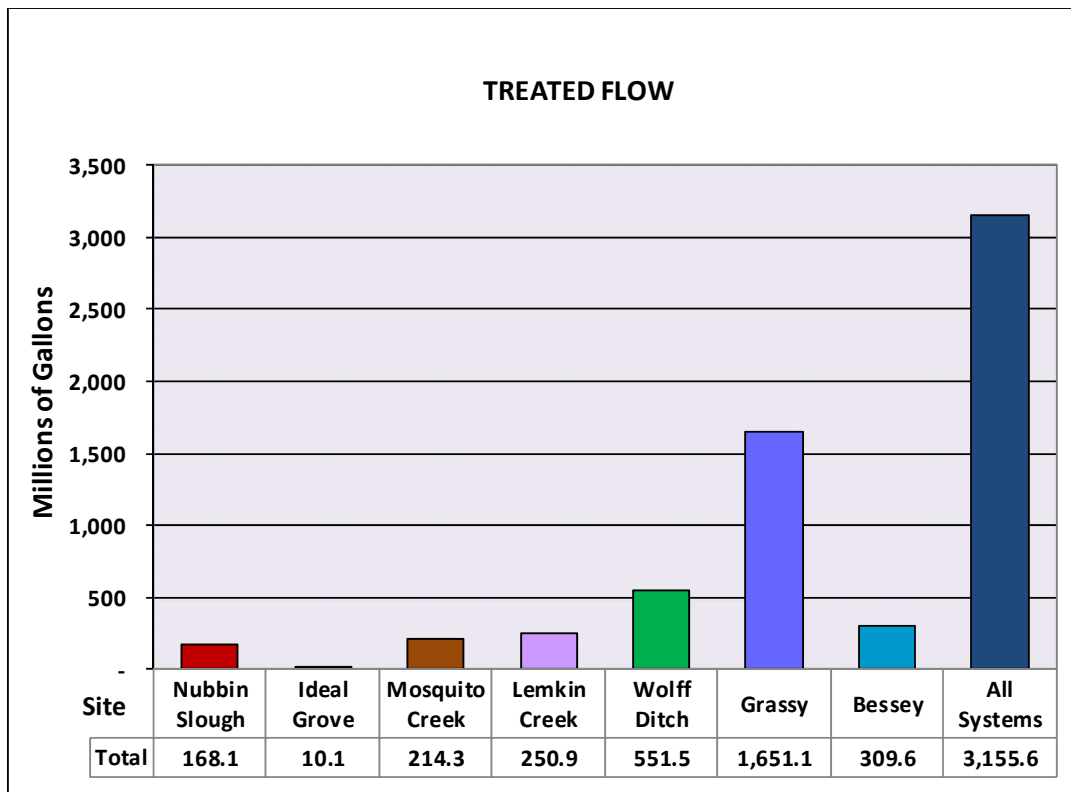


Figure 18. Total treated flow by Site and total all HWT systems.

Comparisons Periods 1 – 8 Operational Facilities

Nubbin Slough, Ideal Grove, and Mosquito Creek facilities have operated for approximately eight years. The first operational contract spanned the period from November 21, 2008, through November 20, 2009 (Period 1 – construction is considered to be Period 0); the second contract encompassed the time from March 9, 2010, through March 8, 2011 (Period 2); the third POR was March 9, 2011, through September 30, 2011 (Period 3); the fourth POR covered October 1, 2011, through June 30, 2012, for Systems 1-3, 5-6 and November 13, 2011, through June 30, 2012, for System 7 (Period 4); the fifth POR was July 1, 2012, through June 30, 2013 (Period 5); and sixth POR is July 1, 2013, through June 30, 2014 (Period 6); the seventh POR is July 1, 2014, through June 30, 2015 (Period 7); the current PORs are from July 1, 2015, through November 30, 2015, and the month of June 2016 (183 days) for Sites 1-3, 5, 6, and 8 and from July 1, 2015, through November 30, 2015, and from May 18, 2016, through June 30, 2016, (197 days) for Site 7 (Period 8). Lemkin Creek and Wolff Ditch commenced operational status at the beginning of Period 2. Optimization and Monitoring was conducted at the Grassy Island facility during Period 3, and operations began during Period 4. Grassy Island was also off-line from March 15, 2012 through June 30, 2012, for construction activities and again in May 2013. Operational improvements were made at all sites during Period 7 except Ideal Grove. Bessey Creek commenced operations in March 2015 and is in the optimization phase.

Comparisons are relevant but are limited by changes in flow paths/configurations during Period 1, capital additions during Period 2 – 5, changes in plant capacity, and, most importantly, truncated time for both Periods 3, 4, and 8. Data related to varying lengths of time will likely be skewed for purposes of comparisons with earlier analyses, particularly depending upon inclusion or exclusion of the wet season. The statistics presented do not include the operational results related to the intervening time between contracts, specifically, from November 21, 2009 through March 8, 2010.

Total Phosphorus Mass Removal

Figure 19 through Figure 25 compare interpolated TP mass inflow to outflow in lbs. per day and percent reduction rates for the eight operating periods for the seven sites, as

applicable, and indicate sustained TP removal performance. Each site requires separate review, as various factors, both controllable and non-controllable, affect TP percentage removal rates. For example, Nubbin Slough TP percentage removal was 70%, 91%, 86%, 72%, 78%, 69%, 83%, and 78%, respectively for the eight periods. The data shows that the TP mass inflow levels were elevated in Periods 3 and 7 (8.16 and 7.61 lbs. per day, respectively), lowest in Period 2 (2.13 lbs. per day) and relatively mid-range in Periods 1, 4, 5, 6, and 8 (5.79, 6.54, 4.63, 4.56, and 6.29). Although the greatest percent reduction rates occurred during the highest and lowest mass inflow rates, generally, the % removal corresponds to the comparative TP levels for this site over time. The configuration of Nubbin Slough generally affects the TP performance rates. The Ideal Grove percentage TP reduction rate remained high during the current period at 98%, (45%, 94%, 86%, 96%, 96%, 94%, and 93% for the previous seven periods), while TP mass inflow was 0.40, 0.35, 0.36, 0.28, .36 lbs. per day for Periods 1 – 5, with substantial increases in Periods 6 through 8 to 0.53, 0.67 lbs., and 0.81 per day, respectively. The current increase is likely due to treatment being limited to the rainy season. Mosquito Creek percentage removal performance remained relatively consistent, even as inflow levels continued to increase or remain elevated. The Lemkin Creek percentage removal rate declined slightly, while TP inflow levels increased during the POR. The percentage reduction was stable (60% to 62%) for Wolff Ditch as average TP mass inflow increased significantly (2.16 versus 3.07 lbs. per day). Grassy Island TP removal performance remained stable in the current period (92% versus 91%), while average mass inflow increased significantly from 16.01 to 36.18 lbs. per day. Installation of a back-end limerock bed during Period 7 is a factor in performance at the site.

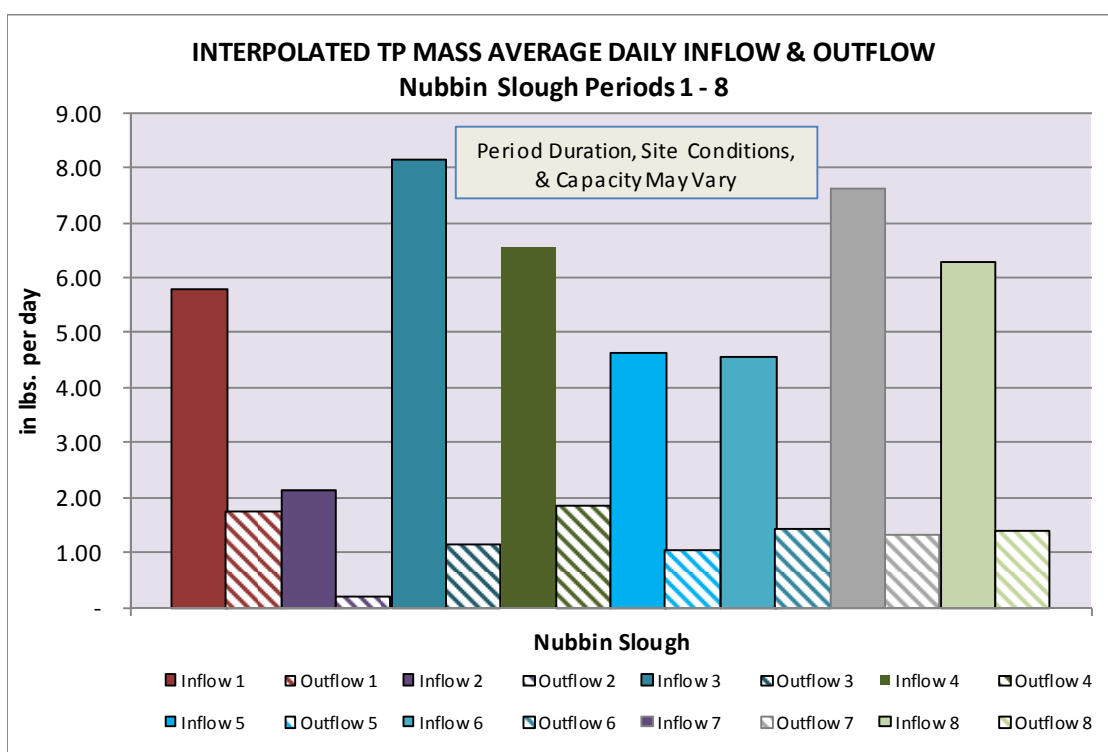


Figure 19. Interpolated TP Mass Inflow vs. Outflow Periods 1-8 Nubbin Slough.

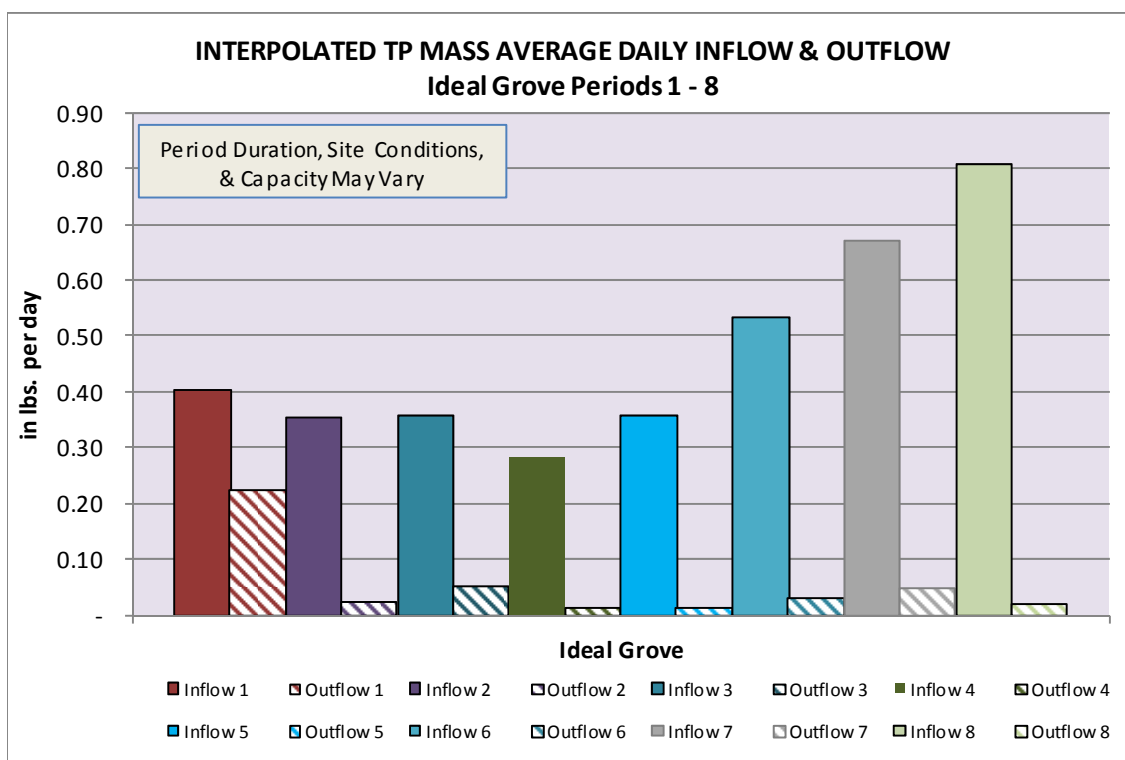


Figure 20. Interpolated TP Mass Inflow vs. Outflow Periods 1-8 Ideal Grove.

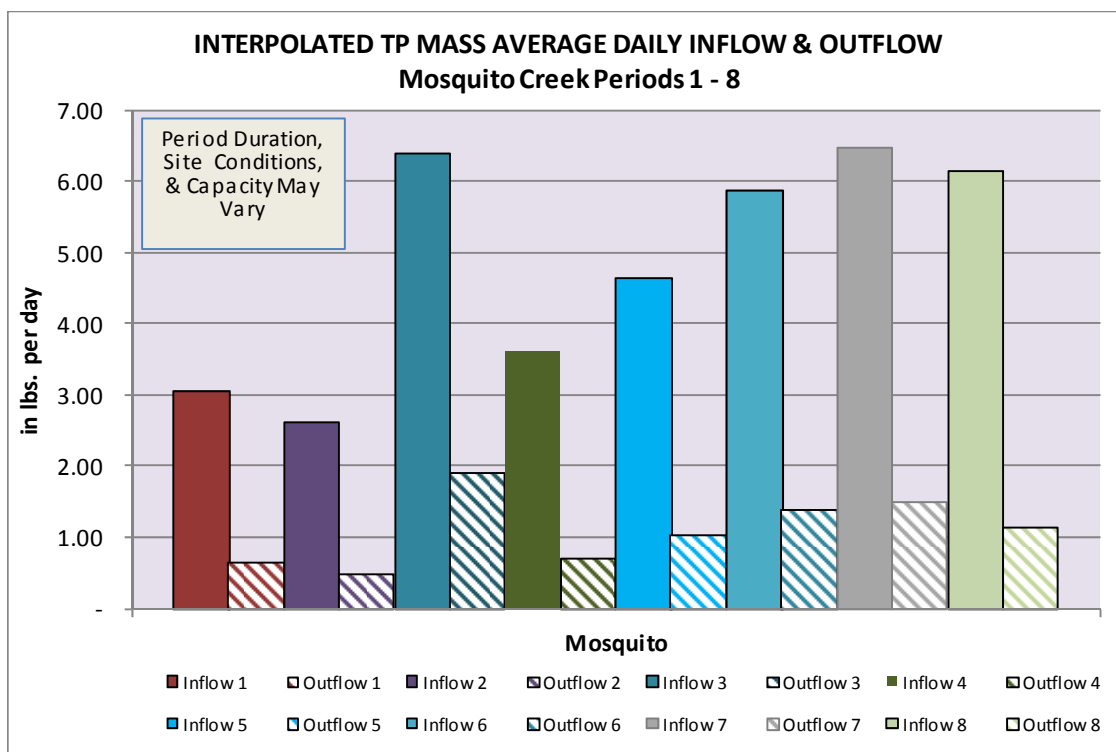


Figure 21. Interpolated TP Mass Inflow vs. Outflow Periods 1-8 Mosquito Creek.

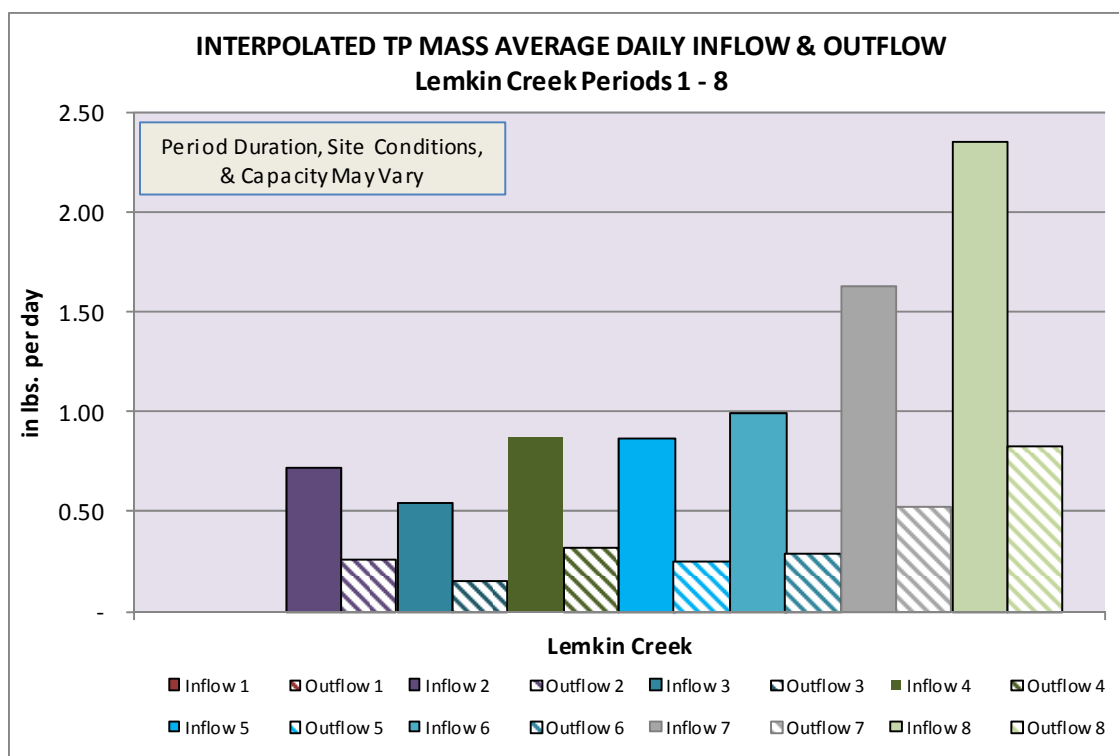


Figure 22. Interpolated TP mass Inflow vs. Outflow Periods 1-8 Lemkin Creek.

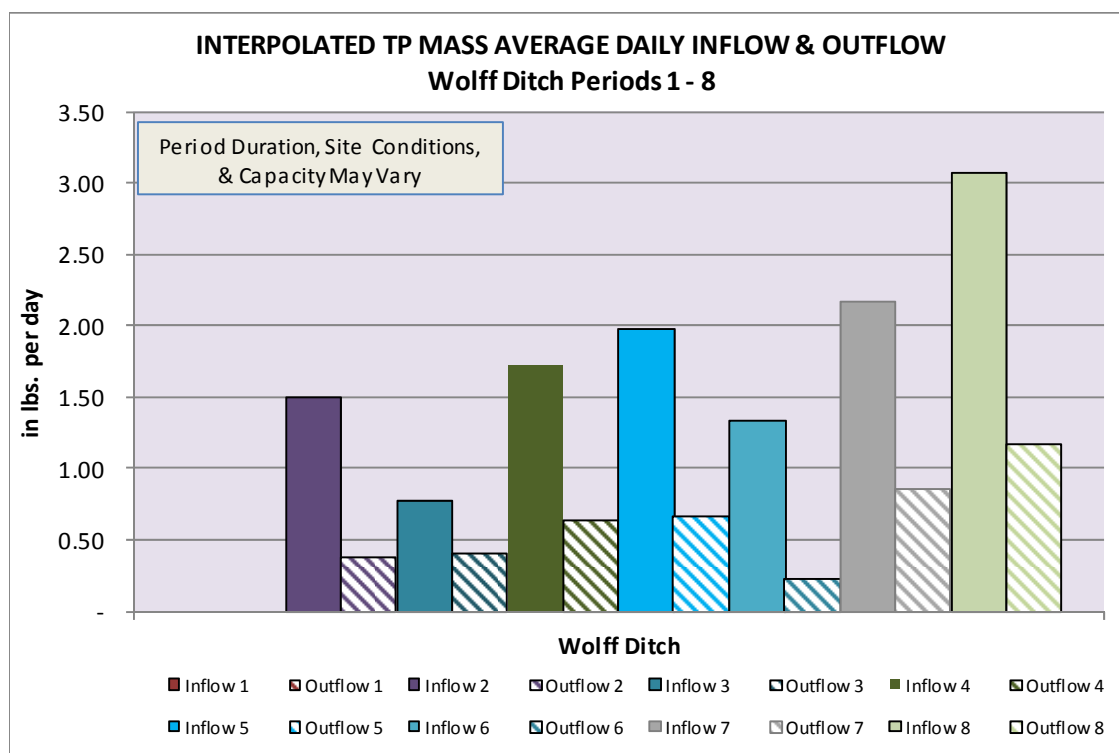


Figure 23. Interpolated TP mass Inflow vs. Outflow Periods 1-8 Wolff Ditch.

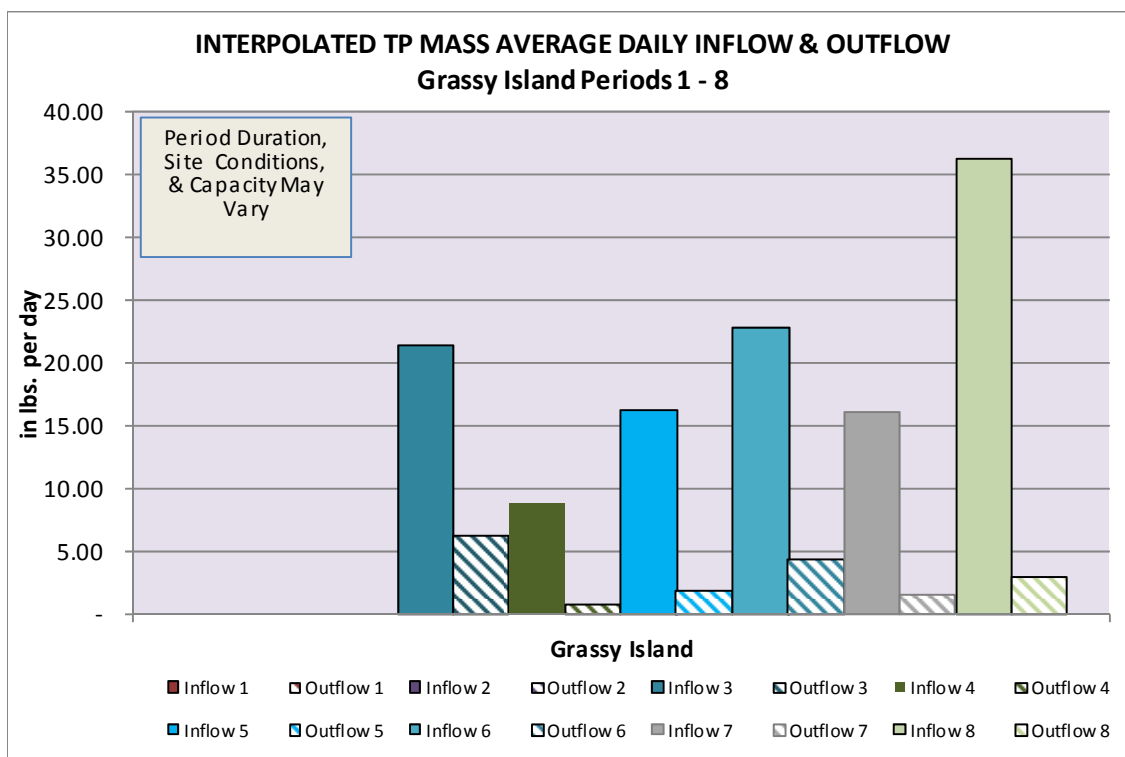


Figure 24. Interpolated TP mass Inflow vs. Outflow Periods 1-8 Grassy Island.

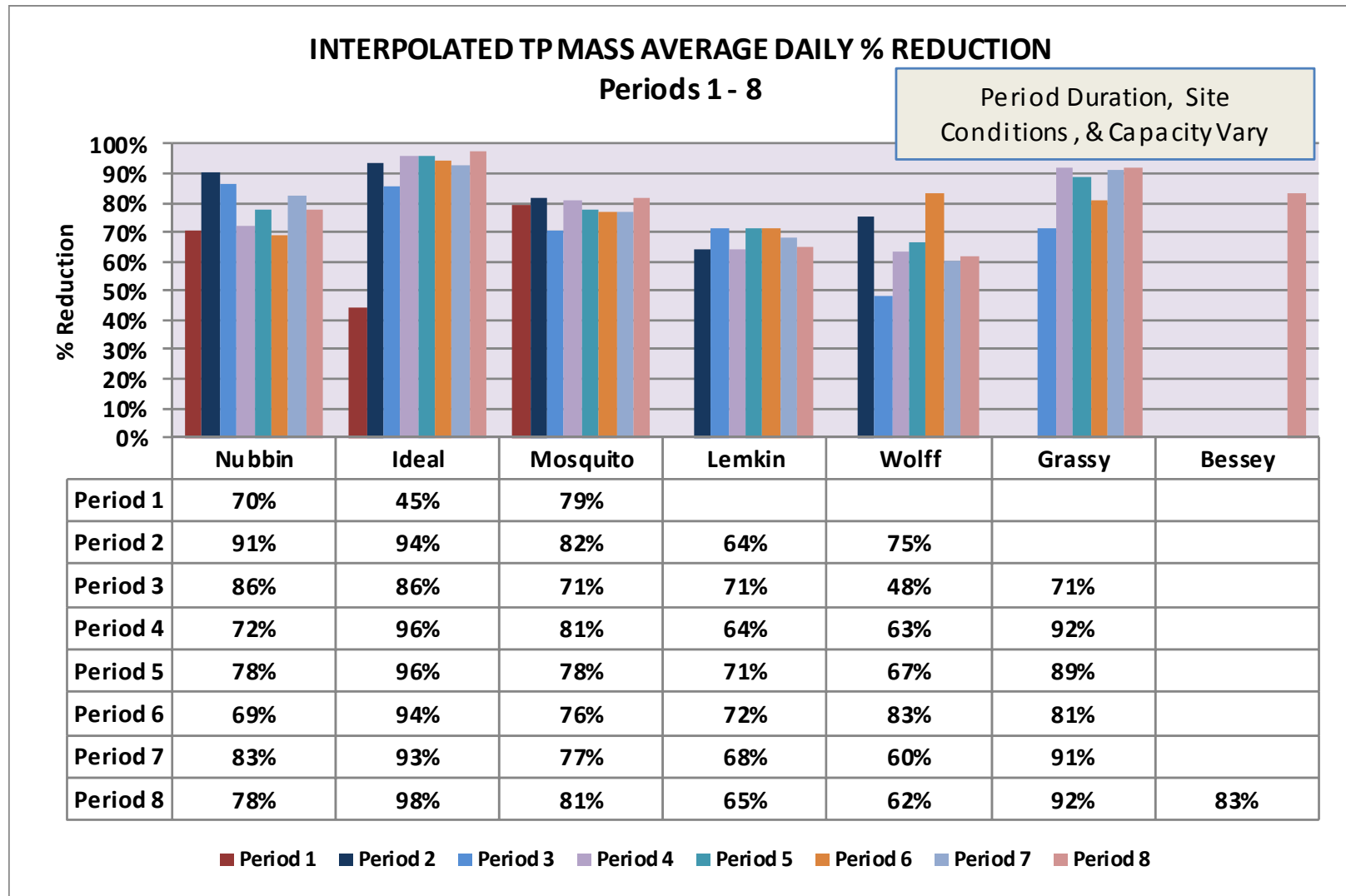


Figure 25. Interpolated TP Mass Average Daily % Reduction Periods 1-8.

Figure 26 depicts the TP removal during each of the eight operational periods, calculated from interpolated samples. P reduction during the shorter time frames in the third and fourth periods cannot be compared from a performance basis to the prior 365 day period, while deployment of additional capacity at Grassy Island is also an important factor affecting TP comparisons. The reduced operational time in the current PORs has pointedly impacted performance (and comparisons); except for Grassy Island, there was a significant decline in total pounds of P removed at all sites over the previous period. Extrapolations of removal performance are also not necessarily valid due to the uncertainty of the availability of flow.

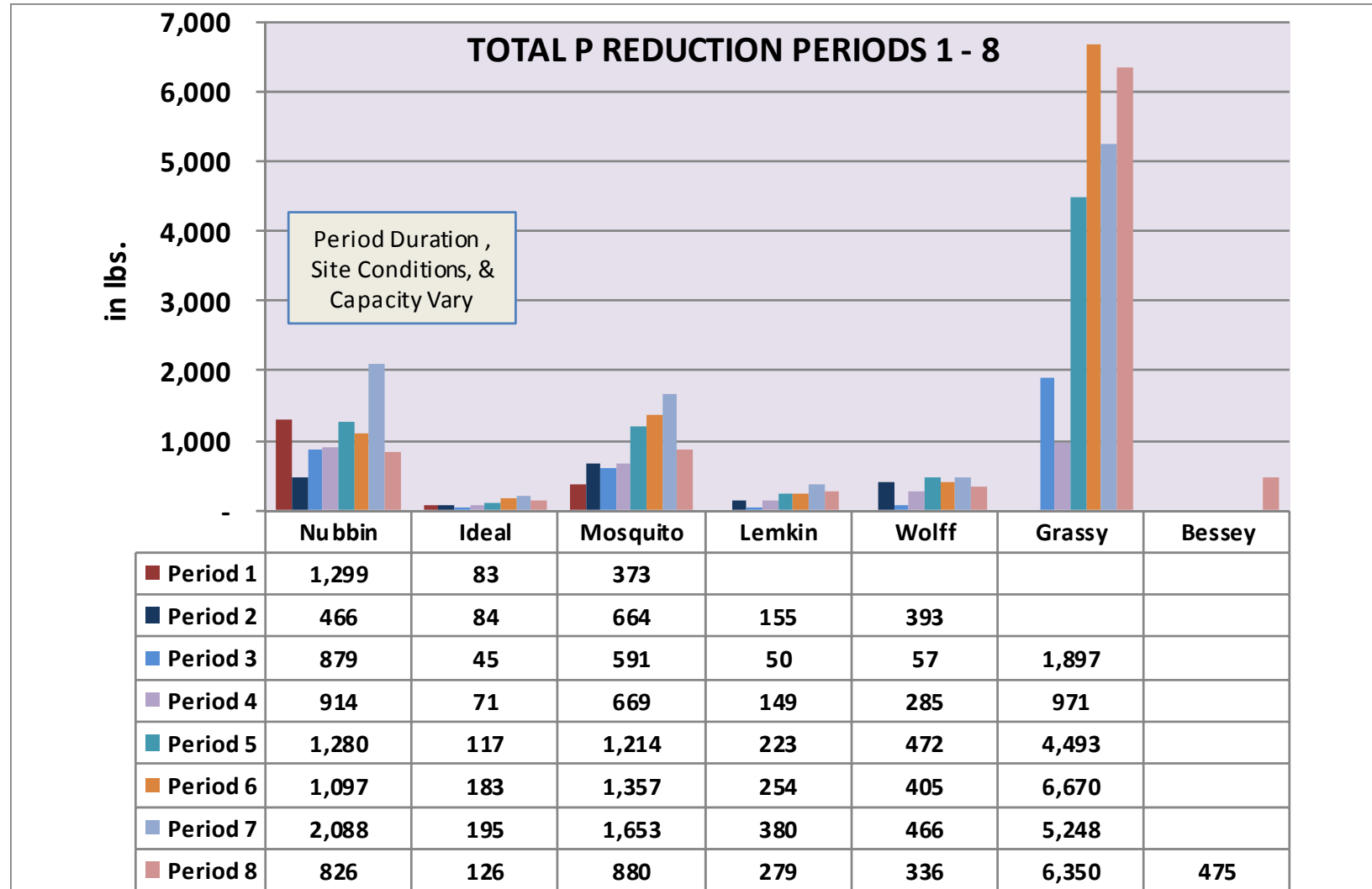


Figure 26. Total P Reduction by Site Periods 1-8.

Flow and Capacity Utilization

Figure 27 and Figure 28 are comparative graphs showing average daily flow and percent capacity utilization for periods 1 – 8. All systems were available for treatment during the PORs (Table 3) with the exception of Mosquito Creek at 99 (excluding the inactive status time). Average daily flow is highest for Grassy Island, across all systems. For Grassy Island, flows and capacity utilization increased, over and above the down-time due to lack of funding.

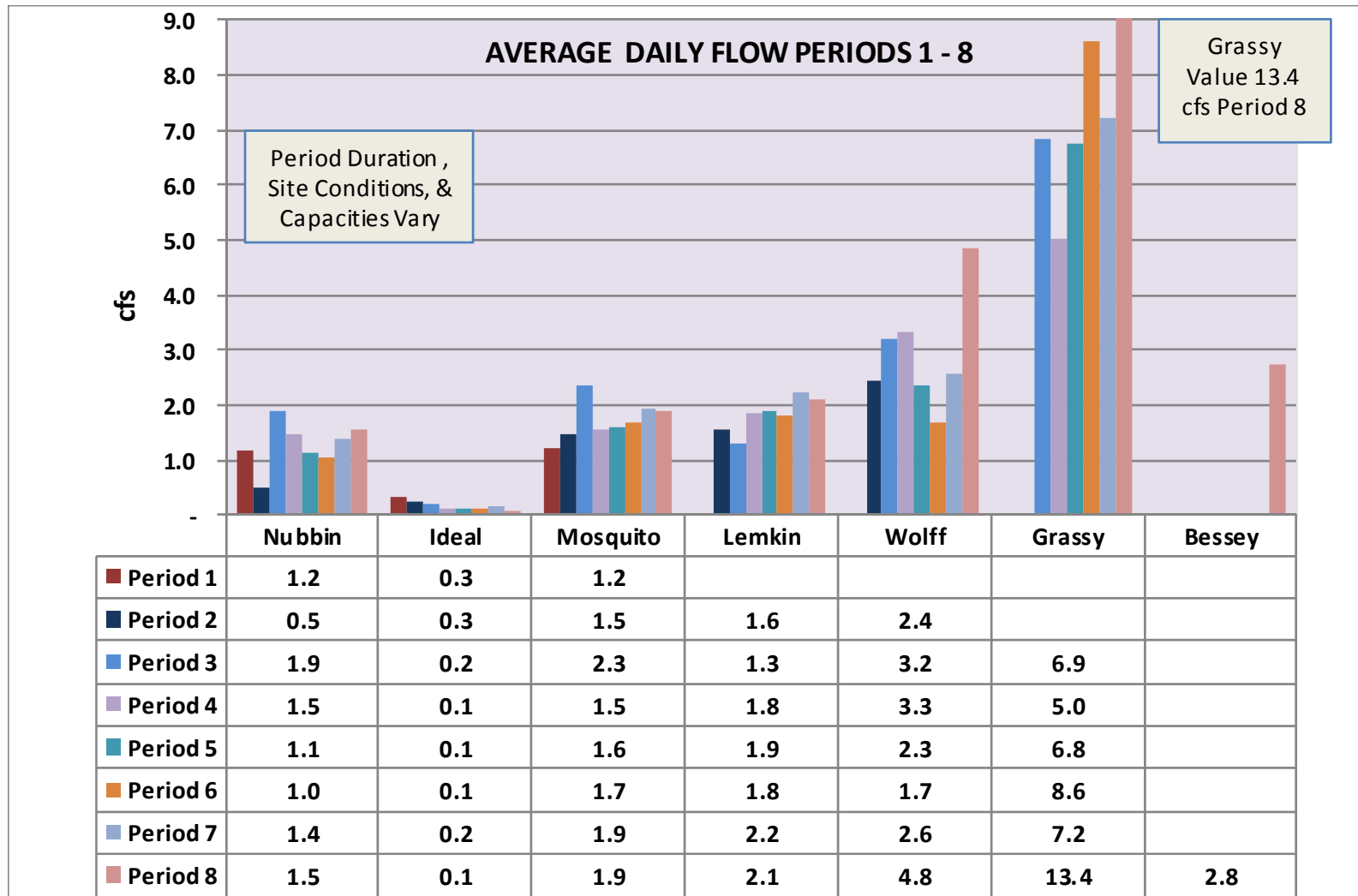


Figure 27. Average Daily Flow by Site Periods 1-8.

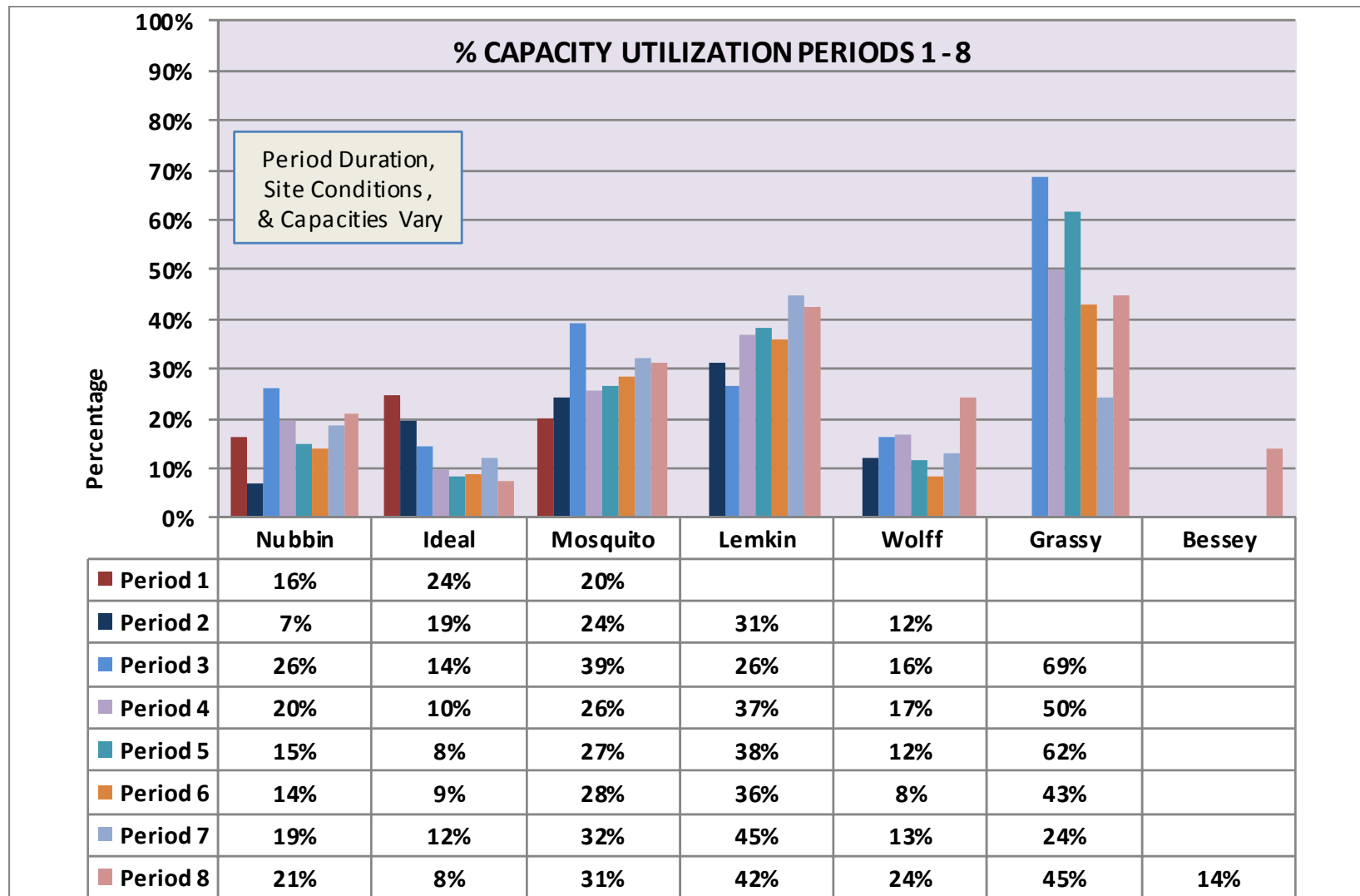


Figure 28. % Capacity Utilization by Site Periods 1- 8.

Site Specific Data

Detailed performance and operating conditions are maintained for the individual HWT facilities. The following discussion highlights significant activities and events during the PORs including specific operating conditions, effective coagulant dosing, vegetation status, TP performance, TN performance, and site specific temporal graphs for the seven operating facilities (Sites 1-3, 5-8). Site 8 was is in the optimization phase during the shortened POR.

TP and TN mass removal, TP and TN mass inflow versus outflow, and TP and TN concentrations are based upon sample points and linearly interpolated data. For those days in which the HWT systems are off-line and/or for no-flow days, daily TP and TN concentrations are shown as gaps in the line plot to clarify that the concentrations are not zero. Mass removal remains plotted as “0” values, however, as no P or N are removed when flow is zero or the system is not operating.

Nubbin Slough (Site 1)

Nubbin HWT was retrofitted from a prior conventional chemical treatment system and consists of a uniformly deep pond. The lack of a shallow vegetated zone at the Nubbin HWT system impairs particulate phosphorus (PP) filtration/settling downstream of the contact zone, thereby resulting in relatively higher outflow TP levels. At the Nubbin site, HWT mesocosms (2008 – 2010) equipped with a shallow vegetated region were able to reduce settling zone outflow TP levels of 114 µg/L down to a final discharge concentration of 30 µg/L.

The facility operated continuously during the POR with some down-time primarily due to power failure. Flows were moderate with low periods in the early part of the POR and November. Site 1 had the second highest interpolated FWM TP inflow concentration (773 µg/L) of the seven HWT facilities. The interpolated FWM TP outflow was 173 µg/L, a 78% reduction for the period. The geometric mean for TP inflow concentration was 781 µg/L and 116 µg/L for TP outflow, representing an 85% removal rate. The effective dosing of alum ranged from 16.6 to 5.3 milligrams per liter (mg/L), and the average effective dosing of alum was 12.8 mg/L as Aluminum (Al) for the period. The dosing was selected to accommodate pH, alkalinity, and color characteristics of the inflow slough waters and other site conditions. Both the geometric mean and FWM for TN inflow concentrations were 2.7 mg/L versus 1.8 mg/L outflow for a 34% reduction. TP and TN levels are interpolated from approximately weekly samples.

A recently installed outflow region limerock bed began operation during Period 1, following a cleaning of the upstream face of the bed to optimize performance. During Period 2, herbicide treatment was used on vegetation that previously had encroached into the inflow region. The two original chemical dosing pumps that were installed in 2007 were rebuilt during Period 3. The two longitudinal pond barriers were removed and redeployed perpendicular to flow during Period 4 to promote floc settling/accumulation into the deepest region of the settling pond. Pooling of water was observed on the surface of the inflow limerock bed during Period 5 operations, suggesting some of the pore spaces

had clogged, presumably by debris and particles pumped into the system from Nubbin Slough. Much of this material is organic in composition, however, and is therefore likely to decompose during the non-operative period. As of December 1, 2015, the facility was shut down and placed in temporary inactive status through May 31, 2016, for Periods 6-11 due to lack of funding. The site was inspected on December 7 and 15, at which time chemical dosing pumps and associated piping were cleared of residual coagulant.

The site was inspected throughout the inactive period. On February 3 and March 23, 2016, the coagulant dosing pumps were briefly exercised to maintain functionality. Tests conducted on April 6, 2016, showed that the communications controller was not functioning properly. A replacement was subsequently ordered and installed. In late May, a problem was found with a power relay and contact block during an examination of the inflow pumps. Replacement parts were ordered and installed. Approximately 4,500 gallons of alum were delivered to the site during Period 11 in preparation for reinstatement of operations.

The Nubbin Slough HWT system resumed operations on June 1, 2016. Soon after startup, a series of electrical problems were observed at this site, including failure of a recently replaced flow monitor and failure of the recently repaired communications controller. The site was operated through most of Period 12, but electrical problems persisted resulting in several off-line days. Discussions were held with the electric provider Florida Power and Light (FPL), who speculated that the equipment problems were being caused by intermittent voltage drops in their transmission lines to the site. FPL installed a power supply monitor at the site near the end of Period 12 and is recording data to assess the stability of power.

Interpolated TP mass removal over time is depicted graphically in Figure 29 together with percent daily average reduction. Temporal variations in interpolated TP mass inflow versus TP mass outflow are presented in Figure 30. Interpolated inflow and outflow TP concentration levels for the period are shown in Figure 31. Daily average flows in cfs are shown in Figure 32 compared to system capacity. The effective dosing of alum and the average for the POR is depicted in Figure 33. Interpolated TN mass removal over time is

depicted graphically in Figure 34 together with percent daily average reduction. Temporal variations in interpolated TN mass inflow versus TP mass outflow are presented in Figure 35. Interpolated inflow and outflow TN concentration levels for the period are shown in Figure 36. Detailed operating data is contained within Appendix III for TP and Appendix X for TN.

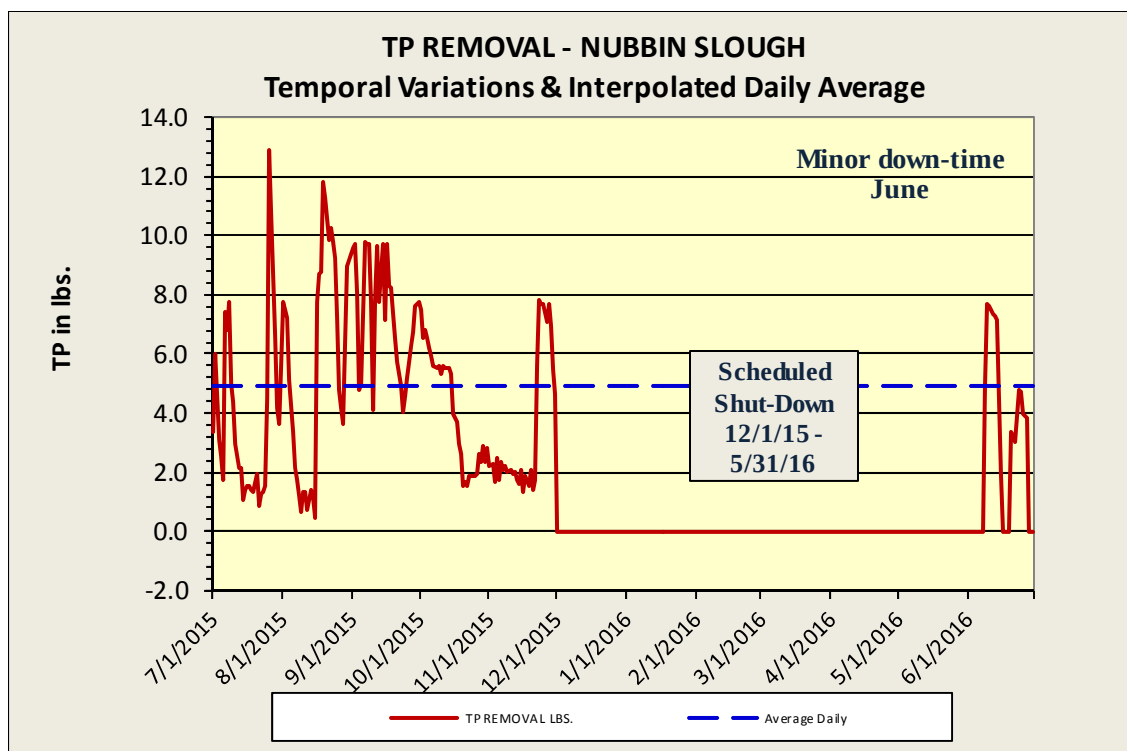


Figure 29. Interpolated TP Removal Temporal Variations & Daily Average Nubbin Slough.

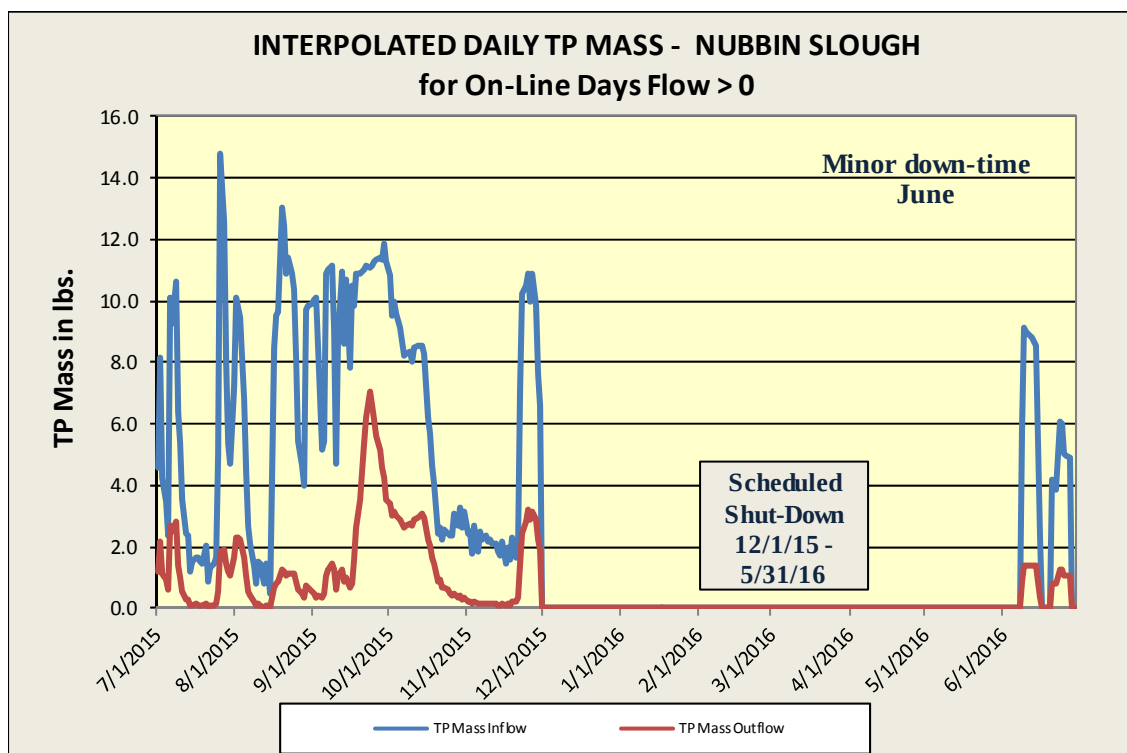


Figure 30. Interpolated Daily TP Mass Inflow versus Outflow Nubbin Slough.

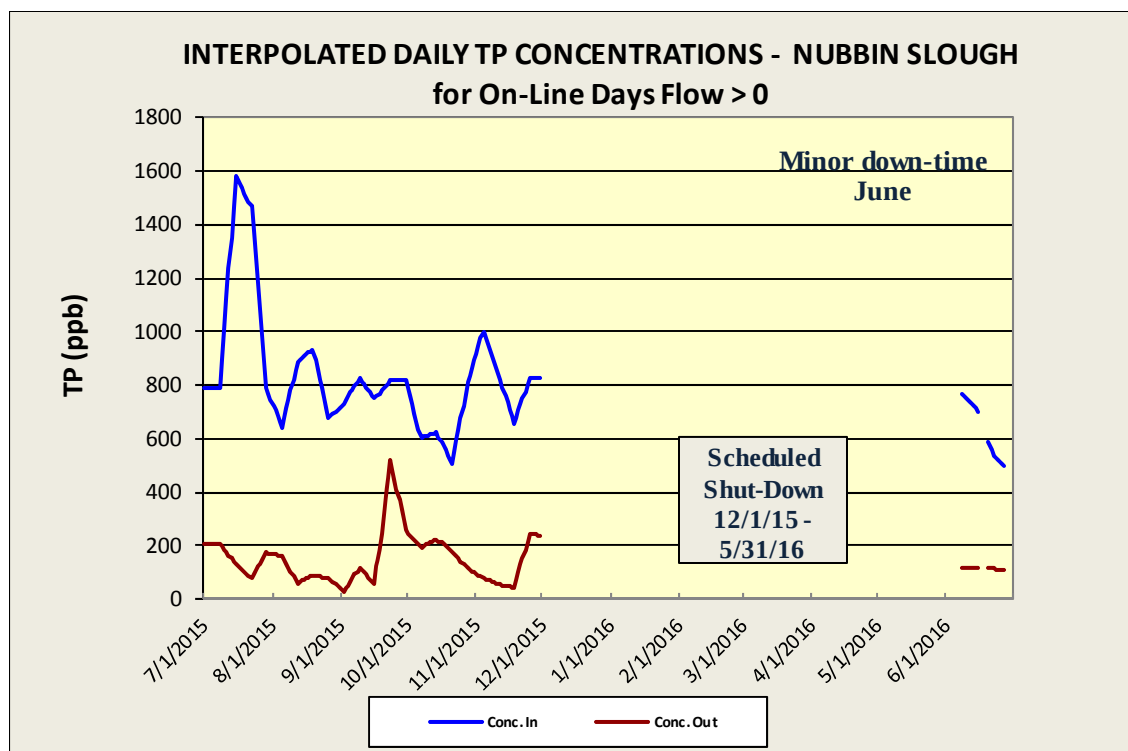


Figure 31. Interpolated Daily TP Concentrations Inflow versus Outflow Nubbin Slough.

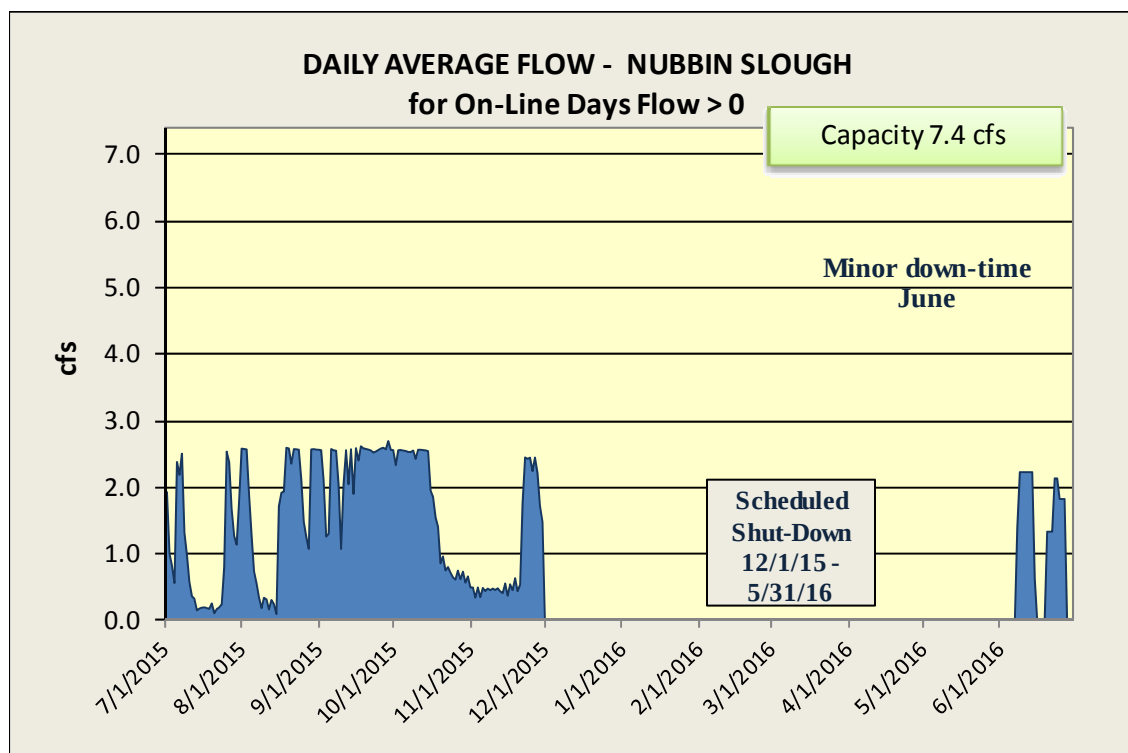


Figure 32. Daily Average Flows versus Capacity Nubbin Slough.

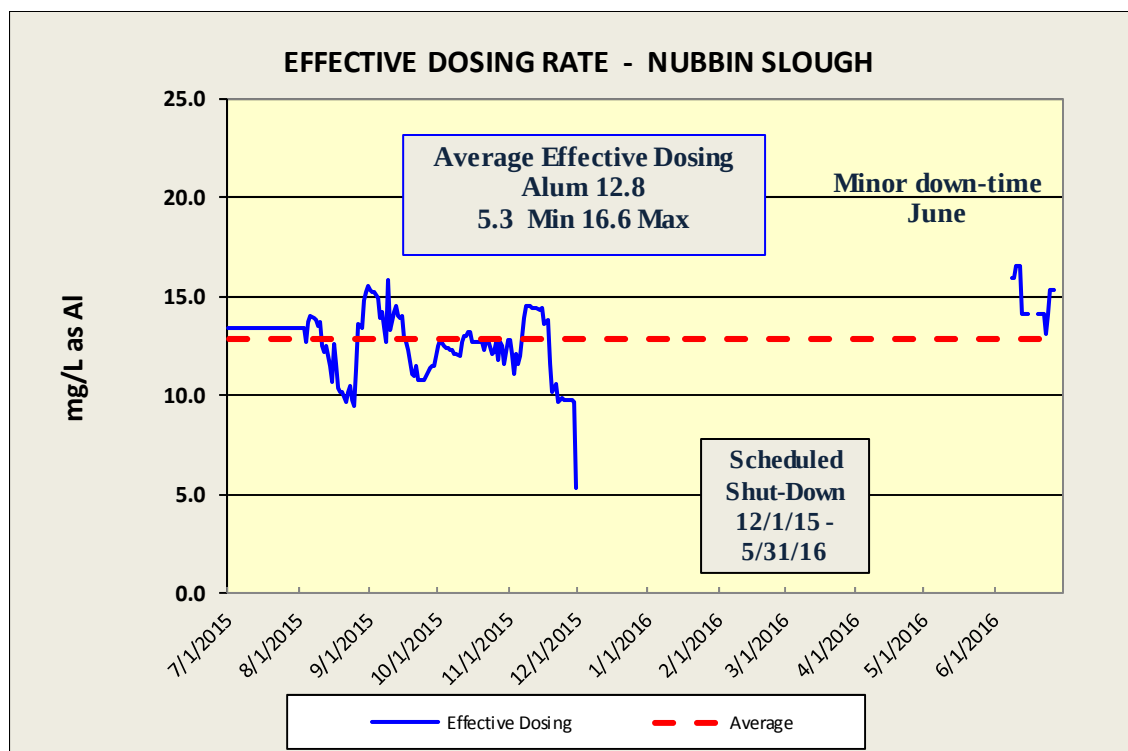


Figure 33. Daily Effective Dosing Rate and Average for the POR Nubbin Slough.

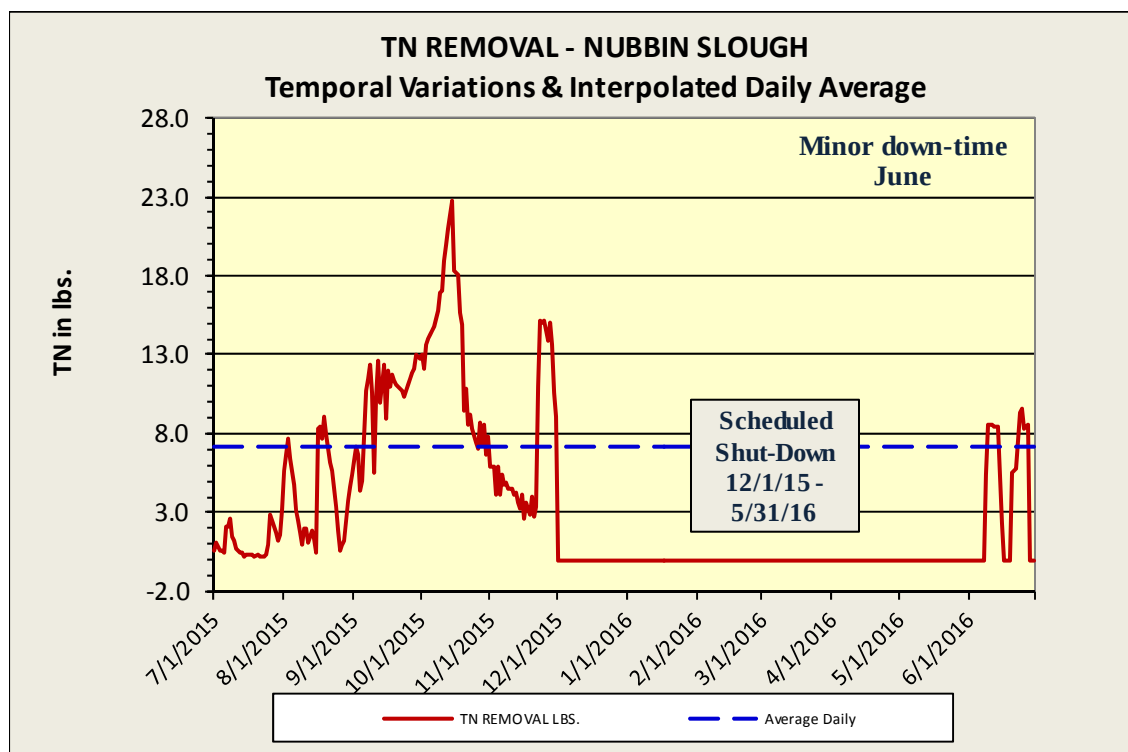


Figure 34. Interpolated TN Removal Temporal Variations & Daily Average Nubbin Slough.

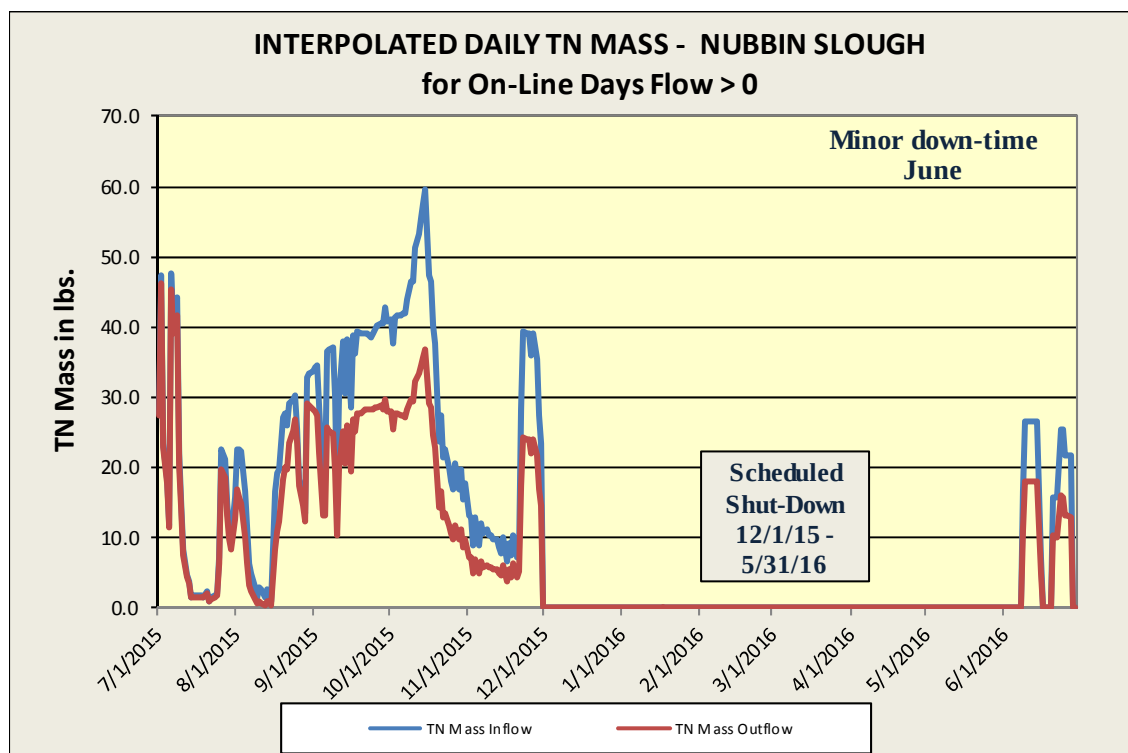


Figure 35. Interpolated Daily TN Mass Inflow versus Outflow Nubbin Slough.

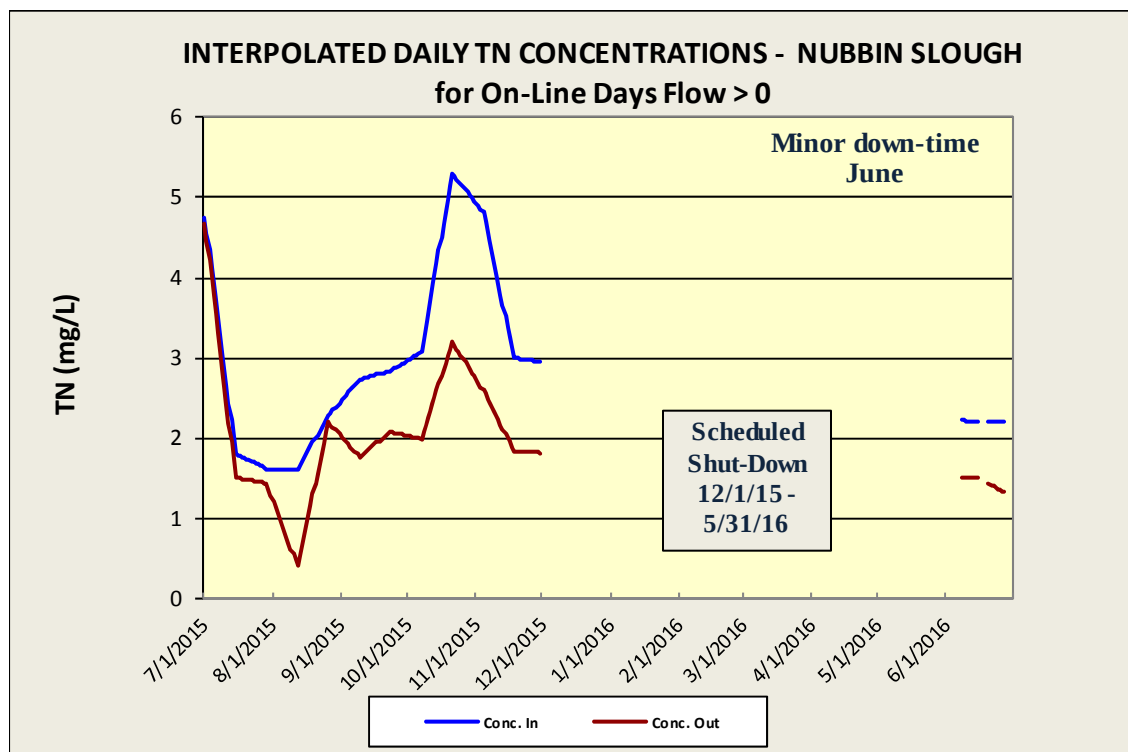


Figure 36. Interpolated Daily TN Concentrations Inflow versus Outflow Nubbin Slough.

Ideal Grove (Site 2)

Operations at Ideal Grove were interrupted by pump and dosing timer failures, minor clogging, and low flow. Site 2 had the highest interpolated FWM TP inflow concentrations (1,842 µg/L) of the seven HWT facilities. The interpolated FWM TP outflow concentration was 39 µg/L for the period, which represents the highest TP removal rate of 98%. The geometric mean for TP inflow concentration was 788 µg/L and 31 µg/L for TP outflow, representing a 96% removal rate. The average effective dosing of alum remained constant at 11.4 mg/L as Al for the POR. Both the geometric mean and FWM for TN inflow concentrations were 3.2 mg/L versus 1.4 mg/L outflow for a 54% reduction. TP and TN levels are interpolated from approximately weekly samples.

During Period 1, the pump intake screen became clogged and was subsequently removed and cleaned. In Period 2, the inflow pump intake plumbing was modified to minimize clogging caused by aquatic weeds in the farm canal. Repairs were made to several of the chemical storage tank discharge valves in Period 3. During Period 4, the water supply farm canal was colonized by water lettuce, the propagules of which were subsequently pumped into the HWT system's inflow region. This has occurred in previous years, and the water lettuce plants typically die off over time due to the P-limited conditions in the inflow region of the pond. Due to an incursion of water lettuce into the farm canal, the barrier protecting the pump intake structure was reconfigured during Period 5, and the area was cleared of floating plants. As of December 1, 2015, the facility was shut down and placed in temporary inactive status through May 31, 2016, for Periods 6-11 due to lack of funding. The site was inspected on December 7 and 15, at which time chemical dosing pumps and associated piping were cleared of residual coagulant.

The site was inspected throughout the inactive period. During site inspections on January 6 and 20, February 3, March 23, April 6, May 11 and May 25, 2016, the inflow water pump was exercised to maintain functionality and to keep vegetation hydrated. The Ideal Grove HWT system resumed operations on June 1, 2016, following the period of inactive status. The inflow line experienced minor clogging during Period 12.

Interpolated TP mass removal over time is depicted graphically in Figure 37 together with the daily average reduction. Temporal variations in interpolated TP mass inflow versus TP mass outflow are presented in Figure 38. Interpolated inflow and outflow TP concentration levels for the period are shown in Figure 39. Daily average flows are shown in Figure 40 compared to system capacity. The effective dosing of alum and the average for the POR is depicted in Figure 41. Interpolated TN mass removal over time is depicted graphically in Figure 42 together with percent daily average reduction. Temporal variations in interpolated TN mass inflow versus TP mass outflow are presented in Figure 43. Interpolated inflow and outflow TN concentration levels for the period are shown in Figure 44. Detailed operating data is contained within Appendix IV for TP and Appendix XI for TN.

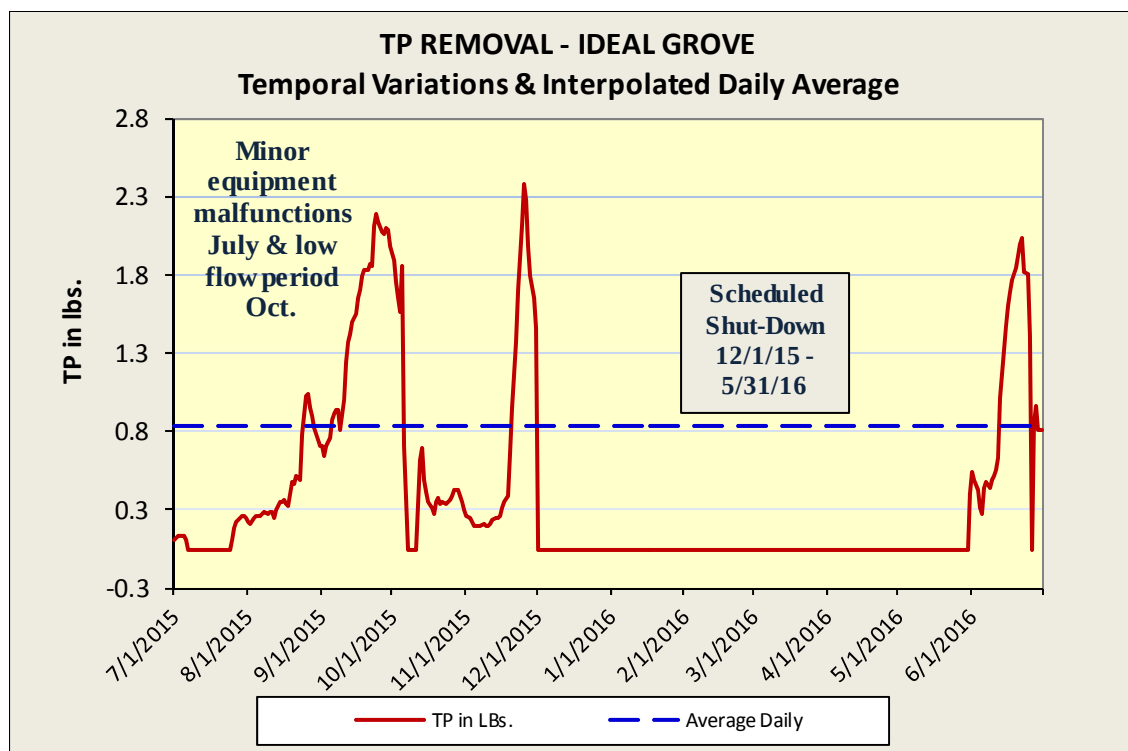


Figure 37. Interpolated TP Removal Temporal Variations & Daily Average Ideal Grove.

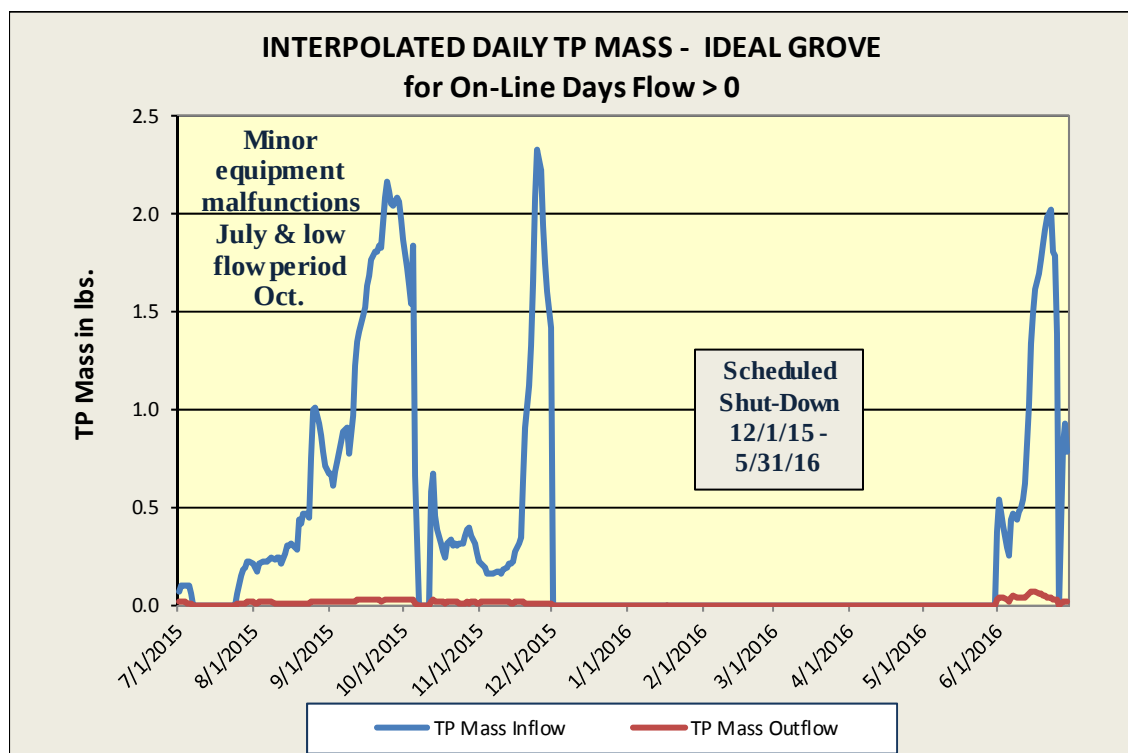


Figure 38. Interpolated Daily TP Mass Inflow versus Outflow Ideal Grove.

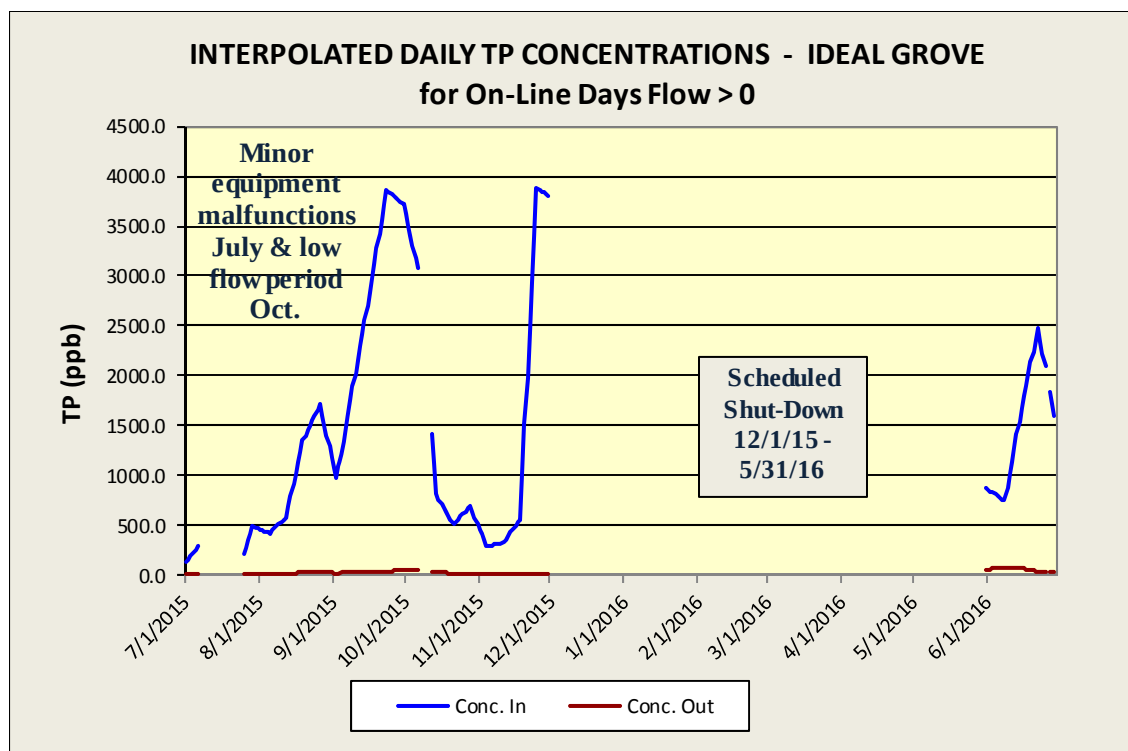


Figure 39. Interpolated Daily TP Concentrations Inflow versus Outflow Ideal Grove.

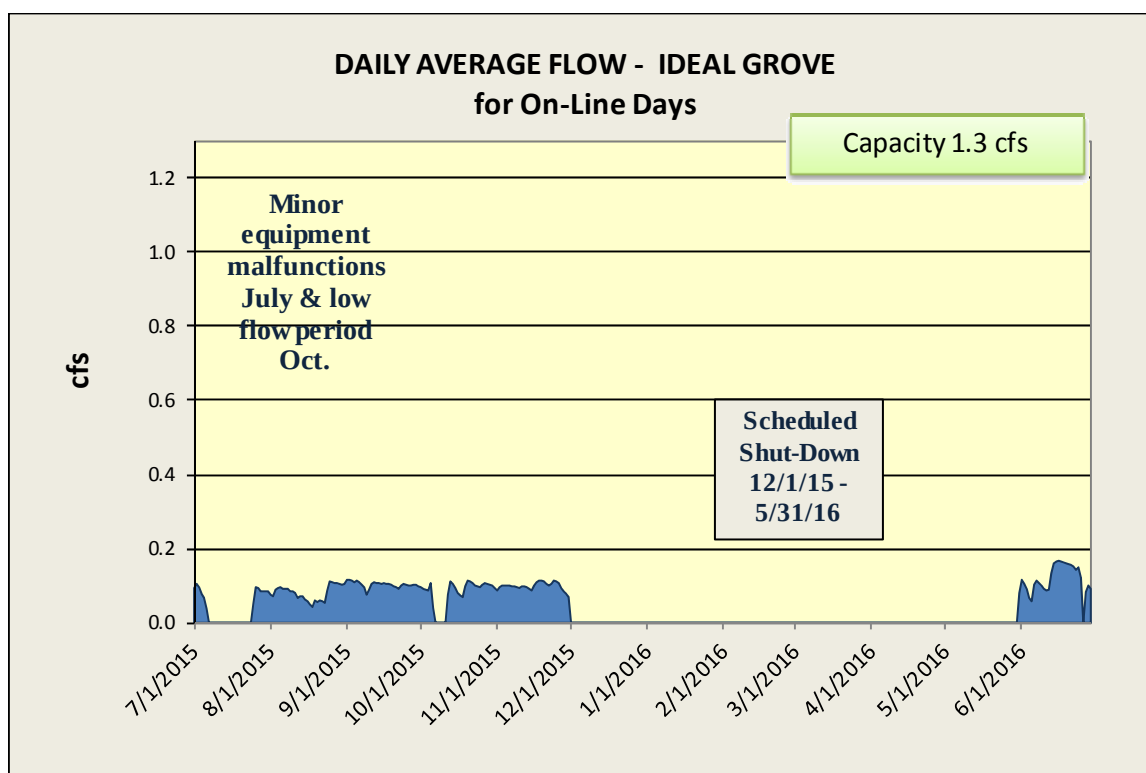


Figure 40. Daily Average Flows versus Capacity Ideal Grove.

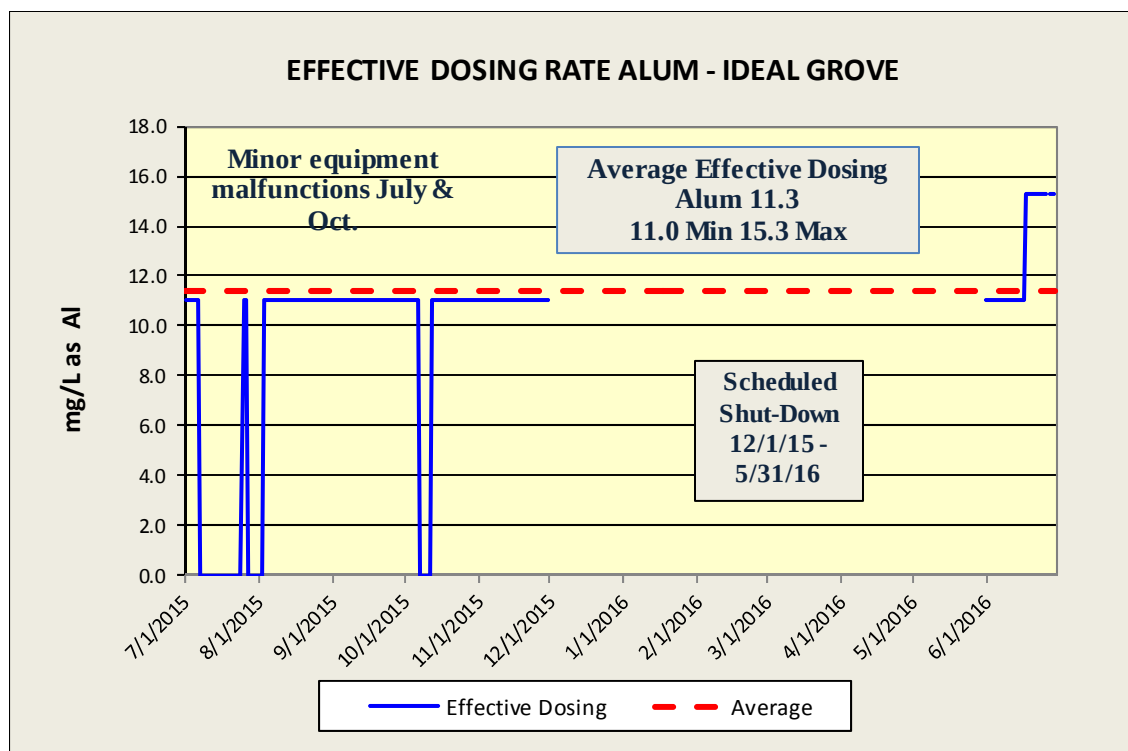


Figure 41. Daily Effective Dosing Rate and Average for the POR Ideal Grove.

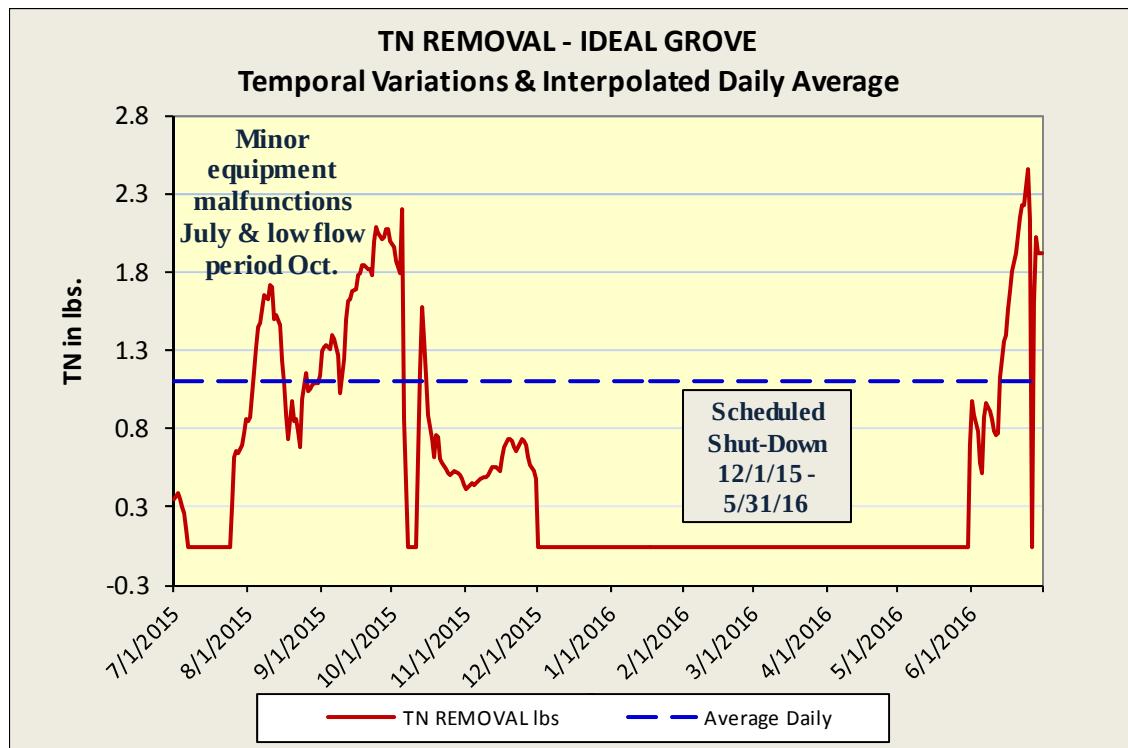


Figure 42. Interpolated TN Removal Temporal Variations & Daily Average Ideal Grove.

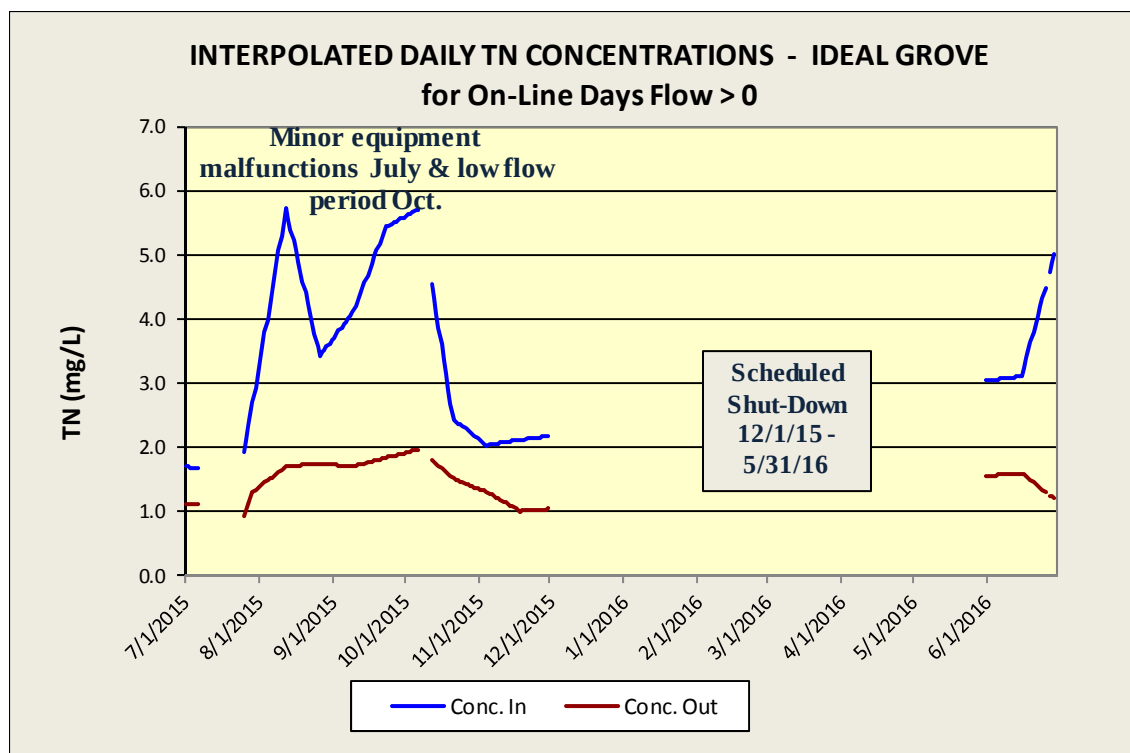


Figure 43. Interpolated Daily TN Mass Inflow versus Outflow Ideal Grove.

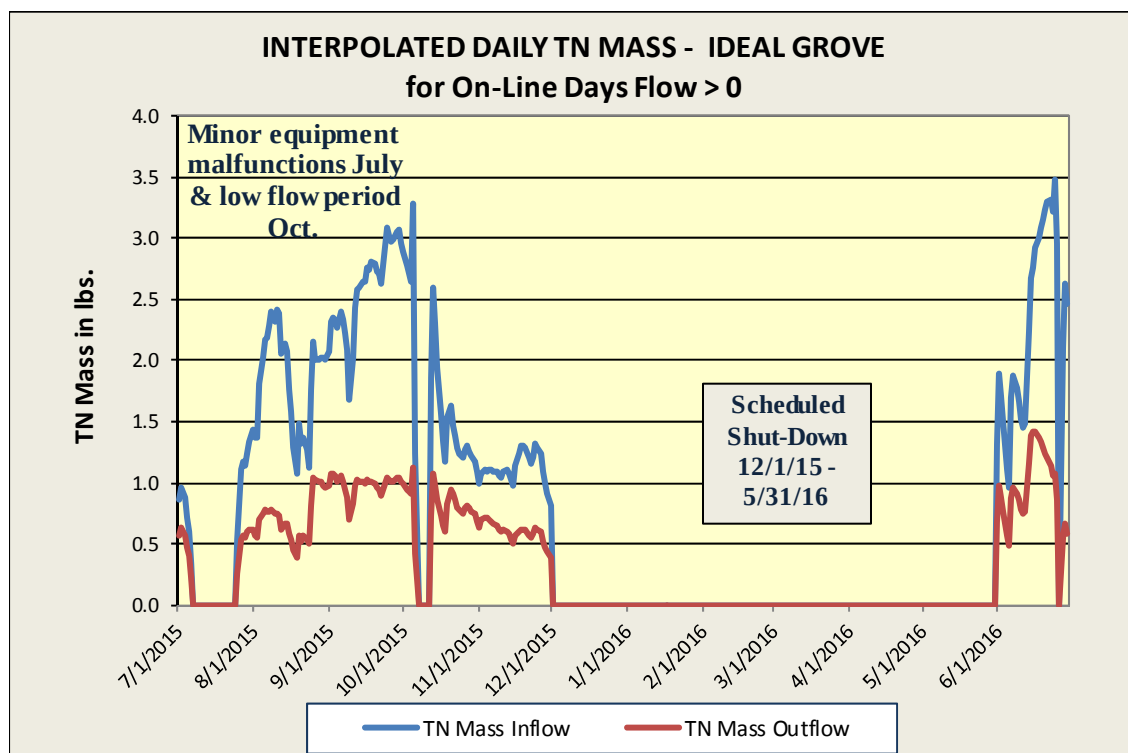


Figure 44. Interpolated Daily TN Concentrations Inflow versus Outflow Ideal Grove.

Mosquito Creek (Site 3)

Mosquito Creek operated continuously during the POR with only very minor equipment issues. Flows were sustained with the highest levels recorded from August through October 2015 and June 2016. Site 3 had the third highest interpolated FWM TP inflow concentration (547 µg/L) of the seven HWT sites. The interpolated FWM TP outflow was 102 µg/L, an 81% average removal for the period. The P levels were relatively high with intermittent spikes, particularly noting one sample point in September. The geometric mean for TP inflow concentration was 608 µg/L and 93 µg/L for TP outflow, representing an 85% removal rate. The effective dosing of alum ranged from 6.8 to 17.9 mg/L, and the average was 11.8 mg/L as Al for the period. Polyaluminum chloride (PAC) was not utilized during the POR; a topic which will be discussed within the Final Report. Dosing adjustments were made as necessary based upon on-site conditions. The geometric mean for TN inflow concentrations was 3.0 mg/L versus 1.7 mg/L outflow for a 43% reduction; the FWM for TN inflow concentrations was 3.1 mg/L compared to 1.9 mg/L outflow for a 37% removal rate. TP and TN levels are interpolated from approximately weekly samples.

A number of electronic relay failures occurred during Period 1, resulting in a shutdown of system operations for several days. Following unsuccessful troubleshooting/repair efforts, the unit was replaced. Also during this period, a new Webmaster communications controller was installed, replacing a defective unit. The coagulant injection location was moved from the northwest corner of the settling pond to the site of inflow pipe discharge to improve the coagulant mixture. The system was shut down for two days during Period 2 so that floc could be removed from the immediate area of the discharge pipe. During Period 3, repairs to floating booms were made both within the shallow vegetated zone and in the contact region. These booms had been damaged by high winds during the prior period. During Period 4, floc was pumped from the settling pond into the adjacent drying bed in preparation for the dry season system shutdown in December. During Period 5, background lighting conditions in the floc camera “chamber” were modified to compensate for recent changes in the chemistry of the Mosquito Creek waters, which in turn influence the color (and optical detection) of the settling flocs. As of December 1, 2015, the facility

was shut down and placed in temporary inactive status through May 31, 2016, for Periods 6-11 due to lack of funding. The site was inspected on December 7, 15, and 29, at which time selected instrument probes (e.g. for pH, turbidity) were removed from the facility and placed in appropriate storage solutions.

The site was inspected throughout the inactive period. During the site inspections on January 20, January 25, May 11, and May 25, 2016, the inflow water pump was exercised to maintain functionality and keep vegetation hydrated. Floc removal from the contact zone was initiated in mid-April, and these efforts were completed in the next period. The coagulant dosing pumps were briefly exercised on February 17 and March 23, 2016. A communications controller malfunction was noted on May 25, possibly caused by a lightning strike. Troubleshooting efforts were initiated and were completed in time for the site to be operational at the start of Period 12. Approximately 4,500 gallons of alum were delivered to the site during Period 11 in preparation for the renewal of operations. The Mosquito Creek system resumed operations on June 1, 2016, following the period of inactive status.

Interpolated TP mass removal over time is depicted graphically in Figure 45 together with the daily average reduction. Temporal variations in interpolated TP mass inflow versus TP mass outflow are presented in Figure 46. Interpolated concentration inflow and outflow levels for the period are shown in Figure 47. Daily average flows are shown in Figure 48 compared to system capacity. The effective dosing of alum and the average for the POR is depicted in Figure 49. Interpolated TN mass removal over time is depicted graphically in Figure 50 together with percent daily average reduction. Temporal variations in interpolated TN mass inflow versus TP mass outflow are presented in Figure 51. Interpolated inflow and outflow TN concentration levels for the period are shown in Figure 52. Detailed operating data is contained within Appendix V for TP and Appendix XII for TN.

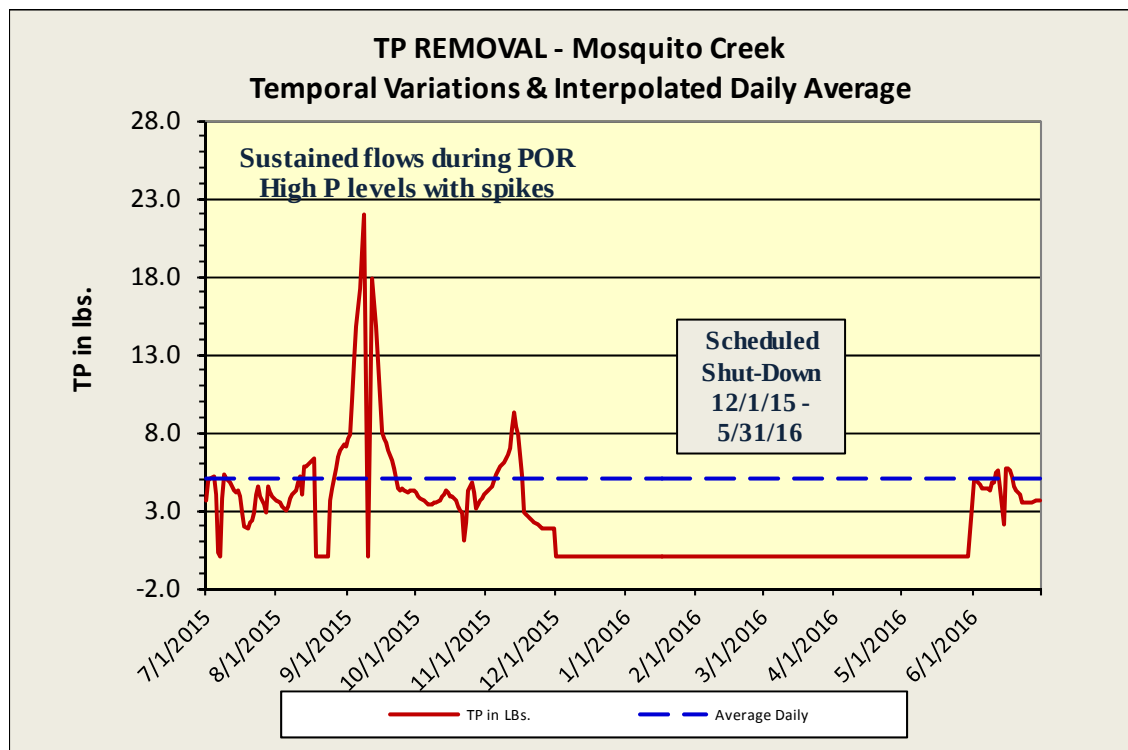


Figure 45. Interpolated TP Removal Temporal Variations & Daily Average Mosquito Creek.

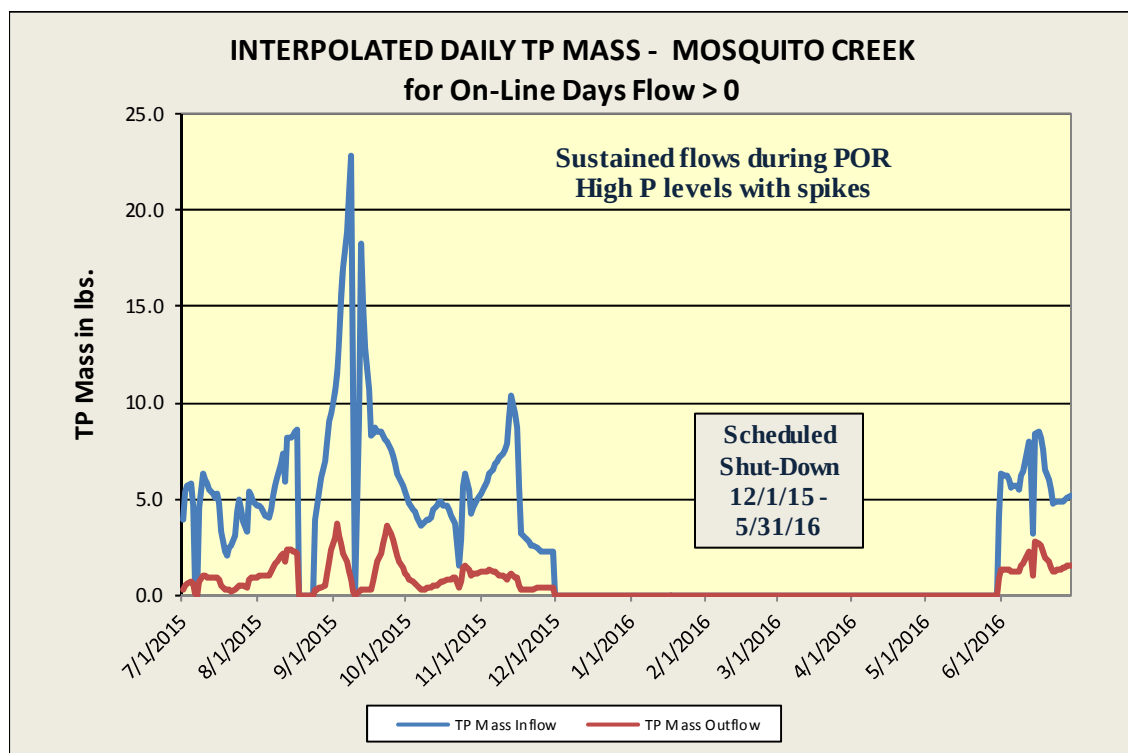


Figure 46. Interpolated Daily TP Mass Inflow versus Outflow Mosquito Creek.

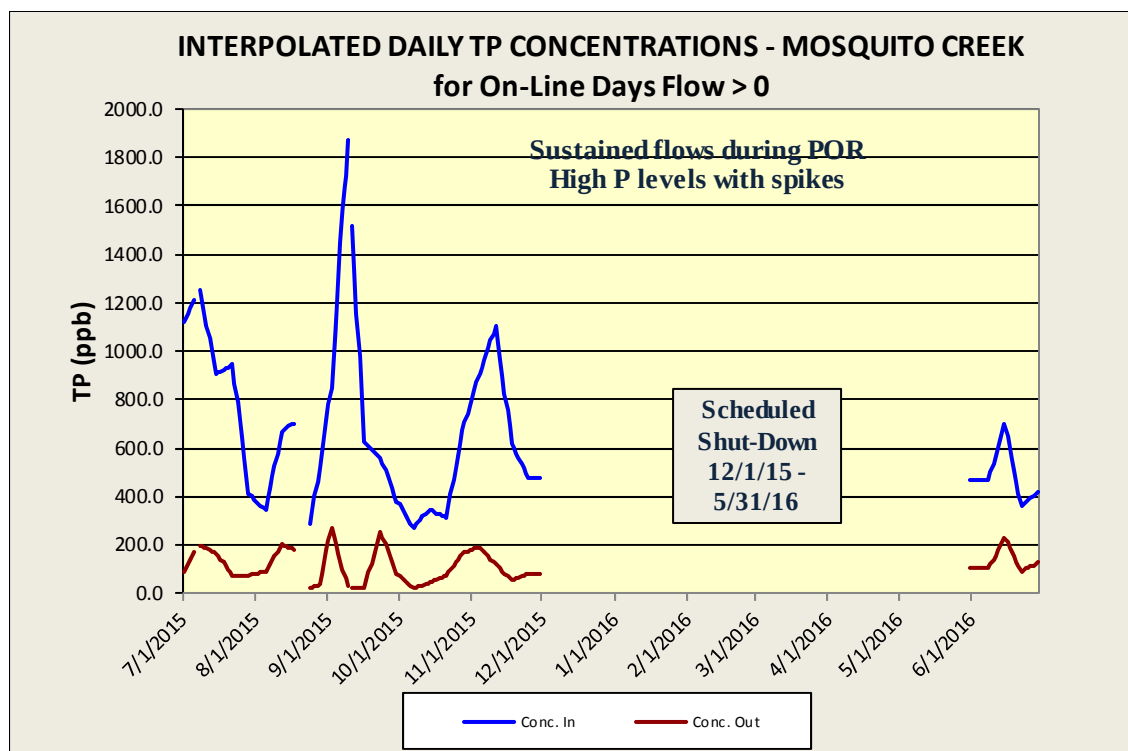


Figure 47. Interpolated Daily TP Concentrations Inflow versus Outflow Mosquito Creek.

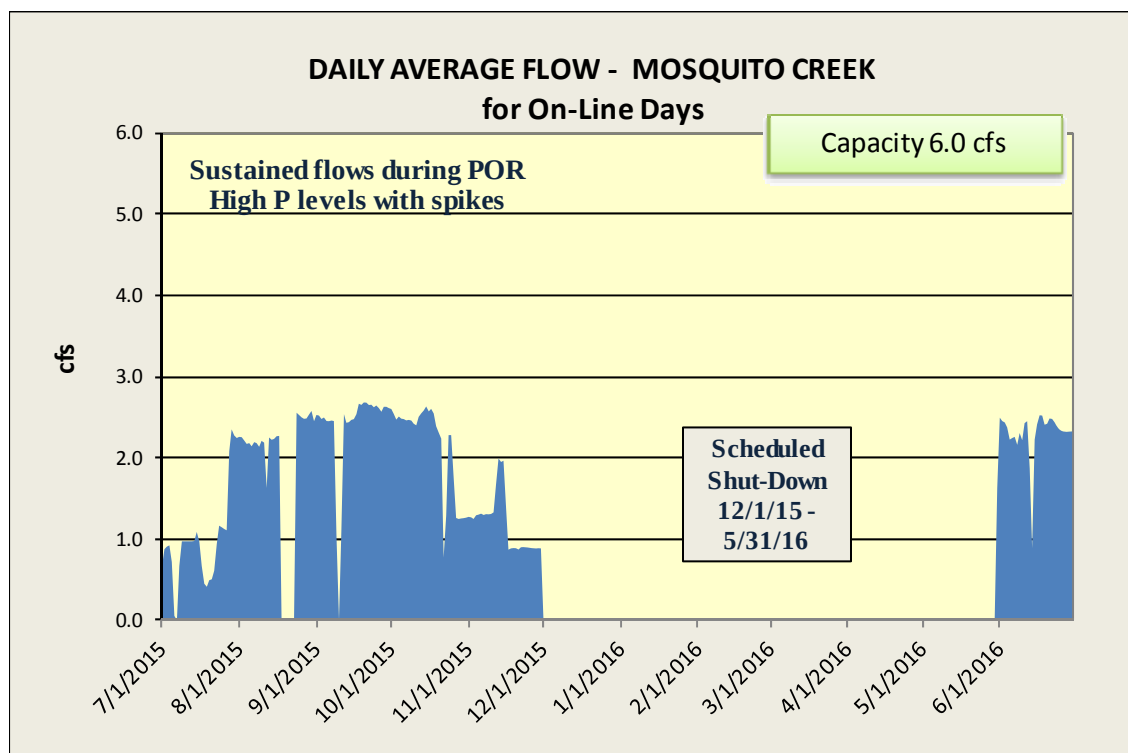


Figure 48. Daily Average Flows versus Capacity Mosquito Creek.

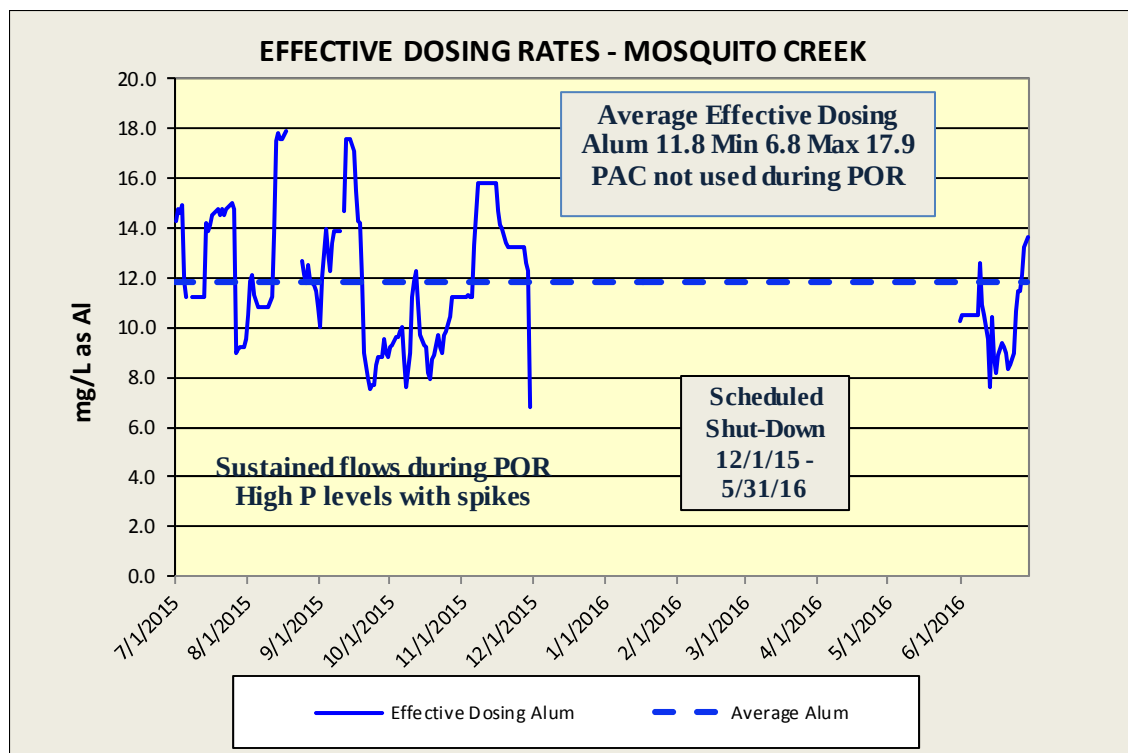


Figure 49. Daily Effective Dosing Rate and Average for the POR Mosquito Creek (excluding PAC).

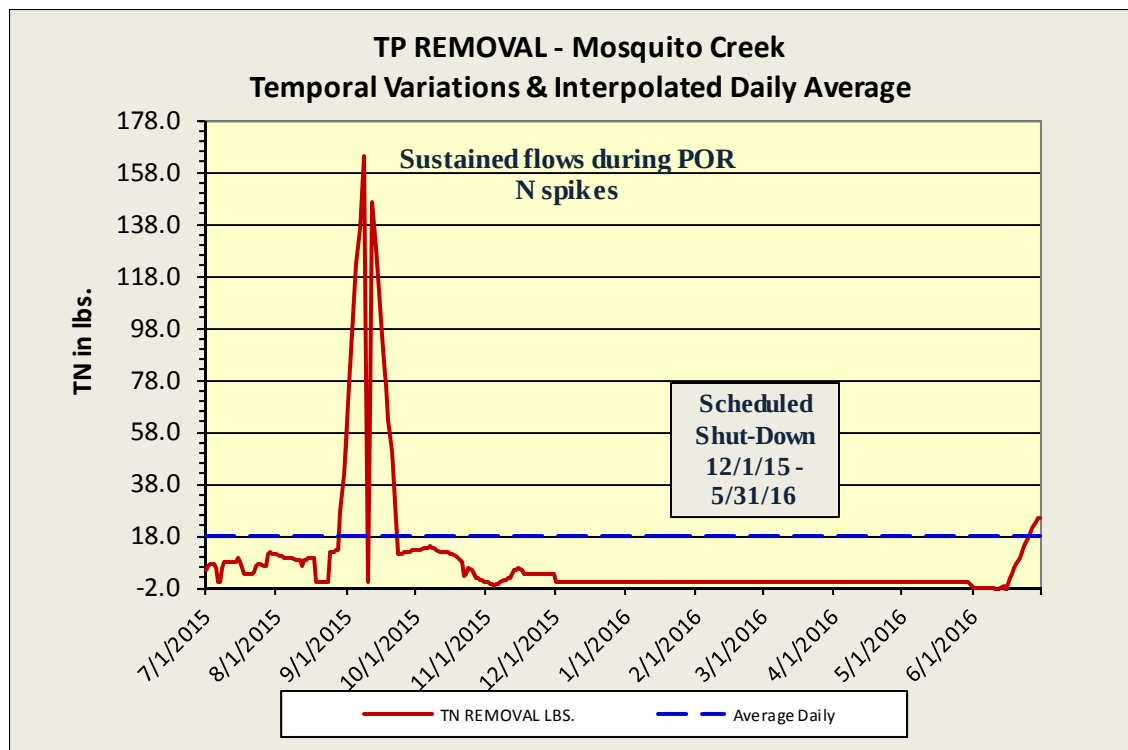


Figure 50. Interpolated TN Removal Temporal Variations & Daily Average Mosquito Creek.

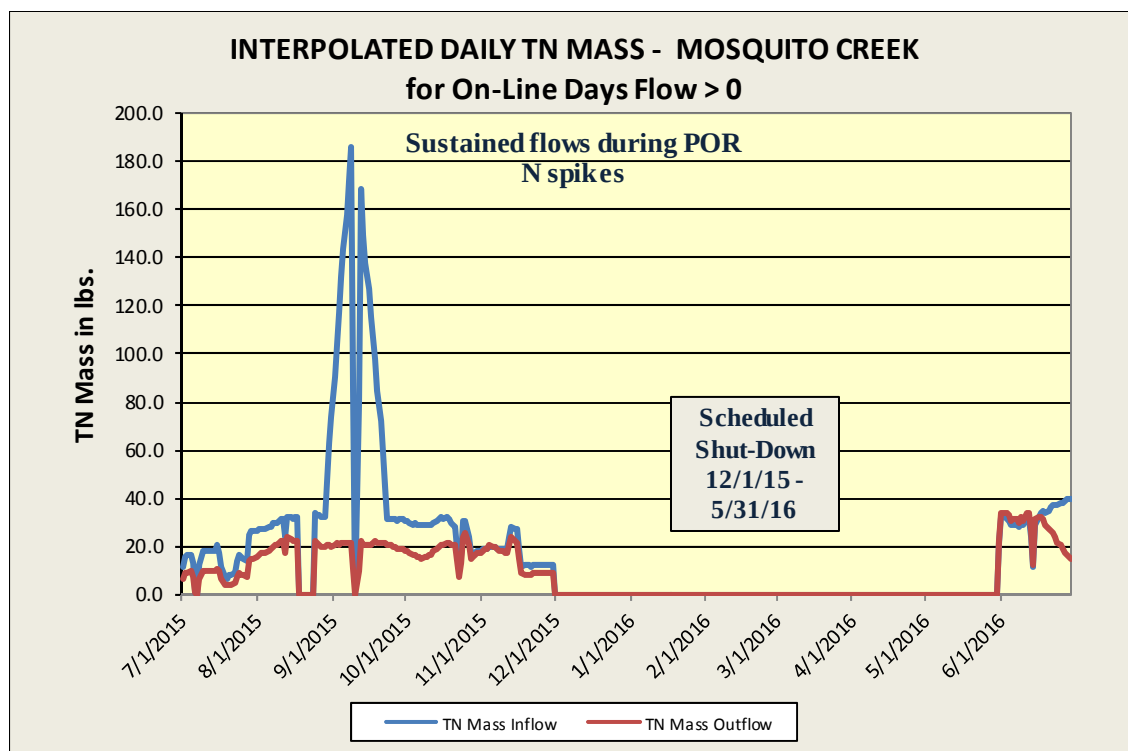


Figure 51. Interpolated Daily TN Mass Inflow versus Outflow Mosquito Creek.

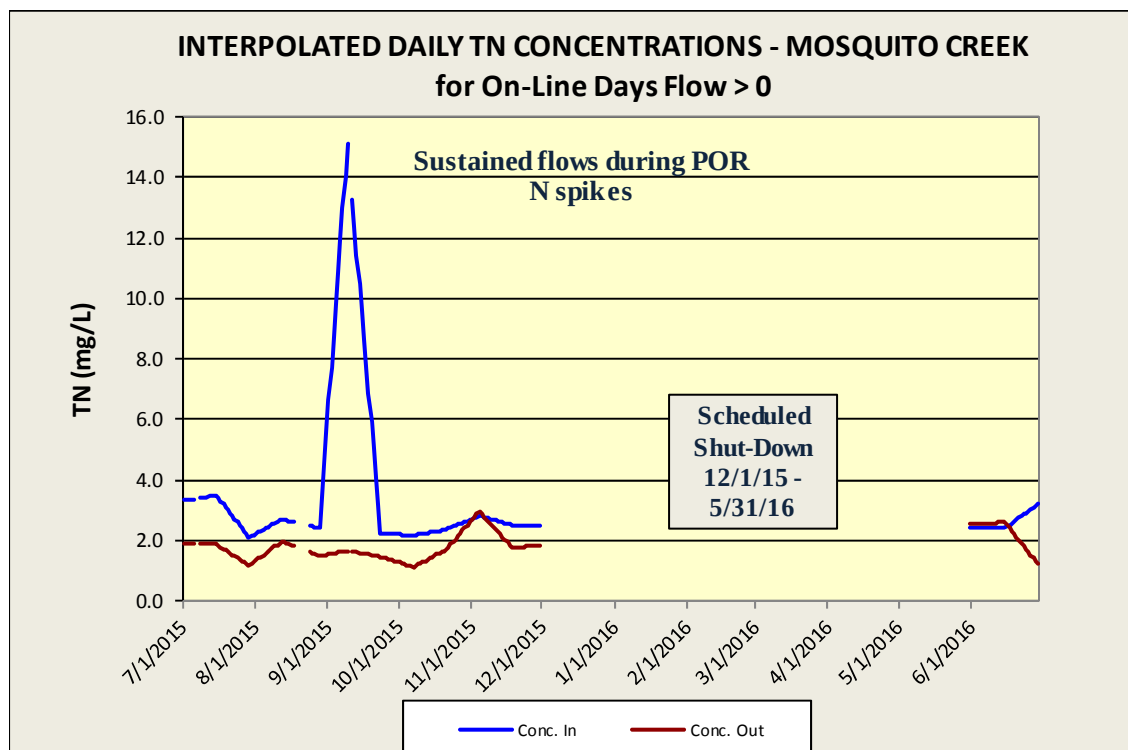


Figure 52. Interpolated Daily TN Concentrations Inflow versus Outflow Mosquito Creek.

Lemkin Creek (Site 5)

Lemkin Creek was on-line continuously during the POR. Flows were relatively stable and sustained, with the highest levels occurring from mid-August through October 2015 and June 2016. Site 5 had the third lowest interpolated FWM TP inflow concentration (232 µg/L) of the seven HWT facilities. The interpolated FWM TP outflow was 70 µg/L, a 70% average reduction (26 µg/L and an 89% reduction including the South Pond). The P levels were moderate with spikes in September 2015 and June 2016 and an increase in late November 2015. The geometric mean for TP inflow concentration was 145 µg/L and 50 µg/L for TP outflow, representing a 66% removal rate. The average effective dosing of alum was 3.8 mg/L as Al for the period with a minimum dosing of 1.0 and maximum of 6.2 mg/L as Al. The geometric mean for TN inflow concentrations was 1.8 mg/L versus 1.4 mg/L outflow for a 22% reduction; the FWM for TN inflow concentrations was 1.8 mg/L compared to 1.4 mg/L outflow for a 19% removal rate (outflow based on South Pond data). TP and TN levels are interpolated from approximately weekly samples.

Samples of fish and wet floc were collected from the settling pond and Lemkin Creek during Period 1. Due to their close proximity to the system intake, the species *Scirpus cubensis* and *Hydrocotyle umbellata* have now become inoculated into the inflow region of the settling pond via the inflow pumps. Bulk water samples were collected from system inflow and outflow locations during Period 2 and were submitted for toxicity testing, which indicated that an inconsistent response was observed among replicate vessels during the procedure. This result suggested impacts of a biological pathogen within the test results. As had occurred previously in spring 2015, the outflow sample failed one of the *Ceriodaphnia dubia* tests. The outflow region of the Lemkin polishing pond was subsequently inspected for evidence of algae mats/blooms (which might contribute algal toxins), but none were found. During Period 3, Cuban bulrush (*Scirpus cubensis*) continued to spread both in Lemkin Creek and in the contact zone of the HWT facility. Control efforts of this plant may be initiated in the contact zone during Spring 2016. In this same period, bulk water samples were collected from system inflow and outflow locations three times per week over a two-week interval, and the samples were sent once more for *Ceriodaphnia dubia*

tests. Both sets of weekly toxicity tests passed during this follow-up assessment. During Period 4, the chemical dosing system temporarily shut down due to a flow sensor failure. The sensor was subsequently removed, repaired, and reinstalled.

During Period 5, water lettuce (*Pistia stratiotes*) appeared in the inflow region of the HWT system for the first time since commencement of system operations. The unusually warm conditions in November have engendered proliferation of this floating aquatic vegetation (FAV) species in Northern Everglades waterways. Samples of fish and wet floc were collected from the settling pond during Period 5, while fish were also collected from Lemkin Creek and from within areas in the South Pond downstream of the system discharge. The floc and fish samples were sent to a subcontract laboratory for metals analyses. As of December 1, 2015, the facility was shut down and placed in temporary inactive status through May 31, 2016, for Periods 6-11 due to lack of funding. The site was inspected on December 7 and 15, at which time selected instrument probes (e.g. for pH, turbidity) were removed from the facility and placed in appropriate storage solutions.

The site was inspected throughout the inactive period. During the site inspections on January 6, April 6, May 11, and May 25, 2016, the inflow water pump was exercised to maintain functionality and often to keep vegetation hydrated. On February 17 and 22, 2016, monitoring instrumentation upgrades were made and continued into the next period. A new sub-surface signal cable to support outflow region monitoring instrumentation was installed during April. The two inflow pumps were briefly tested in May. Approximately 4,500 gallons of alum were delivered to the site during Period 11 in preparation for the renewal of operations. The Lemkin Creek system resumed operations on June 1, 2016, following the period of inactive status. A one-day electric power outage occurred at the site early in Period 12. Later in the period, a flow meter sensor began providing erroneous readings, which was temporarily removed for repair.

Interpolated TP mass removal over time is depicted graphically in Figure 53 together with the daily average reduction. Temporal variations in interpolated TP mass inflow versus TP mass outflow are presented in Figure 54. Interpolated TP concentration inflow and outflow levels for the period are shown in Figure 55. Daily average flows are shown in

Figure 56 compared to system capacity. The effective dosing of alum and the average for the POR is depicted in Figure 57. Interpolated TN mass removal over time is depicted graphically in Figure 58 together with percent daily average reduction. Temporal variations in interpolated TN mass inflow versus TP mass outflow are presented in Figure 59. Interpolated inflow and outflow TN concentration levels for the period are shown in Figure 60. Detailed operating data is Appendix VI for TP and Appendix XIII for TN.

Infrastructure Modifications

There were no infrastructure modifications at Lemkin Creek HWTT facility for the POR.

Design Modifications

There were no design modifications at the Lemkin Creek HWTT facility for the POR, and none are currently being considered.

TP Mass Inflow and Outflow

The TP mass inflow for the shortened POR was 429 lbs., and the outflow was 150 lbs. The total mass reduction was 279 lbs. or 65%.

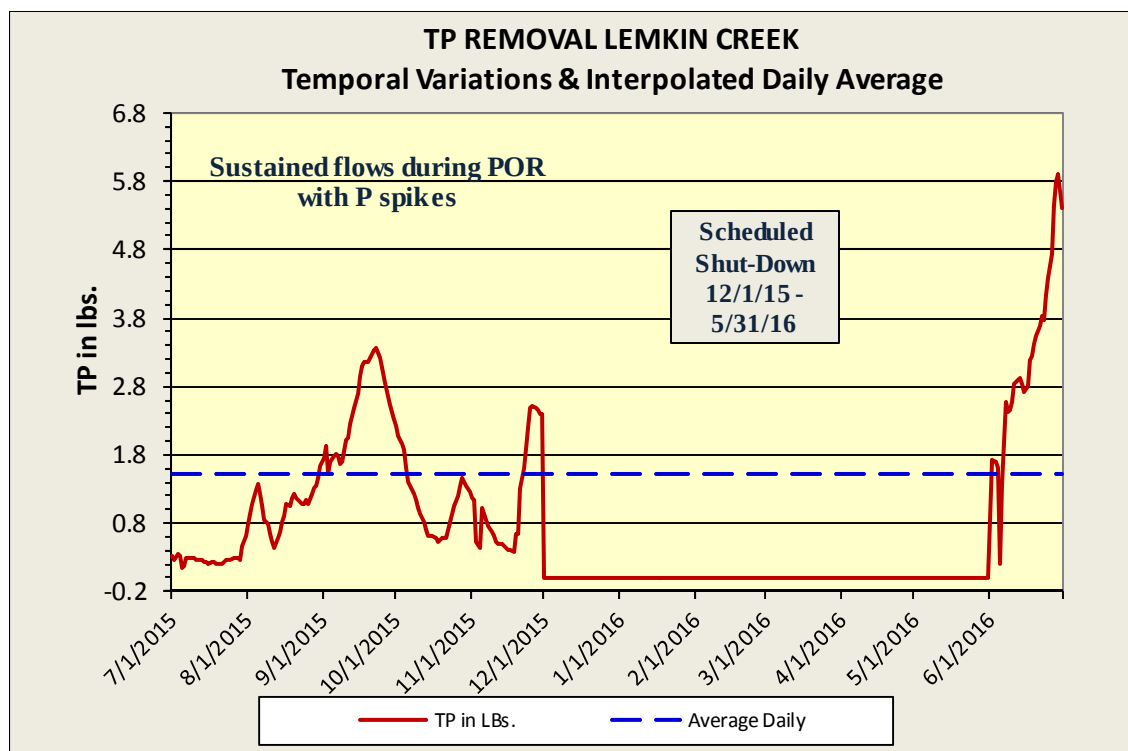


Figure 53. Interpolated TP Removal Temporal Variations & Daily Average Lemkin Creek.

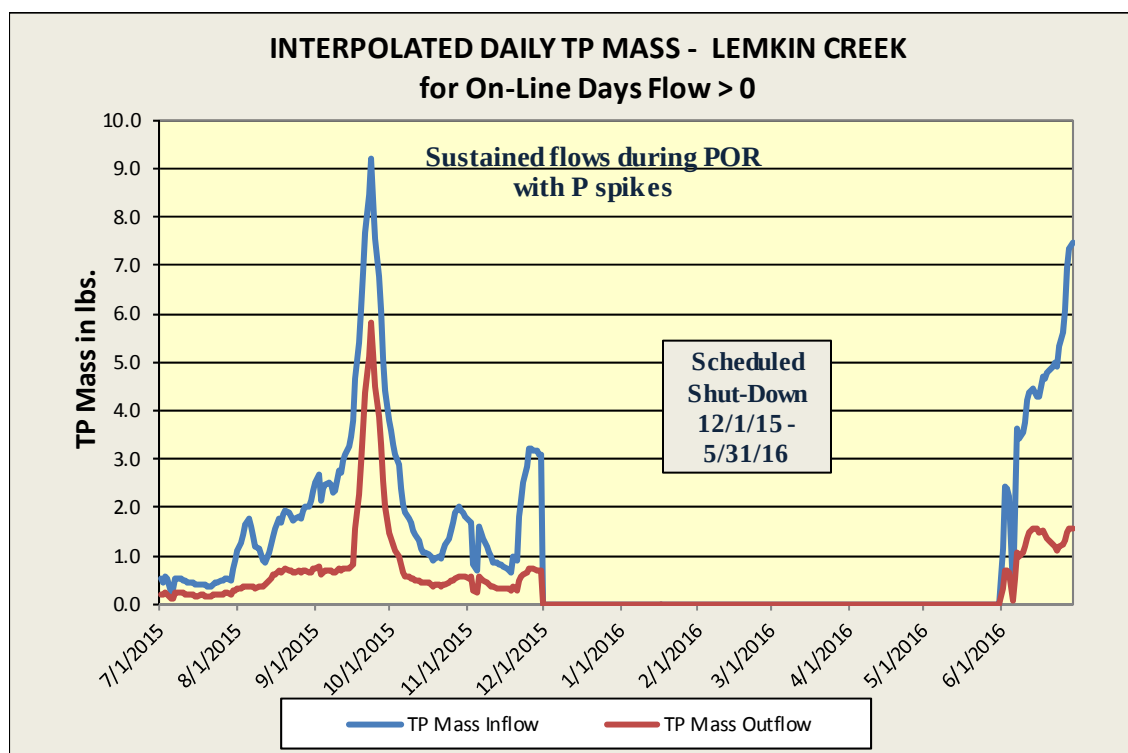


Figure 54. Interpolated Daily TP Mass Inflow versus Outflow Lemkin Creek.

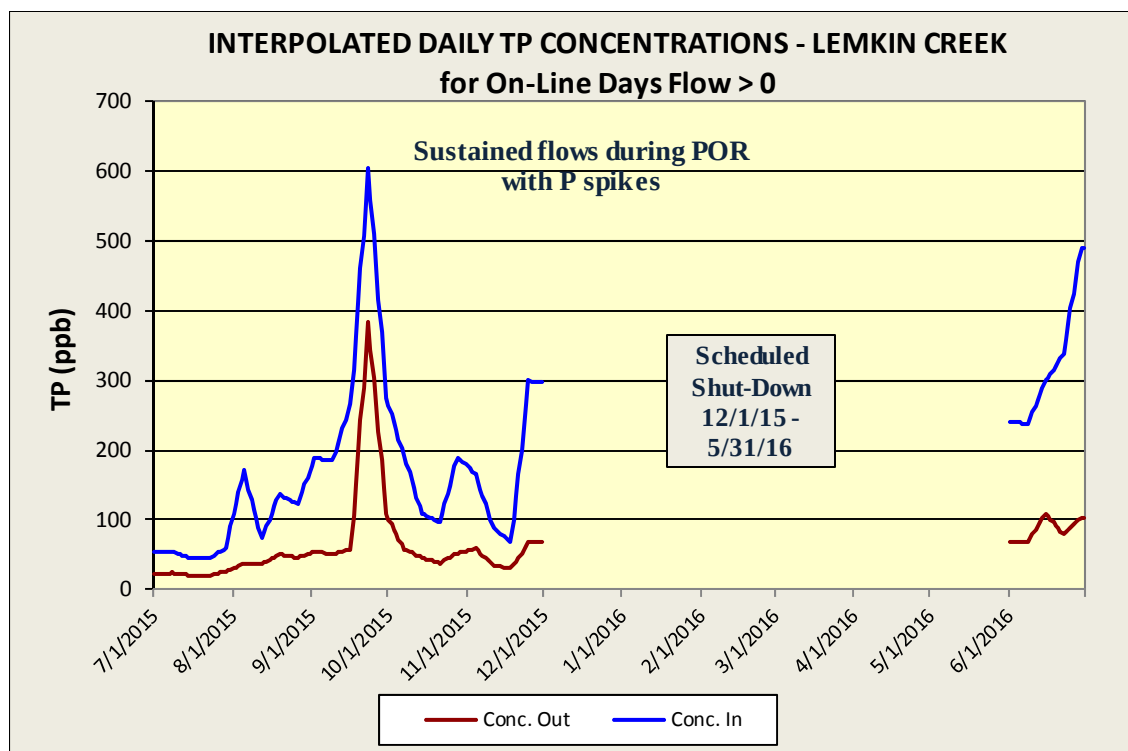


Figure 55. Interpolated Daily TP Concentrations Inflow versus Outflow Lemkin Creek.

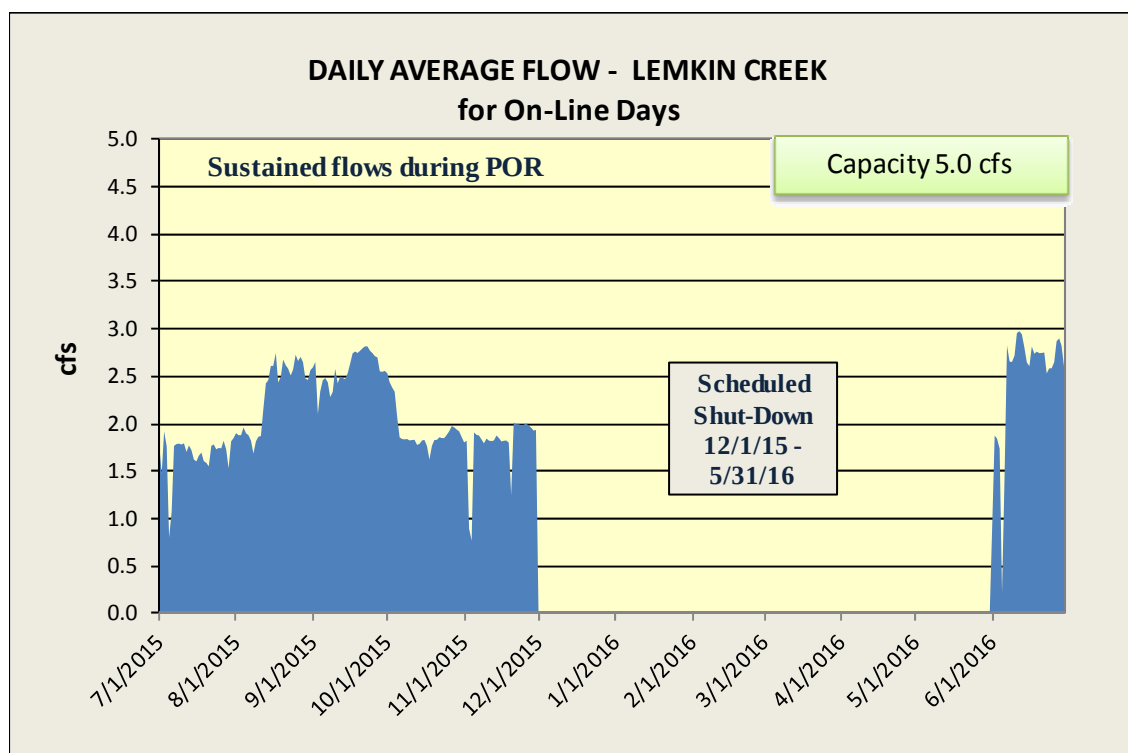


Figure 56. Daily Average Flows versus Capacity Lemkin Creek.

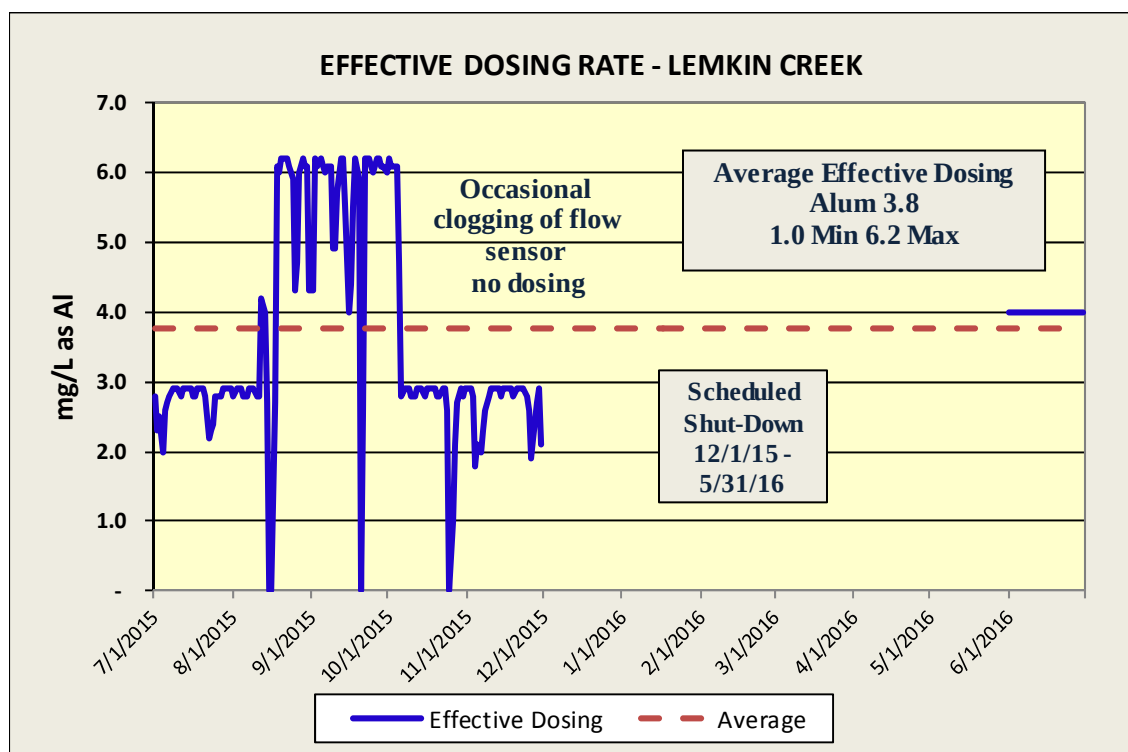


Figure 57. Daily Effective Dosing Rate and Average for the POR Lemkin Creek.

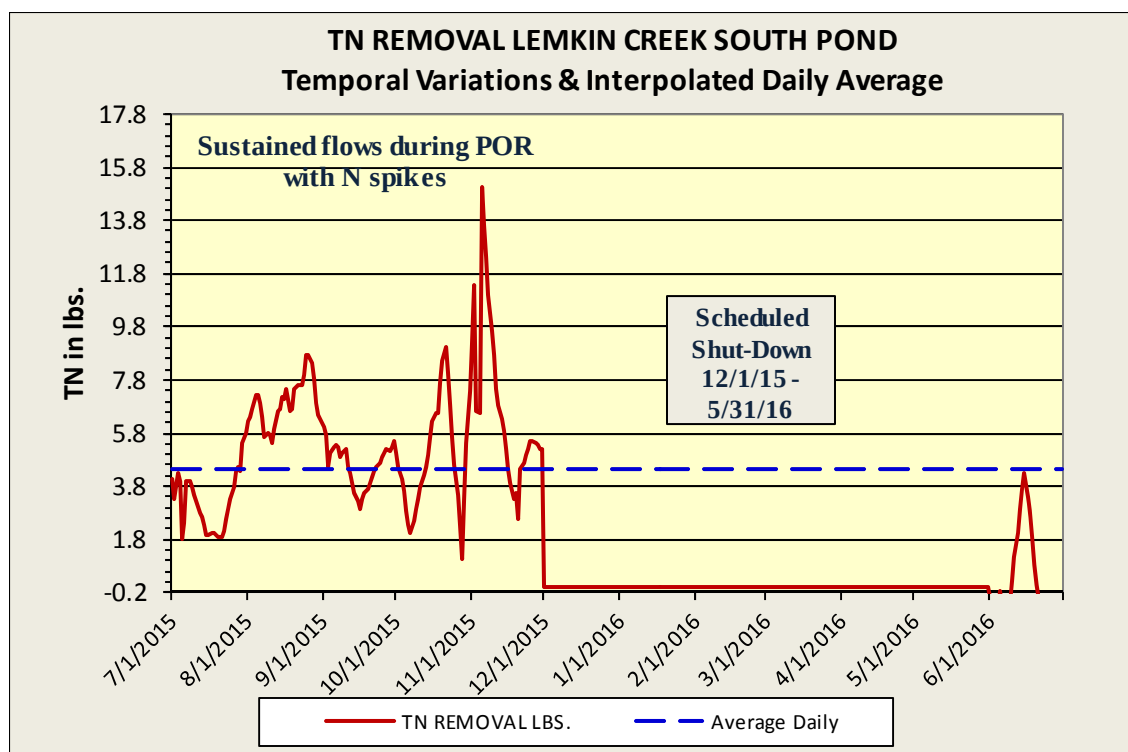


Figure 58. Interpolated TN Removal Temporal Variations & Daily Average Lemkin Creek.

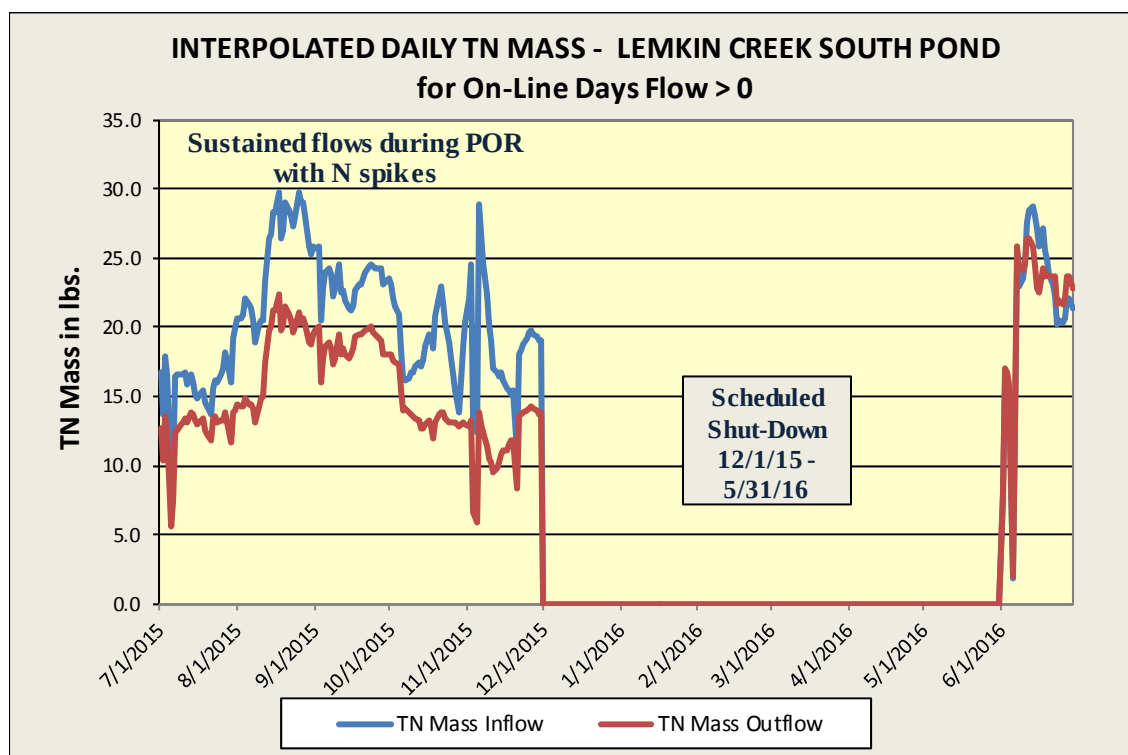


Figure 59. Interpolated Daily TN Mass Inflow versus Outflow Lemkin Creek.

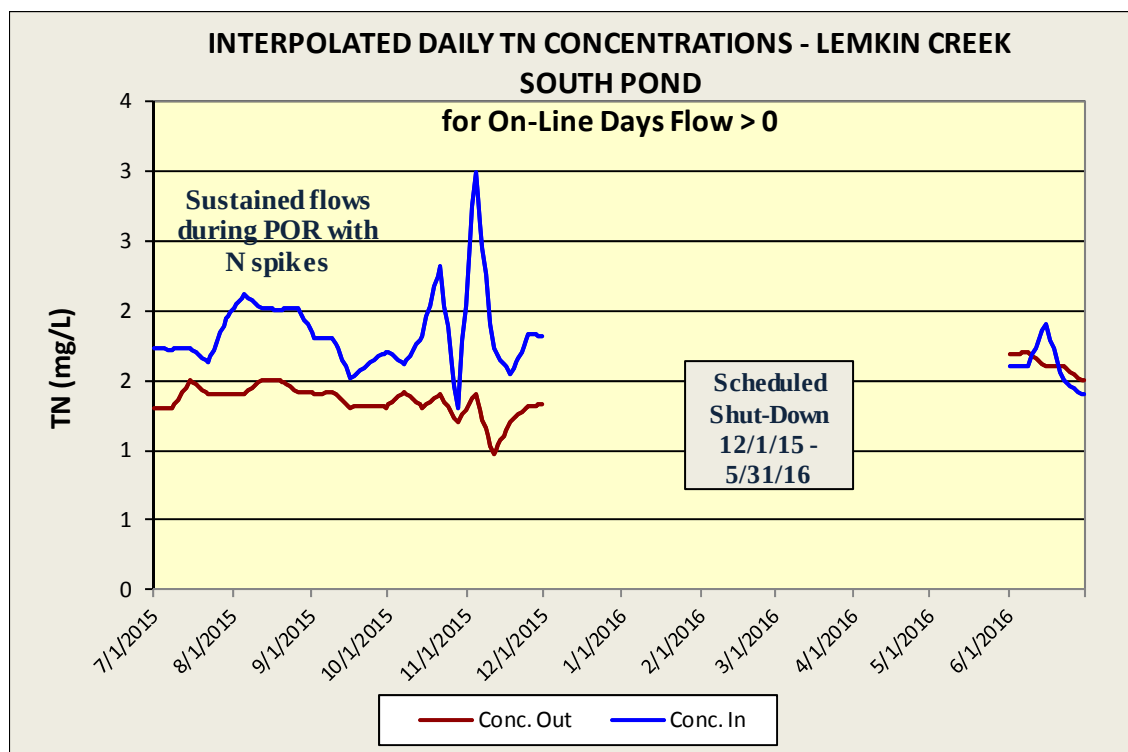


Figure 60. Interpolated Daily TN Concentrations Inflow versus Outflow Lemkin Creek.

Wolff Ditch (Site 6)

Wolff Ditch operated near continuously during the POR except for power outages and minor equipment failure. Flow levels were elevated from late August through October. Site 6 had the lowest FWM TP inflow concentration (125 µg/L) of the seven HWTT sites. The interpolated FWM TP outflow was 41 µg/L, which represents a 67% average reduction for the period (27 µg/L and a 79% reduction including the South Pond). The P levels were moderate with one spike in September and an increase in late November. The geometric mean for TP inflow concentration was 88 µg/L and 31 µg/L for TP outflow, representing a 65% removal rate. The effective dosing of alum ranged from 2.9 to 5.8 mg/L, and the average effective dosing of alum was 4.1 mg/L as Al for the period with dosing adjustments made as necessary. Both the geometric mean and FWM for TN inflow concentrations were 1.6 mg/L versus 1.4 mg/L outflow for a 16% reduction TP and TN levels are interpolated from approximately weekly samples.

The HWTT facility was taken off-line for several days in Period 1 to replace a variable frequency pump drive (VFD). During this period, the integrity of all coagulant piping, from the delivery to the storage tanks and dosing pumps, was inspected. Bulk water samples were collected from system inflow and outflow locations during Period 2 and were submitted for toxicity testing. In contrast to the Lemkin results, the Wolff HWTT water samples passed all tests. This same trend was observed during spring 2015, at which time the Lemkin HWTT outflow waters occasionally failed, but the Wolff HWTT outflow waters consistently passed the toxicity tests. Programming was completed for the recently replaced VFD that controls the Wolff HWTT facility's large inflow pump during Period 2 as well.

During Period 4, a qualitative survey of the downstream ("isolated") wetland was performed to characterize the status of the macrophyte communities. The wetland currently is dominated by *Eleocharis* sp., with interspersed stands of *Pontedaria cordata*, and *Sagittaria lancifolia*. All stands of *Typha* sp., and some of those of *Schoenoplectus californicus*, appear to have recently been controlled by herbicides. A qualitative survey of the downstream ("isolated") wetland was performed to characterize the status of the

periphyton communities. Throughout most of the “isolated wetland”, the periphyton consists of floating calcareous communities, which are typically found in “ultra-low” P marshes, such as certain regions of the Everglades Protection Area. Filamentous green and blue-green algae were also observed, primarily upstream of the outflow weir in which water velocities are high. Samples of fish and wet floc were collected from the settling pond during Period 5, while fish were also collected from Wolff Ditch and from within areas in the South Pond downstream of the system discharge. The floc and fish samples were sent to a subcontract laboratory for metals analyses. Near the end of Period 5, mats of floating vegetation invaded the pump intake region in Wolff Ditch, which will be removed in the coming months during the non-operative period. As of December 1, 2015, the facility was shut down and placed in temporary inactive status through May 31, 2016, for Periods 6-11 due to lack of funding. The site was inspected on December 7 and 15, at which time selected instrument probes (e.g. for pH, turbidity) were removed from the facility and placed in appropriate storage solutions.

The site was inspected throughout the inactive period. During the site inspections on March 9, April 27, and briefly during Period 11, the inflow water pump was exercised to maintain functionality and to keep vegetation hydrated. On January 25, 2016, a problem was noted with one of the chemical dosing pumps, which was repaired on February 22.

The Wolff Ditch system resumed operations on June 1, 2016, following the period of inactive status. One of the incoming electric power legs to the site failed late in Period 12. All equipment continued to run under these conditions, but the chemical dosing pumps lost their ability to coordinate with the signal from the flow sensor. After several days of troubleshooting, the problem was determined to be caused by a nearby FPL transformer (approximately 0.5 mile from the site) and corrected. Further investigations into the matter will be conducted by the service provider.

Interpolated TP mass removal over time is depicted graphically in Figure 61 together with the daily average reduction. Temporal variations in interpolated TP mass inflow versus TP mass outflow are presented in Figure 62. Interpolated TP concentration inflow and outflow levels for the period are shown in Figure 63. Daily average flows are shown in

Figure 64 compared to system capacity. The effective dosing of alum and the average for the POR is depicted in Figure 65. Interpolated TN mass removal over time is depicted graphically in Figure 66 together with percent daily average reduction. Temporal variations in interpolated TN mass inflow versus TP mass outflow are presented in Figure 67. Interpolated inflow and outflow TN concentration levels for the period are shown in Figure 68. Detailed operating data is contained within Appendix VII for TP and Appendix XIV for TN.

Infrastructure Modifications

There were no infrastructure modifications at Wolff Ditch HWT facility for the POR.

Design Modifications

There were no design modifications at the Wolff Ditch HWT facility for the POR, and none are currently being considered.

TP Mass Inflow and Outflow

The TP mass inflow for the shortened POR was 541 lbs., and the outflow was 206 lbs. The total mass reduction was 335 lbs. or 62%.

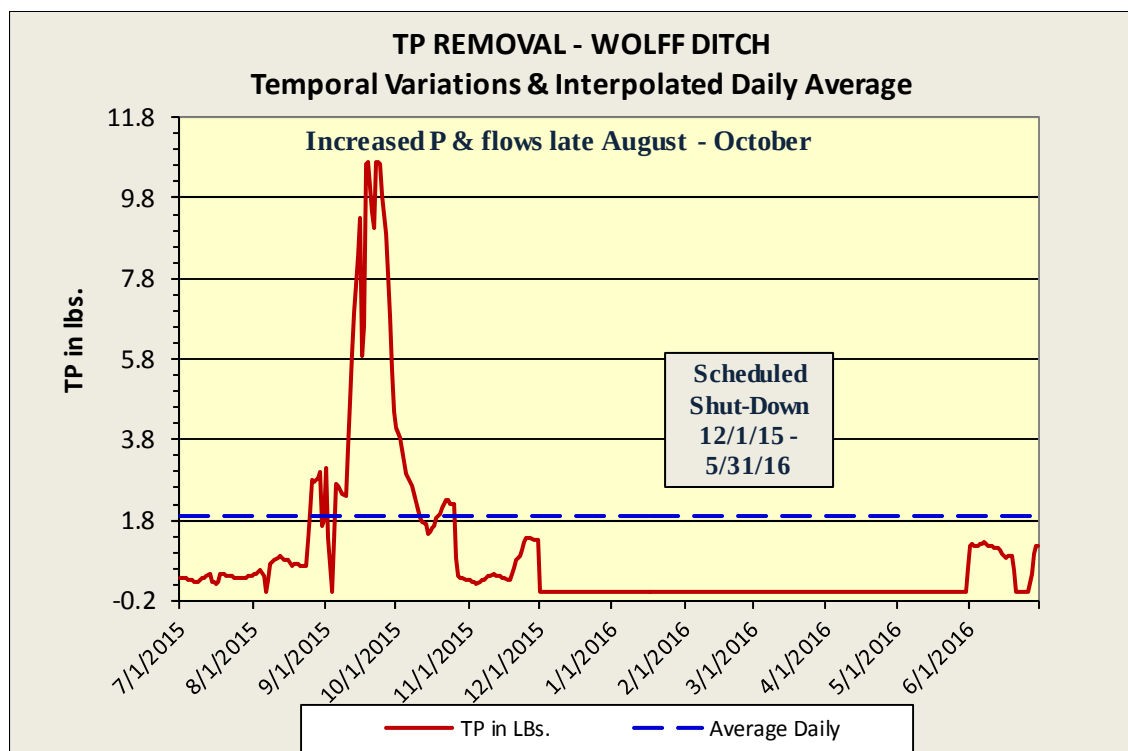


Figure 61. Interpolated TP Removal Temporal Variations & Daily Average Wolff Ditch.

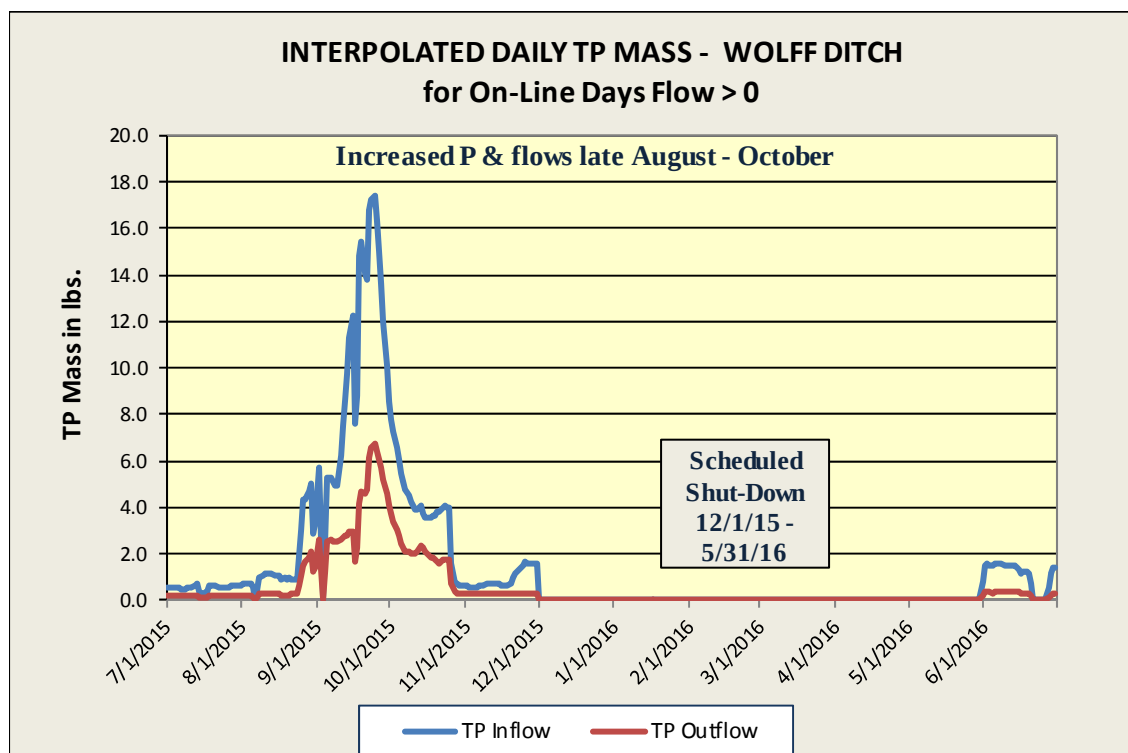


Figure 62. Interpolated Daily TP Mass Inflow versus Outflow Wolff Ditch.

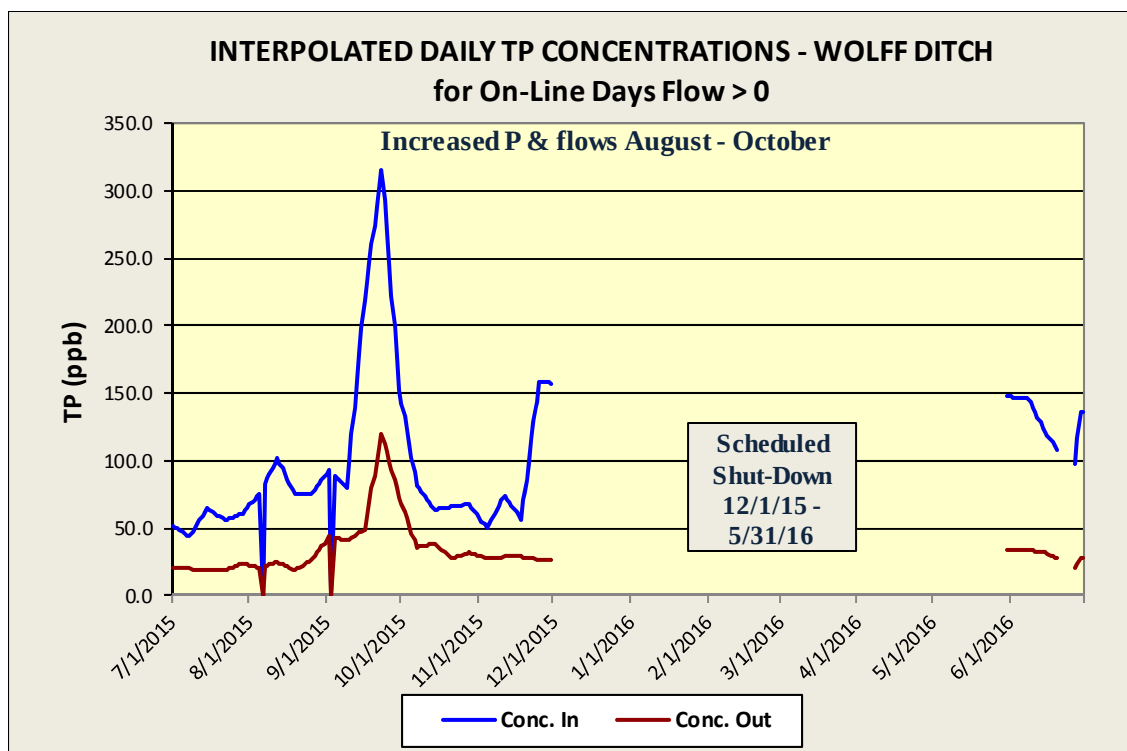


Figure 63. Interpolated Daily TP Concentrations Inflow versus Outflow Wolff Ditch.

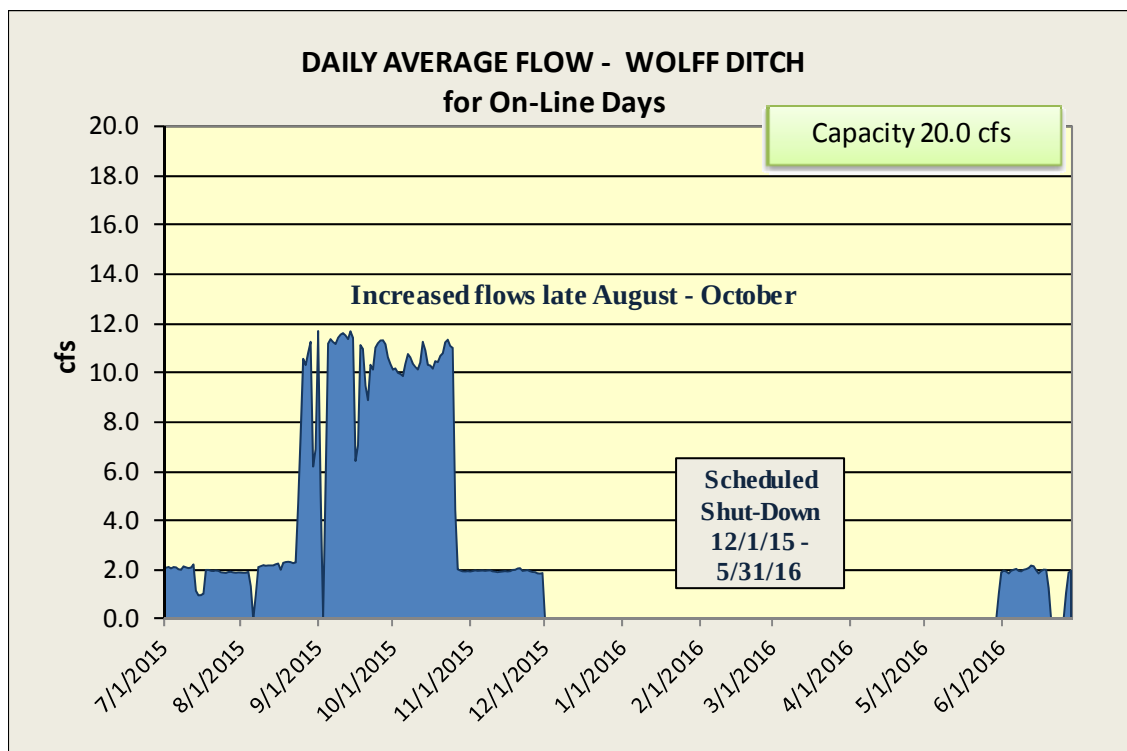


Figure 64. Daily Average Flows versus Capacity Wolff Ditch.

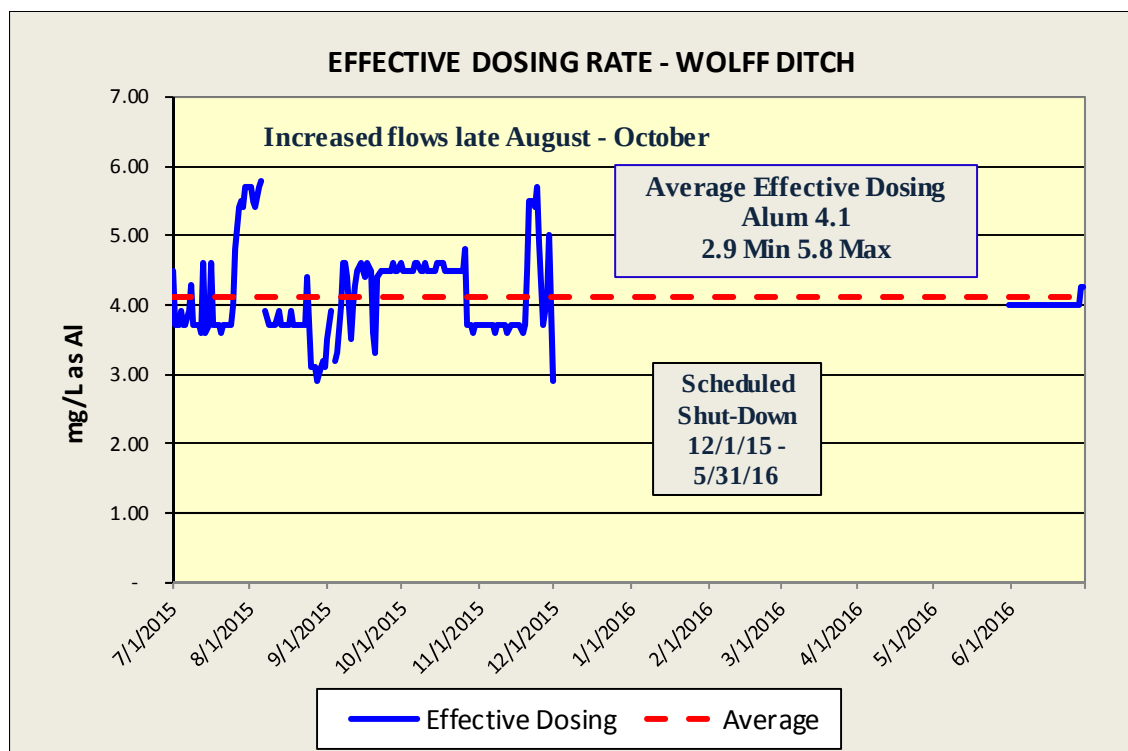


Figure 65. Daily Effective Dosing Rate and Average for the POR Wolff Ditch.

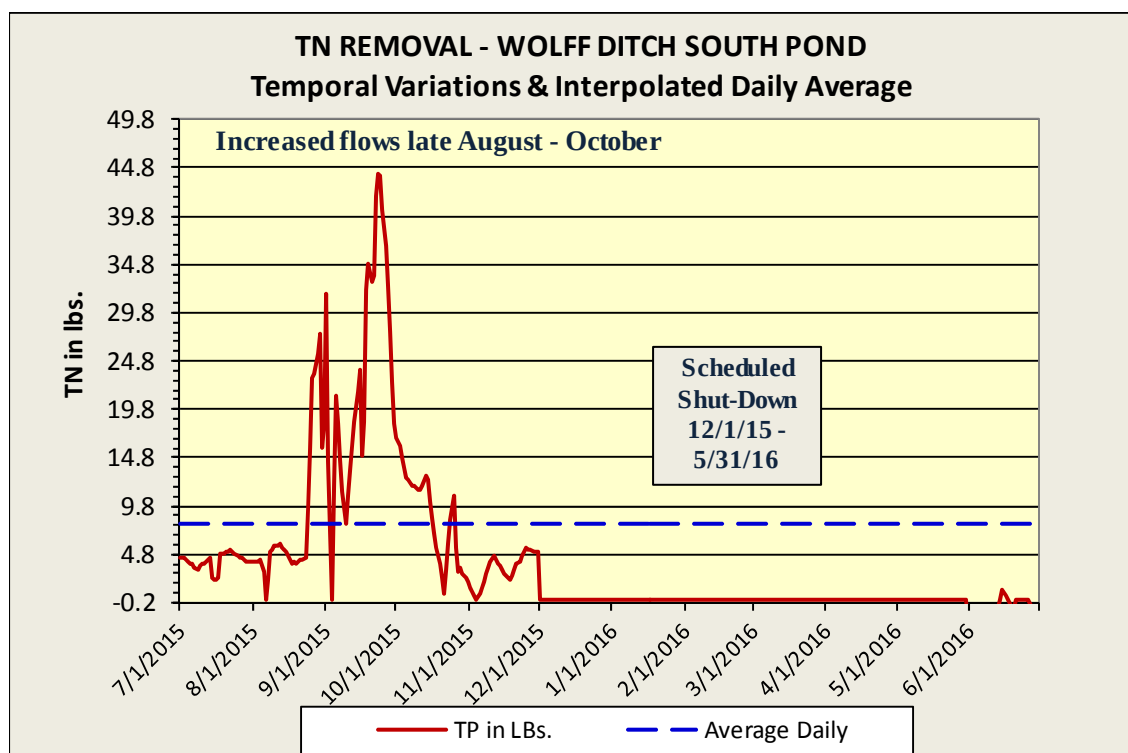


Figure 66. Interpolated TN Removal Temporal Variations & Daily Average Wolff Ditch.

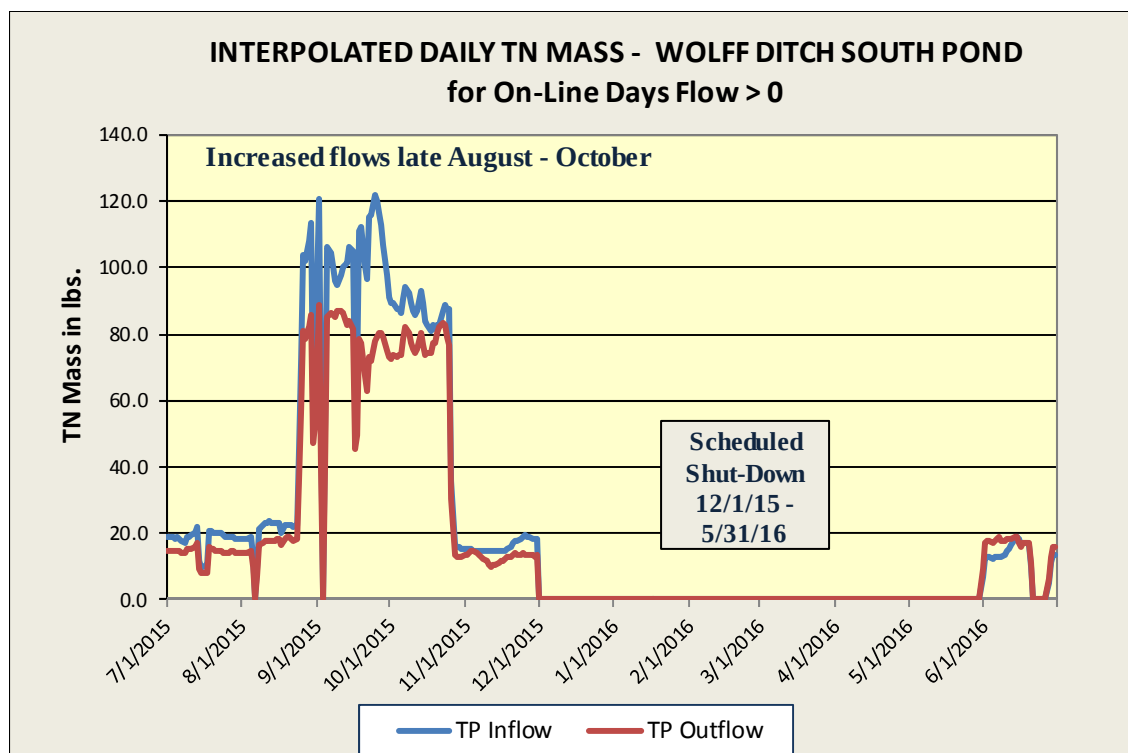


Figure 67. Interpolated Daily TN Mass Inflow versus Outflow Wolff Ditch.

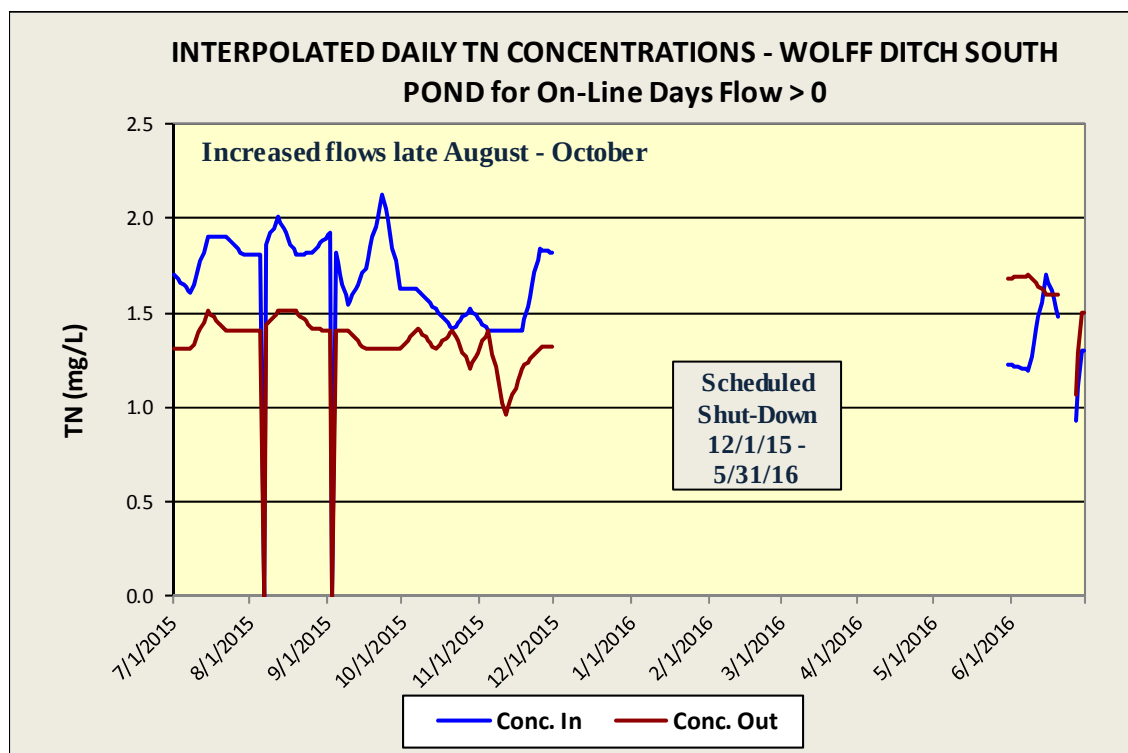


Figure 68. Interpolated Daily TN Concentrations Inflow versus Outflow Wolff Ditch.

Grassy Island (Site 7)

Grassy Island operated continuously during the POR with minor down-time for installation of contact pond liners. Flow levels were highest from August through October, approaching capacity in September and then declining significantly until the system was taken off-line December 1, 2015. Moderate flows were available in May and June 2016, when the system was returned to active status. Site 7 had the fourth highest interpolated FWM TP inflow concentration (501 µg/L) of the seven HWT facilities. The interpolated FWM TP outflow was 42 µg/L, a 92% average reduction for the period. The geometric mean for TP inflow concentration was 467 µg/L and 24 µg/L for TP outflow, representing a 95% removal rate. The TP concentrations were also elevated during the heaviest flows. The effective dosing of alum ranged from 2.6 to 16.8 mg/L, and the average was 10.7 mg/L as Al for the period. PAC was utilized for 151 days during the POR. The effective dosing of PAC ranged from 0.1 to 9.5 mg/L during use, and the average was 3.0 mg/L as Al. The effective dosing of PAC for the entire POR ranged from 0.0 to 9.5 mg/L, and the average was 2.4 mg/L as Al. Dosing adjustments were made as necessary based upon on-site conditions. The geometric mean for TN inflow concentrations was 2.6 mg/L versus 1.1 mg/L outflow for a 55% reduction; the FWM for TN inflow concentrations was 2.7 mg/L compared to 1.2 mg/L outflow for a 56% removal rate. TP levels are interpolated from approximately weekly samples. The permitted capacity for Grassy Island increased from 20 cubic feet per second (cfs) to 30 cfs as of December 1, 2014; therefore, comparisons with prior year data are not valid. TP and TN levels are interpolated from approximately weekly samples.

Flows are now measured at the inflow and outflow points and values are used to calculate flow-weighted P concentrations both in and out, and the difference between water inflow and outflow measurements (residual) is tabulated. The average daily inflow was 13.4 cfs, while the average daily outflow was 12.9 cfs, for a net residual of 0.5 cfs.

The system operated semi-continuously during Period 1. The bulk of the flows were treated in the western flow path to accommodate repairs to the eastern contact ponds, as two of the liners were replaced during this period. Taylor Creek flows were quite low for a portion of Period 1, and then increased markedly following several large rain events.

Concomitant with the increase in creek flows, the color of the creek waters increased dramatically, and the alkalinity declined. In this same period, a grease seal failed on one of the large inflow pumps, which was determined to be able to operate satisfactorily until the onset of the dry season in late fall, at which time the pump will need to be removed for repair.

During Period 2, it was noted that under very high flow conditions (25 cfs and higher) water began leaking from the old Parshall flume near the site of the inflow discharge and onto the inflow region limerock bed. Two large bar grates were found in the flow path and were removed, eliminating the leakage. During Period 2, the solar powered turbidity monitor's entire platform was lifted and moved to a location near the submerged aquatic vegetation (SAV) pond outflow with fewer sunlight obstructions due to early morning shading that had been causing depletion of its battery. Bulk water samples were collected from inflow and outflow locations during Period 2 and were submitted for toxicity testing. As was noted at the Lemkin HWTT facility, the outflow sample failed one of the *Ceriodaphnia dubia* tests, and the pattern of failure reported by the laboratory suggests a potential pathogen interference with the test. Bulk water samples were collected again from system inflow and outflow locations three times per week over a two-week interval during Period 3 and resubmitted for follow-up toxicity testing for *Ceriodaphnia dubia* tests; both sets of weekly toxicity tests passed during this follow-up assessment. Late in Period 2, one of the two large inflow water pumps experienced a failure. Troubleshooting efforts ultimately suggested the problem was either a broken propeller or shaft. The pump was removed and transported to a repair facility, where the shaft connecting the two separate sections was repaired; the pump was subsequently reinstalled during Period 3.

An electric air compressor, which will be used to facilitate floc removal from the western flow path floc bladders, was transported to the site during Period 3 and then covered with an enclosure. Also during Period 3, both the western and eastern outflow region limerock beds were cleaned of accumulated debris. Floc was pumped from two of the eastern flow path contact ponds and into the nearby drying beds during Period 4. During Period 4, final plumbing and electrical connections were made for the electric air compressor, which will

be used to facilitate floc removal from the western flow path floc bladders. A survey of emergent and submerged vegetation was performed to characterize the key species in the western flow path SAV pond. The emergent community are dominated by *Eleocharis* sp. and *Pontederia cordata*, while the submerged community is dominated by *Potamogeton illinoensis* and *Najas guadalupensis*.

At the end of Period 5, water levels were lowered in contact ponds 1 and 2 to allow for inspection of the new liners that were installed in Spring 2015. Both the liners and the culvert penetrations were found to be in good condition. During Period 5, risers connecting the internal ponds were adjusted to maximize water retention in the eastern and western SAV ponds during the non-operative period. Samples of fish and wet floc were collected from the settling ponds during Period 5, and fish were also collected from an upstream Taylor Creek location and from an area in Taylor Creek downstream of the system discharge. The floc and fish samples were sent to a subcontract laboratory for metals analyses. Wet floc was pumped out of several of the western floc bladders during Period 5. As of December 1, 2015, the facility was shut down and placed in temporary inactive status through May 17, 2016, due to lack of funding. The site was inspected on December 2, 7, 9, 15, 17, and 29, to perform shut-down activities on the various dosing pumps, as well as on the monitoring and control instrumentation.

The site was inspected throughout the inactive period. During early January visits, the transfer of wet floc from contact ponds and floating bladders to the drying beds was continued from the previous period. While exercising the inflow water pumps in February, it was noted that a shaft seal on one of the two small inflow water pumps had failed. Chemical dosing pump upgrades were initiated during March for both the western and eastern flow paths. Prior to April, the FAV pond flora became stunted due to winter temperatures and a lack of flow in the ponds. The inflow pumps were operated briefly during Period 10 to increase pond stages and to promote new floating vegetation growth.

Site operations at the Grassy Island facility resumed during Period 11 on May 18, 2016. The pumping of Taylor Creek waters began the same day, and for most of the remainder of the period the creek waters exhibited extremely high color levels relative to system discharge

waters. Early in Period 11, a cover was installed at the pump station to reduce the likelihood of the pump controls overheating, a problem that has occurred intermittently during previous years on extremely hot days. In Period 12, winds from a thunderstorm ripped a large tear in the liner of eastern contact pond #3. This relatively aged liner was scheduled for replacement during the next dry season, but due to the storm-related damage, the eastern contact ponds were taken off-line and a new liner was ordered for replacement in Period 1 of next Fiscal Year. To compensate for the damaged contact pond liner, boards in many of the site culverts were re-adjusted, so that flows could be sent entirely to the western flow path.

Interpolated TP mass removal over time is depicted graphically in Figure 69 together with the daily average reduction. Temporal variations in interpolated TP mass inflow versus TP mass outflow are presented in Figure 70. Interpolated TP concentration inflow and outflow levels for the period are shown in Figure 71. Daily average flows are shown in Figure 72 compared to system capacity. The effective dosing of alum, the average for the POR, and the effective dosing during the period of use are depicted in Figure 73. Daily average inflows versus outflows are plotted in Figure 74, and the residual (inflows minus outflows) is shown in Figure 75. Interpolated TN mass removal over time is depicted graphically in Figure 76 together with the daily average reduction. Temporal variations in interpolated TN mass inflow versus TN mass outflow are presented in Figure 77. Interpolated TN concentration inflow and outflow levels for the period are shown in Figure 78. Detailed operating data is contained within Appendix VIII for TP and in Appendix XV for TN.

Infrastructure Modifications

There were no major infrastructure modifications at the Grassy Island HWT facility for the POR; two contact pond liners in the eastern flow paths were replaced during the POR.

Design Modifications

There were no design modifications at the Grassy Island HWT facility for the POR, and none are currently being considered.

TP Mass Inflow and Outflow

The TP mass inflow for the POR was 6,910 lbs., and the outflow was 560 lbs. The total mass reduction was 6,350 lbs. or 92%.

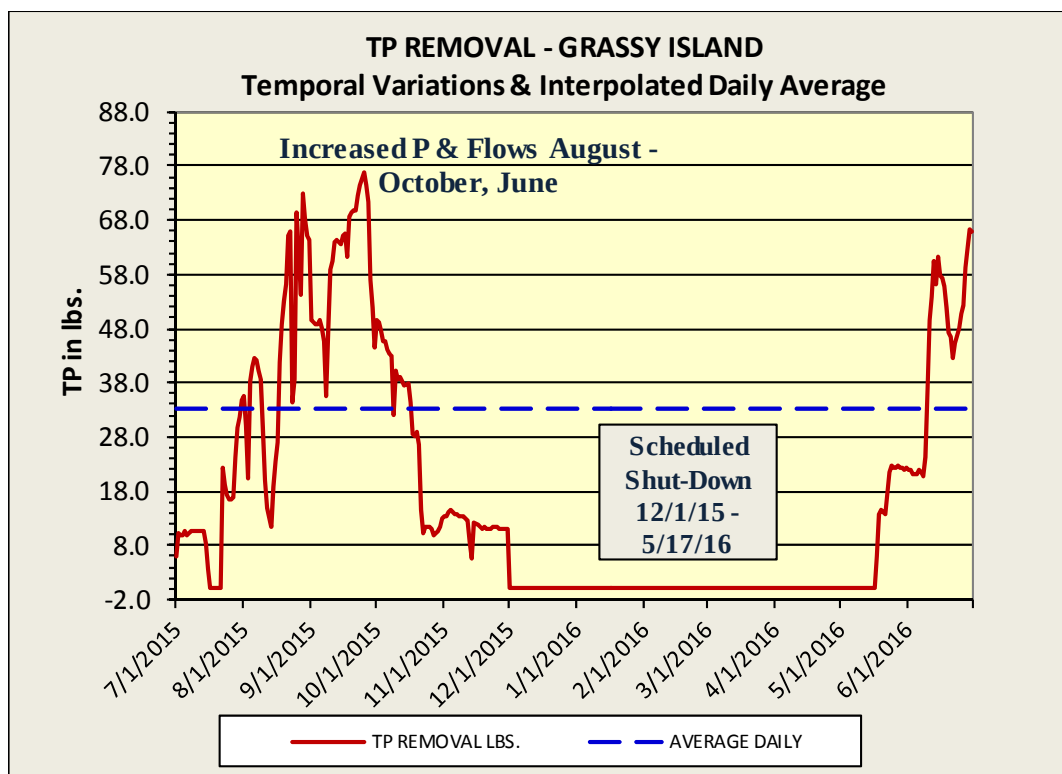


Figure 69. Interpolated TP Removal Temporal Variations & Daily Average Grassy Island.

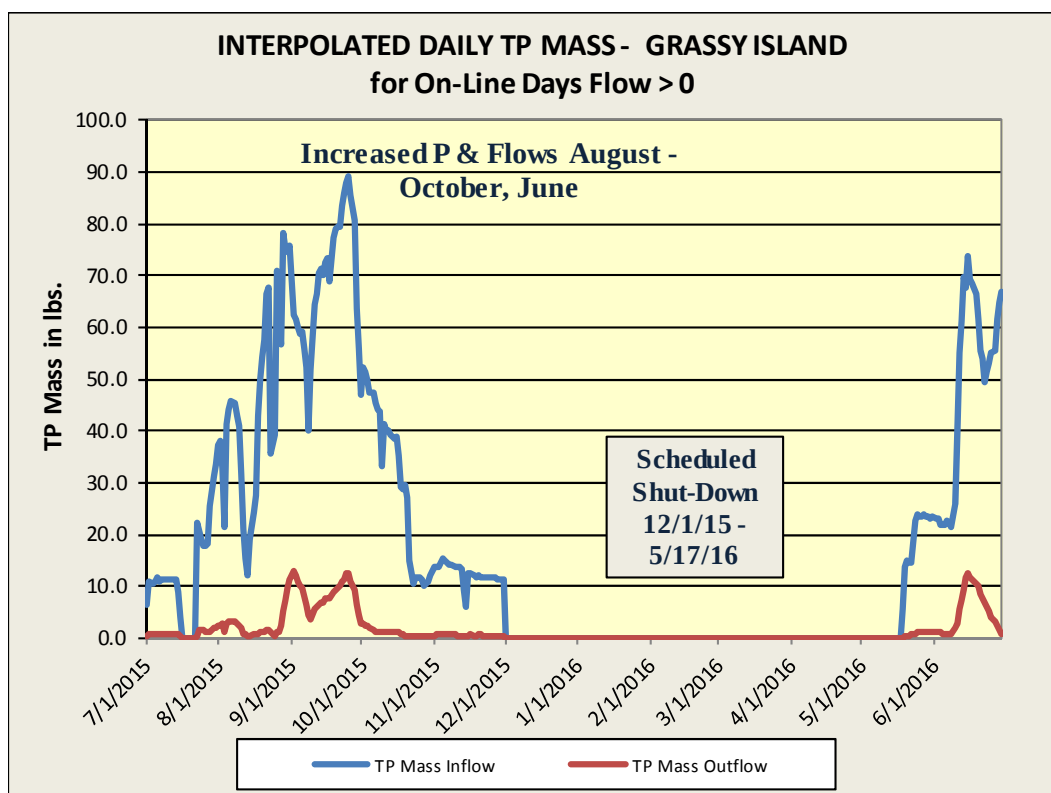


Figure 70. Interpolated Daily TP Mass Inflow versus Outflow Grassy Island.

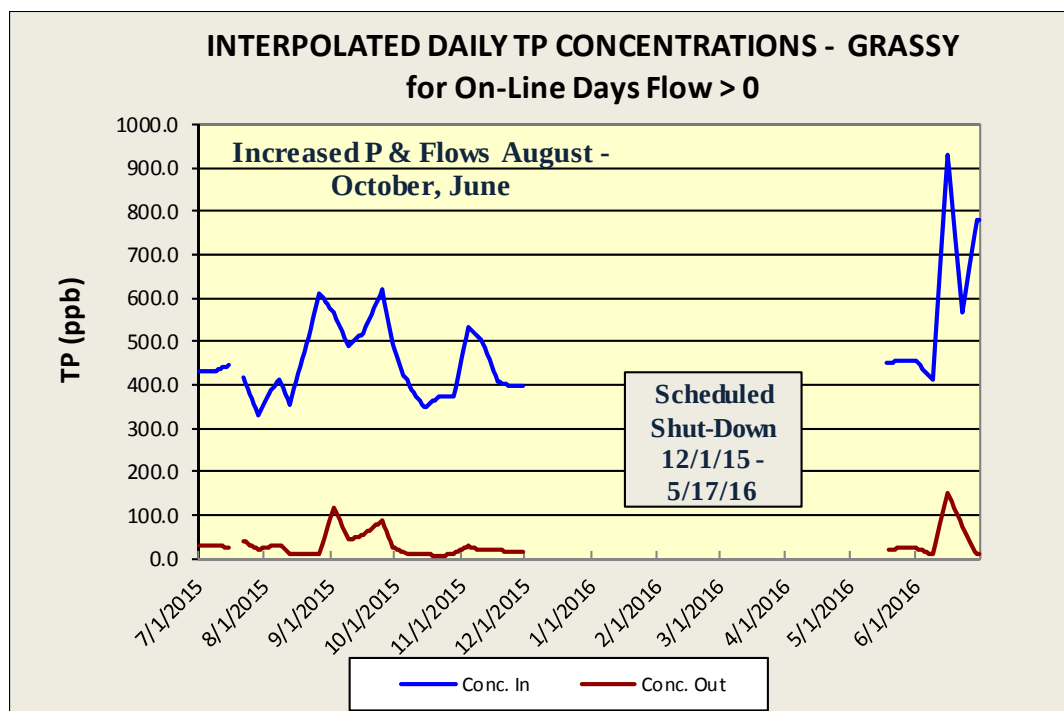


Figure 71. Interpolated Daily TP Concentrations Inflow versus Outflow Grassy Island.

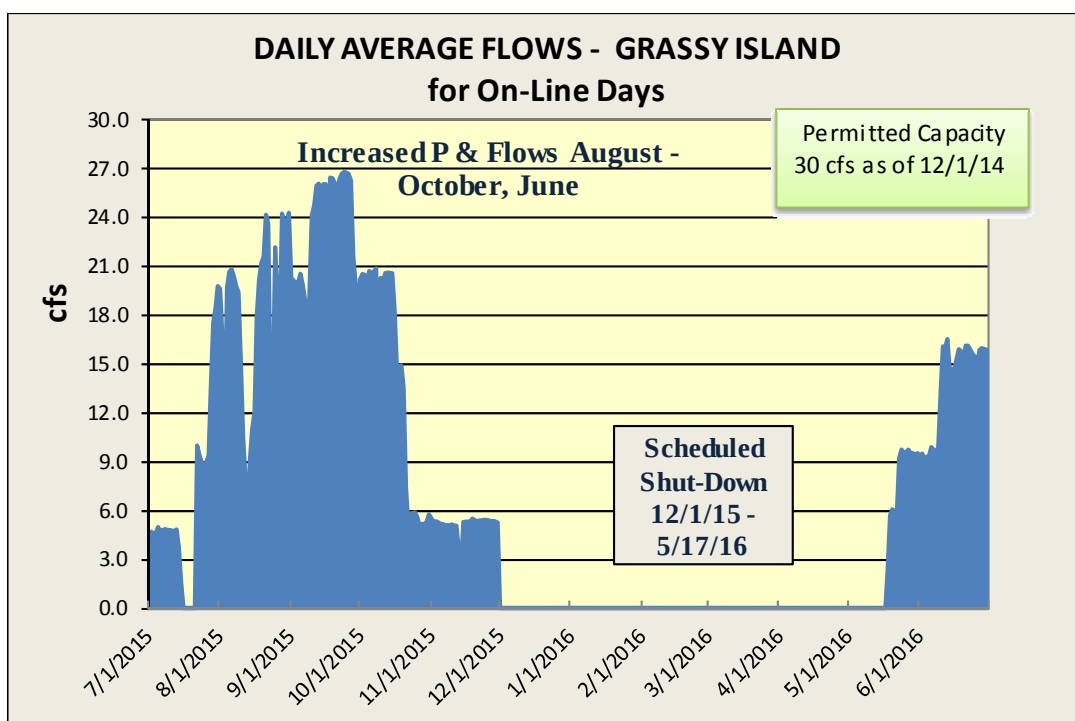


Figure 72. Daily Average Flows Grassy Island.

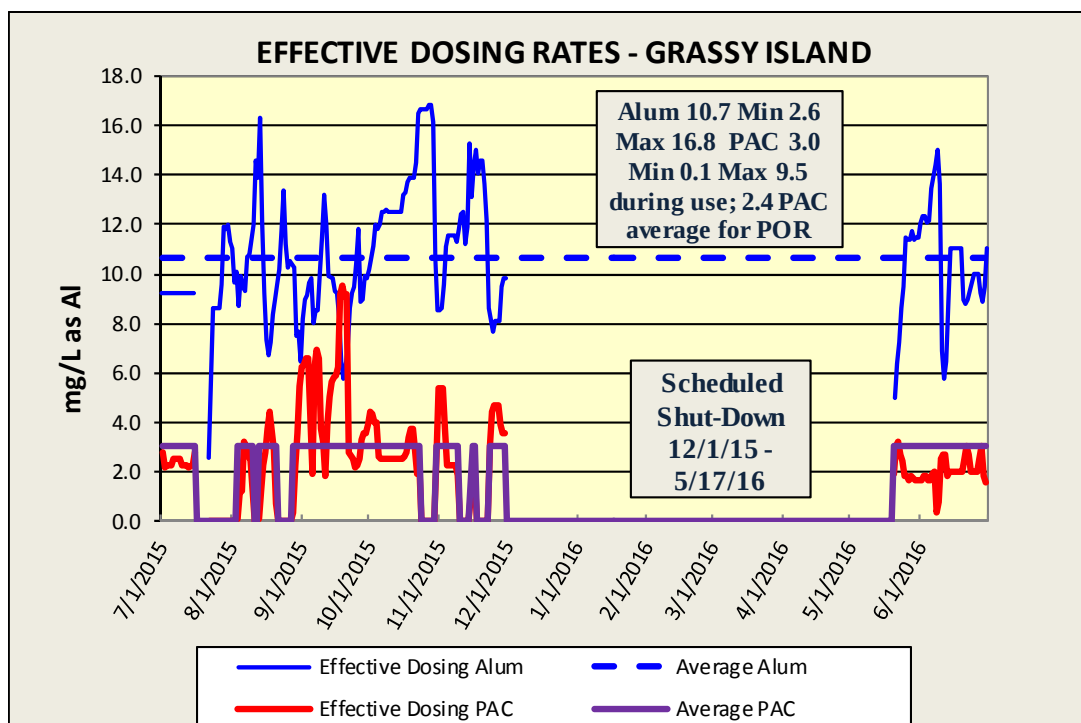


Figure 73. Daily Effective Dosing Rate and Average for the POR Grassy Island.

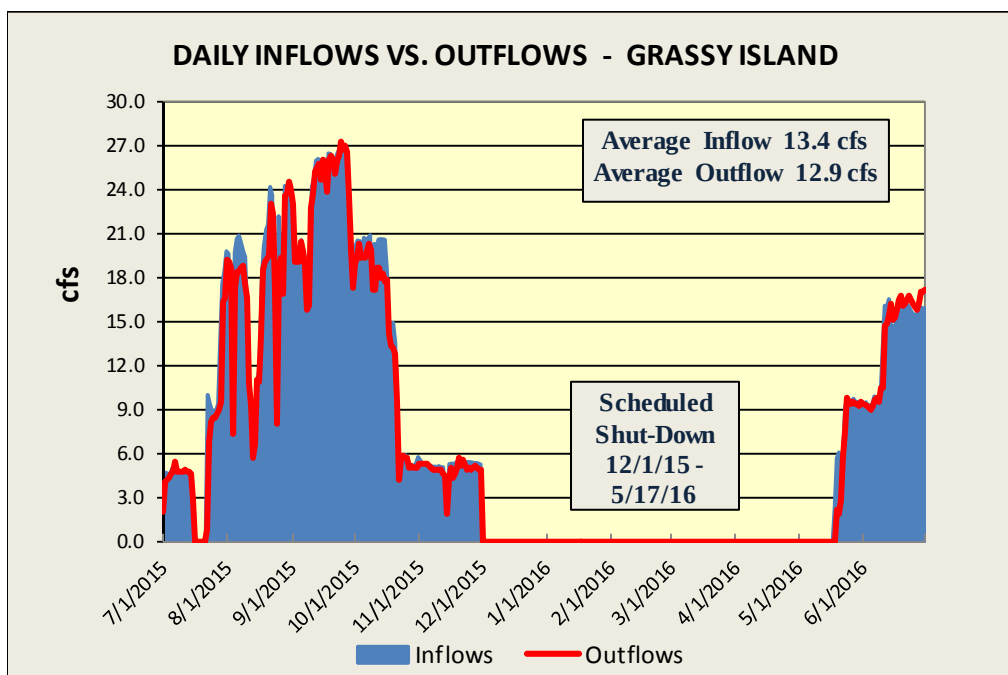


Figure 74. Daily Average Inflows versus Outflows Grassy Island.

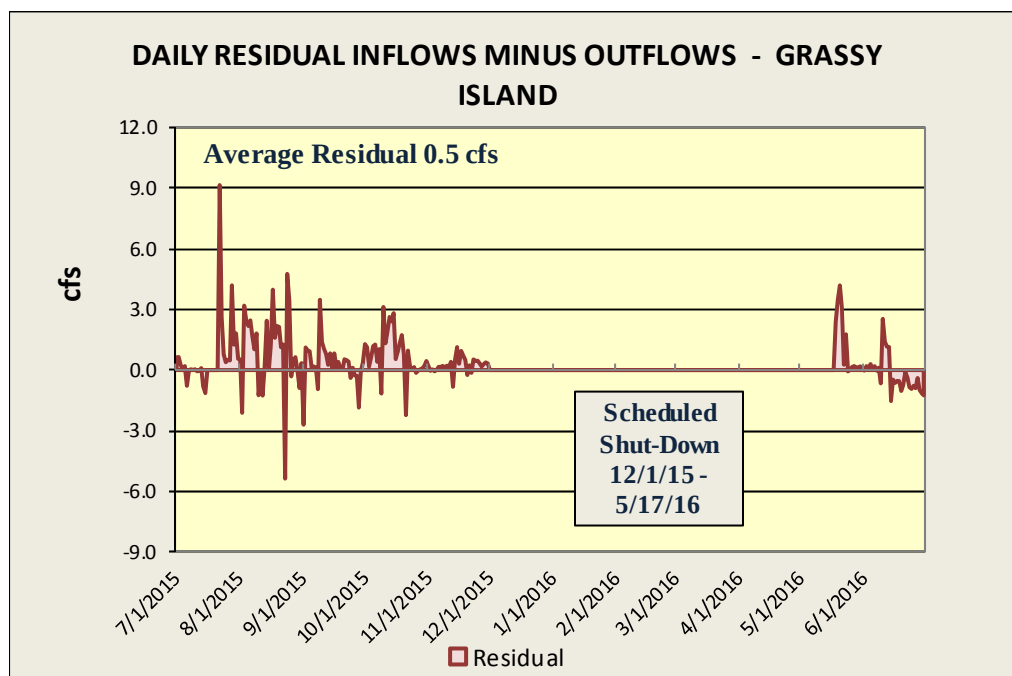


Figure 75. Daily Residual Inflows minus Outflows Grassy Island.

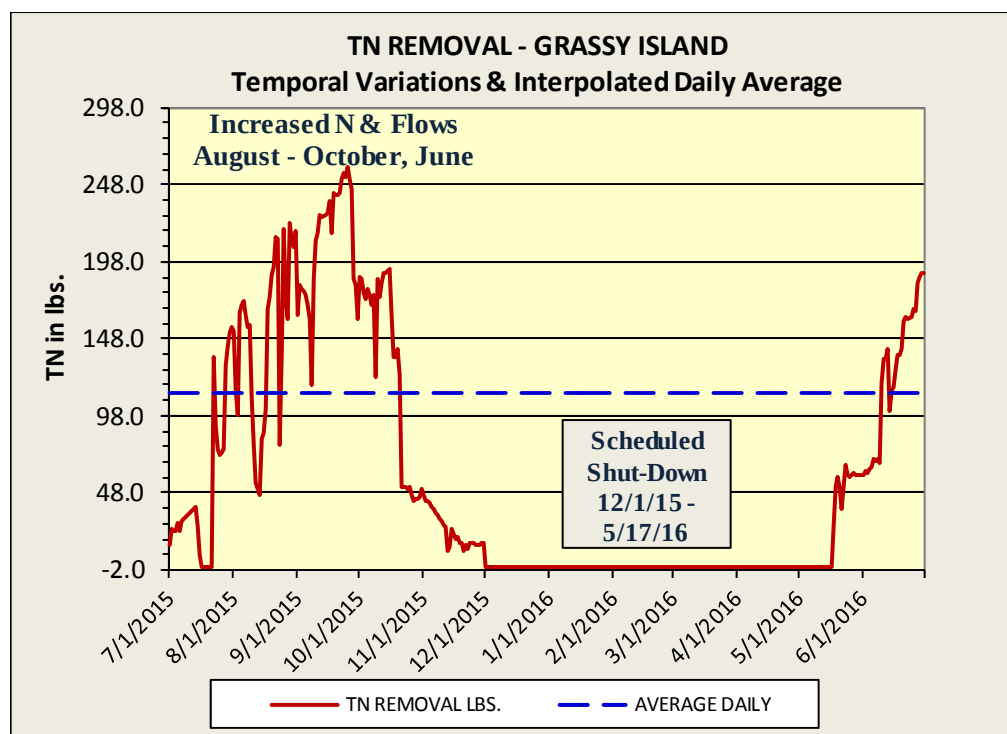


Figure 76. Interpolated TN Removal Temporal Variations & Daily Average Grassy Island.

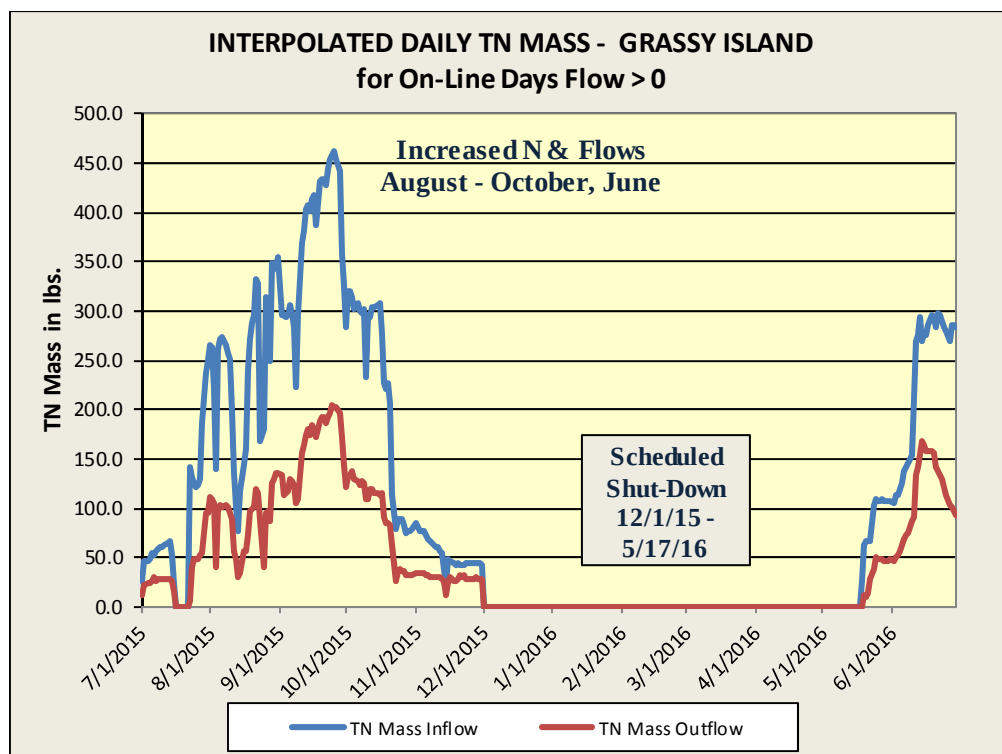


Figure 77. Interpolated Daily TN Mass Inflow versus Outflow Grassy Island.

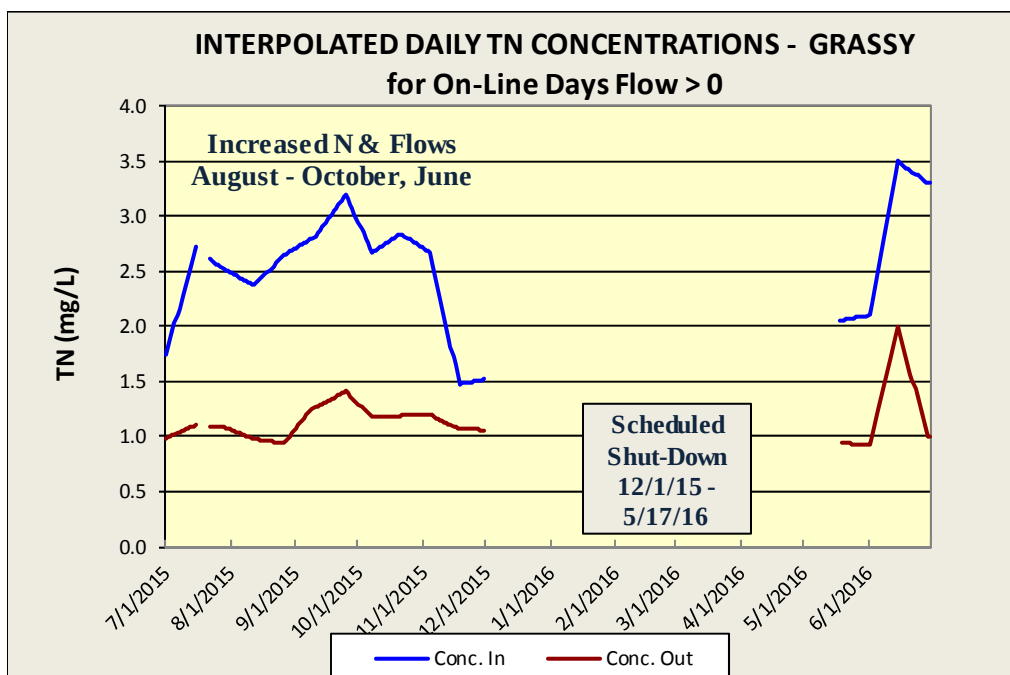


Figure 78. Interpolated Daily TN Concentrations Inflow versus Outflow Grassy Island.

Bessey Creek (Site 8)

The Bessey Creek project was deployed under the prior contract with FDACS, identified as Northern Everglades Site 8. On January 7, 2014, the Martin County Board of County Commissioners approved a lease agreement with FDACS for use of approximately 23 acres of county-owned property to implement an HWT facility serving Bessey Creek. The design and deployment of the facility was closely coordinated with Martin County engineering. The field inspection for system functionality and site acceptance were conducted on March 30, 2015.

The Bessey Creek facility was initialized on March 8, 2015, and continued into the optimization phase in the current POR. Bessey Creek operated near continuously with minor down-time for minor improvements and installation of 3-Phase power to the facility. Flow levels were highest from late August through mid-October, declined significantly, and then increased rapidly mid-November. Comparable flows were available in June 2016, when the system was returned to active status. Site 7 had the second lowest interpolated FWM TP inflow concentration (223 µg/L) of the seven HWT facilities. The interpolated FWM TP outflow was 26 µg/L, an 88% average reduction for the period. The geometric mean for TP inflow concentration was 213 µg/L and 25 µg/L for TP outflow, representing an 88% removal rate. The effective dosing of alum ranged from 2.3 to 16.2 mg/L, and the average was 11.1 mg/L as Al for the period. PAC was utilized for 68 days during the POR. The effective dosing of PAC ranged from 0.1 to 10.2 mg/L during use, and the average was 3.7 mg/L as Al. The effective dosing of PAC for the entire POR ranged from 0.0 to 10.2 mg/L, and the average was 1.5 mg/L as Al. Dosing adjustments were made as necessary based upon on-site conditions. The geometric mean for TN inflow concentrations was 1.5 mg/L versus 0.7 mg/L outflow for a 57% reduction; the FWM for TN inflow concentrations was 1.7 mg/L compared to 0.8 mg/L outflow for a 55% removal rate. TP levels are interpolated from approximately weekly samples.

The increased flows of Period 1 enabled the complete filling of the FAV pond. Several desirable emergent species, including *Thalia geniculata*, colonized the SAV pond during Period 1. Herbicides were applied to some undesirable emergent species in the SAV pond

during Period 2, but small stands of desirable species such as *Thalia* and *Scirpus* will be left intact. During Period 2, it was noted that the water depths of the contact ponds were slightly higher than the desired operating depth. The pond water levels were subsequently lowered, and the aluminum outflow culvert structures were cut down to the desired configuration. A large rain event during Period 2 caused water to back up from the downstream wetland into the outflow region SAV pond of the facility and also into the adjacent pine flatwoods along Citrus Blvd. Drainage from Citrus Blvd. enters the downstream wetland under large rain events, a factor that was accounted for in the system's design. During these unusually high water conditions in Period 2, a survey was conducted of the water levels within the HWT facility, in the downstream wetland, and in the conveyance ditches to Bessey Creek to identify the location of the flow bottleneck. It was determined that an approximately 550 feet long county drainage ditch along Citrus Blvd., which is congested with vegetation, is likely impeding flows to Bessey Creek. The condition of this ditch was subsequently brought to the County's attention, and a plan for cleanout is being formulated. Because of the high water conditions in the back end ponds of the HWT facility, plant inoculation and herbicide treatment activities in the FAV and SAV ponds were postponed until Period 3.

During Period 3, several mats of *Hydrilla verticillata*, an exotic aquatic weed, were observed flowing downstream in Bessey Creek. Despite the use of an intake screen at the pump station, it is possible that this plant may be injected inadvertently into the HWT facility by the system water pumps. Several tons of floating vegetation were inoculated into the FAV pond during Period 3 as a continuation of the grow-in phase. Early in Period 4, flexible barriers were re-configured in the contact ponds to improve performance of the floc mixing/reuse zone, while wet floc was pumped from the contact ponds into the facility's drying bed. Also during this period, the effectiveness of the SAV pond's limerock bed for outflow region alkalinity control was tested. Early in Period 5, flow adjustment trials were performed to balance flows between the two contact ponds. Since Summer 2015, a number of emergent plants in the back-end SAV pond have been controlled with herbicides. Two emergent species, *Thalia* and *Scirpus*, have been left intact, and will be used as a buffer to high winds and flows. Three-phase power was conveyed to the pump station late in Period

5, which caused an interruption in system operations for several days at the end of the reporting period. As of December 1, 2015, the facility was shut down and placed in temporary inactive status through May 31, 2016, for Periods 6-11 due to lack of funding. The site was visited on December 2, 7, 9, 15, 17, 29, and 31 to perform shut-down activities on the various dosing pumps, as well as on the monitoring and control instrumentation.

The site was inspected throughout the inactive period. Pressure gauges were installed on the inflow water pipes on January 2, 2016, to facilitate flow meter calibration efforts during a subsequent Period. During Period 8, a fluorescent tracer was used to calibrate the system influent flow meter. In Periods 9 and 10, modifications were made to the pump station control instrumentation to facilitate operations with the new three-phase power supply. In April, Martin County personnel began removing vegetation from the ditch that discharges from the downstream wetland to Bessey Creek. This vegetation at times had impeded HWTt discharge flows during fall 2015. In Period 11, herbicide was applied to some of the emergent vegetation (primarily *Thalia geniculata*) that had colonized the SAV pond during the non-operational period. The Bessey HWTt system resumed operations on June 1, 2016, following the period of inactive status. With the onset of operations, floc was pumped from the south contact pond into the drying bed, and operations during Period 12 were conducted primarily using the north contact pond.

Interpolated TP mass removal over time is depicted graphically in Figure 79 together with the daily average reduction. Temporal variations in interpolated TP mass inflow versus TP mass outflow are presented in Figure 80. Interpolated TP concentration inflow and outflow levels for the period are shown in Figure 81. Daily average flows are shown in Figure 82 compared to system capacity. The effective dosing of alum and the average for the POR is depicted in Figure 83. Interpolated TN mass removal over time is depicted graphically in Figure 84 together with percent daily average reduction. Temporal variations in interpolated TN mass inflow versus TP mass outflow are presented in Figure 85. Interpolated inflow and outflow TN concentration levels for the period are shown in Figure 86. Detailed data during this initial optimization and monitoring period is contained in Appendix IX for TP and Appendix XVI for TN.

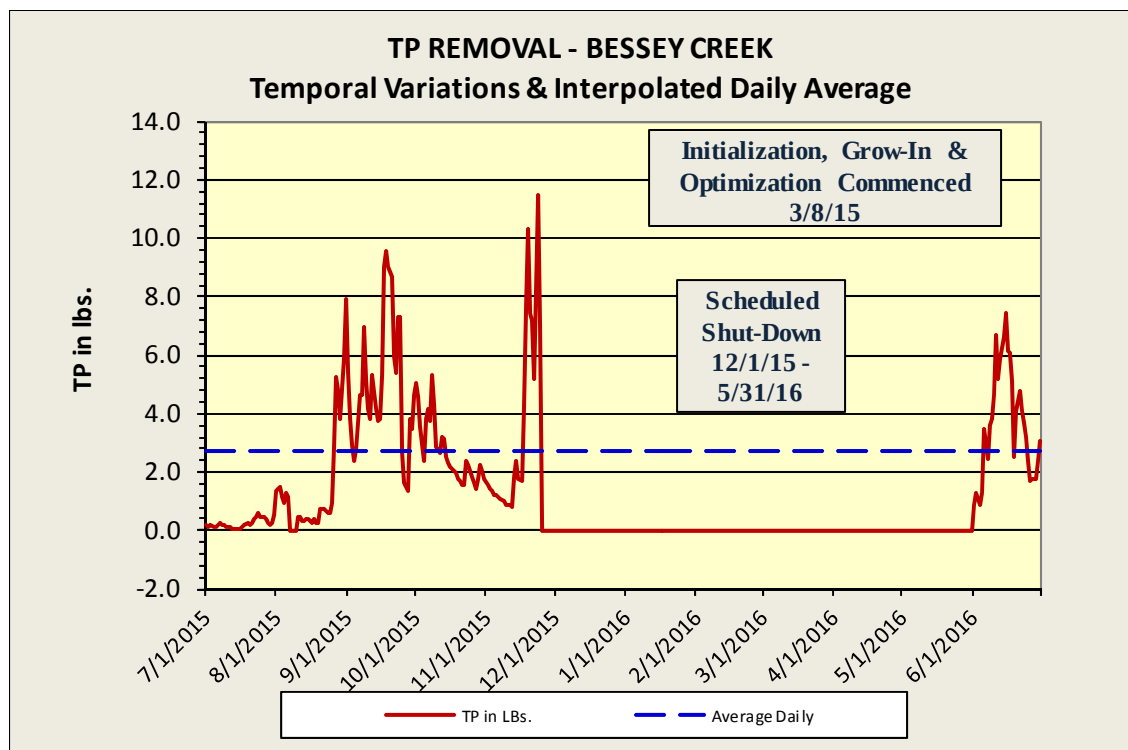


Figure 79. Interpolated TP Removal Temporal Variations & Daily Average Bessey Creek.

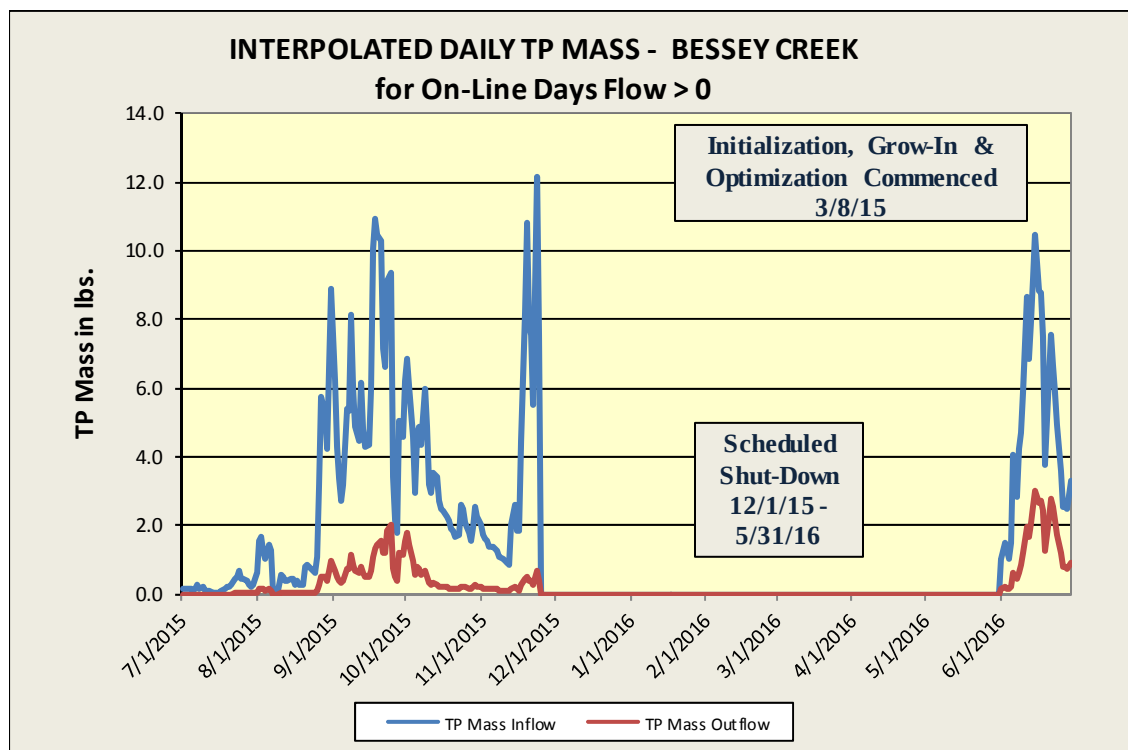


Figure 80. Interpolated Daily TP Mass Inflow versus Outflow Bessey Creek.

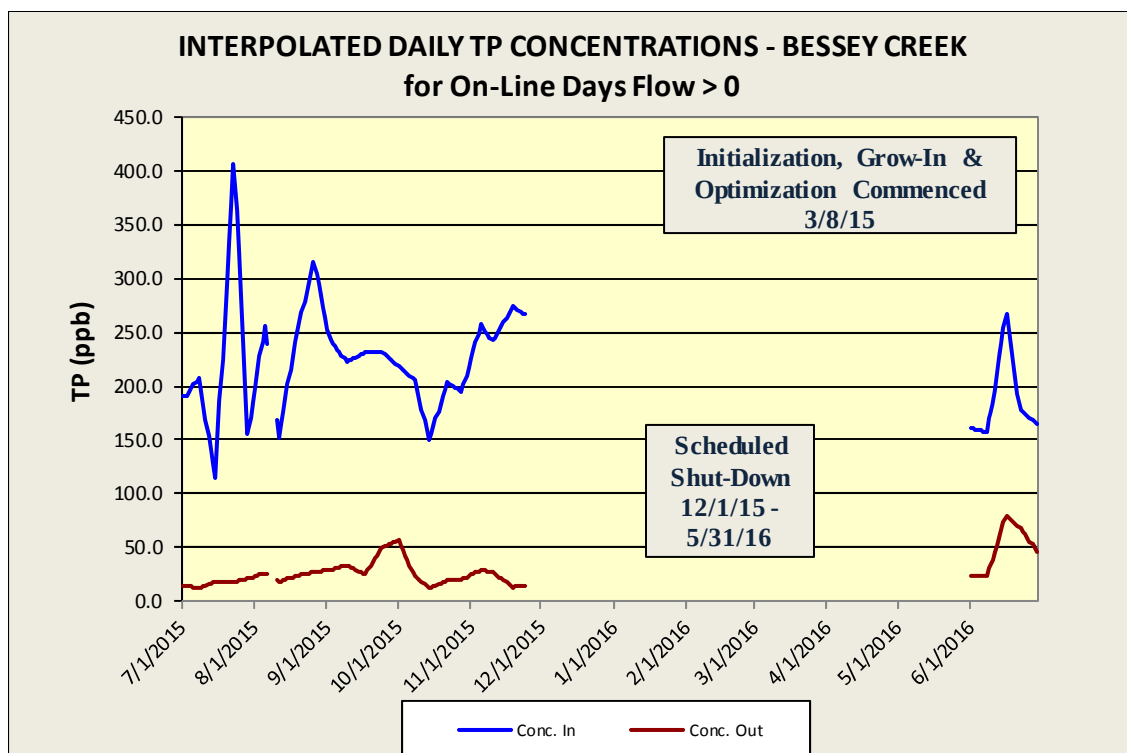


Figure 81. Interpolated Daily TP Concentrations Inflow versus Outflow Bessey Creek.

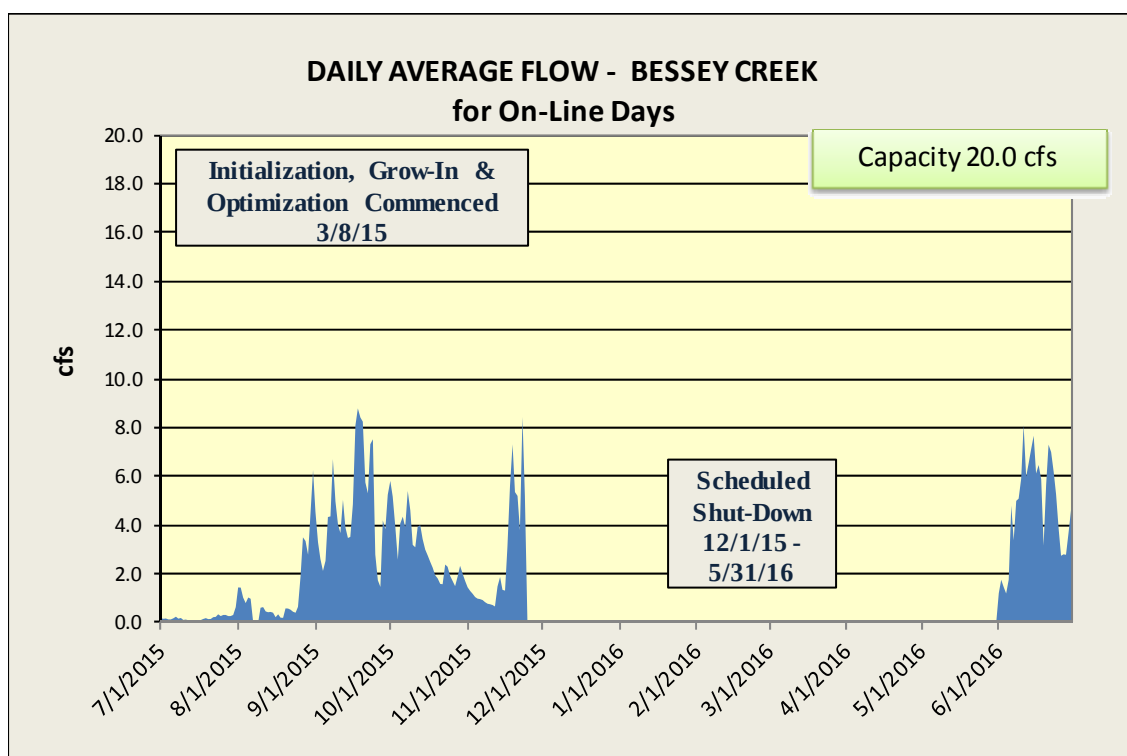


Figure 82. Daily Average Flows Bessey Creek.

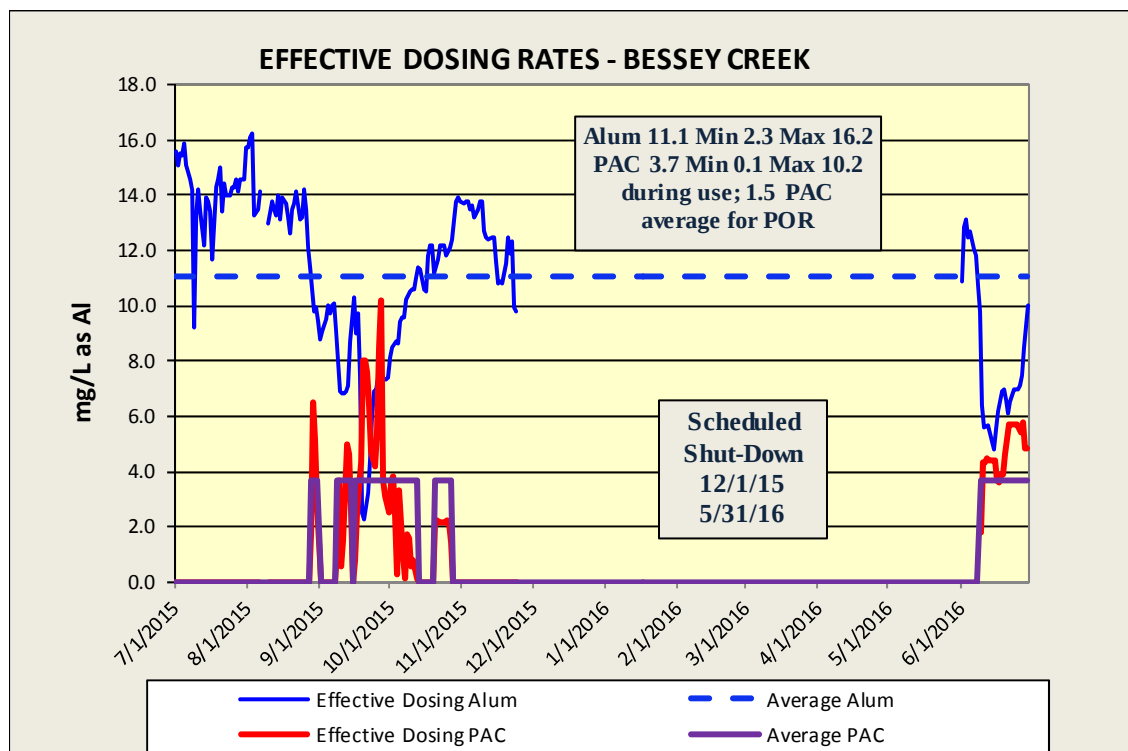


Figure 83. Daily Effective Dosing Rate and Average for the POR Bessey Creek.

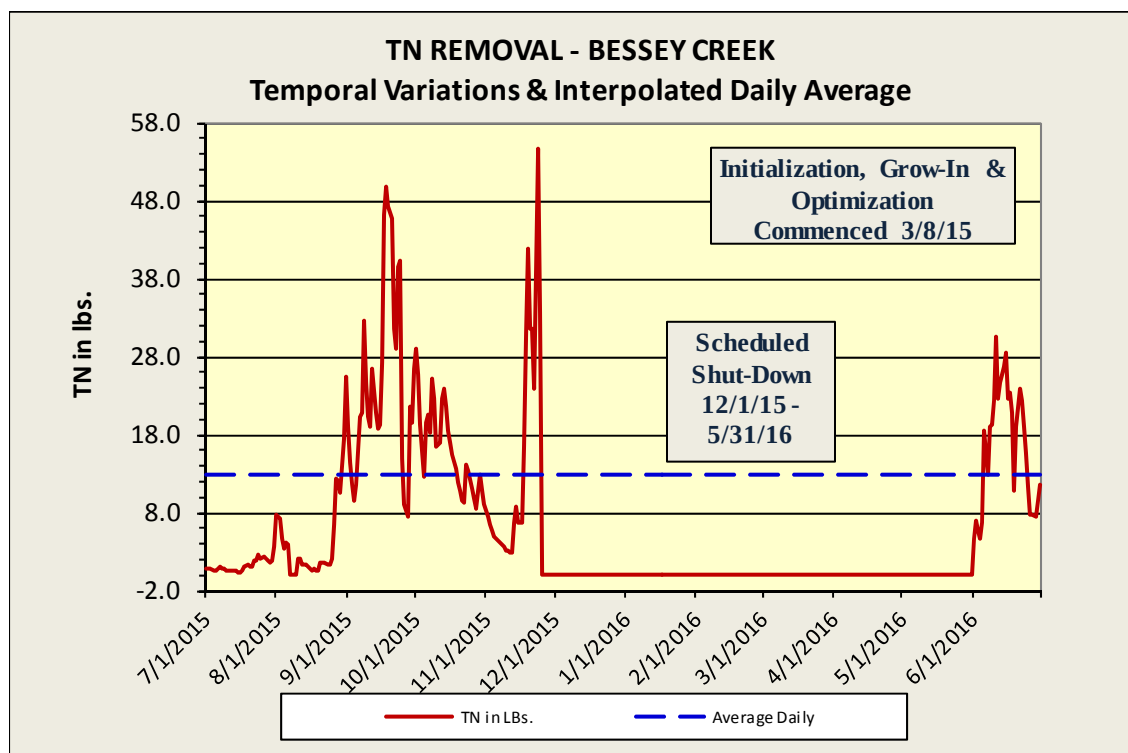


Figure 84. Interpolated TN Removal Temporal Variations & Daily Average Bessey Creek.

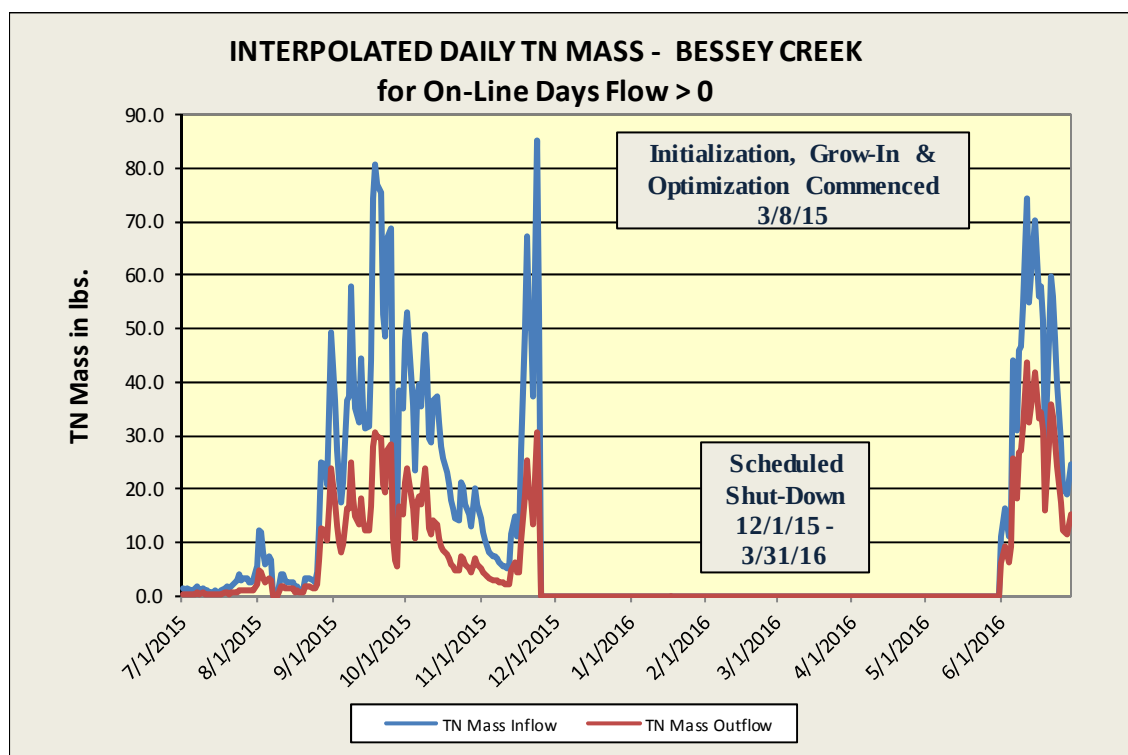


Figure 85. Interpolated Daily TN Mass Inflow versus Outflow Bessey Creek.

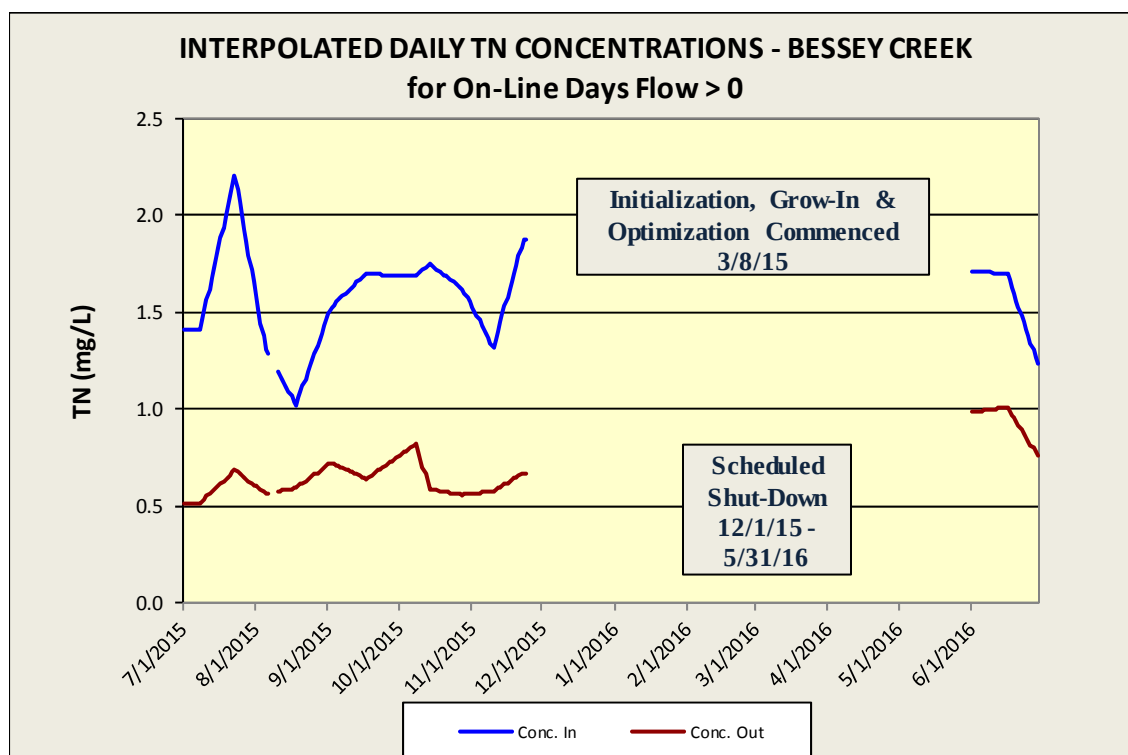


Figure 86. Interpolated Daily TN Concentrations Inflow versus Outflow Bessey Creek.

Economic Analyses

The background of issues concerning Cost/Benefit calculations, assumptions and methodologies employed in this Report are discussed in the following sections. Detailed expenditures by site are presented for both infrastructure and current O&M, together with total forecasted 50 year projections. Cost/Benefit values are computed under the various methodologies presented in previous studies together with detailed operating data. Finally, factors affecting cost benefit values are explored.

Summary of Issues

Over the past several years, various reports demonstrating Cost/Benefit analysis for P removal have been prepared, for example, Brown & Caldwell, 1996; Sano et al., 2004; SFWMD, 2009. These analyses, however, often utilize different methods for comparison; include dissimilar items in the calculations; contain disparate basic assumptions; and present varying units of measurement. For example, Brown & Caldwell projected results under the Present Worth methodology over 50 years, whereas the Davie Dairy Edge of Farm (EOF) Cost/Benefit analysis (SFWMD, 2009) utilized a different approach using current year expenses plus capital cost amortized over 15 years. Conversely, the Sano Report included other economic cost offsets such as water and recreation benefits. Perhaps most importantly, much of the available Cost/Benefit data is based largely upon desktop evaluations rather than actual costs and performance observed under real world conditions. Ideally, all benefits, both tangible and intangible, should be considered and weighed against treatment alternatives whenever practicable and/or feasible. Full costs should be considered and projects should be compared using identical methodologies.

Maximizing Cost/Benefit

Several conditions have proven to be paramount in maximizing the Cost/Benefit of specific projects as follows:

1. Sufficient and consistent flow approximating design capacity.
2. Relatively high P levels available for treatment.

3. Reasonable levels of certain water quality parameters that have a significant influence on treatment, for example, low color and high alkalinity.
4. Minimization of retrofitting and/or pre-existing constraints of original sites that can add significantly to costs and degrade the performance of a technology.

All of the aforementioned factors are relevant at some or all of the HWTT operational sites, and consequently have negatively impacted performance. Site selection therefore becomes a key component of maximizing productivity and efficiency; some of the HWTT locations were chosen to accomplish important goals not directly related to maximum P removal, but nonetheless, the attendant costs impact Cost/Benefit calculations. A discussion of some of these indirect objectives is covered under the Environmental and Ancillary Benefits Section of this Chapter, and a Cost/Benefit model that incorporates the economic benefit of hydrating a downstream wetland at the Lemkin Creek and Wolff Ditch facilities has been calculated and added as supplementary information (taken from the prior period Final Report due to the shortened current PORs). To adequately compare and assess technologies, the inherent social goals and monetary benefits should be included.

Calculation Methodologies

The standard template for a cost benefit analysis projects the present worth of the project over the expected life, considering both capital and annual costs. As noted in the Summary of Issues above, other calculation methods have been utilized for determining the Cost/Benefit for removal of P and N. Additionally, problems that occur when moving from a “desktop” evaluation to an active project must also be taken into consideration. *Accordingly, several alternative calculations are presented to provide information that can be used for comparison with the different methods previously utilized.*

First, two basic scenarios were employed to account for differences due to lack of flow available for treatment and off-line periods during trial modes (see discussions in Chapter I Technical Report for explanation). The first presents actual costs and the second scenario provides additional managerial information for total long-term projected costs and benefits under maximum facility utilization.

- A. Scenario #1 Partial Capacity Utilization: Actual full costs are utilized in calculating Cost/Benefit. This method distorts the true cost of a project if there is unused capacity (for example, lack of flow due to drought or downtime for trials/demonstrations), thereby greatly overstating per unit costs and understating potential removal of P. Cost/Benefit values are higher as fixed costs are distributed over fewer P or N removal “benefit” units. Values produced would be inconsistent with previously referenced desktop studies and would have scant value to management in projecting future costs for planning purposes. Capacity utilization by operational facility for the seven periods is depicted graphically in Figure 28. Utilization for the current POR was 19%, 12%, 32%, 45%, 13%, and 28% for Nubbin Slough, Ideal Grove, Mosquito Creek, Lemkin Creek, Wolff Ditch and Grassy Island, respectively.
- B. Scenario #2 Full Capacity Utilization: Full costs are utilized as above; however, variable and semi-fixed costs are extrapolated to project total costs at full capacity. TP removed is also projected based upon actual per day performance during the current period to compute the long-term Cost/Benefit. Projected total costs and projected P and N removal are demonstrated for a system that is operating close to 100% of design flow capacity; which is more comparable to desktop studies. Semi-fixed costs refer to those expenses that would change in a step-like function as capacity utilization increased, for example, certain personnel time. Economies of scale (for water treatment capacity) are realized.

Second, for each of the above scenarios, Cost/Benefit was calculated based on the two separate approaches that have been discussed, included in previous reports and/or requested by the Funding Agency. Each contract is analyzed as a stand-alone period for O&M and life cycle. Prior expenses are not adjusted to current year dollars. The two approaches are as follows:

- A. Amortized Loan: An alternative calculation of Projected Cost/Benefit values which considers non-recurring costs as loan payments. Capital Improvement costs are adjusted for the time value of money by considering the non-recurring costs as loan

payments. The interest rate and life are 4% annual interest and a 50 year life. The adjusted capital expenditures are added to current year O&M costs. [Note – this approach replaces the previous “Amortized Capital + O&M” wherein infrastructure was amortized over the projected life of the project and added to current year O&M costs to determine the current year Cost/Benefit (referred to as “Amortized Capital + O&M”). The Amortized Loan approach is used starting in Period 4. Presentation of Cost/Benefit for any prior periods utilizes the “Amortized Capital + O&M” methodology.] 50 year life references are: Evaluation Methodology (SFWMD, 2002); Desktop Evaluation (Brown and Caldwell, 1996); and Economic Analysis (Sano et al., 2004).

- B. Present Value: The present value (PV) of O&M with an assumed *net* discount rate of 4% (rate used in Desktop Evaluation (Brown and Caldwell, 1996) and 50 year life is added to infrastructure costs to determine the net PV of total costs and Cost/Benefit. Only the current year O&M costs are used in the analysis. No inflation adjustment is made for capital; infrastructure is therefore stated in original dollars for all sites. (Rate used in the Evaluation Methodology (SFWMD, 2002) was 3.375 %.)

Other Basic Assumptions

The following represent the major assumptions used in calculating Cost/Benefit values. Changes in any assumption will impact the Cost/Benefit calculations. A sensitivity analysis was beyond the scope of this contract and accordingly has not been performed.

1. *Since the current POR relates to a partial period that was not chronologically continuous, costs could not be reliably tabulated to utilize for the Cost/Benefit calculations. Expense data is available by quarter, and a split partial period coupled with sites on temporary inactive status would necessitate unreasonable assumptions and rely upon non-representative values. Additionally, previous shortened contract periods did not coincide with the wet season as in the current PORs. The total current year costs are shown in the cost data by site; however, the Cost/Benefit values are based upon the operating data for Fiscal Year 2016-2017. The Cost/Benefit calculations represent rough approximations based upon various projections; the*

values will not be included in historically reported data. Bessey Creek is in the optimization phase, and therefore, a Cost/Benefit was not calculated for the current POR for that site.

2. For the five existing sites (#1-3, 5-6) only 50% of Optimization & Monitoring costs during construction have been excluded based on the estimated time that the systems were operational during construction. As noted above, infrastructure is not adjusted for inflation and assumed to be in current dollars. Exclusion of up to 100% of first year operations in calculating Cost/Benefit data is a reasonable assumption. Construction of the Grassy Island facility began under the 2010 contract, and modifications were completed under the previous period to allow for sustained operations at 10 cfs. All construction and optimization and monitoring expenses have been capitalized, as compared to only 50% of these expenditures that were added to infrastructure for the other five facilities. Grassy Island was on-line July 11, 2011, and full-scale optimization and monitoring commenced. The following 125 day period through November 12, 2011, was shown as de facto O&M, and the corresponding TP data was tabulated to present a cost benefit calculation during this start-up optimization period in the prior contract.

Grassy Island was permitted at 10 cfs through November 29, 2012, and increased to 20 cfs through June 30, 2013, for an average of 15.8 cfs for the respective POR. Although construction for expansion to 30 cfs was completed June 13, 2013, permitting was limited to 20 cfs until approved completion of a required FDEP operating period. The permitted capacity for Grassy Island was increased from 20 cfs to 30 cfs as of December 1, 2014, resulting in an average available capacity of 25.8 cfs for the prior period.

3. There were no major operational improvements made during the current POR.
4. Variable O&M costs include those costs primarily flow related including chemicals, utilities, drydown, tilling, and floc management, but do not include any associated personnel time.

5. Outstanding expenses as of the Report date are estimated and included in the calculations.
6. Land costs are excluded from the analysis due to lack of availability of data; estimation is beyond the scope of the project. Although the land has been made available at the various sites and hence a purchase price is not identified, the costs should be included in an economic analysis. These costs are relatively minor, however, for HWTT due to the smaller footprint than *some* alternative treatment methodologies.
7. Per day amounts are used to standardize for the differences in the expense period and the sampling period. The operating costs cover the contract period plus projected outstanding expenses as of the contract end date. Operational data are noted for each site in the detailed operating reports shown as appendices.
8. Social and other economic benefits are excluded from the base calculations; however, as stated above, cost avoidance/savings have been recognized in a supplementary schedule for Lemkin Creek and Wolff Ditch. Consideration of all social benefits can materially change the analysis but are beyond the scope of this project. For example, these positive benefits had a significant favorable impact on Cost/Benefit values calculated in Economic Analysis (Sano et al., 2004).
9. Rough Order of Magnitude projected replacement costs and an accompanying sensitivity analysis were prepared as part of the previous contract, upon request, and are included as Appendix XX. Replacement costs and salvage values are beyond the scope of this project and are not considered in the 50 year projection.
10. The Contracts do not all represent 365 days; therefore, the terms are labeled as "Periods". Period 0 is the initial building of Sites 1-3. Sites 5 and 6 were constructed in Period 1, Grassy Island (Site 7) was in varying degrees of construction for Periods 2 through 5, and Bessey Creek (Site 8) was completed in Period 7 and continued in the optimization and monitoring phase during Period 8.

Expenditures – Current and Projected

Expenditures are tracked by major expense category for each project site including capital costs and both variable and fixed O&M. Costs represent total expenditures associated with implementation, which equal contract price. As noted earlier, significant differences exist in pre-existing conditions at each facility that result in Cost/Benefit issues, for example, infrastructure, site restrictions, water quality, and land and power availability. Accurate analysis is not completely reliable in the early stages of a project due to start-up costs and optimization of performance parameters; both controllable and non-controllable variations in water quality can further distort costs and performance. Projected costs are based upon current year operations. (See below for a discussion of expenses used for Cost/Benefit.)

Figure 87 through Figure 93 represent projected expenditures by site and type, including Capital and 50% or less of Optimization & Monitoring costs as discussed above, as well as O&M expenses. The Y-axis scales have been standardized at \$800,000, except for Grassy Island and Bessey Creek, to facilitate a visual relative comparison among the sites. (Infrastructure costs exceed the maximum at some sites as noted on the figures.) Period 0 corresponds to the initial contract during which Sites 1-3 were constructed and optimized. Period 1 refers to the second contract, which includes the first year of operations for the first 3 sites and construction and optimization of Sites 5 and 6. During this period, changes were made to flow pathways and configurations at Nubbin Slough, Ideal Grove, and Mosquito Creek. Nubbin Slough and Mosquito Creek have capital expenditures in Year 2 for limerock bed installation and/or pump additions. Period 3 relates to a previous contract encompassing 206 days that includes O&M for Sites 1-3, 5-6 and completion of the Phase I 10 cfs at Site 7. No major capital expenditures were incurred for sites 1-3, 5-6 during Period 4 (274 day period) or Period 5; approximately 10+ cfs was added at Grassy Island in Period 4 and an additional 10 cfs for Period 5. Site 8 was deployed under the previous contract (Period 6) and commenced initialization, grow-in, and preliminary optimization phases during Period 7. Operational improvements during Period 7 for Sites 1-3, 5-7 have not been capitalized and have been included as Fixed Operating Expenses. Expenses for Period 8 represent a split partial time frame.

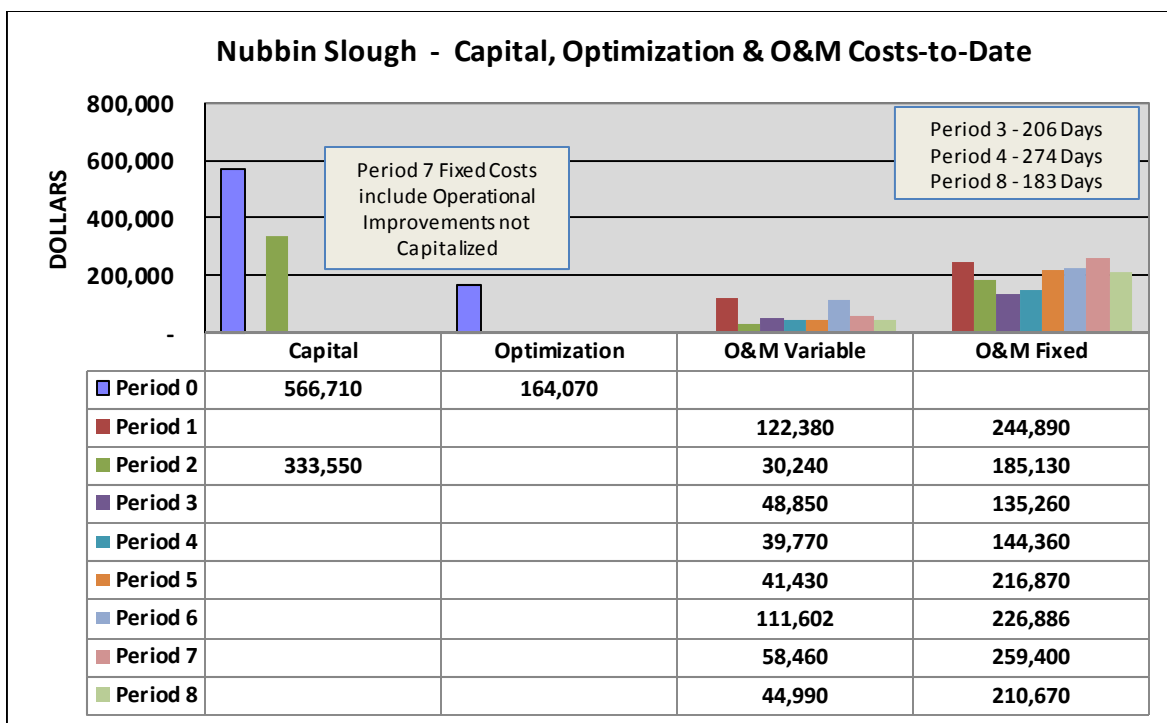


Figure 87. Nubbin Slough Costs-to-Date by Expenditure Type.

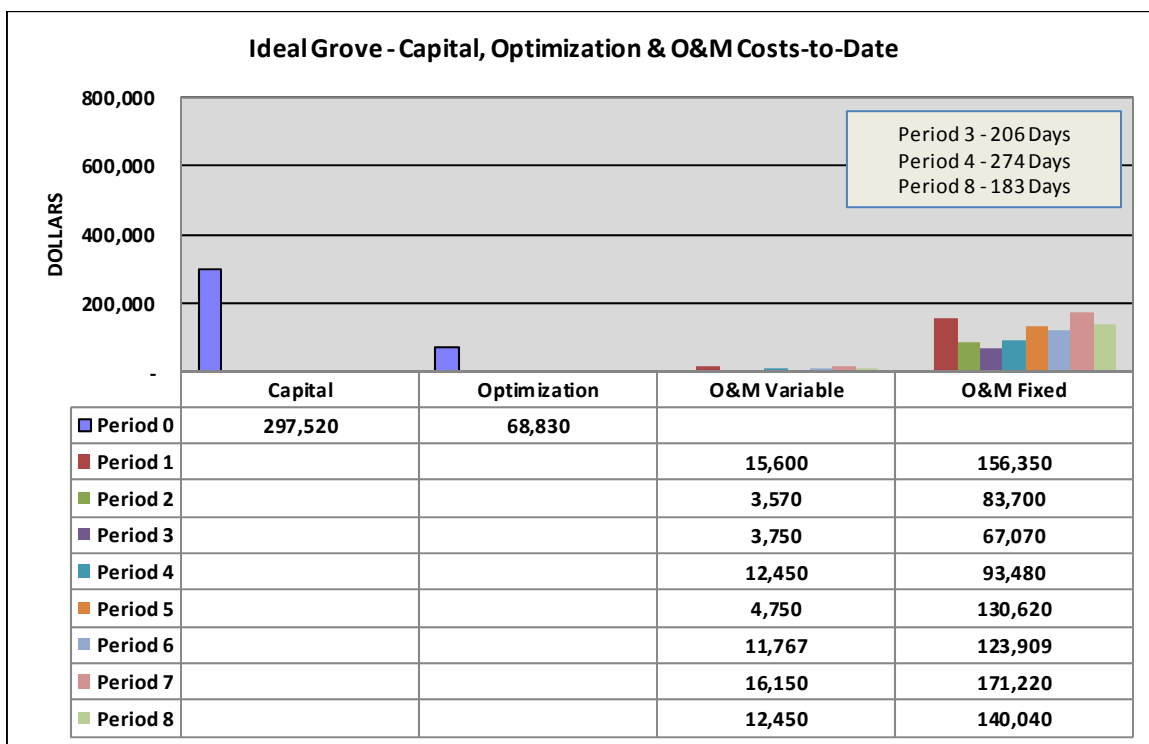


Figure 88. Ideal Grove Costs-to-Date by Expenditure Type.

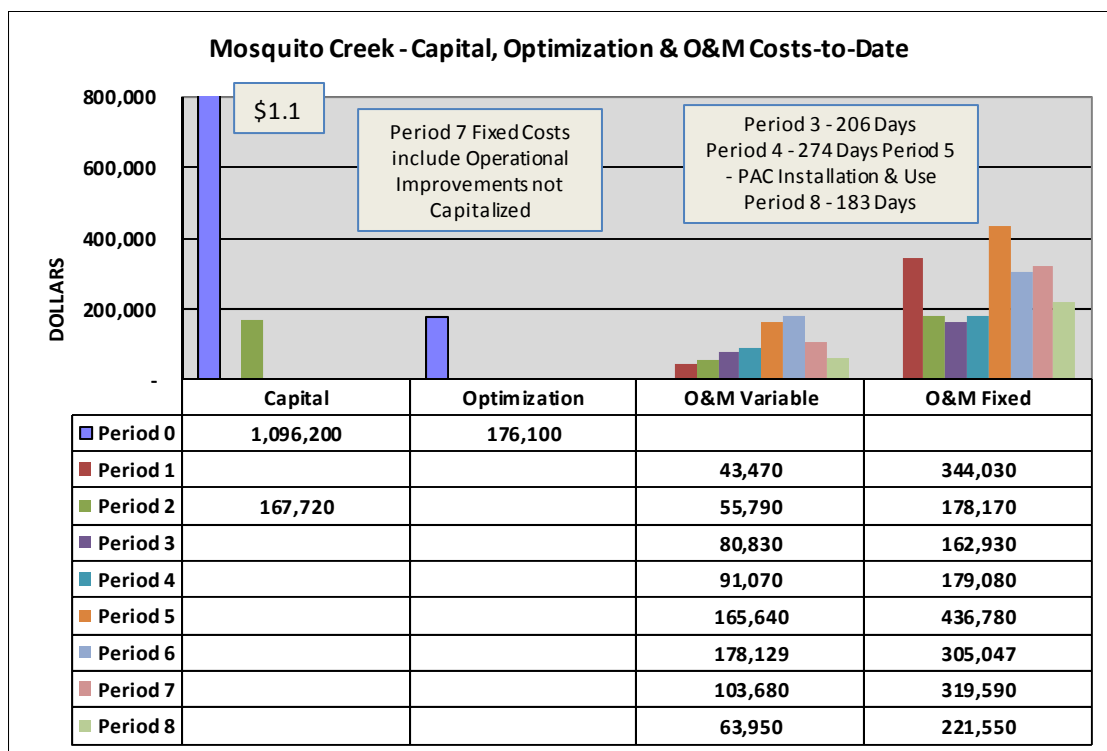


Figure 89. Mosquito Creek Costs-to-Date by Expenditure Type.

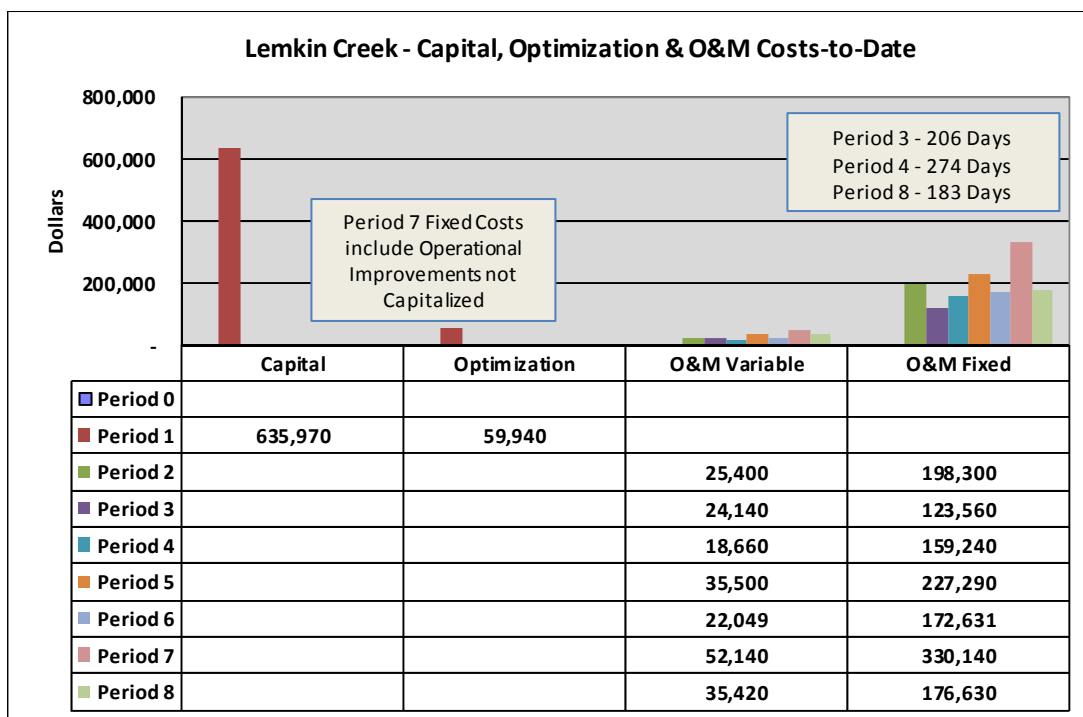


Figure 90. Lemkin Creek Costs-to-Date by Expenditure Type.

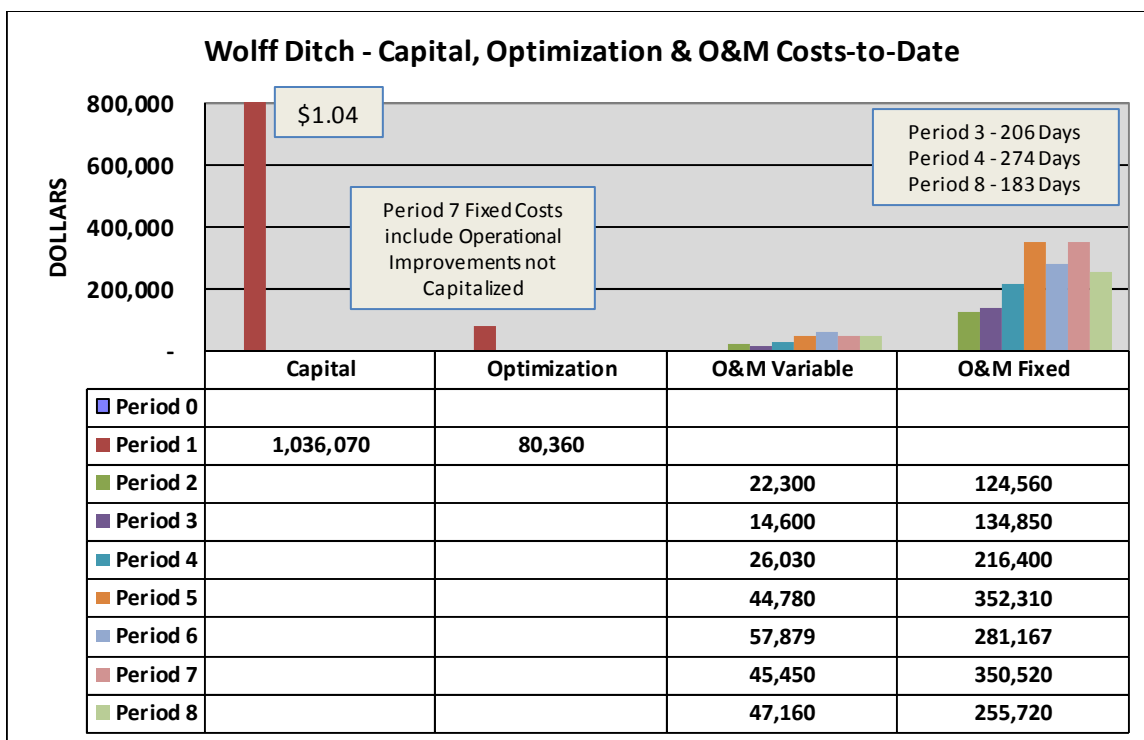


Figure 91. Wolff Ditch Costs-to-Date by Expenditure Type.

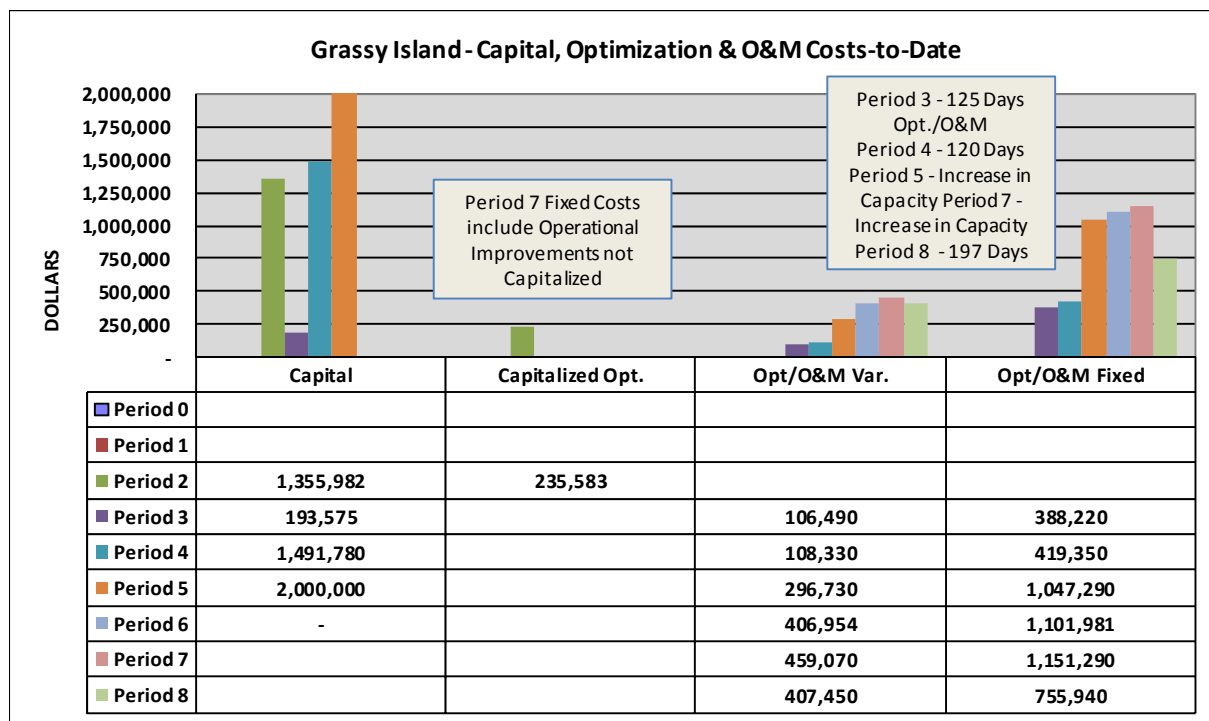


Figure 92. Grassy Island Costs-to-Date by Expenditure Type.

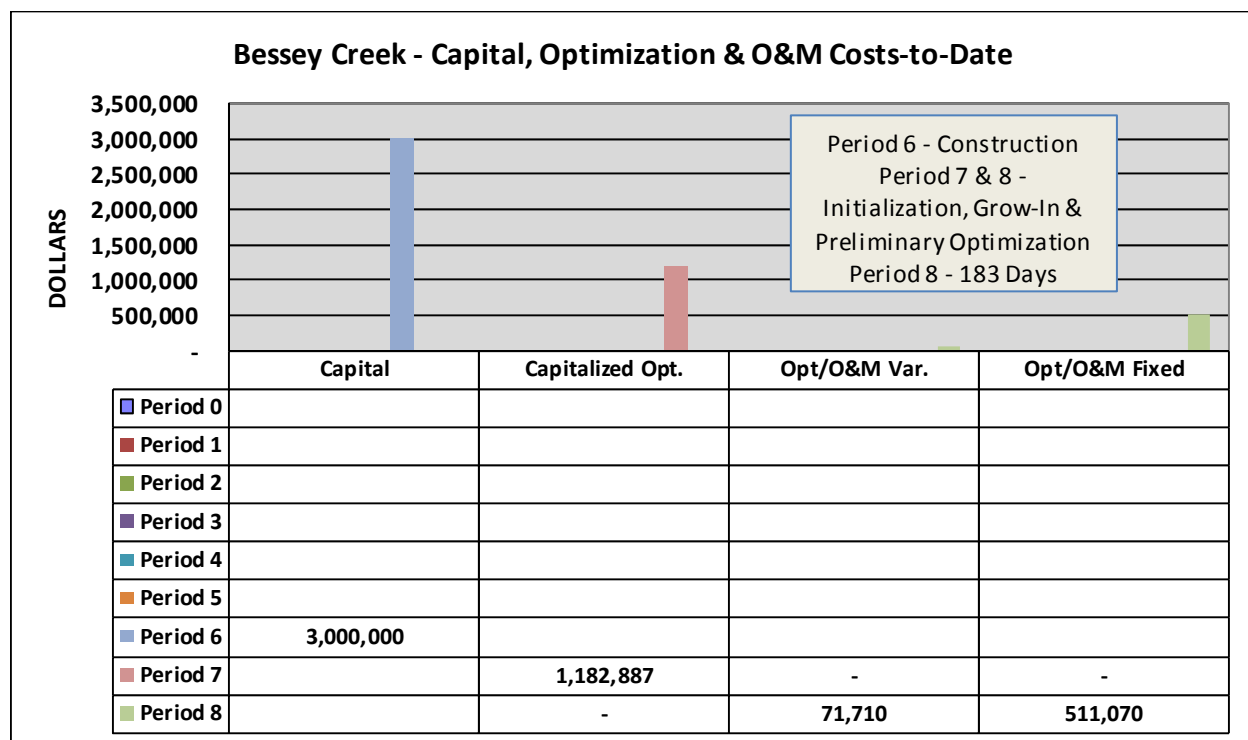


Figure 93. Bessey Creek Costs-to-Date by Expenditure Type.

Variable Costs & Unit Processes

The breakdown of the O&M variable costs by process and total costs for each site is delineated in Appendix XIX (the prior year report is duplicated due to the inability to allocate data for the current POR by month and between active and inactive periods), with accompanying schematics demonstrating the varying components deployed at the different facilities. Fixed costs generally cover all functions; time and material records are not accumulated by “process”. The facilities are considered to be comparable to a wastewater treatment facility, with each HWTT site a division or department in and of itself (the treatment plant) and not subject to further cost breakdown.

Replacement Costs

The replacement costs of the various components of the HWTT system over the estimated useful life of the facility are not considered to be material; the preponderance of capital is excavation and embankment work (ponds), which does not degrade significantly over time. For example, in the SFWMD Desktop Evaluation of Alternative Technologies dated August 1996, Table 4.8-1 Basis of Design and Cost Information for STA – Chemical Treatment/Dissolved Air Flotation/Filtration, the replacement costs were calculated but related almost entirely to pump station costs. The values ranged from \$3.43 million to \$13.91 for capital costs ranging from \$91.02 million to \$198.21 (3-7%). A “rough” order of magnitude estimate of replacement costs for major items for Sites 1-3, 5-7 is shown in Appendix XX, which was prepared upon request in a prior contract period. The estimates have been updated for Grassy Island construction through Phase III. The assets contained within the analysis are the significant items subject to replacement, specifically, pumps, limerock and monitoring and control equipment. Based upon the assumptions contained in this Chapter and the Schedule, these items have a net PV of approximately \$1,084,000 over a 50 year life cycle for the combined six operational systems, excluding labor and overhead (\$826,100 excluding equipment). Numerous capital items have already been replaced and the cost absorbed by Watershed Technologies, such as stolen computers, broken pumps, faulty flow and water quality sensors, faulty flow meters, chemical pumps, major pump station repairs and vegetation. Other than major pump or limerock replacement, the costs are generally recaptured in O&M. Sensitivity analysis for the net

discount rate indicates a range from \$1,102,400 at 3% to \$745,600 at 5% (Appendix XX). Calculating future values first and discounting back to the present (as opposed to a net discount rate) results in a difference of approximately \$17,000. The original costs, although incurred between 2010 and 2013, are assumed to occur within the same year for purposes of the rough estimate.

Projected Cost/Benefit Values

As noted above, as the current POR relates to a partial period that was not chronologically continuous, costs could not be reliably tabulated to utilize for the Cost/Benefit calculations. Data is available by quarter, and a split partial period coupled with sites on temporary inactive status would necessitate unreasonable assumptions and rely upon non-representative values. Additionally, previous shortened contract periods did not coincide with the wet season as in the current PORs. *The total current year costs are shown in the cost data by site; however, the Cost/Benefit values are based upon the operating data for Fiscal Year 2016-2017. The Cost/Benefit calculations represent rough approximations based upon various projections; the values will not be included in historically reported data.* Bessey Creek is in the optimization phase, and therefore, a Cost/Benefit was not calculated for the current POR for that site.

The Cost/Benefit calculations are summarized in Figure 94 and Figure 95 for all sites for TP and in Figure 96 for TN removal at Grassy Island, under the Full Capacity Utilization (Scenario #2) using both Amortized Loan (see Calculation Methodologies) plus current O&M and the PV methods. The assumption of full capacity more accurately predicts the Cost/Benefit of the treatment process as the facilities are operated below design capacity. The underutilization is the result of lack of flow availability, facility siting, and construction activities. Detailed schedules follow (Table 9 through Table 18) which present Partial and Full Capacity scenarios, as well as current and projected capacity utilization, expenditures, TP removal, TN removal (at Grassy Island), and Cost/Benefit calculations. Detailed daily operating data for water treated, TP load inflow, TP load outflow, and load reduction by site for the operational facilities is contained in Appendix III through Appendix VIII; comparable data for TN is provided in Appendix X through Appendix XVI. It is important to

note that the Cost/Benefit calculations are based upon extrapolations of 50 year O&M costs. This projection is used to present a reference point for current year operations and does not necessarily provide a reasonable basis for annualizing expenses. Prior year capital expenditures have not been adjusted to current year dollars. The analyses include capital costs plus current period O&M only (Fiscal Year 2016-2017 for current PORs); calculations are forward looking and do not consider prior year O&M expenses. Please refer to the Assumptions and Notes contained herein.

Cost/Benefit calculations using the South Pond TP samples for Lemkin Creek and Wolff Ditch outflow are presented in Figure 95. The inclusion of the South Pond demonstrates a significant improvement in all performance data, with the Cost/Benefit declining for both facilities. As discussed under the Phosphorus Removal Effectiveness Section above, these two facilities were sited primarily to supply needed hydration for the downstream wetland via the South Pond. During construction, Watershed Technologies made several material changes to the South Pond, including weir relocation, elevation adjustments, piping additions, and general maintenance. The SAV community from the dual HWT facilities has expanded into the South pond shallow zone, providing additional filtration. Weekly samples are taken and laboratory analyses are prepared and tabulated, together with inflow measurements to the adjacent wetland. Detailed Cost/Benefit calculations for TP removal for these side-by-side facilities using South Pond outflow data are shown in Table 16 and Table 17.

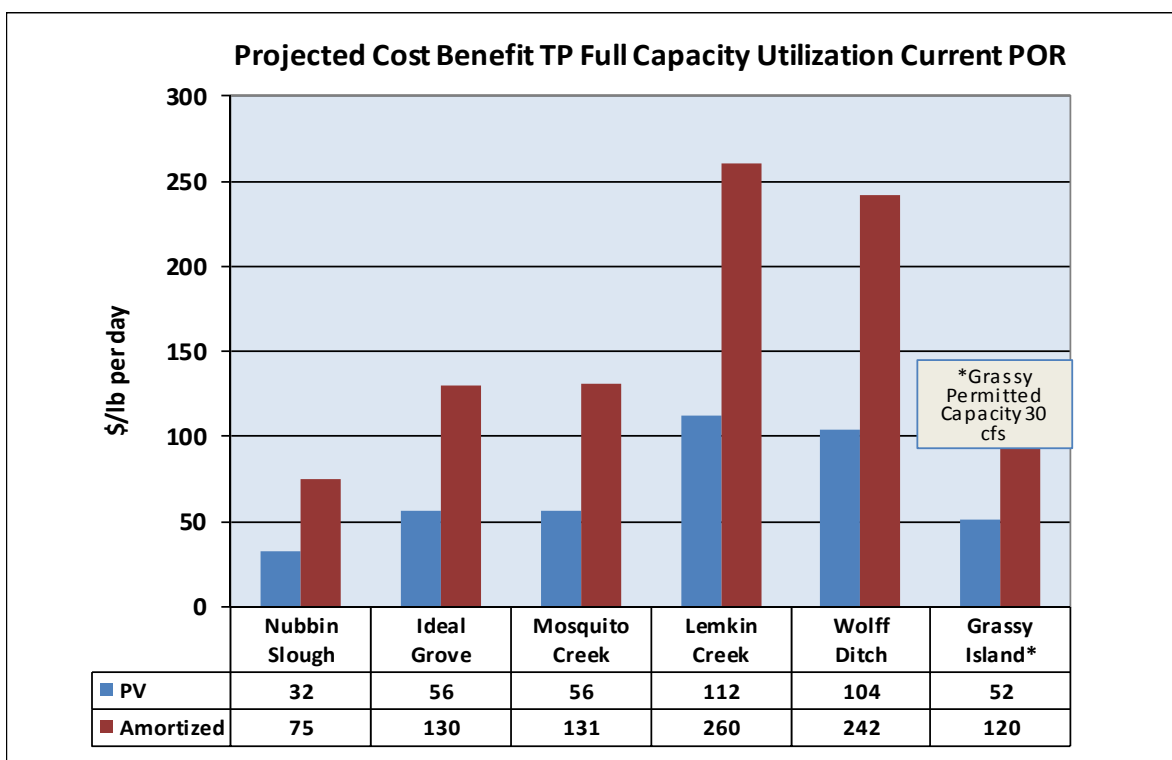


Figure 94. Projected Values Cost/Benefit of TP Full Capacity Present Value & Amortized Loan.

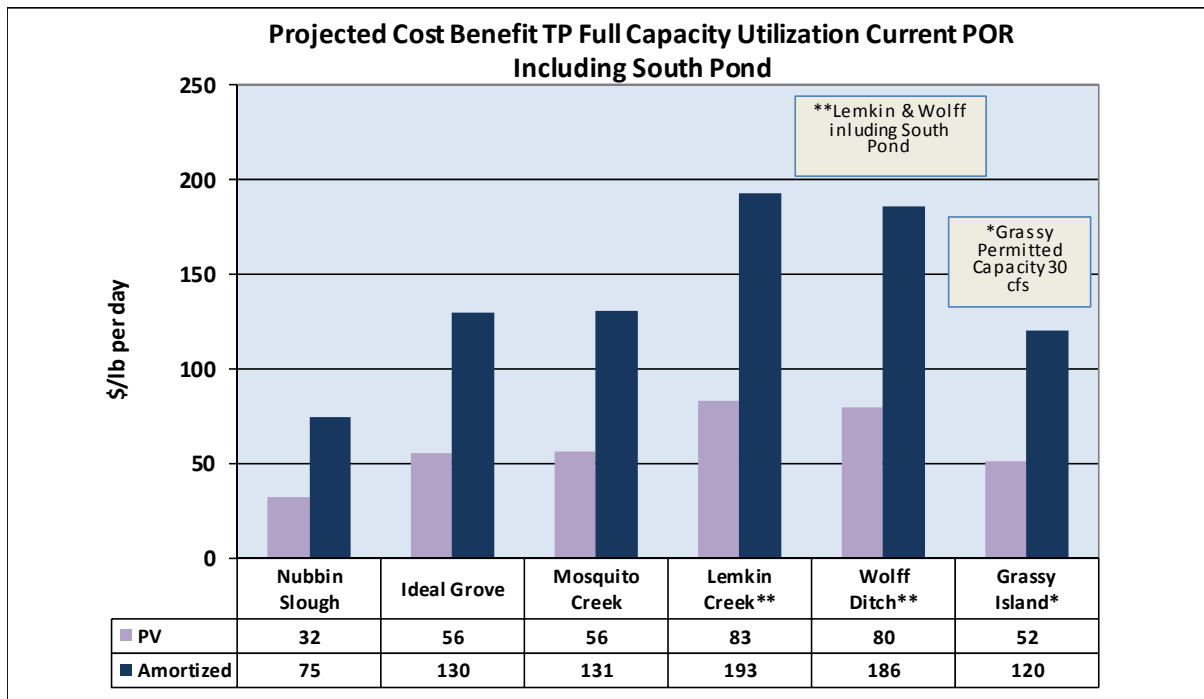


Figure 95. Projected Values Cost/Benefit of TP Full Capacity Present Value & Amortized Loan South Pond Data – Lemkin & Wolff Facilities.

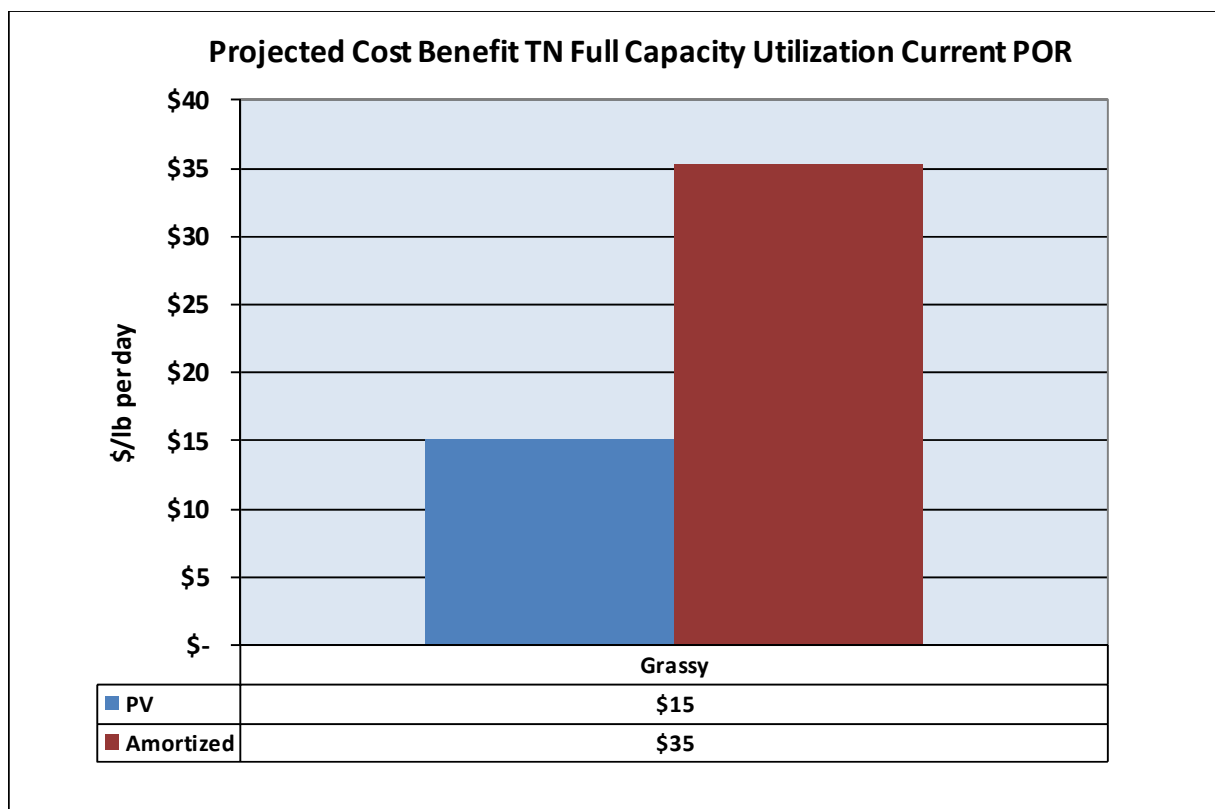


Figure 96. Projected Values Cost/Benefit of TN Full Capacity Present Value & Amortized Loan Grassy Island.

Table 9. TP Cost Benefit Analysis Nubbin Slough Actual & Projected.
(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Nubbin Slough Site 1						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TP Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual P Removal & Costs		Projectd P Removal & Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Design Flow		Based on Design Flow	
		Total	Amortized	Projected	Projected	Projected
		Costs	Loan	Present Value	Amortized Loan	Present Value
Capacity Utilization:						
Actual Average gpm		690.9				
Design Capacity gpm		3321.7				
% of Design Capacity		21%				
Infrastructure (Note 7)						
Infrastructure Period 0		\$ 566,707				
Optimization & Monitoring (Note 1)		164,070				
Total Allocated Capital Period 0		\$ 730,778	\$ 730,778	\$ 730,778	\$ 730,778	\$ 730,778
Unallocated Costs Period 0:						
Optimization & Monitoring (Note 1)		164,070				
Total Period 0		\$ 894,848				
Estimated Life			50	50	50	50
Amortized Capital Period 0			34,018		34,018	
Infrastructure Period 2		\$ 333,554	333,554	333,554	333,554	333,554
Estimated Life			50	50	50	50
Amortized Capital Period 2			15,527		15,527	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			49,681		49,681	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)	\$ 63,348	\$ 63,348	\$ 63,348	\$ 63,348	\$ 304,576	\$ 304,576
O&M Fixed Costs Actual & Projected	201,848	201,848	201,848	201,848	229,178	229,178
Total Operations & Maintenance (Note 3)	\$ 265,196	\$ 265,196	\$ 265,196	\$ 265,196	\$ 533,755	\$ 533,755
Present Worth O&M (Notes 4,10 & 11)				\$ 5,681,421		\$ 11,434,888
Annual Costs & Present Value Actual & Projected			\$ 314,876	\$ 6,745,753	\$ 583,435	\$ 12,499,220
Cost per Day (Notes 5 & 8)			\$ 946	\$ 370	\$ 1,753	\$ 753
P Removal lb/day (Per Data Schedule Appendix)			4.89	4.89	23.51	23.51
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 194	\$ 76	\$ 75	\$ 32

Table 10. TP Cost Benefit Analysis Ideal Grove Actual & Projected.
(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Ideal Grove Site 2						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TP Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization	Full Capacity Utilization		
			Actual P Removal & Costs	Variable/Semi Fixed Costs		
			Capacity & Fixed Costs	All Costs		
			Based on Design Flow	Based on Design Flow		
				Projected	Projected	Projected
		Total	Amortized	Present	Amortized	Present
		Costs	Loan	Value	Loan	Value
Capacity Utilization:						
Actual Average gpm		43.8				
Design Capacity gpm		583.5				
% of Design Capacity		8%				
Infrastructure (Note 7)						
Infrastructure Period 0		\$ 297,523				
Optimization & Monitoring (Note 1)		68,835				
Total Allocated Capital Period 0		\$ 366,358	\$ 366,358	\$ 366,358	\$ 366,358	\$ 366,358
Unallocated Costs Period 0:						
Optimization & Monitoring (Note 1)		68,835				
Total Period 0		\$ 435,193				
Estimated Life			50	50	50	50
Amortized Capital Period 0			17,054		17,054	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			17,101		17,101	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)	\$ 23,740	\$ 23,740	\$ 23,740	\$ 316,377	\$ 316,377	
O&M Fixed Costs Actual & Projected	132,981	132,981	132,981	166,136	166,136	
Total Operations & Maintenance (Note 3)	\$ 156,721	\$ 156,721	\$ 156,721	\$ 482,513	\$ 482,513	
Present Worth O&M (Notes 4,10 & 11)			\$ 3,357,506		\$ 10,337,119	
Annual Costs & Present Value Actual & Projected			\$ 173,822	\$ 3,723,864	\$ 499,614	\$ 10,703,477
Cost per Day (Notes 5 & 8)			\$ 475	\$ 204	\$ 1,365	\$ 586
P Removal lb/day Total (Per Data Schedule Appendix)			0.79	0.79	10.49	10.49
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 604	\$ 259	\$ 130	\$ 56

Table 11. TP Cost Benefit Analysis Mosquito Creek Actual & Projected.
(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Mosquito Creek Site 3						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TP Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual P Removal & Costs		Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Design Flow		Based on Design Flow	
		Total	Amortized	Projected	Projected	Projected
		Costs	Loan	Present Value	Amortized Loan	Present Value
Capacity Utilization:						
Actual Average gpm		845.7				
Design Capacity gpm		2693.3				
% of Design Capacity		31%				
Infrastructure (Note 7)						
Infrastructure Period 0		\$ 1,096,201				
Optimization & Monitoring (Note 1)		176,100				
Total Allocated Capital Period 0		\$ 1,272,300	\$ 1,272,300	\$ 1,272,300	\$ 1,272,300	\$ 1,272,300
Unallocated Costs Period 0:						
Optimization & Monitoring (Note 1)		176,100				
Total Period 0		\$ 1,448,400				
Estimated Life			50	50	50	50
Amortized Capital Period 0			59,226		59,226	
Infrastructure Period 2		\$ 167,718	167,718	167,718	167,718	167,718
Estimated Life			50	50	50	50
Amortized Capital Period 2			7,807		7,807	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			67,217		67,217	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)		\$ 124,532	\$ 124,532	\$ 124,532	\$ 396,590	\$ 396,590
O&M Fixed Costs Actual & Projected		231,536	231,536	231,536	262,360	262,360
Total Operations & Maintenance (Note 3)		\$ 356,068	\$ 356,068	\$ 356,068	\$ 658,951	\$ 658,951
Present Worth O&M (Notes 4,10 & 11)				\$ 7,628,223		\$ 14,117,021
Annual Costs & Present Value Actual & Projected			\$ 423,285	\$ 9,068,242	\$ 726,167	\$ 15,557,040
Cost per Day (Notes 5 & 8)			\$ 1,214	\$ 522	\$ 2,083	\$ 895
P Removal lb/day Total (Per Data Schedule Appendix)			5.00	5.00	15.93	15.93
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 243	\$ 104	\$ 131	\$ 56

Table 12. TP Cost Benefit Analysis Lemkin Creek Actual & Projected.
(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Lemkin Creek Site 5						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TP Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual P Removal & Costs		Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Design Flow		Based on Design Flow	
				Projected	Projected	Projected
		Total	Amortized	Present	Amortized	Present
			Loan	Value	Loan	Value
Capacity Utilization:						
Actual Average gpm		952.2				
Design Capacity gpm		2244.4				
% of Design Capacity		42%				
Infrastructure (Note 7)						
Infrastructure Period 1		\$ 635,973				
Optimization & Monitoring (Note 1)		59,939				
Total Allocated Capital Period 1		\$ 695,911	\$ 695,911	\$ 695,911	\$ 695,911	\$ 695,911
Unallocated Costs Period 1:						
Optimization & Monitoring (Note 1)		59,939				
Total Period 1		\$ 755,850				
Estimated Life			50	50	50	50
Amortized Capital Period 1			32,395		32,395	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			32,484		32,484	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)	\$ 45,646	\$ 45,646	\$ 45,646	\$ 107,592	\$ 107,592	
O&M Fixed Costs Actual & Projected	195,265	195,265	195,265	202,283	202,283	
Total Operations & Maintenance (Note 3)	\$ 240,911	\$ 240,911	\$ 240,911	\$ 309,875	\$ 309,875	
Present Worth O&M (Notes 4,10 & 11)			\$ 5,161,156		\$ 6,638,597	
Annual Costs & Present Value Actual & Projected			\$ 273,395	\$ 5,857,067	\$ 342,358	\$ 7,334,508
Cost per Day (Notes 5 & 8)			\$ 747	\$ 321	\$ 935	\$ 402
P Removal lb/day Total (Per Data Schedule)			1.52	1.52	3.59	3.59
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 490	\$ 211	\$ 260	\$ 112

Table 13. TP Cost Benefit Analysis Wolff Ditch Actual & Projected.
(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Wolff Ditch Site 6						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TP Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual P Removal & Costs		Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Design Flow		Based on Design Flow	
		Total	Amortized Loan	Projected Present Value	Projected Amortized Loan	Projected Present Value
Capacity Utilization:						
Actual Average gpm		2176.0				
Design Capacity gpm		8977.6				
% of Design Capacity		24%				
Infrastructure (Note 7)						
Infrastructure Period 1		\$ 1,036,070				
Optimization & Monitoring (Note 1)		80,360				
Total Allocated Capital Period 1		\$ 1,116,430	\$ 1,116,430	\$ 1,116,430	\$ 1,116,430	\$ 1,116,430
Unallocated Costs Period 1: Optimization & Monitoring (Note 1)		80,360				
Total Period 1		\$ 1,196,790				
Estimated Life			50	50	50	50
Amortized Capital Period 1			51,970		51,970	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			52,112		52,112	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)		\$ 80,840	\$ 80,840	\$ 80,840	\$ 333,517	\$ 333,517
O&M Fixed Costs Actual & Projected		249,226	249,226	249,226	277,855	277,855
Total Operations & Maintenance (Note 3)		\$ 330,067	\$ 330,067	\$ 330,067	\$ 611,372	\$ 611,372
Present Worth O&M (Notes 4,10 & 11)				\$ 7,071,180		\$ 13,097,716
Annual Costs & Present Value Actual & Projected			\$ 382,179	\$ 8,187,610	\$ 663,484	\$ 14,214,146
Cost per Day (Notes 5 & 8)			\$ 1,096	\$ 471	\$ 1,903	\$ 818
P Removal lb/day Total (Per Data Schedule)			1.91	1.91	7.86	7.86
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 575	\$ 247	\$ 242	\$ 104

Table 14. TP Cost Benefit Analysis Grassy Island Actual & Projected.
(See Notes & Assumptions).

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Grassy Island Site 7						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TP Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual P Removal & Costs		Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Permitted Flow		Based on Design Flow	
		Total	Amortized Loan	Projected Present Value	Projected Amortized Loan	Projected Present Value
Capacity Utilization:						
Actual Average gpm		6003.2				
Design Capacity gpm		13466.4				
% of Design Capacity		45%				
Infrastructure (Note 7)						
Infrastructure Periods 2 & 3		\$ 1,549,557				
Optimization & Monitoring (Note 1)		235,583				
Total Allocated Capital Periods 2 & 3		\$ 1,785,140	\$ 1,785,140	\$ 1,785,140	\$ 1,785,140	\$ 1,785,140
Unallocated Costs Period 1: Optimization & Monitoring (Note 1)		494,705				
Total Periods 2 & 3		\$ 2,279,845				
Estimated Life			50	50	50	50
% Days @ Permitted Capacity			100%	100%	100%	100%
Capital Periods 2 & 3			83,099	1,785,140	83,099	1,785,140
Infrastructure Period 4		\$ 1,491,780	1,491,780	1,491,780	1,491,780	1,491,780
Estimated Life			50	50	50	50
% Days @ Permitted Capacity			100%	100%	100%	100%
Capital Period 4			69,443	1,491,780	69,443	1,491,780
Infrastructure Period 5		\$ 2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Estimated Life			50	50	50	50
% Days @ Permitted Capacity			100%	100%	100%	100%
Capital Period 5			93,100	2,000,000	93,100	2,000,000
Amortized Capital Current Period			246,315		246,315	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)	\$ 902,573	\$ 902,573	\$ 902,573	\$ 902,573	\$ 2,024,659	\$ 2,024,659
O&M Fixed Costs Actual & Projected	880,368	880,368	880,368	880,368	1,007,499	1,007,499
Total Operations & Maintenance (Note 3)	\$ 1,782,941	\$ 1,782,941	\$ 1,782,941	\$ 1,782,941	\$ 3,032,158	\$ 3,032,158
Present Worth O&M (Notes 4,10 & 11)				\$ 38,196,816		\$ 64,959,417
Annual Costs & Present Value Actual & Projected						
			\$ 2,029,256	\$ 43,473,737	\$ 3,278,473	\$ 70,236,338
Cost per Day (Notes 5 & 8)						
			\$ 7,263	\$ 2,382	\$ 8,958	\$ 3,849
P Removal lb/day Total (Per Data Schedule)						
			33.25	33.25	74.58	74.58
Cost/Benefit \$/lb. (Days in Period Flow > 0)						
			\$ 218	\$ 72	\$ 120	\$ 52

Table 15. Actual & Projected Costs Sites 1-10 Fiscal 2016-2017.
(See Notes & Assumptions)

Operations & Maintenance Current Period	
O&M Variable Costs Actual & Projected	\$ 4,214,560
O&M Fixed Costs Actual & Projected	\$ 4,585,440
Total Operations & Maintenance	\$ 8,800,000
Total O&M = Contract Amount O&M	

Table 16. TP Cost Benefit Analysis Lemkin Creek South Pond Outflow Actual & Projected.
(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Lemkin Creek Site 5 South Pond						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TP Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual P Removal & Costs		Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Design Flow		Based on Design Flow	
				Projected	Projected	Projected
		Total	Amortized	Present	Amortized	Present
			Loan	Value	Loan	Value
Capacity Utilization:						
Actual Average gpm		952.2				
Design Capacity gpm		2244.4				
% of Design Capacity		42%				
Infrastructure (Note 7)						
Infrastructure Period 1		\$ 635,973				
Optimization & Monitoring (Note 1)		59,939				
Total Allocated Capital Period 1		\$ 695,911	\$ 695,911	\$ 695,911	\$ 695,911	\$ 695,911
Unallocated Costs Period 1:						
Optimization & Monitoring (Note 1)		59,939				
Total Period 1		\$ 755,850				
Estimated Life			50	50	50	50
Amortized Capital Period 1			32,395		32,395	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			32,484		32,484	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)		\$ 45,646	\$ 45,646	\$ 45,646	\$ 107,592	\$ 107,592
O&M Fixed Costs Actual & Projected		195,265	195,265	195,265	202,283	202,283
Total Operations & Maintenance (Note 3)		\$ 240,911	\$ 240,911	\$ 240,911	\$ 309,875	\$ 309,875
Present Worth O&M (Notes 4,10 & 11)				\$ 5,161,156		\$ 6,638,597
Annual Costs & Present Value Actual & Projected			\$ 273,395	\$ 5,857,067	\$ 342,358	\$ 7,334,508
Cost per Day (Notes 5 & 8)			\$ 747	\$ 321	\$ 935	\$ 402
P Removal lb/day Total (Per Data Schedule)			2.05	2.05	4.84	4.84
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 364	\$ 156	\$ 193	\$ 83

Table 17. TP Cost Benefit Analysis Wolff Ditch South Pond Outflow Actual & Projected.
(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Wolff Ditch Site 6 South Pond						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TP Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual P Removal & Costs		Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Design Flow		Based on Design Flow	
				Projected	Projected	Projected
		Total	Amortized	Present	Amortized	Present
			Loan	Value	Loan	Value
Capacity Utilization:						
Actual Average gpm		2176.0				
Design Capacity gpm		8977.6				
% of Design Capacity		24%				
Infrastructure (Note 7)						
Infrastructure Period 1		\$ 1,036,070				
Optimization & Monitoring (Note 1)		80,360				
Total Allocated Capital Period 1		\$ 1,116,430	\$ 1,116,430	\$ 1,116,430	\$ 1,116,430	\$ 1,116,430
Unallocated Costs Period 1:						
Optimization & Monitoring (Note 1)		80,360				
Total Period 1		\$ 1,196,790				
Estimated Life			50	50	50	50
Amortized Capital Period 1			51,970		51,970	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			52,112		52,112	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)	\$ 80,840	\$ 80,840	\$ 80,840	\$ 80,840	\$ 333,517	\$ 333,517
O&M Fixed Costs Actual & Projected	249,226	249,226	249,226	249,226	277,855	277,855
Total Operations & Maintenance (Note 3)	\$ 330,067	\$ 330,067	\$ 330,067	\$ 330,067	\$ 611,372	\$ 611,372
Present Worth O&M (Notes 4,10 & 11)				\$ 7,071,180		\$ 13,097,716
Annual Costs & Present Value Actual & Projected			\$ 382,179	\$ 8,187,610	\$ 663,484	\$ 14,214,146
Cost per Day (Notes 5 & 8)			\$ 1,096	\$ 471	\$ 1,903	\$ 818
P Removal lb/day Total (Per Data Schedule)			2.36	2.36	9.74	9.74
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 442	\$ 190	\$ 186	\$ 80

Table 18. TN Cost Benefit Analysis Grassy Island Actual & Projected.
(See Notes and Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Grassy Island Site 7						
O&M Costs Period:	7/1/2015	through	6/30/2016			
TN Data Period	7/1/2015	through	6/30/2016			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual N Removal & Costs		Projectd N Removal & Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Permitted Flow		Based on Design Flow	
		Total	Amortized Loan	Projected Present Value	Projected Amortized Loan	Projected Present Value
Capacity Utilization:						
Actual Average gpm		6003.2				
Design Capacity gpm		13466.4				
% of Design Capacity		45%				
Infrastructure (Note 7)						
Infrastructure Periods 2 & 3		\$ 1,549,557				
Optimization & Monitoring (Note 1)		235,583				
Total Allocated Capital Periods 2 & 3		\$ 1,785,140	\$ 1,785,140	\$ 1,785,140	\$ 1,785,140	\$ 1,785,140
Unallocated Costs Period 1: Optimization & Monitoring (Note 1)		494,705				
Total Periods 2 & 3		\$ 2,279,845				
Estimated Life			50	50	50	50
% Days @ Permitted Capacity			100%	100%	100%	100%
Capital Periods 2 & 3			83,099	1,785,140	83,099	1,785,140
Infrastructure Period 4		\$ 1,491,780	1,491,780	1,491,780	1,491,780	1,491,780
Estimated Life			50	50	50	50
% Days @ Permitted Capacity			100%	100%	100%	100%
Capital Period 4			69,443	1,491,780	69,443	1,491,780
Infrastructure Period 5		\$ 2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Estimated Life			50	50	50	50
% Days @ Permitted Capacity			0%	0%	100%	100%
Capital Period 5			0	0	93,100	2,000,000
Amortized Capital Current Period			152,959		246,315	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)	\$ 902,573	\$ 902,573	\$ 902,573	\$ 902,573	\$ 2,024,659	\$ 2,024,659
O&M Fixed Costs Actual & Projected	880,368	880,368	880,368	880,368	1,007,499	1,007,499
Total Operations & Maintenance (Note 3)	\$ 1,782,941	\$ 1,782,941	\$ 1,782,941	\$ 1,782,941	\$ 3,032,158	\$ 3,032,158
Present Worth O&M (Notes 4,10 & 11)				\$ 38,196,816		\$ 64,959,417
Annual Costs & Present Value Actual & Projected			\$ 1,935,900	\$ 41,473,737	\$ 3,278,473	\$ 70,236,338
Cost per Day (Notes 5 & 8)			\$ 6,929	\$ 2,273	\$ 8,958	\$ 3,849
N Removal lb/day Total (Per Data Schedule)			113.3	113.3	254.1	254.1
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 47	\$ 20	\$ 35	\$ 15

Notes (See Chapter II discussions regarding methodologies & other assumptions):						
1. Optimization & Monitoring Costs have been allocated to Capital based as follows:						
System 1-3, 5-6: 50% during initial start-up; System 7: 100% of Period 2; Period 3 Optimization treated as O&M expense;						
Systems 1,2,3-7 2015 Operational Improvements included in Fixed Costs - not capitalized; Site 8 excluded - Optimization Phase.						
2. Variable Costs include those costs primarily related to flow including chemicals, utilities, drydown, tilling, floc management.						
3. Outstanding expenses as of Report submission date estimated and included in the analysis.						
4. PV Calculated at Net discount rate of 4% Life 50						
5. Amortized Capital + O&M = Total Costs Actual to Date + Projected / # Days in Expense Period; Capital costs are considered to be a loan payment and therefore adjusted for the cost of money or internal rate of return; O&M are current year dollars.						
Present Value = Present Worth / Estimated Life / 365 days per year						
6. Days in Period:	Nubbin Slough	Ideal Grove	Mosquito Creek	Lemkin Creek	Wolff Ditch	Grassy Island
# Days in Expense Period	366	366	366	366	366	366
# Days in Flow Period	366	366	366	366	366	366
# Days On-Line Flow > 0.0000	169	160	176	183	176	191
# Days in Period Flow > 0.0000	169	160	177	183	176	191
See Text for explanation.						
7. Excludes land costs; these costs are relatively minor for HWTT & estimates are beyond scope of project.						
Replacement costs and salvage values not included in the analysis; supplemental Appendix provided.						
8. Per day amounts are used to standardize for the differences in contract days vs. operational days.						
9. Excludes social and other benefits which have been included in some previous reports and can be significant.						
10. Prior year Capital expenditures have not been adjusted to current year dollars. Analysis includes Capital costs plus current period O&M only; calculations are forward looking and do not consider prior year O&M costs.						
11. O&M expenses have been extrapolated for a 365 day period.						
12. Assumes Contract 018907 improvements for Grassy relate to 10 cfs.						
* The Amortized Loan Method has been revised to reflect the cost of capital for capital improvements. (See Note 5)						

Cost/Benefit Comparisons

Comparative TP Cost/Benefit calculations across periods are shown graphically in Figure 97 through Figure 100 and *represent projections only based upon Fiscal Year 2016-2017*. (The Amortized Loan methodology has replaced the previous straight-line amortization commencing with Period 4.) The current period Present Value Cost/Benefit values (in dollars per pound TP removed) under Full Capacity Utilization (Scenario #2 above) for Nubbin Slough, Ideal Grove, Mosquito Creek, Lemkin Creek, Wolff Ditch and Grassy Island, respectively, are \$32, \$56, \$56, \$112, \$104, and \$52 (values were \$24, \$79, \$58, \$234, \$95, and \$71 for Period 7); values for Lemkin Creek and Wolff Ditch South Pond are \$83 and \$80, respectively. The current period Amortized Loan plus current O&M are \$75, \$130, \$131, \$260, \$242 and \$120 (values were 55, \$183, \$134, \$546, \$222 and \$164 for Period 7); values for Lemkin Creek and Wolff Ditch South Pond are \$193 and \$186, respectively. The present value method is one of the standard methods of comparing projects for decision-making purposes. Lemkin Creek and Wolff Ditch commenced operations during Period 2; Grassy construction for Phase I – III occurred during Period 3 - 5.

The TP Cost/Benefit values are higher under Partial Capacity Utilization (Scenario #1 above), which does not account for the aforementioned factors contributing to lower utilization of the facilities. Desktop studies generally calculate projections under more favorable operating conditions, where greater benefits can accrue from use of the treatment process as fixed costs are “amortized” over a significantly large number of “benefit” units of TP removed. The resulting lower per unit costs are due to economies of scale wherein the treatment capacity is closer to full utilization. The current period Present Value Cost/Benefit values (in dollars per pound TP removed) under Partial Capacity Utilization based upon Fiscal Year 2016-2017 due to the split partial PORs, for Nubbin Slough, Ideal Grove, Mosquito Creek, Lemkin Creek and Wolff Ditch, and Grassy Island, respectively, are \$76, \$259, \$104, \$211, \$247, and \$72 (values were \$69, \$386, \$116, \$440, \$403, and \$142 for Period 7); values for Lemkin Creek and Wolff Ditch South Pond are \$156 and \$190, respectively. The current period Amortized Loan Cost/Benefit values are \$194, \$604, \$243, \$490, \$575, and \$218 (values were \$160, \$899, \$270, \$1,025,

\$938, and \$331 for Period 7); values for Lemkin Creek and Wolff Ditch South Pond are \$364 and \$442, respectively.

Cost/Benefit calculations per lb. of N removed was calculated for Grassy Island under the same assumptions as TP for the current POR (historical data has not been tabulated). The values under Full Capacity Utilization are \$15 for the Present Value methodology and \$35 for the Amortized Loan; values under Partial Capacity Utilization are \$20 for the Present Value methodology and \$47 for the Amortized Loan (Figure 96).

HWTT Horizontal and Vertical Analyses

Changes in Cost/Benefit values are a function of several variables, with the most relevant being TP and TN inflow levels, costs, flow, capacity utilization, P or N removal rates, water quality conditions, capital improvements, and site conditions. Although a detailed analysis must consider all of these factors and their interrelationships, certain trends can be identified. Horizontal (period to period) and vertical (across sites) analyses for HWTT are somewhat hindered by variances in length of the cycles and down-time for expansions, as noted on the graphs, and large differences in site conditions. (A summary of Projected Present Value Cost/Benefit calculations under Full Capacity Utilization and other key operating parameters are included in Table 1.) The following references to Cost/Benefit relate to the Full Capacity Cost/Benefit Calculations under the Present Value Method (Amortized Loan commenced in Year 4). The initial year (Period 1) included trials and demonstration projects requested by the SFWMD for Sites 1-3. Ideal Grove was also segmented into two separate flow paths and Mosquito Creek was divided into large and small ponds, making a reasonable collection of data invalid. *The following analysis is based upon the prior contract period; the current calculations are presented but excluded from the discussion as they relate to a partial period.*

Nubbin Slough Cost/Benefit values have ranged from a high of \$72 to a prior year low of \$24, which is the lowest value to date. Average P removal has varied from 91% to 69%. A moderate decline in the prior year costs coupled with a 90% increase in the quantity of P removed over the prior year contributed to the reduction in cost per unit. During the prior period, there was a 25% increase in flow at Nubbin and a 26% increase in TP FWM inflow concentration levels to 1,011 µg/L. The latter represented the highest for both Nubbin Slough and for all systems for all operating periods. The increased flow and elevated P levels resulted in effective treatment capabilities. The average effective dosing of alum for the current period was 14.7 versus 15.6 for the prior period.

Average P reduction has been significant and relatively consistent over the previous five periods at Ideal Grove (ranging from 96% to 86%), while Costs/Benefit values have varied

from \$191 to \$67. While P levels and performance remain high compared to the other HWTT facilities, flow availability at this site is low.

Mosquito Creek exhibited a substantial decrease in the Cost/Benefit ratio during the prior POR, as costs declined and the quantity of P removed increased to its highest level. The TP FWM inflow concentration remained high at 621 µg/L, compared to a low of 345 µg/L in Period 1. TP removal, however, remained relatively high and consistent for the site at 77%. The facility has the third highest TP FWM inflow concentrations among the sites. Mosquito was taken off-line for approximately 30 days during the latter part of the prior POR due to floc removal and installation of operational improvements.

Although the quantity of P removed for the POR increased by approximately 50% for Lemkin Creek, the Cost/Benefit values increased over the prior low; however, the metric remained below its historical level. The primary influence on the Cost/Benefit calculation during the last contract was additional costs resulting mainly from operational improvements (items not capitalized) and laboratory fees associated with new regulatory requirements. Wolff Ditch Cost/Benefit values declined significantly, primarily due to an increase in the quantity of P removed. While laboratory costs and operational improvements were greater during the prior POR at the site, the regulatory issues were not as significant as with Lemkin Creek. The Cost/Benefit at these side-by-side facilities is impacted by the treatment utilization. The basis for the size of both Lemkin Creek and Wolff Ditch was inclusion of flow resulting from the planned improvements by Okeechobee City to increase their stormwater drainage. The project would utilize the District's property on the eastern side of Wolff Ditch. The additional capacity at Lemkin/Wolff was needed to accommodate treatment of the additional stormwater, per SFWMD recommendations. The capacity and design were reviewed and approved by the District, which was a proponent to capture peak flows. Wolff Ditch has operated at a maximum of 11 cfs of the 20 cfs available capacity since operations commenced. Using the South Pond outflow TP values for the two facilities, the current Cost/Benefit improves significantly.

Grassy Island has a low Cost/Benefit ratio, mainly resulting from comparatively high flow and moderately high TP levels. Prior year costs also increased from operational

improvements that were not capitalized, while TP concentration inflow declined. For Grassy Island (and all systems), both Periods 3 and 4 were partial periods, which can impact performance depending on wet and dry seasons. Construction and associated downtime has also been an important factor at Grassy Island, affecting availability for treatment and performance.

In the prior POR, Cost/Benefit values under Partial Capacity utilization decreased at Nubbin Slough, Mosquito Creek, and Wolff Ditch, and increased at the other facilities, for both the PV and Amortized Loan methodologies. The causative factors discussed above apply.

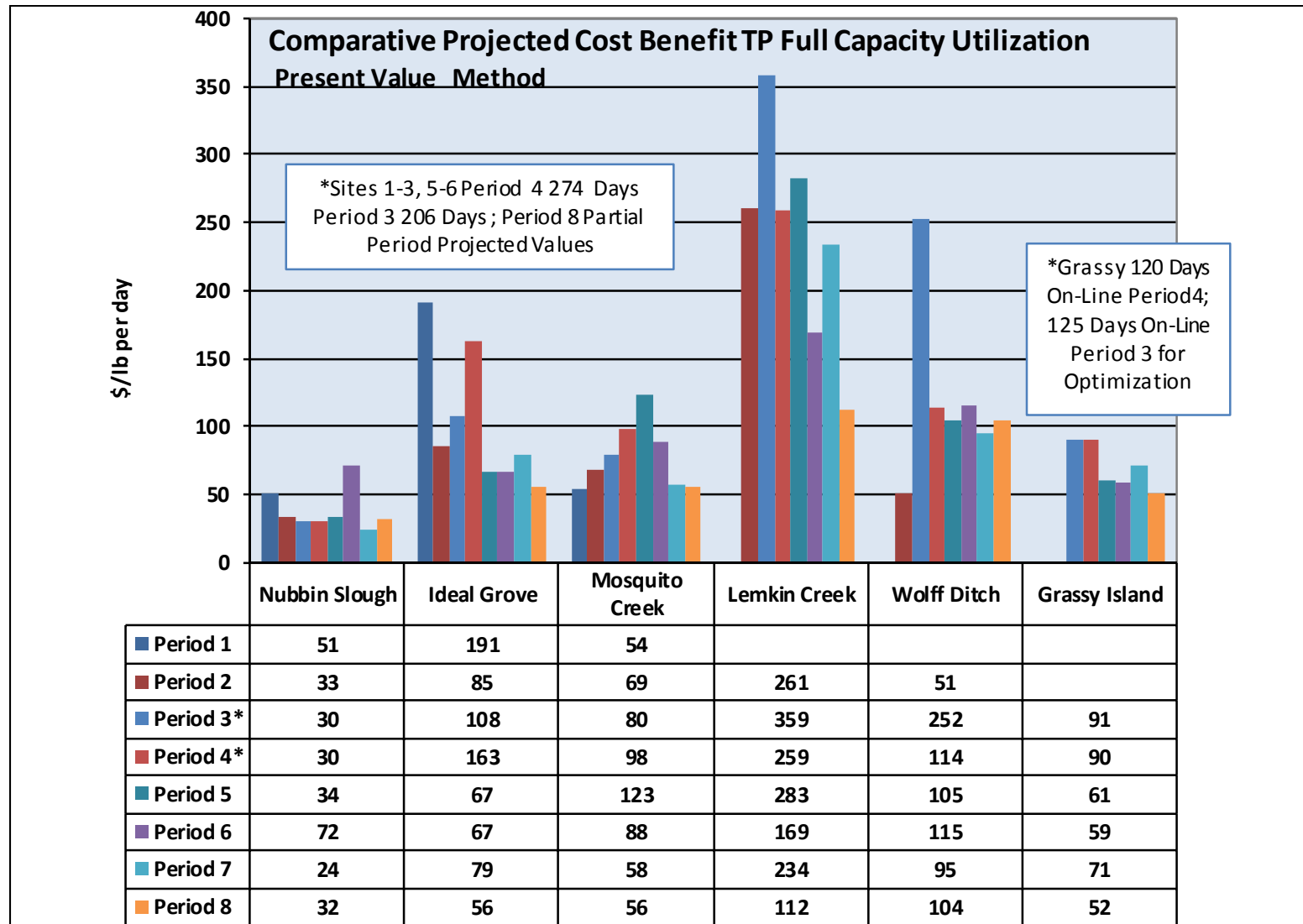


Figure 97. Comparative Projected Cost Benefit Full Capacity Present Value - Period 8 Projected.

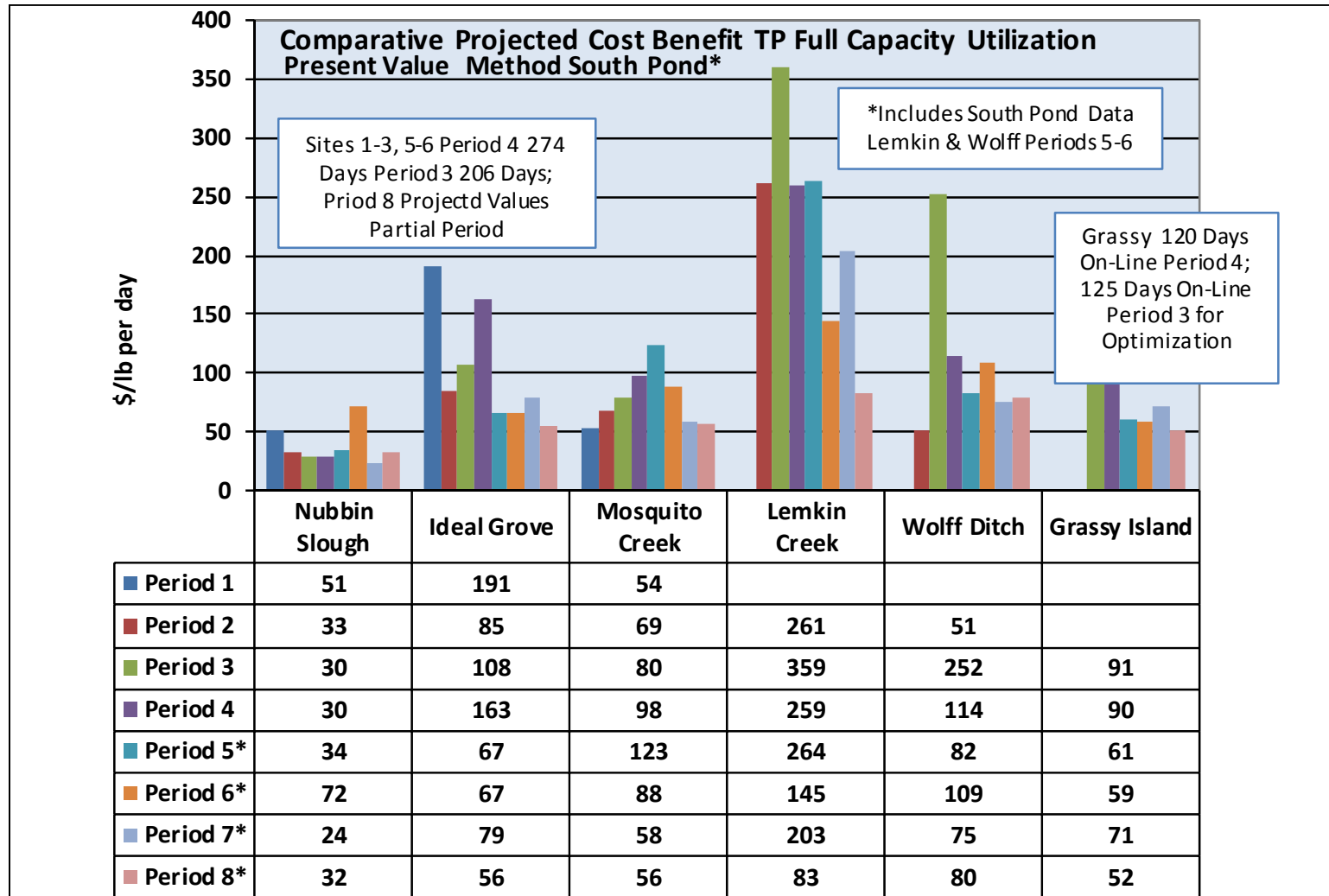


Figure 98. Comparative Projected Cost Benefit Full Capacity Present Value South Pond – Period 8 Projected.

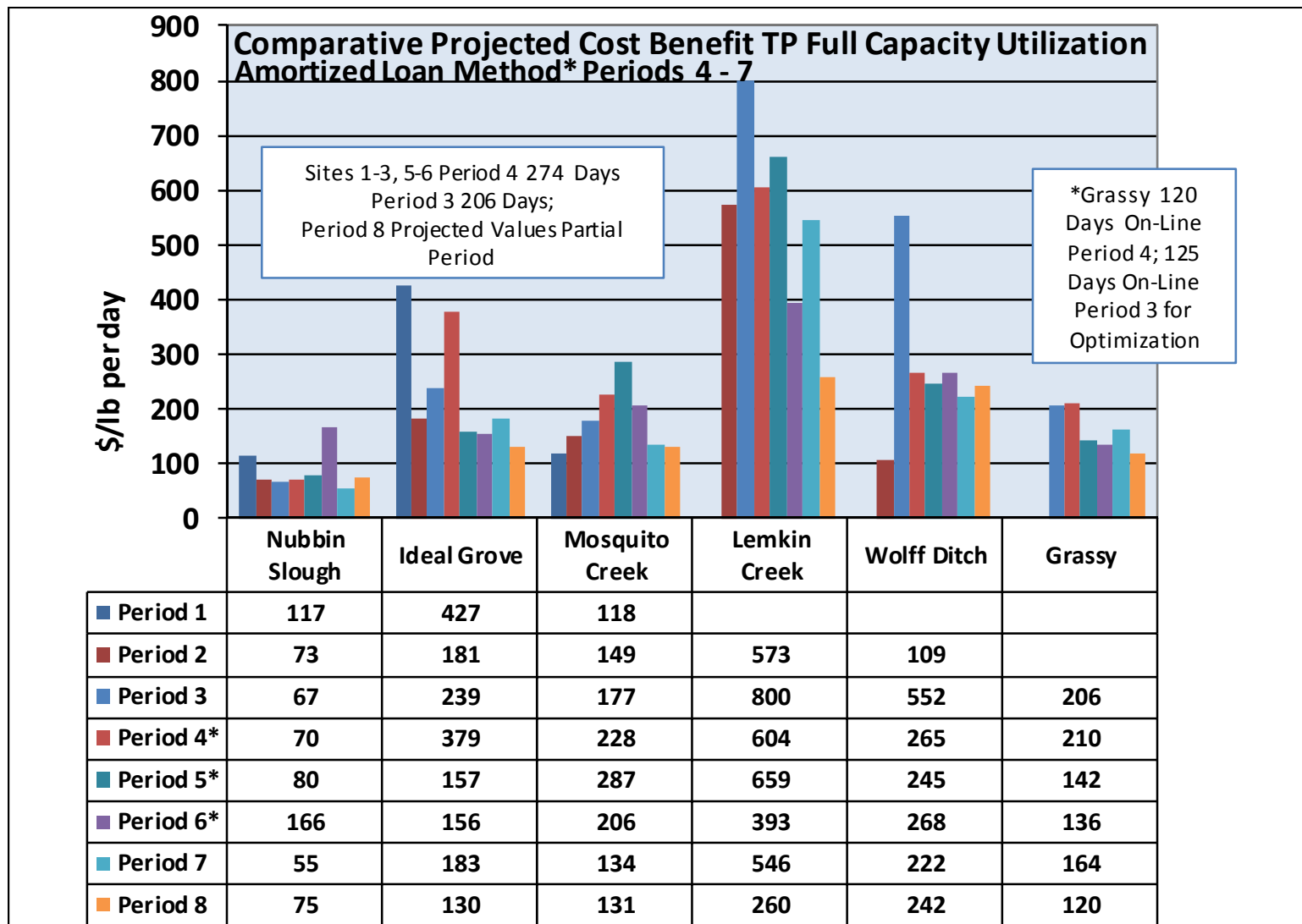


Figure 99. Comparative Projected Cost Benefit Full Capacity Amortized Loan – Period 8 Projected.

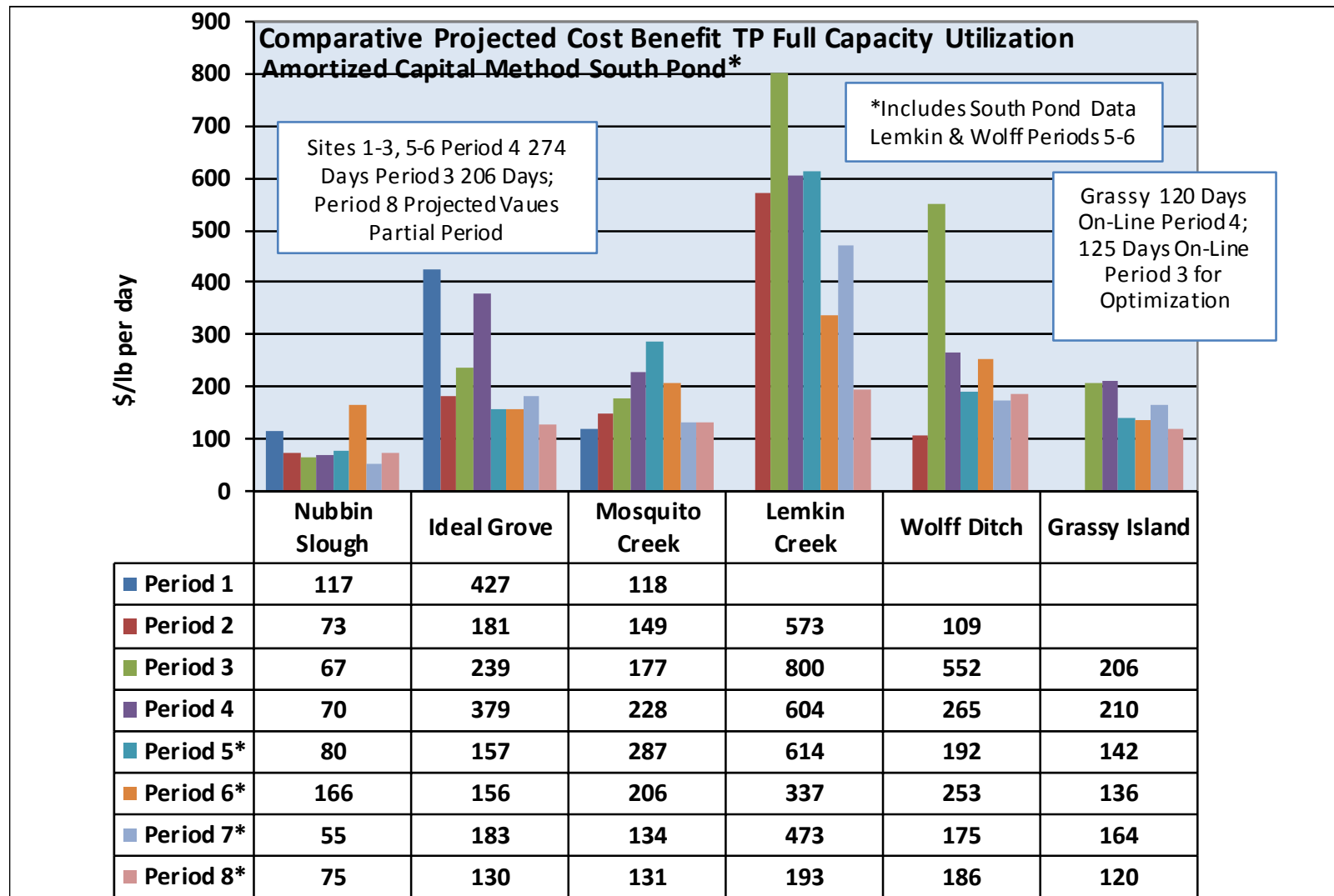


Figure 100. Comparative Projected Cost Benefit Full Capacity Amortized Loan South Pond - Period 8 Projected.

Examples of the significance of key parameters and comparisons to Cost/Benefit values are demonstrated in Figure 101 and Figure 102. The data indicates that elevated levels of TP are generally inversely related to Cost/Benefit values. Additionally, as more P is available to treat, the per unit fixed costs decrease resulting in a lower Cost/Benefit, all other factors remaining constant.

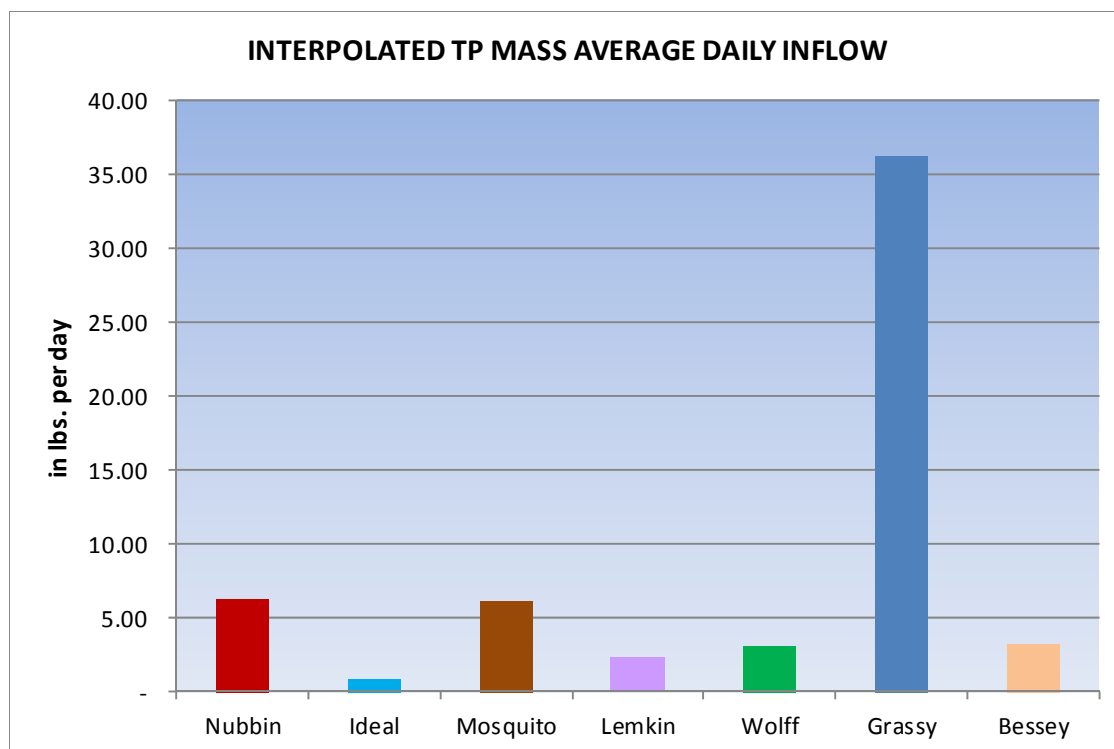


Figure 101. Average Daily TP Mass Inflow Levels by Site.

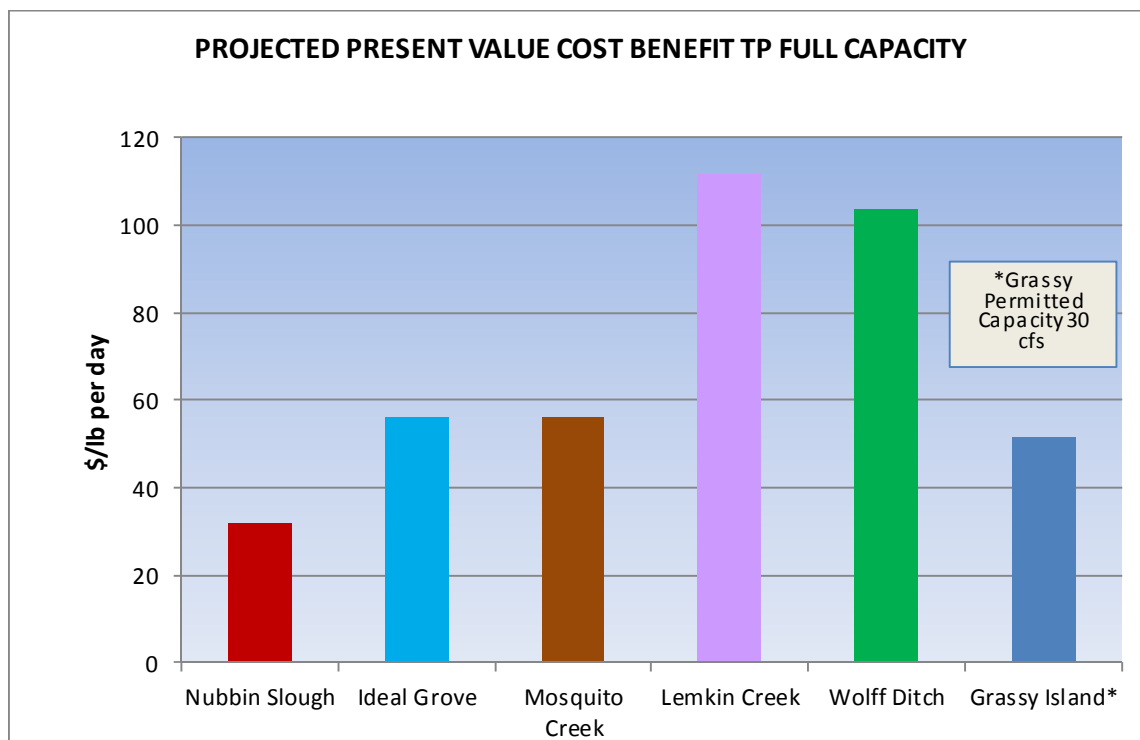


Figure 102. Projected Cost/Benefit by Site PV based on Full Capacity Utilization – Period 8 Projected.

Comparisons - St. Lucie and Martin Counties

In a report prepared by Hazen and Sawyer (Hazen and Sawyer, 2014), Cost/Benefit values were presented for water remediation projects in St. Lucie and Martin Counties for TP, TN, and TP and TN combined. *The following analysis is taken from the previous contract, as current year Cost/Benefit calculations will not be incorporated into the data set for system performance.*

Values for the HWTT systems are considerably lower for all measurements, which include median and high and low calculations. The HWTT metric used for comparisons with the Hazen and Sawyer Report is the Partial Capacity Amortized Loan methodology. (Note that the Wetland, chemical treatment category in the referenced Hazen and Sawyer report included one entry, which was Ideal Grove; therefore, this category was not used for comparison purposes.)

The median cost per lb. of TP removed across all types of systems in the Hazen and Sawyer Report was \$952, compared to a median cost for the HWTT projects (Sites 1-3, 5-7) of \$535. For wet detention with alum injection projects, the cost per lb. of TP ranged from a high of \$2,950 to a low of \$488, compared to a range of \$899 to \$160 for all HWTT sites (Figure 103).

The median cost per lb. of TN removed across all types of systems in the Hazen and Sawyer Report was \$327, compared to a median cost for the HWTT Grassy Island (only site with Cost/Benefit calculation) of \$97. For wet detention with alum injection projects, the cost per lb. of TN ranged from a high of \$1,217 to a low of \$187, compared to \$97 for the HWTT Grassy Island (Figure 104).

The median cost per lb. of TP and TN removed across all types of systems in the Hazen and Sawyer Report was \$240, compared to a median cost for the HWTT Grassy Island (only site with Cost/Benefit calculation) of \$75. For wet detention with alum injection projects, the cost per lb. of TN ranged from a high of \$862 to a low of \$126, compared to \$75 for the HWTT Grassy Island (Figure 105).

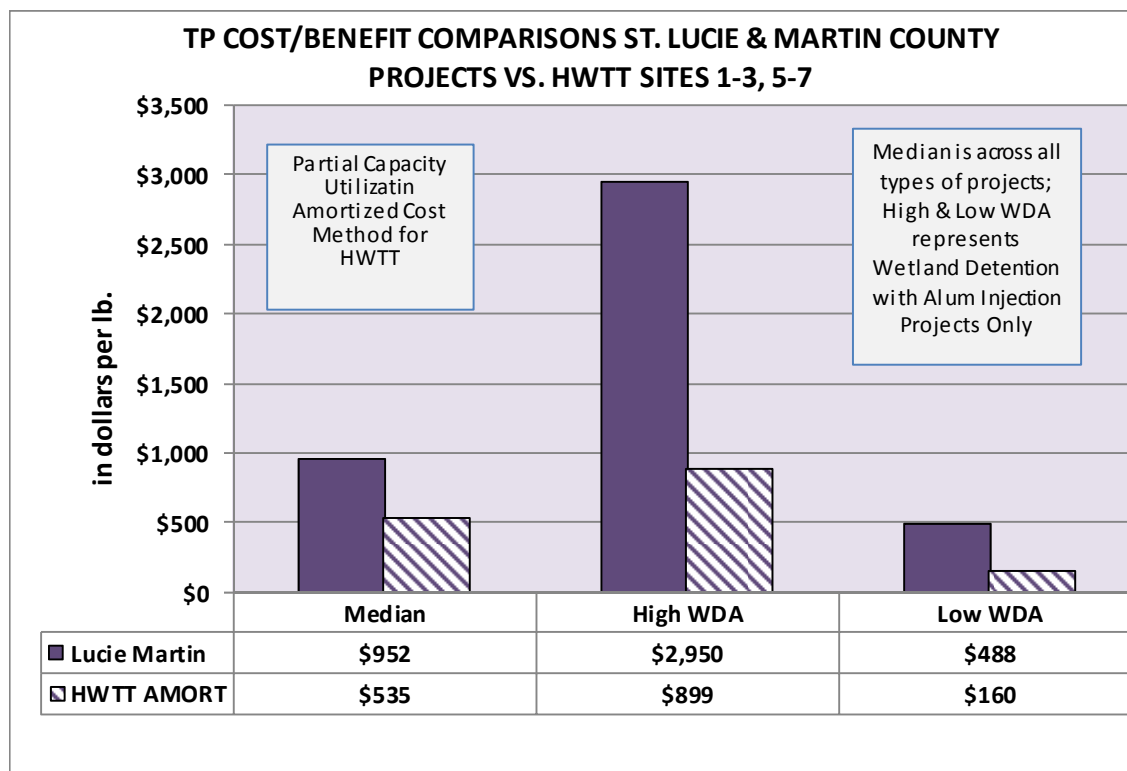


Figure 103. TP Cost/Benefit St. Lucie & Martin County Projects vs. HWTT Facilities previous POR.

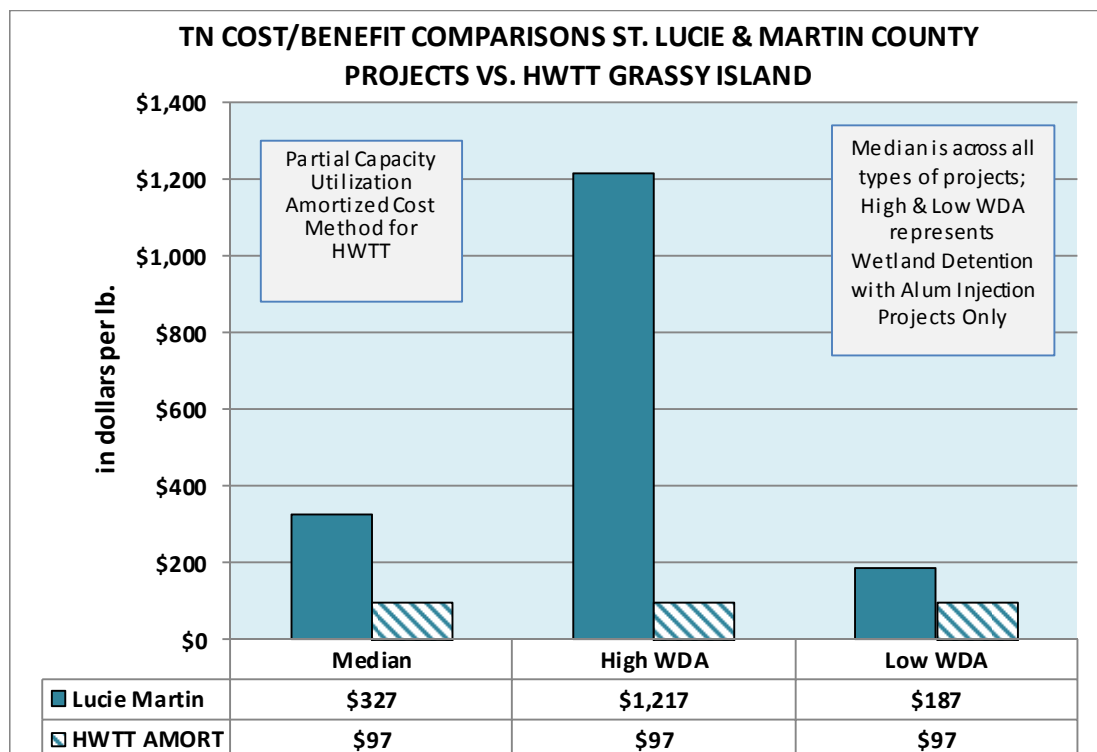


Figure 104. TN Cost/Benefit St. Lucie & Martin County Projects vs. HWTT Grassy Island previous POR.

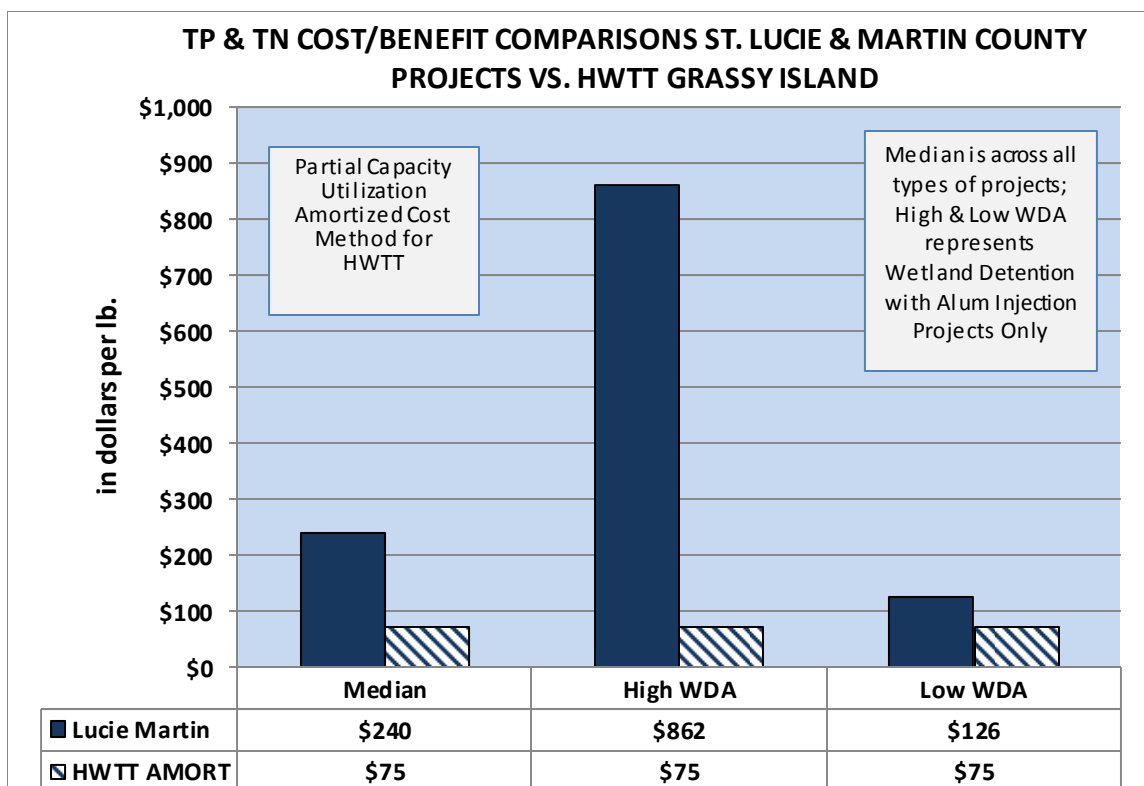


Figure 105. TP & TN Cost/Benefit St. Lucie & Martin County Projects vs. HWTT Grassy Island previous POR.

Cost Avoidance Lemkin Creek & Wolff Ditch

The Lemkin Creek and Wolff Ditch site locations were chosen primarily to hydrate approximately 33 acres of wetlands situated downstream of the facilities. The TP levels at both Lemkin and Wolff are significantly below the other sites, and flows are not available as anticipated (see discussion above). The combination of these factors produces higher Cost/Benefit values as there are fewer “benefit units”, i.e., lbs. of TP, over which to allocate fixed costs. *The following analysis is taken from the previous contract, as current year Cost/Benefit calculations will not be incorporated into the data set for system performance.*

To recognize the economic value of providing needed water to the downstream wetlands, the cost avoidance of restoring the subject wetlands has been estimated, and the Cost/Benefit values have been recalculated accordingly. While the appropriateness of inclusion of cost avoidance, cost savings, and opportunity costs within Cost/Benefit calculations is well recognized (Carter-Finn, et al, 2006), it is more difficult to determine a valuation. The economic savings attributed to the wetland hydration has been valued using the cost per acre of purchasing one mitigation credit times the number of acres within the wetland, the total then allocated to Lemkin Creek and Wolff Ditch based on the respective capacities. The mitigation credit is based upon the quoted Bluefield Ranch Mitigation price of \$95,000 as of November 20, 2014 and 33 acres (per SFWMD) for a total of \$3,135,000. All other costs associated with attaining the credit and associated compliance issues have been excluded. The resulting value was capitalized as a cost avoidance (i.e., cost savings), thereby reducing the investment in the facility, and amortized over the life of the project. The revised Cost/Benefit values for Lemkin Creek and Wolff Ditch with and without the cost avoidance (both sets using South Pond outflow) are shown in Figure 106; the Cost/Benefit comparisons for all sites reflecting the updated values are presented in Figure 107; and the detailed calculation schedules are provided in Table 19 and Table 20. The Cost/Benefit valuations before and after the cost savings were: Present Value method - \$203 versus \$191 for Lemkin Creek and \$75 versus \$65 for Wolff Ditch; and Amortized Cost method - \$473 versus \$445 for Lemkin Creek and \$175 versus \$150 for Wolff Ditch.

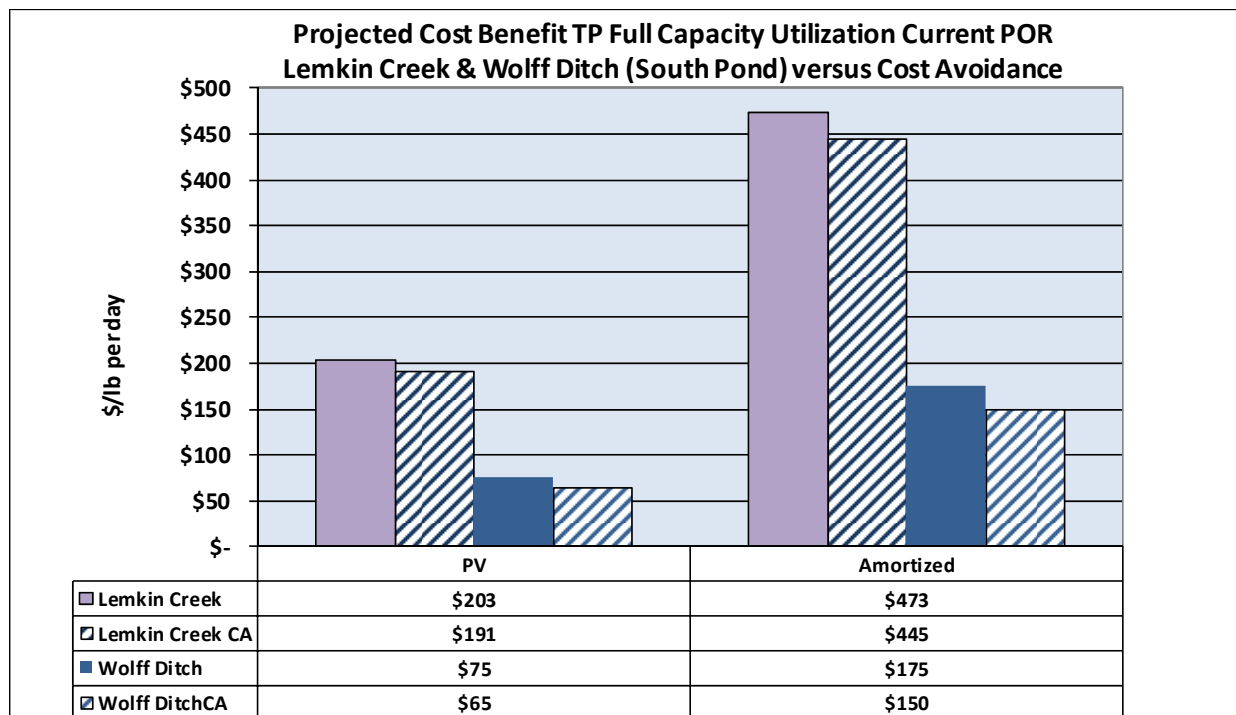


Figure 106. Projected Cost/Benefit of TP Full Capacity Present Value & Amortized Loan South Pond Data – Lemkin & Wolff Facilities versus Cost Avoidance previous POR.

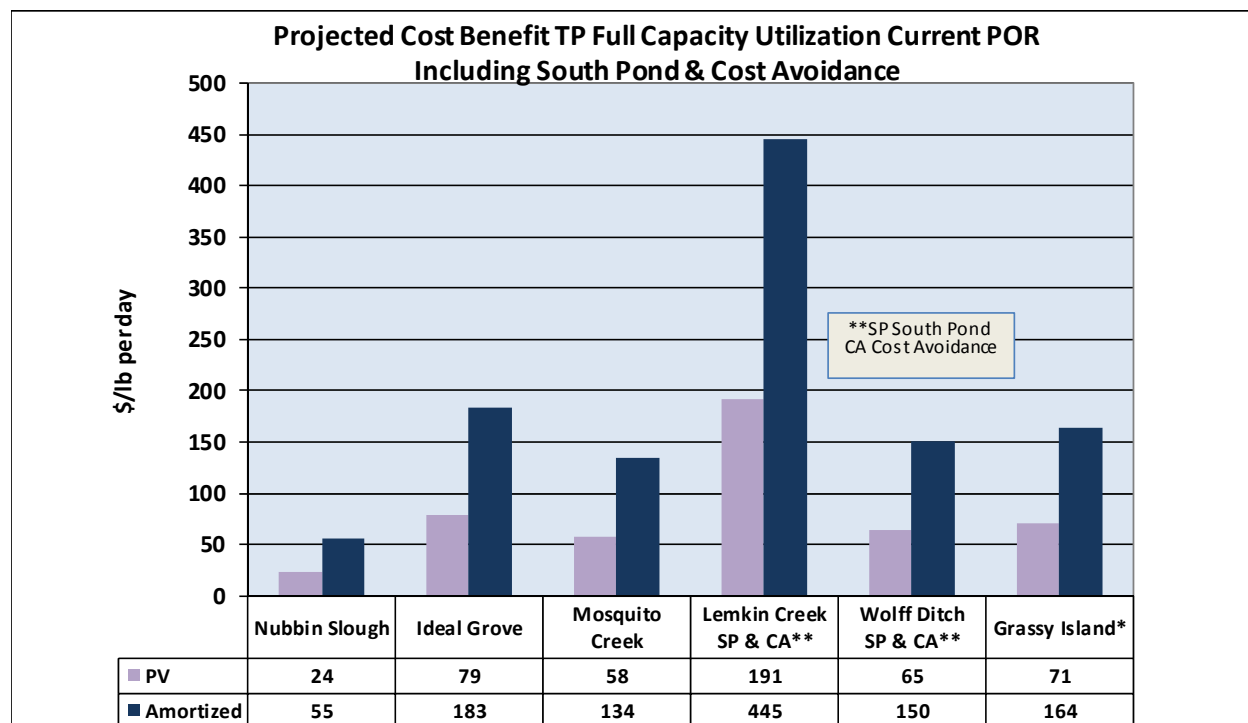


Figure 107. Projected Cost/Benefit of TP Full Capacity Present Value & Amortized Loan South Pond Data – Lemkin & Wolff Facilities including Cost Avoidance previous POR.

Table 19. TP Cost Benefit Analysis Lemkin Actual & Projected South Pond & Cost Avoidance Previous POR.

(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Lemkin Creek Site 5 South Pond & Cost Avoidance						
O&M Costs Period:	7/1/2014	through	6/30/2015			
TP Data Period	7/1/2014	through	6/30/2015			
			Partial Capacity Utilization		Full Capacity Utilization	
			Actual P Removal & Costs		Variable/Semi Fixed Costs	
			Capacity & Fixed Costs		All Costs	
			Based on Design Flow		Based on Design Flow	
		Total	Amortized Loan	Projected Present Value	Projected Amortized Loan	Projected Present Value
Capacity Utilization:						
Actual Average gpm		1003.5				
Design Capacity gpm		2244.4				
% of Design Capacity		45%				
Infrastructure (Note 7)						
Infrastructure Period 1		\$ 635,973				
Optimization & Monitoring (Note 1)		59,939				
Total Allocated Capital Period 1		\$ 695,911	\$ 695,911	\$ 695,911	\$ 695,911	\$ 695,911
Unallocated Costs Period 1:						
Optimization & Monitoring (Note 1)		59,939				
Total Period 1		\$ 755,850				
Estimated Life			50	50	50	50
Amortized Capital Period 1			32,395		32,395	
Cost Avoidance Period 7		\$ (627,000)	-627,000	-627,000	-627,000	-627,000
Estimated Life			50	50	50	50
Amortized Cost Avoidance Period 7			-29,187		-29,187	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			3,208		3,208	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)	\$ 52,142	\$ 52,142	\$ 52,142	\$ 52,142	\$ 116,621	\$ 116,621
O&M Fixed Costs Actual & Projected	330,136	330,136	330,136	330,136	344,778	344,778
Total Operations & Maintenance (Note 3)	\$ 382,278	\$ 382,278	\$ 382,278	\$ 382,278	\$ 461,399	\$ 461,399
Present Worth O&M (Notes 4,10 & 11)				\$ 8,212,173		\$ 9,911,858
Annual Costs & Present Value Actual & Projected						
			\$ 385,486	\$ 8,281,084	\$ 464,607	\$ 9,980,769
Cost per Day (Notes 5 & 8)						
			\$ 1,056	\$ 454	\$ 1,273	\$ 547
P Removal lb/day Total (Per Data Schedule)						
			1.28	1.28	2.86	2.86
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)						
			\$ 825	\$ 355	\$ 445	\$ 191

Table 20. TP Cost Benefit Analysis Wolff Actual & Projected South Pond & Cost Avoidance previous POR.

(See Notes & Assumptions)

WATERSHED TECHNOLOGIES, LLC.						
Projected Cost Benefit Analysis (Note 8) Wolff Ditch Site 6 South Pond & Cost Avoidance						
O&M Costs Period:	7/1/2014	through	6/30/2015			
TP Data Period	7/1/2014	through	6/30/2015			
			Partial Capacity Utilization	Full Capacity Utilization		
			Actual P Removal & Costs	Projectd P Removal & Variable/Semi Fixed Costs		
			Capacity & Fixed Costs	All Costs		
			Based on Design Flow	Based on Design Flow		
		Total	Amortized Loan	Projected Present Value	Projected Amortized Loan	Projected Present Value
Capacity Utilization:						
Actual Average gpm		1148.7				
Design Capacity gpm		8977.6				
% of Design Capacity		13%				
Infrastructure (Note 7)						
Infrastructure Period 1		\$ 1,036,070				
Optimization & Monitoring (Note 1)		80,360				
Total Allocated Capital Period 1		\$ 1,116,430	\$ 1,116,430	\$ 1,116,430	\$ 1,116,430	\$ 1,116,430
Unallocated Costs Period 1:						
Optimization & Monitoring (Note 1)		80,360				
Total Period 1		\$ 1,196,790				
Estimated Life			50	50	50	50
Amortized Capital Period 1			51,970		51,970	
Cost Avoidance Period 7		\$ (2,508,000)	-2,508,000	-2,508,000	-2,508,000	-2,508,000
Estimated Life			50	50	50	50
Amortized Cost Avoidance Period 7			-116,748		-116,748	
% Expense Days Current Period (Note 11)			100%	100%	100%	100%
Amortized Capital Current Period			-64,778		-64,778	
Operations & Maintenance Current Period						
O&M Variable Costs Actual & Projected (Note 2)	\$ 45,452		\$ 45,452	\$ 45,452	\$ 355,231	\$ 355,231
O&M Fixed Costs Actual & Projected	350,517		350,517	350,517	420,862	420,862
Total Operations & Maintenance (Note 3)	\$ 395,968		\$ 395,968	\$ 395,968	\$ 776,093	\$ 776,093
Present Worth O&M (Notes 4,10 & 11)				\$ 8,506,267		\$ 16,672,173
Annual Costs & Present Value Actual & Projected			\$ 331,191	\$ 7,114,697	\$ 711,315	\$ 15,280,603
Cost per Day (Notes 5 & 8)			\$ 907	\$ 390	\$ 1,949	\$ 837
P Removal lb/day Total (Per Data Schedule)			1.66	1.66	12.97	12.97
Cost/Benefit \$/lb. (System On-Line Flow > 0) (Note 6)			\$ 547	\$ 235	\$ 150	\$ 65

Environmental and Ancillary Benefits

As stated, this Report provides a limited quantification of environmental and other benefits in calculating Cost/Benefit values; however, the effectiveness of HWTT on qualitative factors is discussed below. Additionally, as HWTT projects require a significantly smaller land area as compared to traditional wetland treatment or systems with large detention/reservoir areas, positive savings will accrue through a reduction in land costs. HWTT projects are also well suited for implementation on either existing SFWMD properties and/or private property with associated cost benefits.

Flora and Fauna

As well as removal of P, the HWTT systems provide environmental benefits through wetland and wildlife habitat restoration and creation. Wetlands provide a valuable environment for a wide range of plant and animal species. The intrinsically high habitat value of wetlands is due in large part to their water and nutrient storage functions, which support high levels of primary productivity. The HWTT systems provide many of the same ancillary benefits to wildlife as the native marshes of South Florida, for example, water supply, food source, and refuge.

The Lemkin Creek/Wolff Ditch site provides flow to a restored downstream wetland. The Nubbin Slough site was retrofitted from a traditional chemical treatment system that was not actively removing P to a partial HWTT system, providing additional desirable habitat. Ideal Grove is a converted wetland treatment system that was not effective in nutrient removal; the new facility provides added wildlife surroundings. The HWTT Mosquito Creek facility likewise affords new wetland and wildlife habitat. Informal field observations have confirmed utilization of the HWTT wetland sites by a variety of wildlife. Photographs of various flora and fauna at the sites or downstream wetlands are shown in Figure 108 through Figure 114.

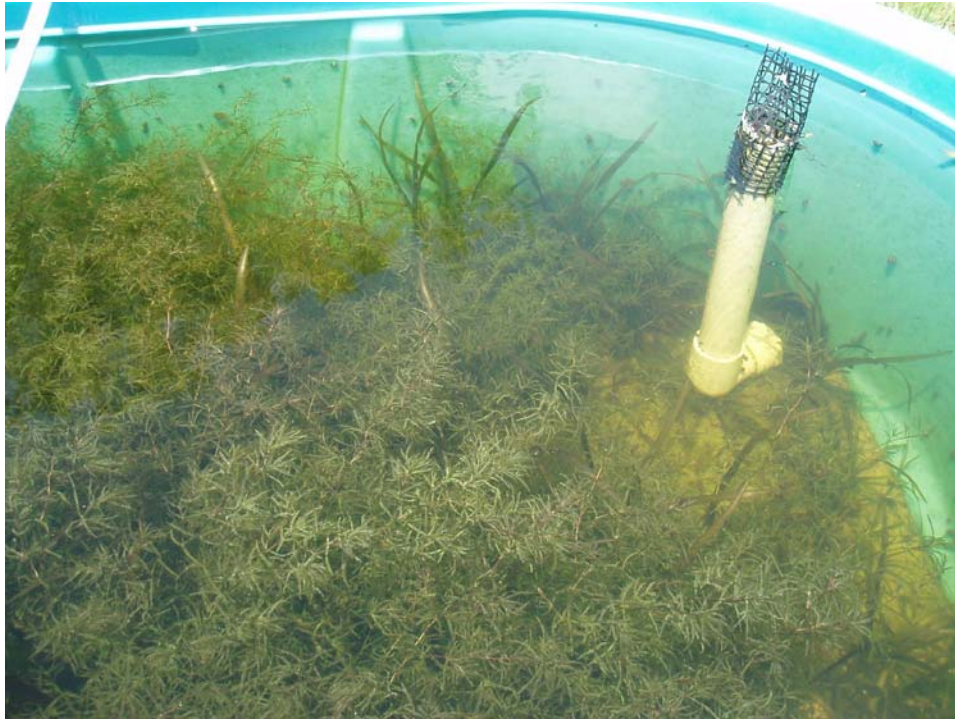


Figure 108. Southern naiad (*Najas*) and *Vallisneria*, Mesocosm.



Figure 109. Otters, HWTT Treatment Facility.



Figure 110. Roseate Spoonbills, Grassy Island limerock beds.



Figure 111. Baby alligator, Wolff Ditch Treatment Facility.



Figure 112. Everglades Rat snake, Nubbin Slough Treatment Facility.



Figure 113. Lotus Flower, HWTT Treatment Facility.



Figure 114. Gallinule, Ideal Grove Treatment Facility.

Further Minimization of Coagulant Use

The HWTT affords several mechanisms for minimizing coagulant use and economizing on the cost per mass of TP removed. HWTT design and operational factors that can be adjusted include: relative size and configuration of the wetland (floating and/or submerged vegetation) unit processes; type and dose of coagulants; coagulant aids and buffers; and amendment dosing cycles. For some Northern Everglades locations, depending on the size and configuration of the associated wetland unit processes, it is possible to implement extremely low frequency coagulant dosing and still achieve desired outflow TP concentrations and mass TP reductions.

Another mechanism for minimizing coagulant use in an HWTT system is the reuse of spent floc (see discussion below). At HWTT facilities such as the Nubbin and Grassy Island sites, where floc tilling is not performed, the floc drying beds will accumulate increasingly large amounts of dried floc over time. One potential use for this dried floc will be to recycle the material back into the HWTT flow train. For example, the dried floc may be introduced into the inflow region, or broadcast over the shallow zone of the FAV pond.

Efficient Floc Management Alternatives

Prior to the initiation of the HWTT project, no floc management activities had been performed in any of the chemical dosing facilities in the Northern Everglades. HWTT systems cycle wet floc internally to enhance contaminant removal per unit area. This concept was clearly illustrated by simple jar test re-use studies presented in previous reports. At an operational scale (presently at Nubbin Slough, Mosquito Creek, and Grassy Island), wet floc is pumped to adjacent drying beds and subjected to passive, solar drying; the resultant dried material will be subsequently reintroduced into the system to achieve additional TP removal. The first use will be to broadcast throughout the water hyacinth zones to stabilize P in the underlying sediments. The dry material is stable and low-volume, thus it can be incorporated into the relatively large footprint HWTT system on a sustainable basis.

Further, in HWTT facilities several options are available with respect to final use of floc materials. The systems can capitalize on dry season periods by drawing down water levels in shallow zones and tilling the dried floc and vegetation into the soil using conventional farm machinery. Deep zones incorporated into the system keep vegetation viable during the drydown and tilling operations. Because both the vegetation and floc exhibit a dramatic volume (~90%) reduction upon drying, this patented tilling technique can be repeated numerous times without creating a substantial change in the shallow zone ground elevation. Moreover, in laboratory trials, shallow zone soil cores collected post-tilling (of vegetation and floc) revealed no release of P to the water following reflooding with low P (rain) waters.

Suitability for Treating Northern Everglades Runoff

HWTT systems offer a cost-effective technology for treating runoff P in the Northern Everglades watersheds. The technology is compatible with the distinct wet season/dry season rainfall regime and is capable of achieving high TP mass load reductions and low outflow TP concentrations. HWTT systems combine the benefits of treatment wetlands and conventional chemical treatment systems, while eliminating the major drawbacks, for example, the large footprint and year-round water requirements of wetland systems and the high operations cost of chemical systems.

Operational Flexibility

HWTT provides operational flexibility primarily through utilization of several varying components to maximize treatment while minimizing costs. Each component can be implemented based on very specific site-conditions, which can be invaluable in managing a diverse set of circumstances and water quality parameters.

The hybrid process can also be constructed in areas with limited land availability as compared to traditional wetland treatment systems. As the technology relies in part on chemical amendments, it is less vulnerable to natural disasters/disturbances and would recover faster than systems that rely solely on vegetation (hurricane wind damage, natural predation, and drought effects).

Scale-up issues and costs are also relatively minor as compared to wetland treatment. Where land is not available, the technology can be deployed directly within the water body (DeBusk et al., 2005).

Enhanced System Evaluation Techniques

Watershed Technologies has designed, constructed, and fully implemented a “Mesocosm” facility (Figure 115) for rapid assessment of comparisons between traditional chemical treatment and HWT and for the investigation of optimal operational parameters necessary for full-scale design and optimization. The system is a mobile unit, which can be assembled and utilized at current sites as well as off-site locations, providing invaluable performance data in real time and consequently reducing personnel and other operating costs.



Figure 115. Photograph of Mesocosm assembled at the Grassy Island Site during Phase I construction.

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Appendices

Appendix I. Comparative Summary of Operating Performance Statistics for the HWT Systems for Periods 1- 8.

(Click to Open Linked Excel File.)

TREATMENT DAYS SITES 1-3, 5-8										
ALL PERIODS										
Site	Parameter	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	
Nubbin Slough	# Days in Period		365	206	274	365	365	365	365	183
Nubbin Slough	# Days On-line		265	199	234	359	350	332	332	169
Nubbin Slough	# Days On-line Flow > 0		241	125	194	355	348	332	332	169
Nubbin Slough	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		283	125	208	355	361	347	347	169
Nubbin Slough	% Days On-Line vs. Available Days*		85%	100%	93%	100%	96%	96%	96%	100%
Nubbin Slough	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.								
Ideal Grove	# Days in Period		365	206	274	365	365	365	365	183
Ideal Grove	# Days On-line		358	197	262	361	362	313	313	165
Ideal Grove	# Days On-line Flow > 0		253	148	261	341	362	313	313	160
Ideal Grove	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		257	148	267	341	364	313	313	160
Ideal Grove	% Days On-Line vs. Available Days*		98%	100%	98%	100%	99%	100%	100%	100%
Ideal Grove	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.								
Mosquito Creek	# Days in Period		365	206	274	365	365	365	365	183
Mosquito Creek	# Days On-line		324	193	254	337	310	332	332	176
Mosquito Creek	# Days On-line Flow > 0		312	131	229	335	302	332	332	176
Mosquito Creek	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		312	132	235	346	344	332	332	77
Mosquito Creek	% Days On-Line vs. Available Days*		100%	99%	97%	97%	88%	100%	100%	99%
Mosquito Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.								
Lemkin Creek	# Days in Period		365	206	274	365	365	365	365	183
Lemkin Creek	# Days On-line		338	201	267	361	358	343	343	183
Lemkin Creek	# Days On-line Flow > 0		338	129	267	361	358	343	343	183
Lemkin Creek	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		338	129	267	361	358	343	343	183
Lemkin Creek	% Days On-Line vs. Available Days*		100%	100%	100%	100%	100%	100%	100%	100%
Lemkin Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner; provide flow to downstream wetlands.								
Wolff Ditch	# Days in Period		365	206	274	365	365	365	365	183
Wolff Ditch	# Days On-line		350	203	262	357	364	356	356	176
Wolff Ditch	# Days On-line Flow > 0		350	155	262	357	364	356	356	176
Wolff Ditch	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		356	155	262	357	364	356	356	176
Wolff Ditch	% Days On-Line vs. Available Days*		98%	100%	100%	100%	100%	100%	100%	100%
Wolff Ditch	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner; provide flow to downstream wetlands.								
Grassy Island	# Days in Period			206	231	365	365	365	365	197
Grassy Island	# Days On-line				120	321	362	360	360	197
Grassy Island	# Days On-line Flow > 0			125	120	314	362	360	360	197
Grassy Island	# Days in Period Flow >0.0000 Less Non-Controllable Down Time				120	316	362	360	360	197
Grassy Island	% Days On-Line vs. Available Days*				100%	99%	100%	100%	100%	100%
Grassy Island	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner & provide lower input concentrations to downstream waters.								
Bessey Creek	# Days in Period									183
Bessey Creek	# Days On-line									174
Bessey Creek	# Days On-line Flow > 0									174
Bessey Creek	# Days in Period Flow >0.0000 Less Non-Controllable Down Time									174
Bessey Creek	% Days On-Line vs. Available Days*									100%
Bessey Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner & provide lower input concentrations to downstream waters.								
Sites 1-3, 5-6, 8	Period Start	11/21/2008	3/9/2010	3/9/2011	10/1/2011	7/1/2012	7/1/2013	7/1/2014	7/1/2014	
Sites 1-3, 5-6, 8	Period End	11/20/2009	3/8/2011	9/30/2011	6/30/2012	6/30/2013	6/30/2014	6/30/2015	11/30/2015	
Sites 1-3, 5-6, 8	Period Start (Period 8 Only)									6/1/2016
Sites 1-3, 5-6, 8	Period End (Period 8 Only)									6/30/2016
Site 7	Period Start			7/11/2011	11/13/2011	7/1/2012	7/1/2013	7/1/2014	7/1/2014	
Site 7	Period End (Period 3 Extended)			11/12/2011	6/30/2012	6/30/2013	6/30/2014	6/30/2015	11/30/2015	
Site 7	Period Start (Period 8 Only)									5/18/2016
Site 7	Period End (Period 8 Only)									6/30/2016
Notes:	*Excl. No Flow Days * Non-Controllable Downtime									

Appendix II. Comparative Summary of TMDL Performance Statistics for the HWT Systems Periods 1- 8.

(Click to Open Linked Excel File.)

TMDL SITES 1-3, 5-8 ALL PERIODS										
Site	Parameter	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	
Nubbin Slough	On-line Flow Days >0						348	332	169	
Nubbin Slough	Flow Weighted Average Inflow Concentration in µg/L						799	1011	773	
Nubbin Slough	Flow Weighted Average Outflow Concentration in µg/L		73	109	231	169	247	179	173	
Nubbin Slough	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration		YES	YES	NO	NO	NO	NO	NO	
Nubbin Slough	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration		NO	NO	NO	NO	NO	NO	NO	
Nubbin Slough	% Data Points Inflow Concentration Meeting Tributary TMDL		0%	0%	0%	0%	0%	0%	0%	
Nubbin Slough	% Data Points Outflow Concentration Meeting Tributary TMDL		52%	90%	81%	45%	53%	49%	43%	
Nubbin Slough	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.								
Ideal Grove	On-line Flow Days >0						362	313	160	
Ideal Grove	Flow Weighted Average Inflow Concentration in µg/L						862	814	1842	
Ideal Grove	Flow Weighted Average Outflow Concentration in µg/L		16	50	19	24	48	56	39	
Ideal Grove	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration		YES	YES	YES	YES	YES	YES	YES	
Ideal Grove	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration		YES	NO	YES	YES	NO	NO	YES	
Ideal Grove	% Data Points Inflow Concentration Meeting Tributary TMDL		39%	30%	17%	9%	6%	8%	0%	
Ideal Grove	% Data Points Outflow Concentration Meeting Tributary TMDL		92%	89%	100%	91%	87%	86%	100%	
Ideal Grove A	% Data Points Inflow Concentration Meeting Tributary TMDL		46%							
Ideal Grove A	% Data Points Outflow Concentration Meeting Tributary TMDL		100%							
Ideal Grove B	% Data Points Inflow Concentration Meeting Tributary TMDL		46%							
Ideal Grove B	% Data Points Outflow Concentration Meeting Tributary TMDL		95%							
Ideal Grove	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.								
Mosquito Creek	On-line Flow Days >0						302	332	176	
Mosquito Creek	Flow Weighted Average Inflow Concentration in µg/L						640	621	547	
Mosquito Creek	Flow Weighted Average Outflow Concentration in µg/L		61	149	84.6	118	150	142	102	
Mosquito Creek	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration		YES	NO	YES	NO	NO	NO	YES	
Mosquito Creek	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration		NO	NO	NO	NO	NO	NO	NO	
Mosquito Creek	% Data Points Inflow Concentration Meeting Tributary TMDL		7%	0%	2%	4%	6%	6%	0%	
Mosquito Creek	% Data Points Outflow Concentration Meeting Tributary TMDL		80%	51%	72%	65%	46%	52%	56%	
Mosquito Small East	% Data Points Inflow Concentration Meeting Tributary TMDL		0%							
Mosquito Small East	% Data Points Outflow Concentration Meeting Tributary TMDL		86%							
Mosquito Small West	% Data Points Inflow Concentration Meeting Tributary TMDL		0%							
Mosquito Small West	% Data Points Outflow Concentration Meeting Tributary TMDL		94%							
Mosquito Large Pond	% Data Points Inflow Concentration Meeting Tributary TMDL		1%							
Mosquito Large Pond	% Data Points Outflow Concentration Meeting Tributary TMDL		98%							
Mosquito Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.								
Lemkin Creek	On-line Flow Days >0						358	343	183	
Lemkin Creek	Flow Weighted Average Inflow Concentration in µg/L						101	132	232	
Lemkin Creek	Flow Weighted Average Outflow Concentration in µg/L		30	22	31	24	29	42	70	
Lemkin Creek	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration		YES	YES	YES	YES	YES	YES	YES	
Lemkin Creek	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration		YES	YES	YES	YES	YES	NO	NO	
Lemkin Creek	% Data Points Inflow Concentration Meeting Tributary TMDL		85%	91%	83%	81%	73%	48%	32%	
Lemkin Creek	% Data Points Outflow Concentration Meeting Tributary TMDL		94%	100%	100%	94%	94%	93%	93%	
Lemkin Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner; provide flow to downstream wetlands.								
Wolff Ditch	On-line Flow Days >0						364	356	176	
Wolff Ditch	Flow Weighted Average Inflow Concentration in µg/L						146	156	125	
Wolff Ditch	Flow Weighted Average Outflow Concentration in µg/L		28	23	35.1	52	24	62	41	
Wolff Ditch	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration		YES	YES	YES	YES	YES	YES	YES	
Wolff Ditch	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration		YES	YES	YES	NO	YES	NO	NO	
Wolff Ditch	% Data Points Inflow Concentration Meeting Tributary TMDL		63%	100%	74%	72%	56%	42%	69%	
Wolff Ditch	% Data Points Outflow Concentration Meeting Tributary TMDL		94%	100%	100%	92%	94%	86%	99%	
Wolff Ditch	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner; provide lower input conc. to downstream wetlands.								
Grassy Island	On-line Flow Days >0						362	360	191	
Grassy Island	Flow Weighted Average Inflow Concentration in µg/L						490	411	501	
Grassy Island	Flow Weighted Average Outflow Concentration in µg/L				27	50	93	40	42	
Grassy Island	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration				YES	YES	YES	YES	YES	
Grassy Island	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration				YES	NO	NO	YES	NO	
Grassy Island	% Data Points Inflow Concentration Meeting Tributary TMDL				4%	2%	1%	3%	0%	
Grassy Island	% Data Points Outflow Concentration Meeting Tributary TMDL				100%	89%	82%	93%	96%	
Grassy Island	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner; provide lower input conc. to downstream wetlands.								
Bessey Creek	On-line Flow Days >0								174	
Bessey Creek	Flow Weighted Average Inflow Concentration in µg/L								223	
Bessey Creek	Flow Weighted Average Outflow Concentration in µg/L								26	
Bessey Creek	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration								YES	
Bessey Creek	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration								N/A	
Bessey Creek	% Data Points Inflow Concentration Meeting Tributary TMDL								0%	
Bessey Creek	% Data Points Outflow Concentration Meeting Tributary TMDL								100%	
Bessey Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner; provide lower input conc. to downstream wetlands.								
Sites 1-3, 5-6, 8	Period Start	11/21/2008	3/9/2010	3/9/2011	10/1/2011	7/1/2012	7/1/2013	7/1/2014	7/1/2014	
Sites 1-3, 5-6, 8	Period End	11/20/2009	3/8/2011	9/30/2011	6/30/2012	6/30/2013	6/30/2014	6/30/2015	11/30/2015	
Sites 1-3, 5-6, 8	Period Start			7/1/2011	11/13/2011	7/1/2012	7/1/2013	7/1/2014	7/1/2014	
Sites 1-3, 5-6, 8	Period End (Period 3 Extended)			11/12/2011	6/30/2012	6/30/2013	6/30/2014	6/30/2015	11/30/2015	
Site 7	Period Start								5/18/2016	
Site 7	Period End								6/30/2016	
Notes:	Includes Linear Interpolation between Actual Measurements for On-line Flow Days.									

Appendix III. Nubbin Slough TP Reduction & Operations Report.

(Click to Open Linked File.)

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE DAILY FLOW	On-Line Unless Noted Otherwise	
	INFLOW	OUTFLOW	REMOVAL	gpm On-Line Flow > 0	Operational/ Flow Status	Comments
TOTAL PER DAY	1062.9314	236.7245	826.2068	690.88		
7/1/2015	4.6003	1.2291	3.3712	487.0		sampling date
7/2/2015	8.1710	2.1831	5.9879	863.0		
7/3/2015	4.2413	1.1332	3.1082	449.0		
7/4/2015	3.3045	0.9363	2.3682	371.0		
7/5/2015	2.3899	0.6385	1.7514	253.0		
7/6/2015	10.0886	2.6954	7.3931	1068.0		
7/7/2015	9.2762	2.4784	6.7978	982.0		
7/8/2015	10.6175	2.8367	7.7808	1124.0		sampling date
7/9/2015	6.4100	1.4131	4.9968	593.0		
7/10/2015	5.3681	0.9888	4.3793	441.0		
7/11/2015	3.5328	0.5485	2.9844	261.0		
7/12/2015	2.4434	0.3215	2.1219	164.0		
7/13/2015	2.3905	0.2675	2.1230	147.0		
7/14/2015	1.2162	0.1159	1.1003	69.0		
7/15/2015	1.5191	0.1231	1.3960	80.0		sampling date
7/16/2015	1.6356	0.1270	1.5086	87.0		
7/17/2015	1.6564	0.1229	1.5335	89.0		
7/18/2015	1.5474	0.1093	1.4381	84.0		
7/19/2015	1.4404	0.0966	1.3438	79.0		
7/20/2015	2.0751	0.1315	1.9436	115.0		
7/21/2015	0.8928	0.0532	0.8395	50.0		
7/22/2015	1.3603	0.0759	1.2844	77.0		sampling date
7/23/2015	1.4680	0.1019	1.3660	89.0		
7/24/2015	1.6700	0.1422	1.5278	109.0		
7/25/2015	5.0511	0.5228	4.5283	357.0		
7/26/2015	14.7668	1.8483	12.9185	1138.0		
7/27/2015	12.5825	1.9016	10.6809	1066.0		
7/28/2015	8.0157	1.4654	6.5503	754.0		
7/29/2015	5.3817	1.1967	4.1850	569.0		sampling date
7/30/2015	4.7143	1.0619	3.6524	512.0		
7/31/2015	7.2820	1.6624	5.6195	813.0		
8/1/2015	10.0818	2.3341	7.7478	1158.0		
8/2/2015	9.7746	2.2963	7.4783	1156.0		
8/3/2015	9.4603	2.2567	7.2036	1153.0		
8/4/2015	6.7691	1.6408	5.1283	851.0		
8/5/2015	4.4296	1.0918	3.3377	575.0		sampling date
8/6/2015	2.6995	0.5746	2.1250	332.0		
8/7/2015	2.1311	0.3890	1.7421	249.0		
8/8/2015	1.4018	0.2175	1.1844	156.0		
8/9/2015	0.7907	0.1030	0.6878	84.0		
8/10/2015	1.5057	0.1618	1.3439	153.0		
8/11/2015	1.4581	0.1263	1.3319	142.0		
8/12/2015	0.8022	0.0541	0.7481	75.0		sampling date
8/13/2015	1.4860	0.1064	1.3796	138.0		
8/14/2015	1.1924	0.0903	1.1022	110.0		
8/15/2015	0.4801	0.0383	0.4418	44.0		

Appendix IV. Ideal Grove TP Reduction & Operations Report.

(Click to Open Linked File)

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216	3.1220	125.8996	gpm On-Line Flow > 0	Operational/ Flow Status	Comments
	0.8064	0.0195	0.7869	43.79		
7/1/2015	0.0681	0.0141	0.0540	42.0		sampling date
7/2/2015	0.0943	0.0154	0.0789	47.0		
7/3/2015	0.1028	0.0137	0.0891	43.0		
7/4/2015	0.0972	0.0109	0.0863	35.0		
7/5/2015	0.0948	0.0091	0.0858	30.0		
7/6/2015	0.0603	0.0050	0.0553	17.0		
7/7/2015					Off-Line	pump down
7/8/2015					Off-Line	pump down; sampling date
7/9/2015					Off-Line	pump down
7/10/2015					Off-Line	pump down
7/11/2015					Off-Line	pump down
7/12/2015					Off-Line	pump down
7/13/2015					Off-Line	new pump on order
7/14/2015					Off-Line	new pump on order
7/15/2015					Off-Line	new pump on order; sampling date
7/16/2015					Off-Line	new pump on order
7/17/2015					Off-Line	new pump on order
7/18/2015					Off-Line	new pump on order
7/19/2015					Off-Line	new pump on order
7/20/2015					Off-Line	new pump on order
7/21/2015					Off-Line	new pump on order
7/22/2015					Off-Line	new pump on order; sampling date
7/23/2015					Off-Line	new pump on order
7/24/2015					Off-Line	new pump on order
7/25/2015	0.0583	0.0033	0.0550	23.0		
7/26/2015	0.1453	0.0083	0.1370	43.0		
7/27/2015	0.1774	0.0101	0.1673	42.0		dosing timer failure
7/28/2015	0.1926	0.0110	0.1816	38.0		dosing timer failure
7/29/2015	0.2247	0.0128	0.2119	38.0		dosing timer failure; sampling date
7/30/2015	0.2205	0.0126	0.2079	38.0		dosing timer failure
7/31/2015	0.2163	0.0124	0.2039	38.0		dosing timer failure
8/1/2015	0.1896	0.0109	0.1789	34.0		dosing timer failure
8/2/2015	0.1751	0.0101	0.1650	32.0		dosing timer failure
8/3/2015	0.2145	0.0124	0.2021	40.0		
8/4/2015	0.2207	0.0128	0.2078	42.0		
8/5/2015	0.2212	0.0129	0.2083	43.0		sampling date
8/6/2015	0.2215	0.0123	0.2092	41.0		
8/7/2015	0.2322	0.0123	0.2198	41.0		
8/8/2015	0.2428	0.0123	0.2305	41.0		
8/9/2015	0.2349	0.0114	0.2235	38.0		
8/10/2015	0.2447	0.0114	0.2333	38.0		
8/11/2015	0.2412	0.0108	0.2304	36.0		
8/12/2015	0.2088	0.0090	0.1997	30.0		sampling date
8/13/2015	0.2650	0.0099	0.2551	32.0		
8/14/2015	0.3074	0.0103	0.2971	32.0		
8/15/2015	0.3060	0.0093	0.2968	28.0		
8/16/2015	0.3186	0.0089	0.3097	26.0		

Appendix V. Mosquito Creek TP Reduction & Operations Report. (Click to Open Linked File)

WATERSHED TECHNOLOGIES					
Mosquito Large Pond TP Reduction					
Period	7/1/2015	through	6/30/2016	366 days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177
					# Days On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE DAILY FLOW	On-Line Unless Otherwise Noted
	INFLOW	OUTFLOW	REMOVAL	gpm On-Line Flow > 0	Operational/ Flow Status
TOTAL PER DAY	1080.8090	200.3665	880.4425	845.70	Comments
6.1410	1.1384	5.0025			
7/1/2015	3.9439	0.3204	3.6234	293.0	sample date
7/2/2015	5.3776	0.5027	4.8749	393.0	
7/3/2015	5.6600	0.5960	5.0640	407.0	
7/4/2015	5.8497	0.6831	5.1667	414.0	
7/5/2015	4.6217	0.5910	4.0307	322.0	
7/6/2015	0.3498	0.0485	0.3013	24.0	
7/7/2015					Off-Line
7/8/2015	4.5068	0.7175	3.7893	300.0	equipment failure, faulty relay sample date
7/9/2015	6.2916	1.0158	5.2758	436.0	
7/10/2015	6.0334	0.9888	5.0445	436.0	
7/11/2015	5.7751	0.9619	4.8132	436.0	
7/12/2015	5.5168	0.9349	4.5819	436.0	
7/13/2015	5.2586	0.9080	4.3506	436.0	
7/14/2015	5.0233	0.8851	4.1382	438.0	
7/15/2015	5.3077	0.9560	4.3517	488.0	sample date
7/16/2015	4.7501	0.7846	3.9655	434.0	
7/17/2015	3.3151	0.4987	2.8164	301.0	
7/18/2015	2.2386	0.3042	1.9345	202.0	
7/19/2015	2.0629	0.2506	1.8123	185.0	
7/20/2015	2.4796	0.2660	2.2136	221.0	
7/21/2015	2.5625	0.2389	2.3236	227.0	
7/22/2015	3.1005	0.2461	2.8544	273.0	sample date
7/23/2015	4.3820	0.3778	4.0042	420.0	
7/24/2015	4.9736	0.4696	4.5040	523.0	
7/25/2015	4.4132	0.4606	3.9526	514.0	
7/26/2015	3.8618	0.4508	3.4110	504.0	
7/27/2015	3.3491	0.4437	2.9054	497.0	
7/28/2015	5.4254	0.8314	4.5941	933.0	
7/29/2015	5.1604	0.9383	4.2221	1055.0	sample date
7/30/2015	4.8819	0.9326	3.9493	1021.0	
7/31/2015	4.7043	0.9440	3.7603	1007.0	
8/1/2015	4.6210	0.9739	3.6471	1013.0	
8/2/2015	4.5008	0.9963	3.5045	1011.0	
8/3/2015	4.3159	1.0035	3.3124	994.0	
8/4/2015	4.1220	1.0067	3.1154	974.0	
8/5/2015	4.0356	1.0354	3.0003	979.0	sample date
8/6/2015	4.4993	1.2061	3.2932	961.0	
8/7/2015	5.1577	1.4292	3.7285	984.0	
8/8/2015	5.6795	1.6153	4.0642	979.0	
8/9/2015	6.0938	1.7698	4.3241	958.0	
8/10/2015	6.8584	2.0264	4.8320	991.0	
8/11/2015	7.3383	2.1996	5.1386	981.0	
8/12/2015	5.8693	1.7810	4.0883	730.0	sample date
8/13/2015	8.2020	2.4103	5.7917	1010.0	
8/14/2015	8.1769	2.3262	5.8507	997.0	
8/15/2015	8.2987	2.2846	6.0142	1002.0	
8/16/2015	8.5050	2.2646	6.2404	1017.0	

Appendix VI. Lemkin Creek TP Reduction & Operations Report.
(Click to Open Linked File)

WATERSHED TECHNOLOGIES					
Lemkin Creek TP Reduction & Operations Report					
Period	7/1/2015	through	6/30/2016	366 days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183
				% Time On-Line vs. Available Days Excl. Uncontrollable Downtime:	
				100%	
	TP MASS (lbs.)		TP (lbs.) REMOVAL	AVERAGE DAILY FLOW gpm On-Line Flow > 0	On-Line Unless Otherwise Noted
	INFLOW	OUTFLOW			
TOTAL PER DAY	429.2827	150.3308	278.9519	952.20	Operational/ Flow Status
	2.3458	0.8215	1.5243		Comments
7/1/2015	0.5314	0.2126	0.3189	804.0	sample date
7/2/2015	0.4369	0.1770	0.2599	661.0	
7/3/2015	0.5698	0.2338	0.3359	862.0	
7/4/2015	0.5235	0.2176	0.3059	792.0	
7/5/2015	0.2380	0.1001	0.1378	360.0	
7/6/2015	0.3173	0.1352	0.1821	480.0	
7/7/2015	0.5242	0.2260	0.2982	793.0	
7/8/2015	0.5301	0.2313	0.2988	802.0	sample date
7/9/2015	0.5176	0.2264	0.2913	804.0	
7/10/2015	0.5013	0.2198	0.2816	800.0	
7/11/2015	0.4906	0.2156	0.2750	803.0	
7/12/2015	0.4525	0.1994	0.2532	764.0	
7/13/2015	0.4572	0.2020	0.2552	793.0	
7/14/2015	0.4313	0.1911	0.2402	773.0	
7/15/2015	0.3943	0.1752	0.2190	729.0	sample date
7/16/2015	0.3881	0.1718	0.2163	720.0	
7/17/2015	0.4014	0.1770	0.2244	747.0	
7/18/2015	0.4076	0.1790	0.2286	761.0	
7/19/2015	0.3850	0.1683	0.2166	721.0	
7/20/2015	0.3795	0.1653	0.2142	713.0	
7/21/2015	0.3692	0.1601	0.2091	696.0	
7/22/2015	0.4193	0.1811	0.2383	793.0	sample date
7/23/2015	0.4436	0.1923	0.2513	800.0	
7/24/2015	0.4509	0.1961	0.2548	777.0	
7/25/2015	0.4745	0.2070	0.2675	783.0	
7/26/2015	0.4941	0.2162	0.2779	782.0	
7/27/2015	0.5372	0.2357	0.3016	817.0	
7/28/2015	0.5303	0.2332	0.2971	776.0	
7/29/2015	0.4871	0.2147	0.2725	687.0	sample date
7/30/2015	0.7360	0.2701	0.4659	815.0	
7/31/2015	0.9106	0.2907	0.6199	830.0	
8/1/2015	1.1026	0.3152	0.7874	854.0	
8/2/2015	1.2534	0.3275	0.9259	844.0	
8/3/2015	1.4172	0.3434	1.0737	844.0	
8/4/2015	1.6483	0.3747	1.2736	880.0	
8/5/2015	1.7632	0.3793	1.3839	853.0	sample date
8/6/2015	1.6012	0.3739	1.2273	844.0	
8/7/2015	1.4128	0.3609	1.0519	818.0	
8/8/2015	1.1788	0.3327	0.8461	757.0	
8/9/2015	1.1306	0.3568	0.7738	815.0	
8/10/2015	1.0176	0.3646	0.6531	836.0	
8/11/2015	0.8797	0.3649	0.5149	840.0	
8/12/2015	0.8475	0.4179	0.4296	966.0	sample date
8/13/2015	1.0751	0.4992	0.5759	1089.0	
8/14/2015	1.2112	0.5345	0.6767	1104.0	
8/15/2015	1.4146	0.5976	0.8169	1172.0	
8/16/2015	1.5433	0.6278	0.9155	1172.0	

Appendix VII. Wolff Ditch TP Reduction & Operations Report. (Click to Open Linked File)

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
for the period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645	205.6521	335.5124	gpm On-Line Flow > 0	Operational/ Flow Status	Comments
	3.0748	1.1685	1.9063	2176.0		
7/1/2015	0.5818	0.2238	0.3580	931.0		sample date
7/2/2015	0.5721	0.2230	0.3471	936.0		
7/3/2015	0.5670	0.2281	0.3389	949.0		
7/4/2015	0.5394	0.2221	0.3173	924.0		
7/5/2015	0.5398	0.2276	0.3122	947.0		
7/6/2015	0.5246	0.2267	0.2979	943.0		
7/7/2015	0.4926	0.2182	0.2744	908.0		
7/8/2015	0.4749	0.2158	0.2590	898.0		sample date
7/9/2015	0.5417	0.2289	0.3128	959.0		
7/10/2015	0.5667	0.2234	0.3432	943.0		
7/11/2015	0.5917	0.2185	0.3732	929.0		
7/12/2015	0.6306	0.2188	0.4118	937.0		
7/13/2015	0.7055	0.2306	0.4749	995.0		
7/14/2015	0.3830	0.1183	0.2647	514.0		
7/15/2015	0.3390	0.0991	0.2399	434.0		sample date
7/16/2015	0.3339	0.0996	0.2343	436.0		
7/17/2015	0.3466	0.1035	0.2411	462.0		
7/18/2015	0.6577	0.2044	0.4533	895.0		
7/19/2015	0.6438	0.2044	0.4395	895.0		
7/20/2015	0.6194	0.2009	0.4185	880.0		
7/21/2015	0.6038	0.2003	0.4035	877.0		
7/22/2015	0.5963	0.2023	0.3940	886.0		sample date
7/23/2015	0.5991	0.2083	0.3909	879.0		
7/24/2015	0.5880	0.2092	0.3789	852.0		
7/25/2015	0.5919	0.2152	0.3766	847.0		
7/26/2015	0.5942	0.2207	0.3735	840.0		
7/27/2015	0.6136	0.2325	0.3811	857.0		
7/28/2015	0.6245	0.2412	0.3833	862.0		
7/29/2015	0.6231	0.2452	0.3780	850.0		sample date
7/30/2015	0.6397	0.2388	0.4009	843.0		
7/31/2015	0.6661	0.2361	0.4300	849.0		
8/1/2015	0.6864	0.2312	0.4552	847.0		
8/2/2015	0.7057	0.2260	0.4796	844.0		
8/3/2015	0.7266	0.2214	0.5051	843.0		
8/4/2015	0.7634	0.2215	0.5419	860.0		
8/5/2015	0.5471	0.1512	0.3959	599.0		sample date
8/6/2015					Off-Line	power outage
8/7/2015	0.4352	0.1155	0.3197	434.0		
8/8/2015	0.9918	0.2585	0.7333	947.0		
8/9/2015	1.0526	0.2698	0.7828	964.0		
8/10/2015	1.1161	0.2816	0.8346	982.0		
8/11/2015	1.1481	0.2854	0.8628	972.0		
8/12/2015	1.1989	0.2938	0.9050	978.0		sample date
8/13/2015	1.1535	0.2838	0.8698	978.0		
8/14/2015	1.1071	0.2734	0.8337	977.0		
8/15/2015	1.0657	0.2693	0.8164	999.0		
8/16/2015	1.0519	0.2621	0.7898	1011.0		

Appendix VIII. Grassy Island TP Reduction & Operations Report.

(Click to Open Linked File)

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
7/1/2015	6.2457	0.3428	5.9030	1203.0		sampling date
7/2/2015	10.9236	0.6766	10.2470	2104.0		
7/3/2015	10.5757	0.7194	9.8563	2037.0		
7/4/2015	10.7574	0.7652	9.9922	2072.0		
7/5/2015	11.5777	0.7991	10.7786	2230.0		
7/6/2015	10.9132	0.9128	10.0004	2102.0		
7/7/2015	11.1676	0.8006	10.3670	2151.0		
7/8/2015	11.3026	0.8051	10.4975	2177.0		sampling date
7/9/2015	11.2208	0.7855	10.4353	2152.0		
7/10/2015	11.2584	0.7654	10.4930	2150.0		
7/11/2015	11.2380	0.7616	10.4764	2137.0		
7/12/2015	11.1748	0.7354	10.4394	2116.0		
7/13/2015	11.4766	0.7180	10.7585	2164.0		
7/14/2015	8.9259	0.6793	8.2466	1676.0		
7/15/2015	4.0057	0.4092	3.5965	749.0		sampling date
7/16/2015					Off-Line	installation of contact pond liners
7/17/2015					Off-Line	installation of contact pond liners
7/18/2015					Off-Line	installation of contact pond liners
7/19/2015					Off-Line	installation of contact pond liners
7/20/2015					Off-Line	installation of contact pond liners
7/21/2015					Off-Line	installation of contact pond liners
7/22/2015	22.4467	0.1878	22.2589	4479.0		sampling date
7/23/2015	20.4721	1.4188	19.0533	4209.0		
7/24/2015	18.9357	1.5900	17.3457	4015.0		
7/25/2015	17.9820	1.4912	16.4908	3936.0		
7/26/2015	17.7324	1.3647	16.3677	4011.0		
7/27/2015	18.0034	1.2980	16.7054	4213.0		
7/28/2015	25.3231	1.2282	24.0950	6138.0		
7/29/2015	31.3545	1.8467	29.5078	7882.0		sampling date
7/30/2015	33.7928	1.9993	31.7935	8262.0		
7/31/2015	37.2872	2.4526	34.8346	8873.0		
8/1/2015	37.9675	2.5731	35.3944	8800.0		
8/2/2015	32.8812	2.6508	30.2304	7428.0		
8/3/2015	21.3370	1.0876	20.2494	4701.0		
8/4/2015	41.1520	2.7035	38.4485	8848.0		
8/5/2015	44.1022	3.0177	41.0844	9259.0		
8/6/2015	45.5990	3.1397	42.4593	9353.0		
8/7/2015	45.5559	3.3259	42.2300	9134.0		sampling date
8/8/2015	43.0511	2.9140	40.1371	8880.0		
8/9/2015	41.0268	2.3359	38.6909	8713.0		
8/10/2015	31.5920	1.8319	29.7601	6914.0		
8/11/2015	20.9843	0.9382	20.0460	4737.0		
8/12/2015	15.4027	0.5994	14.8034	3590.0		sampling date
8/13/2015	11.9651	0.3708	11.5943	2662.0		
8/14/2015	19.1252	0.4290	18.6962	4070.0		
8/15/2015	24.1687	0.7107	23.4580	4929.0		
8/16/2015	27.5764	0.7010	26.8753	5399.0		
8/17/2015	42.8253	0.9055	41.9197	8062.0		

Appendix IX. Bessey Creek TP Reduction & Operations Report. (Click to Open Linked File)

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761	94.2428	475.2332	gpm On-Line Flow > 0	Operational/ Flow Status	
	3.2729	0.5416	2.7312	1,235.47		
7/1/2015	0.1767	0.0139	0.1629	77.0		
7/2/2015	0.1384	0.0124	0.1459	69.0		
7/3/2015	0.1722	0.0135	0.1586	75.0		sampling date
7/4/2015	0.1355	0.0100	0.1255	58.0		
7/5/2015	0.1331	0.0093	0.1238	56.0		
7/6/2015	0.1886	0.0124	0.1762	78.0		
7/7/2015	0.2606	0.0161	0.2446	106.0		
7/8/2015	0.1775	0.0102	0.1672	71.0		sampling date
7/9/2015	0.1988	0.0131	0.1856	85.0		
7/10/2015	0.1067	0.0081	0.0986	49.0		
7/11/2015	0.1068	0.0093	0.0975	53.0		
7/12/2015	0.0779	0.0078	0.0701	42.0		
7/13/2015	0.0609	0.0070	0.0539	36.0		
7/14/2015	0.0674	0.0091	0.0583	44.0		
7/15/2015	0.0343	0.0054	0.0288	25.0		sampling date
7/16/2015	0.0343	0.0065	0.0478	30.0		
7/17/2015	0.1034	0.0100	0.0934	46.0		
7/18/2015	0.1773	0.0143	0.1630	66.0		
7/19/2015	0.2300	0.0173	0.2327	80.0		
7/20/2015	0.2209	0.0134	0.2075	62.0		
7/21/2015	0.2681	0.0145	0.2536	67.0		
7/22/2015	0.4396	0.0214	0.4182	99.0		
7/23/2015	0.5123	0.0227	0.4896	105.0		sampling date
7/24/2015	0.6655	0.0338	0.6318	152.0		
7/25/2015	0.4653	0.0274	0.4379	120.0		
7/26/2015	0.4762	0.0330	0.4431	141.0		
7/27/2015	0.3998	0.0334	0.3664	139.0		
7/28/2015	0.2803	0.0291	0.2512	118.0		
7/29/2015	0.2212	0.0298	0.1914	118.0		sampling date
7/30/2015	0.2865	0.0365	0.2500	140.0		
7/31/2015	0.6277	0.0763	0.5515	283.0		
8/1/2015	1.5463	0.1800	1.3663	647.0		
8/2/2015	1.6496	0.1846	1.4650	644.0		
8/3/2015	1.2628	0.1364	1.1263	462.0		
8/4/2015	1.0400	0.1088	0.9312	358.0		
8/5/2015	1.4183	0.1440	1.2743	461.0		sampling date
8/6/2015	1.2554	0.1298	1.1256	438.0		
8/7/2015					Off-Line	system modifications
8/8/2015					Off-Line	system modifications
8/9/2015					Off-Line	system modifications
8/10/2015	0.5488	0.0630	0.4858	271.0		
8/11/2015	0.5136	0.0612	0.4523	283.0		sampling date
8/12/2015	0.4037	0.0461	0.3576	205.0		
8/13/2015	0.4035	0.0444	0.3592	190.0		
8/14/2015	0.4443	0.0472	0.3971	195.0		
8/15/2015	0.4403	0.0454	0.3950	181.0		
8/16/2015	0.2561	0.0257	0.2305	99.0		

Appendix X. Nubbin Slough TN Reduction & Operations Report. (Click to Open Linked File)

WATERSHED TECHNOLOGIES					
Nubbin Slough TN Reduction					# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169
					% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.) REMOVAL	AVERAGE DAILY FLOW	On-Line Unless Noted Otherwise
	INFLOW	OUTFLOW			
TOTAL PER DAY	3986.4707	2776.8113	1209.6594	gpm On-Line Flow > 0	Operational/ Flow Status
	23.5886	16.4308	7.1577	690.88	Comments
7/1/2015	27.8594	27.3326	0.5268	487.0	sampling date
7/2/2015	47.2912	46.1997	1.0915	863.0	
7/3/2015	23.4099	22.7624	0.6475	449.0	
7/4/2015	18.4030	17.8011	0.6019	371.0	
7/5/2015	11.9086	11.4525	0.4561	253.0	
7/6/2015	47.5640	45.4462	2.1178	1068.0	
7/7/2015	41.2454	39.1211	2.1243	982.0	
7/8/2015	44.3613	41.7272	2.6341	1124.0	sampling date
7/9/2015	21.9014	20.4048	1.4966	593.0	
7/10/2015	15.1700	13.9775	1.1925	441.0	
7/11/2015	8.3168	7.5640	0.7528	261.0	
7/12/2015	4.8103	4.3077	0.5026	164.0	
7/13/2015	3.9391	3.4621	0.4770	147.0	
7/14/2015	1.6741	1.4378	0.2363	69.0	
7/15/2015	1.7383	1.4499	0.2884	80.0	sampling date
7/16/2015	1.8764	1.5716	0.3047	87.0	
7/17/2015	1.9051	1.6026	0.3025	89.0	
7/18/2015	1.7845	1.5076	0.2769	84.0	
7/19/2015	1.6656	1.4133	0.2523	79.0	
7/20/2015	2.4060	2.0506	0.3554	115.0	
7/21/2015	1.0380	0.8887	0.1494	50.0	
7/22/2015	1.5861	1.3640	0.2221	77.0	sampling date
7/23/2015	1.8189	1.5714	0.2475	89.0	
7/24/2015	2.2101	1.9182	0.2919	109.0	
7/25/2015	7.1810	6.2616	0.9194	357.0	
7/26/2015	22.7070	19.8936	2.8135	1138.0	
7/27/2015	21.0983	18.5727	2.5257	1066.0	
7/28/2015	14.8015	13.0928	1.7088	754.0	
7/29/2015	11.0780	9.8471	1.2309	569.0	sampling date
7/30/2015	9.9678	8.4049	1.5629	512.0	
7/31/2015	15.8271	12.6223	3.2048	813.0	
8/1/2015	22.5425	16.9478	5.5946	1158.0	
8/2/2015	22.5025	15.8895	6.6130	1156.0	
8/3/2015	22.4431	14.8219	7.6213	1153.0	
8/4/2015	16.5640	10.1821	6.3819	851.0	
8/5/2015	11.1914	6.3679	4.8235	575.0	sampling date
8/6/2015	6.4615	3.3812	3.0803	332.0	
8/7/2015	4.8459	2.3143	2.5317	249.0	
8/8/2015	3.0359	1.3110	1.7248	156.0	
8/9/2015	1.6346	0.6312	1.0035	84.0	
8/10/2015	2.9772	1.0134	1.9638	153.0	
8/11/2015	2.7631	0.8142	1.9489	142.0	
8/12/2015	1.4593	0.3632	1.0960	75.0	sampling date
8/13/2015	2.7634	0.8813	1.8822	138.0	
8/14/2015	2.2651	0.8721	1.3930	110.0	
8/15/2015	0.9310	0.4167	0.5143	44.0	

Appendix XI. Ideal Grove TN Reduction & Operations Report.

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WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days Active Status: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
7/1/2015	0.8621	0.5393	0.3029	42.0		sampling date
7/2/2015	0.9607	0.6259	0.3349	47.0		
7/3/2015	0.8753	0.5726	0.3027	43.0		
7/4/2015	0.7094	0.4661	0.2434	35.0		
7/5/2015	0.6055	0.3995	0.2060	30.0		
7/6/2015	0.3417	0.2264	0.1153	17.0		
7/7/2015					Off-Line	pump down
7/8/2015					Off-Line	pump down; sampling date
7/9/2015					Off-Line	pump down
7/10/2015					Off-Line	pump down
7/11/2015					Off-Line	pump down
7/12/2015					Off-Line	pump down
7/13/2015					Off-Line	new pump on order
7/14/2015					Off-Line	new pump on order
7/15/2015					Off-Line	new pump on order; sampling date
7/16/2015					Off-Line	new pump on order
7/17/2015					Off-Line	new pump on order
7/18/2015					Off-Line	new pump on order
7/19/2015					Off-Line	new pump on order
7/20/2015					Off-Line	new pump on order
7/21/2015					Off-Line	new pump on order
7/22/2015					Off-Line	new pump on order; sampling date
7/23/2015					Off-Line	new pump on order
7/24/2015					Off-Line	new pump on order
7/25/2015	0.5347	0.2583	0.2764	23.0		
7/26/2015	1.0996	0.5311	0.5685	43.0		
7/27/2015	1.1716	0.5659	0.6057	42.0		dosing timer failure
7/28/2015	1.1484	0.5547	0.5937	38.0		dosing timer failure
7/29/2015	1.2367	0.5973	0.6394	38.0		dosing timer failure; sampling date
7/30/2015	1.3348	0.6104	0.7244	38.0		dosing timer failure
7/31/2015	1.4330	0.6234	0.8095	38.0		dosing timer failure
8/1/2015	1.3699	0.5695	0.8004	34.0		dosing timer failure
8/2/2015	1.3720	0.5470	0.8250	32.0		dosing timer failure
8/3/2015	1.8182	0.6975	1.1208	40.0		
8/4/2015	2.0176	0.7468	1.2708	42.0		
8/5/2015	2.1767	0.7793	1.3974	43.0		sampling date
8/6/2015	2.1813	0.7571	1.4242	41.0		
8/7/2015	2.2872	0.7712	1.5160	41.0		
8/8/2015	2.3930	0.7853	1.6077	41.0		
8/9/2015	2.3161	0.7409	1.5752	38.0		
8/10/2015	2.4142	0.7539	1.6603	38.0		
8/11/2015	2.3801	0.7266	1.6535	36.0		
8/12/2015	2.0609	0.6158	1.4451	30.0		sampling date
8/13/2015	2.1353	0.6578	1.4774	32.0		
8/14/2015	2.0723	0.6588	1.4134	32.0		
8/15/2015	1.7581	0.5773	1.1808	28.0		
8/16/2015	1.5814	0.5369	1.0445	26.0		

Appendix XII. Mosquito Creek TN Reduction & Operations Report.

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WATERSHED TECHNOLOGIES					
Mosquito Large Pond TN Reduction					
Period	7/1/2015	through	6/30/2016	366	days in period
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177
					% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.) REMOVAL	AVERAGE DAILY FLOW	On-Line Unless Otherwise Noted
	INFLOW	OUTFLOW			
TOTAL PER DAY	6328.9317	3157.4842	3171.4475	gpm On-Line Flow > 0	Operational/ Flow Status
	35.9598	17.9403	18.0196	845.70	Comments
7/1/2015	11.6907	6.7257	4.9650	293.0	sample date
7/2/2015	15.7350	9.0093	6.7257	393.0	
7/3/2015	16.3518	9.3180	7.0338	407.0	
7/4/2015	16.6903	9.4659	7.2244	414.0	
7/5/2015	13.0258	7.3527	5.6732	322.0	
7/6/2015	0.9742	0.5473	0.4269	24.0	
7/7/2015					Off-Line
7/8/2015	12.2602	6.8233	5.4370	300.0	equipment failure; faulty relay
7/9/2015	17.8783	9.9034	7.9751	436.0	sample date
7/10/2015	17.9387	9.8903	8.0485	436.0	
7/11/2015	17.9990	9.8772	8.1218	436.0	
7/12/2015	18.0593	9.8641	8.1952	436.0	
7/13/2015	18.1195	9.8510	8.2685	436.0	
7/14/2015	18.2632	9.8830	8.3802	438.0	
7/15/2015	20.4154	10.9965	9.4189	488.0	sample date
7/16/2015	17.6419	9.5171	8.1248	434.0	
7/17/2015	11.8786	6.4184	5.4603	301.0	
7/18/2015	7.7322	4.1851	3.5471	202.0	
7/19/2015	6.8622	3.7209	3.1413	185.0	
7/20/2015	7.9355	4.3113	3.6243	221.0	
7/21/2015	7.8819	4.2909	3.5910	227.0	
7/22/2015	9.1555	4.9952	4.1602	273.0	sample date
7/23/2015	13.5874	7.4308	6.1566	420.0	
7/24/2015	16.2995	8.9366	7.3630	523.0	
7/25/2015	15.4097	8.4717	6.9380	514.0	
7/26/2015	14.5124	8.0019	6.5105	504.0	
7/27/2015	13.7217	7.5900	6.1317	497.0	
7/28/2015	24.6531	13.6837	10.9694	933.0	
7/29/2015	26.6261	14.8345	11.7915	1055.0	sample date
7/30/2015	26.2938	15.0576	11.2362	1021.0	
7/31/2015	26.4520	15.5427	10.9093	1007.0	
8/1/2015	27.1313	16.3310	10.8004	1013.0	
8/2/2015	27.5985	16.9930	10.6055	1011.0	
8/3/2015	27.6464	17.3899	10.2585	994.0	
8/4/2015	27.5918	17.7089	9.8829	974.0	
8/5/2015	28.2377	18.4721	9.7655	979.0	sample date
8/6/2015	28.2135	18.7925	9.4210	961.0	
8/7/2015	29.3955	19.9180	9.4775	984.0	
8/8/2015	29.7504	20.4891	9.2613	979.0	
8/9/2015	29.6057	20.7075	8.8982	958.0	
8/10/2015	31.1359	22.1014	9.0345	991.0	
8/11/2015	31.3270	22.5521	8.7749	981.0	
8/12/2015	23.6876	17.2832	6.4044	730.0	sample date
8/13/2015	32.5457	23.5331	9.0127	1010.0	
8/14/2015	31.9021	22.8557	9.0464	997.0	
8/15/2015	31.8363	22.5940	9.2423	1002.0	
8/16/2015	32.0838	22.5503	9.5335	1017.0	

Appendix XIII. Lemkin Creek TN Reduction & Operations Report.
(Click to Open Linked File)

WATERSHED TECHNOLOGIES					
Lemkin Creek TN Reduction & Operations Report South Pond					# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183
					% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted
TOTAL PER DAY	3752.7035	2943.1807	809.5228	gpm On-Line Flow > 0	Operational/
	20.5066	16.0830	4.4236	952.20	Flow Status
	Comments				
7/1/2015	16.6872	12.6386	4.0486	804.0	sample date
7/2/2015	13.7147	10.3907	3.3240	661.0	
7/3/2015	17.8792	13.5503	4.3288	862.0	
7/4/2015	16.4218	12.4500	3.9719	792.0	
7/5/2015	7.4620	5.6391	1.8029	360.0	
7/6/2015	9.9460	7.5454	2.4006	480.0	
7/7/2015	16.4262	12.4657	3.9605	793.0	
7/8/2015	16.6071	12.6072	4.0000	802.0	sample date
7/9/2015	16.6624	12.9147	3.7477	804.0	
7/10/2015	16.5932	13.1251	3.4681	800.0	
7/11/2015	16.7107	13.4836	3.2272	805.0	
7/12/2015	15.8727	13.0592	2.8136	764.0	
7/13/2015	16.5304	13.8620	2.6684	795.0	
7/14/2015	16.0863	13.7439	2.3424	773.0	
7/15/2015	15.1831	13.2119	1.9713	729.0	sample date
7/16/2015	14.8708	12.9251	1.9457	720.0	
7/17/2015	15.2990	13.2816	2.0174	747.0	
7/18/2015	15.4537	13.3998	2.0539	761.0	
7/19/2015	14.5164	12.5717	1.9447	721.0	
7/20/2015	14.2317	12.3098	1.9219	713.0	
7/21/2015	13.7717	11.8968	1.8749	696.0	
7/22/2015	15.5353	13.4187	2.1166	793.0	sample date
7/23/2015	16.1138	13.5372	2.5767	800.0	
7/24/2015	16.0614	13.1480	2.9135	777.0	
7/25/2015	16.5995	13.2495	3.3500	783.0	
7/26/2015	16.9918	13.2526	3.7393	782.0	
7/27/2015	18.1844	13.8248	4.3595	817.0	
7/28/2015	17.6822	13.1311	4.5511	776.0	
7/29/2015	16.0175	11.6250	4.3924	687.0	sample date
7/30/2015	19.2481	13.7910	5.4571	815.0	
7/31/2015	19.8531	14.0448	5.8083	830.0	
8/1/2015	20.6852	14.4509	6.2343	854.0	
8/2/2015	20.6980	14.2817	6.4163	844.0	
8/3/2015	20.9531	14.2817	6.6714	844.0	
8/4/2015	22.1127	14.8909	7.2218	880.0	
8/5/2015	21.6920	14.4340	7.2580	853.0	sample date
8/6/2015	21.3211	14.4266	6.8945	844.0	
8/7/2015	20.5267	14.1226	6.4041	818.0	
8/8/2015	18.8686	13.1994	5.6692	757.0	
8/9/2015	20.1772	14.3507	5.8265	815.0	
8/10/2015	20.5564	14.8640	5.6924	836.0	
8/11/2015	20.5134	15.0793	5.4341	840.0	
8/12/2015	23.4279	17.5071	5.9208	966.0	sample date
8/13/2015	26.3923	19.7362	6.6560	1089.0	
8/14/2015	26.7368	20.0081	6.7288	1104.0	
8/15/2015	28.3635	21.2405	7.1231	1172.0	
8/16/2015	28.3434	21.2405	7.1030	1172.0	

Appendix XIV. Wolff Ditch TN Reduction & Operations Report. (Click to Open Linked File)

WATERSHED TECHNOLOGIES					
Wolff Ditch TN Reduction & Operations Report South Pond					# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176
					% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502	6311.2780	1394.7722	gpm On-Line Flow > 0	Operational/ Flow Status
	43.7844	35.8595	7.9248	2176.0	
7/1/2015	19.1105	14.6350	4.4755	931.0	sample date
7/2/2015	19.0325	14.7136	4.3389	936.0	
7/3/2015	19.1541	14.9179	4.2362	949.0	
7/4/2015	18.4909	14.5250	3.9660	924.0	
7/5/2015	18.7886	14.8865	3.9021	947.0	
7/6/2015	18.5473	14.8236	3.7237	943.0	
7/7/2015	17.7031	14.2734	3.4296	908.0	
7/8/2015	17.3539	14.1162	3.2377	898.0	sample date
7/9/2015	19.0267	15.4044	3.6222	959.0	
7/10/2015	19.1949	15.4712	3.7237	943.0	
7/11/2015	19.3885	15.5605	3.8279	929.0	
7/12/2015	20.0380	16.0163	4.0218	937.0	
7/13/2015	21.7909	17.3493	4.4415	995.0	
7/14/2015	11.5215	9.1389	2.3827	514.0	
7/15/2015	9.9518	7.8655	2.0863	434.0	sample date
7/16/2015	9.9977	7.8269	2.1708	436.0	
7/17/2015	10.5939	8.2143	2.3796	462.0	
7/18/2015	20.5228	15.7593	4.7635	895.0	
7/19/2015	20.5228	15.6057	4.9171	895.0	
7/20/2015	20.1788	15.1931	4.9858	880.0	
7/21/2015	20.1100	14.9907	5.1194	877.0	
7/22/2015	20.3164	14.9924	5.3240	886.0	sample date
7/23/2015	20.0050	14.8740	5.1310	879.0	
7/24/2015	19.2442	14.4171	4.8271	852.0	
7/25/2015	18.9859	14.3325	4.6534	847.0	
7/26/2015	18.6847	14.2140	4.4707	840.0	
7/27/2015	18.9158	14.5017	4.4141	857.0	
7/28/2015	18.8781	14.5863	4.2918	862.0	
7/29/2015	18.4694	14.3832	4.0861	850.0	sample date
7/30/2015	18.3173	14.2648	4.0525	843.0	
7/31/2015	18.4477	14.3663	4.0813	849.0	
8/1/2015	18.4042	14.3325	4.0717	847.0	
8/2/2015	18.3390	14.2817	4.0573	844.0	
8/3/2015	18.3173	14.2648	4.0525	843.0	
8/4/2015	18.6867	14.5525	4.1342	860.0	
8/5/2015	13.0155	10.1360	2.8795	599.0	sample date
8/6/2015					Off-Line power outage
8/7/2015	9.7283	7.4929	2.2354	434.0	
8/8/2015	21.5526	16.5124	5.0402	947.0	
8/9/2015	22.2705	16.9743	5.2962	964.0	
8/10/2015	23.0235	17.4599	5.5637	982.0	
8/11/2015	23.1228	17.4489	5.6739	972.0	
8/12/2015	23.6014	17.7246	5.8768	978.0	sample date
8/13/2015	23.2656	17.7246	5.5410	978.0	
8/14/2015	22.9063	17.7064	5.1999	977.0	
8/15/2015	23.0791	18.1051	4.9739	999.0	
8/16/2015	23.0092	18.3226	4.6865	1011.0	

Appendix XV. Grassy Island TN Reduction & Operations Report.
(Click to Open Linked File)

WATERSHED TECHNOLOGIES					
Grassy Island TN Reduction & Operations Report					
Period	7/1/2015	through	6/30/2016	366	days in period
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191
					% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless Noted Otherwise
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	# Days Outflow >0
TOTAL PER DAY	37596.4467	15962.8497	21633.5971	gpm On-Line Flow > 0	Operational/ Flow Status
	196.8400	83.5751	113.2649	6003.2	Comments
7/1/2015	25.3444	10.9240	14.4205	1203.0	sampling date
7/2/2015	46.0784	21.7500	24.3284	2104.0	
7/3/2015	46.3072	23.3263	22.9810	2037.0	
7/4/2015	48.8282	25.0237	23.8045	2072.0	
7/5/2015	54.4085	26.3533	28.0552	2230.0	
7/6/2015	53.0358	30.3529	22.6829	2102.0	
7/7/2015	56.0632	26.8452	29.2180	2151.0	
7/8/2015	58.5536	27.2177	31.3359	2177.0	sampling date
7/9/2015	59.6731	27.2752	32.3979	2152.0	
7/10/2015	61.4079	27.3045	34.1035	2150.0	
7/11/2015	62.8161	27.9242	34.8918	2137.0	
7/12/2015	63.9607	27.7179	36.2428	2116.0	
7/13/2015	67.2136	27.8325	39.3810	2164.0	
7/14/2015	53.4519	27.0867	26.3652	1676.0	
7/15/2015	24.5112	16.7915	7.7197	749.0	sampling date
7/16/2015					Off-Line inspection contact pond liners
7/17/2015					Off-Line inspection contact pond liners
7/18/2015					Off-Line inspection contact pond liners
7/19/2015					Off-Line inspection contact pond liners
7/20/2015					Off-Line inspection contact pond liners
7/21/2015					Off-Line inspection contact pond liners
7/22/2015	140.8435	4.8910	135.9526	4479.0	sampling date
7/23/2015	131.5837	39.7256	91.8581	4209.0	
7/24/2015	124.7846	48.1414	76.6432	4015.0	
7/25/2015	121.6097	49.1645	72.4452	3936.0	
7/26/2015	123.1935	49.4004	73.7931	4011.0	
7/27/2015	128.6274	52.1104	76.5170	4213.0	
7/28/2015	186.2774	55.3692	130.9082	6138.0	
7/29/2015	237.7635	94.9712	142.7923	7882.0	sampling date
7/30/2015	248.2902	96.0323	152.2579	8262.0	
7/31/2015	265.6466	110.4124	155.2342	8873.0	
8/1/2015	262.4639	108.9071	153.5568	8800.0	
8/2/2015	220.7017	105.7829	114.9188	7428.0	
8/3/2015	139.1440	41.0240	98.1200	4701.0	
8/4/2015	260.8877	96.6070	164.2808	8848.0	
8/5/2015	271.9571	102.3708	169.5863	9259.0	
8/6/2015	273.6582	101.3021	172.3561	9353.0	
8/7/2015	266.2156	102.2378	163.9778	9134.0	sampling date
8/8/2015	257.8064	101.9029	155.9034	8880.0	
8/9/2015	251.9707	94.9413	157.0294	8713.0	
8/10/2015	199.1621	89.1320	110.0300	6914.0	
8/11/2015	135.9155	57.0629	78.8525	4737.0	
8/12/2015	102.5986	48.8483	53.7503	3590.0	sampling date

Appendix XVI. Bessey Creek TN Reduction & Operations Report. (Click to Open Linked File)

WATERSHED TECHNOLOGIES						
Bessey Creek TN Reduction & Operations Report						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE DAILY FLOW	On-Line Unless Otherwise Noted	
	INFLOW	OUTFLOW	REMOVAL	gpm On-Line Flow > 0	Operational/ Flow Status	Comments
TOTAL PER DAY	4195.1311	1937.5645	2257.5667	1,235.47		
7/1/2015	1.3030	0.4766	0.8264	77.0		
7/2/2015	1.1676	0.4271	0.7405	69.0		
7/3/2015	1.2691	0.4642	0.8049	75.0		sampling date
7/4/2015	0.9814	0.3590	0.6225	58.0		
7/5/2015	0.9476	0.3466	0.6010	56.0		
7/6/2015	1.3199	0.4828	0.8371	78.0		
7/7/2015	1.7937	0.6561	1.1376	106.0		
7/8/2015	1.2014	0.4394	0.7620	71.0		sampling date
7/9/2015	1.4928	0.5376	0.9552	83.0		
7/10/2015	0.8920	0.3166	0.5754	49.0		
7/11/2015	0.9988	0.3496	0.6491	53.0		
7/12/2015	0.8184	0.2828	0.5356	42.0		
7/13/2015	0.7245	0.2473	0.4773	36.0		
7/14/2015	0.9138	0.3082	0.6056	44.0		
7/15/2015	0.5352	0.1785	0.3567	25.0		sampling date
7/16/2015	0.6615	0.2183	0.4432	30.0		
7/17/2015	1.0437	0.3409	0.7028	46.0		
7/18/2015	1.5399	0.4981	1.0417	66.0		
7/19/2015	1.9178	0.6147	1.3031	80.0		
7/20/2015	1.5260	0.4848	1.0412	62.0		
7/21/2015	1.6920	0.5330	1.1590	67.0		
7/22/2015	2.5636	0.8010	1.7626	99.0		
7/23/2015	2.7863	0.8638	1.9225	105.0		sampling date
7/24/2015	3.9070	1.2335	2.6735	152.0		
7/25/2015	2.9846	0.9604	2.0242	120.0		
7/26/2015	3.3896	1.1128	2.2768	141.0		
7/27/2015	3.2259	1.0815	2.1444	139.0		
7/28/2015	2.6403	0.9050	1.7354	118.0		
7/29/2015	2.5422	0.8918	1.6503	118.0		sampling date
7/30/2015	2.8996	1.0425	1.8571	140.0		
7/31/2015	5.6260	2.0739	3.5501	283.0		
8/1/2015	12.3239	4.6738	7.6501	647.0		
8/2/2015	11.7309	4.5804	7.1505	644.0		
8/3/2015	8.0313	3.2345	4.7968	462.0		
8/4/2015	5.9255	2.4665	3.4590	358.0		
8/5/2015	7.2468	3.1247	4.1220	461.0		sampling date
8/6/2015	6.7690	2.9808	3.7882	438.0		
8/7/2015					Off-Line	system modifications
8/8/2015					Off-Line	system modifications
8/9/2015					Off-Line	system modifications
8/10/2015	3.9005	1.8738	2.0267	271.0		
8/11/2015	3.9981	1.9645	2.0336	283.0		sampling date
8/12/2015	2.8418	1.4287	1.4131	205.0		
8/13/2015	2.5834	1.3293	1.2541	190.0		
8/14/2015	2.5997	1.3696	1.2301	195.0		
8/15/2015	2.3650	1.2762	1.0888	181.0		
8/16/2015	1.2673	0.7007	0.5666	99.0		

Appendix XVII. Lemkin Creek TP Reduction & Operations Report South Pond. (Click to Open Linked File)

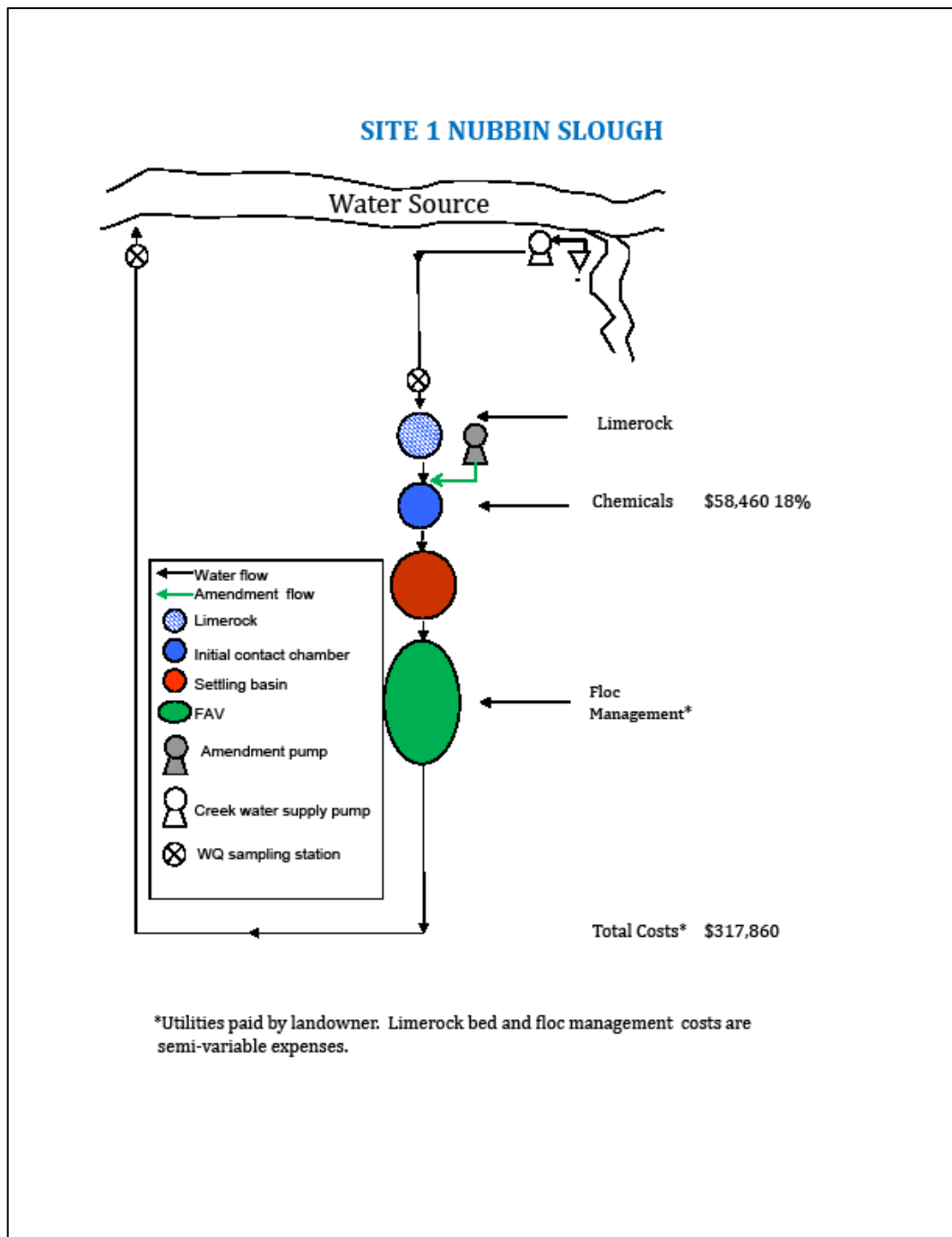
WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827	53.6243	375.6584	gpm On-Line Flow > 0	Operational/ Flow Status	Comments
	2.3458	0.2930	2.0528	952.20		
7/1/2015	0.5314	0.1836	0.3479	804.0		sample date
7/2/2015	0.4369	0.1509	0.2860	661.0		
7/3/2015	0.5698	0.1968	0.3729	862.0		
7/4/2015	0.5235	0.1808	0.3427	792.0		
7/5/2015	0.2380	0.0822	0.1558	360.0		
7/6/2015	0.3173	0.1096	0.2077	480.0		
7/7/2015	0.5242	0.1811	0.3431	793.0		
7/8/2015	0.5301	0.1831	0.3470	802.0		sample date
7/9/2015	0.5176	0.1808	0.3368	804.0		
7/10/2015	0.5013	0.1772	0.3241	800.0		
7/11/2015	0.4906	0.1755	0.3151	805.0		
7/12/2015	0.4525	0.1640	0.2886	764.0		
7/13/2015	0.4572	0.1679	0.2894	795.0		
7/14/2015	0.4313	0.1606	0.2707	773.0		
7/15/2015	0.3943	0.1489	0.2453	729.0		sample date
7/16/2015	0.3881	0.1483	0.2398	720.0		
7/17/2015	0.4014	0.1552	0.2462	747.0		
7/18/2015	0.4076	0.1594	0.2482	761.0		
7/19/2015	0.3850	0.1523	0.2327	721.0		
7/20/2015	0.3795	0.1518	0.2277	713.0		
7/21/2015	0.3692	0.1494	0.2199	696.0		
7/22/2015	0.4193	0.1715	0.2478	793.0		sample date
7/23/2015	0.4436	0.1772	0.2663	800.0		
7/24/2015	0.4509	0.1761	0.2748	777.0		
7/25/2015	0.4745	0.1815	0.2931	783.0		
7/26/2015	0.4941	0.1853	0.3088	782.0		
7/27/2015	0.5372	0.1978	0.3394	817.0		
7/28/2015	0.5303	0.1918	0.3384	776.0		
7/29/2015	0.4871	0.1734	0.3137	687.0		sample date
7/30/2015	0.7360	0.2015	0.5345	815.0		
7/31/2015	0.9106	0.2009	0.7097	830.0		
8/1/2015	1.1026	0.2023	0.9003	854.0		
8/2/2015	1.2534	0.1956	1.0578	844.0		
8/3/2015	1.4172	0.1913	1.2259	844.0		
8/4/2015	1.6483	0.1949	1.4534	880.0		
8/5/2015	1.7632	0.1845	1.5787	853.0		sample date
8/6/2015	1.6012	0.1811	1.4201	844.0		
8/7/2015	1.4128	0.1741	1.2387	818.0		
8/8/2015	1.1788	0.1599	1.0189	757.0		
8/9/2015	1.1306	0.1707	0.9599	815.0		
8/10/2015	1.0176	0.1737	0.8440	836.0		
8/11/2015	0.8797	0.1731	0.7067	840.0		
8/12/2015	0.8475	0.1974	0.6501	966.0		sample date
8/13/2015	1.0751	0.2281	0.8470	1089.0		
8/14/2015	1.2112	0.2369	0.9742	1104.0		
8/15/2015	1.4146	0.2576	1.1570	1172.0		
8/16/2015	1.5433	0.2636	1.2797	1172.0		

Appendix XVIII. Wolff Ditch TP Reduction & Operations Report South Pond. (Click to Open Linked File)

WATERSHED TECHNOLOGIES					
Wolff Ditch TP Reduction & Operations Report South Pond					
Period	7/1/2015	through	6/30/2016	366	days in period
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176
					% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645	125.6514	415.5131	gpm On-Line Flow > 0	
	3.0748	0.7139	2.3609	2176.0	
7/1/2015	0.5818	0.2126	0.3692	931.0	sample date
7/2/2015	0.5721	0.2137	0.3584	936.0	
7/3/2015	0.5670	0.2167	0.3503	949.0	
7/4/2015	0.5394	0.2110	0.3284	924.0	
7/5/2015	0.5398	0.2162	0.3235	947.0	
7/6/2015	0.5246	0.2153	0.3092	943.0	
7/7/2015	0.4926	0.2073	0.2853	908.0	
7/8/2015	0.4749	0.2051	0.2698	898.0	sample date
7/9/2015	0.5417	0.2157	0.3260	959.0	
7/10/2015	0.5667	0.2089	0.3578	943.0	
7/11/2015	0.5917	0.2026	0.3892	929.0	
7/12/2015	0.6306	0.2011	0.4295	937.0	
7/13/2015	0.7055	0.2101	0.4954	995.0	
7/14/2015	0.3830	0.1068	0.2762	514.0	
7/15/2015	0.3390	0.0887	0.2504	434.0	sample date
7/16/2015	0.3339	0.0898	0.2440	436.0	
7/17/2015	0.3466	0.0960	0.2506	462.0	
7/18/2015	0.6577	0.1875	0.4702	895.0	
7/19/2015	0.6438	0.1890	0.4548	895.0	
7/20/2015	0.6194	0.1873	0.4321	880.0	
7/21/2015	0.6038	0.1882	0.4156	877.0	
7/22/2015	0.5963	0.1917	0.4046	886.0	sample date
7/23/2015	0.5991	0.1947	0.4044	879.0	
7/24/2015	0.5880	0.1931	0.3949	852.0	
7/25/2015	0.5919	0.1963	0.3955	847.0	
7/26/2015	0.5942	0.1990	0.3952	840.0	
7/27/2015	0.6136	0.2075	0.4061	857.0	
7/28/2015	0.6245	0.2131	0.4114	862.0	
7/29/2015	0.6231	0.2145	0.4086	850.0	sample date
7/30/2015	0.6397	0.2084	0.4313	843.0	
7/31/2015	0.6661	0.2055	0.4606	849.0	
8/1/2015	0.6864	0.2007	0.4857	847.0	
8/2/2015	0.7057	0.1956	0.5101	844.0	
8/3/2015	0.7266	0.1910	0.5355	843.0	
8/4/2015	0.7634	0.1905	0.5729	860.0	
8/5/2015	0.5471	0.1296	0.4175	599.0	sample date
8/6/2015					power outage
8/7/2015	0.4352	0.0924	0.3428	434.0	
8/8/2015	0.9918	0.2000	0.7918	947.0	
8/9/2015	1.0526	0.2019	0.8507	964.0	
8/10/2015	1.1161	0.2040	0.9121	982.0	
8/11/2015	1.1481	0.2003	0.9479	972.0	
8/12/2015	1.1989	0.1998	0.9991	978.0	sample date
8/13/2015	1.1535	0.2048	0.9487	978.0	
8/14/2015	1.1071	0.2097	0.8974	977.0	
8/15/2015	1.0857	0.2195	0.8662	999.0	
8/16/2015	1.0519	0.2274	0.8245	1011.0	

Appendix XIX. Variable and Total Cost Detail by Site.

(Click to Open Linked File)



Appendix XX. Estimated Rough Order of Magnitude Replacement Costs Sites 1-3, 5-7, Discounted Future Values & Discount Rate Sensitivity Analyses.

(Click to Open Linked File.)

HWTT

Estimated Replacement Costs Order of Magnitude Excluding Labor & Overhead

in 2010 - 2013 dollars (See Note)

System Life in Years 50

Net Discount Rate Compounded Annually

(6% ROR less 2% inflation) 4%

RC = Replacement Cost

Item	Average Estimated Life	Estimated RC* in 2010 - 2013 Dollars	PV* in 2010 - 2013 Dollars	Year 2020	Year 2030	Year 2040	Year 2050	# of Replacements
Site 1 Nubbin Slough								
Pumps	10	\$ 14,000	\$ 23,100	\$ 9,500	\$ 6,400	\$ 4,300	\$ 2,900	4
Limerock (projected life 5-10 years)	10	34,110	56,200	23,000	15,600	10,500	7,100	4
Monitoring & Control Equipment	10	20,000	33,000	13,500	9,100	6,200	4,200	4
Total Replacement Cost		\$ 68,110	\$ 112,300	\$ 46,000	\$ 31,100	\$ 21,000	\$ 14,200	
Site 2 Ideal Grove								
Pumps	10	\$ 4,000	\$ 6,500	\$ 2,700	\$ 1,800	\$ 1,200	\$ 800	4
Limerock (projected life 5-10 years)	10	-	-	-	-	-	-	4
Monitoring & Control Equipment	10	8,000	13,300	5,400	3,700	2,500	1,700	4
Total Replacement Cost		\$ 12,000	\$ 19,800	\$ 8,100	\$ 5,500	\$ 3,700	\$ 2,500	
Site 3 Mosquito Creek								
Pumps	10	\$ 16,000	\$ 26,300	\$ 10,800	\$ 7,300	\$ 4,900	\$ 3,300	4
Limerock (projected life 5-10 years)	10	35,000	57,700	23,600	16,000	10,800	7,300	4
Monitoring & Control Equipment	10	13,000	21,400	8,800	5,900	4,000	2,700	4
Total Replacement Cost		\$ 64,000	\$ 105,400	\$ 43,200	\$ 29,200	\$ 19,700	\$ 13,300	
Site 5 Lemkin Creek								
Pumps	10	\$ 32,000	\$ 52,800	\$ 21,600	\$ 14,600	\$ 9,900	\$ 6,700	4
Limerock (projected life 5-10 years)	10	8,750	14,400	5,900	4,000	2,700	1,800	4
Monitoring & Control Equipment	10	16,000	26,300	10,800	7,300	4,900	3,300	4
Total Replacement Cost		\$ 56,750	\$ 93,500	\$ 38,300	\$ 25,900	\$ 17,500	\$ 11,800	
Site 6 Wolff Ditch								
Pumps	10	\$ 59,000	\$ 97,300	\$ 39,900	\$ 26,900	\$ 18,200	\$ 12,300	4
Limerock (projected life 5-10 years)	10	8,750	14,400	5,900	4,000	2,700	1,800	4
Monitoring & Control Equipment	10	18,000	29,600	12,200	8,200	5,500	3,700	4
Total Replacement Cost		\$ 85,750	\$ 141,300	\$ 58,000	\$ 39,100	\$ 26,400	\$ 17,800	
Site 7 Grassy Island through Phase III								
Pumps	10	212,450	\$ 350,300	\$ 143,500	\$ 97,000	\$ 65,500	\$ 44,300	4
Limerock (projected life 5-10 years)	10	77,050	127,100	52,100	35,200	23,800	16,000	4
Monitoring & Control Equipment	10	81,450	134,300	55,000	37,200	25,100	17,000	4
Total Replacement Cost		\$ 370,950	\$ 611,700	\$ 250,600	\$ 169,400	\$ 114,400	\$ 77,300	
Total Replacement Costs		\$ 657,560	\$ 1,084,000					

Note: The information contained herein is based upon a set of assumptions including estimated current year costs, life & discount rates.

WATERSHED TECHNOLOGIES						
Bessey Creek TN Reduction & Operations Report						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	4195.1311 24.1099	1937.5645 11.1354	2257.5667 12.9745	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
7/1/2015	1.3030	0.4766	0.8264	77.0		
7/2/2015	1.1676	0.4271	0.7405	69.0		
7/3/2015	1.2691	0.4642	0.8049	75.0		sampling date
7/4/2015	0.9814	0.3590	0.6225	58.0		
7/5/2015	0.9476	0.3466	0.6010	56.0		
7/6/2015	1.3199	0.4828	0.8371	78.0		
7/7/2015	1.7937	0.6561	1.1376	106.0		
7/8/2015	1.2014	0.4394	0.7620	71.0		sampling date
7/9/2015	1.4928	0.5376	0.9552	85.0		
7/10/2015	0.8920	0.3166	0.5754	49.0		
7/11/2015	0.9988	0.3496	0.6491	53.0		
7/12/2015	0.8184	0.2828	0.5356	42.0		
7/13/2015	0.7245	0.2473	0.4773	36.0		
7/14/2015	0.9138	0.3082	0.6056	44.0		
7/15/2015	0.5352	0.1785	0.3567	25.0		sampling date
7/16/2015	0.6615	0.2183	0.4432	30.0		
7/17/2015	1.0437	0.3409	0.7028	46.0		
7/18/2015	1.5399	0.4981	1.0417	66.0		
7/19/2015	1.9178	0.6147	1.3031	80.0		
7/20/2015	1.5260	0.4848	1.0412	62.0		
7/21/2015	1.6920	0.5330	1.1590	67.0		
7/22/2015	2.5636	0.8010	1.7626	99.0		
7/23/2015	2.7863	0.8638	1.9225	105.0		sampling date
7/24/2015	3.9070	1.2335	2.6735	152.0		
7/25/2015	2.9846	0.9604	2.0242	120.0		
7/26/2015	3.3896	1.1128	2.2768	141.0		
7/27/2015	3.2259	1.0815	2.1444	139.0		
7/28/2015	2.6403	0.9050	1.7354	118.0		
7/29/2015	2.5422	0.8918	1.6503	118.0		sampling date
7/30/2015	2.8996	1.0425	1.8571	140.0		
7/31/2015	5.6260	2.0759	3.5501	283.0		
8/1/2015	12.3239	4.6738	7.6501	647.0		
8/2/2015	11.7309	4.5804	7.1505	644.0		
8/3/2015	8.0313	3.2345	4.7968	462.0		
8/4/2015	5.9255	2.4665	3.4590	358.0		
8/5/2015	7.2468	3.1247	4.1220	461.0		sampling date
8/6/2015	6.7690	2.9808	3.7882	438.0		
8/7/2015					Off-Line	system modifications
8/8/2015					Off-Line	system modifications
8/9/2015					Off-Line	system modifications
8/10/2015	3.9005	1.8738	2.0267	271.0		
8/11/2015	3.9981	1.9645	2.0336	283.0		sampling date
8/12/2015	2.8418	1.4287	1.4131	205.0		
8/13/2015	2.5834	1.3293	1.2541	190.0		
8/14/2015	2.5997	1.3696	1.2301	195.0		
8/15/2015	2.3650	1.2762	1.0888	181.0		
8/16/2015	1.2673	0.7007	0.5666	99.0		

WATERSHED TECHNOLOGIES						
Bessey Creek TN Reduction & Operations Report						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	4195.1311 24.1099	1937.5645 11.1354	2257.5667 12.9745	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
8/17/2015	1.8804	1.0658	0.8145	150.0		
8/18/2015	1.1043	0.6419	0.4624	90.0		sampling date
8/19/2015	1.1029	0.6296	0.4732	87.0		
8/20/2015	3.3885	1.9015	1.4869	259.0		
8/21/2015	3.4802	1.9212	1.5590	258.0		
8/22/2015	3.3071	1.7971	1.5100	238.0		
8/23/2015	2.8603	1.5311	1.3292	200.0		
8/24/2015	2.6768	1.4123	1.2645	182.0		
8/25/2015	4.3830	2.2807	2.1023	290.0		
8/26/2015	13.1766	6.7658	6.4108	849.0		sampling date
8/27/2015	24.9725	12.6596	12.3129	1568.0		
8/28/2015	24.5152	12.2756	12.2396	1501.0		
8/29/2015	20.8565	10.3204	10.5361	1246.0		
8/30/2015	34.2386	16.7497	17.4889	1997.0		
8/31/2015	49.2487	23.8285	25.4202	2806.0		
9/1/2015	36.6152	17.5283	19.0868	2039.0		
9/2/2015	27.1782	12.8776	14.3006	1480.0		sampling date
9/3/2015	21.6652	10.1106	11.5545	1171.0		
9/4/2015	17.6886	8.1304	9.5583	949.0		
9/5/2015	21.3119	9.6479	11.6640	1135.0		
9/6/2015	36.7326	16.3778	20.3548	1942.0		
9/7/2015	37.2480	16.3567	20.8913	1955.0		
9/8/2015	57.7249	24.9655	32.7595	3008.0		
9/9/2015	43.1407	18.3756	24.7651	2232.0		sampling date
9/10/2015	35.1168	14.7313	20.3856	1804.0		
9/11/2015	32.3268	13.3552	18.9716	1649.0		
9/12/2015	44.5965	18.1445	26.4520	2259.0		
9/13/2015	34.9482	14.0028	20.9454	1758.0		
9/14/2015	31.1670	12.2976	18.8693	1557.0		
9/15/2015	31.7645	12.3423	19.4222	1576.0		
9/16/2015	44.1168	16.8800	27.2368	2174.0		
9/17/2015	74.1840	27.9499	46.2341	3631.0		sampling date
9/18/2015	80.5245	30.7566	49.7679	3943.0		
9/19/2015	77.0408	29.8260	47.2148	3774.0		
9/20/2015	75.4372	29.5973	45.8399	3697.0		
9/21/2015	52.6227	20.9199	31.7028	2580.0		
9/22/2015	48.4822	19.5263	28.9560	2378.0		
9/23/2015	66.8846	27.2863	39.5983	3282.0		
9/24/2015	68.7306	28.3978	40.3327	3374.0		sampling date
9/25/2015	25.4933	10.6663	14.8270	1252.0		
9/26/2015	15.8757	6.7252	9.1505	780.0		
9/27/2015	13.3056	5.7060	7.5995	654.0		
9/28/2015	38.2729	16.6135	21.6595	1882.0		
9/29/2015	34.9637	15.3601	19.6036	1720.0		
9/30/2015	47.7906	21.2457	26.5450	2352.0		
10/1/2015	52.9902	23.8352	29.1551	2609.0		sampling date
10/2/2015	47.0194	21.3963	25.6231	2316.0		

WATERSHED TECHNOLOGIES						
Bessey Creek TN Reduction & Operations Report						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
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	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	4195.1311 24.1099	1937.5645 11.1354	2257.5667 12.9745	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
10/3/2015	35.8990	16.5246	19.3744	1769.0		
10/4/2015	23.4492	10.9172	12.5321	1156.0		
10/5/2015	36.9433	17.3940	19.5493	1822.0		
10/6/2015	39.5016	18.8066	20.6950	1949.0		
10/7/2015	35.4533	17.0662	18.3872	1750.0		
10/8/2015	49.0466	23.8684	25.1782	2422.0		sampling date
10/9/2015	42.0249	19.3583	22.6666	2062.0		
10/10/2015	29.3100	12.7487	16.5613	1429.0		
10/11/2015	28.5879	11.7098	16.8781	1385.0		
10/12/2015	36.6197	14.0829	22.5368	1763.0		
10/13/2015	37.4554	13.4782	23.9772	1792.0		
10/14/2015	32.3256	10.8429	21.4827	1537.0		sampling date
10/15/2015	28.0956	9.4409	18.6547	1343.0		
10/16/2015	25.6568	8.6369	17.0199	1233.0		
10/17/2015	23.1805	7.8175	15.3630	1120.0		
10/18/2015	20.7911	7.0246	13.7665	1010.0		
10/19/2015	17.8735	6.0500	11.8235	873.0		
10/20/2015	16.4933	5.5932	10.9000	810.0		
10/21/2015	14.3981	4.8919	9.5062	711.0		
10/22/2015	14.1979	4.8331	9.3648	705.0		sampling date
10/23/2015	21.3891	7.2950	14.0941	1068.0		
10/24/2015	20.4335	6.9826	13.4509	1026.0		
10/25/2015	17.0117	5.8247	11.1870	859.0		
10/26/2015	15.0844	5.1750	9.9094	766.0		
10/27/2015	13.1192	4.5098	8.6094	670.0		
10/28/2015	16.5294	5.6935	10.8360	849.0		sampling date
10/29/2015	20.0172	7.0137	13.0035	1043.0		
10/30/2015	17.0231	6.0688	10.9544	900.0		
10/31/2015	14.3321	5.1996	9.1324	769.0		
11/1/2015	11.9156	4.4002	7.5153	649.0		
11/2/2015	10.5241	3.9567	6.5673	582.0		
11/3/2015	9.4368	3.6130	5.8238	530.0		
11/4/2015	8.2381	3.2127	5.0254	470.0		
11/5/2015	7.5902	3.0158	4.5745	440.0		sampling date
11/6/2015	7.3155	2.9620	4.3534	431.0		
11/7/2015	6.9288	2.8598	4.0690	415.0		
11/8/2015	6.1570	2.5911	3.5659	375.0		
11/9/2015	5.5849	2.3971	3.1878	346.0		
11/10/2015	5.3620	2.3479	3.0141	338.0		sampling date
11/11/2015	5.2567	2.2571	2.9996	321.0		
11/12/2015	5.0158	2.1136	2.9022	297.0		
11/13/2015	11.5364	4.7747	6.7618	663.0		
11/14/2015	15.0107	6.1062	8.9044	838.0		
11/15/2015	11.0916	4.4378	6.6539	602.0		
11/16/2015	11.0970	4.3697	6.7273	586.0		
11/17/2015	27.1118	10.5133	16.5986	1394.0		
11/18/2015	50.1822	19.1739	31.0083	2514.0		

WATERSHED TECHNOLOGIES						
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Period	7/1/2015	through	6/30/2016	366	days in period	
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	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	4195.1311 24.1099	1937.5645 11.1354	2257.5667 12.9745	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
11/19/2015	67.1728	25.3028	41.8700	3281.0		sampling date
11/20/2015	50.3860	18.7205	31.6655	2401.0		
11/21/2015	50.0893	18.3651	31.7243	2330.0		
11/22/2015	37.3945	13.5360	23.8585	1699.0		
11/23/2015	85.2228	30.4692	54.7536	3784.0		sampling date
11/24/2015	52.5649	18.8480	33.7169	2335.0		
11/25/2015					Off-Line	FPL installing 3-phase power
11/26/2015					Off-Line	FPL installing 3-phase power
11/27/2015					Off-Line	FPL installing 3-phase power
11/28/2015					Off-Line	FPL installing 3-phase power
11/29/2015					Off-Line	FPL installing 3-phase power
11/30/2015					Off-Line	FPL installing 3-phase power
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
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	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	4195.1311 24.1099	1937.5645 11.1354	2257.5667 12.9745	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Bessey Creek TN Reduction & Operations Report						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
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	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	4195.1311 24.1099	1937.5645 11.1354	2257.5667 12.9745	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Bessey Creek TN Reduction & Operations Report						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	4195.1311 24.1099	1937.5645 11.1354	2257.5667 12.9745	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Bessey Creek TN Reduction & Operations Report						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	4195.1311 24.1099	1937.5645 11.1354	2257.5667 12.9745	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016					Off-Line	scheduled site shut down
6/1/2016	11.1354	6.4058	4.7296	541.0		
6/2/2016	16.2320	9.3580	6.8740	789.0		
6/3/2016	13.3452	7.7104	5.6348	649.0		
6/4/2016	10.9751	6.3547	4.6203	534.0		
6/5/2016	16.2080	9.4049	6.8030	789.0		
6/6/2016	44.1649	25.6827	18.4821	2151.0		
6/7/2016	31.0294	18.0831	12.9463	1512.0		
6/8/2016	45.9673	26.8462	19.1210	2241.0		sampling date
6/9/2016	46.7646	27.3707	19.3939	2281.0		
6/10/2016	54.2619	31.8270	22.4349	2648.0		
6/11/2016	74.4297	43.7500	30.6797	3634.0		
6/12/2016	54.9655	32.3782	22.5874	2685.0		
6/13/2016	60.0945	35.4753	24.6192	2937.0		
6/14/2016	65.1979	38.5703	26.6276	3188.0		
6/15/2016	70.3167	41.6874	28.6293	3440.0		
6/16/2016	56.0824	33.3195	22.7628	2745.0		sampling date
6/17/2016	57.9844	34.5169	23.4675	2899.0		
6/18/2016	51.6317	30.7979	20.8339	2638.0		
6/19/2016	27.0875	16.1917	10.8957	1415.0		
6/20/2016	47.5519	28.4875	19.0644	2541.0		
6/21/2016	59.8457	35.9355	23.9102	3273.0		
6/22/2016	56.0303	33.7260	22.3044	3138.0		sampling date
6/23/2016	48.3403	29.1709	19.1694	2774.0		
6/24/2016	40.0789	24.2498	15.8292	2358.0		
6/25/2016	28.6291	17.3703	11.2588	1728.0		
6/26/2016	19.8666	12.0890	7.7776	1231.0		
6/27/2016	19.7152	12.0338	7.6814	1255.0		
6/28/2016	19.0696	11.6775	7.3921	1248.0		
6/29/2016	24.5486	15.0839	9.4647	1653.0		

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761 3.2729	94.2428 0.5416	475.2332 2.7312	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
7/1/2015	0.1767	0.0139	0.1629	77.0		
7/2/2015	0.1584	0.0124	0.1459	69.0		
7/3/2015	0.1722	0.0135	0.1586	75.0		sampling date
7/4/2015	0.1355	0.0100	0.1255	58.0		
7/5/2015	0.1331	0.0093	0.1238	56.0		
7/6/2015	0.1886	0.0124	0.1762	78.0		
7/7/2015	0.2606	0.0161	0.2446	106.0		
7/8/2015	0.1775	0.0102	0.1672	71.0		sampling date
7/9/2015	0.1988	0.0131	0.1856	85.0		
7/10/2015	0.1067	0.0081	0.0986	49.0		
7/11/2015	0.1068	0.0093	0.0975	53.0		
7/12/2015	0.0779	0.0078	0.0701	42.0		
7/13/2015	0.0609	0.0070	0.0539	36.0		
7/14/2015	0.0674	0.0091	0.0583	44.0		
7/15/2015	0.0343	0.0054	0.0288	25.0		sampling date
7/16/2015	0.0543	0.0065	0.0478	30.0		
7/17/2015	0.1034	0.0100	0.0934	46.0		
7/18/2015	0.1773	0.0143	0.1630	66.0		
7/19/2015	0.2500	0.0173	0.2327	80.0		
7/20/2015	0.2209	0.0134	0.2075	62.0		
7/21/2015	0.2681	0.0145	0.2536	67.0		
7/22/2015	0.4396	0.0214	0.4182	99.0		
7/23/2015	0.5123	0.0227	0.4896	105.0		sampling date
7/24/2015	0.6655	0.0338	0.6318	152.0		
7/25/2015	0.4653	0.0274	0.4379	120.0		
7/26/2015	0.4762	0.0330	0.4431	141.0		
7/27/2015	0.3998	0.0334	0.3664	139.0		
7/28/2015	0.2803	0.0291	0.2512	118.0		
7/29/2015	0.2212	0.0298	0.1914	118.0		sampling date
7/30/2015	0.2865	0.0365	0.2500	140.0		
7/31/2015	0.6277	0.0763	0.5515	283.0		
8/1/2015	1.5463	0.1800	1.3663	647.0		
8/2/2015	1.6496	0.1846	1.4650	644.0		
8/3/2015	1.2628	0.1364	1.1263	462.0		
8/4/2015	1.0400	0.1088	0.9312	358.0		
8/5/2015	1.4183	0.1440	1.2743	461.0		sampling date
8/6/2015	1.2554	0.1298	1.1256	438.0		
8/7/2015					Off-Line	system modifications
8/8/2015					Off-Line	system modifications
8/9/2015					Off-Line	system modifications
8/10/2015	0.5488	0.0630	0.4858	271.0		
8/11/2015	0.5136	0.0612	0.4523	283.0		sampling date
8/12/2015	0.4037	0.0461	0.3576	205.0		
8/13/2015	0.4035	0.0444	0.3592	190.0		
8/14/2015	0.4443	0.0472	0.3971	195.0		
8/15/2015	0.4403	0.0454	0.3950	181.0		
8/16/2015	0.2561	0.0257	0.2305	99.0		

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761 3.2729	94.2428 0.5416	475.2332 2.7312	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
8/17/2015	0.4113	0.0402	0.3711	150.0		
8/18/2015	0.2607	0.0249	0.2358	90.0		sampling date
8/19/2015	0.2617	0.0246	0.2371	87.0		
8/20/2015	0.8077	0.0747	0.7330	259.0		
8/21/2015	0.8333	0.0760	0.7573	258.0		
8/22/2015	0.7952	0.0715	0.7237	238.0		
8/23/2015	0.6904	0.0613	0.6291	200.0		
8/24/2015	0.6485	0.0569	0.5917	182.0		
8/25/2015	1.0656	0.0924	0.9733	290.0		
8/26/2015	3.2141	0.2755	2.9386	849.0		sampling date
8/27/2015	5.7395	0.5142	5.2253	1568.0		
8/28/2015	5.3061	0.4974	4.8087	1501.0		
8/29/2015	4.2485	0.4171	3.8313	1246.0		
8/30/2015	6.5589	0.6754	5.8835	1997.0		
8/31/2015	8.8643	0.9587	7.9056	2806.0		
9/1/2015	6.1857	0.7036	5.4821	2039.0		
9/2/2015	4.3044	0.5158	3.7886	1480.0		sampling date
9/3/2015	3.3675	0.4162	2.9513	1171.0		
9/4/2015	2.6981	0.3438	2.3544	949.0		
9/5/2015	3.1899	0.4190	2.7710	1135.0		
9/6/2015	5.3947	0.7302	4.6645	1942.0		
9/7/2015	5.3670	0.7485	4.6185	1955.0		
9/8/2015	8.1597	1.1723	6.9874	3008.0		
9/9/2015	5.9818	0.8852	5.0966	2232.0		sampling date
9/10/2015	4.8565	0.6938	4.1627	1804.0		
9/11/2015	4.4590	0.6144	3.8447	1649.0		
9/12/2015	6.1356	0.8145	5.3212	2259.0		
9/13/2015	4.7960	0.6127	4.1833	1758.0		
9/14/2015	4.2664	0.5239	3.7424	1557.0		
9/15/2015	4.3374	0.5114	3.8260	1576.0		
9/16/2015	6.0093	0.6793	5.3300	2174.0		
9/17/2015	10.0803	1.0909	8.9894	3631.0		sampling date
9/18/2015	10.9465	1.3539	9.5925	3943.0		
9/19/2015	10.4773	1.4579	9.0194	3774.0		
9/20/2015	10.2635	1.5868	8.6767	3697.0		
9/21/2015	7.1625	1.2181	5.9444	2580.0		
9/22/2015	6.6017	1.2248	5.3769	2378.0		
9/23/2015	9.1114	1.8313	7.2801	3282.0		
9/24/2015	9.3668	2.0275	7.3394	3374.0		sampling date
9/25/2015	3.4500	0.7674	2.6826	1252.0		
9/26/2015	2.1333	0.4875	1.6458	780.0		
9/27/2015	1.7752	0.4166	1.3586	654.0		
9/28/2015	5.0697	1.2214	3.8483	1882.0		
9/29/2015	4.5978	1.1369	3.4609	1720.0		
9/30/2015	6.2388	1.5829	4.6559	2352.0		
10/1/2015	6.8668	1.7872	5.0795	2609.0		sampling date
10/2/2015	6.0400	1.4513	4.5886	2316.0		

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761 3.2729	94.2428 0.5416	475.2332 2.7312	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
10/3/2015	4.5709	1.0053	3.5656	1769.0		
10/4/2015	2.9592	0.5895	2.3697	1156.0		
10/5/2015	4.6203	0.8227	3.7976	1822.0		
10/6/2015	4.8955	0.7663	4.1292	1949.0		
10/7/2015	4.3535	0.5859	3.7677	1750.0		
10/8/2015	5.9671	0.6695	5.2976	2422.0		sampling date
10/9/2015	4.8489	0.5245	4.3243	2062.0		
10/10/2015	3.2001	0.3320	2.8680	1429.0		
10/11/2015	2.9462	0.2913	2.6549	1385.0		
10/12/2015	3.5525	0.3319	3.2206	1763.0		
10/13/2015	3.4099	0.2979	3.1120	1792.0		
10/14/2015	2.7523	0.2217	2.5306	1537.0		sampling date
10/15/2015	2.5159	0.2078	2.3081	1343.0		
10/16/2015	2.4117	0.2038	2.2079	1233.0		
10/17/2015	2.2832	0.1969	2.0863	1120.0		
10/18/2015	2.1424	0.1881	1.9543	1010.0		
10/19/2015	1.9239	0.1718	1.7521	873.0		
10/20/2015	1.8520	0.1679	1.6841	810.0		
10/21/2015	1.6844	0.1549	1.5295	711.0		
10/22/2015	1.7284	0.1610	1.5675	705.0		sampling date
10/23/2015	2.5970	0.2460	2.3510	1068.0		
10/24/2015	2.4743	0.2384	2.2359	1026.0		
10/25/2015	2.0544	0.2013	1.8531	859.0		
10/26/2015	1.8166	0.1810	1.6356	766.0		
10/27/2015	1.5755	0.1597	1.4158	670.0		
10/28/2015	1.9794	0.2041	1.7754	849.0		sampling date
10/29/2015	2.5305	0.2648	2.2657	1043.0		
10/30/2015	2.2687	0.2407	2.0281	900.0		
10/31/2015	2.0113	0.2160	1.7952	769.0		
11/1/2015	1.7588	0.1911	1.5677	649.0		
11/2/2015	1.6323	0.1792	1.4531	582.0		
11/3/2015	1.5367	0.1704	1.3663	530.0		
11/4/2015	1.4072	0.1575	1.2497	470.0		
11/5/2015	1.3590	0.1534	1.2057	440.0		sampling date
11/6/2015	1.3157	0.1481	1.1675	431.0		
11/7/2015	1.2519	0.1406	1.1112	415.0		
11/8/2015	1.1177	0.1253	0.9924	375.0		
11/9/2015	1.0188	0.1139	0.9048	346.0		
11/10/2015	0.9830	0.1097	0.8734	338.0		sampling date
11/11/2015	0.9473	0.0982	0.8491	321.0		
11/12/2015	0.8892	0.0853	0.8039	297.0		
11/13/2015	2.0132	0.1780	1.8353	663.0		
11/14/2015	2.5805	0.2093	2.3712	838.0		
11/15/2015	1.8795	0.1391	1.7404	602.0		
11/16/2015	1.8545	0.1244	1.7301	586.0		
11/17/2015	4.4712	0.2699	4.2013	1394.0		
11/18/2015	8.1711	0.4398	7.7313	2514.0		

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761 3.2729	94.2428 0.5416	475.2332 2.7312	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
11/19/2015	10.8042	0.5126	10.2916	3281.0		sampling date
11/20/2015	7.8559	0.3895	7.4663	2401.0		
11/21/2015	7.5746	0.3920	7.1825	2330.0		
11/22/2015	5.4875	0.2961	5.1915	1699.0		
11/23/2015	12.1422	0.6821	11.4601	3784.0		sampling date
11/24/2015	7.4770	0.4222	7.0548	2335.0		
11/25/2015					Off-Line	FPL installing 3-phase power
11/26/2015					Off-Line	FPL installing 3-phase power
11/27/2015					Off-Line	FPL installing 3-phase power
11/28/2015					Off-Line	FPL installing 3-phase power
11/29/2015					Off-Line	FPL installing 3-phase power
11/30/2015					Off-Line	FPL installing 3-phase power
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761 3.2729	94.2428 0.5416	475.2332 2.7312	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761 3.2729	94.2428 0.5416	475.2332 2.7312	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761 3.2729	94.2428 0.5416	475.2332 2.7312	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Bessey Creek TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	174	# Days On-Line Flow > 0.0000	174	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	174	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	569.4761 3.2729	94.2428 0.5416	475.2332 2.7312	gpm On-Line Flow > 0 1,235.47	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016					Off-Line	scheduled site shut down
6/1/2016	1.0461	0.1540	0.8921	541.0		
6/2/2016	1.5203	0.2250	1.2953	789.0		
6/3/2016	1.2462	0.1854	1.0608	649.0		
6/4/2016	1.0218	0.1529	0.8690	534.0		
6/5/2016	1.5045	0.2263	1.2782	789.0		
6/6/2016	4.0873	0.6181	3.4692	2151.0		
6/7/2016	2.8630	0.4353	2.4277	1512.0		
6/8/2016	4.2284	0.6464	3.5820	2241.0		sampling date
6/9/2016	4.6808	0.8498	3.8310	2281.0		
6/10/2016	5.8715	1.2093	4.6622	2648.0		
6/11/2016	8.6583	1.9653	6.6930	3634.0		
6/12/2016	6.8409	1.6780	5.1630	2685.0		
6/13/2016	7.9683	2.0825	5.8858	2937.0		
6/14/2016	9.1761	2.5287	6.6474	3188.0		
6/15/2016	10.4699	3.0180	7.4519	3440.0		
6/16/2016	8.8082	2.6392	6.1691	2745.0		sampling date
6/17/2016	8.7798	2.7176	6.0622	2899.0		
6/18/2016	7.5138	2.4095	5.1043	2638.0		
6/19/2016	3.7752	1.2584	2.5168	1415.0		
6/20/2016	6.3214	2.1987	4.1226	2541.0		
6/21/2016	7.5524	2.7535	4.7989	3273.0		
6/22/2016	6.6752	2.5645	4.1107	3138.0		sampling date
6/23/2016	5.8467	2.1628	3.6839	2774.0		
6/24/2016	4.9238	1.7499	3.1739	2358.0		
6/25/2016	3.5746	1.2175	2.3571	1728.0		
6/26/2016	2.5224	0.8211	1.7013	1231.0		
6/27/2016	2.5471	0.7900	1.7571	1255.0		
6/28/2016	2.5085	0.7387	1.7698	1248.0		
6/29/2016	3.2903	0.9163	2.3740	1653.0		
6/30/2016	4.1154	1.0790	3.0363	2088.0		sampling date

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless Noted Otherwise	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW		190
TOTAL PER DAY	37596.4467 196.8400	15962.8497 83.5751	21633.5971 113.2649	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
7/1/2015	25.3444	10.9240	14.4205	1203.0		sampling date
7/2/2015	46.0784	21.7500	24.3284	2104.0		
7/3/2015	46.3072	23.3263	22.9810	2037.0		
7/4/2015	48.8282	25.0237	23.8045	2072.0		
7/5/2015	54.4085	26.3533	28.0552	2230.0		
7/6/2015	53.0358	30.3529	22.6829	2102.0		
7/7/2015	56.0632	26.8452	29.2180	2151.0		
7/8/2015	58.5536	27.2177	31.3359	2177.0		sampling date
7/9/2015	59.6731	27.2752	32.3979	2152.0		
7/10/2015	61.4079	27.3045	34.1035	2150.0		
7/11/2015	62.8161	27.9242	34.8918	2137.0		
7/12/2015	63.9607	27.7179	36.2428	2116.0		
7/13/2015	67.2136	27.8325	39.3810	2164.0		
7/14/2015	53.4519	27.0867	26.3652	1676.0		
7/15/2015	24.5112	16.7915	7.7197	749.0		sampling date
7/16/2015					Off-Line	inspection contact pond liners
7/17/2015					Off-Line	inspection contact pond liners
7/18/2015					Off-Line	inspection contact pond liners
7/19/2015					Off-Line	inspection contact pond liners
7/20/2015					Off-Line	inspection contact pond liners
7/21/2015					Off-Line	inspection contact pond liners
7/22/2015	140.8435	4.8910	135.9526	4479.0		sampling date
7/23/2015	131.5837	39.7256	91.8581	4209.0		
7/24/2015	124.7846	48.1414	76.6432	4015.0		
7/25/2015	121.6097	49.1645	72.4452	3936.0		
7/26/2015	123.1935	49.4004	73.7931	4011.0		
7/27/2015	128.6274	52.1104	76.5170	4213.0		
7/28/2015	186.2774	55.3692	130.9082	6138.0		
7/29/2015	237.7635	94.9712	142.7923	7882.0		sampling date
7/30/2015	248.2902	96.0323	152.2579	8262.0		
7/31/2015	265.6466	110.4124	155.2342	8873.0		
8/1/2015	262.4639	108.9071	153.5568	8800.0		
8/2/2015	220.7017	105.7829	114.9188	7428.0		
8/3/2015	139.1440	41.0240	98.1200	4701.0		
8/4/2015	260.8877	96.6070	164.2808	8848.0		
8/5/2015	271.9571	102.3708	169.5863	9259.0		
8/6/2015	273.6582	101.3021	172.3561	9353.0		
8/7/2015	266.2156	102.2378	163.9778	9134.0		sampling date
8/8/2015	257.8064	101.9029	155.9034	8880.0		
8/9/2015	251.9707	94.9413	157.0294	8713.0		
8/10/2015	199.1621	89.1320	110.0300	6914.0		
8/11/2015	135.9155	57.0629	78.8525	4737.0		
8/12/2015	102.5986	48.8483	53.7503	3590.0		sampling date

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE DAILY FLOW	On-Line Unless Noted Otherwise	# Days Outflow >0
	INFLOW	OUTFLOW				
TOTAL PER DAY	37596.4467 196.8400	15962.8497 83.5751	21633.5971 113.2649	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
8/13/2015	76.6988	30.1348	46.5640	2662.0		
8/14/2015	118.2171	34.7731	83.4440	4070.0		
8/15/2015	144.3185	57.4399	86.8787	4929.0		
8/16/2015	159.3405	56.5004	102.8402	5399.0		
8/17/2015	239.8160	72.7772	167.0387	8062.0		
8/18/2015	270.9888	96.1853	174.8035	9039.0		
8/19/2015	287.7227	98.4725	189.2502	9523.0		
8/20/2015	295.0614	100.3659	194.6955	9691.0		
8/21/2015	332.5453	118.3943	214.1510	10839.0		sampling date
8/22/2015	327.2858	114.5033	212.7825	10587.0		
8/23/2015	167.4486	88.7090	78.7396	5376.0		
8/24/2015	179.4675	40.7223	138.7452	5719.0		
8/25/2015	314.4054	95.1801	219.2253	9945.0		
8/26/2015	271.1531	97.7642	173.3889	8514.0		sampling date
8/27/2015	249.0024	87.6093	161.3931	7787.0		
8/28/2015	348.9862	125.4059	223.5802	10870.0		
8/29/2015	341.9727	128.7624	213.2103	10609.0		
8/30/2015	343.4035	136.4653	206.9382	10611.0		
8/31/2015	353.9975	136.1191	217.8784	10895.0		
9/1/2015	296.4225	133.3225	163.1000	9087.0		
9/2/2015	295.8896	112.8317	183.0579	9035.0		sampling date
9/3/2015	294.7187	115.0548	179.6638	8964.0		
9/4/2015	296.2690	117.8651	178.4039	8976.0		
9/5/2015	305.3774	128.9238	176.4536	9216.0		
9/6/2015	296.8509	126.6631	170.1878	8924.0		
9/7/2015	283.5742	123.0806	160.4936	8492.0		
9/8/2015	223.3561	105.3552	118.0009	6663.0		
9/9/2015	295.8563	109.4974	186.3588	8792.0		sampling date
9/10/2015	367.9618	155.9260	212.0358	10838.0		
9/11/2015	380.1577	163.3477	216.8100	11099.0		
9/12/2015	402.4615	174.8246	227.6369	11648.0		
9/13/2015	407.7037	180.5878	227.1159	11698.0		
9/14/2015	401.4108	173.5370	227.8738	11419.0		
9/15/2015	414.1659	184.2257	229.9402	11682.0		
9/16/2015	417.7830	180.2964	237.4866	11685.0		sampling date
9/17/2015	387.8355	171.4476	216.3878	10757.0		
9/18/2015	431.3848	188.8408	242.5440	11866.0		
9/19/2015	434.2535	192.3703	241.8832	11847.0		
9/20/2015	432.6392	191.6056	241.0336	11707.0		
9/21/2015	428.5191	185.7976	242.7215	11502.0		
9/22/2015	444.1056	192.7299	251.3758	11825.0		
9/23/2015	453.0720	196.9801	256.0919	11968.0		
9/24/2015	458.7665	205.2931	253.4734	12023.0		

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless Noted Otherwise	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW		190
TOTAL PER DAY	37596.4467	15962.8497	21633.5971	gpm On-Line Flow > 0	Operational/ Flow Status	Comments
	196.8400	83.5751	113.2649	6003.2		
9/25/2015	461.6096	202.5495	259.0602	12003.0		sampling date
9/26/2015	454.1386	202.1091	252.0295	11974.0		
9/27/2015	441.1263	196.4289	244.6974	11796.0		
9/28/2015	358.8115	171.5533	187.2582	9733.0		
9/29/2015	326.4669	144.0847	182.3822	8985.0		
9/30/2015	282.8863	122.0026	160.8837	7901.0		sampling date
10/1/2015	319.3976	131.7385	187.6591	9055.0		
10/2/2015	319.8373	133.1080	186.7293	9206.0		
10/3/2015	314.3008	137.2208	177.0799	9187.0		
10/4/2015	302.5535	128.9531	173.6004	8983.0		
10/5/2015	307.9291	127.7963	180.1328	9289.0		
10/6/2015	300.5195	124.1559	176.3637	9213.0		
10/7/2015	297.6187	128.3621	169.2566	9275.0		sampling date
10/8/2015	301.8089	125.7795	176.0293	9363.0		
10/9/2015	232.6513	109.0168	123.6346	7185.0		
10/10/2015	295.9222	109.0169	186.9054	9098.0		
10/11/2015	293.9174	119.0511	174.8663	8996.0		
10/12/2015	302.9752	118.9323	184.0430	9232.0		
10/13/2015	304.8170	114.5677	190.2492	9247.0		
10/14/2015	305.9678	115.9649	190.0029	9241.0		sampling date
10/15/2015	306.9505	113.3246	193.6259	9230.0		
10/16/2015	276.4991	114.3669	162.1322	8278.0		
10/17/2015	226.3122	90.3451	135.9671	6746.0		
10/18/2015	221.2655	85.0353	136.2302	6567.0		
10/19/2015	226.3184	84.3983	141.9201	6688.0		
10/20/2015	206.6313	81.8739	124.7574	6080.0		
10/21/2015	113.2137	61.7539	51.4597	3317.0		sampling date
10/22/2015	78.3024	26.8028	51.4996	2304.0		
10/23/2015	88.1857	36.1260	52.0596	2606.0		
10/24/2015	88.3445	37.2796	51.0649	2622.0		
10/25/2015	88.4315	36.8861	51.5454	2636.0		
10/26/2015	83.4374	36.7218	46.7156	2498.0		
10/27/2015	74.2268	32.2082	42.0186	2232.0		
10/28/2015	76.9472	33.1609	43.7863	2324.0		sampling date
10/29/2015	76.2125	32.7497	43.4628	2312.0		
10/30/2015	77.8770	32.7836	45.0934	2373.0		
10/31/2015	84.2611	34.2275	50.0336	2579.0		
11/1/2015	80.8273	34.5503	46.2770	2485.0		
11/2/2015	76.7733	34.3548	42.4185	2371.0		
11/3/2015	77.0720	34.2744	42.7976	2391.0		
11/4/2015	75.9850	34.5400	41.4451	2368.0		sampling date
11/5/2015	72.0127	33.0850	38.9277	2318.0		
11/6/2015	69.6448	31.9040	37.7407	2318.0		

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE DAILY FLOW	On-Line Unless Noted Otherwise	# Days Outflow >0 190
	INFLOW	OUTFLOW				
TOTAL PER DAY	37596.4467 196.8400	15962.8497 83.5751	21633.5971 113.2649	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
11/7/2015	66.2610	31.1602	35.1008	2283.0		
11/8/2015	64.0969	30.7317	33.3652	2289.0		
11/9/2015	61.3808	30.7359	30.6450	2275.0		
11/10/2015	59.8097	30.3647	29.4450	2304.0		
11/11/2015	56.6082	30.1319	26.4763	2270.0		sampling date
11/12/2015	54.2414	28.2484	25.9930	2268.0		
11/13/2015	37.7300	27.1030	10.6270	1648.0		
11/14/2015	23.5134	11.1901	12.3233	1075.0		
11/15/2015	49.3969	24.5411	24.8558	2369.0		
11/16/2015	47.1752	29.2656	17.9095	2379.0		
11/17/2015	44.8014	25.3971	19.4043	2382.0		
11/18/2015	42.2080	26.3745	15.8335	2373.0		sampling date
11/19/2015	43.9381	28.7986	15.1395	2465.0		
11/20/2015	43.2637	32.5035	10.7601	2422.0		
11/21/2015	42.8545	29.3889	13.4656	2394.0		
11/22/2015	43.2684	31.7162	11.5522	2412.0		
11/23/2015	43.5040	28.0039	15.5001	2420.0		
11/24/2015	43.7761	28.5359	15.2402	2430.0		
11/25/2015	43.8143	28.4143	15.4000	2427.0		sampling date
11/26/2015	43.7257	29.0092	14.7164	2417.0		
11/27/2015	43.4369	29.6033	13.8335	2396.0		
11/28/2015	43.6369	29.0214	14.6156	2402.0		
11/29/2015	43.4006	28.2743	15.1263	2384.0		
11/30/2015	42.9257	28.1532	14.7724	2353.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE DAILY FLOW	On-Line Unless Noted Otherwise	# Days Outflow >0 190
	INFLOW	OUTFLOW				
TOTAL PER DAY	37596.4467 196.8400	15962.8497 83.5751	21633.5971 113.2649	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless Noted Otherwise	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW		190
TOTAL PER DAY	37596.4467 196.8400	15962.8497 83.5751	21633.5971 113.2649	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless Noted Otherwise	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW		190
TOTAL PER DAY	37596.4467 196.8400	15962.8497 83.5751	21633.5971 113.2649	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless Noted Otherwise	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW		190
TOTAL PER DAY	37596.4467 196.8400	15962.8497 83.5751	21633.5971 113.2649	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016	26.3116	0.0000	26.3116	1065.0		
5/19/2016	63.2203	11.2545	51.9657	2555.0		
5/20/2016	67.4064	9.4976	57.9088	2720.0		
5/21/2016	66.1944	14.3596	51.8348	2667.0		
5/22/2016	66.2212	28.6635	37.5577	2664.0		
5/23/2016	103.2430	37.7574	65.4856	4147.0		
5/24/2016	108.8861	49.4352	59.4509	4367.0		
5/25/2016	106.7547	47.9703	58.7843	4275.0		
5/26/2016	107.3424	47.4172	59.9252	4292.0		
5/27/2016	109.3340	48.0093	61.3248	4365.0		
5/28/2016	107.1168	47.2214	59.8954	4270.0		
5/29/2016	107.2038	47.1404	60.0634	4267.0		
5/30/2016	106.2589	46.3767	59.8822	4223.0		
5/31/2016	107.5786	47.7057	59.8729	4269.0		
6/1/2016	105.8985	46.9985	58.9000	4196.0		sampling date
6/2/2016	112.5277	50.4255	62.1022	4256.0		
6/3/2016	113.7175	52.9534	60.7641	4114.0		
6/4/2016	120.2193	56.2451	63.9742	4168.0		
6/5/2016	126.0697	61.9283	64.1414	4196.0		
6/6/2016	138.6117	68.6128	69.9989	4436.0		
6/7/2016	141.4768	72.9264	68.5504	4360.0		
6/8/2016	145.0342	75.0212	70.0129	4310.0		sampling date

WATERSHED TECHNOLOGIES						
Grassy Island TN Reduction & Operations Report						# Days Active Status: 197
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless Noted Otherwise	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW		190
TOTAL PER DAY	37596.4467 196.8400	15962.8497 83.5751	21633.5971 113.2649	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
6/9/2016	154.2220	87.4381	66.7840	4425.0		
6/10/2016	210.9534	91.6763	119.2771	5851.0		
6/11/2016	268.5416	133.8806	134.6610	7208.0		
6/12/2016	276.2043	141.7713	134.4331	7182.0		
6/13/2016	293.8781	153.1517	140.7264	7410.0		
6/14/2016	268.5007	167.8109	100.6898	6571.0		
6/15/2016	277.2811	163.5901	113.6910	6592.0		sampling date
6/16/2016	274.6832	158.5820	116.1012	6557.0		
6/17/2016	286.6158	158.7348	127.8810	6870.0		
6/18/2016	296.3634	158.3811	137.9823	7133.0		
6/19/2016	292.9872	155.4247	137.5625	7081.0		
6/20/2016	283.6542	142.3739	141.2803	6884.0		
6/21/2016	296.8339	137.4679	159.3659	7234.0		
6/22/2016	295.4693	133.2925	162.1768	7231.0		sampling date
6/23/2016	289.9961	128.8853	161.1108	7127.0		
6/24/2016	283.7077	121.0058	162.7020	7002.0		
6/25/2016	279.5603	112.5201	167.0402	6929.0		
6/26/2016	269.5322	103.7590	165.7733	6709.0		
6/27/2016	284.7016	100.2102	184.4914	7117.0		
6/28/2016	285.4315	98.0289	187.4026	7166.0		
6/29/2016	283.2493	92.0104	191.2389	7142.0		sampling date
6/30/2016	282.5751	92.3710	190.2041	7125.0		

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
7/1/2015	6.2457	0.3428	5.9030	1203.0		sampling date
7/2/2015	10.9236	0.6766	10.2470	2104.0		
7/3/2015	10.5757	0.7194	9.8563	2037.0		
7/4/2015	10.7574	0.7652	9.9922	2072.0		
7/5/2015	11.5777	0.7991	10.7786	2230.0		
7/6/2015	10.9132	0.9128	10.0004	2102.0		
7/7/2015	11.1676	0.8006	10.3670	2151.0		
7/8/2015	11.3026	0.8051	10.4975	2177.0		sampling date
7/9/2015	11.2208	0.7855	10.4353	2152.0		
7/10/2015	11.2584	0.7654	10.4930	2150.0		
7/11/2015	11.2380	0.7616	10.4764	2137.0		
7/12/2015	11.1748	0.7354	10.4394	2116.0		
7/13/2015	11.4766	0.7180	10.7585	2164.0		
7/14/2015	8.9259	0.6793	8.2466	1676.0		
7/15/2015	4.0057	0.4092	3.5965	749.0		sampling date
7/16/2015					Off-Line	installation of contact pond liners
7/17/2015					Off-Line	installation of contact pond liners
7/18/2015					Off-Line	installation of contact pond liners
7/19/2015					Off-Line	installation of contact pond liners
7/20/2015					Off-Line	installation of contact pond liners
7/21/2015					Off-Line	installation of contact pond liners
7/22/2015	22.4467	0.1878	22.2589	4479.0		sampling date
7/23/2015	20.4721	1.4188	19.0533	4209.0		
7/24/2015	18.9357	1.5900	17.3457	4015.0		
7/25/2015	17.9820	1.4912	16.4908	3936.0		
7/26/2015	17.7324	1.3647	16.3677	4011.0		
7/27/2015	18.0034	1.2980	16.7054	4213.0		
7/28/2015	25.3231	1.2282	24.0950	6138.0		
7/29/2015	31.3545	1.8467	29.5078	7882.0		sampling date
7/30/2015	33.7928	1.9993	31.7935	8262.0		
7/31/2015	37.2872	2.4526	34.8346	8873.0		
8/1/2015	37.9675	2.5731	35.3944	8800.0		
8/2/2015	32.8812	2.6508	30.2304	7428.0		
8/3/2015	21.3370	1.0876	20.2494	4701.0		
8/4/2015	41.1520	2.7035	38.4485	8848.0		
8/5/2015	44.1022	3.0177	41.0844	9259.0		
8/6/2015	45.5990	3.1397	42.4593	9353.0		
8/7/2015	45.5559	3.3259	42.2300	9134.0		sampling date
8/8/2015	43.0511	2.9140	40.1371	8880.0		
8/9/2015	41.0268	2.3359	38.6909	8713.0		
8/10/2015	31.5920	1.8319	29.7601	6914.0		
8/11/2015	20.9843	0.9382	20.0460	4737.0		
8/12/2015	15.4027	0.5994	14.8034	3590.0		sampling date
8/13/2015	11.9651	0.3708	11.5943	2662.0		
8/14/2015	19.1252	0.4290	18.6962	4070.0		
8/15/2015	24.1687	0.7107	23.4580	4929.0		
8/16/2015	27.5764	0.7010	26.8753	5399.0		
8/17/2015	42.8253	0.9055	41.9197	8062.0		

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
8/18/2015	49.8618	1.2002	48.6617	9039.0		
8/19/2015	54.4773	1.2322	53.2451	9523.0		
8/20/2015	57.4183	1.2594	56.1589	9691.0		
8/21/2015	66.4346	1.4899	64.9447	10839.0		sampling date
8/22/2015	67.4857	1.4210	66.0647	10587.0		
8/23/2015	35.5867	1.0853	34.5014	5376.0		
8/24/2015	39.2594	0.4910	38.7683	5719.0		
8/25/2015	70.7079	1.1308	69.5771	9945.0		
8/26/2015	62.6210	1.1440	61.4770	8514.0		sampling date
8/27/2015	56.6589	2.4047	54.2542	7787.0		
8/28/2015	78.2326	5.3252	72.9074	10870.0		
8/29/2015	75.5163	7.3136	68.2028	10609.0		
8/30/2015	74.6925	9.6206	65.0719	10611.0		
8/31/2015	75.8312	11.3801	64.4511	10895.0		
9/1/2015	62.5295	12.8195	49.7101	9087.0		
9/2/2015	61.4582	12.2063	49.2518	9035.0		sampling date
9/3/2015	59.7902	11.0810	48.7092	8964.0		
9/4/2015	58.6836	10.0082	48.6754	8976.0		
9/5/2015	59.0343	9.5353	49.4990	9216.0		
9/6/2015	55.9842	8.0341	47.9500	8924.0		
9/7/2015	52.1514	6.5595	45.5919	8492.0		
9/8/2015	40.0382	4.5865	35.4518	6663.0		
9/9/2015	51.6692	3.7368	47.9324	8792.0		sampling date
9/10/2015	64.2886	5.4926	58.7961	10838.0		
9/11/2015	66.4466	5.9308	60.5158	11099.0		
9/12/2015	70.3733	6.5340	63.8393	11648.0		
9/13/2015	71.3180	6.9392	64.3788	11698.0		
9/14/2015	70.2444	6.8481	63.3964	11419.0		
9/15/2015	72.5041	7.4580	65.0461	11682.0		
9/16/2015	73.1647	7.4805	65.6842	11685.0		sampling date
9/17/2015	68.7618	7.5343	61.2275	10757.0		
9/18/2015	77.4037	8.7558	68.6479	11866.0		
9/19/2015	78.8301	9.3787	69.4513	11847.0		
9/20/2015	79.4305	9.7926	69.6379	11707.0		
9/21/2015	79.5448	9.9273	69.6176	11502.0		
9/22/2015	83.3261	10.7392	72.5869	11825.0		
9/23/2015	85.8999	11.4212	74.4787	11968.0		
9/24/2015	87.8680	12.3609	75.5071	12023.0		
9/25/2015	89.2926	12.6414	76.6512	12003.0		sampling date
9/26/2015	85.4793	11.0473	74.4320	11974.0		
9/27/2015	80.6644	9.1707	71.4938	11796.0		
9/28/2015	63.6328	6.6019	57.0309	9733.0		
9/29/2015	56.0429	4.3280	51.7149	8985.0		
9/30/2015	46.9077	2.6035	44.3041	7901.0		sampling date
10/1/2015	52.2509	2.5918	49.6591	9055.0		
10/2/2015	51.5891	2.3902	49.1990	9206.0		
10/3/2015	49.9527	2.2210	47.7317	9187.0		

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
10/4/2015	47.3475	1.8515	45.4960	8983.0		
10/5/2015	47.4134	1.5939	45.8195	9289.0		
10/6/2015	45.4912	1.3066	44.1846	9213.0		
10/7/2015	44.2527	1.0924	43.1602	9275.0		sampling date
10/8/2015	43.8849	1.1000	42.7848	9363.0		
10/9/2015	33.0720	0.9790	32.0930	7185.0		
10/10/2015	41.1120	1.0046	40.1074	9098.0		
10/11/2015	39.8943	1.1249	38.7694	8996.0		
10/12/2015	40.1642	1.1515	39.0127	9232.0		
10/13/2015	39.4516	1.1360	38.3156	9247.0		
10/14/2015	38.6486	1.1768	37.4717	9241.0		sampling date
10/15/2015	38.9987	1.0669	37.9318	9230.0		
10/16/2015	35.3316	0.9930	34.3386	8278.0		
10/17/2015	29.0824	0.7184	28.3640	6746.0		
10/18/2015	28.5926	0.6142	27.9784	6567.0		
10/19/2015	29.4065	0.5481	28.8584	6688.0		
10/20/2015	26.9941	0.4722	26.5219	6080.0		
10/21/2015	14.8693	0.3114	14.5579	3317.0		sampling date
10/22/2015	10.3243	0.1544	10.1699	2304.0		
10/23/2015	11.6731	0.2339	11.4392	2606.0		
10/24/2015	11.7402	0.2680	11.4722	2622.0		
10/25/2015	11.7984	0.2916	11.5069	2636.0		
10/26/2015	11.1765	0.3165	10.8600	2498.0		
10/27/2015	9.9825	0.3005	9.6820	2232.0		
10/28/2015	10.3900	0.3330	10.0570	2324.0		sampling date
10/29/2015	10.9833	0.3952	10.5881	2312.0		
10/30/2015	11.9372	0.4619	11.4753	2373.0		
10/31/2015	13.6952	0.5514	13.1438	2579.0		
11/1/2015	13.8915	0.6263	13.2651	2485.0		
11/2/2015	13.9177	0.6920	13.2257	2371.0		
11/3/2015	14.7042	0.7594	13.9448	2391.0		
11/4/2015	15.2255	0.8347	14.3907	2368.0		sampling date
11/5/2015	14.7528	0.7661	13.9867	2318.0		
11/6/2015	14.6015	0.7060	13.8955	2318.0		
11/7/2015	14.2321	0.6570	13.5751	2283.0		
11/8/2015	14.1202	0.6154	13.5048	2289.0		
11/9/2015	13.8854	0.5824	13.3030	2275.0		
11/10/2015	13.9121	0.5421	13.3700	2304.0		
11/11/2015	13.5587	0.5044	13.0543	2270.0		sampling date
11/12/2015	13.2002	0.4875	12.7126	2268.0		
11/13/2015	9.3398	0.4821	8.8578	1648.0		
11/14/2015	5.9282	0.2050	5.7231	1075.0		
11/15/2015	12.7021	0.4630	12.2390	2369.0		
11/16/2015	12.3922	0.5684	11.8237	2379.0		
11/17/2015	12.0438	0.5076	11.5362	2382.0		
11/18/2015	11.6357	0.5423	11.0934	2373.0		sampling date
11/19/2015	12.0403	0.5617	11.4785	2465.0		

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
11/20/2015	11.7845	0.5997	11.1848	2422.0		
11/21/2015	11.6030	0.5111	11.0919	2394.0		
11/22/2015	11.6447	0.5180	11.1267	2412.0		
11/23/2015	11.6377	0.4277	11.2100	2420.0		
11/24/2015	11.6399	0.4055	11.2344	2430.0		
11/25/2015	11.5796	0.3735	11.2061	2427.0		sampling date
11/26/2015	11.5412	0.3830	11.1581	2417.0		
11/27/2015	11.4500	0.3926	11.0574	2396.0		
11/28/2015	11.4879	0.3866	11.1013	2402.0		
11/29/2015	11.4109	0.3783	11.0326	2384.0		
11/30/2015	11.2715	0.3784	10.8931	2353.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down
1/5/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down
2/21/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down
4/8/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016	5.7924	0.0000	5.7924	1065.0		
5/19/2016	13.9060	0.2793	13.6267	2555.0		
5/20/2016	14.8144	0.2364	14.5780	2720.0		
5/21/2016	14.5359	0.3586	14.1774	2667.0		
5/22/2016	14.5297	0.7179	13.8119	2664.0		
5/23/2016	22.6340	0.9485	21.6855	4147.0		
5/24/2016	23.8514	1.2456	22.6058	4367.0		
5/25/2016	23.3653	1.2123	22.1529	4275.0		

WATERSHED TECHNOLOGIES						
Grassy Island TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 197
# of Days On-Line	191	# Days On-Line Flow > 0.0000	191	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	191	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	# Days Outflow >0
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	190
TOTAL PER DAY	6910.0265 36.1781	559.8239 2.9310	6350.2027 33.2471	gpm On-Line Flow > 0 6003.2	Operational/ Flow Status	Comments
5/26/2016	23.4745	1.2019	22.2726	4292.0		
5/27/2016	23.8905	1.2206	22.6699	4365.0		
5/28/2016	23.3868	1.2042	22.1826	4270.0		
5/29/2016	23.3866	1.2057	22.1809	4267.0		
5/30/2016	23.1616	1.1897	21.9719	4223.0		
5/31/2016	23.4302	1.2275	22.2027	4269.0		
6/1/2016	23.0455	1.2129	21.8327	4196.0		sampling date
6/2/2016	23.0682	1.1166	21.9516	4256.0		
6/3/2016	22.0019	1.0060	20.9959	4114.0		
6/4/2016	21.9901	0.9149	21.0752	4168.0		
6/5/2016	21.8353	0.8591	20.9761	4196.0		
6/6/2016	22.7643	0.8068	21.9575	4436.0		
6/7/2016	22.0599	0.7203	21.3396	4360.0		
6/8/2016	21.4961	0.6145	20.8816	4310.0		sampling date
6/9/2016	25.9974	1.8233	24.1741	4425.0		
6/10/2016	39.5688	2.9628	36.6060	5851.0		
6/11/2016	55.1438	5.7232	49.4206	7208.0		
6/12/2016	61.3198	7.4117	53.9081	7182.0		
6/13/2016	69.8438	9.3454	60.4983	7410.0		
6/14/2016	67.7682	11.5904	56.1779	6571.0		
6/15/2016	73.8360	12.5146	61.3214	6592.0		sampling date
6/16/2016	69.3462	11.6763	57.6699	6557.0		
6/17/2016	68.3632	11.1969	57.1663	6870.0		
6/18/2016	66.5226	10.6432	55.8794	7133.0		
6/19/2016	61.6124	9.8824	51.7300	7081.0		
6/20/2016	55.5962	8.4929	47.1033	6884.0		
6/21/2016	53.9021	7.6107	46.2913	7234.0		
6/22/2016	49.3608	6.7535	42.6073	7231.0		sampling date
6/23/2016	51.2571	5.9932	45.2639	7127.0		
6/24/2016	52.9187	5.0695	47.8492	7002.0		
6/25/2016	54.9009	4.1382	50.7626	6929.0		
6/26/2016	55.6112	3.2226	52.3885	6709.0		
6/27/2016	61.5957	2.4677	59.1281	7117.0		
6/28/2016	64.6404	1.6992	62.9412	7166.0		
6/29/2016	67.0357	0.8281	66.2076	7142.0		sampling date
6/30/2016	66.8761	0.8313	66.0448	7125.0		

WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
7/1/2015	0.8621	0.5593	0.3029	42.0		sampling date
7/2/2015	0.9607	0.6259	0.3349	47.0		
7/3/2015	0.8753	0.5726	0.3027	43.0		
7/4/2015	0.7094	0.4661	0.2434	35.0		
7/5/2015	0.6055	0.3995	0.2060	30.0		
7/6/2015	0.3417	0.2264	0.1153	17.0		
7/7/2015					Off-Line	pump down
7/8/2015					Off-Line	pump down; sampling date
7/9/2015					Off-Line	pump down
7/10/2015					Off-Line	pump down
7/11/2015					Off-Line	pump down
7/12/2015					Off-Line	pump down
7/13/2015					Off-Line	new pump on order
7/14/2015					Off-Line	new pump on order
7/15/2015					Off-Line	new pump on order; sampling date
7/16/2015					Off-Line	new pump on order
7/17/2015					Off-Line	new pump on order
7/18/2015					Off-Line	new pump on order
7/19/2015					Off-Line	new pump on order
7/20/2015					Off-Line	new pump on order
7/21/2015					Off-Line	new pump on order
7/22/2015					Off-Line	new pump on order; sampling date
7/23/2015					Off-Line	new pump on order
7/24/2015					Off-Line	new pump on order
7/25/2015	0.5347	0.2583	0.2764	23.0		
7/26/2015	1.0996	0.5311	0.5685	43.0		
7/27/2015	1.1716	0.5659	0.6057	42.0		dosing timer failure
7/28/2015	1.1484	0.5547	0.5937	38.0		dosing timer failure
7/29/2015	1.2367	0.5973	0.6394	38.0		dosing timer failure; sampling date
7/30/2015	1.3348	0.6104	0.7244	38.0		dosing timer failure
7/31/2015	1.4330	0.6234	0.8095	38.0		dosing timer failure
8/1/2015	1.3699	0.5695	0.8004	34.0		dosing timer failure
8/2/2015	1.3720	0.5470	0.8250	32.0		dosing timer failure
8/3/2015	1.8182	0.6975	1.1208	40.0		
8/4/2015	2.0176	0.7468	1.2708	42.0		
8/5/2015	2.1767	0.7793	1.3974	43.0		sampling date
8/6/2015	2.1813	0.7571	1.4242	41.0		
8/7/2015	2.2872	0.7712	1.5160	41.0		
8/8/2015	2.3930	0.7853	1.6077	41.0		
8/9/2015	2.3161	0.7409	1.5752	38.0		
8/10/2015	2.4142	0.7539	1.6603	38.0		
8/11/2015	2.3801	0.7266	1.6535	36.0		
8/12/2015	2.0609	0.6158	1.4451	30.0		sampling date
8/13/2015	2.1353	0.6578	1.4774	32.0		
8/14/2015	2.0723	0.6588	1.4134	32.0		
8/15/2015	1.7581	0.5773	1.1808	28.0		
8/16/2015	1.5814	0.5369	1.0445	26.0		

WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
8/17/2015	1.2948	0.4550	0.8398	22.0		
8/18/2015	1.0808	0.3935	0.6873	19.0		
8/19/2015	1.4827	0.5601	0.9227	27.0		sampling date
8/20/2015	1.3237	0.5194	0.8044	25.0		
8/21/2015	1.3765	0.5617	0.8147	27.0		
8/22/2015	1.2743	0.5417	0.7326	26.0		
8/23/2015	1.1290	0.5008	0.6282	24.0		
8/24/2015	1.7579	0.8150	0.9429	39.0		
8/25/2015	2.1553	1.0464	1.1089	50.0		
8/26/2015	2.0158	1.0270	0.9887	49.0		sampling date
8/27/2015	2.0028	1.0046	0.9983	48.0		
8/28/2015	2.0311	1.0031	1.0280	48.0		
8/29/2015	2.0164	0.9807	1.0357	47.0		
8/30/2015	2.0005	0.9585	1.0421	46.0		
8/31/2015	2.0717	0.9778	1.0938	47.0		
9/1/2015	2.3226	1.0803	1.2424	52.0		
9/2/2015	2.3532	1.0786	1.2746	52.0		sampling date
9/3/2015	2.3379	1.0563	1.2816	51.0		
9/4/2015	2.2751	1.0134	1.2617	49.0		
9/5/2015	2.3979	1.0532	1.3448	51.0		
9/6/2015	2.3327	1.0104	1.3223	49.0		
9/7/2015	2.2169	0.9471	1.2699	46.0		
9/8/2015	2.0976	0.8840	1.2137	43.0		
9/9/2015	1.6786	0.6979	0.9807	34.0		sampling date
9/10/2015	2.0205	0.8257	1.1948	40.0		
9/11/2015	2.4277	0.9756	1.4521	47.0		
9/12/2015	2.5870	1.0227	1.5642	49.0		
9/13/2015	2.5890	1.0074	1.5816	48.0		
9/14/2015	2.6438	1.0129	1.6309	48.0		
9/15/2015	2.6424	0.9972	1.6452	47.0		
9/16/2015	2.7534	1.0239	1.7294	48.0		sampling date
9/17/2015	2.7497	1.0080	1.7417	47.0		
9/18/2015	2.8033	1.0134	1.7899	47.0		
9/19/2015	2.7962	0.9972	1.7991	46.0		
9/20/2015	2.7249	0.9589	1.7660	44.0		
9/21/2015	2.7120	0.9420	1.7700	43.0		
9/22/2015	2.6327	0.9029	1.7298	41.0		
9/23/2015	2.9409	0.9962	1.9448	45.0		sampling date
9/24/2015	3.0831	1.0459	2.0373	47.0		
9/25/2015	3.0287	1.0289	1.9998	46.0		
9/26/2015	2.9739	1.0117	1.9621	45.0		
9/27/2015	2.9848	1.0169	1.9679	45.0		
9/28/2015	3.0624	1.0448	2.0176	46.0		
9/29/2015	3.0736	1.0501	2.0235	46.0		
9/30/2015	2.9507	1.0095	1.9412	44.0		sampling date
10/1/2015	2.8941	0.9915	1.9026	43.0		
10/2/2015	2.7695	0.9501	1.8194	41.0		

WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
10/3/2015	2.7117	0.9315	1.7802	40.0		
10/4/2015	2.6534	0.9127	1.7407	39.0		
10/5/2015	3.2774	1.1288	2.1486	48.0		
10/6/2015	1.2334	0.4254	0.8080	18.0		
10/7/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off low flow sampling date
10/8/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off; low flow
10/9/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off; low flow
10/10/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off; low flow
10/11/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off; low flow
10/12/2015	1.8584	0.7391	1.1193	34.0		
10/13/2015	2.5919	1.0669	1.5250	50.0		
10/14/2015	2.3037	0.9840	1.3198	47.0		sampling date
10/15/2015	1.9402	0.8624	1.0777	42.0		
10/16/2015	1.5614	0.7248	0.8367	36.0		
10/17/2015	1.3382	0.6511	0.6871	33.0		
10/18/2015	1.1696	0.5992	0.5704	31.0		
10/19/2015	1.5359	0.8328	0.7031	44.0		
10/20/2015	1.6364	0.9448	0.6916	51.0		
10/21/2015	1.4632	0.9062	0.5570	50.0		sampling date
10/22/2015	1.3880	0.8617	0.5263	48.0		
10/23/2015	1.2856	0.8001	0.4855	45.0		
10/24/2015	1.2417	0.7748	0.4670	44.0		
10/25/2015	1.1986	0.7498	0.4488	43.0		
10/26/2015	1.2662	0.7942	0.4720	46.0		
10/27/2015	1.3045	0.8205	0.4841	48.0		
10/28/2015	1.2610	0.7953	0.4657	47.0		sampling date
10/29/2015	1.2182	0.7705	0.4477	46.0		
10/30/2015	1.1761	0.7460	0.4301	45.0		
10/31/2015	1.0831	0.6891	0.3940	42.0		
11/1/2015	0.9921	0.6332	0.3590	39.0		
11/2/2015	1.0790	0.6907	0.3882	43.0		
11/3/2015	1.1135	0.7151	0.3984	45.0		
11/4/2015	1.0979	0.7074	0.3905	45.0		sampling date
11/5/2015	1.1013	0.6958	0.4055	45.0		
11/6/2015	1.1048	0.6842	0.4206	45.0		
11/7/2015	1.0837	0.6577	0.4260	44.0		
11/8/2015	1.0871	0.6463	0.4407	44.0		
11/9/2015	1.0657	0.6206	0.4451	43.0		
11/10/2015	1.0441	0.5953	0.4488	42.0		
11/11/2015	1.0973	0.6123	0.4849	44.0		sampling date
11/12/2015	1.1007	0.6010	0.4996	44.0		
11/13/2015	1.0790	0.5763	0.5027	43.0		
11/14/2015	1.0319	0.5389	0.4930	41.0		
11/15/2015	0.9846	0.5026	0.4820	39.0		
11/16/2015	1.1396	0.5683	0.5713	45.0		
11/17/2015	1.2447	0.6062	0.6384	49.0		
11/18/2015	1.2994	0.6178	0.6816	51.0		sampling date

WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
11/19/2015	1.3023	0.6196	0.6827	51.0		
11/20/2015	1.2796	0.6091	0.6705	50.0		
11/21/2015	1.2055	0.5741	0.6313	47.0		
11/22/2015	1.1567	0.5512	0.6055	45.0		
11/23/2015	1.2108	0.5773	0.6334	47.0		
11/24/2015	1.3167	0.6282	0.6885	51.0		
11/25/2015	1.2937	0.6176	0.6761	50.0		sampling date
11/26/2015	1.2447	0.5945	0.6502	48.0		
11/27/2015	1.0915	0.5216	0.5699	42.0		
11/28/2015	0.9897	0.4732	0.5164	38.0		
11/29/2015	0.9135	0.4370	0.4765	35.0		
11/30/2015	0.8109	0.3881	0.4227	31.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Ideal Grove TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	295.7891 1.8487	126.4995 0.7906	169.2896 1.0581	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016	1.3141	0.6739	0.6402	36.0		
6/1/2016	1.9012	0.9752	0.9259	52.0		
6/2/2016	1.7210	0.8831	0.8379	47.0		
6/3/2016	1.5036	0.7717	0.7319	41.0		
6/4/2016	1.1019	0.5657	0.5362	30.0		
6/5/2016	0.9565	0.4911	0.4653	26.0		
6/6/2016	1.6948	0.8705	0.8243	46.0		
6/7/2016	1.8819	0.9669	0.9150	51.0		
6/8/2016	1.7739	0.9116	0.8623	48.0		sampling date
6/9/2016	1.6656	0.8562	0.8094	45.0		
6/10/2016	1.5198	0.7814	0.7384	41.0		
6/11/2016	1.4479	0.7446	0.7033	39.0		
6/12/2016	1.4873	0.7651	0.7222	40.0		
6/13/2016	2.2343	1.1497	1.0847	60.0		
6/14/2016	2.6853	1.3820	1.3032	72.0		
6/15/2016	2.7641	1.4229	1.3411	74.0		sampling date
6/16/2016	2.9237	1.4164	1.5073	75.0		
6/17/2016	3.0055	1.3721	1.6333	74.0		
6/18/2016	3.0839	1.3285	1.7554	73.0		
6/19/2016	3.1591	1.2856	1.8735	72.0		
6/20/2016	3.2310	1.2434	1.9877	71.0		
6/21/2016	3.2997	1.2018	2.0979	70.0		
6/22/2016	3.3163	1.1441	2.1722	68.0		sampling date
6/23/2016	3.2256	1.0548	2.1708	64.0		
6/24/2016	3.4861	1.0813	2.4048	67.0		
6/25/2016	2.9514	0.8687	2.0827	55.0		
6/26/2016					Off-Line	clogged intake
6/27/2016	2.1062	0.5590	1.5472	37.0		
6/28/2016	2.6350	0.6644	1.9706	45.0		
6/29/2016	2.4676	0.5913	1.8764	41.0		sampling date
6/30/2016	2.4676	0.5913	1.8764	41.0		

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216 0.8064	3.1220 0.0195	125.8996 0.7869	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
7/1/2015	0.0681	0.0141	0.0540	42.0		sampling date
7/2/2015	0.0943	0.0154	0.0789	47.0		
7/3/2015	0.1028	0.0137	0.0891	43.0		
7/4/2015	0.0972	0.0109	0.0863	35.0		
7/5/2015	0.0948	0.0091	0.0858	30.0		
7/6/2015	0.0603	0.0050	0.0553	17.0		
7/7/2015					Off-Line	pump down
7/8/2015					Off-Line	pump down; sampling date
7/9/2015					Off-Line	pump down
7/10/2015					Off-Line	pump down
7/11/2015					Off-Line	pump down
7/12/2015					Off-Line	pump down
7/13/2015					Off-Line	new pump on order
7/14/2015					Off-Line	new pump on order
7/15/2015					Off-Line	new pump on order; sampling date
7/16/2015					Off-Line	new pump on order
7/17/2015					Off-Line	new pump on order
7/18/2015					Off-Line	new pump on order
7/19/2015					Off-Line	new pump on order
7/20/2015					Off-Line	new pump on order
7/21/2015					Off-Line	new pump on order
7/22/2015					Off-Line	new pump on order; sampling date
7/23/2015					Off-Line	new pump on order
7/24/2015					Off-Line	new pump on order
7/25/2015	0.0583	0.0033	0.0550	23.0		
7/26/2015	0.1453	0.0083	0.1370	43.0		
7/27/2015	0.1774	0.0101	0.1673	42.0		dosing timer failure
7/28/2015	0.1926	0.0110	0.1816	38.0		dosing timer failure
7/29/2015	0.2247	0.0128	0.2119	38.0		dosing timer failure; sampling date
7/30/2015	0.2205	0.0126	0.2079	38.0		dosing timer failure
7/31/2015	0.2163	0.0124	0.2039	38.0		dosing timer failure
8/1/2015	0.1898	0.0109	0.1789	34.0		dosing timer failure
8/2/2015	0.1751	0.0101	0.1650	32.0		dosing timer failure
8/3/2015	0.2145	0.0124	0.2021	40.0		
8/4/2015	0.2207	0.0128	0.2078	42.0		
8/5/2015	0.2212	0.0129	0.2083	43.0		sampling date
8/6/2015	0.2215	0.0123	0.2092	41.0		
8/7/2015	0.2322	0.0123	0.2198	41.0		
8/8/2015	0.2428	0.0123	0.2305	41.0		
8/9/2015	0.2349	0.0114	0.2235	38.0		
8/10/2015	0.2447	0.0114	0.2333	38.0		
8/11/2015	0.2412	0.0108	0.2304	36.0		
8/12/2015	0.2088	0.0090	0.1997	30.0		sampling date
8/13/2015	0.2650	0.0099	0.2551	32.0		
8/14/2015	0.3074	0.0103	0.2971	32.0		
8/15/2015	0.3060	0.0093	0.2968	28.0		
8/16/2015	0.3186	0.0089	0.3097	26.0		

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216 0.8064	3.1220 0.0195	125.8996 0.7869	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
8/17/2015	0.2987	0.0077	0.2910	22.0		
8/18/2015	0.2831	0.0069	0.2762	19.0		
8/19/2015	0.4381	0.0101	0.4280	27.0		sampling date
8/20/2015	0.4211	0.0096	0.4115	25.0		
8/21/2015	0.4714	0.0106	0.4608	27.0		
8/22/2015	0.4700	0.0105	0.4596	26.0		
8/23/2015	0.4487	0.0099	0.4388	24.0		
8/24/2015	0.7533	0.0165	0.7367	39.0		
8/25/2015	0.9966	0.0217	0.9749	50.0		
8/26/2015	1.0070	0.0218	0.9852	49.0		sampling date
8/27/2015	0.9259	0.0205	0.9054	48.0		
8/28/2015	0.8653	0.0197	0.8456	48.0		
8/29/2015	0.7880	0.0185	0.7695	47.0		
8/30/2015	0.7132	0.0173	0.6959	46.0		
8/31/2015	0.6693	0.0169	0.6525	47.0		
9/1/2015	0.6749	0.0178	0.6572	52.0		
9/2/2015	0.6093	0.0169	0.5924	52.0		sampling date
9/3/2015	0.6777	0.0174	0.6603	51.0		
9/4/2015	0.7281	0.0176	0.7105	49.0		
9/5/2015	0.8380	0.0192	0.8188	51.0		
9/6/2015	0.8821	0.0193	0.8628	49.0		
9/7/2015	0.9003	0.0189	0.8815	46.0		
9/8/2015	0.9092	0.0184	0.8908	43.0		
9/9/2015	0.7723	0.0151	0.7572	34.0		sampling date
9/10/2015	0.9731	0.0182	0.9549	40.0		
9/11/2015	1.2193	0.0219	1.1974	47.0		
9/12/2015	1.3502	0.0233	1.3269	49.0		
9/13/2015	1.4001	0.0233	1.3768	48.0		
9/14/2015	1.4776	0.0238	1.4538	48.0		
9/15/2015	1.5227	0.0238	1.4989	47.0		
9/16/2015	1.6325	0.0248	1.6077	48.0		sampling date
9/17/2015	1.6816	0.0244	1.6573	47.0		
9/18/2015	1.7648	0.0244	1.7403	47.0		
9/19/2015	1.8085	0.0240	1.7845	46.0		
9/20/2015	1.8077	0.0230	1.7847	44.0		
9/21/2015	1.8427	0.0226	1.8201	43.0		
9/22/2015	1.8295	0.0216	1.8079	41.0		
9/23/2015	2.0875	0.0238	2.0637	45.0		sampling date
9/24/2015	2.1690	0.0258	2.1432	47.0		
9/25/2015	2.1118	0.0262	2.0856	46.0		
9/26/2015	2.0551	0.0266	2.0285	45.0		
9/27/2015	2.0443	0.0275	2.0168	45.0		
9/28/2015	2.0786	0.0291	2.0496	46.0		
9/29/2015	2.0676	0.0300	2.0376	46.0		
9/30/2015	1.9671	0.0296	1.9375	44.0		sampling date
10/1/2015	1.8670	0.0283	1.8387	43.0		
10/2/2015	1.7274	0.0265	1.7009	41.0		

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216 0.8064	3.1220 0.0195	125.8996 0.7869	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
10/3/2015	1.6338	0.0253	1.6085	40.0		
10/4/2015	1.5427	0.0241	1.5186	39.0		
10/5/2015	1.8369	0.0290	1.8079	48.0		
10/6/2015	0.6657	0.0106	0.6550	18.0		
10/7/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off low flow sampling date
10/8/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off; low flow
10/9/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off; low flow
10/10/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off; low flow
10/11/2015	0.0000	0.0000	0.0000	0.0	No Flow	system off; low flow
10/12/2015	0.5834	0.0170	0.5665	34.0		
10/13/2015	0.6727	0.0242	0.6485	50.0		
10/14/2015	0.4581	0.0220	0.4361	47.0		sampling date
10/15/2015	0.3877	0.0185	0.3691	42.0		
10/16/2015	0.3137	0.0149	0.2988	36.0		
10/17/2015	0.2705	0.0127	0.2577	33.0		
10/18/2015	0.2381	0.0111	0.2269	31.0		
10/19/2015	0.3152	0.0146	0.3006	44.0		
10/20/2015	0.3389	0.0155	0.3234	51.0		
10/21/2015	0.3065	0.0138	0.2926	50.0		sampling date
10/22/2015	0.3096	0.0131	0.2965	48.0		
10/23/2015	0.3047	0.0121	0.2926	45.0		
10/24/2015	0.3121	0.0117	0.3004	44.0		
10/25/2015	0.3188	0.0113	0.3075	43.0		
10/26/2015	0.3558	0.0119	0.3439	46.0		
10/27/2015	0.3867	0.0123	0.3744	48.0		
10/28/2015	0.3937	0.0119	0.3818	47.0		sampling date
10/29/2015	0.3536	0.0120	0.3416	46.0		
10/30/2015	0.3148	0.0121	0.3027	45.0		
10/31/2015	0.2649	0.0117	0.2532	42.0		
11/1/2015	0.2190	0.0112	0.2078	39.0		
11/2/2015	0.2118	0.0127	0.1991	43.0		
11/3/2015	0.1906	0.0137	0.1769	45.0		
11/4/2015	0.1595	0.0141	0.1455	45.0		sampling date
11/5/2015	0.1625	0.0141	0.1484	45.0		
11/6/2015	0.1654	0.0141	0.1514	45.0		
11/7/2015	0.1646	0.0137	0.1509	44.0		
11/8/2015	0.1675	0.0137	0.1537	44.0		
11/9/2015	0.1665	0.0134	0.1530	43.0		
11/10/2015	0.1653	0.0131	0.1522	42.0		
11/11/2015	0.1761	0.0137	0.1623	44.0		sampling date
11/12/2015	0.1937	0.0134	0.1803	44.0		
11/13/2015	0.2065	0.0127	0.1938	43.0		
11/14/2015	0.2133	0.0118	0.2015	41.0		
11/15/2015	0.2185	0.0108	0.2076	39.0		
11/16/2015	0.2701	0.0121	0.2580	45.0		
11/17/2015	0.3137	0.0128	0.3009	49.0		
11/18/2015	0.3469	0.0129	0.3340	51.0		sampling date

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216 0.8064	3.1220 0.0195	125.8996 0.7869	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
11/19/2015	0.6371	0.0122	0.6249	51.0		
11/20/2015	0.9091	0.0112	0.8978	50.0		
11/21/2015	1.1220	0.0099	1.1120	47.0		
11/22/2015	1.3302	0.0089	1.3214	45.0		
11/23/2015	1.6568	0.0086	1.6482	47.0		
11/24/2015	2.0880	0.0087	2.0793	51.0		
11/25/2015	2.3315	0.0078	2.3237	50.0		sampling date
11/26/2015	2.2290	0.0077	2.2214	48.0		
11/27/2015	1.9423	0.0069	1.9355	42.0		
11/28/2015	1.7501	0.0063	1.7437	38.0		
11/29/2015	1.6052	0.0060	1.5992	35.0		
11/30/2015	1.4158	0.0054	1.4104	31.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216 0.8064	3.1220 0.0195	125.8996 0.7869	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216 0.8064	3.1220 0.0195	125.8996 0.7869	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216 0.8064	3.1220 0.0195	125.8996 0.7869	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Ideal Grove TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	165	# Days On-Line Flow > 0.0000	160	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	160	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	129.0216 0.8064	3.1220 0.0195	125.8996 0.7869	gpm On-Line Flow > 0 43.79	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016	0.3793	0.0293	0.3501	36.0		
6/1/2016	0.5380	0.0425	0.4955	52.0		
6/2/2016	0.4772	0.0386	0.4387	47.0		
6/3/2016	0.4084	0.0338	0.3746	41.0		
6/4/2016	0.2931	0.0248	0.2683	30.0		
6/5/2016	0.2490	0.0216	0.2274	26.0		
6/6/2016	0.4317	0.0384	0.3934	46.0		
6/7/2016	0.4689	0.0427	0.4261	51.0		
6/8/2016	0.4321	0.0404	0.3917	48.0		sampling date
6/9/2016	0.4770	0.0385	0.4385	45.0		
6/10/2016	0.5001	0.0356	0.4645	41.0		
6/11/2016	0.5381	0.0344	0.5037	39.0		
6/12/2016	0.6158	0.0358	0.5800	40.0		
6/13/2016	1.0196	0.0546	0.9650	60.0		
6/14/2016	1.3386	0.0665	1.2721	72.0		
6/15/2016	1.4941	0.0694	1.4247	74.0		sampling date
6/16/2016	1.6160	0.0654	1.5506	75.0		
6/17/2016	1.6948	0.0597	1.6351	74.0		
6/18/2016	1.7709	0.0541	1.7168	73.0		
6/19/2016	1.8443	0.0487	1.7956	72.0		
6/20/2016	1.9150	0.0434	1.8716	71.0		
6/21/2016	1.9830	0.0382	1.9448	70.0		
6/22/2016	2.0186	0.0327	1.9859	68.0		sampling date
6/23/2016	1.8031	0.0303	1.7728	64.0		
6/24/2016	1.7864	0.0313	1.7551	67.0		
6/25/2016	1.3834	0.0253	1.3581	55.0		
6/26/2016					Off-Line	clogged intake
6/27/2016	0.8188	0.0165	0.8023	37.0		
6/28/2016	0.9279	0.0198	0.9081	45.0		
6/29/2016	0.7835	0.0177	0.7657	41.0		sampling date
6/30/2016	0.7835	0.0177	0.7657	41.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	3752.7035 20.5066	2943.1807 16.0830	809.5228 4.4236	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
7/1/2015	16.6872	12.6386	4.0486	804.0		sample date
7/2/2015	13.7147	10.3907	3.3240	661.0		
7/3/2015	17.8792	13.5503	4.3288	862.0		
7/4/2015	16.4218	12.4500	3.9719	792.0		
7/5/2015	7.4620	5.6591	1.8029	360.0		
7/6/2015	9.9460	7.5454	2.4006	480.0		
7/7/2015	16.4262	12.4657	3.9605	793.0		
7/8/2015	16.6071	12.6072	4.0000	802.0		sample date
7/9/2015	16.6624	12.9147	3.7477	804.0		
7/10/2015	16.5932	13.1251	3.4681	800.0		
7/11/2015	16.7107	13.4836	3.2272	805.0		
7/12/2015	15.8727	13.0592	2.8136	764.0		
7/13/2015	16.5304	13.8620	2.6684	795.0		
7/14/2015	16.0863	13.7439	2.3424	773.0		
7/15/2015	15.1831	13.2119	1.9713	729.0		sample date
7/16/2015	14.8708	12.9251	1.9457	720.0		
7/17/2015	15.2990	13.2816	2.0174	747.0		
7/18/2015	15.4537	13.3998	2.0539	761.0		
7/19/2015	14.5164	12.5717	1.9447	721.0		
7/20/2015	14.2317	12.3098	1.9219	713.0		
7/21/2015	13.7717	11.8968	1.8749	696.0		
7/22/2015	15.5535	13.4187	2.1348	793.0		sample date
7/23/2015	16.1138	13.5372	2.5767	800.0		
7/24/2015	16.0614	13.1480	2.9135	777.0		
7/25/2015	16.5995	13.2495	3.3500	783.0		
7/26/2015	16.9918	13.2326	3.7593	782.0		
7/27/2015	18.1844	13.8248	4.3595	817.0		
7/28/2015	17.6822	13.1311	4.5511	776.0		
7/29/2015	16.0175	11.6250	4.3924	687.0		sample date
7/30/2015	19.2481	13.7910	5.4571	815.0		
7/31/2015	19.8531	14.0448	5.8083	830.0		
8/1/2015	20.6852	14.4509	6.2343	854.0		
8/2/2015	20.6980	14.2817	6.4163	844.0		
8/3/2015	20.9531	14.2817	6.6714	844.0		
8/4/2015	22.1127	14.8909	7.2218	880.0		
8/5/2015	21.6920	14.4340	7.2580	853.0		sample date
8/6/2015	21.3211	14.4266	6.8945	844.0		
8/7/2015	20.5267	14.1226	6.4041	818.0		
8/8/2015	18.8686	13.1994	5.6692	757.0		
8/9/2015	20.1772	14.3507	5.8265	815.0		
8/10/2015	20.5564	14.8640	5.6924	836.0		
8/11/2015	20.5134	15.0793	5.4341	840.0		
8/12/2015	23.4279	17.5071	5.9208	966.0		sample date
8/13/2015	26.3923	19.7362	6.6560	1089.0		
8/14/2015	26.7368	20.0081	6.7288	1104.0		
8/15/2015	28.3635	21.2405	7.1231	1172.0		
8/16/2015	28.3434	21.2405	7.1030	1172.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	3752.7035 20.5066	2943.1807 16.0830	809.5228 4.4236	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
8/17/2015	29.7733	22.3279	7.4454	1232.0		
8/18/2015	26.4195	19.8269	6.5927	1094.0		
8/19/2015	27.0040	20.2799	6.7241	1119.0		sample date
8/20/2015	29.0180	21.5763	7.4416	1201.0		
8/21/2015	28.4240	20.9236	7.5004	1175.0		
8/22/2015	28.0708	20.4557	7.6152	1159.0		
8/23/2015	27.3044	19.6954	7.6091	1126.0		
8/24/2015	28.0171	20.0029	8.0142	1154.0		
8/25/2015	29.7766	21.0401	8.7365	1225.0		
8/26/2015	29.0823	20.3360	8.7462	1195.0		sample date
8/27/2015	29.0924	20.6427	8.4497	1214.0		
8/28/2015	28.0503	20.2013	7.8490	1189.0		
8/29/2015	25.8195	18.8778	6.9417	1112.0		
8/30/2015	25.2452	18.7437	6.5015	1105.0		
8/31/2015	25.8674	19.5082	6.3591	1151.0		
9/1/2015	25.7480	19.7295	6.0185	1165.0		
9/2/2015	25.8571	20.1365	5.7206	1190.0		sample date
9/3/2015	20.5119	15.9771	4.5348	944.0		
9/4/2015	22.8586	17.8086	5.0500	1052.0		
9/5/2015	23.9885	18.6927	5.2958	1104.0		
9/6/2015	24.2058	18.8658	5.3400	1114.0		
9/7/2015	23.7712	18.5309	5.2403	1094.0		
9/8/2015	22.2502	17.3487	4.9015	1024.0		
9/9/2015	22.7934	17.7758	5.0176	1049.0		sample date
9/10/2015	24.5853	19.4201	5.1652	1158.0		
9/11/2015	22.5781	18.0722	4.5059	1089.0		
9/12/2015	22.6834	18.4070	4.2765	1121.0		
9/13/2015	22.0069	18.1132	3.8937	1115.0		
9/14/2015	21.3363	17.8215	3.5148	1109.0		
9/15/2015	21.2902	18.0565	3.2337	1136.0		
9/16/2015	21.5273	18.5492	2.9781	1180.0		sample date
9/17/2015	22.6669	19.3699	3.2970	1231.0		
9/18/2015	23.0434	19.5307	3.5127	1240.0		
9/19/2015	23.1229	19.4395	3.6834	1233.0		
9/20/2015	23.5217	19.6163	3.9053	1243.0		
9/21/2015	23.9621	19.8251	4.1370	1255.0		
9/22/2015	24.3488	19.9868	4.3619	1264.0		
9/23/2015	24.5636	20.0064	4.5573	1264.0		sample date
9/24/2015	24.3693	19.6706	4.6987	1244.0		
9/25/2015	24.3267	19.4618	4.8649	1232.0		
9/26/2015	24.2406	19.2218	5.0188	1218.0		
9/27/2015	24.3105	19.1084	5.2021	1212.0		
9/28/2015	23.1657	18.0501	5.1156	1146.0		
9/29/2015	23.3040	18.0010	5.3031	1144.0		
9/30/2015	23.5649	18.0462	5.5187	1148.0		sample date
10/1/2015	23.1731	18.0880	5.0852	1137.0		
10/2/2015	22.1371	17.6105	4.5266	1094.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	3752.7035 20.5066	2943.1807 16.0830	809.5228 4.4236	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
10/3/2015	21.4752	17.4100	4.0653	1069.0		
10/4/2015	20.9204	17.2823	3.6380	1049.0		
10/5/2015	18.3520	15.4475	2.9046	927.0		
10/6/2015	16.3695	14.0384	2.3311	833.0		
10/7/2015	16.1114	14.0764	2.0350	826.0		sample date
10/8/2015	16.3539	13.8867	2.4672	824.0		
10/9/2015	16.6758	13.7644	2.9114	826.0		
10/10/2015	16.8143	13.4931	3.3212	819.0		
10/11/2015	17.1359	13.3710	3.7649	821.0		
10/12/2015	17.4376	13.2320	4.2056	822.0		
10/13/2015	17.2011	12.6950	4.5061	798.0		
10/14/2015	17.5832	12.6229	4.9604	803.0		sample date
10/15/2015	18.6423	13.0150	5.6273	819.0		
10/16/2015	19.4218	13.2038	6.2180	822.0		
10/17/2015	19.3983	12.8579	6.5404	792.0		
10/18/2015	18.4861	11.9603	6.5258	729.0		
10/19/2015	20.8214	13.1630	7.6584	794.0		
10/20/2015	22.2399	13.7516	8.4883	821.0		
10/21/2015	22.9782	13.9094	9.0688	822.0		sample date
10/22/2015	21.8560	13.8261	8.0299	834.0		
10/23/2015	20.3006	13.4748	6.8258	830.0		
10/24/2015	18.8499	13.1898	5.6601	830.0		
10/25/2015	17.7347	13.1536	4.5811	846.0		
10/26/2015	16.5827	13.1216	3.4612	863.0		
10/27/2015	15.4936	13.1819	2.3117	887.0		
10/28/2015	13.8490	12.7902	1.0588	881.0		sample date
10/29/2015	16.1825	12.9293	3.2532	870.0		
10/30/2015	18.5170	13.1064	5.4107	862.0		
10/31/2015	20.3426	12.9825	7.3600	835.0		
11/1/2015	22.0670	12.8720	9.1951	810.0		
11/2/2015	24.6115	13.2638	11.3477	817.0		
11/3/2015	13.2680	6.6644	6.6037	402.0		
11/4/2015	12.3807	5.8379	6.5428	345.0		sample date
11/5/2015	28.9048	13.8543	15.0505	857.0		
11/6/2015	26.6765	13.0220	13.6545	845.0		
11/7/2015	24.7646	12.3397	12.4250	842.0		
11/8/2015	22.4297	11.4395	10.9902	823.0		
11/9/2015	20.2019	10.5812	9.6207	805.0		
11/10/2015	18.9921	10.2580	8.7341	828.0		
11/11/2015	16.9974	9.5162	7.4812	818.0		sample date
11/12/2015	16.6967	9.8292	6.8675	816.0		
11/13/2015	16.4980	10.2028	6.2952	819.0		
11/14/2015	16.6938	10.8362	5.8576	842.0		
11/15/2015	16.2118	11.0371	5.1747	831.0		
11/16/2015	15.6216	11.1467	4.4749	814.0		
11/17/2015	15.4197	11.5244	3.8952	817.0		
11/18/2015	15.1973	11.8901	3.3072	819.0		sample date

WATERSHED TECHNOLOGIES					
Lemkin Creek TN Reduction & Operations Report South Pond					# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183 % Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted
TOTAL PER DAY	3752.7035 20.5066	2943.1807 16.0830	809.5228 4.4236	gpm On-Line Flow > 0 952.20	Operational/ Flow Status
					Comments
11/19/2015	15.4076	11.8949	3.5126	809.0	
11/20/2015	10.9393	8.3377	2.6017	560.0	
11/21/2015	18.0815	13.6119	4.4696	903.0	
11/22/2015	18.3798	13.6725	4.7072	896.0	
11/23/2015	18.7972	13.8232	4.9740	895.0	
11/24/2015	19.1707	13.9423	5.2284	892.0	
11/25/2015	19.6291	14.1235	5.5056	893.0	sample date
11/26/2015	19.7484	14.2396	5.5088	899.0	
11/27/2015	19.5382	14.1180	5.4202	890.0	
11/28/2015	19.3063	13.9801	5.3262	880.0	
11/29/2015	18.9870	13.7780	5.2089	866.0	
11/30/2015	19.0405	13.8462	5.1943	869.0	
12/1/2015					Off-Line scheduled site shut down
12/2/2015					Off-Line scheduled site shut down
12/3/2015					Off-Line scheduled site shut down
12/4/2015					Off-Line scheduled site shut down
12/5/2015					Off-Line scheduled site shut down
12/6/2015					Off-Line scheduled site shut down
12/7/2015					Off-Line scheduled site shut down
12/8/2015					Off-Line scheduled site shut down
12/9/2015					Off-Line scheduled site shut down
12/10/2015					Off-Line scheduled site shut down
12/11/2015					Off-Line scheduled site shut down
12/12/2015					Off-Line scheduled site shut down
12/13/2015					Off-Line scheduled site shut down
12/14/2015					Off-Line scheduled site shut down
12/15/2015					Off-Line scheduled site shut down
12/16/2015					Off-Line scheduled site shut down
12/17/2015					Off-Line scheduled site shut down
12/18/2015					Off-Line scheduled site shut down
12/19/2015					Off-Line scheduled site shut down
12/20/2015					Off-Line scheduled site shut down
12/21/2015					Off-Line scheduled site shut down
12/22/2015					Off-Line scheduled site shut down
12/23/2015					Off-Line scheduled site shut down
12/24/2015					Off-Line scheduled site shut down
12/25/2015					Off-Line scheduled site shut down
12/26/2015					Off-Line scheduled site shut down
12/27/2015					Off-Line scheduled site shut down
12/28/2015					Off-Line scheduled site shut down
12/29/2015					Off-Line scheduled site shut down
12/30/2015					Off-Line scheduled site shut down
12/31/2015					Off-Line scheduled site shut down
1/1/2016					Off-Line scheduled site shut down
1/2/2016					Off-Line scheduled site shut down
1/3/2016					Off-Line scheduled site shut down
1/4/2016					Off-Line scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	3752.7035 20.5066	2943.1807 16.0830	809.5228 4.4236	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES					
Lemkin Creek TN Reduction & Operations Report South Pond					# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183 % Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted
TOTAL PER DAY	3752.7035 20.5066	2943.1807 16.0830	809.5228 4.4236	gpm On-Line Flow > 0 952.20	Operational/ Flow Status
					Comments
2/21/2016					Off-Line scheduled site shut down
2/22/2016					Off-Line scheduled site shut down
2/23/2016					Off-Line scheduled site shut down
2/24/2016					Off-Line scheduled site shut down
2/25/2016					Off-Line scheduled site shut down
2/26/2016					Off-Line scheduled site shut down
2/27/2016					Off-Line scheduled site shut down
2/28/2016					Off-Line scheduled site shut down
2/29/2016					Off-Line scheduled site shut down
3/1/2016					Off-Line scheduled site shut down
3/2/2016					Off-Line scheduled site shut down
3/3/2016					Off-Line scheduled site shut down
3/4/2016					Off-Line scheduled site shut down
3/5/2016					Off-Line scheduled site shut down
3/6/2016					Off-Line scheduled site shut down
3/7/2016					Off-Line scheduled site shut down
3/8/2016					Off-Line scheduled site shut down
3/9/2016					Off-Line scheduled site shut down
3/10/2016					Off-Line scheduled site shut down
3/11/2016					Off-Line scheduled site shut down
3/12/2016					Off-Line scheduled site shut down
3/13/2016					Off-Line scheduled site shut down
3/14/2016					Off-Line scheduled site shut down
3/15/2016					Off-Line scheduled site shut down
3/16/2016					Off-Line scheduled site shut down
3/17/2016					Off-Line scheduled site shut down
3/18/2016					Off-Line scheduled site shut down
3/19/2016					Off-Line scheduled site shut down
3/20/2016					Off-Line scheduled site shut down
3/21/2016					Off-Line scheduled site shut down
3/22/2016					Off-Line scheduled site shut down
3/23/2016					Off-Line scheduled site shut down
3/24/2016					Off-Line scheduled site shut down
3/25/2016					Off-Line scheduled site shut down
3/26/2016					Off-Line scheduled site shut down
3/27/2016					Off-Line scheduled site shut down
3/28/2016					Off-Line scheduled site shut down
3/29/2016					Off-Line scheduled site shut down
3/30/2016					Off-Line scheduled site shut down
3/31/2016					Off-Line scheduled site shut down
4/1/2016					Off-Line scheduled site shut down
4/2/2016					Off-Line scheduled site shut down
4/3/2016					Off-Line scheduled site shut down
4/4/2016					Off-Line scheduled site shut down
4/5/2016					Off-Line scheduled site shut down
4/6/2016					Off-Line scheduled site shut down
4/7/2016					Off-Line scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TN Reduction & Operations Report South Pond					# Days Active Status: 183	
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	3752.7035 20.5066	2943.1807 16.0830	809.5228 4.4236	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	3752.7035 20.5066	2943.1807 16.0830	809.5228 4.4236	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016					Off-Line	scheduled site shut down
6/1/2016	7.6922	8.0658	-0.3736	398.0		
6/2/2016	16.2617	17.0837	-0.8220	842.0		
6/3/2016	15.9604	16.7989	-0.8385	827.0		
6/4/2016	15.0424	15.8625	-0.8201	780.0		
6/5/2016	1.8500	1.9546	-0.1045	96.0		
6/6/2016	12.6519	13.3921	-0.7402	657.0		
6/7/2016	24.4001	25.8763	-1.4762	1268.0		
6/8/2016	22.9401	24.3739	-1.4338	1193.0		sample date
6/9/2016	23.4953	24.1083	-0.6129	1190.0		
6/10/2016	24.7160	24.5066	0.2095	1220.0		
6/11/2016	27.5672	26.4281	1.1391	1327.0		
6/12/2016	28.4423	26.3780	2.0644	1336.0		
6/13/2016	28.8034	25.8550	2.9484	1321.0		
6/14/2016	28.0553	24.3866	3.6688	1257.0		
6/15/2016	27.1272	22.8440	4.2832	1188.0		sample date
6/16/2016	25.9127	22.4978	3.4149	1170.0		
6/17/2016	27.1051	24.2861	2.8189	1263.0		
6/18/2016	25.5314	23.6324	1.8990	1229.0		
6/19/2016	24.8882	23.8246	1.0636	1239.0		
6/20/2016	23.9016	23.6900	0.2115	1232.0		
6/21/2016	23.0742	23.7093	-0.6351	1233.0		
6/22/2016	22.2635	23.7477	-1.4842	1235.0		sample date
6/23/2016	20.2838	21.6490	-1.3653	1136.0		
6/24/2016	20.5131	21.9072	-1.3941	1160.0		
6/25/2016	20.3140	21.7081	-1.3941	1160.0		
6/26/2016	20.6177	22.0467	-1.4289	1189.0		
6/27/2016	22.1133	23.6612	-1.5479	1288.0		
6/28/2016	22.1301	23.6948	-1.5648	1302.0		
6/29/2016	21.3177	22.8404	-1.5227	1267.0		sample date
6/30/2016	19.5678	20.9655	-1.3977	1163.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	53.6243 0.2930	375.6584 2.0528	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
7/1/2015	0.5314	0.1836	0.3479	804.0		sample date
7/2/2015	0.4369	0.1509	0.2860	661.0		
7/3/2015	0.5698	0.1968	0.3729	862.0		
7/4/2015	0.5235	0.1808	0.3427	792.0		
7/5/2015	0.2380	0.0822	0.1558	360.0		
7/6/2015	0.3173	0.1096	0.2077	480.0		
7/7/2015	0.5242	0.1811	0.3431	793.0		
7/8/2015	0.5301	0.1831	0.3470	802.0		sample date
7/9/2015	0.5176	0.1808	0.3368	804.0		
7/10/2015	0.5013	0.1772	0.3241	800.0		
7/11/2015	0.4906	0.1755	0.3151	805.0		
7/12/2015	0.4525	0.1640	0.2886	764.0		
7/13/2015	0.4572	0.1679	0.2894	795.0		
7/14/2015	0.4313	0.1606	0.2707	773.0		
7/15/2015	0.3943	0.1489	0.2453	729.0		sample date
7/16/2015	0.3881	0.1483	0.2398	720.0		
7/17/2015	0.4014	0.1552	0.2462	747.0		
7/18/2015	0.4076	0.1594	0.2482	761.0		
7/19/2015	0.3850	0.1523	0.2327	721.0		
7/20/2015	0.3795	0.1518	0.2277	713.0		
7/21/2015	0.3692	0.1494	0.2199	696.0		
7/22/2015	0.4193	0.1715	0.2478	793.0		sample date
7/23/2015	0.4436	0.1772	0.2665	800.0		
7/24/2015	0.4509	0.1761	0.2748	777.0		
7/25/2015	0.4745	0.1815	0.2931	783.0		
7/26/2015	0.4941	0.1853	0.3088	782.0		
7/27/2015	0.5372	0.1978	0.3394	817.0		
7/28/2015	0.5303	0.1918	0.3384	776.0		
7/29/2015	0.4871	0.1734	0.3137	687.0		sample date
7/30/2015	0.7360	0.2015	0.5345	815.0		
7/31/2015	0.9106	0.2009	0.7097	830.0		
8/1/2015	1.1026	0.2023	0.9003	854.0		
8/2/2015	1.2534	0.1956	1.0578	844.0		
8/3/2015	1.4172	0.1913	1.2259	844.0		
8/4/2015	1.6483	0.1949	1.4534	880.0		
8/5/2015	1.7632	0.1845	1.5787	853.0		sample date
8/6/2015	1.6012	0.1811	1.4201	844.0		
8/7/2015	1.4128	0.1741	1.2387	818.0		
8/8/2015	1.1788	0.1599	1.0189	757.0		
8/9/2015	1.1306	0.1707	0.9599	815.0		
8/10/2015	1.0176	0.1737	0.8440	836.0		
8/11/2015	0.8797	0.1731	0.7067	840.0		
8/12/2015	0.8475	0.1974	0.6501	966.0		sample date
8/13/2015	1.0751	0.2281	0.8470	1089.0		
8/14/2015	1.2112	0.2369	0.9742	1104.0		
8/15/2015	1.4146	0.2576	1.1570	1172.0		
8/16/2015	1.5433	0.2636	1.2797	1172.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	53.6243 0.2930	375.6584 2.0528	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
8/17/2015	1.7577	0.2834	1.4743	1232.0		
8/18/2015	1.6810	0.2573	1.4237	1094.0		
8/19/2015	1.8424	0.2690	1.5734	1119.0		sample date
8/20/2015	1.9465	0.2907	1.6558	1201.0		
8/21/2015	1.8741	0.2865	1.5876	1175.0		
8/22/2015	1.8187	0.2845	1.5342	1159.0		
8/23/2015	1.7379	0.2784	1.4596	1126.0		
8/24/2015	1.7514	0.2873	1.4642	1154.0		
8/25/2015	1.8276	0.3071	1.5206	1225.0		
8/26/2015	1.7521	0.3016	1.4505	1195.0		sample date
8/27/2015	1.9175	0.3001	1.6174	1214.0		
8/28/2015	2.0128	0.2878	1.7249	1189.0		
8/29/2015	2.0084	0.2635	1.7450	1112.0		
8/30/2015	2.1210	0.2561	1.8649	1105.0		
8/31/2015	2.3397	0.2608	2.0789	1151.0		
9/1/2015	2.5002	0.2580	2.2422	1165.0		
9/2/2015	2.6887	0.2574	2.4313	1190.0		sample date
9/3/2015	2.1296	0.2156	1.9141	944.0		
9/4/2015	2.3697	0.2529	2.1168	1052.0		
9/5/2015	2.4830	0.2786	2.2044	1104.0		
9/6/2015	2.5017	0.2945	2.2071	1114.0		
9/7/2015	2.4530	0.3024	2.1506	1094.0		
9/8/2015	2.2925	0.2954	1.9972	1024.0		
9/9/2015	2.3449	0.3152	2.0297	1049.0		sample date
9/10/2015	2.7476	0.3459	2.4017	1158.0		
9/11/2015	2.7335	0.3235	2.4100	1089.0		
9/12/2015	2.9677	0.3310	2.6367	1121.0		
9/13/2015	3.1050	0.3273	2.7777	1115.0		
9/14/2015	3.2406	0.3237	2.9169	1109.0		
9/15/2015	3.4755	0.3296	3.1459	1136.0		
9/16/2015	3.7722	0.3404	3.4319	1180.0		sample date
9/17/2015	4.6517	0.4164	4.2354	1231.0		
9/18/2015	5.4074	0.4811	4.9263	1240.0		
9/19/2015	6.0946	0.5398	5.5547	1233.0		
9/20/2015	6.8674	0.6061	6.2614	1243.0		
9/21/2015	7.6642	0.6744	6.9897	1255.0		
9/22/2015	8.4548	0.7422	7.7126	1264.0		
9/23/2015	9.1905	0.8051	8.3854	1264.0		sample date
9/24/2015	8.3402	0.7667	7.5735	1244.0		
9/25/2015	7.5618	0.7340	6.8278	1232.0		
9/26/2015	6.7858	0.7005	6.0852	1218.0		
9/27/2015	6.0657	0.6721	5.3935	1212.0		
9/28/2015	5.0861	0.6119	4.4742	1146.0		
9/29/2015	4.4290	0.5873	3.8418	1144.0		
9/30/2015	3.7941	0.5657	3.2284	1148.0		sample date
10/1/2015	3.5957	0.5349	3.0609	1137.0		
10/2/2015	3.3038	0.4902	2.8136	1094.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	53.6243 0.2930	375.6584 2.0528	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
10/3/2015	3.0760	0.4552	2.6209	1069.0		
10/4/2015	2.8690	0.4232	2.4458	1049.0		
10/5/2015	2.4032	0.3533	2.0499	927.0		
10/6/2015	2.0408	0.2989	1.7419	833.0		
10/7/2015	1.9060	0.2780	1.6280	826.0		sample date
10/8/2015	1.7839	0.2688	1.5151	824.0		
10/9/2015	1.6706	0.2609	1.4096	826.0		
10/10/2015	1.5397	0.2503	1.2894	819.0		
10/11/2015	1.4265	0.2424	1.1840	821.0		
10/12/2015	1.3111	0.2343	1.0768	822.0		
10/13/2015	1.1591	0.2192	0.9399	798.0		
10/14/2015	1.0519	0.2123	0.8396	803.0		sample date
10/15/2015	1.0546	0.2194	0.8352	819.0		
10/16/2015	1.0401	0.2230	0.8171	822.0		
10/17/2015	0.9845	0.2176	0.7669	792.0		
10/18/2015	0.8899	0.2028	0.6871	729.0		
10/19/2015	0.9515	0.2236	0.7279	794.0		
10/20/2015	0.9655	0.2340	0.7316	821.0		
10/21/2015	0.9484	0.2371	0.7113	822.0		sample date
10/22/2015	1.0968	0.2391	0.8577	834.0		
10/23/2015	1.2255	0.2366	0.9890	830.0		
10/24/2015	1.3595	0.2351	1.1243	830.0		
10/25/2015	1.5222	0.2382	1.2840	846.0		
10/26/2015	1.6921	0.2415	1.4505	863.0		
10/27/2015	1.8823	0.2467	1.6356	887.0		
10/28/2015	2.0117	0.2435	1.7682	881.0		sample date
10/29/2015	1.9507	0.2390	1.7118	870.0		
10/30/2015	1.8973	0.2353	1.6620	862.0		
10/31/2015	1.8035	0.2265	1.5769	835.0		
11/1/2015	1.7161	0.2183	1.4977	810.0		
11/2/2015	1.6972	0.2188	1.4784	817.0		
11/3/2015	0.8186	0.1070	0.7116	402.0		
11/4/2015	0.6883	0.0912	0.5971	345.0		sample date
11/5/2015	1.5964	0.2325	1.3639	857.0		
11/6/2015	1.4624	0.2350	1.2273	845.0		
11/7/2015	1.3459	0.2400	1.1059	842.0		
11/8/2015	1.2067	0.2402	0.9665	823.0		
11/9/2015	1.0739	0.2405	0.8334	805.0		
11/10/2015	0.9951	0.2530	0.7421	828.0		
11/11/2015	0.8749	0.2556	0.6193	818.0		sample date
11/12/2015	0.8434	0.2592	0.5842	816.0		
11/13/2015	0.8170	0.2643	0.5526	819.0		
11/14/2015	0.8095	0.2761	0.5334	842.0		
11/15/2015	0.7690	0.2768	0.4922	831.0		
11/16/2015	0.7239	0.2753	0.4486	814.0		
11/17/2015	0.6971	0.2805	0.4166	817.0		
11/18/2015	0.6693	0.2854	0.3839	819.0		sample date

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	53.6243 0.2930	375.6584 2.0528	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
11/19/2015	0.9820	0.2736	0.7084	809.0		
11/20/2015	0.9018	0.1836	0.7182	560.0		
11/21/2015	1.8123	0.2868	1.5255	903.0		
11/22/2015	2.1536	0.2754	1.8783	896.0		
11/23/2015	2.5062	0.2658	2.2404	895.0		
11/24/2015	2.8516	0.2558	2.5958	892.0		
11/25/2015	3.2089	0.2468	2.9621	893.0		sample date
11/26/2015	3.2271	0.2489	2.9782	899.0		
11/27/2015	3.1915	0.2468	2.9447	890.0		
11/28/2015	3.1523	0.2444	2.9079	880.0		
11/29/2015	3.0989	0.2409	2.8581	866.0		
11/30/2015	3.1064	0.2421	2.8643	869.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	53.6243 0.2930	375.6584 2.0528	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827	53.6243	375.6584	gpm On-Line Flow > 0	Operational/ Flow Status	
	2.3458	0.2930	2.0528	952.20		
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827	53.6243	375.6584	gpm On-Line Flow > 0	Operational/ Flow Status	
	2.3458	0.2930	2.0528	952.20		
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	53.6243 0.2930	375.6584 2.0528	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016					Off-Line	scheduled site shut down
6/1/2016	1.1488	0.1423	1.0065	398.0		
6/2/2016	2.4273	0.3014	2.1259	842.0		
6/3/2016	2.3809	0.2964	2.0845	827.0		
6/4/2016	2.2427	0.2799	1.9628	780.0		
6/5/2016	0.2757	0.0345	0.2412	96.0		
6/6/2016	1.8841	0.2363	1.6478	657.0		
6/7/2016	3.6316	0.4566	3.1750	1268.0		
6/8/2016	3.4123	0.4301	2.9822	1193.0		sample date
6/9/2016	3.5284	0.4250	3.1034	1190.0		
6/10/2016	3.7451	0.4315	3.3136	1220.0		
6/11/2016	4.2125	0.4648	3.7478	1327.0		
6/12/2016	4.3810	0.4633	3.9177	1336.0		
6/13/2016	4.4702	0.4536	4.0166	1321.0		
6/14/2016	4.3853	0.4273	3.9580	1257.0		
6/15/2016	4.2690	0.3998	3.8692	1188.0		sample date
6/16/2016	4.2806	0.3977	3.8829	1170.0		
6/17/2016	4.7033	0.4337	4.2696	1263.0		
6/18/2016	4.6568	0.4262	4.2306	1229.0		
6/19/2016	4.7756	0.4339	4.3416	1239.0		
6/20/2016	4.8290	0.4357	4.3932	1232.0		
6/21/2016	4.9133	0.4403	4.4730	1233.0		
6/22/2016	5.0019	0.4453	4.5566	1235.0		sample date
6/23/2016	4.9013	0.4057	4.4956	1136.0		
6/24/2016	5.3115	0.4103	4.9012	1160.0		
6/25/2016	5.6182	0.4063	5.2119	1160.0		
6/26/2016	6.0730	0.4124	5.6607	1189.0		
6/27/2016	6.9192	0.4423	6.4770	1288.0		
6/28/2016	7.3387	0.4426	6.8961	1302.0		
6/29/2016	7.4764	0.4264	7.0501	1267.0		sample date
6/30/2016	6.8627	0.3914	6.4714	1163.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	150.3308 0.8215	278.9519 1.5243	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
7/1/2015	0.5314	0.2126	0.3189	804.0		sample date
7/2/2015	0.4369	0.1770	0.2599	661.0		
7/3/2015	0.5698	0.2338	0.3359	862.0		
7/4/2015	0.5235	0.2176	0.3059	792.0		
7/5/2015	0.2380	0.1001	0.1378	360.0		
7/6/2015	0.3173	0.1352	0.1821	480.0		
7/7/2015	0.5242	0.2260	0.2982	793.0		
7/8/2015	0.5301	0.2313	0.2988	802.0		sample date
7/9/2015	0.5176	0.2264	0.2913	804.0		
7/10/2015	0.5013	0.2198	0.2816	800.0		
7/11/2015	0.4906	0.2156	0.2750	805.0		
7/12/2015	0.4525	0.1994	0.2532	764.0		
7/13/2015	0.4572	0.2020	0.2552	795.0		
7/14/2015	0.4313	0.1911	0.2402	773.0		
7/15/2015	0.3943	0.1752	0.2190	729.0		sample date
7/16/2015	0.3881	0.1718	0.2163	720.0		
7/17/2015	0.4014	0.1770	0.2244	747.0		
7/18/2015	0.4076	0.1790	0.2286	761.0		
7/19/2015	0.3850	0.1683	0.2166	721.0		
7/20/2015	0.3795	0.1653	0.2142	713.0		
7/21/2015	0.3692	0.1601	0.2091	696.0		
7/22/2015	0.4193	0.1811	0.2383	793.0		sample date
7/23/2015	0.4436	0.1923	0.2513	800.0		
7/24/2015	0.4509	0.1961	0.2548	777.0		
7/25/2015	0.4745	0.2070	0.2675	783.0		
7/26/2015	0.4941	0.2162	0.2779	782.0		
7/27/2015	0.5372	0.2357	0.3016	817.0		
7/28/2015	0.5303	0.2332	0.2971	776.0		
7/29/2015	0.4871	0.2147	0.2725	687.0		sample date
7/30/2015	0.7360	0.2701	0.4659	815.0		
7/31/2015	0.9106	0.2907	0.6199	830.0		
8/1/2015	1.1026	0.3152	0.7874	854.0		
8/2/2015	1.2534	0.3275	0.9259	844.0		
8/3/2015	1.4172	0.3434	1.0737	844.0		
8/4/2015	1.6483	0.3747	1.2736	880.0		
8/5/2015	1.7632	0.3793	1.3839	853.0		sample date
8/6/2015	1.6012	0.3739	1.2273	844.0		
8/7/2015	1.4128	0.3609	1.0519	818.0		
8/8/2015	1.1788	0.3327	0.8461	757.0		
8/9/2015	1.1306	0.3568	0.7738	815.0		
8/10/2015	1.0176	0.3646	0.6531	836.0		
8/11/2015	0.8797	0.3649	0.5149	840.0		
8/12/2015	0.8475	0.4179	0.4296	966.0		sample date
8/13/2015	1.0751	0.4992	0.5759	1089.0		
8/14/2015	1.2112	0.5345	0.6767	1104.0		
8/15/2015	1.4146	0.5976	0.8169	1172.0		
8/16/2015	1.5433	0.6278	0.9155	1172.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	150.3308 0.8215	278.9519 1.5243	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
8/17/2015	1.7577	0.6917	1.0661	1232.0		
8/18/2015	1.6810	0.6424	1.0387	1094.0		
8/19/2015	1.8424	0.6859	1.1565	1119.0		sample date
8/20/2015	1.9465	0.7258	1.2207	1201.0		
8/21/2015	1.8741	0.7000	1.1741	1175.0		
8/22/2015	1.8187	0.6805	1.1382	1159.0		
8/23/2015	1.7379	0.6515	1.0865	1126.0		
8/24/2015	1.7514	0.6578	1.0937	1154.0		
8/25/2015	1.8276	0.6877	1.1399	1225.0		
8/26/2015	1.7521	0.6606	1.0915	1195.0		sample date
8/27/2015	1.9175	0.6878	1.2297	1214.0		
8/28/2015	2.0128	0.6900	1.3228	1189.0		
8/29/2015	2.0084	0.6606	1.3479	1112.0		
8/30/2015	2.1210	0.6716	1.4494	1105.0		
8/31/2015	2.3397	0.7154	1.6244	1151.0		
9/1/2015	2.5002	0.7401	1.7601	1165.0		
9/2/2015	2.6887	0.7723	1.9164	1190.0		sample date
9/3/2015	2.1296	0.6078	1.5219	944.0		
9/4/2015	2.3697	0.6719	1.6978	1052.0		
9/5/2015	2.4830	0.6994	1.7836	1104.0		
9/6/2015	2.5017	0.7000	1.8017	1114.0		
9/7/2015	2.4530	0.6818	1.7712	1094.0		
9/8/2015	2.2925	0.6329	1.6596	1024.0		
9/9/2015	2.3449	0.6430	1.7019	1049.0		sample date
9/10/2015	2.7476	0.7237	2.0239	1158.0		
9/11/2015	2.7335	0.6936	2.0398	1089.0		
9/12/2015	2.9677	0.7275	2.2402	1121.0		
9/13/2015	3.1050	0.7370	2.3680	1115.0		
9/14/2015	3.2406	0.7464	2.4942	1109.0		
9/15/2015	3.4755	0.7782	2.6974	1136.0		
9/16/2015	3.7722	0.8225	2.9497	1180.0		sample date
9/17/2015	4.6517	1.5449	3.1068	1231.0		
9/18/2015	5.4074	2.2481	3.1593	1240.0		
9/19/2015	6.0946	2.9234	3.1711	1233.0		
9/20/2015	6.8674	3.6407	3.2267	1243.0		
9/21/2015	7.6642	4.3761	3.2880	1255.0		
9/22/2015	8.4548	5.1128	3.3420	1264.0		
9/23/2015	9.1905	5.8181	3.3724	1264.0		sample date
9/24/2015	8.3402	5.1366	3.2037	1244.0		
9/25/2015	7.5618	4.5032	3.0586	1232.0		
9/26/2015	6.7858	3.8749	2.9109	1218.0		
9/27/2015	6.0657	3.2815	2.7842	1212.0		
9/28/2015	5.0861	2.5598	2.5263	1146.0		
9/29/2015	4.4290	2.0132	2.4158	1144.0		
9/30/2015	3.7941	1.4763	2.3179	1148.0		sample date
10/1/2015	3.5957	1.3665	2.2293	1137.0		
10/2/2015	3.3038	1.2227	2.0811	1094.0		

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	150.3308 0.8215	278.9519 1.5243	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
10/3/2015	3.0760	1.1049	1.9711	1069.0		
10/4/2015	2.8690	0.9960	1.8730	1049.0		
10/5/2015	2.4032	0.8021	1.6011	927.0		
10/6/2015	2.0408	0.6507	1.3901	833.0		
10/7/2015	1.9060	0.5758	1.3302	826.0		sample date
10/8/2015	1.7839	0.5574	1.2265	824.0		
10/9/2015	1.6706	0.5417	1.1288	826.0		
10/10/2015	1.5397	0.5203	1.0194	819.0		
10/11/2015	1.4265	0.5046	0.9218	821.0		
10/12/2015	1.3111	0.4883	0.8228	822.0		
10/13/2015	1.1591	0.4576	0.7015	798.0		
10/14/2015	1.0519	0.4439	0.6080	803.0		sample date
10/15/2015	1.0546	0.4415	0.6131	819.0		
10/16/2015	1.0401	0.4318	0.6083	822.0		
10/17/2015	0.9845	0.4052	0.5793	792.0		
10/18/2015	0.8899	0.3630	0.5269	729.0		
10/19/2015	0.9515	0.3844	0.5671	794.0		
10/20/2015	0.9655	0.3862	0.5793	821.0		
10/21/2015	0.9484	0.3754	0.5730	822.0		sample date
10/22/2015	1.0968	0.4009	0.6959	834.0		
10/23/2015	1.2255	0.4190	0.8066	830.0		
10/24/2015	1.3595	0.4389	0.9206	830.0		
10/25/2015	1.5222	0.4677	1.0545	846.0		
10/26/2015	1.6921	0.4978	1.1942	863.0		
10/27/2015	1.8823	0.5330	1.3493	887.0		
10/28/2015	2.0117	0.5506	1.4611	881.0		sample date
10/29/2015	1.9507	0.5542	1.3966	870.0		
10/30/2015	1.8973	0.5594	1.3379	862.0		
10/31/2015	1.8035	0.5519	1.2515	835.0		
11/1/2015	1.7161	0.5451	1.1709	810.0		
11/2/2015	1.6972	0.5597	1.1376	817.0		
11/3/2015	0.8186	0.2802	0.5383	402.0		
11/4/2015	0.6883	0.2446	0.4436	345.0		sample date
11/5/2015	1.5964	0.5724	1.0241	857.0		
11/6/2015	1.4624	0.5295	0.9328	845.0		
11/7/2015	1.3459	0.4930	0.8529	842.0		
11/8/2015	1.2067	0.4479	0.7588	823.0		
11/9/2015	1.0739	0.4049	0.6689	805.0		
11/10/2015	0.9951	0.3824	0.6127	828.0		
11/11/2015	0.8749	0.3441	0.5309	818.0		sample date
11/12/2015	0.8434	0.3362	0.5071	816.0		
11/13/2015	0.8170	0.3304	0.4865	819.0		
11/14/2015	0.8095	0.3325	0.4770	842.0		
11/15/2015	0.7690	0.3210	0.4480	831.0		
11/16/2015	0.7239	0.3075	0.4165	814.0		
11/17/2015	0.6971	0.3016	0.3956	817.0		
11/18/2015	0.6693	0.2953	0.3740	819.0		sample date

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	150.3308 0.8215	278.9519 1.5243	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
11/19/2015	0.9820	0.3431	0.6389	809.0		
11/20/2015	0.9018	0.2731	0.6288	560.0		
11/21/2015	1.8123	0.4977	1.3147	903.0		
11/22/2015	2.1536	0.5507	1.6029	896.0		
11/23/2015	2.5062	0.6070	1.8992	895.0		
11/24/2015	2.8516	0.6616	2.1900	892.0		
11/25/2015	3.2089	0.7191	2.4899	893.0		sample date
11/26/2015	3.2271	0.7240	2.5031	899.0		
11/27/2015	3.1915	0.7169	2.4746	890.0		
11/28/2015	3.1523	0.7089	2.4434	880.0		
11/29/2015	3.0989	0.6977	2.4012	866.0		
11/30/2015	3.1064	0.7003	2.4062	869.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
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	TP MASS (lbs.)		TP (lbs.) REMOVAL	AVERAGE DAILY FLOW	On-Line Unless Otherwise Noted	
	INFLOW	OUTFLOW				
TOTAL PER DAY	429.2827 2.3458	150.3308 0.8215	278.9519 1.5243	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	Comments
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.) REMOVAL	AVERAGE DAILY FLOW	On-Line Unless Otherwise Noted	
	INFLOW	OUTFLOW				
TOTAL PER DAY	429.2827	150.3308	278.9519	gpm On-Line Flow > 0	Operational/ Flow Status	Comments
	2.3458	0.8215	1.5243	952.20		
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.) REMOVAL	AVERAGE DAILY FLOW	On-Line Unless Otherwise Noted	
	INFLOW	OUTFLOW				
TOTAL PER DAY	429.2827	150.3308	278.9519	gpm On-Line Flow > 0	Operational/ Flow Status	Comments
	2.3458	0.8215	1.5243	952.20		
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Lemkin Creek TP Reduction & Operations Report						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	183	# Days On-Line Flow > 0.0000:	183	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	183	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	429.2827 2.3458	150.3308 0.8215	278.9519 1.5243	gpm On-Line Flow > 0 952.20	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016					Off-Line	scheduled site shut down
6/1/2016	1.1488	0.3297	0.8191	398.0		
6/2/2016	2.4273	0.6976	1.7297	842.0		
6/3/2016	2.3809	0.6853	1.6957	827.0		
6/4/2016	2.2427	0.6464	1.5963	780.0		
6/5/2016	0.2757	0.0796	0.1961	96.0		
6/6/2016	1.8841	0.5447	1.3395	657.0		
6/7/2016	3.6316	1.0513	2.5803	1268.0		
6/8/2016	3.4123	0.9893	2.4230	1193.0		sample date
6/9/2016	3.5284	1.0685	2.4599	1190.0		
6/10/2016	3.7451	1.1792	2.5659	1220.0		
6/11/2016	4.2125	1.3738	2.8387	1327.0		
6/12/2016	4.3810	1.4749	2.9062	1336.0		
6/13/2016	4.4702	1.5490	2.9212	1321.0		
6/14/2016	4.3853	1.5603	2.8250	1257.0		
6/15/2016	4.2690	1.5562	2.7127	1188.0		sample date
6/16/2016	4.2806	1.4724	2.8082	1170.0		
6/17/2016	4.7033	1.5244	3.1789	1263.0		
6/18/2016	4.6568	1.4201	3.2368	1229.0		
6/19/2016	4.7756	1.3678	3.4078	1239.0		
6/20/2016	4.8290	1.2966	3.5324	1232.0		
6/21/2016	4.9133	1.2342	3.6792	1233.0		
6/22/2016	5.0019	1.1725	3.8293	1235.0		sample date
6/23/2016	4.9013	1.1254	3.7759	1136.0		
6/24/2016	5.3115	1.1969	4.1146	1160.0		
6/25/2016	5.6182	1.2447	4.3735	1160.0		
6/26/2016	6.0730	1.3248	4.7482	1189.0		
6/27/2016	6.9192	1.4882	5.4310	1288.0		
6/28/2016	7.3387	1.5580	5.7806	1302.0		
6/29/2016	7.4764	1.5684	5.9080	1267.0		sample date
6/30/2016	6.8627	1.4396	5.4231	1163.0		

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	6328.9317 35.9598	3157.4842 17.9403	3171.4475 18.0196	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
7/1/2015	11.6907	6.7257	4.9650	293.0		sample date
7/2/2015	15.7350	9.0093	6.7257	393.0		
7/3/2015	16.3518	9.3180	7.0338	407.0		
7/4/2015	16.6903	9.4659	7.2244	414.0		
7/5/2015	13.0258	7.3527	5.6732	322.0		
7/6/2015	0.9742	0.5473	0.4269	24.0		
7/7/2015					Off-Line	equipment failure; faulty relay
7/8/2015	12.2602	6.8233	5.4370	300.0		sample date
7/9/2015	17.8785	9.9034	7.9751	436.0		
7/10/2015	17.9387	9.8903	8.0485	436.0		
7/11/2015	17.9990	9.8772	8.1218	436.0		
7/12/2015	18.0593	9.8641	8.1952	436.0		
7/13/2015	18.1195	9.8510	8.2685	436.0		
7/14/2015	18.2632	9.8830	8.3802	438.0		
7/15/2015	20.4154	10.9965	9.4189	488.0		sample date
7/16/2015	17.6419	9.5171	8.1248	434.0		
7/17/2015	11.8786	6.4184	5.4603	301.0		
7/18/2015	7.7322	4.1851	3.5471	202.0		
7/19/2015	6.8622	3.7209	3.1413	185.0		
7/20/2015	7.9355	4.3113	3.6243	221.0		
7/21/2015	7.8819	4.2909	3.5910	227.0		
7/22/2015	9.1555	4.9952	4.1602	273.0		sample date
7/23/2015	13.5874	7.4308	6.1566	420.0		
7/24/2015	16.2995	8.9366	7.3630	523.0		
7/25/2015	15.4097	8.4717	6.9380	514.0		
7/26/2015	14.5124	8.0019	6.5105	504.0		
7/27/2015	13.7217	7.5900	6.1317	497.0		
7/28/2015	24.6531	13.6837	10.9694	933.0		
7/29/2015	26.6261	14.8345	11.7915	1055.0		sample date
7/30/2015	26.2938	15.0576	11.2362	1021.0		
7/31/2015	26.4520	15.5427	10.9093	1007.0		
8/1/2015	27.1313	16.3310	10.8004	1013.0		
8/2/2015	27.5985	16.9930	10.6055	1011.0		
8/3/2015	27.6464	17.3899	10.2565	994.0		
8/4/2015	27.5918	17.7089	9.8829	974.0		
8/5/2015	28.2377	18.4721	9.7655	979.0		sample date
8/6/2015	28.2135	18.7925	9.4210	961.0		
8/7/2015	29.3955	19.9180	9.4775	984.0		
8/8/2015	29.7504	20.4891	9.2613	979.0		
8/9/2015	29.6057	20.7075	8.8982	958.0		
8/10/2015	31.1359	22.1014	9.0345	991.0		
8/11/2015	31.3270	22.5521	8.7749	981.0		
8/12/2015	23.6876	17.2832	6.4044	730.0		sample date
8/13/2015	32.5457	23.5331	9.0127	1010.0		
8/14/2015	31.9021	22.8557	9.0464	997.0		
8/15/2015	31.8363	22.5940	9.2423	1002.0		
8/16/2015	32.0838	22.5503	9.5335	1017.0		

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	6328.9317 35.9598	3157.4842 17.9403	3171.4475 18.0196	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
8/17/2015	31.8859	22.1902	9.6958	1018.0		
8/18/2015					Off-Line	walchem replaced
8/19/2015					Off-Line	walchem replaced; sample date
8/20/2015					Off-Line	walchem replaced
8/21/2015					Off-Line	walchem replaced
8/22/2015					Off-Line	walchem replaced
8/23/2015					Off-Line	walchem replaced
8/24/2015	34.1172	21.9867	12.1306	1147.0		
8/25/2015	33.4750	21.3116	12.1634	1134.0		
8/26/2015	32.8387	20.6463	12.1924	1121.0		
8/27/2015	32.3535	20.0809	12.2726	1113.0		
8/28/2015	32.1604	19.6982	12.4621	1115.0		sample date
8/29/2015	47.2418	20.3033	26.9385	1137.0		
8/30/2015	62.7195	20.8625	41.8570	1156.0		
8/31/2015	73.6579	20.0612	53.5967	1100.0		
9/1/2015	90.3433	20.8970	69.4463	1134.0		
9/2/2015	104.4750	21.0570	83.4180	1131.0		sample date
9/3/2015	116.8491	20.9148	95.9342	1112.0		
9/4/2015	131.9205	21.2784	110.6421	1120.0		
9/5/2015	143.6720	21.1269	122.5451	1101.0		
9/6/2015	157.5183	21.3171	136.2012	1100.0		
9/7/2015	171.9627	21.5851	150.3776	1103.0		
9/8/2015	185.6403	21.7555	163.8849	1101.0		
9/9/2015	85.5815	9.4164	76.1651	472.0		sample date
9/10/2015					Off-Line	floc removal
9/11/2015	79.4571	9.7837	69.6734	499.0		
9/12/2015	168.7892	22.1364	146.6527	1139.0		
9/13/2015	149.6291	21.0162	128.6129	1091.0		
9/14/2015	137.9606	20.8862	117.0744	1094.0		
9/15/2015	127.3764	20.9443	106.4321	1107.0		
9/16/2015	115.5690	20.8293	94.7397	1111.0		sample date
9/17/2015	105.9047	21.1587	84.7461	1139.0		
9/18/2015	97.9983	22.0122	75.9862	1196.0		
9/19/2015	84.3667	21.6974	62.6692	1190.0		
9/20/2015	72.0048	21.7279	50.2768	1203.0		
9/21/2015	58.6724	21.5035	37.1689	1202.0		
9/22/2015	44.9088	21.0668	23.8420	1189.0		
9/23/2015	31.8333	20.8978	10.9355	1191.0		sample date
9/24/2015	31.3985	20.3086	11.0899	1177.0		
9/25/2015	31.5775	20.1177	11.4598	1186.0		
9/26/2015	31.1444	19.5382	11.6062	1172.0		
9/27/2015	30.5536	18.8685	11.6850	1152.0		
9/28/2015	31.2089	18.9666	12.2423	1179.0		
9/29/2015	31.1482	18.6225	12.5257	1179.0		
9/30/2015	30.9029	18.1699	12.7330	1172.0		sample date
10/1/2015	30.7110	17.7518	12.9592	1167.0		
10/2/2015	29.9417	17.0083	12.9334	1140.0		

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	6328.9317 35.9598	3157.4842 17.9403	3171.4475 18.0196	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
10/3/2015	29.0704	16.2221	12.8482	1109.0		
10/4/2015	29.4318	16.1278	13.3040	1125.0		
10/5/2015	29.0867	15.6450	13.4417	1114.0		
10/6/2015	28.9511	15.2786	13.6725	1111.0		
10/7/2015	28.7119	14.8601	13.8518	1104.0		sample date
10/8/2015	28.9761	15.4517	13.5245	1107.0		
10/9/2015	29.0570	15.9450	13.1120	1103.0		
10/10/2015	28.7919	16.2400	12.5519	1086.0		
10/11/2015	28.7345	16.6416	12.0929	1077.0		
10/12/2015	30.1776	17.9275	12.2501	1124.0		
10/13/2015	30.8800	18.7996	12.0804	1143.0		
10/14/2015	31.4801	19.6229	11.8572	1158.0		sample date
10/15/2015	32.3041	20.6006	11.7034	1181.0		
10/16/2015	31.7597	20.7042	11.0555	1154.0		
10/17/2015	32.3415	21.5369	10.8046	1168.0		
10/18/2015	31.8137	21.6261	10.1876	1142.0		
10/19/2015	30.0440	20.8343	9.2098	1072.0		
10/20/2015	29.2376	20.6704	8.5672	1037.0		
10/21/2015	28.4478	20.4920	7.9557	1003.0		sample date
10/22/2015	9.9471	7.4403	2.5068	346.0		
10/23/2015	16.8402	13.0494	3.7908	578.0		
10/24/2015	30.2006	24.1938	6.0067	1023.0		
10/25/2015	30.5957	25.2915	5.3042	1023.0		
10/26/2015	24.1444	20.5594	3.5851	797.0		
10/27/2015	17.3344	15.1810	2.1535	565.0		
10/28/2015	17.3974	15.6475	1.7498	560.0		sample date
10/29/2015	17.6766	16.3065	1.3701	562.0		
10/30/2015	17.9574	16.9697	0.9877	564.0		
10/31/2015	18.2719	17.6684	0.6035	567.0		
11/1/2015	18.6214	18.4057	0.2157	571.0		
11/2/2015	18.7760	18.9518	-0.1758	569.0		
11/3/2015	18.6953	19.2530	-0.5576	560.0		
11/4/2015	19.5871	20.5629	-0.9759	580.0		sample date
11/5/2015	19.5718	20.1132	-0.5414	584.0		
11/6/2015	19.5876	19.6888	-0.1011	589.0		
11/7/2015	19.2050	18.8652	0.3397	582.0		
11/8/2015	19.1860	18.4013	0.7847	586.0		
11/9/2015	19.0026	17.7773	1.2253	585.0		
11/10/2015	18.9164	17.2435	1.6730	587.0		
11/11/2015	19.0530	16.9042	2.1488	596.0		sample date
11/12/2015	23.6244	20.3755	3.2488	745.0		
11/13/2015	28.1190	23.5451	4.5739	894.0		
11/14/2015	27.2649	22.1330	5.1319	874.0		
11/15/2015	27.2564	21.4179	5.8385	881.0		
11/16/2015	19.1446	14.5379	4.6067	624.0		
11/17/2015	11.8649	8.6911	3.1738	390.0		
11/18/2015	11.9757	8.4450	3.5307	397.0		sample date

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	6328.9317 35.9598	3157.4842 17.9403	3171.4475 18.0196	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
11/19/2015	12.0335	8.5065	3.5270	399.0		
11/20/2015	12.0008	8.5041	3.4967	398.0		
11/21/2015	11.7873	8.3731	3.4142	391.0		
11/22/2015	12.1465	8.6492	3.4973	403.0		
11/23/2015	12.1440	8.6683	3.4756	403.0		
11/24/2015	12.1716	8.7090	3.4625	404.0		
11/25/2015	12.0786	8.6634	3.4152	401.0		sample date
11/26/2015	12.0460	8.6608	3.3852	400.0		
11/27/2015	11.9532	8.6147	3.3385	397.0		
11/28/2015	11.9507	8.6336	3.3171	397.0		
11/29/2015	11.9783	8.6742	3.3040	398.0		
11/30/2015	11.9457	8.6713	3.2744	397.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	6328.9317 35.9598	3157.4842 17.9403	3171.4475 18.0196	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	6328.9317 35.9598	3157.4842 17.9403	3171.4475 18.0196	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	6328.9317 35.9598	3157.4842 17.9403	3171.4475 18.0196	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	6328.9317 35.9598	3157.4842 17.9403	3171.4475 18.0196	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016	21.0957	22.2597	-1.1640	729.0		
6/1/2016	32.3744	34.2213	-1.8469	1119.0		
6/2/2016	31.8467	33.7231	-1.8764	1101.0		
6/3/2016	31.6084	33.5300	-1.9216	1093.0		
6/4/2016	30.7920	32.7216	-1.9296	1065.0		
6/5/2016	28.8485	30.7105	-1.8619	998.0		
6/6/2016	29.1023	31.0352	-1.9329	1007.0		
6/7/2016	29.2694	31.2683	-1.9989	1013.0		
6/8/2016	27.9919	29.9562	-1.9642	969.0		sample date
6/9/2016	29.8631	32.0147	-2.1516	1034.0		
6/10/2016	28.7305	30.8545	-2.1240	995.0		
6/11/2016	31.4379	33.8211	-2.3832	1089.0		
6/12/2016	31.7485	34.2150	-2.4665	1100.0		
6/13/2016	24.1813	26.1054	-1.9241	838.0		
6/14/2016	11.4533	12.3862	-0.9329	397.0		
6/15/2016	28.7857	31.1845	-2.3988	998.0		sample date
6/16/2016	31.9516	32.5089	-0.5573	1082.0		
6/17/2016	34.2055	32.6507	1.5548	1132.0		
6/18/2016	34.9520	31.2626	3.6894	1131.0		
6/19/2016	34.1176	28.5550	5.5627	1080.0		
6/20/2016	35.0530	27.4084	7.6445	1086.0		
6/21/2016	36.7547	26.8003	9.9544	1115.0		
6/22/2016	37.4195	25.3918	12.0277	1112.0		sample date
6/23/2016	37.5307	23.6444	13.8864	1093.0		
6/24/2016	37.4408	21.8405	15.6003	1069.0		
6/25/2016	37.6750	20.2865	17.3884	1055.0		
6/26/2016	37.9991	18.8203	19.1788	1044.0		
6/27/2016	38.6048	17.5151	21.0897	1041.0		
6/28/2016	39.3575	16.2797	23.0778	1042.0		
6/29/2016	40.0731	15.0274	25.0457	1042.0		sample date
6/30/2016	40.1115	15.0418	25.0697	1043.0		

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	1080.8090 6.1410	200.3665 1.1384	880.4425 5.0025	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
7/1/2015	3.9439	0.3204	3.6234	293.0		sample date
7/2/2015	5.3776	0.5027	4.8749	393.0		
7/3/2015	5.6600	0.5960	5.0640	407.0		
7/4/2015	5.8497	0.6831	5.1667	414.0		
7/5/2015	4.6217	0.5910	4.0307	322.0		
7/6/2015	0.3498	0.0485	0.3013	24.0		
7/7/2015					Off-Line	equipment failure; faulty relay
7/8/2015	4.5068	0.7175	3.7893	300.0		sample date
7/9/2015	6.2916	1.0158	5.2758	436.0		
7/10/2015	6.0334	0.9888	5.0445	436.0		
7/11/2015	5.7751	0.9619	4.8132	436.0		
7/12/2015	5.5168	0.9349	4.5819	436.0		
7/13/2015	5.2586	0.9080	4.3506	436.0		
7/14/2015	5.0233	0.8851	4.1382	438.0		
7/15/2015	5.3077	0.9560	4.3517	488.0		sample date
7/16/2015	4.7501	0.7846	3.9655	434.0		
7/17/2015	3.3151	0.4987	2.8164	301.0		
7/18/2015	2.2386	0.3042	1.9345	202.0		
7/19/2015	2.0629	0.2506	1.8123	185.0		
7/20/2015	2.4796	0.2660	2.2136	221.0		
7/21/2015	2.5625	0.2389	2.3236	227.0		
7/22/2015	3.1005	0.2461	2.8544	273.0		sample date
7/23/2015	4.3820	0.3778	4.0042	420.0		
7/24/2015	4.9736	0.4696	4.5040	523.0		
7/25/2015	4.4132	0.4606	3.9526	514.0		
7/26/2015	3.8618	0.4508	3.4110	504.0		
7/27/2015	3.3491	0.4437	2.9054	497.0		
7/28/2015	5.4254	0.8314	4.5941	933.0		
7/29/2015	5.1604	0.9383	4.2221	1055.0		sample date
7/30/2015	4.8819	0.9326	3.9493	1021.0		
7/31/2015	4.7043	0.9440	3.7603	1007.0		
8/1/2015	4.6210	0.9739	3.6471	1013.0		
8/2/2015	4.5008	0.9963	3.5045	1011.0		
8/3/2015	4.3159	1.0035	3.3124	994.0		
8/4/2015	4.1220	1.0067	3.1154	974.0		
8/5/2015	4.0356	1.0354	3.0003	979.0		sample date
8/6/2015	4.4993	1.2061	3.2932	961.0		
8/7/2015	5.1577	1.4292	3.7285	984.0		
8/8/2015	5.6795	1.6153	4.0642	979.0		
8/9/2015	6.0938	1.7698	4.3241	958.0		
8/10/2015	6.8584	2.0264	4.8320	991.0		
8/11/2015	7.3383	2.1996	5.1386	981.0		
8/12/2015	5.8693	1.7810	4.0883	730.0		sample date
8/13/2015	8.2020	2.4103	5.7917	1010.0		
8/14/2015	8.1769	2.3262	5.8507	997.0		
8/15/2015	8.2987	2.2846	6.0142	1002.0		
8/16/2015	8.5050	2.2646	6.2404	1017.0		

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	1080.8090 6.1410	200.3665 1.1384	880.4425 5.0025	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
8/17/2015	8.5955	2.2127	6.3829	1018.0		
8/18/2015					Off-Line	walchem replaced
8/19/2015					Off-Line	walchem replaced; sample date
8/20/2015					Off-Line	walchem replaced
8/21/2015					Off-Line	walchem replaced
8/22/2015					Off-Line	walchem replaced
8/23/2015					Off-Line	walchem replaced
8/24/2015	3.9440	0.2680	3.6759	1147.0		
8/25/2015	4.6791	0.3180	4.3611	1134.0		
8/26/2015	5.3964	0.3667	5.0296	1121.0		
8/27/2015	6.1233	0.4161	5.7071	1113.0		
8/28/2015	6.9011	0.4690	6.4321	1115.0		sample date
8/29/2015	7.9418	1.1205	6.8213	1137.0		
8/30/2015	8.9943	1.7922	7.2021	1156.0		
8/31/2015	9.4337	2.3267	7.1070	1100.0		
9/1/2015	10.6275	3.0392	7.5884	1134.0		
9/2/2015	11.4992	3.6700	7.8293	1131.0		sample date
9/3/2015	13.2610	3.1425	10.1185	1112.0		
9/4/2015	15.3255	2.6959	12.6296	1120.0		
9/5/2015	17.0011	2.1889	14.8122	1101.0		
9/6/2015	18.9195	1.7261	17.1934	1100.0		
9/7/2015	20.9103	1.2688	19.6415	1103.0		
9/8/2015	22.8080	0.8053	22.0028	1101.0		
9/9/2015	10.6076	0.1475	10.4602	472.0		sample date
9/10/2015					Off-Line	floc removal
9/11/2015	9.0778	0.1508	8.9270	499.0		
9/12/2015	18.2821	0.3383	17.9438	1139.0		
9/13/2015	15.1759	0.3184	14.8575	1091.0		
9/14/2015	12.8754	0.3137	12.5618	1094.0		
9/15/2015	10.6584	0.3117	10.3467	1107.0		
9/16/2015	8.3184	0.3071	8.0113	1111.0		sample date
9/17/2015	8.4009	0.7587	7.6421	1139.0		
9/18/2015	8.6878	1.2628	7.4250	1196.0		
9/19/2015	8.5114	1.7203	6.7912	1190.0		
9/20/2015	8.4702	2.2079	6.2623	1203.0		
9/21/2015	8.3290	2.6745	5.6545	1202.0		
9/22/2015	8.1062	3.1090	4.9972	1189.0		
9/23/2015	7.9870	3.5784	4.4086	1191.0		sample date
9/24/2015	7.5334	3.1867	4.3466	1177.0		
9/25/2015	7.2285	2.8588	4.3697	1186.0		
9/26/2015	6.7850	2.4770	4.3081	1172.0		
9/27/2015	6.3172	2.0925	4.2247	1152.0		
9/28/2015	6.1050	1.7914	4.3135	1179.0		
9/29/2015	5.7446	1.4412	4.3034	1179.0		
9/30/2015	5.3524	1.0846	4.2678	1172.0		sample date
10/1/2015	5.1152	0.9697	4.1454	1167.0		
10/2/2015	4.7874	0.8397	3.9477	1140.0		

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	1080.8090 6.1410	200.3665 1.1384	880.4425 5.0025	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
10/3/2015	4.4535	0.7121	3.7414	1109.0		
10/4/2015	4.3111	0.6161	3.6949	1125.0		
10/5/2015	4.0643	0.5049	3.5593	1114.0		
10/6/2015	3.8492	0.3987	3.4506	1111.0		
10/7/2015	3.6222	0.2919	3.3303	1104.0		sample date
10/8/2015	3.7726	0.3326	3.4400	1107.0		
10/9/2015	3.8991	0.3712	3.5280	1103.0		
10/10/2015	3.9770	0.4046	3.5724	1086.0		
10/11/2015	4.0809	0.4401	3.6408	1077.0		
10/12/2015	4.4018	0.4998	3.9020	1124.0		
10/13/2015	4.6214	0.5495	4.0719	1143.0		
10/14/2015	4.8292	0.5984	4.2307	1158.0		sample date
10/15/2015	4.8501	0.6732	4.1769	1181.0		
10/16/2015	4.6659	0.7192	3.9467	1154.0		
10/17/2015	4.6483	0.7901	3.8582	1168.0		
10/18/2015	4.4723	0.8333	3.6390	1142.0		
10/19/2015	4.1300	0.8393	3.2908	1072.0		
10/20/2015	3.9293	0.8671	3.0623	1037.0		
10/21/2015	3.7368	0.8920	2.8448	1003.0		sample date
10/22/2015	1.5035	0.3612	1.1423	346.0		
10/23/2015	2.8699	0.6927	2.1772	578.0		
10/24/2015	5.7134	1.3840	4.3294	1023.0		
10/25/2015	6.3475	1.5421	4.8054	1023.0		
10/26/2015	5.4392	1.3246	4.1146	797.0		
10/27/2015	4.2061	1.0263	3.1798	565.0		
10/28/2015	4.5159	1.1037	3.4122	560.0		sample date
10/29/2015	4.7569	1.1337	3.6231	562.0		
10/30/2015	4.9994	1.1639	3.8355	564.0		
10/31/2015	5.2528	1.1964	4.0564	567.0		
11/1/2015	5.5183	1.2313	4.2870	571.0		
11/2/2015	5.7266	1.2534	4.4732	569.0		
11/3/2015	5.8600	1.2595	4.6005	560.0		
11/4/2015	6.3013	1.3314	4.9700	580.0		sample date
11/5/2015	6.5413	1.2694	5.2719	584.0		
11/6/2015	6.7955	1.2084	5.5871	589.0		
11/7/2015	6.9106	1.1231	5.7875	582.0		
11/8/2015	7.1553	1.0594	6.0959	586.0		
11/9/2015	7.3399	0.9863	6.3536	585.0		
11/10/2015	7.5625	0.9181	6.6444	587.0		
11/11/2015	7.8791	0.8595	7.0195	596.0		sample date
11/12/2015	9.2336	0.9900	8.2436	745.0		
11/13/2015	10.3420	1.0867	9.2553	894.0		
11/14/2015	9.3889	0.9633	8.4255	874.0		
11/15/2015	8.7366	0.8712	7.8653	881.0		
11/16/2015	5.6727	0.5464	5.1263	624.0		
11/17/2015	3.2234	0.2973	2.9261	390.0		
11/18/2015	2.9534	0.2576	2.6957	397.0		sample date

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	1080.8090 6.1410	200.3665 1.1384	880.4425 5.0025	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
11/19/2015	2.8682	0.2761	2.5922	399.0		
11/20/2015	2.7613	0.2925	2.4688	398.0		
11/21/2015	2.6147	0.3041	2.3106	391.0		
11/22/2015	2.5939	0.3307	2.2632	403.0		
11/23/2015	2.4929	0.3480	2.1449	403.0		
11/24/2015	2.3978	0.3662	2.0316	404.0		
11/25/2015	2.2795	0.3807	1.8988	401.0		sample date
11/26/2015	2.2737	0.3803	1.8934	400.0		
11/27/2015	2.2566	0.3780	1.8785	397.0		
11/28/2015	2.2565	0.3786	1.8779	397.0		
11/29/2015	2.2621	0.3801	1.8819	398.0		
11/30/2015	2.2563	0.3797	1.8766	397.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	1080.8090 6.1410	200.3665 1.1384	880.4425 5.0025	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	1080.8090 6.1410	200.3665 1.1384	880.4425 5.0025	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	1080.8090 6.1410	200.3665 1.1384	880.4425 5.0025	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Mosquito Large Pond TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	177	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 99%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	1080.8090 6.1410	200.3665 1.1384	880.4425 5.0025	gpm On-Line Flow > 0 845.70	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016	4.1104	0.8854	3.2250	729.0		
6/1/2016	6.3091	1.3607	4.9485	1119.0		
6/2/2016	6.2074	1.3403	4.8670	1101.0		
6/3/2016	6.1620	1.3321	4.8299	1093.0		
6/4/2016	6.0039	1.2995	4.7044	1065.0		
6/5/2016	5.6259	1.2192	4.4068	998.0		
6/6/2016	5.6764	1.2316	4.4448	1007.0		
6/7/2016	5.7100	1.2404	4.4697	1013.0		
6/8/2016	5.4617	1.1878	4.2739	969.0		sample date
6/9/2016	6.2382	1.4948	4.7434	1034.0		
6/10/2016	6.3975	1.6570	4.7405	995.0		
6/11/2016	7.4338	2.0529	5.3809	1089.0		
6/12/2016	7.9452	2.3154	5.6298	1100.0		
6/13/2016	6.3851	1.9480	4.4371	838.0		
6/14/2016	3.1824	1.0101	2.1722	397.0		
6/15/2016	8.3958	2.7586	5.6372	998.0		sample date
6/16/2016	8.4690	2.7326	5.7364	1082.0		
6/17/2016	8.1977	2.5887	5.6089	1132.0		
6/18/2016	7.5283	2.3165	5.2117	1131.0		
6/19/2016	6.5565	1.9543	4.6022	1080.0		
6/20/2016	5.9571	1.7060	4.2511	1086.0		
6/21/2016	5.4634	1.4855	3.9779	1115.0		
6/22/2016	4.7977	1.2161	3.5816	1112.0		sample date
6/23/2016	4.8227	1.2610	3.5617	1093.0		
6/24/2016	4.8214	1.2976	3.5238	1069.0		
6/25/2016	4.8615	1.3440	3.5175	1055.0		
6/26/2016	4.9130	1.3927	3.5203	1044.0		
6/27/2016	5.0008	1.4513	3.5495	1041.0		
6/28/2016	5.1075	1.5153	3.5923	1042.0		
6/29/2016	5.2095	1.5779	3.6316	1042.0		sample date
6/30/2016	5.2145	1.5794	3.6351	1043.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
7/1/2015	27.8594	27.3326	0.5268	487.0		sampling date
7/2/2015	47.2912	46.1997	1.0915	865.0		
7/3/2015	23.4099	22.7624	0.6475	449.0		
7/4/2015	18.4030	17.8011	0.6019	371.0		
7/5/2015	11.9086	11.4525	0.4561	253.0		
7/6/2015	47.5640	45.4462	2.1178	1068.0		
7/7/2015	41.2454	39.1211	2.1243	982.0		
7/8/2015	44.3613	41.7272	2.6341	1124.0		sampling date
7/9/2015	21.9014	20.4048	1.4966	593.0		
7/10/2015	15.1700	13.9775	1.1925	441.0		
7/11/2015	8.3168	7.5640	0.7528	261.0		
7/12/2015	4.8103	4.3077	0.5026	164.0		
7/13/2015	3.9391	3.4621	0.4770	147.0		
7/14/2015	1.6741	1.4378	0.2363	69.0		
7/15/2015	1.7383	1.4499	0.2884	80.0		sampling date
7/16/2015	1.8764	1.5716	0.3047	87.0		
7/17/2015	1.9051	1.6026	0.3025	89.0		
7/18/2015	1.7845	1.5076	0.2769	84.0		
7/19/2015	1.6656	1.4133	0.2523	79.0		
7/20/2015	2.4060	2.0506	0.3554	115.0		
7/21/2015	1.0380	0.8887	0.1494	50.0		
7/22/2015	1.5861	1.3640	0.2221	77.0		sampling date
7/23/2015	1.8189	1.5714	0.2475	89.0		
7/24/2015	2.2101	1.9182	0.2919	109.0		
7/25/2015	7.1810	6.2616	0.9194	357.0		
7/26/2015	22.7070	19.8936	2.8135	1138.0		
7/27/2015	21.0983	18.5727	2.5257	1066.0		
7/28/2015	14.8015	13.0928	1.7088	754.0		
7/29/2015	11.0780	9.8471	1.2309	569.0		sampling date
7/30/2015	9.9678	8.4049	1.5629	512.0		
7/31/2015	15.8271	12.6223	3.2048	813.0		
8/1/2015	22.5425	16.9478	5.5946	1158.0		
8/2/2015	22.5025	15.8895	6.6130	1156.0		
8/3/2015	22.4431	14.8219	7.6213	1153.0		
8/4/2015	16.5640	10.1821	6.3819	851.0		
8/5/2015	11.1914	6.3679	4.8235	575.0		sampling date
8/6/2015	6.4615	3.3812	3.0803	332.0		
8/7/2015	4.8459	2.3143	2.5317	249.0		
8/8/2015	3.0359	1.3110	1.7248	156.0		
8/9/2015	1.6346	0.6312	1.0035	84.0		
8/10/2015	2.9772	1.0134	1.9638	153.0		
8/11/2015	2.7631	0.8142	1.9489	142.0		
8/12/2015	1.4593	0.3632	1.0960	75.0		sampling date
8/13/2015	2.7634	0.8813	1.8822	138.0		
8/14/2015	2.2651	0.8721	1.3930	110.0		
8/15/2015	0.9310	0.4167	0.5143	44.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
8/16/2015	16.7298	8.4806	8.2492	770.0		
8/17/2015	19.1955	10.8110	8.3845	861.0		
8/18/2015	19.8669	12.2520	7.6150	869.0		
8/19/2015	27.2716	18.2067	9.0649	1164.0		sampling date
8/20/2015	27.8121	19.9164	7.8957	1159.0		
8/21/2015	25.9643	19.7942	6.1701	1057.0		
8/22/2015	29.0269	23.4111	5.6158	1155.0		
8/23/2015	29.6566	25.1710	4.4856	1154.0		
8/24/2015	30.2326	26.8811	3.3515	1151.0		
8/25/2015	25.4116	23.5776	1.8340	947.0		
8/26/2015	18.2218	17.5825	0.6394	665.0		sampling date
8/27/2015	15.6444	14.6778	0.9666	563.0		
8/28/2015	13.6080	12.4138	1.1941	483.0		
8/29/2015	32.9298	29.2083	3.7216	1153.0		
8/30/2015	33.4331	28.8326	4.6005	1155.0		
8/31/2015	33.7913	28.3325	5.4588	1152.0		
9/1/2015	34.2066	27.8830	6.3236	1151.0		
9/2/2015	34.5308	27.3627	7.1681	1147.0		sampling date
9/3/2015	28.7841	22.1715	6.6126	944.0		
9/4/2015	17.4769	13.0846	4.3923	566.0		
9/5/2015	18.2583	13.2851	4.9732	584.0		
9/6/2015	36.5563	25.8482	10.7081	1155.0		
9/7/2015	36.7462	25.2458	11.5004	1147.0		
9/8/2015	37.0920	24.7575	12.3345	1144.0		
9/9/2015	29.9878	19.4426	10.5451	914.0		sampling date
9/10/2015	15.8925	10.4029	5.4896	483.0		
9/11/2015	30.1934	19.9509	10.2425	915.0		
9/12/2015	37.9573	25.3147	12.6426	1147.0		
9/13/2015	30.4989	20.5272	9.9717	919.0		
9/14/2015	38.4068	26.0834	12.3235	1154.0		
9/15/2015	28.5030	19.5299	8.9732	854.0		
9/16/2015	38.8591	26.8595	11.9996	1161.0		sampling date
9/17/2015	36.2164	25.2496	10.9668	1079.0		
9/18/2015	39.5159	27.7851	11.7308	1174.0		
9/19/2015	39.1542	27.7625	11.3918	1160.0		
9/20/2015	39.1284	27.9743	11.1540	1156.0		
9/21/2015	39.1018	28.1841	10.9176	1152.0		
9/22/2015	39.0063	28.3423	10.6640	1146.0		
9/23/2015	38.6367	28.2973	10.3394	1132.0		sampling date
9/24/2015	39.1005	28.3843	10.7162	1139.0		
9/25/2015	39.7052	28.5696	11.1356	1150.0		
9/26/2015	40.2447	28.7036	11.5411	1159.0		
9/27/2015	40.6482	28.7375	11.9107	1164.0		
9/28/2015	40.5268	28.4015	12.1253	1154.0		
9/29/2015	42.6970	29.6617	13.0354	1209.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
9/30/2015	40.8404	28.1253	12.7151	1150.0		sampling date
10/1/2015	40.9961	27.9877	13.0084	1148.0		
10/2/2015	37.6319	25.4688	12.1631	1048.0		
10/3/2015	41.4133	27.7861	13.6272	1147.0		
10/4/2015	41.7124	27.7458	13.9666	1149.0		
10/5/2015	41.7932	27.5607	14.2325	1145.0		
10/6/2015	41.9092	27.4003	14.5089	1142.0		
10/7/2015	41.9133	27.1686	14.7447	1136.0		sampling date
10/8/2015	44.0491	28.3236	15.7256	1135.0		
10/9/2015	46.6291	29.7624	16.8667	1145.0		
10/10/2015	46.4759	29.4650	17.0109	1090.0		
10/11/2015	51.2802	32.3095	18.9707	1151.0		
10/12/2015	53.4836	33.5050	19.9785	1151.0		
10/13/2015	55.5418	34.6101	20.9316	1148.0		
10/14/2015	57.6388	35.7402	21.8986	1146.0		sampling date
10/15/2015	59.5716	36.7694	22.8021	1141.0		
10/16/2015	47.4129	29.1396	18.2733	876.0		
10/17/2015	46.6241	28.5401	18.0840	832.0		
10/18/2015	40.2773	24.5625	15.7148	695.0		
10/19/2015	37.8361	22.9924	14.8436	632.0		
10/20/2015	23.8477	14.4438	9.4039	386.0		
10/21/2015	27.4529	16.5753	10.8776	431.0		sampling date
10/22/2015	21.3899	12.8247	8.5653	338.0		
10/23/2015	22.6338	13.4740	9.1598	360.0		
10/24/2015	20.1745	11.9228	8.2517	323.0		
10/25/2015	18.0559	10.5917	7.4642	291.0		
10/26/2015	17.0114	9.9036	7.1078	276.0		
10/27/2015	20.5711	11.8835	8.6876	336.0		
10/28/2015	16.9664	9.7238	7.2426	279.0		sampling date
10/29/2015	19.8714	11.2970	8.5744	329.0		
10/30/2015	15.3568	8.6585	6.6983	256.0		
10/31/2015	17.6939	9.8923	7.8016	297.0		
11/1/2015	13.1934	7.3127	5.8808	223.0		
11/2/2015	13.0428	7.1655	5.8773	222.0		
11/3/2015	9.0426	4.9231	4.1195	155.0		
11/4/2015	12.8598	6.9368	5.9230	222.0		sampling date
11/5/2015	8.9056	4.8339	4.0717	158.0		
11/6/2015	12.0017	6.5573	5.4444	219.0		
11/7/2015	10.5948	5.8287	4.7661	199.0		
11/8/2015	11.1107	6.1570	4.9537	215.0		
11/9/2015	10.2737	5.7369	4.5367	205.0		
11/10/2015	10.4389	5.8765	4.5624	215.0		
11/11/2015	9.6801	5.4961	4.1840	206.0		sampling date
11/12/2015	9.8580	5.6480	4.2099	217.0		
11/13/2015	8.6416	4.9989	3.6427	197.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
11/14/2015	7.8262	4.5737	3.2524	185.0		
11/15/2015	10.1446	5.9936	4.1510	249.0		
11/16/2015	6.5821	3.9342	2.6478	168.0		
11/17/2015	9.1784	5.5548	3.6236	244.0		
11/18/2015	7.3911	4.5332	2.8579	205.0		sampling date
11/19/2015	10.2624	6.2967	3.9657	285.0		
11/20/2015	7.1206	4.3707	2.7499	198.0		
11/21/2015	8.6560	5.3152	3.3407	241.0		
11/22/2015	28.3023	17.3860	10.9163	789.0		
11/23/2015	39.3720	24.1956	15.1765	1099.0		
11/24/2015	38.9997	23.9762	15.0235	1090.0		
11/25/2015	39.1999	24.1088	15.0911	1097.0		sampling date
11/26/2015	35.9735	22.1333	13.8402	1008.0		
11/27/2015	39.1351	24.0881	15.0470	1098.0		
11/28/2015	35.3472	21.7653	13.5820	993.0		
11/29/2015	27.5162	16.9500	10.5662	774.0		
11/30/2015	23.5752	14.5282	9.0470	664.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016					Off-Line	scheduled site shut down
6/1/2016					Off-Line	scheduled site shut down
6/2/2016					Off-Line	scheduled site shut down
6/3/2016					Off-Line	scheduled site shut down
6/4/2016					Off-Line	scheduled site shut down
6/5/2016					Off-Line	scheduled site shut down
6/6/2016					Off-Line	scheduled site shut down
6/7/2016					Off-Line	scheduled site shut down
6/8/2016	16.7252	11.3521	5.3731	625.0		sampling date
6/9/2016	26.7145	18.1439	8.5706	1000.0		
6/10/2016	26.6687	18.1244	8.5443	1000.0		
6/11/2016	26.6229	18.1050	8.5180	1000.0		
6/12/2016	26.5771	18.0855	8.4916	1000.0		
6/13/2016	26.5313	18.0660	8.4653	1000.0		
6/14/2016	26.4856	18.0466	8.4390	1000.0		
6/15/2016	7.3767	5.0296	2.3471	279.0		sampling date
6/16/2016					Off-Line	inflow pump off-line
6/17/2016					Off-Line	inflow pump off-line
6/18/2016					Off-Line	inflow pump off-line
6/19/2016					Off-Line	inflow pump off-line
6/20/2016	15.8374	10.2840	5.5534	599.0		
6/21/2016	15.8374	10.1812	5.6562	599.0		
6/22/2016	15.8374	10.0784	5.7591	599.0		sampling date
6/23/2016	25.3293	15.9542	9.3751	958.0		
6/24/2016	25.3293	15.7897	9.5396	958.0		
6/25/2016	21.6542	13.3581	8.2961	819.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TN Reduction						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	3986.4707 23.5886	2776.8113 16.4308	1209.6594 7.1577	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	
6/26/2016	21.6542	13.2175	8.4367	819.0		
6/27/2016	21.6542	13.0769	8.5773	819.0		
6/28/2016					Off-Line	power failure
6/29/2016					Off-Line	power failure
6/30/2016					Off-Line	power failure

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314 6.2895	236.7245 1.4007	826.2068 4.8888	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	Comments
7/1/2015	4.6003	1.2291	3.3712	487.0		sampling date
7/2/2015	8.1710	2.1831	5.9879	865.0		
7/3/2015	4.2413	1.1332	3.1082	449.0		
7/4/2015	3.5045	0.9363	2.5682	371.0		
7/5/2015	2.3899	0.6385	1.7514	253.0		
7/6/2015	10.0886	2.6954	7.3931	1068.0		
7/7/2015	9.2762	2.4784	6.7978	982.0		
7/8/2015	10.6175	2.8367	7.7808	1124.0		sampling date
7/9/2015	6.4100	1.4131	4.9968	593.0		
7/10/2015	5.3681	0.9888	4.3793	441.0		
7/11/2015	3.5328	0.5485	2.9844	261.0		
7/12/2015	2.4434	0.3215	2.1219	164.0		
7/13/2015	2.3905	0.2675	2.1230	147.0		
7/14/2015	1.2162	0.1159	1.1003	69.0		
7/15/2015	1.5191	0.1231	1.3960	80.0		sampling date
7/16/2015	1.6356	0.1270	1.5086	87.0		
7/17/2015	1.6564	0.1229	1.5335	89.0		
7/18/2015	1.5474	0.1093	1.4381	84.0		
7/19/2015	1.4404	0.0966	1.3438	79.0		
7/20/2015	2.0751	0.1315	1.9436	115.0		
7/21/2015	0.8928	0.0532	0.8395	50.0		
7/22/2015	1.3603	0.0759	1.2844	77.0		sampling date
7/23/2015	1.4680	0.1019	1.3660	89.0		
7/24/2015	1.6700	0.1422	1.5278	109.0		
7/25/2015	5.0511	0.5228	4.5283	357.0		
7/26/2015	14.7668	1.8483	12.9185	1138.0		
7/27/2015	12.5825	1.9016	10.6809	1066.0		
7/28/2015	8.0157	1.4654	6.5503	754.0		
7/29/2015	5.3817	1.1967	4.1850	569.0		sampling date
7/30/2015	4.7143	1.0619	3.6524	512.0		
7/31/2015	7.2820	1.6624	5.6195	813.0		
8/1/2015	10.0818	2.3341	7.7478	1158.0		
8/2/2015	9.7746	2.2963	7.4783	1156.0		
8/3/2015	9.4603	2.2567	7.2036	1153.0		
8/4/2015	6.7691	1.6408	5.1283	851.0		
8/5/2015	4.4296	1.0918	3.3377	575.0		sampling date
8/6/2015	2.6995	0.5746	2.1250	332.0		
8/7/2015	2.1311	0.3890	1.7421	249.0		
8/8/2015	1.4018	0.2175	1.1844	156.0		
8/9/2015	0.7907	0.1030	0.6878	84.0		
8/10/2015	1.5057	0.1618	1.3439	153.0		
8/11/2015	1.4581	0.1263	1.3319	142.0		
8/12/2015	0.8022	0.0541	0.7481	75.0		sampling date
8/13/2015	1.4860	0.1064	1.3796	138.0		
8/14/2015	1.1924	0.0903	1.1022	110.0		
8/15/2015	0.4801	0.0383	0.4418	44.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314 6.2895	236.7245 1.4007	826.2068 4.8888	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	Comments
8/16/2015	8.4581	0.7086	7.7495	770.0		
8/17/2015	9.5198	0.8352	8.6846	861.0		
8/18/2015	9.6709	0.8862	8.7847	869.0		
8/19/2015	13.0378	1.2450	11.7928	1164.0		sampling date
8/20/2015	12.4724	1.2138	11.2586	1159.0		
8/21/2015	10.9102	1.0834	9.8268	1057.0		
8/22/2015	11.4141	1.1581	10.2560	1155.0		
8/23/2015	10.8970	1.1313	9.7657	1154.0		
8/24/2015	10.3628	1.1027	9.2601	1151.0		
8/25/2015	8.1099	0.8861	7.2238	947.0		
8/26/2015	5.4026	0.6074	4.7952	665.0		sampling date
8/27/2015	4.6281	0.4659	4.1622	563.0		
8/28/2015	4.0169	0.3582	3.6586	483.0		
8/29/2015	9.6998	0.7562	8.9436	1153.0		
8/30/2015	9.8277	0.6584	9.1693	1155.0		
8/31/2015	9.9129	0.5577	9.3551	1152.0		
9/1/2015	10.0150	0.4585	9.5565	1151.0		
9/2/2015	10.0904	0.3584	9.7320	1147.0		sampling date
9/3/2015	8.4537	0.4425	8.0112	944.0		
9/4/2015	5.1580	0.3537	4.8043	566.0		
9/5/2015	5.4143	0.4562	4.9581	584.0		
9/6/2015	10.8905	1.0827	9.8078	1155.0		
9/7/2015	10.9963	1.2544	9.7419	1147.0		
9/8/2015	11.1482	1.4299	9.7184	1144.0		
9/9/2015	9.0512	1.2852	7.7661	914.0		sampling date
9/10/2015	4.7226	0.6286	4.0940	483.0		
9/11/2015	8.8318	1.0949	7.7369	915.0		
9/12/2015	10.9274	1.2524	9.6749	1147.0		
9/13/2015	8.6400	0.9072	7.7328	919.0		
9/14/2015	10.7048	1.0184	9.6864	1154.0		
9/15/2015	7.8149	0.6642	7.1507	854.0		
9/16/2015	10.4787	0.7814	9.6973	1161.0		sampling date
9/17/2015	9.8609	1.5820	8.2788	1079.0		
9/18/2015	10.8621	2.6525	8.2096	1174.0		
9/19/2015	10.8640	3.5410	7.3230	1160.0		
9/20/2015	10.9575	4.4457	6.5118	1156.0		
9/21/2015	11.0502	5.3441	5.7060	1152.0		
9/22/2015	11.1225	6.2253	4.8972	1146.0		
9/23/2015	11.1148	7.0471	4.0677	1132.0		sampling date
9/24/2015	11.1836	6.5764	4.6072	1139.0		
9/25/2015	11.2916	6.1206	5.1710	1150.0		
9/26/2015	11.3800	5.6452	5.7347	1159.0		
9/27/2015	11.4290	5.1440	6.2851	1164.0		
9/28/2015	11.3309	4.5787	6.7522	1154.0		
9/29/2015	11.8709	4.2510	7.6199	1209.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314 6.2895	236.7245 1.4007	826.2068 4.8888	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	Comments
9/30/2015	11.2916	3.5243	7.7673	1150.0		sampling date
10/1/2015	10.8521	3.3999	7.4522	1148.0		
10/2/2015	9.5236	2.9958	6.5278	1048.0		
10/3/2015	10.0038	3.1606	6.8431	1147.0		
10/4/2015	9.6010	3.0478	6.5532	1149.0		
10/5/2015	9.1489	2.9192	6.2297	1145.0		
10/6/2015	8.7073	2.7939	5.9134	1142.0		
10/7/2015	8.2461	2.6622	5.5839	1136.0		sampling date
10/8/2015	8.2740	2.7145	5.5595	1135.0		
10/9/2015	8.3822	2.7934	5.5888	1145.0		
10/10/2015	8.0133	2.7116	5.3016	1090.0		
10/11/2015	8.4973	2.9187	5.5786	1151.0		
10/12/2015	8.5329	2.9741	5.5588	1151.0		
10/13/2015	8.5461	3.0215	5.5246	1148.0		
10/14/2015	8.5666	3.0713	5.4953	1146.0		sampling date
10/15/2015	8.3001	2.9717	5.3283	1141.0		
10/16/2015	6.1964	2.2154	3.9810	876.0		
10/17/2015	5.7180	2.0412	3.6768	832.0		
10/18/2015	4.6369	1.6526	2.9843	695.0		
10/19/2015	4.0896	1.4551	2.6345	632.0		
10/20/2015	2.4202	0.8595	1.5607	386.0		
10/21/2015	2.6158	0.9272	1.6886	431.0		sampling date
10/22/2015	2.2284	0.6900	1.5384	338.0		
10/23/2015	2.5619	0.6953	1.8666	360.0		
10/24/2015	2.4677	0.5884	1.8794	323.0		
10/25/2015	2.3756	0.4981	1.8775	291.0		
10/26/2015	2.3977	0.4421	1.9556	276.0		
10/27/2015	3.0949	0.5013	2.5936	336.0		
10/28/2015	2.7160	0.3856	2.3304	279.0		sampling date
10/29/2015	3.3100	0.4338	2.8762	329.0		
10/30/2015	2.6591	0.3213	2.3378	256.0		
10/31/2015	3.1818	0.3539	2.8280	297.0		
11/1/2015	2.4618	0.2515	2.2103	223.0		
11/2/2015	2.5232	0.2363	2.2869	222.0		
11/3/2015	1.8122	0.1551	1.6571	155.0		
11/4/2015	2.6680	0.2081	2.4599	222.0		sampling date
11/5/2015	1.8563	0.1421	1.7141	158.0		
11/6/2015	2.5139	0.1887	2.3251	219.0		
11/7/2015	2.2307	0.1640	2.0667	199.0		
11/8/2015	2.3521	0.1691	2.1830	215.0		
11/9/2015	2.1874	0.1535	2.0340	205.0		
11/10/2015	2.2362	0.1528	2.0834	215.0		
11/11/2015	2.0870	0.1386	1.9484	206.0		sampling date
11/12/2015	2.1284	0.1412	1.9872	217.0		
11/13/2015	1.8687	0.1238	1.7449	197.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314 6.2895	236.7245 1.4007	826.2068 4.8888	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	Comments
11/14/2015	1.6951	0.1121	1.5830	185.0		
11/15/2015	2.2012	0.1454	2.0558	249.0		
11/16/2015	1.4309	0.0943	1.3366	168.0		
11/17/2015	1.9995	0.1315	1.8679	244.0		
11/18/2015	1.6137	0.1059	1.5078	205.0		sampling date
11/19/2015	2.3267	0.2447	2.0820	285.0		
11/20/2015	1.6742	0.2376	1.4366	198.0		
11/21/2015	2.1081	0.3716	1.7366	241.0		
11/22/2015	7.1320	1.4860	5.6460	789.0		
11/23/2015	10.2550	2.4453	7.8096	1099.0		
11/24/2015	10.4891	2.7977	7.6914	1090.0		
11/25/2015	10.8767	3.1905	7.6862	1097.0		sampling date
11/26/2015	9.9907	2.9241	7.0666	1008.0		
11/27/2015	10.8789	3.1769	7.7020	1098.0		
11/28/2015	9.8351	2.8656	6.9695	993.0		
11/29/2015	7.6633	2.2278	5.4355	774.0		
11/30/2015	6.5719	1.9062	4.6657	664.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314 6.2895	236.7245 1.4007	826.2068 4.8888	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	Comments
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314 6.2895	236.7245 1.4007	826.2068 4.8888	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	Comments
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314 6.2895	236.7245 1.4007	826.2068 4.8888	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	Comments
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314 6.2895	236.7245 1.4007	826.2068 4.8888	gpm On-Line Flow > 0 690.88	Operational/ Flow Status	Comments
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016					Off-Line	scheduled site shut down
6/1/2016					Off-Line	scheduled site shut down
6/2/2016					Off-Line	scheduled site shut down
6/3/2016					Off-Line	scheduled site shut down
6/4/2016					Off-Line	scheduled site shut down
6/5/2016					Off-Line	scheduled site shut down
6/6/2016					Off-Line	scheduled site shut down
6/7/2016					Off-Line	scheduled site shut down
6/8/2016	5.7687	0.8967	4.8720	625.0		sampling date
6/9/2016	9.1183	1.4272	7.6911	1000.0		
6/10/2016	9.0067	1.4197	7.5870	1000.0		
6/11/2016	8.8951	1.4122	7.4829	1000.0		
6/12/2016	8.7835	1.4046	7.3789	1000.0		
6/13/2016	8.6719	1.3971	7.2748	1000.0		
6/14/2016	8.5603	1.3896	7.1707	1000.0		
6/15/2016	2.3572	0.3856	1.9716	279.0		sampling date
6/16/2016					Off-Line	inflow pump off-line
6/17/2016					Off-Line	inflow pump off-line
6/18/2016					Off-Line	inflow pump off-line
6/19/2016					Off-Line	inflow pump off-line
6/20/2016	4.2072	0.8176	3.3896	599.0		
6/21/2016	4.0365	0.8155	3.2210	599.0		
6/22/2016	3.8658	0.8135	3.0523	599.0		sampling date
6/23/2016	6.0955	1.2928	4.8027	958.0		
6/24/2016	6.0083	1.2846	4.7238	958.0		
6/25/2016	5.0620	1.0911	3.9709	819.0		

WATERSHED TECHNOLOGIES						
Nubbin Slough TP Reduction						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line	169	# Days On-Line Flow > 0.0000	169	# Days in Period Flow > 0.0000 Less Uncontrollable Downtime:	169	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime:
						100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Noted Otherwise	
TOTAL PER DAY	1062.9314	236.7245	826.2068	gpm On-Line Flow > 0	Operational/	
	6.2895	1.4007	4.8888	690.88	Flow Status	Comments
6/26/2016	4.9875	1.0841	3.9034	819.0		
6/27/2016	4.9130	1.0771	3.8359	819.0		
6/28/2016					Off-Line	power failure
6/29/2016					Off-Line	power failure
6/30/2016					Off-Line	power failure

WATERSHED TECHNOLOGIES						
Wolff Ditch TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502 43.7844	6311.2780 35.8595	1394.7722 7.9248	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
7/1/2015	19.1105	14.6350	4.4755	931.0		sample date
7/2/2015	19.0525	14.7136	4.3389	936.0		
7/3/2015	19.1541	14.9179	4.2362	949.0		
7/4/2015	18.4909	14.5250	3.9660	924.0		
7/5/2015	18.7886	14.8865	3.9021	947.0		
7/6/2015	18.5473	14.8236	3.7237	943.0		
7/7/2015	17.7031	14.2734	3.4296	908.0		
7/8/2015	17.3539	14.1162	3.2377	898.0		sample date
7/9/2015	19.0267	15.4044	3.6222	959.0		
7/10/2015	19.1949	15.4712	3.7237	943.0		
7/11/2015	19.3885	15.5605	3.8279	929.0		
7/12/2015	20.0380	16.0163	4.0218	937.0		
7/13/2015	21.7909	17.3493	4.4415	995.0		
7/14/2015	11.5215	9.1389	2.3827	514.0		
7/15/2015	9.9518	7.8655	2.0863	434.0		sample date
7/16/2015	9.9977	7.8269	2.1708	436.0		
7/17/2015	10.5939	8.2143	2.3796	462.0		
7/18/2015	20.5228	15.7593	4.7635	895.0		
7/19/2015	20.5228	15.6057	4.9171	895.0		
7/20/2015	20.1788	15.1931	4.9858	880.0		
7/21/2015	20.1100	14.9907	5.1194	877.0		
7/22/2015	20.3164	14.9924	5.3240	886.0		sample date
7/23/2015	20.0050	14.8740	5.1310	879.0		
7/24/2015	19.2442	14.4171	4.8271	852.0		
7/25/2015	18.9859	14.3325	4.6534	847.0		
7/26/2015	18.6847	14.2140	4.4707	840.0		
7/27/2015	18.9158	14.5017	4.4141	857.0		
7/28/2015	18.8781	14.5863	4.2918	862.0		
7/29/2015	18.4694	14.3832	4.0861	850.0		sample date
7/30/2015	18.3173	14.2648	4.0525	843.0		
7/31/2015	18.4477	14.3663	4.0813	849.0		
8/1/2015	18.4042	14.3325	4.0717	847.0		
8/2/2015	18.3390	14.2817	4.0573	844.0		
8/3/2015	18.3173	14.2648	4.0525	843.0		
8/4/2015	18.6867	14.5525	4.1342	860.0		
8/5/2015	13.0155	10.1360	2.8795	599.0		sample date
8/6/2015					Off-Line	power outage
8/7/2015	9.7283	7.4929	2.2354	434.0		
8/8/2015	21.5526	16.5124	5.0402	947.0		
8/9/2015	22.2705	16.9743	5.2962	964.0		
8/10/2015	23.0235	17.4599	5.5637	982.0		
8/11/2015	23.1228	17.4489	5.6739	972.0		
8/12/2015	23.6014	17.7246	5.8768	978.0		sample date
8/13/2015	23.2656	17.7246	5.5410	978.0		
8/14/2015	22.9063	17.7064	5.1999	977.0		
8/15/2015	23.0791	18.1051	4.9739	999.0		
8/16/2015	23.0092	18.3226	4.6865	1011.0		

WATERSHED TECHNOLOGIES						
Wolff Ditch TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502 43.7844	6311.2780 35.8595	1394.7722 7.9248	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
8/17/2015	20.1515	16.2928	3.8587	899.0		
8/18/2015	22.6239	18.5763	4.0475	1025.0		
8/19/2015	22.5544	18.8119	3.7424	1038.0		sample date
8/20/2015	22.7316	18.7738	3.9578	1045.0		
8/21/2015	22.5825	18.4662	4.1163	1037.0		
8/22/2015	22.2150	17.9847	4.2303	1019.0		
8/23/2015	22.5232	18.0512	4.4720	1032.0		
8/24/2015	45.9700	36.4697	9.5003	2104.0		
8/25/2015	73.1649	57.4522	15.7126	3345.0		
8/26/2015	103.7915	80.6634	23.1281	4740.0		sample date
8/27/2015	102.1592	78.6769	23.4823	4627.0		
8/28/2015	107.8541	82.3172	25.5370	4845.0		
8/29/2015	113.3142	85.7138	27.6004	5049.0		
8/30/2015	62.8746	47.1392	15.7353	2779.0		
8/31/2015	70.5645	52.4400	18.1245	3094.0		
9/1/2015	120.5766	88.8251	31.7515	5245.0		
9/2/2015	53.5710	39.1224	14.4486	2312.0		sample date
9/3/2015					Off-Line	plumbing modifications
9/4/2015	53.6574	41.5929	12.0645	2457.0		
9/5/2015	106.2432	84.9636	21.2797	5018.0		
9/6/2015	104.5410	86.3356	18.2054	5098.0		
9/7/2015	100.0935	85.4554	14.6381	5045.0		
9/8/2015	96.0809	84.8967	11.1842	5011.0		
9/9/2015	94.8157	86.8118	8.0039	5123.0		sample date
9/10/2015	97.6315	86.8705	10.7610	5180.0		
9/11/2015	99.9105	86.4115	13.4990	5207.0		
9/12/2015	100.8799	84.8264	16.0535	5166.0		
9/13/2015	101.3248	82.8496	18.4752	5100.0		
9/14/2015	105.9077	84.2223	21.6854	5241.0		
9/15/2015	105.2031	81.3812	23.8219	5120.0		
9/16/2015	60.1767	45.2883	14.8884	2881.0		sample date
9/17/2015	68.1631	49.7701	18.3930	3163.0		
9/18/2015	110.8199	78.5795	32.2404	4989.0		
9/19/2015	112.4334	77.4899	34.9435	4915.0		
9/20/2015	100.0612	67.0870	32.9742	4251.0		
9/21/2015	96.5377	63.0139	33.5238	3989.0		
9/22/2015	115.1189	73.2112	41.9077	4630.0		
9/23/2015	116.0175	71.9374	44.0801	4545.0		sample date
9/24/2015	122.0927	78.2079	43.8848	4946.0		
9/25/2015	119.7916	79.3637	40.4279	5024.0		
9/26/2015	116.7152	80.0751	36.6401	5074.0		
9/27/2015	112.5353	80.0598	32.4755	5078.0		
9/28/2015	106.7070	78.8315	27.8755	5005.0		
9/29/2015	97.6225	75.0092	22.6133	4767.0		
9/30/2015	91.1967	73.0020	18.1947	4644.0		sample date
10/1/2015	89.1472	72.2882	16.8589	4544.0		
10/2/2015	89.4730	73.4844	15.9885	4565.0		

WATERSHED TECHNOLOGIES						
Wolff Ditch TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502 43.7844	6311.2780 35.8595	1394.7722 7.9248	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
10/3/2015	87.8399	73.0600	14.7799	4486.0		
10/4/2015	87.3443	73.5612	13.7831	4465.0		
10/5/2015	86.4978	73.7545	12.7433	4426.0		
10/6/2015	90.7486	78.3317	12.4169	4648.0		
10/7/2015	94.1328	82.2429	11.8898	4826.0		sample date
10/8/2015	92.1278	80.3204	11.8075	4766.0		
10/9/2015	89.0712	77.4873	11.5840	4650.0		
10/10/2015	87.1561	75.6535	11.5026	4592.0		
10/11/2015	85.4869	74.0371	11.4498	4546.0		
10/12/2015	87.2244	75.3678	11.8566	4682.0		
10/13/2015	93.1774	80.3220	12.8553	5049.0		
10/14/2015	89.4599	76.9320	12.5279	4894.0		sample date
10/15/2015	83.8595	73.6087	10.2508	4632.0		
10/16/2015	82.7615	74.1469	8.6145	4616.0		
10/17/2015	80.9944	74.0627	6.9316	4562.0		
10/18/2015	82.5686	77.0608	5.5078	4697.0		
10/19/2015	81.4676	77.6020	3.8656	4681.0		
10/20/2015	82.5775	80.2816	2.2959	4793.0		
10/21/2015	82.5226	81.8829	0.6397	4839.0		sample date
10/22/2015	86.8588	83.5867	3.2721	5042.0		
10/23/2015	88.5336	82.6022	5.9314	5088.0		
10/24/2015	87.4124	79.0435	8.3689	4974.0		
10/25/2015	87.6183	76.7603	10.8580	4937.0		
10/26/2015	35.5905	30.1963	5.3941	1986.0		
10/27/2015	16.3932	13.4643	2.9290	906.0		
10/28/2015	16.1850	12.8628	3.3222	886.0		sample date
10/29/2015	15.7254	12.9293	2.7962	870.0		
10/30/2015	15.5045	13.1824	2.3221	867.0		
10/31/2015	15.4616	13.5889	1.8727	874.0		
11/1/2015	15.1710	13.7778	1.3933	867.0		
11/2/2015	15.1601	14.2216	0.9385	876.0		
11/3/2015	15.1970	14.7213	0.4757	888.0		
11/4/2015	14.8740	14.8740	0.0000	879.0		sample date
11/5/2015	14.9416	14.2746	0.6670	883.0		
11/6/2015	14.9924	13.6538	1.3386	886.0		
11/7/2015	14.8740	12.8819	1.9920	879.0		
11/8/2015	14.9924	12.3152	2.6772	886.0		
11/9/2015	15.0263	11.6722	3.3541	888.0		
11/10/2015	14.7047	10.7660	3.9388	869.0		
11/11/2015	14.6201	10.0513	4.5688	864.0		sample date
11/12/2015	14.4509	10.2869	4.1640	854.0		
11/13/2015	14.5863	10.7384	3.8478	862.0		
11/14/2015	14.6878	11.1709	3.5170	868.0		
11/15/2015	14.7894	11.6082	3.1812	874.0		
11/16/2015	14.6540	11.8588	2.7952	866.0		
11/17/2015	14.7555	12.3003	2.4553	872.0		
11/18/2015	15.1447	12.9935	2.1512	895.0		sample date

WATERSHED TECHNOLOGIES						
Wolff Ditch TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502 43.7844	6311.2780 35.8595	1394.7722 7.9248	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
11/19/2015	15.8408	13.1888	2.6519	897.0		
11/20/2015	16.9261	13.6976	3.2285	920.0		
11/21/2015	17.7201	13.9586	3.7615	926.0		
11/22/2015	17.4498	13.3979	4.0519	878.0		
11/23/2015	18.2423	13.6688	4.5735	885.0		
11/24/2015	19.0664	13.9579	5.1085	893.0		
11/25/2015	19.2839	13.8072	5.4767	873.0		sample date
11/26/2015	18.9190	13.5902	5.3288	858.0		
11/27/2015	18.8194	13.5628	5.2566	855.0		
11/28/2015	18.3026	13.2334	5.0692	833.0		
11/29/2015	18.1823	13.1894	4.9929	829.0		
11/30/2015	18.3469	13.3523	4.9946	838.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502 43.7844	6311.2780 35.8595	1394.7722 7.9248	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502 43.7844	6311.2780 35.8595	1394.7722 7.9248	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502 43.7844	6311.2780 35.8595	1394.7722 7.9248	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TN Reduction & Operations Report South Pond						# Days Active Status: 183
Period	7/1/2015	through	6/30/2016	366	days in period	
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TN MASS (lbs.)		TN (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	7706.0502 43.7844	6311.2780 35.8595	1394.7722 7.9248	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016	6.8516	9.4127	-2.5611	465.0		
6/1/2016	12.4618	17.1855	-4.7237	848.0		
6/2/2016	12.9416	17.9156	-4.9740	883.0		
6/3/2016	12.6732	17.6114	-4.9382	867.0		
6/4/2016	12.1436	16.9403	-4.7967	833.0		
6/5/2016	12.8089	17.9372	-5.1283	881.0		
6/6/2016	13.0354	18.3249	-5.2895	899.0		
6/7/2016	13.2172	18.6522	-5.4350	914.0		
6/8/2016	12.6622	17.9382	-5.2759	878.0		sample date
6/9/2016	13.2784	17.6051	-4.3267	869.0		
6/10/2016	14.5086	18.0585	-3.5500	899.0		
6/11/2016	15.4843	18.1432	-2.6589	911.0		
6/12/2016	16.6056	18.3619	-1.7564	930.0		
6/13/2016	18.2460	19.0830	-0.8370	975.0		
6/14/2016	18.8481	18.6828	0.1653	963.0		
6/15/2016	18.2038	17.1330	1.0708	891.0		sample date
6/16/2016	16.5698	15.9985	0.5714	832.0		
6/17/2016	16.9949	16.8445	0.1504	876.0		
6/18/2016	17.0159	17.3253	-0.3094	901.0		
6/19/2016	16.4967	17.2676	-0.7709	898.0		
6/20/2016	10.0705	10.8451	-0.7747	564.0		
6/21/2016					Off-Line	power outage
6/22/2016					Off-Line	power outage, sample date
6/23/2016					Off-Line	power outage
6/24/2016					Off-Line	power outage
6/25/2016					Off-Line	power outage
6/26/2016					Off-Line	power outage
6/27/2016	5.3008	6.1163	-0.8155	475.0		
6/28/2016	11.3159	13.0568	-1.7409	845.0		
6/29/2016	13.7956	15.9179	-2.1224	883.0		sample date
6/30/2016	13.7487	15.8639	-2.1152	880.0		

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	125.6514 0.7139	415.5131 2.3609	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
7/1/2015	0.5818	0.2126	0.3692	931.0		sample date
7/2/2015	0.5721	0.2137	0.3584	936.0		
7/3/2015	0.5670	0.2167	0.3503	949.0		
7/4/2015	0.5394	0.2110	0.3284	924.0		
7/5/2015	0.5398	0.2162	0.3235	947.0		
7/6/2015	0.5246	0.2153	0.3092	943.0		
7/7/2015	0.4926	0.2073	0.2853	908.0		
7/8/2015	0.4749	0.2051	0.2698	898.0		sample date
7/9/2015	0.5417	0.2157	0.3260	959.0		
7/10/2015	0.5667	0.2089	0.3578	943.0		
7/11/2015	0.5917	0.2026	0.3892	929.0		
7/12/2015	0.6306	0.2011	0.4295	937.0		
7/13/2015	0.7055	0.2101	0.4954	995.0		
7/14/2015	0.3830	0.1068	0.2762	514.0		
7/15/2015	0.3390	0.0887	0.2504	434.0		sample date
7/16/2015	0.3339	0.0898	0.2440	436.0		
7/17/2015	0.3466	0.0960	0.2506	462.0		
7/18/2015	0.6577	0.1875	0.4702	895.0		
7/19/2015	0.6438	0.1890	0.4548	895.0		
7/20/2015	0.6194	0.1873	0.4321	880.0		
7/21/2015	0.6038	0.1882	0.4156	877.0		
7/22/2015	0.5963	0.1917	0.4046	886.0		sample date
7/23/2015	0.5991	0.1947	0.4044	879.0		
7/24/2015	0.5880	0.1931	0.3949	852.0		
7/25/2015	0.5919	0.1963	0.3955	847.0		
7/26/2015	0.5942	0.1990	0.3952	840.0		
7/27/2015	0.6136	0.2075	0.4061	857.0		
7/28/2015	0.6245	0.2131	0.4114	862.0		
7/29/2015	0.6231	0.2145	0.4086	850.0		sample date
7/30/2015	0.6397	0.2084	0.4313	843.0		
7/31/2015	0.6661	0.2055	0.4606	849.0		
8/1/2015	0.6864	0.2007	0.4857	847.0		
8/2/2015	0.7057	0.1956	0.5101	844.0		
8/3/2015	0.7266	0.1910	0.5355	843.0		
8/4/2015	0.7634	0.1905	0.5729	860.0		
8/5/2015	0.5471	0.1296	0.4175	599.0		sample date
8/6/2015					Off-Line	power outage
8/7/2015	0.4352	0.0924	0.3428	434.0		
8/8/2015	0.9918	0.2000	0.7918	947.0		
8/9/2015	1.0526	0.2019	0.8507	964.0		
8/10/2015	1.1161	0.2040	0.9121	982.0		
8/11/2015	1.1481	0.2003	0.9479	972.0		
8/12/2015	1.1989	0.1998	0.9991	978.0		sample date
8/13/2015	1.1535	0.2048	0.9487	978.0		
8/14/2015	1.1071	0.2097	0.8974	977.0		
8/15/2015	1.0857	0.2195	0.8662	999.0		
8/16/2015	1.0519	0.2274	0.8245	1011.0		

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	125.6514 0.7139	415.5131 2.3609	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
8/17/2015	0.8937	0.2068	0.6868	899.0		
8/18/2015	0.9714	0.2411	0.7303	1025.0		
8/19/2015	0.9356	0.2495	0.6861	1038.0		sample date
8/20/2015	0.9437	0.2530	0.6907	1045.0		
8/21/2015	0.9383	0.2528	0.6855	1037.0		
8/22/2015	0.9237	0.2502	0.6736	1019.0		
8/23/2015	0.9373	0.2551	0.6821	1032.0		
8/24/2015	1.9145	0.5238	1.3907	2104.0		
8/25/2015	3.0495	0.8385	2.2110	3345.0		
8/26/2015	4.3294	1.1963	3.1331	4740.0		sample date
8/27/2015	4.3612	1.1439	3.2173	4627.0		
8/28/2015	4.7081	1.1729	3.5352	4845.0		
8/29/2015	5.0537	1.1962	3.8575	5049.0		
8/30/2015	2.8627	0.6441	2.2186	2779.0		
8/31/2015	3.2775	0.7012	2.5763	3094.0		
9/1/2015	5.7092	1.1616	4.5475	5245.0		
9/2/2015	2.5841	0.5001	2.0839	2312.0		sample date
9/3/2015					Off-Line	plumbing modifications
9/4/2015	2.6365	0.5906	2.0459	2457.0		
9/5/2015	5.2725	1.2664	4.0061	5018.0		
9/6/2015	5.2428	1.3479	3.8949	5098.0		
9/7/2015	5.0757	1.3945	3.6812	5045.0		
9/8/2015	4.9296	1.4453	3.4843	5011.0		
9/9/2015	4.9255	1.5392	3.3863	5123.0		sample date
9/10/2015	6.2165	1.5474	4.6690	5180.0		
9/11/2015	7.4915	1.5466	5.9449	5207.0		
9/12/2015	8.6653	1.5255	7.1398	5166.0		
9/13/2015	9.7717	1.4973	8.2744	5100.0		
9/14/2015	11.2926	1.5297	9.7629	5241.0		
9/15/2015	12.2538	1.4856	10.7682	5120.0		
9/16/2015	7.5827	0.8310	6.7517	2881.0		sample date
9/17/2015	8.8516	1.0698	7.7818	3163.0		
9/18/2015	14.7925	1.9358	12.8568	4989.0		
9/19/2015	15.3917	2.1518	13.2399	4915.0		
9/20/2015	14.0202	2.0727	11.9475	4251.0		
9/21/2015	13.8205	2.1436	11.6768	3989.0		
9/22/2015	16.8123	2.7186	14.0938	4630.0		
9/23/2015	17.2606	2.8950	14.3656	4545.0		sample date
9/24/2015	17.3994	3.0485	14.3509	4946.0		
9/25/2015	16.2678	2.9931	13.2747	5024.0		
9/26/2015	15.0097	2.9183	12.0914	5074.0		
9/27/2015	13.6005	2.8160	10.7845	5078.0		
9/28/2015	12.0043	2.6724	9.3319	5005.0		
9/29/2015	10.0994	2.4471	7.6523	4767.0		
9/30/2015	8.5392	2.2883	6.2509	4644.0		sample date
10/1/2015	7.8015	2.1376	5.6639	4544.0		
10/2/2015	7.2810	2.0456	5.2355	4565.0		

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	125.6514 0.7139	415.5131 2.3609	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
10/3/2015	6.6082	1.9101	4.6981	4486.0		
10/4/2015	6.0330	1.8015	4.2315	4465.0		
10/5/2015	5.4408	1.6869	3.7538	4426.0		
10/6/2015	5.1471	1.6678	3.4793	4648.0		
10/7/2015	4.7559	1.6240	3.1320	4826.0		sample date
10/8/2015	4.5495	1.5547	2.9948	4766.0		
10/9/2015	4.2951	1.4690	2.8261	4650.0		
10/10/2015	4.0996	1.4033	2.6963	4592.0		
10/11/2015	3.9181	1.3424	2.5756	4546.0		
10/12/2015	3.8906	1.3344	2.5562	4682.0		
10/13/2015	4.0395	1.3870	2.6526	5049.0		
10/14/2015	3.7643	1.2940	2.4703	4894.0		sample date
10/15/2015	3.5786	1.2406	2.3380	4632.0		
10/16/2015	3.5821	1.2522	2.3300	4616.0		
10/17/2015	3.5559	1.2532	2.3027	4562.0		
10/18/2015	3.6772	1.3064	2.3709	4697.0		
10/19/2015	3.6808	1.3180	2.3628	4681.0		
10/20/2015	3.7853	1.3660	2.4193	4793.0		
10/21/2015	3.8383	1.3957	2.4425	4839.0		sample date
10/22/2015	4.0166	1.4456	2.5710	5042.0		
10/23/2015	4.0707	1.4501	2.6206	5088.0		
10/24/2015	3.9966	1.4091	2.5875	4974.0		
10/25/2015	3.9838	1.3901	2.5937	4937.0		
10/26/2015	1.6094	0.5558	1.0536	1986.0		
10/27/2015	0.7373	0.2520	0.4853	906.0		
10/28/2015	0.7241	0.2449	0.4792	886.0		sample date
10/29/2015	0.6841	0.2390	0.4451	870.0		
10/30/2015	0.6550	0.2367	0.4183	867.0		
10/31/2015	0.6332	0.2371	0.3961	874.0		
11/1/2015	0.6014	0.2337	0.3677	867.0		
11/2/2015	0.5805	0.2346	0.3459	876.0		
11/3/2015	0.5610	0.2363	0.3247	888.0		
11/4/2015	0.5282	0.2324	0.2958	879.0		sample date
11/5/2015	0.5670	0.2395	0.3275	883.0		
11/6/2015	0.6054	0.2464	0.3590	886.0		
11/7/2015	0.6369	0.2505	0.3863	879.0		
11/8/2015	0.6784	0.2586	0.4198	886.0		
11/9/2015	0.7166	0.2653	0.4513	888.0		
11/10/2015	0.7370	0.2656	0.4715	869.0		
11/11/2015	0.7684	0.2700	0.4984	864.0		sample date
11/12/2015	0.7346	0.2712	0.4633	854.0		
11/13/2015	0.7163	0.2782	0.4381	862.0		
11/14/2015	0.6959	0.2846	0.4113	868.0		
11/15/2015	0.6752	0.2911	0.3841	874.0		
11/16/2015	0.6438	0.2929	0.3509	866.0		
11/17/2015	0.6228	0.2994	0.3234	872.0		
11/18/2015	0.6131	0.3119	0.3012	895.0		sample date

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	125.6514 0.7139	415.5131 2.3609	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
11/19/2015	0.7700	0.3034	0.4666	897.0		
11/20/2015	0.9493	0.3017	0.6476	920.0		
11/21/2015	1.1161	0.2941	0.8219	926.0		
11/22/2015	1.2105	0.2698	0.9406	878.0		
11/23/2015	1.3736	0.2629	1.1107	885.0		
11/24/2015	1.5408	0.2560	1.2848	893.0		
11/25/2015	1.6577	0.2413	1.4164	873.0		sample date
11/26/2015	1.6286	0.2375	1.3911	858.0		
11/27/2015	1.6224	0.2371	1.3853	855.0		
11/28/2015	1.5801	0.2313	1.3487	833.0		
11/29/2015	1.5719	0.2306	1.3413	829.0		
11/30/2015	1.5884	0.2334	1.3550	838.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	125.6514 0.7139	415.5131 2.3609	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	125.6514 0.7139	415.5131 2.3609	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	125.6514 0.7139	415.5131 2.3609	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report South Pond						
Period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	125.6514 0.7139	415.5131 2.3609	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016	0.8240	0.1661	0.6579	465.0		
6/1/2016	1.5021	0.3032	1.1989	848.0		
6/2/2016	1.5635	0.3161	1.2474	883.0		
6/3/2016	1.5346	0.3107	1.2239	867.0		
6/4/2016	1.4739	0.2989	1.1750	833.0		
6/5/2016	1.5582	0.3165	1.2417	881.0		
6/6/2016	1.5894	0.3234	1.2661	899.0		
6/7/2016	1.6153	0.3291	1.2862	914.0		
6/8/2016	1.5511	0.3166	1.2346	878.0		sample date
6/9/2016	1.4964	0.3103	1.1861	869.0		
6/10/2016	1.5080	0.3180	1.1900	899.0		
6/11/2016	1.4874	0.3191	1.1684	911.0		
6/12/2016	1.4769	0.3225	1.1544	930.0		
6/13/2016	1.5049	0.3348	1.1701	975.0		
6/14/2016	1.4434	0.3274	1.1160	963.0		
6/15/2016	1.2957	0.2998	0.9959	891.0		sample date
6/16/2016	1.1856	0.2828	0.9028	832.0		
6/17/2016	1.2227	0.3008	0.9219	876.0		
6/18/2016	1.2313	0.3125	0.9189	901.0		
6/19/2016	1.2010	0.3145	0.8865	898.0		
6/20/2016	0.7379	0.1995	0.5384	564.0		
6/21/2016					Off-Line	power outage
6/22/2016					Off-Line	power outage, sample date
6/23/2016					Off-Line	power outage
6/24/2016					Off-Line	power outage
6/25/2016					Off-Line	power outage
6/26/2016					Off-Line	power outage
6/27/2016	0.5586	0.1142	0.4445	475.0		
6/28/2016	1.1925	0.2437	0.9488	845.0		
6/29/2016	1.4538	0.2971	1.1567	883.0		sample date
6/30/2016	1.4489	0.2961	1.1528	880.0		

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
for the period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	205.6521 1.1685	335.5124 1.9063	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
7/1/2015	0.5818	0.2238	0.3580	931.0		sample date
7/2/2015	0.5721	0.2250	0.3471	936.0		
7/3/2015	0.5670	0.2281	0.3389	949.0		
7/4/2015	0.5394	0.2221	0.3173	924.0		
7/5/2015	0.5398	0.2276	0.3122	947.0		
7/6/2015	0.5246	0.2267	0.2979	943.0		
7/7/2015	0.4926	0.2182	0.2744	908.0		
7/8/2015	0.4749	0.2158	0.2590	898.0		sample date
7/9/2015	0.5417	0.2289	0.3128	959.0		
7/10/2015	0.5667	0.2234	0.3432	943.0		
7/11/2015	0.5917	0.2185	0.3732	929.0		
7/12/2015	0.6306	0.2188	0.4118	937.0		
7/13/2015	0.7055	0.2306	0.4749	995.0		
7/14/2015	0.3830	0.1183	0.2647	514.0		
7/15/2015	0.3390	0.0991	0.2399	434.0		sample date
7/16/2015	0.3339	0.0996	0.2343	436.0		
7/17/2015	0.3466	0.1055	0.2411	462.0		
7/18/2015	0.6577	0.2044	0.4533	895.0		
7/19/2015	0.6438	0.2044	0.4395	895.0		
7/20/2015	0.6194	0.2009	0.4185	880.0		
7/21/2015	0.6038	0.2003	0.4035	877.0		
7/22/2015	0.5963	0.2023	0.3940	886.0		sample date
7/23/2015	0.5991	0.2083	0.3909	879.0		
7/24/2015	0.5880	0.2092	0.3789	852.0		
7/25/2015	0.5919	0.2152	0.3766	847.0		
7/26/2015	0.5942	0.2207	0.3735	840.0		
7/27/2015	0.6136	0.2325	0.3811	857.0		
7/28/2015	0.6245	0.2412	0.3833	862.0		
7/29/2015	0.6231	0.2452	0.3780	850.0		sample date
7/30/2015	0.6397	0.2388	0.4009	843.0		
7/31/2015	0.6661	0.2361	0.4300	849.0		
8/1/2015	0.6864	0.2312	0.4552	847.0		
8/2/2015	0.7057	0.2260	0.4796	844.0		
8/3/2015	0.7266	0.2214	0.5051	843.0		
8/4/2015	0.7634	0.2215	0.5419	860.0		
8/5/2015	0.5471	0.1512	0.3959	599.0		sample date
8/6/2015					Off-Line	power outage
8/7/2015	0.4352	0.1155	0.3197	434.0		
8/8/2015	0.9918	0.2585	0.7333	947.0		
8/9/2015	1.0526	0.2698	0.7828	964.0		
8/10/2015	1.1161	0.2816	0.8346	982.0		
8/11/2015	1.1481	0.2854	0.8628	972.0		
8/12/2015	1.1989	0.2938	0.9050	978.0		sample date
8/13/2015	1.1535	0.2838	0.8698	978.0		
8/14/2015	1.1071	0.2734	0.8337	977.0		
8/15/2015	1.0857	0.2693	0.8164	999.0		
8/16/2015	1.0519	0.2621	0.7898	1011.0		

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
for the period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	205.6521 1.1685	335.5124 1.9063	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
8/17/2015	0.8937	0.2238	0.6699	899.0		
8/18/2015	0.9714	0.2446	0.7268	1025.0		
8/19/2015	0.9356	0.2370	0.6986	1038.0		sample date
8/20/2015	0.9437	0.2530	0.6907	1045.0		
8/21/2015	0.9383	0.2653	0.6730	1037.0		
8/22/2015	0.9237	0.2747	0.6491	1019.0		
8/23/2015	0.9373	0.2923	0.6449	1032.0		
8/24/2015	1.9145	0.6249	1.2896	2104.0		
8/25/2015	3.0495	1.0395	2.0100	3345.0		
8/26/2015	4.3294	1.5381	2.7913	4740.0		sample date
8/27/2015	4.3612	1.6365	2.7248	4627.0		
8/28/2015	4.7081	1.8550	2.8532	4845.0		
8/29/2015	5.0537	2.0804	2.9733	5049.0		
8/30/2015	2.8627	1.2262	1.6365	2779.0		
8/31/2015	3.2775	1.4555	1.8220	3094.0		
9/1/2015	5.7092	2.6204	3.0887	5245.0		
9/2/2015	2.5841	1.2226	1.3615	2312.0		sample date
9/3/2015					Off-Line	plumbing modifications
9/4/2015	2.6365	1.2739	1.3625	2457.0		
9/5/2015	5.2725	2.5760	2.6966	5018.0		
9/6/2015	5.2428	2.5908	2.6520	5098.0		
9/7/2015	5.0757	2.5378	2.5378	5045.0		
9/8/2015	4.9296	2.4949	2.4347	5011.0		
9/9/2015	4.9255	2.5243	2.4012	5123.0		sample date
9/10/2015	6.2165	2.6235	3.5929	5180.0		
9/11/2015	7.4915	2.7087	4.7828	5207.0		
9/12/2015	8.6653	2.7584	5.9070	5166.0		
9/13/2015	9.7717	2.7932	6.9786	5100.0		
9/14/2015	11.2926	2.9424	8.3502	5241.0		
9/15/2015	12.2538	2.9448	9.3090	5120.0		
9/16/2015	7.5827	1.6966	5.8861	2881.0		sample date
9/17/2015	8.8516	2.2482	6.6034	3163.0		
9/18/2015	14.7925	4.1542	10.6383	4989.0		
9/19/2015	15.3917	4.6918	10.6999	4915.0		
9/20/2015	14.0202	4.5761	9.4441	4251.0		
9/21/2015	13.8205	4.7803	9.0401	3989.0		
9/22/2015	16.8123	6.1129	10.6995	4630.0		
9/23/2015	17.2606	6.5547	10.7059	4545.0		sample date
9/24/2015	17.3994	6.7339	10.6655	4946.0		
9/25/2015	16.2678	6.4347	9.8331	5024.0		
9/26/2015	15.0097	6.0893	8.9205	5074.0		
9/27/2015	13.6005	5.6843	7.9162	5078.0		
9/28/2015	12.0043	5.1987	6.8056	5005.0		
9/29/2015	10.0994	4.5668	5.5326	4767.0		
9/30/2015	8.5392	4.0743	4.4650	4644.0		sample date
10/1/2015	7.8015	3.6979	4.1036	4544.0		
10/2/2015	7.2810	3.4250	3.8561	4565.0		

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
for the period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
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	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	205.6521 1.1685	335.5124 1.9063	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
10/3/2015	6.6082	3.0807	3.5275	4486.0		
10/4/2015	6.0330	2.7827	3.2503	4465.0		
10/5/2015	5.4408	2.4772	2.9636	4426.0		
10/6/2015	5.1471	2.3062	2.8409	4648.0		
10/7/2015	4.7559	2.0880	2.6680	4826.0		sample date
10/8/2015	4.5495	2.0866	2.4630	4766.0		
10/9/2015	4.2951	2.0597	2.2354	4650.0		
10/10/2015	4.0996	2.0577	2.0419	4592.0		
10/11/2015	3.9181	2.0605	1.8576	4546.0		
10/12/2015	3.8906	2.1462	1.7443	4682.0		
10/13/2015	4.0395	2.3405	1.6990	5049.0		
10/14/2015	3.7643	2.2938	1.4704	4894.0		sample date
10/15/2015	3.5786	2.0836	1.4951	4632.0		
10/16/2015	3.5821	1.9892	1.5929	4616.0		
10/17/2015	3.5559	1.8798	1.6761	4562.0		
10/18/2015	3.6772	1.8467	1.8306	4697.0		
10/19/2015	3.6808	1.7520	1.9288	4681.0		
10/20/2015	3.7853	1.7034	2.0819	4793.0		
10/21/2015	3.8383	1.6284	2.2099	4839.0		sample date
10/22/2015	4.0166	1.7313	2.2853	5042.0		
10/23/2015	4.0707	1.7820	2.2887	5088.0		
10/24/2015	3.9966	1.7763	2.2203	4974.0		
10/25/2015	3.9838	1.7970	2.1869	4937.0		
10/26/2015	1.6094	0.7365	0.8729	1986.0		
10/27/2015	0.7373	0.3422	0.3951	906.0		
10/28/2015	0.7241	0.3407	0.3833	886.0		sample date
10/29/2015	0.6841	0.3286	0.3555	870.0		
10/30/2015	0.6550	0.3215	0.3334	867.0		
10/31/2015	0.6332	0.3181	0.3151	874.0		
11/1/2015	0.6014	0.3096	0.2918	867.0		
11/2/2015	0.5805	0.3068	0.2737	876.0		
11/3/2015	0.5610	0.3049	0.2561	888.0		
11/4/2015	0.5282	0.2958	0.2324	879.0		sample date
11/5/2015	0.5670	0.2987	0.2683	883.0		
11/6/2015	0.6054	0.3012	0.3042	886.0		
11/7/2015	0.6369	0.3003	0.3365	879.0		
11/8/2015	0.6784	0.3042	0.3742	886.0		
11/9/2015	0.7166	0.3064	0.4101	888.0		
11/10/2015	0.7370	0.3014	0.4357	869.0		
11/11/2015	0.7684	0.3011	0.4673	864.0		sample date
11/12/2015	0.7346	0.2976	0.4369	854.0		
11/13/2015	0.7163	0.3004	0.4159	862.0		
11/14/2015	0.6959	0.3025	0.3934	868.0		
11/15/2015	0.6752	0.3046	0.3706	874.0		
11/16/2015	0.6438	0.3018	0.3420	866.0		
11/17/2015	0.6228	0.3039	0.3189	872.0		
11/18/2015	0.6131	0.3119	0.3012	895.0		sample date

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
for the period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
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	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	205.6521 1.1685	335.5124 1.9063	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
11/19/2015	0.7700	0.3095	0.4605	897.0		
11/20/2015	0.9493	0.3143	0.6350	920.0		
11/21/2015	1.1161	0.3132	0.8029	926.0		
11/22/2015	1.2105	0.2939	0.9165	878.0		
11/23/2015	1.3736	0.2932	1.0803	885.0		
11/24/2015	1.5408	0.2928	1.2480	893.0		
11/25/2015	1.6577	0.2833	1.3744	873.0		sample date
11/26/2015	1.6286	0.2788	1.3499	858.0		
11/27/2015	1.6224	0.2782	1.3442	855.0		
11/28/2015	1.5801	0.2714	1.3087	833.0		
11/29/2015	1.5719	0.2704	1.3015	829.0		
11/30/2015	1.5884	0.2737	1.3147	838.0		
12/1/2015					Off-Line	scheduled site shut down
12/2/2015					Off-Line	scheduled site shut down
12/3/2015					Off-Line	scheduled site shut down
12/4/2015					Off-Line	scheduled site shut down
12/5/2015					Off-Line	scheduled site shut down
12/6/2015					Off-Line	scheduled site shut down
12/7/2015					Off-Line	scheduled site shut down
12/8/2015					Off-Line	scheduled site shut down
12/9/2015					Off-Line	scheduled site shut down
12/10/2015					Off-Line	scheduled site shut down
12/11/2015					Off-Line	scheduled site shut down
12/12/2015					Off-Line	scheduled site shut down
12/13/2015					Off-Line	scheduled site shut down
12/14/2015					Off-Line	scheduled site shut down
12/15/2015					Off-Line	scheduled site shut down
12/16/2015					Off-Line	scheduled site shut down
12/17/2015					Off-Line	scheduled site shut down
12/18/2015					Off-Line	scheduled site shut down
12/19/2015					Off-Line	scheduled site shut down
12/20/2015					Off-Line	scheduled site shut down
12/21/2015					Off-Line	scheduled site shut down
12/22/2015					Off-Line	scheduled site shut down
12/23/2015					Off-Line	scheduled site shut down
12/24/2015					Off-Line	scheduled site shut down
12/25/2015					Off-Line	scheduled site shut down
12/26/2015					Off-Line	scheduled site shut down
12/27/2015					Off-Line	scheduled site shut down
12/28/2015					Off-Line	scheduled site shut down
12/29/2015					Off-Line	scheduled site shut down
12/30/2015					Off-Line	scheduled site shut down
12/31/2015					Off-Line	scheduled site shut down
1/1/2016					Off-Line	scheduled site shut down
1/2/2016					Off-Line	scheduled site shut down
1/3/2016					Off-Line	scheduled site shut down
1/4/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
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TOTAL PER DAY	541.1645 3.0748	205.6521 1.1685	335.5124 1.9063	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
1/5/2016					Off-Line	scheduled site shut down
1/6/2016					Off-Line	scheduled site shut down
1/7/2016					Off-Line	scheduled site shut down
1/8/2016					Off-Line	scheduled site shut down
1/9/2016					Off-Line	scheduled site shut down
1/10/2016					Off-Line	scheduled site shut down
1/11/2016					Off-Line	scheduled site shut down
1/12/2016					Off-Line	scheduled site shut down
1/13/2016					Off-Line	scheduled site shut down
1/14/2016					Off-Line	scheduled site shut down
1/15/2016					Off-Line	scheduled site shut down
1/16/2016					Off-Line	scheduled site shut down
1/17/2016					Off-Line	scheduled site shut down
1/18/2016					Off-Line	scheduled site shut down
1/19/2016					Off-Line	scheduled site shut down
1/20/2016					Off-Line	scheduled site shut down
1/21/2016					Off-Line	scheduled site shut down
1/22/2016					Off-Line	scheduled site shut down
1/23/2016					Off-Line	scheduled site shut down
1/24/2016					Off-Line	scheduled site shut down
1/25/2016					Off-Line	scheduled site shut down
1/26/2016					Off-Line	scheduled site shut down
1/27/2016					Off-Line	scheduled site shut down
1/28/2016					Off-Line	scheduled site shut down
1/29/2016					Off-Line	scheduled site shut down
1/30/2016					Off-Line	scheduled site shut down
1/31/2016					Off-Line	scheduled site shut down
2/1/2016					Off-Line	scheduled site shut down
2/2/2016					Off-Line	scheduled site shut down
2/3/2016					Off-Line	scheduled site shut down
2/4/2016					Off-Line	scheduled site shut down
2/5/2016					Off-Line	scheduled site shut down
2/6/2016					Off-Line	scheduled site shut down
2/7/2016					Off-Line	scheduled site shut down
2/8/2016					Off-Line	scheduled site shut down
2/9/2016					Off-Line	scheduled site shut down
2/10/2016					Off-Line	scheduled site shut down
2/11/2016					Off-Line	scheduled site shut down
2/12/2016					Off-Line	scheduled site shut down
2/13/2016					Off-Line	scheduled site shut down
2/14/2016					Off-Line	scheduled site shut down
2/15/2016					Off-Line	scheduled site shut down
2/16/2016					Off-Line	scheduled site shut down
2/17/2016					Off-Line	scheduled site shut down
2/18/2016					Off-Line	scheduled site shut down
2/19/2016					Off-Line	scheduled site shut down
2/20/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
for the period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
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	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	205.6521 1.1685	335.5124 1.9063	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
2/21/2016					Off-Line	scheduled site shut down
2/22/2016					Off-Line	scheduled site shut down
2/23/2016					Off-Line	scheduled site shut down
2/24/2016					Off-Line	scheduled site shut down
2/25/2016					Off-Line	scheduled site shut down
2/26/2016					Off-Line	scheduled site shut down
2/27/2016					Off-Line	scheduled site shut down
2/28/2016					Off-Line	scheduled site shut down
2/29/2016					Off-Line	scheduled site shut down
3/1/2016					Off-Line	scheduled site shut down
3/2/2016					Off-Line	scheduled site shut down
3/3/2016					Off-Line	scheduled site shut down
3/4/2016					Off-Line	scheduled site shut down
3/5/2016					Off-Line	scheduled site shut down
3/6/2016					Off-Line	scheduled site shut down
3/7/2016					Off-Line	scheduled site shut down
3/8/2016					Off-Line	scheduled site shut down
3/9/2016					Off-Line	scheduled site shut down
3/10/2016					Off-Line	scheduled site shut down
3/11/2016					Off-Line	scheduled site shut down
3/12/2016					Off-Line	scheduled site shut down
3/13/2016					Off-Line	scheduled site shut down
3/14/2016					Off-Line	scheduled site shut down
3/15/2016					Off-Line	scheduled site shut down
3/16/2016					Off-Line	scheduled site shut down
3/17/2016					Off-Line	scheduled site shut down
3/18/2016					Off-Line	scheduled site shut down
3/19/2016					Off-Line	scheduled site shut down
3/20/2016					Off-Line	scheduled site shut down
3/21/2016					Off-Line	scheduled site shut down
3/22/2016					Off-Line	scheduled site shut down
3/23/2016					Off-Line	scheduled site shut down
3/24/2016					Off-Line	scheduled site shut down
3/25/2016					Off-Line	scheduled site shut down
3/26/2016					Off-Line	scheduled site shut down
3/27/2016					Off-Line	scheduled site shut down
3/28/2016					Off-Line	scheduled site shut down
3/29/2016					Off-Line	scheduled site shut down
3/30/2016					Off-Line	scheduled site shut down
3/31/2016					Off-Line	scheduled site shut down
4/1/2016					Off-Line	scheduled site shut down
4/2/2016					Off-Line	scheduled site shut down
4/3/2016					Off-Line	scheduled site shut down
4/4/2016					Off-Line	scheduled site shut down
4/5/2016					Off-Line	scheduled site shut down
4/6/2016					Off-Line	scheduled site shut down
4/7/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
for the period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
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	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	205.6521 1.1685	335.5124 1.9063	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
4/8/2016					Off-Line	scheduled site shut down
4/9/2016					Off-Line	scheduled site shut down
4/10/2016					Off-Line	scheduled site shut down
4/11/2016					Off-Line	scheduled site shut down
4/12/2016					Off-Line	scheduled site shut down
4/13/2016					Off-Line	scheduled site shut down
4/14/2016					Off-Line	scheduled site shut down
4/15/2016					Off-Line	scheduled site shut down
4/16/2016					Off-Line	scheduled site shut down
4/17/2016					Off-Line	scheduled site shut down
4/18/2016					Off-Line	scheduled site shut down
4/19/2016					Off-Line	scheduled site shut down
4/20/2016					Off-Line	scheduled site shut down
4/21/2016					Off-Line	scheduled site shut down
4/22/2016					Off-Line	scheduled site shut down
4/23/2016					Off-Line	scheduled site shut down
4/24/2016					Off-Line	scheduled site shut down
4/25/2016					Off-Line	scheduled site shut down
4/26/2016					Off-Line	scheduled site shut down
4/27/2016					Off-Line	scheduled site shut down
4/28/2016					Off-Line	scheduled site shut down
4/29/2016					Off-Line	scheduled site shut down
4/30/2016					Off-Line	scheduled site shut down
5/1/2016					Off-Line	scheduled site shut down
5/2/2016					Off-Line	scheduled site shut down
5/3/2016					Off-Line	scheduled site shut down
5/4/2016					Off-Line	scheduled site shut down
5/5/2016					Off-Line	scheduled site shut down
5/6/2016					Off-Line	scheduled site shut down
5/7/2016					Off-Line	scheduled site shut down
5/8/2016					Off-Line	scheduled site shut down
5/9/2016					Off-Line	scheduled site shut down
5/10/2016					Off-Line	scheduled site shut down
5/11/2016					Off-Line	scheduled site shut down
5/12/2016					Off-Line	scheduled site shut down
5/13/2016					Off-Line	scheduled site shut down
5/14/2016					Off-Line	scheduled site shut down
5/15/2016					Off-Line	scheduled site shut down
5/16/2016					Off-Line	scheduled site shut down
5/17/2016					Off-Line	scheduled site shut down
5/18/2016					Off-Line	scheduled site shut down
5/19/2016					Off-Line	scheduled site shut down
5/20/2016					Off-Line	scheduled site shut down
5/21/2016					Off-Line	scheduled site shut down
5/22/2016					Off-Line	scheduled site shut down
5/23/2016					Off-Line	scheduled site shut down
5/24/2016					Off-Line	scheduled site shut down

WATERSHED TECHNOLOGIES						
Wolff Ditch TP Reduction & Operations Report						
for the period	7/1/2015	through	6/30/2016	366	days in period	# Days POR: 183
# of Days On-Line:	176	# Days On-Line Flow > 0.0000	176	# Days in Period Flow > 0.0000 Less Non-Controllable Down Time:	176	% Time On-Line vs. Available Days Excl. Uncontrollable Downtime: 100%
	TP MASS (lbs.)		TP (lbs.)	AVERAGE	On-Line Unless	Comments
	INFLOW	OUTFLOW	REMOVAL	DAILY FLOW	Otherwise Noted	
TOTAL PER DAY	541.1645 3.0748	205.6521 1.1685	335.5124 1.9063	gpm On-Line Flow > 0 2176.0	Operational/ Flow Status	
5/25/2016					Off-Line	scheduled site shut down
5/26/2016					Off-Line	scheduled site shut down
5/27/2016					Off-Line	scheduled site shut down
5/28/2016					Off-Line	scheduled site shut down
5/29/2016					Off-Line	scheduled site shut down
5/30/2016					Off-Line	scheduled site shut down
5/31/2016	0.8240	0.1884	0.6356	465.0		
6/1/2016	1.5021	0.3440	1.1582	848.0		
6/2/2016	1.5635	0.3585	1.2050	883.0		
6/3/2016	1.5346	0.3524	1.1822	867.0		
6/4/2016	1.4739	0.3389	1.1349	833.0		
6/5/2016	1.5582	0.3589	1.1994	881.0		
6/6/2016	1.5894	0.3666	1.2229	899.0		
6/7/2016	1.6153	0.3731	1.2423	914.0		
6/8/2016	1.5511	0.3588	1.1924	878.0		sample date
6/9/2016	1.4964	0.3521	1.1443	869.0		
6/10/2016	1.5080	0.3612	1.1468	899.0		
6/11/2016	1.4874	0.3629	1.1246	911.0		
6/12/2016	1.4769	0.3672	1.1097	930.0		
6/13/2016	1.5049	0.3817	1.1232	975.0		
6/14/2016	1.4434	0.3737	1.0697	963.0		
6/15/2016	1.2957	0.3427	0.9530	891.0		sample date
6/16/2016	1.1856	0.3114	0.8742	832.0		
6/17/2016	1.2227	0.3188	0.9039	876.0		
6/18/2016	1.2313	0.3187	0.9127	901.0		
6/19/2016	1.2010	0.3083	0.8927	898.0		
6/20/2016	0.7379	0.1879	0.5500	564.0		
6/21/2016					Off-Line	power outage
6/22/2016					Off-Line	power outage, sample date
6/23/2016					Off-Line	power outage
6/24/2016					Off-Line	power outage
6/25/2016					Off-Line	power outage
6/26/2016					Off-Line	power outage
6/27/2016	0.5586	0.1142	0.4445	475.0		
6/28/2016	1.1925	0.2437	0.9488	845.0		
6/29/2016	1.4538	0.2971	1.1567	883.0		sample date
6/30/2016	1.4489	0.2961	1.1528	880.0		

Key Parameters Sites 1-3, 5-7
Periods 1-8 (See Notes & Assumptions)
***Projected Full Capacity Utilization**

Site	Parameter	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7
Nubbin Slough	Cost per Day*	\$1,294	\$895	\$818	\$ 720	\$ 818	\$ 1,592	\$ 801
Nubbin Slough	P Removal per Day	25.34	27.52	27.18	23.81	23.93	22.26	33.74
Nubbin Slough	Cost/Benefit \$/lb. PV*	\$51	\$33	\$30	\$ 30	\$ 34	\$ 72	\$ 24
Nubbin Slough	Cost/Benefit \$/lb. Amortized Loan*	N/A	N/A	N/A	\$ 70	\$ 80	\$ 166	\$ 55
Nubbin Slough	# Days in Period	365	365	206	274	365	365	365
Nubbin Slough	On-line Days Flow>0	319	241	125	194	355	348	332
Nubbin Slough	Flow Average per day in cfs	1.2	0.5	1.9	1.5	1.1	1.0	1.4
Nubbin Slough	Capacity per day in cfs	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Nubbin Slough	% Capacity Utilization	16%	7%	26%	20%	15%	14%	19%
Nubbin Slough	Total Flow in millions of gallons	245.1	81.0	154.7	183.5	255.8	235.7	296.0
Nubbin Slough	FWM TP Conc. In µg/L	905	794	792	819	775	799	1,011
Nubbin Slough	FWM TP Conc. Out µg/L	274	73	109	231	169	247	179
Nubbin Slough	% Change TP Conc. In vs. Out	70%	91%	86%	72%	78%	69%	82%
Nubbin Slough	Total P Removal in lbs.	1,299	466	879	914	1,280	1,097	2,088
Nubbin Slough	TN Geometric Mean Inflow							
Nubbin Slough	TN Geometric Mean Outflow							
Nubbin Slough	% Change TN Geometric Mean							
Nubbin Slough	Comments	Trials	Limerock				Limerock	Improvements
Ideal Grove	Cost per Day*	\$284	\$144	\$227	\$ 454	\$ 284	\$ 383	\$ 414
Ideal Grove	P Removal per Day	1.49	1.71	2.10	2.79	4.21	5.71	5.25
Ideal Grove	Cost/Benefit \$/lb. PV*	\$191	\$85	\$108	\$ 163	\$ 67	\$ 67	\$ 79
Ideal Grove	Cost/Benefit \$/lb. Amortized Loan*	N/A	N/A	N/A	\$ 379	\$ 157	\$ 156	\$ 183
Ideal Grove	# Days in Period	365	365	206	274	365	365	365
Ideal Grove	On-line Days Flow>0	N/A	253	148	261	341	362	313
Ideal Grove	Flow Average per day in cfs	0.3	0.3	0.2	0.1	0.1	0.1	0.2
Ideal Grove	Capacity per day in cfs	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Ideal Grove	% Capacity Utilization	24%	19%	14%	10%	8%	9%	12%
Ideal Grove	Total Flow in millions of gallons	18	18	18	21	23	27	31
Ideal Grove	FWM TP Conc. In µg/L	N/A	258	347	421	623	862	814
Ideal Grove	FWM TP Conc. Out µg/L	N/A	16	50	19	24	48	56
Ideal Grove	% Change TP Conc. In vs. Out	N/A	94%	86%	96%	96%	94%	93%
Ideal Grove	Total P Removal in lbs.	83	84	45	71	117	183	195
Ideal Grove	TN Geometric Mean Inflow							
Ideal Grove	TN Geometric Mean Outflow							
Ideal Grove	% Change TN Geometric Mean							
Ideal Grove	Comments	Trials						
Mosquito Creek	Cost per Day*	\$746	\$609	\$927	\$ 1,112	\$ 1,684	\$ 1,408	\$ 894
Mosquito Creek	P Removal per Day	13.89	8.78	11.56	11.38	13.68	15.93	15.53

Key Parameters Sites 1-3, 5-7
Periods 1-8 (See Notes & Assumptions)
***Projected Full Capacity Utilization**

Site	Parameter	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7
Mosquito Creek	Cost/Benefit \$/lb. PV*	\$54	\$69	\$80	\$ 98	\$ 123	\$ 88	\$ 58
Mosquito Creek	Cost/Benefit \$/lb. Amortized Loan*	N/A	N/A	N/A	\$ 228	\$ 287	\$ 206	\$ 134
Mosquito Creek	# Days in Period	365	365	206	274	365	365	365
Mosquito Creek	On-line Days Flow>0	N/A	312	131	229	335	302	332
Mosquito Creek	Flow Average per day in cfs	1.2	1.5	2.3	1.5	1.6	1.7	1.9
Mosquito Creek	Capacity per day in cfs	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Mosquito Creek	% Capacity Utilization	20%	24%	39%	26%	27%	28%	32%
Mosquito Creek	Total Flow in millions of gallons	103.6	293.1	198.3	228.0	344.3	330.4	413.0
Mosquito Creek	FWM TP Conc. In µg/L	N/A	345	506	435	541	640	621
Mosquito Creek	FWM TP Conc. Out µg/L	N/A	61	149	85	118	150	142
Mosquito Creek	% Change TP Conc. In vs. Out	N/A	82%	70%	81%	78%	77%	77%
Mosquito Creek	Total P Removal in lbs.	373	664	591	669	1,214	1,357	1,653
Mosquito Creek	TN Geometric Mean Inflow							
Mosquito Creek	TN Geometric Mean Outflow							
Mosquito Creek	% Change TN Geometric Mean							
Mosquito Creek	Comments	Trials	Limerock					Improvements
Lemkin Creek	Cost per Day*		\$382	\$527	\$ 391	\$ 460	\$ 333	\$ 581
Lemkin Creek	P Removal per Day		1.46	1.47	1.51	1.62	1.97	2.48
Lemkin Creek	P Removal per Day So. Pond					1.74	2.30	2.86
Lemkin Creek	Cost/Benefit \$/lb. PV*		\$261	\$359	\$ 259	\$ 283	\$ 169	\$ 234
Lemkin Creek	Cost/Benefit \$/lb. Amortized Loan*		N/A	N/A	\$ 604	\$ 659	\$ 393	\$ 546
Lemkin Creek	Cost/Benefit \$/lb. PV So. Pond*				\$	264	\$ 145	\$ 203
Lemkin Creek	Cost/Benefit \$/lb. Amortized Loan So. Pond*				\$	614	\$ 337	\$ 473
Lemkin Creek	Cost/Benefit \$/lb. PV So. Pond Cost Avoidance*							\$ 191
Lemkin Creek	Cost/Benefit \$/lb. Amortized Loan So. Pond*							\$ 445
Lemkin Creek	# Days in Period		365	206	274	365	\$ 365	\$ 365
Lemkin Creek	On-line Days Flow>0		338	129	267	361	\$ 358	\$ 343
Lemkin Creek	Flow Average per day in cfs		1.6	1.3	1.8	1.9	\$ 2	\$ 2
Lemkin Creek	Capacity per day in cfs		5.0	5.0	5.0	5.0	\$ 5	\$ 5
Lemkin Creek	% Capacity Utilization		31%	26%	37%	38%	36%	45%
Lemkin Creek	Total Flow in millions of gallons		342.9	109.9	318.9	444.6	\$ 416	\$ 496
Lemkin Creek	FWM TP Conc. In µg/L		85	76	87	85	101	132
Lemkin Creek	FWM TP Conc. Out µg/L		30	22	31	24	\$ 29	\$ 42
Lemkin Creek	% Change TP Conc. In vs. Out		64%	71%	64%	71%	71%	68%
Lemkin Creek	FWM TP Conc. Out µg/L So. Pond					20	\$ 17	\$ 28
Lemkin Creek	% Change TP In vs. Out So. Pond					76%	83%	79%
Lemkin Creek	Total P Removal in lbs.		155	50	149	223	\$ 254	\$ 380
Lemkin Creek	TN Geometric Mean Inflow							
Lemkin Creek	TN Geometric Mean Outflow							

Key Parameters Sites 1-3, 5-7
Periods 1-8 (See Notes & Assumptions)
***Projected Full Capacity Utilization**

Site	Parameter	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7
Lemkin Creek	% Change TN Geometric Mean							
Lemkin Creek	Comments	Low Flows					Improvements	
Wolff Ditch	Cost per Day*		\$469	\$577	\$ 742	\$ 1,188	\$ 1,507	\$ 975
Wolff Ditch	P Removal per Day		9.24	2.29	6.52	11.29	13.11	10.22
Wolff Ditch	P Removal per Day So. Pond					14.42	\$ 14	\$ 13
Wolff Ditch	Cost/Benefit \$/lb. PV*		\$51	\$252	\$ 114	\$ 105	\$ 115	\$ 95
Wolff Ditch	Cost/Benefit \$/lb. Amortized Loan*		N/A	N/A	\$ 265	\$ 245	\$ 268	\$ 222
Wolff Ditch	Cost/Benefit \$/lb. PV So. Pond*					\$ 82	\$ 109	\$ 75
Wolff Ditch	Cost/Benefit \$/lb. Amortized Loan So. Pond*					\$ 192	\$ 253	\$ 175
Wolff Ditch	Cost/Benefit \$/lb. PV So. Pond Cost Avoidance*							\$ 65
Wolff Ditch	Cost/Benefit \$/lb. Amortized Loan So. Pond*							\$ 150
Wolff Ditch	# Days in Period		365	206	274	365	\$ 365	\$ 365
Wolff Ditch	On-line Days Flow>0		350	155	262	357	\$ 364	\$ 356
Wolff Ditch	Flow Average per day in cfs		2.4	3.2	3.3	2.3	\$ 2	\$ 3
Wolff Ditch	Capacity per day in cfs		20.0	20.0	20.0	20.0	\$ 20	\$ 20
Wolff Ditch	% Capacity Utilization		12%	16%	17%	12%	8%	13%
Wolff Ditch	Total Flow in millions of gallons		550.8	323.2	565.0	540.1	\$ 400	\$ 589
Wolff Ditch	FWM TP Conc. In µg/L		114	44	95	156	146	156
Wolff Ditch	FWM TP Conc. Out µg/L		28	23	35	52	\$ 24	\$ 62
Wolff Ditch	% Change TP Conc. In vs. Out		75%	48%	63%	66%	83%	61%
Wolff Ditch	FWM TP Conc. Out µg/L So. Pond					23	\$ 17	\$ 36
Wolff Ditch	% Change TP In vs. Out So. Pond					85%	88%	77%
Wolff Ditch	Total P Removal in lbs.		393	57	285	472	\$ 405	\$ 466
Wolff Ditch	TN Geometric Mean Inflow							
Wolff Ditch	TN Geometric Mean Outflow							
Wolff Ditch	% Change TN Geometric Mean							
Wolff Ditch	Comments	Low Flows					Improvements	
Grassy Island	Cost per Day*			\$2,017	\$ 1,457	\$ 3,858	\$ 3,763	\$ 4,274
Grassy Island	P Removal per Day			22.12	16.17	63.43	64.26	60.50
Grassy Island	Cost/Benefit \$/lb. PV*			\$91	\$ 90	\$ 61	\$ 59	\$ 71
Grassy Island	Cost/Benefit \$/lb. Amortized Loan*			N/A	\$ 210	\$ 142	\$ 136	\$ 164
Grassy Island	# Days in Period			206	231	365	365	365
Grassy Island	On-line Days Flow>0			125	120	314	362	360
Grassy Island	Flow Average per day in cfs			6.9	5.0	6.8	8.6	7.2
Grassy Island	Capacity per day in cfs			10.0	10.0	15.8	20.0	25.8
Grassy Island	% Capacity Utilization			69%	50%	62%	43%	28%
Grassy Island	Total Flow in millions of gallons			554.2	388.3	1,373.6	2,012.8	1,681.9
Grassy Island	FWM TP Conc. In µg/L			575	327	442	490	411

Key Parameters Sites 1-3, 5-7
Periods 1-8 (See Notes & Assumptions)
***Projected Full Capacity Utilization**

Site	Parameter	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7
Grassy Island	FWM TP Conc. Out µg/L			165	27	50	93	40
Grassy Island	% Change TP Conc. In vs. Out			71%	92%	89%	81%	90%
Grassy Island	Total P Removal in lbs.			1,897	971	4,493	6,670	5,248
Grassy Island	N Removal per Day*							207.0
Grassy Island	Cost/Benefit \$/lb. PV* N							\$ 21
Grassy Island	Cost/Benefit \$/lb. Amortized Loan* N							\$ 48
Grassy Island	FWM TN Conc. In mg/L							2.438
Grassy Island	FWM TN Conc. Out mg/L							1.273
Grassy Island	% Change TN Conc. In vs. Out							48%
Grassy Island	Total N Removal in lbs.							17,954
Grassy Island	TN Geometric Mean Inflow							
Grassy Island	TN Geometric Mean Outflow							
Grassy Island	% Change TN Geometric Mean							
Grassy Island	Comments			Start-Up	Construction	Construction	PAC	Improvements
Total Systems	Total TP Removal in lbs.	1,754	1,763	3,519	3,058	7,799	9,965	10,030
Total Systems	Total Flow in millions of gallons					2,982	3,421	3,507
St. Lucie/Martin	Cost/Benefit \$/lb. TP Median All Systems							\$ 952
St. Lucie/Martin	Cost/Benefit \$/lb. TP High Wet with Alum							\$ 2,950
St. Lucie/Martin	Cost/Benefit \$/lb. TP Low Wet with Alum							\$ 488
St. Lucie/Martin	Cost/Benefit \$/lb. TN Median All Systems							\$ 327
St. Lucie/Martin	Cost/Benefit \$/lb. TN High Wet with Alum							\$ 1,217
St. Lucie/Martin	Cost/Benefit \$/lb. TN Low Wet with Alum							\$ 187
St. Lucie/Martin	Cost/Benefit \$/lb. TP+TN Median All Systems							\$ 240
St. Lucie/Martin	Cost/Benefit \$/lb. TP+TN High Wet with Alum							\$ 862
St. Lucie/Martin	Cost/Benefit \$/lb. TP+TN Low Wet with Alum							\$ 126
Sites 1-3, 5-6	Period Start	11/21/2008	3/9/2010	3/9/2011	10/1/2011	7/1/2012	7/1/2013	7/1/2014
Sites 1-3, 5-6	Period End	11/20/2009	3/8/2011	9/30/2011	6/30/2012	6/30/2013	6/30/2014	6/30/2015
Site 7	Period Start			7/11/2011	11/13/2011	7/1/2012	7/1/2013	7/1/2014
Site 7	Period End (Period 3 Extended)			11/12/2011	6/30/2012	6/30/2013	6/30/2014	6/30/2015

Column8	
\$	753
	23.51
\$	32
\$	75
	365
	169
	1.5
	7.4
	21%
	168.1
	773
	173
	78%
	826
	2.7
	1.8
	34%
Partial POR	
\$	586
	10.49
\$	56
\$	130
	365
	160
	0.1
	1.3
	8%
	10
	1,842
	39
	98%
	126
	3.2
	1.4
	54%
Partial POR	
\$	895
	15.93

Column8	
\$	56
\$	131
	365
	176
	1.9
	6.0
	31%
	214.3
	547
	102
	81%
	880
	3.0
	1.7
	43%
Partial POR	
\$	402
	3.59
	4.84
\$	112
\$	260
\$	83
\$	193
\$	76
\$	177
\$	365
\$	183
\$	2
\$	5
	42%
\$	251
	232
\$	70
	70%
\$	26
	89%
\$	279
	1.8
	1.4

Column8
22%
Partial POR
\$ 818
7.86
\$ 10
\$ 104
\$ 242
\$ 80
\$ 186
\$ 66
\$ 153
\$ 365
\$ 176
\$ 5
\$ 20
24%
\$ 551
125
\$ 41
67%
\$ 27
79%
\$ 336
1.6
1.4
16%
Partial POR
\$ 3,849
74.58
\$ 52
\$ 120
365
191
13.4
30.0
45%
1,651.1
501

Column8
42
92%
6,350
254.1
\$ 15
\$ 35
2.728
1.206
56%
21,634
2.6
1.1
55%
Partial POR
8,797
2,846
\$ 952
\$ 2,950
\$ 488
\$ 327
\$ 1,217
\$ 187
\$ 240
\$ 862
\$ 126
7/1/2015
6/30/2016
7/1/2015
6/30/2016

TREATMENT DAYS SITES 1-3, 5-8
ALL PERIODS

Site	Parameter	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
Nubbin Slough	# Days in Period		365	206	274	365	365
Nubbin Slough	# Days On-line		265	199	234	359	350
Nubbin Slough	# Days On-line Flow > 0		241	125	194	355	348
Nubbin Slough	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		283	125	208	355	361
Nubbin Slough	% Days On-Line vs. Available Days*		85%	100%	93%	100%	96%
Nubbin Slough	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.					
Ideal Grove	# Days in Period		365	206	274	365	365
Ideal Grove	# Days On-line		358	197	262	361	362
Ideal Grove	# Days On-line Flow > 0		253	148	261	341	362
Ideal Grove	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		257	148	267	341	364
Ideal Grove	% Days On-Line vs. Available Days*		98%	100%	98%	100%	99%
Ideal Grove	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.					
Mosquito Creek	# Days in Period		365	206	274	365	365
Mosquito Creek	# Days On-line		324	193	254	337	310
Mosquito Creek	# Days On-line Flow > 0		312	131	229	335	302
Mosquito Creek	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		312	132	235	346	344
Mosquito Creek	% Days On-Line vs. Available Days*		100%	99%	97%	97%	88%
Mosquito Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner.					
Lemkin Creek	# Days in Period		365	206	274	365	365
Lemkin Creek	# Days On-line		338	201	267	361	358
Lemkin Creek	# Days On-line Flow > 0		338	129	267	361	358
Lemkin Creek	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		338	129	267	361	358
Lemkin Creek	% Days On-Line vs. Available Days*		100%	100%	100%	100%	100%
Lemkin Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner; provide flow to downstream wetlan					
Wolff Ditch	# Days in Period		365	206	274	365	365
Wolff Ditch	# Days On-line		350	203	262	357	364
Wolff Ditch	# Days On-line Flow > 0		350	155	262	357	364
Wolff Ditch	# Days in Period Flow >0.0000 Less Non-Controllable Down Time		356	155	262	357	364
Wolff Ditch	% Days On-Line vs. Available Days*		98%	100%	100%	100%	100%
Wolff Ditch	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner; provide flow to downstream wetlan					

**TREATMENT DAYS SITES 1-3, 5-8
ALL PERIODS**

Site	Parameter	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
Grassy Island	# Days in Period			206	231	365	365
Grassy Island	# Days On-line				120	321	362
Grassy Island	# Days On-line Flow > 0			125	120	314	362
Grassy Island	# Days in Period Flow >0.0000 Less Non-Controllable Down Time				120	316	362
Grassy Island	% Days On-Line vs. Available Days*				100%	99%	100%
Grassy Island	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner & provide lower input concentrations to downstream water					
Bessey Creek	# Days in Period						
Bessey Creek	# Days On-line						
Bessey Creek	# Days On-line Flow > 0						
Bessey Creek	# Days in Period Flow >0.0000 Less Non-Controllable Down Time						
Bessey Creek	% Days On-Line vs. Available Days*						
Bessey Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sound manner & provide lower input concentrations to downstream water					
Sites 1-3, 5-6, 8	Period Start	11/21/2008	3/9/2010	3/9/2011	10/1/2011	7/1/2012	7/1/2013
Sites 1-3, 5-6, 8	Period End	11/20/2009	3/8/2011	9/30/2011	6/30/2012	6/30/2013	6/30/2014
Sites 1-3, 5-6, 8	Period Start (Period 8 Only)						
Sites 1-3, 5-6, 8	Period End (Period 8 Only)						
Site 7	Period Start			7/11/2011	11/13/2011	7/1/2012	7/1/2013
Site 7	Period End (Period 3 Extended)			11/12/2011	6/30/2012	6/30/2013	6/30/2014
Site 7	Period Start (Period 8 Only)						
Site 7	Period End (Period 8 Only)						
Notes:	*Excl. No Flow Days * Non-Controllable Downtime						

Period 7	Period 8
365	183
332	169
332	169
347	169
96%	100%
365	183
313	165
313	160
313	160
100%	100%
365	183
332	176
332	176
332	77
100%	99%
365	183
343	183
343	183
343	183
100%	100%
ds.	
365	183
356	176
356	176
356	176
100%	100%
ds.	

Period 7	Period 8
365	197
360	191
360	191
360	191
100%	100%
rs.	
	183
	174
	174
	174
	100%
rs.	
7/1/2014	7/1/2014
6/30/2015	11/30/2015
	6/1/2016
	6/30/2016
7/1/2014	7/1/2014
6/30/2015	11/30/2015
	5/18/2016
	6/30/2016

TMDL SITES 1-3, 5-8
ALL PERIODS

Site	Parameter	Period 1	Period 2	Period 3
Nubbin Slough	On-line Flow Days >0			
Nubbin Slough	Flow Weighted Average Inflow Concentration in µg/L			
Nubbin Slough	Flow Weighted Average Outflow Concentration in µg/L		73	109
Nubbin Slough	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration		YES	YES
Nubbin Slough	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration		NO	NO
Nubbin Slough	% Data Points Inflow Concentration Meeting Tributary TMDL	0%	0%	0%
Nubbin Slough	% Data Points Outflow Concentration Meeting Tributary TMDL	52%	90%	81%
Nubbin Slough	Facility Purpose	Remove P & N in cost-effective & environment		
Ideal Grove	On-line Flow Days >0			
Ideal Grove	Flow Weighted Average Inflow Concentration in µg/L			
Ideal Grove	Flow Weighted Average Outflow Concentration in µg/L		16	50
Ideal Grove	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration		YES	YES
Ideal Grove	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration		YES	NO
Ideal Grove	% Data Points Inflow Concentration Meeting Tributary TMDL		39%	30%
Ideal Grove	% Data Points Outflow Concentration Meeting Tributary TMDL		92%	89%
Ideal Grove A	% Data Points Inflow Concentration Meeting Tributary TMDL	46%		
Ideal Grove A	% Data Points Outflow Concentration Meeting Tributary TMDL	100%		
Ideal Grove B	% Data Points Inflow Concentration Meeting Tributary TMDL	46%		
Ideal Grove B	% Data Points Outflow Concentration Meeting Tributary TMDL	95%		
Ideal Grove	Facility Purpose	Remove P & N in cost-effective & environment		

Mosquito Creek	On-line Flow Days >0		
Mosquito Creek	Flow Weighted Average Inflow Concentration in µg/L		
Mosquito Creek	Flow Weighted Average Outflow Concentration in µg/L	61	149
Mosquito Creek	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration	YES	NO
Mosquito Creek	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration	NO	NO
Mosquito Creek	% Data Points Inflow Concentration Meeting Tributary TMDL	7%	0%
Mosquito Creek	% Data Points Outflow Concentration Meeting Tributary TMDL	80%	51%
Mosquito Small East	% Data Points Inflow Concentration Meeting Tributary TMDL	0%	
Mosquito Small East	% Data Points Outflow Concentration Meeting Tributary TMDL	86%	
Mosquito Small West	% Data Points Inflow Concentration Meeting Tributary TMDL	0%	
Mosquito Small West	% Data Points Outflow Concentration Meeting Tributary TMDL	94%	
Mosquito Large Pond	% Data Points Inflow Concentration Meeting Tributary TMDL	1%	
Mosquito Large Pond	% Data Points Outflow Concentration Meeting Tributary TMDL	98%	
Mosquito Creek	Facility Purpose	Remove P & N in cost-effective & environment	
Lemkin Creek	On-line Flow Days >0		
Lemkin Creek	Flow Weighted Average Inflow Concentration in µg/L		
Lemkin Creek	Flow Weighted Average Outflow Concentration in µg/L	30	22
Lemkin Creek	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration	YES	YES
Lemkin Creek	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration	YES	YES
Lemkin Creek	% Data Points Inflow Concentration Meeting Tributary TMDL	85%	91%
Lemkin Creek	% Data Points Outflow Concentration Meeting Tributary TMDL	94%	100%
Lemkin Creek	Facility Purpose	Remove P & N in cost-effective & environment	

Wolff Ditch	On-line Flow Days >0			
Wolff Ditch	Flow Weighted Average Inflow Concentration in µg/L			
Wolff Ditch	Flow Weighted Average Outflow Concentration in µg/L	28		23
Wolff Ditch	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration	YES		YES
Wolff Ditch	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration	YES		YES
Wolff Ditch	% Data Points Inflow Concentration Meeting Tributary TMDL	63%		100%
Wolff Ditch	% Data Points Outflow Concentration Meeting Tributary TMDL	94%		100%
Wolff Ditch	Facility Purpose	Remove P & N in cost-effective & environment		
Grassy Island	On-line Flow Days >0			
Grassy Island	Flow Weighted Average Inflow Concentration in µg/L			
Grassy Island	Flow Weighted Average Outflow Concentration in µg/L			
Grassy Island	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration			
Grassy Island	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration			
Grassy Island	% Data Points Inflow Concentration Meeting Tributary TMDL			
Grassy Island	% Data Points Outflow Concentration Meeting Tributary TMDL			
Grassy Island	Facility Purpose	Remove P & N in cost-effective & environmentally sc		
Bessey Creek	On-line Flow Days >0			
Bessey Creek	Flow Weighted Average Inflow Concentration in µg/L			
Bessey Creek	Flow Weighted Average Outflow Concentration in µg/L			
Bessey Creek	Tributary TMDL (113 in µg/L) Met for Average Outflow Concentration			
Bessey Creek	Lake TMDL (40 in µg/L) Met for Average Outflow Concentration			
Bessey Creek	% Data Points Inflow Concentration Meeting Tributary TMDL			
Bessey Creek	% Data Points Outflow Concentration Meeting Tributary TMDL			
Bessey Creek	Facility Purpose	Remove P & N in cost-effective & environmentally sc		
Sites 1-3, 5-6, 8	Period Start	11/21/2008	3/9/2010	3/9/2011

Sites 1-3, 5-6, 8	Period End	11/20/2009	3/8/2011	9/30/2011
Sites 1-3, 5-6, 8				
Sites 1-3, 5-6, 8				
Site 7	Period Start			7/11/2011
Site 7	Period End (Period 3 Extended)			11/12/2011
Site 7				
Site 7				
Notes:	Includes Linear Interpolation between Actual Measurements for On-line Flow Days.			

Period 4	Period 5	Period 6	Period 7	Period 8
		348	332	169
		799	1011	773
231	169	247	179	173
NO	NO	NO	NO	NO
NO	NO	NO	NO	NO
0%	0%	0%	0%	0%
45%	53%	49%	43%	44%
ally sound manner.				
		362	313	160
		862	814	1842
19	24	48	56	39
YES	YES	YES	YES	YES
YES	YES	NO	NO	YES
17%	9%	6%	8%	0%
100%	91%	87%	86%	100%
ally sound manner.				

[illegible]

		364	356	176
		146	156	125
35.1	52	24	62	41
YES	YES	YES	YES	YES
YES	NO	YES	NO	NO
74%	72%	56%	42%	69%
100%	92%	94%	86%	99%
ally sound manner; provide flow to downstream wetlands.				
		362	360	191
		490	411	501
27	50	93	40	42
YES	YES	YES	YES	YES
YES	NO	NO	YES	NO
4%	2%	1%	3%	0%
100%	89%	82%	93%	96%
ound manner; provide lower input conc. to downstream waters.				
				174
				223
				26
				YES
				N/A
				0%
				100%
ound manner; provide lower input conc. to downstream waters.				
10/1/2011	7/1/2012	7/1/2013	7/1/2014	7/1/2014

6/30/2012	6/30/2013	6/30/2014	6/30/2015	11/30/2015
				6/1/2016
				6/30/2016
11/13/2011	7/1/2012	7/1/2013	7/1/2014	7/1/2014
6/30/2012	6/30/2013	6/30/2014	6/30/2015	11/30/2015
				5/18/2016
				6/30/2016

HWTT**Estimated Replacement Costs Order of Magnitude Excluding Labor & Overhead
in 2010 - 2013 dollars (See Note)****System Life in Years** 50**Net Discount Rate Compounded Annually****(6% ROR less 2% inflation)** 4%**RC = Replacement Cost**

Item	Average Estimated Life	Estimated RC* in 2010 - 2013 Dollars	PV* in 2010 - 2013 Dollars	Year 2020	Year 2030	Year 2040	Year 2050	# of Replaces- ments
Site 1 Nubbin Slough								
Pumps	10	\$ 14,000	\$ 23,100	\$ 9,500	\$ 6,400	\$ 4,300	\$ 2,900	4
Limerock (projected life 5-10 years)	10	34,110	56,200	23,000	15,600	10,500	7,100	4
Monitoring & Control Equipment	10	20,000	33,000	13,500	9,100	6,200	4,200	4
Total Replacement Cost		<u>\$ 68,110</u>	<u>\$ 112,300</u>	<u>\$ 46,000</u>	<u>\$ 31,100</u>	<u>\$ 21,000</u>	<u>\$ 14,200</u>	
Site 2 Ideal Grove								
Pumps	10	\$ 4,000	\$ 6,500	\$ 2,700	\$ 1,800	\$ 1,200	\$ 800	4
Limerock (projected life 5-10 years)	10	-	-	-	-	-	-	4
Monitoring & Control Equipment	10	8,000	13,300	5,400	3,700	2,500	1,700	4
Total Replacement Cost		<u>\$ 12,000</u>	<u>\$ 19,800</u>	<u>\$ 8,100</u>	<u>\$ 5,500</u>	<u>\$ 3,700</u>	<u>\$ 2,500</u>	
Site 3 Mosquito Creek								
Pumps	10	\$ 16,000	\$ 26,300	\$ 10,800	\$ 7,300	\$ 4,900	\$ 3,300	4
Limerock (projected life 5-10 years)	10	35,000	57,700	23,600	16,000	10,800	7,300	4
Monitoring & Control Equipment	10	13,000	21,400	8,800	5,900	4,000	2,700	4
Total Replacement Cost		<u>\$ 64,000</u>	<u>\$ 105,400</u>	<u>\$ 43,200</u>	<u>\$ 29,200</u>	<u>\$ 19,700</u>	<u>\$ 13,300</u>	
Site 5 Lemkin Creek								
Pumps	10	\$ 32,000	\$ 52,800	\$ 21,600	\$ 14,600	\$ 9,900	\$ 6,700	4
Limerock (projected life 5-10 years)	10	8,750	14,400	5,900	4,000	2,700	1,800	4
Monitoring & Control Equipment	10	16,000	26,300	10,800	7,300	4,900	3,300	4
Total Replacement Cost		<u>\$ 56,750</u>	<u>\$ 93,500</u>	<u>\$ 38,300</u>	<u>\$ 25,900</u>	<u>\$ 17,500</u>	<u>\$ 11,800</u>	
Site 6 Wolff Ditch								
Pumps	10	\$ 59,000	\$ 97,300	\$ 39,900	\$ 26,900	\$ 18,200	\$ 12,300	4
Limerock (projected life 5-10 years)	10	8,750	14,400	5,900	4,000	2,700	1,800	4
Monitoring & Control Equipment	10	18,000	29,600	12,200	8,200	5,500	3,700	4
Total Replacement Cost		<u>\$ 85,750</u>	<u>\$ 141,300</u>	<u>\$ 58,000</u>	<u>\$ 39,100</u>	<u>\$ 26,400</u>	<u>\$ 17,800</u>	
Site 7 Grassy Island through Phase III								
Pumps	10	212,450	\$ 350,300	\$ 143,500	\$ 97,000	\$ 65,500	\$ 44,300	4
Limerock (projected life 5-10 years)	10	77,050	127,100	52,100	35,200	23,800	16,000	4
Monitoring & Control Equipment	10	81,450	134,300	55,000	37,200	25,100	17,000	4
Total Replacement Cost		<u>\$ 370,950</u>	<u>\$ 611,700</u>	<u>\$ 250,600</u>	<u>\$ 169,400</u>	<u>\$ 114,400</u>	<u>\$ 77,300</u>	
Total Replacement Costs		<u>\$ 657,560</u>	<u>\$ 1,084,000</u>					

Note: The information contained herein is based upon a set of assumptions including estimated current year costs, life & discount rates.

HWTT

**Estimated Replacement Costs Order of Magnitude Excluding Labor & Overhead
Determination of Future Value & Present Value in 2010 - 2013 dollars (See Note)**

ROR		Inflation								Difference Net vs. 2 Step Calc.
6.0%		2.0%								
2020		2030		2040		2050		50 years		
Future Value	Present Value	Future Value	Present Value	Future Value	Present Value	Future Value	Present Value	Total Present Value		
\$ 17,066	\$ 9,500	\$ 20,803	\$ 6,500	\$ 25,359	\$ 4,400	\$ 30,913	\$ 3,000	\$ 23,400		
41,580	23,200	50,686	15,800	61,786	10,800	75,316	7,300	57,100		
24,380	13,600	29,719	9,300	36,227	6,300	44,161	4,300	33,500		
\$ 83,026	\$ 46,300	\$ 101,208	\$ 31,600	\$ 123,372	\$ 21,500	\$ 150,390	\$ 14,600	\$ 114,000	\$ (1,700)	
\$ 4,876	\$ 2,700	\$ 5,944	\$ 1,900	\$ 7,245	\$ 1,300	\$ 8,832	\$ 900	\$ 6,800		
-	-	-	-	-	-	-	-	-		
9,752	5,400	11,888	3,700	14,491	2,500	17,664	1,700	13,300		
\$ 14,628	\$ 8,100	\$ 17,831	\$ 5,600	\$ 21,736	\$ 3,800	\$ 26,496	\$ 2,600	\$ 20,100	\$ (300)	
\$ 19,504	\$ 10,900	\$ 23,775	\$ 7,400	\$ 28,982	\$ 5,000	\$ 35,329	\$ 3,400	\$ 26,700		
42,665	23,800	52,008	16,200	63,398	11,000	77,281	7,500	58,500		
15,847	8,800	19,317	6,000	23,548	4,100	28,705	2,800	21,700		
\$ 78,016	\$ 43,500	\$ 95,101	\$ 29,600	\$ 115,927	\$ 20,100	\$ 141,315	\$ 13,700	\$ 106,900	\$ (1,500)	
\$ 39,008	\$ 21,800	\$ 47,550	\$ 14,800	\$ 57,964	\$ 10,100	\$ 70,657	\$ 6,900	\$ 53,600		
10,666	6,000	13,002	4,100	15,849	2,800	19,320	1,900	14,800		
19,504	10,900	23,775	7,400	28,982	5,000	35,329	3,400	26,700		
\$ 69,178	\$ 38,700	\$ 84,328	\$ 26,300	\$ 102,795	\$ 17,900	\$ 125,306	\$ 12,200	\$ 95,100	\$ (1,600)	
\$ 71,921	\$ 40,200	\$ 87,671	\$ 27,300	\$ 106,870	\$ 18,600	\$ 130,274	\$ 12,700	\$ 98,800		
10,666	6,000	13,002	4,100	15,849	2,800	19,320	1,900	14,800		
21,942	12,300	26,747	8,300	32,605	5,700	39,745	3,900	30,200		
\$ 104,529	\$ 58,500	\$ 127,420	\$ 39,700	\$ 155,324	\$ 27,100	\$ 189,339	\$ 18,500	\$ 143,800	\$ (2,500)	
\$ 258,975	\$ 144,600	\$ 315,690	\$ 98,400	\$ 384,824	\$ 67,000	\$ 469,098	\$ 45,600	\$ 355,600		
93,924	52,400	114,492	35,700	139,565	24,300	170,129	16,500	128,900		
99,287	55,400	121,030	37,700	147,535	25,700	179,845	17,500	136,300		
\$ 452,186	\$ 252,400	\$ 551,212	\$ 171,800	\$ 671,925	\$ 117,000	\$ 819,072	\$ 79,600	\$ 620,800	\$ (9,100)	
									\$ 1,100,700 \$ (16,700)	

Note: The information contained herein is based upon a set of assumptions including estimated current year costs, life & discount rates

HWTT
**Estimated Replacement Costs Order of Magnitude Excluding Labor & Overhead
in 2010 - 2013 dollars (See Note)**
System Life in Years 50

Net Discount Rate Compounded Annually
(7% ROR less 2% inflation) 3%

RC = Replacement Cost

Item	Average Estimated Life in Years	Estimated RC* in 2010 - 2013 Dollars	Present Value* in 2010 - 2013 Dollars	Year 2020	Year 2030	Year 2040	Year 2050	# of Replaces- ments
Site 1 Nubbin Slough								
Pumps	10	\$ 14,000	\$ 28,300	\$ 10,400	\$ 7,800	\$ 5,800	\$ 4,300	4
Limerock (projected life 5-10 years)	10	34,110	68,900	25,400	18,900	14,100	10,500	4
Monitoring & Control Equipment	10	20,000	40,300	14,900	11,100	8,200	6,100	4
Total Replacement Cost		<u>\$ 68,110</u>	<u>\$ 137,500</u>	<u>\$ 50,700</u>	<u>\$ 37,800</u>	<u>\$ 28,100</u>	<u>\$ 20,900</u>	
Site 2 Ideal Grove								
Pumps	10	\$ 4,000	\$ 8,000	\$ 3,000	\$ 2,200	\$ 1,600	\$ 1,200	4
Limerock (projected life 5-10 years)	10	-	-	-	-	-	-	4
Monitoring & Control Equipment	10	8,000	16,200	6,000	4,400	3,300	2,500	4
Total Replacement Cost		<u>\$ 12,000</u>	<u>\$ 24,200</u>	<u>\$ 9,000</u>	<u>\$ 6,600</u>	<u>\$ 4,900</u>	<u>\$ 3,700</u>	
Site 3 Mosquito Creek								
Pumps	10	\$ 16,000	\$ 32,300	\$ 11,900	\$ 8,900	\$ 6,600	\$ 4,900	4
Limerock (projected life 5-10 years)	10	35,000	70,500	26,000	19,400	14,400	10,700	4
Monitoring & Control Equipment	10	13,000	26,300	9,700	7,200	5,400	4,000	4
Total Replacement Cost		<u>\$ 64,000</u>	<u>\$ 129,100</u>	<u>\$ 47,600</u>	<u>\$ 35,500</u>	<u>\$ 26,400</u>	<u>\$ 19,600</u>	
Site 5 Lemkin Creek								
Pumps	10	\$ 32,000	\$ 64,500	\$ 23,800	\$ 17,700	\$ 13,200	\$ 9,800	4
Limerock (projected life 5-10 years)	10	8,750	17,600	6,500	4,800	3,600	2,700	4
Monitoring & Control Equipment	10	16,000	32,300	11,900	8,900	6,600	4,900	4
Total Replacement Cost		<u>\$ 56,750</u>	<u>\$ 114,400</u>	<u>\$ 42,200</u>	<u>\$ 31,400</u>	<u>\$ 23,400</u>	<u>\$ 17,400</u>	
Site 6 Wolff Ditch								
Pumps	10	\$ 59,000	\$ 119,000	\$ 43,900	\$ 32,700	\$ 24,300	\$ 18,100	4
Limerock (projected life 5-10 years)	10	8,750	17,600	6,500	4,800	3,600	2,700	4
Monitoring & Control Equipment	10	18,000	36,300	13,400	10,000	7,400	5,500	4
Total Replacement Cost		<u>\$ 85,750</u>	<u>\$ 172,900</u>	<u>\$ 63,800</u>	<u>\$ 47,500</u>	<u>\$ 35,300</u>	<u>\$ 26,300</u>	
Site 7 Grassy Island								
Pumps	10	\$ 140,000	\$ 282,300	\$ 104,200	\$ 77,500	\$ 57,700	\$ 42,900	4
Limerock (projected life 5-10 years)	10	77,050	155,300	57,300	42,700	31,700	23,600	4
Monitoring & Control Equipment	10	43,050	86,700	32,000	23,800	17,700	13,200	4
Total Replacement Cost		<u>\$ 260,100</u>	<u>\$ 524,300</u>	<u>\$ 193,500</u>	<u>\$ 144,000</u>	<u>\$ 107,100</u>	<u>\$ 79,700</u>	
Total Replacement Costs		<u>\$ 546,710</u>	<u>\$ 1,102,400</u>					

Note: The information contained herein is based upon a set of assumptions including estimated current year costs, life & discount rates

HWTT
**Estimated Replacement Costs Order of Magnitude Excluding Labor & Overhead
in 2010 - 2013 dollars (See Note)**
System Life in Years 50

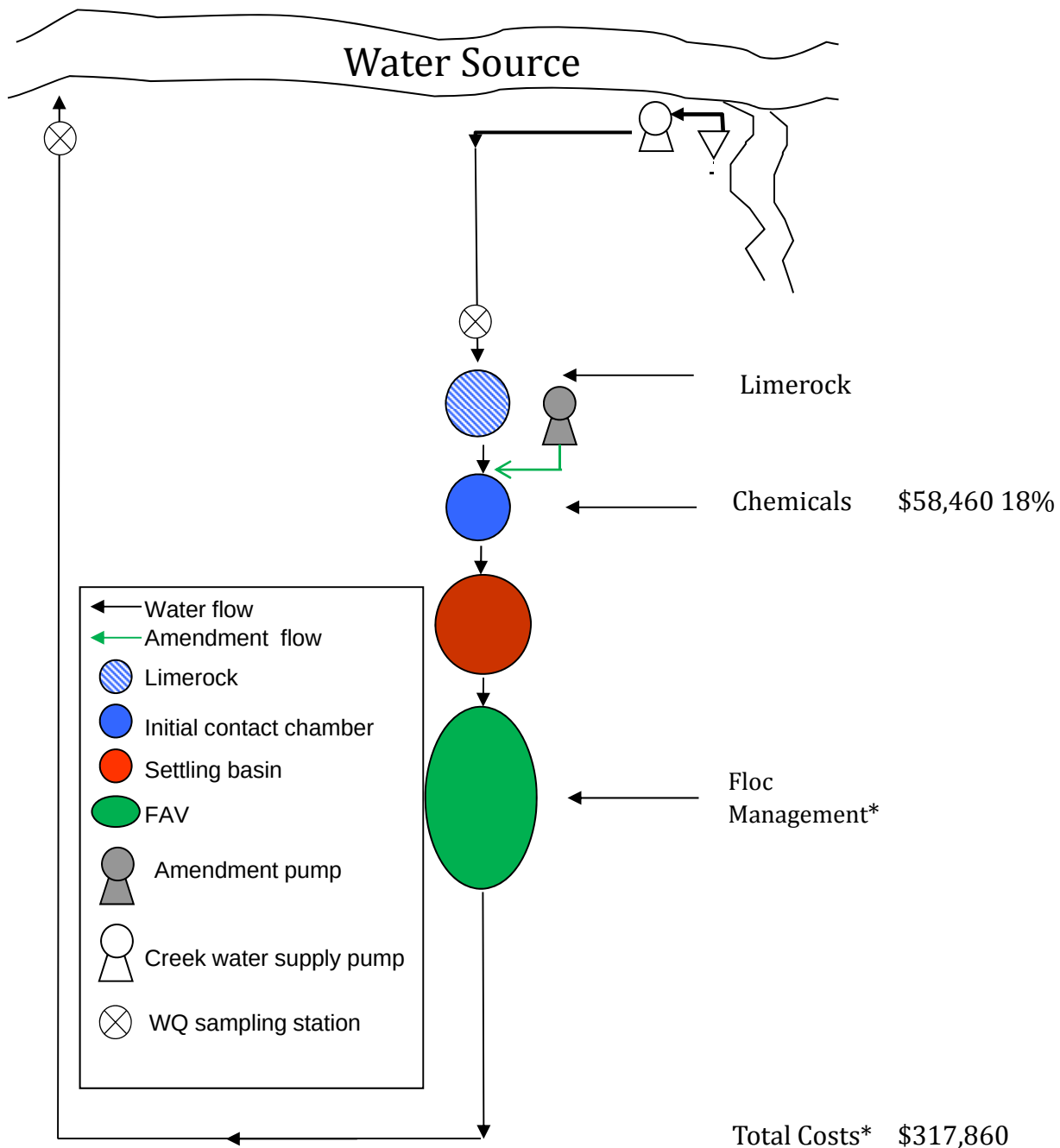
Net Discount Rate Compounded Annually
(7% ROR less 2% inflation) 5%

RC = Replacement Cost

Item	Average Estimated Life in Years	Estimated RC* in 2010 - 2013 Dollars	Present Value* in 2010 - 2013 Dollars	Year 2020	Year 2030	Year 2040	Year 2050	# of Replaces- ments
Site 1 Nubbin Slough								
Pumps	10	\$ 14,000	\$ 19,100	\$ 8,600	\$ 5,300	\$ 3,200	\$ 2,000	4
Limerock (projected life 5-10 years)	10	34,110	46,500	20,900	12,900	7,900	4,800	4
Monitoring & Control Equipment	10	20,000	27,200	12,300	7,500	4,600	2,800	4
Total Replacement Cost		<u>\$ 68,110</u>	<u>\$ 92,800</u>	<u>\$ 41,800</u>	<u>\$ 25,700</u>	<u>\$ 15,700</u>	<u>\$ 9,600</u>	
Site 2 Ideal Grove								
Pumps	10	\$ 4,000	\$ 5,500	\$ 2,500	\$ 1,500	\$ 900	\$ 600	4
Limerock (projected life 5-10 years)	10	-	-	-	-	-	-	4
Monitoring & Control Equipment	10	8,000	10,900	4,900	3,000	1,900	1,100	4
Total Replacement Cost		<u>\$ 12,000</u>	<u>\$ 16,400</u>	<u>\$ 7,400</u>	<u>\$ 4,500</u>	<u>\$ 2,800</u>	<u>\$ 1,700</u>	
Site 3 Mosquito Creek								
Pumps	10	\$ 16,000	\$ 21,800	\$ 9,800	\$ 6,000	\$ 3,700	\$ 2,300	4
Limerock (projected life 5-10 years)	10	35,000	47,800	21,500	13,200	8,100	5,000	4
Monitoring & Control Equipment	10	13,000	17,700	8,000	4,900	3,000	1,800	4
Total Replacement Cost		<u>\$ 64,000</u>	<u>\$ 87,300</u>	<u>\$ 39,300</u>	<u>\$ 24,100</u>	<u>\$ 14,800</u>	<u>\$ 9,100</u>	
Site 5 Lemkin Creek								
Pumps	10	\$ 32,000	\$ 43,600	\$ 19,600	\$ 12,100	\$ 7,400	\$ 4,500	4
Limerock (projected life 5-10 years)	10	8,750	11,900	5,400	3,300	2,000	1,200	4
Monitoring & Control Equipment	10	16,000	21,800	9,800	6,000	3,700	2,300	4
Total Replacement Cost		<u>\$ 56,750</u>	<u>\$ 77,300</u>	<u>\$ 34,800</u>	<u>\$ 21,400</u>	<u>\$ 13,100</u>	<u>\$ 8,000</u>	
Site 6 Wolff Ditch								
Pumps	10	\$ 59,000	\$ 80,500	\$ 36,200	\$ 22,200	\$ 13,700	\$ 8,400	4
Limerock (projected life 5-10 years)	10	8,750	11,900	5,400	3,300	2,000	1,200	4
Monitoring & Control Equipment	10	18,000	24,700	11,100	6,800	4,200	2,600	4
Total Replacement Cost		<u>\$ 85,750</u>	<u>\$ 117,100</u>	<u>\$ 52,700</u>	<u>\$ 32,300</u>	<u>\$ 19,900</u>	<u>\$ 12,200</u>	
Site 7 Grassy Island								
Pumps	10	\$ 140,000	\$ 191,000	\$ 85,900	\$ 52,800	\$ 32,400	\$ 19,900	4
Limerock (projected life 5-10 years)	10	77,050	105,000	47,300	29,000	17,800	10,900	4
Monitoring & Control Equipment	10	43,050	58,700	26,400	16,200	10,000	6,100	4
Total Replacement Cost		<u>\$ 260,100</u>	<u>\$ 354,700</u>	<u>\$ 159,600</u>	<u>\$ 98,000</u>	<u>\$ 60,200</u>	<u>\$ 36,900</u>	
Total Replacement Costs		<u>\$ 546,710</u>	<u>\$ 745,600</u>					

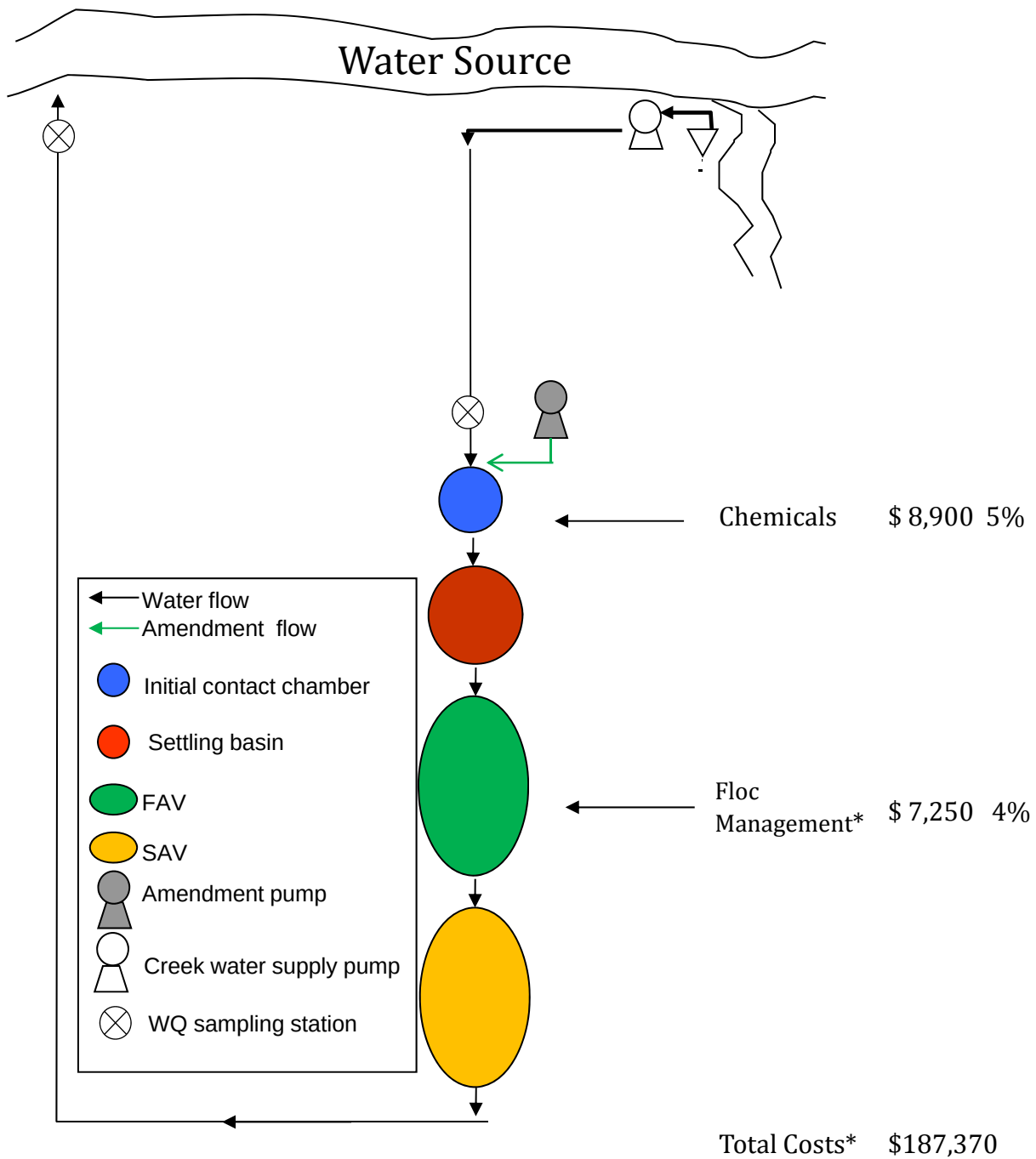
Note: The information contained herein is based upon a set of assumptions including estimated current year costs, life & discount rates

SITE 1 NUBBIN SLOUGH



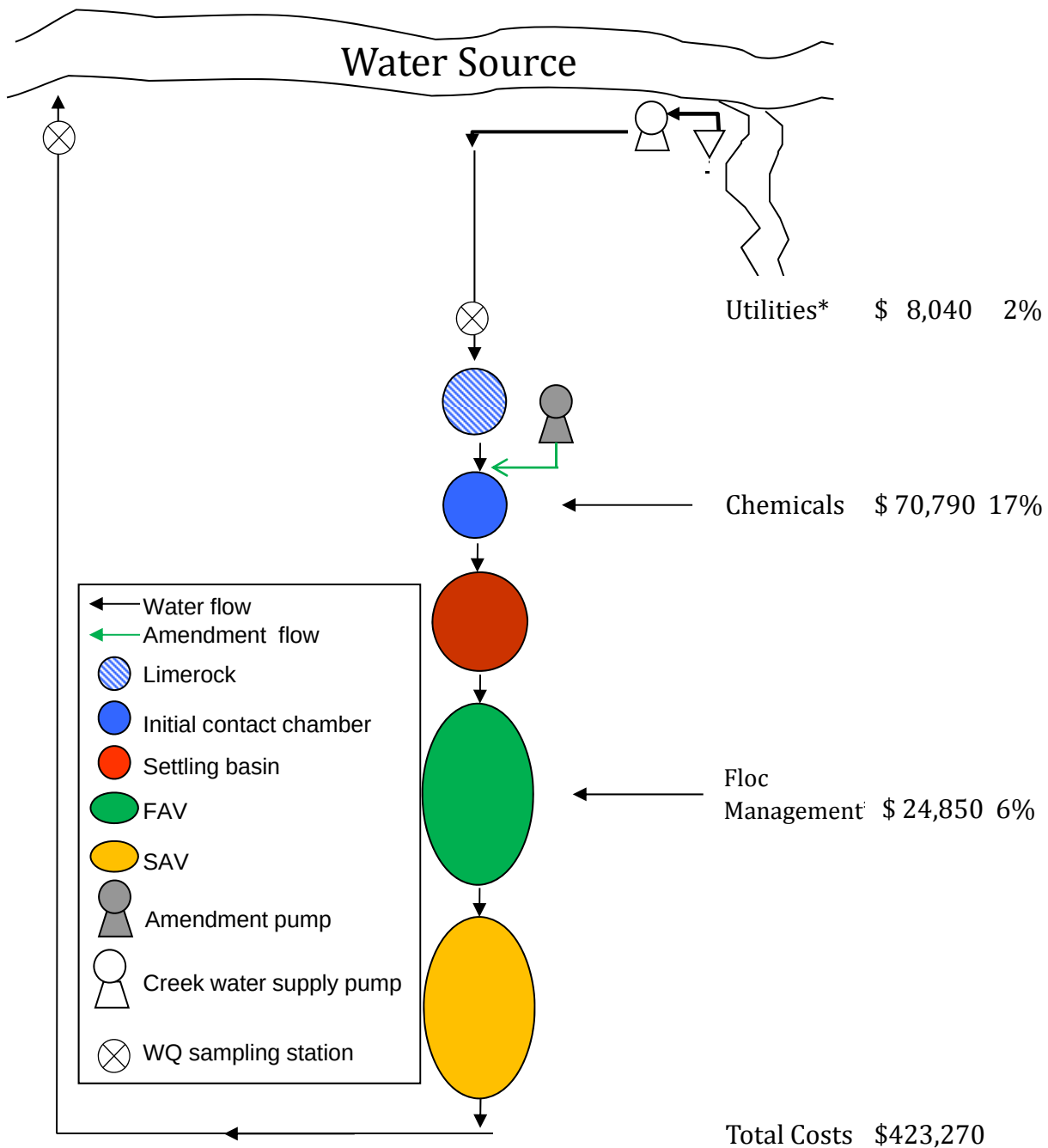
*Utilities paid by landowner. Limerock bed and floc management costs are semi-variable expenses.

SITE 2 IDEAL GROVE



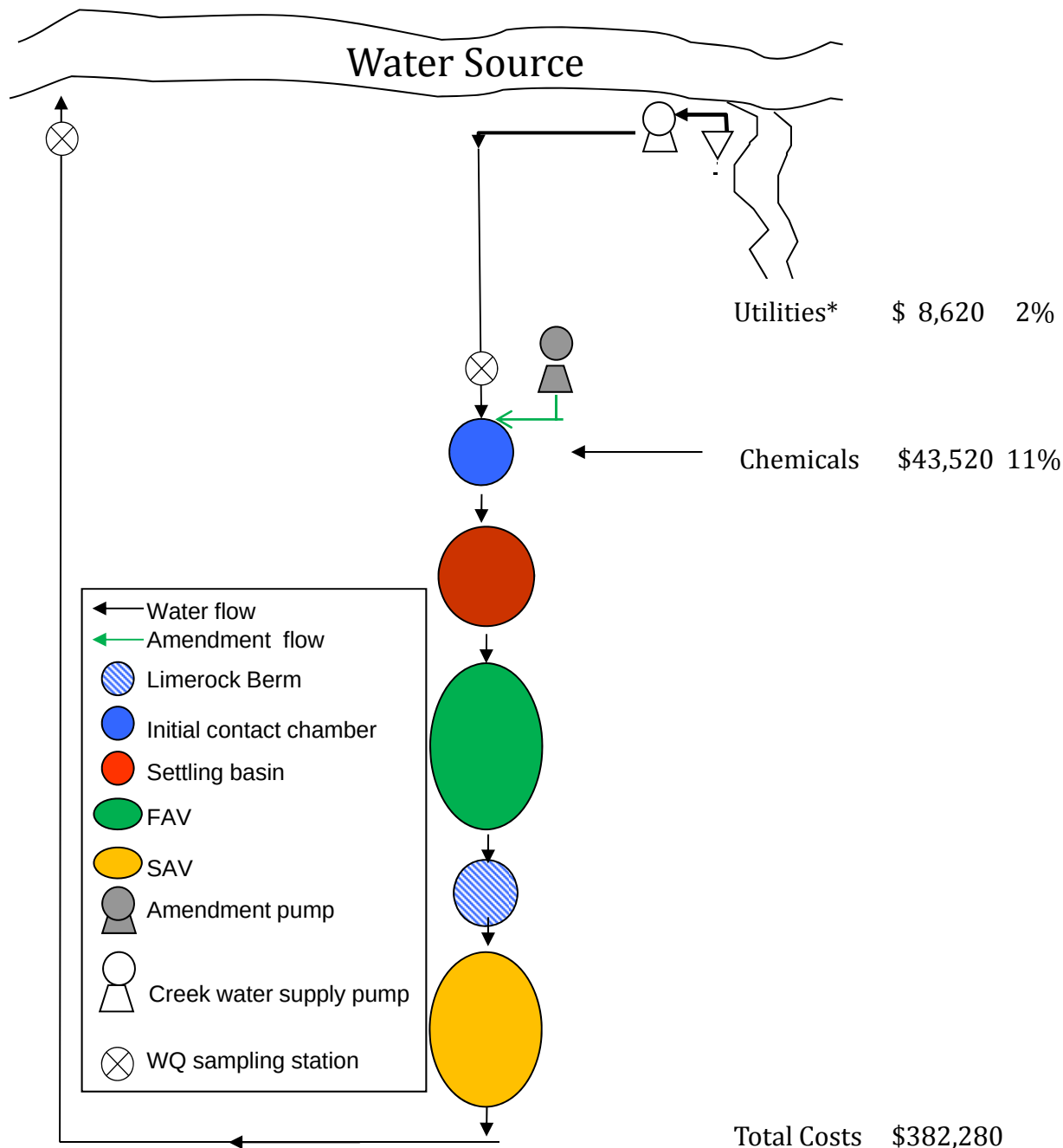
*Utilities paid by landowner. Floc management is a semi-variable expense.

SITE 3 MOSQUITO CREEK



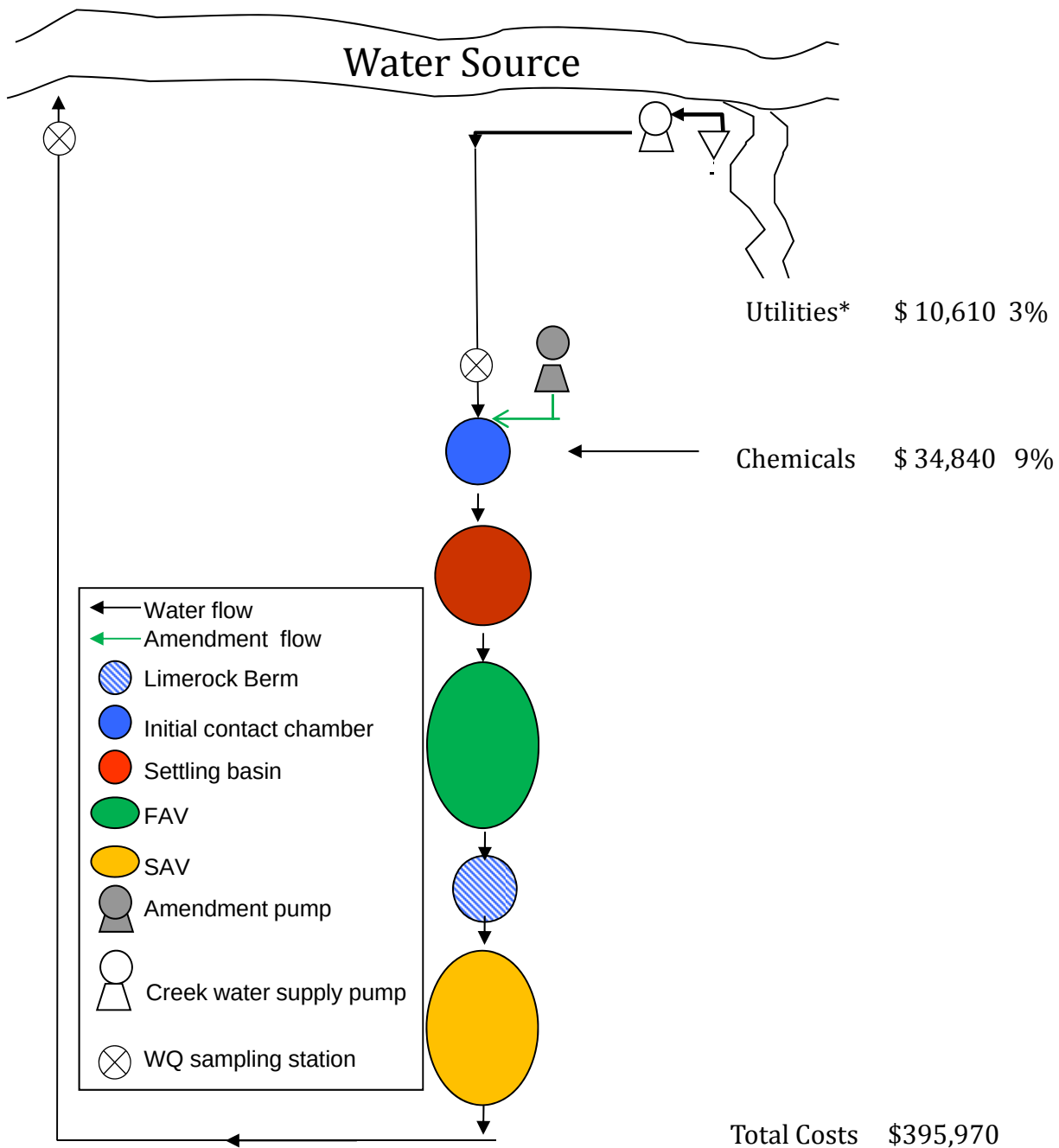
*Utilities primarily associated with pump station, amendment injection & monitoring equipment. Floc management is a semi-variable expense.

SITE 5 LEMKIN CREEK



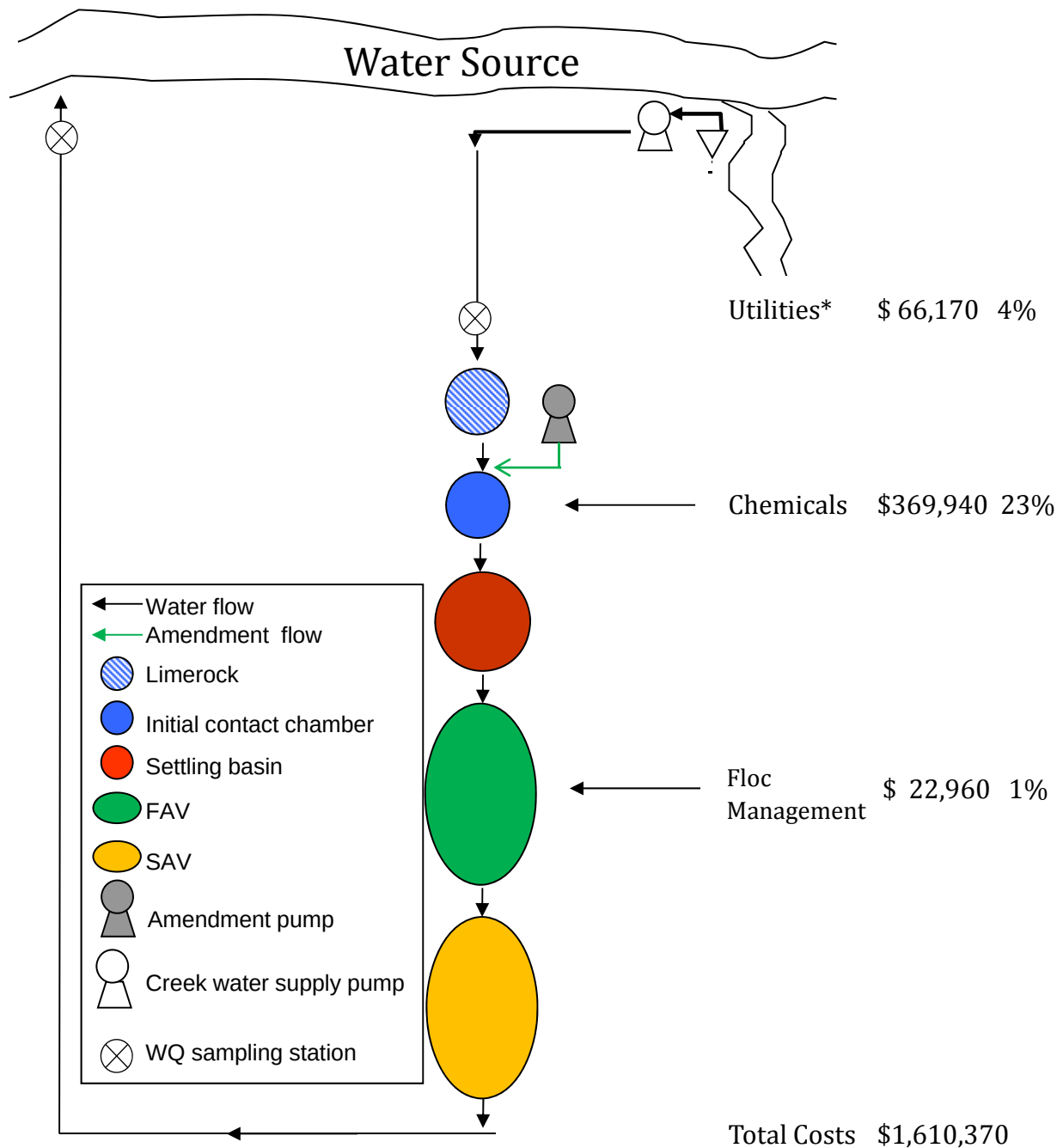
*Utilities primarily associated with pump station, amendment injection & monitoring equipment. Floc management costs have not been separately identified to date.

SITE 6 WOLFF DITCH



*Utilities primarily associated with pump station, amendment injection & monitoring equipment. Floc management costs have not been separately identified to date.

SITE 7 GRASSY ISLAND



*Utilities primarily associated with pump station, amendment injection & monitoring equipment. Floc management is a semi-variable expense.