U.S. Fish & Wildlife Service

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# List of Acronyms

For a list of receptor acronyms with receptor description, see Appendix D Table 34.

BCF – Body Condition Factor
BLA – Black River
BW – Body Weight
BW/d – Body Weight per day
CEC – Contaminant of Emerging Concern
CED – Cedar River
CTU – Cumulative Thermal Unit
GEN – Genoa National Fish Hatchery
GLB – Great Lakes Basin
GSU – Genetic Stocking Unit
HUC 8/10 – USGS 8/10-digit Hydrologic Unit Code
EC – Effect Concentration
EPA – US Environmental Protection Agency
KEW – Kewaunee River
$K_{ow}$ – octanol/water partitioning coefficient
K – Fulton's Body Condition Factor
HRCG/HRMS – High Resolution Gas Chromatography/High Resolution Mass Spectometry
L – Length
LC-MS/MS – Liquid Chromatography-Mass Spectometry/Mass Spectometry
LOAEL – Lowest Observed Adverse Effect Level
MAU – Maumee River
MIL – Milwaukee River
NFH – National Fish Hatchery
NHDPlusHR – National Hydrography Dataset Plus High Resolution
NLCD – National Land Cover Database
NPDES – National Pollution Discharge Elimination System
PBDE – Poly-Brominated Diphenyl Ether
PES – Peshtigo River
PNEC – Probable No Effect Concentration
PPCP – Pharmaceutical/Personal Care Product
ppm – parts per million
RPD – Relative Percent Difference
SJ – Jaccard's Similarity Coefficient
SRF – Streamside Rearing Facility
STC – St. Clair River
SV – Screening Value
TEQ – Toxicity Equivalence Quotient
T3 – thyroid hormone Triiodothyronine
T4 – thyroid hormone Thyroxine
TH – Thyroid Hormone
TU – Thermal Unit
W – Weight
WHI – White River
WOL – Wolf River

# Introduction

The amount of research on contaminants of emerging concern (CECs) continues to grow as awareness of their presence in the environment increases. A search of CEC literature reveals the primary focus of CEC research has been on quantifying presence and determining extent. There is currently limited research on the physiological effects of CECs. Of the research on organismal effects, almost the entirety of it is based on laboratory studies leaving a large data gap on observed environmental effects. Recent conservation efforts for lake sturgeon (*Acipenser fulvescens*) using streamside rearing facilities (SRFs) offers an applied field-based situation for investigating the relationship between CECs and a managed species of interest.

Lake sturgeon are long-lived, migratory, freshwater fish that are native to North America. Their native range includes the Mississippi River, Great Lakes, and Hudson Bay Basins. However, a combination of biological and anthropogenic factors has led to the species being listed as of special concern, threatened, or endangered in 19 of the 20 states in its native range (Bruch et al. 2016, IDNR). Anthropogenic reasons for their decline include being regarded as a nuisance fish, over-harvesting in the late 1800s, habitat loss, construction of barriers to spawning migration, and pollution (Harkness and Dymond 1961). Biological factors include high juvenile mortality, low recruitment, delayed sexual maturity, and spawning periodicity of 1 to 3 years for males and 4 to 9 years for females (Peterson et al. 2007).

To increase the success of population restoration efforts and downlist species' status, SRFs are being used across the Great Lakes basin, but it is currently unclear if exposure to CECs at SRFs could be impeding the success of rearing goals.

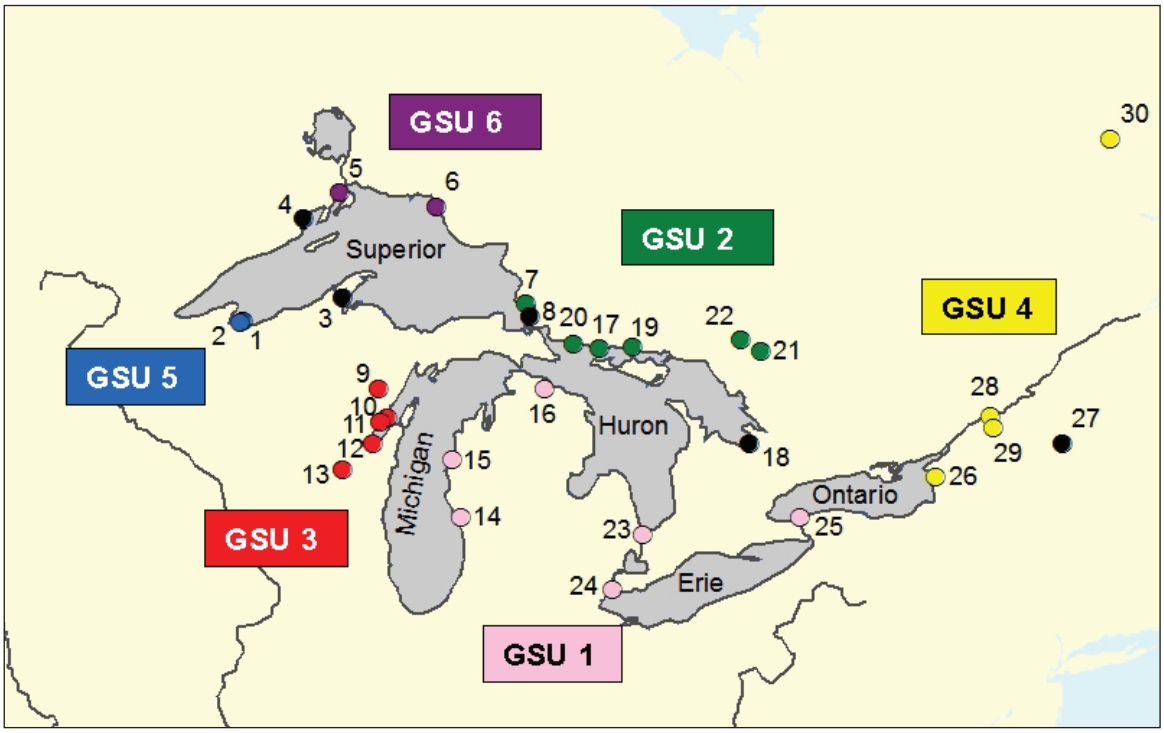


**Figure 1.** Lake sturgeon genetic stocking units of the Great Lakes (from Welsh et al. 2010)

SRFs are fixed or mobile hatcheries stationed adjacent to rivers that utilize ambient river water for rearing. These facilities have smaller production capabilities than traditional hatcheries but maintain the benefits of being able to treat for pathogens, protection from predation, guarantee of food, and, at some facilities, control of water temperature. In addition, SRFs have a distinct advantage of being able to rear fish in water from the location where they will be released. This aspect is especially important in migrating fish that are subject to olfactory imprinting to the chemical composition of their natal waters. Research on the related Russian sturgeon (*Acipenser gueldenstaedtii*) indicates that imprinting in sturgeon occurs during the prolarval stage as prolarvae are transitioning to exogenous feeding (Boiko et al. 1993; Boiko and Gregor'yan 2002). If this timing is representative of lake sturgeon, then imprinting for lake sturgeon occurs while the fish are in the SRFs or hatcheries. In a traditional hatchery, the sturgeon would then imprint to waters unconnected to their release waters, potentially preventing them from returning to desirable spawning areas.

Lake sturgeon in the Great Lakes have been genetically analyzed and assigned to six distinct Genetic Stocking Units (GSUs; Welsh et al. 2010; Figure 1). Mature fish of different GSUs may reside within the same body of water during non-spawning periods. The inability to home in on their natural spawning ground potentially results in fish spawning outside of their natural GSU and can lead to reduction of fitness through outbreeding depression. Outbreeding depression effects include reduced countergradient variation growth rates (Power and McKinley 1997), changes in embryo development time and survival (Granath et al. 2004), decreased survival in hybrid offspring (Gilk et al. 2004), and increased infection and disease susceptibility (Goldberg et al. 2005).

Among the limited laboratory research on CECs, there is indication of potential to negatively impact fish populations in the Great Lakes Basin (GLB). For example, polybrominated diphenyl ether (PBDE) compounds, found throughout the GLB (Choy et al. 2017, Kolpin et al. 2002, Lee et al. 2015) have been shown to interfere with thyroid hormone signaling (Schriks et al. 2007, Lema et al. 2008). Hydroxylated PBDEs share similar chemical structures to triiodothyronine and thyroxine (Ren et al. 2013) and have been shown to compete with thyroxine for binding sites on thyroid transport proteins, thereby reducing transport of thyroxine (Meerts et al. 2000). This disruption potentially reduces the parental supply of hormones to developing eggs, which may impair imprinting, growth, and survival.

Analysis of environmental contaminant effects is complicated since chemical interactions can alter the magnitude of effect. Single chemicals have not been observed in the GLB but rather complex mixtures exist, highlighting the importance of conducting field based studies which assess actual environmental conditions and effects.

The goal of this study is to assess the health, growth, and development of larval and age-0 lake sturgeon and compare among rearing waters with different exposure levels to CECs.

# Methods

**Site Selection** — There are currently nine SRFs in operation in the Great Lakes Basin (Figure 3). The suitability of an SRF for this study was determined by the suspected presence of CECs, based on surrounding land usage, and the ability of facility managers to accommodate research needs. In 2017, the facilities on the Cedar River near Cedar River, MI; the Whitefish River near Rapid River, MI; and the Black River at the Black River Sturgeon Research Facility in Onaway, MI were selected. The Genoa National Fish Hatchery (NFH) in Genoa, WI was also selected for study as a reference for comparison between traditional rearing, which has a greater rearing capacity but may not facilitate larval imprinting, and streamside rearing. In 2018, a second set of facilities was studied in order to include additional exposure profiles. This set included the Milwaukee River near Newburg, WI; the Kewaunee River at the Besadny Anadromous Fish Facility in Kewaunee, MI; and the Maumee River at the Toledo Zoo in Toledo, OH. The Genoa NFH and Black River Sturgeon Research Facility were also studied for an additional year in 2018 for repeatability and to analyze temporal variations.

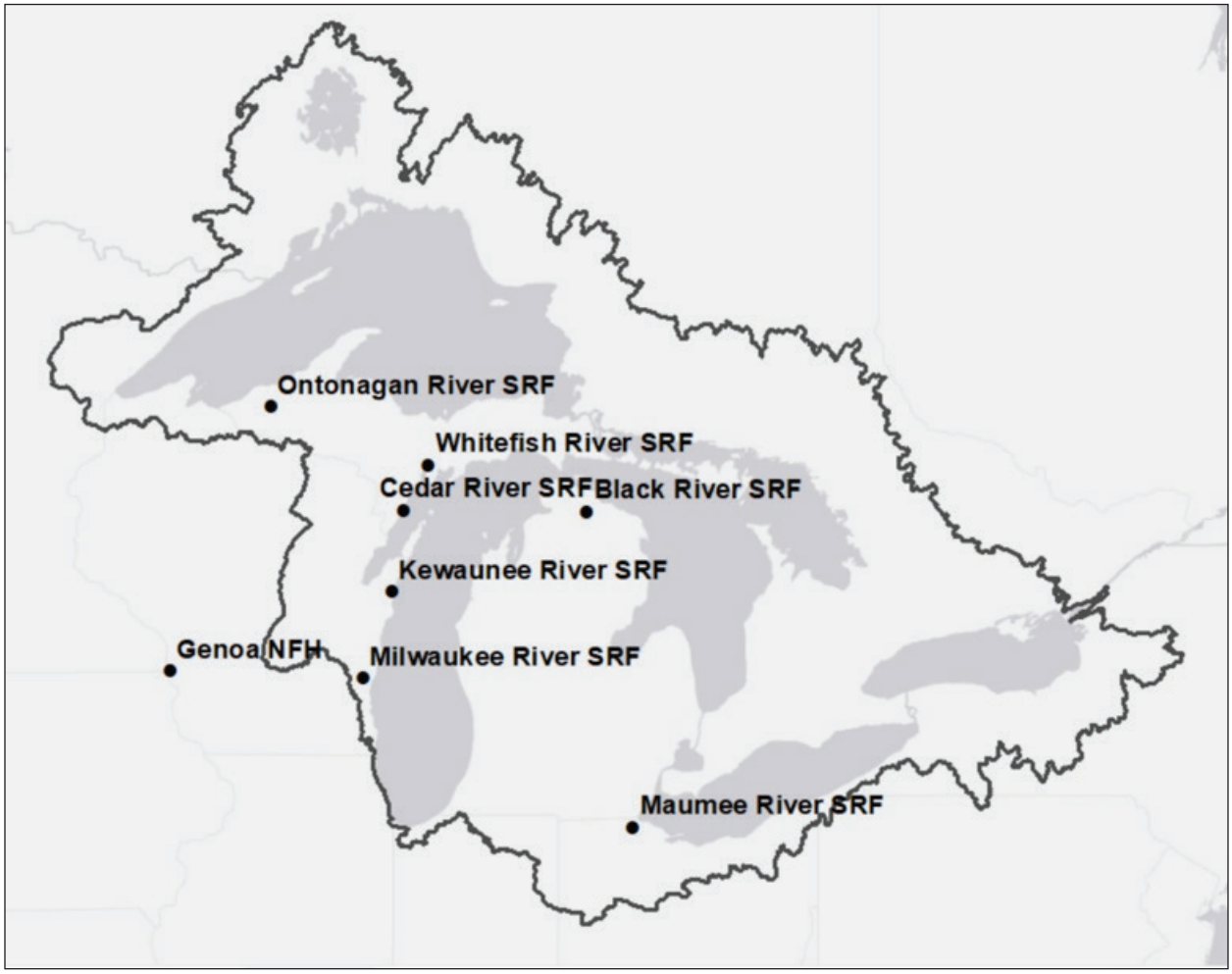


**Figure 2.** Lake sturgeon streamside rearing facility locations in the Great Lakes Basin. Dark gray line represents the hydrologic divide of the Great Lakes Basin.

**Site Configurations** — The SRFs utilized in the study generally used a design as described in Holtgren et al. (2007). Briefly, they consisted of an intake pump to pull water from an adjacent river through a screened intake. Water was then pumped through a filter to reduce suspended solids. Following filtration, water was sent to a raised head tank which gravity-fed water to maintain a consistent water supply to the rearing tanks. Flow to each tank was individually controlled by a ball valve installed in the outlet pipe that fed each tank. Water was drained from the tanks through an elevated drainpipe and returned to the source river. The set up for the Genoa NFH was similar with the notable exception that instead of drawing source water from an adjacent river water was drawn from on-site wells, recirculated through a hatchery pond and filtered to maintain optimal temperature for growth and improved water quality. Additionally, the Genoa NFH, Black River Sturgeon Research Facility, and Maumee River SRF were housed in fixed buildings instead of the converted trailers described in Holtgren et al. (2007). Individual design specifications are presented in Table 11 Appendix A for comparison. Water temperatures were collected using HOBO Pendant Temperature/ Light Data Loggers (Onset Computer Corporation Model UA-002-08) placed in the head tanks at all locations except at the Black River Sturgeon Research Facility where it was placed in one of the rearing tanks instead. Loggers were programmed to collect hourly temperature readings throughout the entire rearing period. Data were extracted from the loggers using the HOBOware software suite Version 3.7.10 (Onset Computer Corporation).

**Egg Collection** — In 2017, gametes were collected from the south side of the dam on the Peshtigo River in Peshtigo, WI. In 2018, gametes were collected from the Wolf River below the dam at Shawano, WI and from the upper St. Clair River/southern Lake Huron (hereafter referred to as St. Clair River) near Port Huron, MI. Ripe adults were captured from the Peshtigo River and Wolf River using dip nets. Gametes were then collected from the adults using direct gamete collection as described in Crossman et al. (2011). Fish from the St. Clair River were captured on setlines and transported to Purdy Fisheries in Sarnia, Ontario. There they were treated with common carp pituitary hormone to induce gamete maturation and oviposition (Pickford and Atz 1957) followed by direct gamete collection.


**Figure 3.** Egg collection sites.

**Egg Fertilization and Hatching** — Eggs were fertilized following the method presented in Aloisi et al. (2006) with the exception that only eggs being delivered to Genoa NFH in both 2017 and 2018 were fertilized in water from the destination facility. Eggs for the Cedar River, Whitefish River, and Black River facilities in 2017 were fertilized in water from the Cedar River. In 2018, eggs for the Milwaukee River, Kewaunee River, and Black River facilities were fertilized in water from Wolf River. St. Clair River eggs for the Maumee River and Black River facilities were fertilized in St. Clair River water. River water at ambient temperature was collected in a cooler and used to cool the fertilized eggs during transport. An additional variation from the Aloisi et al. (2006) methods was that egg disinfection was not standardized throughout all sites (Appendix A, Table 11).

Upon arrival at the rearing facilities, eggs were equilibrated to hatchery water temperatures via temperature displacement to avoid abnormal development and mortality (Linares-Casenave et al. 2013) caused by temperature shock. During acclimation, temperature increments were controlled so that eggs were not exposed to a temperature change of more than 2°C per half hour. Following acclimation, eggs were transferred to egg hatching jars. Milwaukee River SRF and Kewaunee River SRF eggs reached the destination facilities at temperatures near ambient river water temperatures so they were not tempered. Instead, they were placed in river water mixed with iodine and then placed in incubation jars. Constant water flow was provided to the jars so that the eggs reached a state of gently rolling over each other in order to prevent clumping, thereby reducing the likelihood of bacterial infection.

**Rearing** — As eggs hatched, sturgeon prolarva were transferred to rearing tanks. SRFs supplied with river water and the Genoa NFH supplied well water at a sufficient rate to provide six complete turnovers per hour. During the first five weeks of feeding, or until average batch weight exceeded 0.4 g, fish at all locations except the Kewaunee River SRF were fed a diet of *Artemia nauplii* (Premium Grade; Brine Shrimp Direct) eggs cultured for 24 hours at 28°C and 25 parts per thousand salinity consistent with manufacture's recommendations. Fish reared at the Kewaunee River SRF in 2018 were fed decapsulated *Artemia nauplii* eggs (Decapsulated Brine Shrimp Eggs (Non-Hatching); Brine Shrimp Direct). The feeding regimen was based on a percentage of body weight method described in Deng et al. (2003) and Bauman et al. (2016). Larvae in all tanks were fed 26% of body weight (BW) per day during the first and second weeks post-exogenous feeding, 13% of BW/d during the third week, and 11% of BW/d during the fourth and fifth weeks. At 0.4 g, larvae were transitioned to bloodworms. During the transition period, a diet of 50:50 brine shrimp:bloodworms was offered at a cumulative rate of 11% BW/d for seven days. After the transition period, bloodworms were fed daily at 11% BW/d at 0900, 1300, and 1800 until the completion of the experimental period. Though a percentage of body weight method was the foundation for feeding, individual SRFs adjusted the feed amounts as necessary to prevent under feeding of sturgeon.

**Sample Collection** — Water samples were collected three times throughout the rearing season to assess CEC exposure from the rearing water. Three locations had a duplicate water sample collected for quality control purposes. Collection occurred when the fertilized eggs were delivered to the destination rearing facility, during the transition to exogenous feeding, and at the end of the rearing season. Samples were drawn from a supply spigot of a randomly selected tank. No additional flushing of equipment was conducted prior to sampling due to the continuous supply of water through the plumbing at each facility. Collection bottles were triple rinsed in rearing water prior to collection.

Tissue samples were collected at three different stages of propagation in order to assess exposure and potential effects. Egg samples were collected to assess initial CEC body burden. Samples were collected from eggs as they were expressed from the female, prior to exposure to fertilization water. Larval sturgeon carcasses were collected at the time of transition to exogenous feeding. Carcasses for chemical analysis were wrapped in aluminum foil and placed in plastic freezer bags. Carcasses for hormone analysis were transferred to Nalgene cryogenic tubes until analysis. Tissue samples were also collected at the end of the season. Whole carcasses were collected for chemical analysis. Samples were comprised of three to five fish composites in order to meet minimum mass requirements for analysis. Composite serum samples were collected for thyroid hormone (TH) analysis, typically also from three to five fish. Sturgeon were euthanized using MS-222 at manufacturer (Syndel, Ferndale, WA) recommended concentrations. The caudal vein was accessed by caudal severing and blood was collected using capillary tubes. Whole blood was transferred to 1.5 mL micro centrifuge tubes. Centrifuge tubes were placed in a centrifuge and spun for 15 minutes at approximately 1,100 x g. Serum was siphoned off with a pipette and placed into a sterile cryovial. Samples for chemical analysis were frozen at -20° C until analysis. Samples for TH concentration analysis were frozen at -80° C until analysis.

**Chemical Quantification** — All samples for chemical analysis were submitted to AXYS Analytical Services, Ltd (Sidney, British Columbia, Canada). Sixty multi-residue pesticides were analyzed by HRGC/MS using AXYS method MLA-035 following the protocols described in EPA method 1699. Forty-six PBDEs were analyzed by HRGC/HRMS using AXYS method MLA-033 following the protocols

described in EPA method 1614A. One hundred and forty-one PPCPs were analyzed by LC-MS/MS using AXYS method MLA-075 following modified protocols described in EPA method 1694.

**Thyroid Hormone Quantification** — Prior to analysis, eggs and carcasses for TH analysis were homogenized in a 1:1 mixture of PBS and Ethyl Acetate using a 7mm tissue homogenizer. The homogenate was centrifuged to remove particulate matter. Following centrifugation, the supernatant was combined with ethyl acetate and vortexed vigorously. The organic layer was retained and centrifuged to dryness using a SpeedVac SC110A. Samples were re-suspended in EtOH and assay buffer. Serum samples were extracted with dissociation reagent (Arbor Assays, Ann Arbor, Michigan) to separate thyroid hormone from thyroid-binding globulin.
Thyroid hormone measurement used a competitive, antigen-capture ELISA. Resuspended samples or serum samples were diluted in PBS assay buffer according to assay kit directions (Arbor Assays, Ann Arbor, Michigan). Egg samples were diluted 1:20 and 1:100. Whole body homogenates were diluted 1:1000, 2000, 4000 and 8000. Serum samples were diluted 1:25, 50 and 100. Calculations of thyroid hormones in the fish are reported as ng/g body mass. Total body mass was recorded prior to homogenization and drying. Resuspension of each sample was into a total volume of 500mL (100mL EtOH and 400mL assay buffer). Assay calculated sample concentrations were multiplied by this resuspension volume and then divided by the body mass of the sample.

**Data Analysis** — Analytes were included in the analysis if they had at least one detection in the related sample medium. Lists of analytes that were not detected are included in Appendix B for water samples and Appendix I for tissue samples. All ANOVAs and accompanying Tukey Honest Significant Difference (HSD) post hoc tests were performed using R statistical software and regressions were performed with Microsoft Excel.

## Water

Frequency of detection was analyzed using percentages of detection. Although the same number of water samples was collected at each location, laboratory quality control procedures resulted in some analytes not being reported in some samples. Comparison by use of detection count could potentially skew results due to some analytes having a larger number of detections to report.

Results of chemical analysis for water samples were compared within locations where sampling was conducted in multiple years. The arithmetic mean was calculated for water samples taken from each year. The means were ranked by highest concentration for each contaminant. The location with the highest concentration of an analyte was assigned a score of 9 with scores descending to a minimum detection score of 1. The value of 9 was chosen as it is the number of sample sets analyzed. Non-detects were assigned a value of 0. The scores for all analytes detected at a location were summed to calculate a location score. The locations were then given an overall analyte presence rank based on the summed rank scores. An arithmetic mean was calculated for all location scores to generate a basis for comparison for each individual location. Analytes that were not detected in a least one sample were excluded from the ranking.

Locations that were analyzed in multiple years were also compared for similarity using a Jaccard similarity coefficient. The similarity coefficient was calculated as

$$S_J = \frac{a}{a + b + c}$$

where SJ is the similarity coefficient, a is the number of analytes detected at the location in both 2017 and 2018, b is the number of analytes detected only in 2017, and c is the number of analytes detected only in 2018. The similarity coefficient was then multiplied by 100 in order to calculate a percentage of similarity. An additional 2016 dataset was incorporated for the temporal analysis of the Maumee River. This dataset was collected in 2016 from a location 2.9 river miles downstream of the 2018 SRF study location. The samples were collected by this same FWS CEC Team using the same methods and laboratory as the 2018 SRF study. Spatial analysis indicated a Combined Sewer Overflow outfall (CSO) in the vicinity of the 2016 sampling location. It is unknown if this outfall was active at the time of the 2016 sampling and to what degree it may have impacted the corresponding samples. The 2016 sample set did not include PBDEs in the analyte list. As a result, PBDEs were removed from the 2018 Maumee River data set for the similarity analysis.

In instances where an analyte was detected in one year but not both, the detected concentration was compared to the detection limit of the undetected year. Proximity of these two values was used to assess if similarity was potentially under-reported due to environmental concentrations being similar to detection limits. Because detection limits varied by sample, detection limits for all samples from a single year were averaged together. The results of the analysis are reported as a relative percent difference (RPD) in order to display both the magnitude and direction of the difference.

Chemicals that were detected in water samples were analyzed for expected behavior based on their log $K_{OW}$. Log $K_{OW}$ values (Appendix B, Table 19 and Table 20) were taken from EPA's CompTox Chemistry Dashboard (https://comptox.epa.gov/dashboard). Experimental mean values were used when available. When not available, predicted mean values were used instead. Chemicals are expected to have low hydrophilicity at log $K_{OW}$ values greater than 3.5 (EPA 2000). Above this value, chemicals are considered bioaccumulative with values above 5.0 indicating that a chemical is expected to biomagnify (EPA 2000).

A search of published literature was conducted for toxicity thresholds in fish from aqueous concentrations of the study analytes (Appendix B, Table 18). Effect specific screening values (SVs) taken from Gefell et al. (2019) are identified as Population-relevant $SV_{LOW}$ and Comprehensive $SV_{LOW}$. An $SV_{LOW}$ is paired with an $SV_{HIGH}$ for each chemical. $SV_{LOW}$ indicates a concentration below which effects are not expected to occur, and a $SV_{HIGH}$ is the concentration above which effects are expected to occur. The range between an $SV_{LOW}$ and an $SV_{HIGH}$ indicates the concentration range in which it is uncertain if effects will occur. All of the detected analyte concentrations in this study were below an $SV_{HIGH}$, therefore the $SV_{HIGH}$s are not discussed in this report.

A search was conducted of the U.S. National Library of Medicine PubChem website (https://pubchem.ncbi.nlm.nih.gov/) for data on receptor activity induced by chemicals that were detected in water and tissue samples during this study. A separate search was conducted for each analyte and data was recorded for each receptor that demonstrated activity in response to it. The collected data were then reorganized by receptor to indicate which chemicals induce activity of each receptor. The resulting data were analyzed for receptors that had responses from multiple detected chemicals. A minimum of three activity inducing analytes detected at a single location were required for a receptor to be included in the analysis. Receptor activity was not quantified for this analysis and effects were not assessed for synergistic or antagonistic reactions between agonists. Responses were included for all vertebrates due to the low number of represented fish targets. Effect categories were classified using the guidelines

published in Gefell et al. (2019). Responses that directly promote abnormal functions were given additional categories not presented in Gefell et al. (2019). These categories are cancer, genotoxicity, and immunotoxicity.

## Tissue

Egg concentrations were compared to carcass concentrations of the same strain at the time of transition to exogenous feeding in order to assess changes in body burdens from exposure to water. Student's t-tests were used to determine if CEC concentrations changed significantly between the time of egg collection and the transition to exogenous feeding. Analytes were excluded from the analysis when concentrations were not detected in both eggs and the transitioning fish carcasses.

Analyte frequency of detection and relative concentration ranking analyses were conducted for carcass chemical concentrations at the end of the rearing season. These analyses used the same methods described for the equivalent water analyses.

## Growth

Growth was analyzed using a Welch's ANOVA of total length normalized to thermal opportunity for growth. Sturgeon length measurements were collected from the time of transition to exogenous feeding until the end of the rearing season. Thermal opportunity for growth was calculated as the cumulative thermal units (CTU) accumulated during the study. CTUs were calculated according to the formula

$$\text{CTU} = \sum_{i=1}^{n} (x_i - K)$$

presented in Kempinger (1988), where K is the constant (5.8° C), $x_i$ is the mean daily water temperature (°C) averaged from 24 hourly measurements, and $n$ is the number of days from egg fertilization until the end of the study.

Exponential regressions were used to analyze the portion of growth that was explained by thermal opportunity for growth. Coefficients of determination were examined for indications that broods were influenced by other factors.

Growth among the lake sturgeon broods is divided into three groups. The group which contains the largest number of fish is designated as the moderate growth group. Fish that had statistically higher growth are labeled as the accelerated group. Fish that had statistically lower growth are labeled as the reduced growth group. These designations are meant to describe their growth relative to the other fish analyzed in this assessment. These categories are not meant to imply any degree of fitness relative to norms for lake sturgeon.

## Health

Two methods were employed for the assessment of fish health during rearing. Exponential regressions were run to examine the correlation between fish weight and thermal opportunity for growth, as CTUs. Fish weight was measured concurrently with fish length. Fish were initially batched weighed weekly in groups of 5 to 25, depending on facility standard operating procedure, using a digital scale. Once fish reached sufficient weight to be practical for individual measurement, weights were generally recorded per individual. However, the Cedar River, Whitefish River, and Black River facilities continued to batch weigh throughout the rearing season.

Fish health was also assessed by plotting Fulton's body condition factor K (Ricker 1975) against thermal opportunity for growth. Body condition factor (BCF) was calculated as

$$K = \frac{W}{L^3} \times 10^5$$

where K is the BCF, W is the weight of the fish in grams and L is the total length of the fish in millimeters. A Welch's ANOVA was used to assess differences between mean BCFs for each of the broods.

## Thyroid Hormones

Welch's ANOVAs with HSD tests were performed on the thyroid hormone (TH) concentrations extracted from all tissue types collected. Statistical analysis on several tissue types was limited by insufficient tissue for quantification or by results of analysis. The limited available data consisted of carcasses from the transition to exogenous feeding collected in 2017, which consists of the BLA_PES, CED, GEN_PES, and WHI broods. Serum analysis was limited to BLA_PES, BLA_WOL, GEN_PES, GEN_STC, GEN_WOL, and KEW.

## Land Use Classification

Land use for the catchment of each SRF was determined using the USGS 2016 National Land Cover Database (NLCD) downloaded from the Multi-Resolution Land Characteristics Consortium (https://www.mrlc.gov/). The NLCD was cropped down to include only data for each catchment using USGS National Hydrography Dataset Plus High Resolution (NHDPlus HR) HUC boundaries retrieved from the USGS National Map Viewer (https://viewer.nationalmap.gov/basic/). The appropriate HUC resolution was determined by using the smallest HUC that contained the intake of each SRF and the entire upstream catchment. HUC10 was determined to be the appropriate resolution at all locations except for the Maumee River. The Maumee River had a much larger catchment and a HUC8 was determined to be appropriate. Cropping the NLCD was achieved by using the extract by mask tool in ArcMap 10.5 (Environmental System Research Institute, Redlands CA, 2017). Land coverage was then simplified from 15 USGS classifications to 7 classifications (**Table 1**). Total coverage for each cover type was calculated by dividing the area of each polygon, in acres, by total number of pixels in the NLCD/HUC polygon to determine the acre per pixel unit. This unit was then multiplied by the number of pixels of each cover type. Percent coverage for each cover type was calculated by dividing the total number of pixels in the NLCD/HUC polygon by the number of pixels of each cover type.

Land cover was assessed both as total area per cover type and percent coverage per cover type.

**Table 1.** Simplified land cover classifications based on the 15 NLCD land cover classifications. Colors indicate the color used on the NLCD to represent that land cover classification.

| NLCD classification | Simplified classification |
|---|---|
| Open Water | Open Water |
| Developed, Open Space | Developed |
| Developed, Low Intensity | |
| Developed, Medium Intensity | |
| Developed, High Intensity | |
| Barren Land | Barren Land |
| Deciduous Forest | Forest |
| Evergreen Forest | |
| Mixed Forest | |
| Shrub/Scrub | Woody and Herbaceous |
| Herbaceous | |
| Hay/Pasture | Agriculture |
| Cultivated Crops | |
| Woody Wetlands | Wetlands |
| Emergent Herbaceous Wetlands | |

# Results

## Water

### Detection Frequency

Water samples were analyzed for 242 analytes with 94 analytes being detected in a least one sample. Of the detected analytes, 66 occurred at <25% of the locations (Appendix B). Nine analytes were detected in 25% to 50% of the samples. This detection range included 3 PBDEs, ametryn, amphetamine, atrazine, metformin, simazine, and sulfamethoxazole. The detection category of ≥50% but <100% detection consisted of 15 analytes which included 12 PBDEs, desethylatrazine, erythromycin, and HCB. DEET and PBDEs 100, 47, and 99 were detected in 100% of all water samples.

### Location Comparison

The relative ranking of concentrations between locations showed the highest concentrations of different analytes were distributed across most sites. Black River 2018 was the only location that did not rank highest for any analyte. The Maumee River had the highest concentration for 50% (47 of 94) of the analytes. It also had the least number of analytes with non-detections with 22 non-detections (range 22-69, median 62). Among the nine locations, the Maumee River ranked in the top four for each of the 72 analytes detected in its waters (Table 2). Black River 2017, Cedar River, Genoa NFH 2017, Whitefish River, and Kewaunee River were all within 18% RPD of the mean ranking score. Locations with the largest differences between the cumulative mean and location mean are the Black River 2018, Genoa NFH 2018, Maumee River, and Milwaukee River. Black River 2018 and Genoa NFH 2018 had the lowest ranking scores at 29% and 34% below the mean score, respectively. The Maumee River and the Milwaukee River were the only locations that had ranking scores above the mean with 149% and 47% above the mean, respectively (Figure 5).

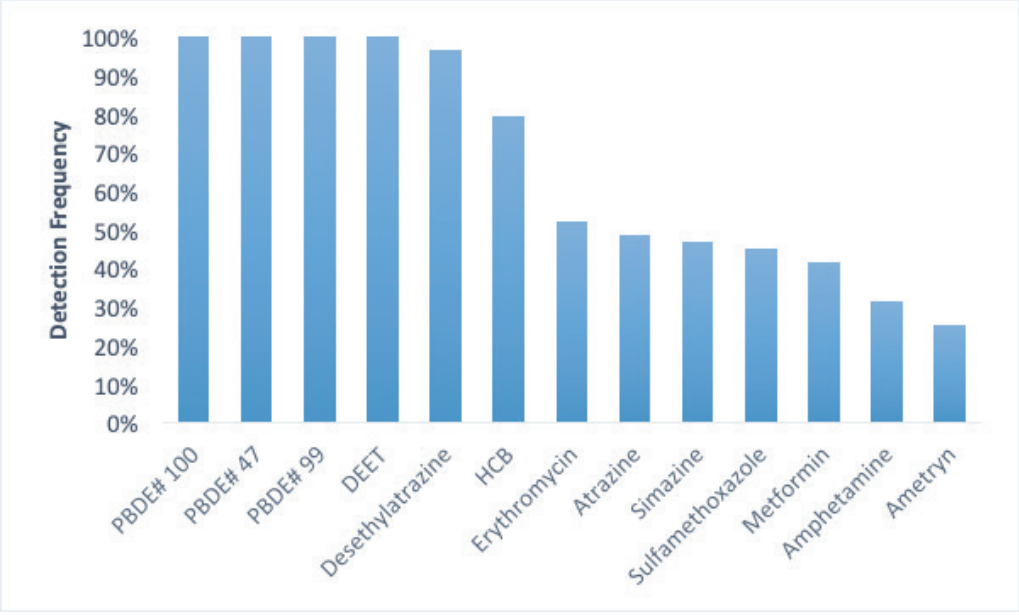


**Figure 4.** Detection frequency of chemicals detected in at least 25% of water samples. Only PBDEs detected in 100% of water samples are included.

**Table 2.** Relative ranking of location mean water concentrations. Column values indicate the number of times detected concentrations at the location were assigned that rank. The highest relative concentration rank is indicated by "1." The "analyte not detected" category indicates an analyte was detected from at least one location but not at the particular location.

| Rank | BLA 17 | CED-17 | GEN 17 | WHI-17 | BLA 18 | GEN 18 | KEW 18 | MAU-18 | MIL-18 |
|---|---|---|---|---|---|---|---|---|---|
| **1** | 5 | 4 | 7 | 11 | 0 | 3 | 6 | 47 | 11 |
| **2** | 7 | 3 | 4 | 5 | 4 | 2 | 6 | 20 | 20 |
| **3** | 3 | 4 | 8 | 7 | 7 | 2 | 2 | 3 | 7 |
| **4** | 6 | 3 | 5 | 2 | 1 | 5 | 3 | 2 | 3 |
| **5** | 6 | 6 | 5 | 0 | 3 | 2 | 1 | 0 | 1 |
| **6** | 2 | 6 | 2 | 2 | 3 | 2 | 5 | 0 | 2 |
| **7** | 4 | 4 | 0 | 2 | 0 | 1 | 5 | 0 | 4 |
| **8** | 1 | 2 | 1 | 2 | 3 | 3 | 1 | 0 | 6 |
| **9** | 1 | 0 | 1 | 1 | 6 | 5 | 2 | 0 | 0 |
| **Analyte Not Detected** | 59 | 62 | 61 | 62 | 67 | 69 | 63 | 22 | 40 |

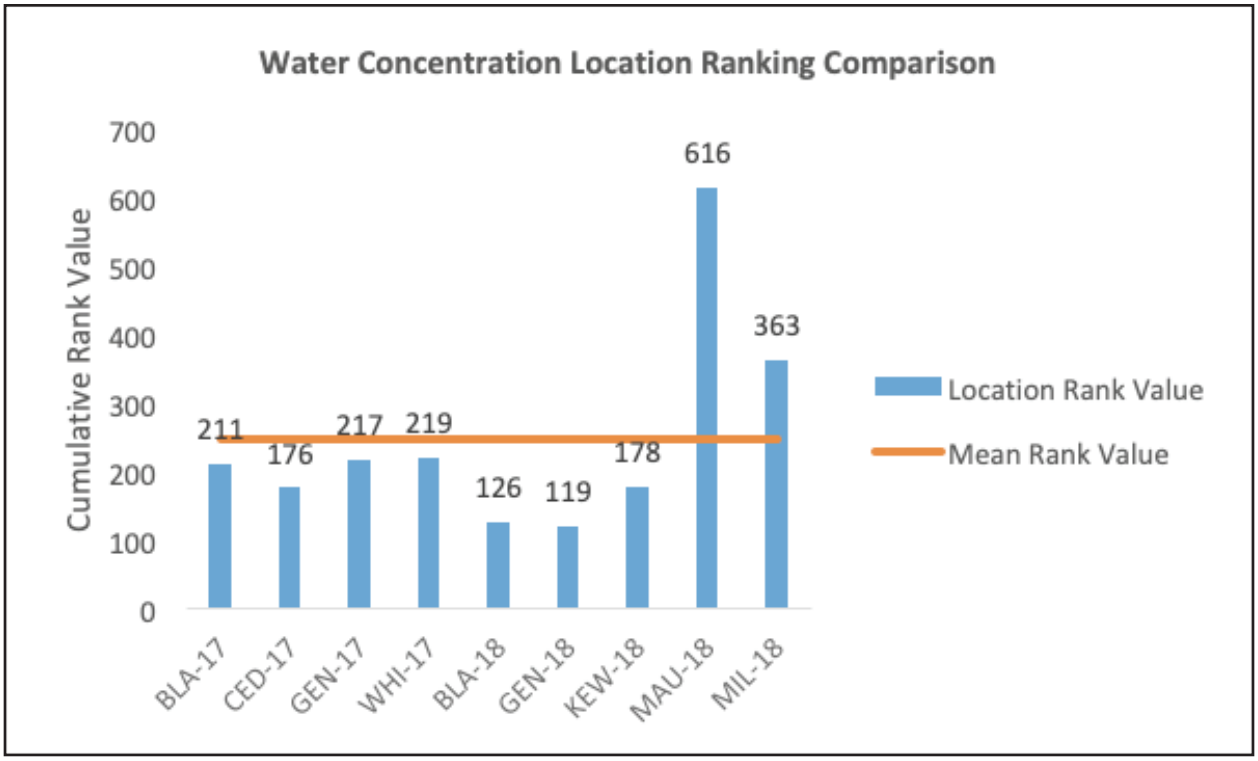


**Figure 5.** Comparison of cumulative concentration rank values for each location to the mean rank value of each location.

### Temporal Analysis

Genoa NFH and Black River were sampled in both years. Genoa NFH had 38 analytes detected between the two years. Thirty-three analytes were detected in 2017 and 25 were detected in 2018. Twenty analytes were detected at Genoa NFH during both years with a 52.6% similarity. Black River had 41 analytes detected with 35 detected in 2017 and 27 detected in 2018. Black River had 21 analytes detected in both years and had a 51.2% similarity. The Maumee River had 35 analytes detected in both years. Fifty-two analytes were detected in 2016 and 41 were detected in 2018. The Maumee River 2016 and 2018 water datasets had a 60.3% similarity index (Figure 6).

Analysis of CEC concentrations from one year compared to the detection level of the same CEC in the non-detect year indicates that similarity may be under reported. Six of the 18 analytes detected at Genoa NFH in only one year had concentrations that were lower than the mean detection limit of the year with no detections of the analyte. Eight of the 18 were less than 3 times the mean detection limit. All 18 were less than 10 times the mean detection limit (Table 3, Appendix B, Table 13). Of the 20 single-year detects in the Black River, 3 were detected at concentrations lower than the mean detection limit of the undetected year, 15 were less than 3 times the mean detection limit, and 2 were less than 10 times the mean detection limit (Table 4, Appendix B, Table 12). Seven of the 23 analytes only detected in the Maumee River during a single year were detected in concentrations lower than the mean detection limit of the undetected year. Fourteen were detected at less than 3 times the mean detection limit of the undetected year, 2 were at less than 10 times, and none were detected at greater than 10 times the mean limit (Table 5, Appendix B, Table 14).

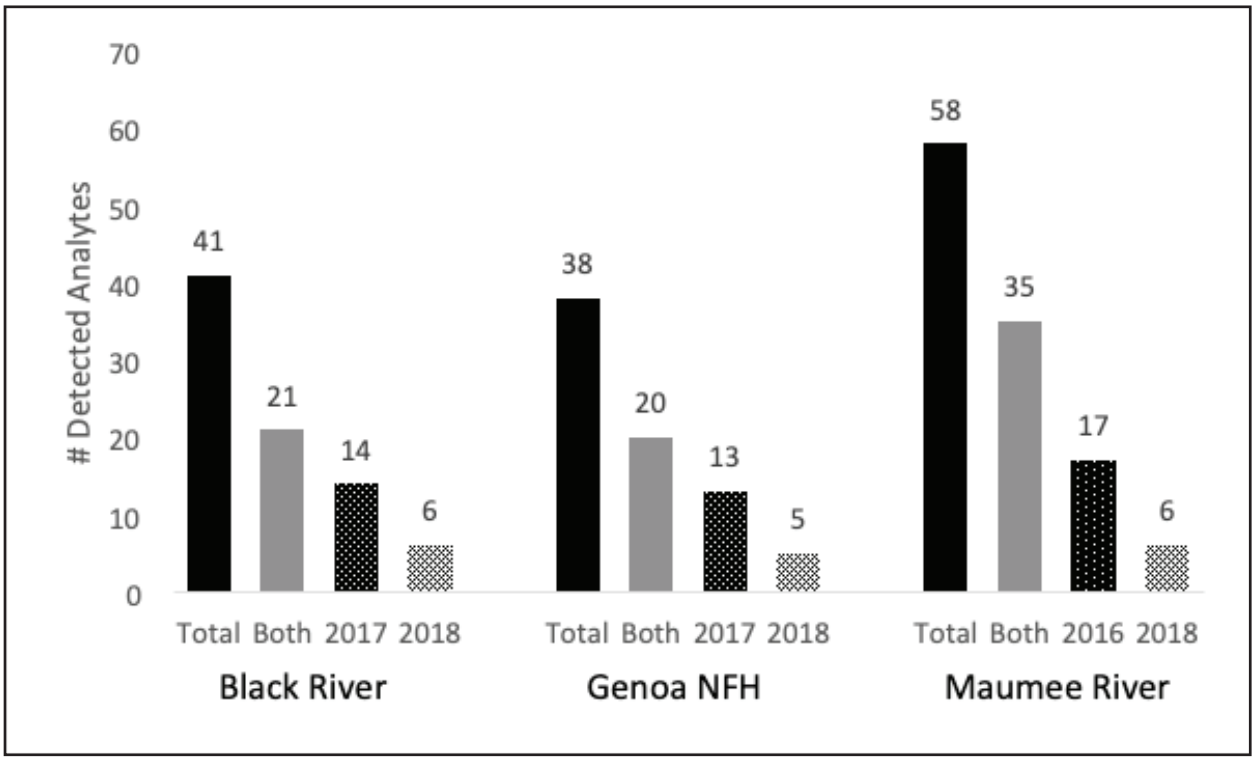


**Figure 6.** Analysis of similarity between locations sampled in multiple years. "Total" indicates the number of detected analytes. "Both" indicates the number of analytes detected in both years. The columns listing year indicate the number of analytes that were detected only in that year.

**Table 3.** Comparison of annual presence of analytes detected in water at Genoa NFH. Analytes detected only in a single year are presented as a multiple of the detection limit of the undetected year. In some cases the detection limit of one year was higher than the detected concentration of the other year.

| Detected both Years | < 1x the DL | < 3x the DL | < 10x the DL | > 10x the DL |
|---|---|---|---|---|
| Amphetamine | gamma BHC | BDE# 155 | Atrazine | none |
| BDE# 100 | Norfloxacin | BDE# 51 | BDE# 116 | |
| BDE# 153 | o,p' DDE | BDE# 66 | BDE# 49 | |
| BDE# 154 | p,p' DDE | BDE# 71 | Chlorpyriphos Methyl | |
| BDE# 183 | BDE# 181 | BDE# 79 | | |
| BDE# 190 | oxychlordane | Oxycodone | | |
| BDE# 203 | | Erythromycin-H2O | | |
| BDE# 206 | | Penicillin G | | |
| BDE# 207 | | | | |
| BDE# 208 | | | | |
| BDE# 209 | | | | |
| BDE# 28/33 | | | | |
| BDE# 47 | | | | |
| BDE# 85 | | | | |
| BDE# 99 | | | | |
| DEET | | | | |
| Desethylatrazine | | | | |
| HCB | | | | |
| Sulfamethoxazole | | | | |

**Table 4.** Comparison of annual presence of analytes detected in water at Black River SRF. Analytes detected only in a single year are presented as a multiple of the detection limit of the undetected year. In some cases the detection limit of one year was higher than the detected concentration of the other year.

| Detected both Years | < 1x the DL | < 3x the DL | < 10x the DL | > 10x the DL |
|---|---|---|---|---|
| Atrazine | Aldrin | BDE# 116 | Chlorothalonil | none |
| BDE# 100 | endrin | BDE# 119/120 | Penicillin G | |
| BDE# 128 | Heptachlor Epoxide | BDE# 12/13 | | |
| BDE# 138/166 | | BDE# 15 | | |
| BDE# 153 | | BDE# 17/25 | | |
| BDE# 154 | | BDE# 51 | | |
| BDE# 183 | | BDE# 66 | | |
| BDE# 203 | | BDE# 79 | | |
| BDE# 206 | | BDE# 8/11 | | |
| BDE# 207 | | Cocaine | | |
| BDE# 208 | | Colchicine | | |
| BDE# 209 | | BDE# 140 | | |
| BDE# 28/33 | | BDE# 155 | | |
| BDE# 47 | | BDE# 181 | | |
| BDE# 49 | | Erythromycin H2O | | |
| BDE# 85 | | | | |
| BDE# 99 | | | | |
| DEET | | | | |
| Desethylatrazine | | | | |
| HCB | | | | |
| Metformin | | | | |

**Table 5.** Comparison of annual presence of analytes detected in water at Maumee River SRF. Analytes detected only in a single year are presented as a multiple of the detection limit of the undetected year. In some cases the detection limit of one year was higher than the detected concentration of the other year.

| Detected both Years | < 1x the DL | < 3x the DL | < 10x the DL | > 10x the DL |
|---|---|---|---|---|
| Alprazolam | alpha BHC | Albuterol | Sulfanilamide | none |
| Ametryn | Endosulphan Sulphate | Amitriptyline | p,p'-DDE | |
| Amphetamine | gamma BHC | Chlorothalonil | | |
| Atenolol | gamma chlordane | Cimetidine | | |
| Atrazine | Heptachlor | Clarithromycin | | |
| Benzoylecgonine | Oxolinic Acid | Diphenhydramine | | |
| Caffeine | trans-nonachlor | Prednisone | | |
| Carbamazepine | | Ranitidine | | |
| Chlorpyriphos | | Sertraline | | |
| Citalopram | | Aldrin | | |
| Cotinine | | Dacthal | | |
| DEET | | Desmethyldiltiazem | | |
| Desethylatrazine | | Hexazinone | | |
| dieldrin | | Metoprolol | | |
| Diltiazem | | | | |
| Erythromycin-H2O | | | | |
| Fluoxetine | | | | |
| Gemfibrozil | | | | |
| HCB | | | | |
| Heptachlor Epoxide | | | | |
| Iopamidol | | | | |
| Lincomycin | | | | |
| Meprobamate | | | | |
| Metformin | | | | |
| Naproxen | | | | |
| Oxycodone | | | | |
| Sulfadimethoxine | | | | |
| Sulfamethazine | | | | |
| Sulfamethoxazole | | | | |
| Thiabendazole | | | | |
| Triamterene | | | | |
| Trimethoprim | | | | |
| Valsartan | | | | |
| Venlafaxine | | | | |
| 10-hydroxy-amitriptyline | | | | |

### Screening Value Analysis

The literature search returned toxicity values for 6 CECs which were exceeded water samples. Of the 6 analytes with exceedances, 4 were pharmaceuticals, 1 was a personal care product, and 1 was an agricultural herbicide (Table 18 Published aquatic screening values for fish that were exceeded in collected water samples.). The MAU (n=5) and MIL (n=3) locations had the greatest number of CECs with exceeded thresholds.

### Log $K_{ow}$ Analysis

Fifty-one of the 94 detected analytes had log $K_{ow}$ values above the bioaccumulation threshold of 3.5. Thirty-four of these were PBDE congeners.

**Table 6.** Detected analytes with Log $K_{ow}$ values greater than 3.5. Only PBDEs that were detected in 100% of samples are displayed though all PBDEs have Log $K_{ow}$ values greater than 3.5.

| Chemical | Maximum detected concentration (ppm) | Log $K_{ow}$ | Water Solubility (mol/L) |
|---|---|---|---|
| **Aldrin** | 0.000000085 | 6.5 | 0.000000047 |
| **alpha BHC** | 0.000000029 | 3.72 | 0.00000942 |
| **BDE# 100** | 0.000000041 | 7.24 | 0.000000028 |
| **BDE# 47** | 0.000000224 | 6.81 | 0.000000094 |
| **BDE# 99** | 0.000000404 | 7.32 | 0.0000000273 |
| **Chlorpyriphos** | 0.000000446 | 4.96 | 0.00000319 |
| **Chlorpyriphos-Methyl** | 0.000000456 | 4.31 | 0.0000148 |
| **cis-nonachlor** | 0.000000017 | 6.11 | 0.000000095 |
| **Dacthal** | 0.000000218 | 4.28 | 0.00000151 |
| **dieldrin** | 0.00000108 | 5.4 | 0.00000058 |
| **endrin** | 0.000000031 | 5.4 | 0.00000058 |
| **Fluoxetine** | 0.000026 | 4.05 | 0.000305 |
| **gamma BHC** | 0.000000027 | 3.72 | |
| **Gemfibrozil** | 0.00000397 | 4.28 | 0.000123 |
| **HCB** | 0.000000153 | 5.73 | 0.0000000218 |
| **Heptachlor Epoxide** | 0.000000173 | 4.98 | 0.000000514 |
| **o,p'-DDE** | 0.00000003 | 5.97 | 0.00000044 |
| **oxychlordane** | 0.000000024 | 5.09 | 0.000000397 |
| **p,p'-DDE** | 0.000000249 | 6.51 | 0.000000126 |
| **Sertraline** | 0.000000869 | 4.85 | 0.0000161 |

### Potential Effect Analysis

Detected analyte concentrations were generally below published toxicity thresholds. However, there were several exceedances. The MAU location exceeded atrazine concentrations that have been found to increase the quantity of nuclear abnormalities and micronuclei in zebrafish erythrocytes (Appendix B, Table 18). The MAU also exceeded a sulfamethoxazole probable no effect concentration (PNEC) for embryo mortality. DEET was not only one of the most frequently detected analytes, it also had the highest number of effect concentration (EC) and SV exceedances. The $SV_{LOW}$ for the population-relevant and comprehensive categories of growth, mortality, and reproduction as well as for the comprehensive category of endocrine disruption were exceeded at the following locations: BLA-17, CED, GEN, WHI, BLA-18, GEN, KEW, MAU, and MIL. The $SV_{LOW}$ for carbamazepine was exceeded at MAU for the population-relevant and comprehensive categories of development and reproduction and the comprehensive categories of behavioral, circulatory/blood constituents, histopathology, neurology, and physiology/metabolism. The citalopram $SV_{LOW}$ was exceeded at MIL for the population-relevant category of behavior. The $SV_{LOW}$ for Venlafaxine was exceeded at MAU and MIL for the population-relevant and comprehensive categories of growth, mortality, and reproduction. Both locations also exceeded the values for the comprehensive categories of endocrine disruption and histopathology.

Among receptors with known response to analytes detected in water, ABCB1 is the receptor with multiple potential agonists at the most locations (Table 7). It had at least 3 potential agonists present at 6 of the 9 locations. GLI3 and CYP3A4 are the next most widely potentially impacted at 4 locations each. For the greatest potential receptor activity at a single location, AR had 12 agonists present in the Maumee River (Table 8). GLI3 and Thrb are the next most potentially affected at 10 agonists. AR was also the receptor with the most potential agonists detected in end of season carcasses among all locations (n = 29, Table 9). Cyp1a2, Cyp3a4, Thrb, Cyp2d6, and Esr1 all had 20 or more potential agonists detected (22, 22, 21, 20, and 20 respectively).

Tables with full receptor response results are located in Appendix D. Full receptor names are listed in Appendix D, Table 34.

**Table 7.** Receptors with 3 or more agonists most frequently detected among all locations.

| Receptor | Receptor Categories | Rank | n |
|---|---|---|---|
| **AR** | reproductive / developmental | 1 | 12 |
| **GLI3** | developmental | 2 | 10 |
| **Thrb** | endocrine / hormone | 2 | 10 |
| **CYP1A2** | physiological / metabolic | 4 | 9 |
| **CYP2D6** | physiological / metabolic | 4 | 9 |
| **CYP3A4** | physiological / metabolic | 4 | 9 |
| **ESR1** | reproductive | 4 | 9 |
| **ABCB1** | immunological / neurological | 8 | 8 |
| **Rorc** | immunological / circulatory / blood constituents / physiological / metabolic / developmental | 8 | 8 |
| **CYP2C19** | physiological / metabolic | 10 | 7 |
| **CYP2C9** | physiological / metabolic | 10 | 7 |
| **ESRRA** | reproductive | 10 | 7 |
| **NR1I3** | physiological / metabolic | 10 | 7 |

**Table 8.** Receptors with the greatest number of agonists detected at a single location.

| Receptor | Receptor Categories | Rank | n |
|---|---|---|---|
| **AR** | reproductive / developmental | 1 | 12 |
| **GLI3** | developmental | 2 | 10 |
| **Thrb** | endocrine / hormone | 2 | 10 |
| **CYP1A2** | physiological / metabolic | 4 | 9 |
| **CYP2D6** | physiological / metabolic | 4 | 9 |
| **CYP3A4** | physiological / metabolic | 4 | 9 |
| **ESR1** | reproductive | 4 | 9 |
| **ABCB1** | immunological / neurological | 8 | 8 |
| **Rorc** | immunological / circulatory / blood constituents / physiological / metabolic / developmental | 8 | 8 |
| **CYP2C19** | physiological / metabolic | 10 | 7 |
| **CYP2C9** | physiological / metabolic | 10 | 7 |
| **ESRRA** | reproductive | 10 | 7 |
| **NR1I3** | physiological / metabolic | 10 | 7 |

**Table 9.** Receptors with the greatest number of agonistic analytes detected in end of season carcasses at all locations.

| Receptor | Effect Categories | Rank | # Detected Agonists |
|---|---|---|---|
| Ar | developmental / reproduction | 1 | 29 |
| Cyp1a2 | physiological / metabolic | 2 | 22 |
| Cyp3a4 | physiological / metabolic | 2 | 22 |
| Thrb | endocrine / hormone | 4 | 21 |
| Cyp2d6 | physiological / metabolic | 5 | 20 |
| Esr1 | reproductive | 5 | 20 |

## Tissue

### Exogenous feeding transition tissue

The comparison of eggs to exogenous-feeding transitioning fish revealed significant differences ($p < 0.05$) between the two tissue types in 137 of the 225 pairwise comparisons (Appendix I, Table 56) that could be assessed. The largest decrease from egg to carcass at exogenous feeding was detected in PBDE 35 in the St. Clair – Black River brood ($p < 0.01$) with a relative decrease of 94.6%. The largest increase detected was in PBDE 206 in the Peshtigo – Cedar River brood ($p < 0.01$) with a relative increase of 13305.2%. The amount of time that eggs were exposed to rearing waters varied depending on the water temperature each rearing facility. Mean time of exposure to rearing water was 18 days prior to being sacrificed with a range of 10-25 days.

### End of rearing season tissue

*Detection Frequency* – Tissue samples were analyzed for 242 analytes with 118 analytes detected in at least one sample. Of the detected analytes, 43 occurred at <25% of the locations (Appendix I). Twenty-one were analytes were detected in 25% to 50% of the samples. The detection category of ≥50% but <100% detection consisted of 22 analytes. Thirty-two analytes were detected in 100% of samples. This included 27 PBDEs, DEET, HCB, o,p'-DDD, p,p'-DDD, and p,p'-DDE.

*Brood Concentration Ranking* – The relative ranking of concentrations between broods showed that overall analyte concentrations were similarly distributed across the majority of broods (Figure 8). Nearly all broods were within a 15% difference of the overall mean score. The broods with the greatest score difference from the mean were the KEW and BLA_PES broods. KEW had the lowest score and was 28% lower than the overall mean score. BLA_PES had the highest score and was 51% above the overall mean score (Table 10).

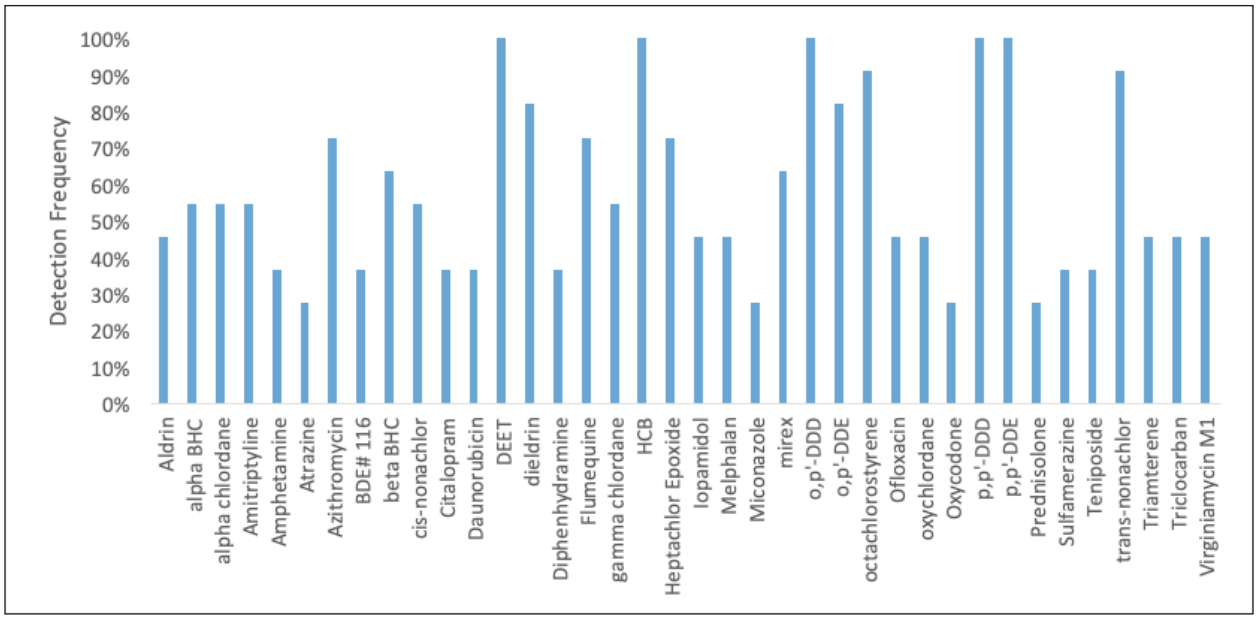


**Figure 7.** Detetction frequency of chemicals detected in at least 25% of water samples. PBDEs are not displayed.

**Table 10.** Relative ranking of brood mean concentrations. Column values indicate the number of times detected concentrations in the brood were assigned that rank. The highest relative concentration rank is indicated by "1." The "analyte not detected" category indicates that an analyte was detected in at least one brood but not in the particular brood.

| Rank | BLA_PES | CED | GEN_PES | WHI | BLA_STC | BLA_WOL | GEN_STC | GEN_WOL | KEW | MAU | MIL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 37 | 4 | 6 | 5 | 10 | 10 | 5 | 3 | 8 | 14 | 18 |
| 2 | 10 | 6 | 12 | 9 | 8 | 12 | 6 | 6 | 11 | 9 | 2 |
| 3 | 3 | 7 | 17 | 10 | 4 | 9 | 6 | 8 | 3 | 6 | 6 |
| 4 | 7 | 10 | 5 | 11 | 8 | 5 | 6 | 7 | 0 | 6 | 6 |
| 5 | 5 | 9 | 10 | 6 | 6 | 4 | 5 | 10 | 2 | 4 | 4 |
| 6 | 6 | 1 | 3 | 5 | 8 | 8 | 9 | 6 | 1 | 3 | 6 |
| 7 | 3 | 2 | 2 | 4 | 5 | 3 | 12 | 6 | 0 | 10 | 2 |
| 8 | 2 | 5 | 0 | 7 | 3 | 3 | 6 | 5 | 6 | 5 | 4 |
| 9 | 0 | 6 | 2 | 3 | 4 | 5 | 4 | 4 | 5 | 6 | 3 |
| 10 | 0 | 7 | 0 | 1 | 0 | 2 | 1 | 2 | 14 | 0 | 13 |
| 11 | 0 | 5 | 2 | 1 | 4 | 1 | 0 | 2 | 13 | 1 | 5 |
| Analyte Not Detected | 171 | 182 | 185 | 182 | 184 | 182 | 184 | 185 | 181 | 180 | 175 |

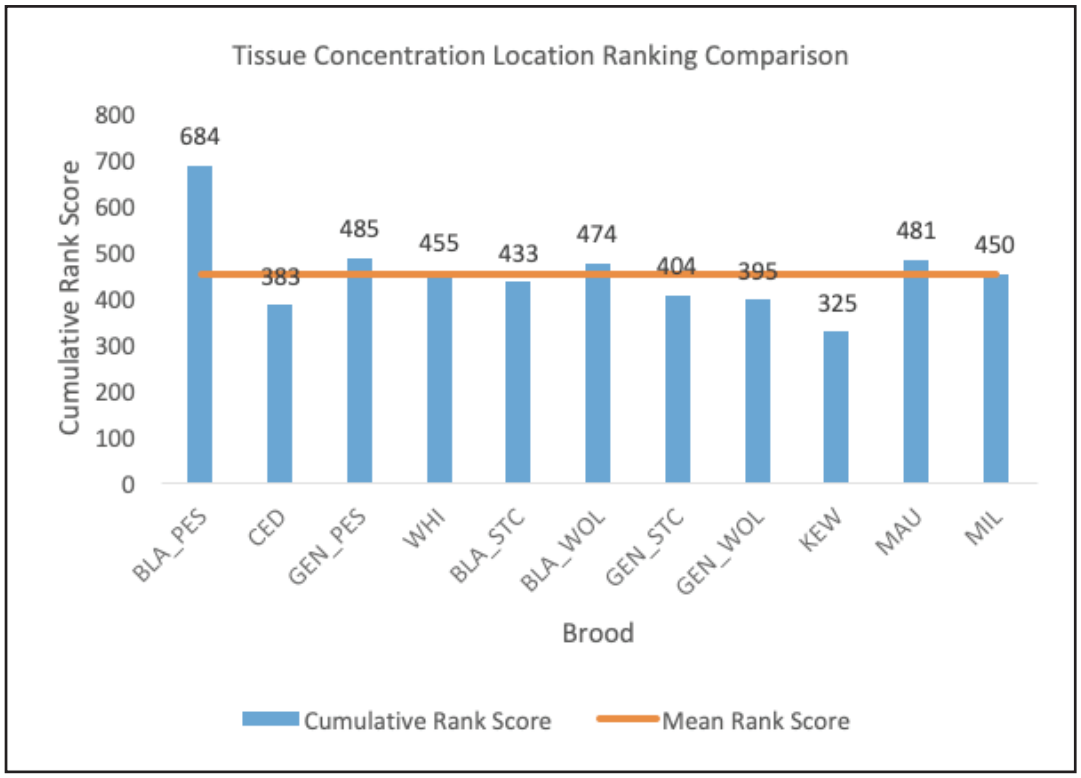


**Figure 8.** Relative ranking of magnitude of analyte concentrations detected in carcasses at the end of the rearing season.

### Food Concentrations

Analysis of food samples revealed that CECs were present in both brine shrimp (Appendix I, Table 21) and bloodworms (Appendix I, Table 22). Seventy-seven different CECs were detected in at least one sample of either food type. Forty-five CECs were detected in at least one brine shrimp sample and 73 were detected in at least one bloodworm sample. Of the 45 CECs detected in brine shrimp, 26 were detected in at least 50% of samples with 15 of those being detected in 100% of samples. Of the 73 CECs detected in bloodworms, 45 were detected in at least 50% of samples with 25 of those being detected in 100% of samples. PBDEs constituted 39 of the 77 CECs detected across both food types.

## Growth

Growth curves were calculated for all facilities except for the Maumee River SRF. Due to a temperature logger malfunction daily temperature and thermal opportunity for growth data were unavailable after July 27. Six of the ten broods belong to the moderate growth group which had a median growth rate of approximately 0.08 mm of length per TU (range: 0.079 – 0.086). This group included Peshtigo River strains at Black River, Cedar River, and Whitefish River; Wolf River strains at Black River and Kewaunee River; and the St. Clair River strain at Genoa NFH. The reduced growth group only included the St. Clair

River strain reared at the Black River SRF. It had a median growth rate of 0.047 mm per TU. The accelerated growth group contained the Peshtigo River and Wolf River strains at Genoa NFH with median growth rates of 0.111 and 0.115, respectively. The Wolf River strain reared at the Milwaukee River SRF had a median growth rate of 0.068. It was not statistically different from either the reduced growth groups or the Black River Peshtigo and Genoa St. Clair broods of the moderate growth group, placing it between the moderate and reduced growth groups.

Results from a Welch's ANOVA ($F_{2,87} = 13.7$, $p < 0.001$) indicate that fish originating from the St. Clair River had a significantly lower growth rate (0.07 ±0.02 mm/TU) than fish from the Wolf River (0.09 ±0.02 mm/TU) and the Peshtigo River (0.09 ±0.01 mm/TU). A comparison of median growth of fish reared at the Black River facility in 2018 shows that St. Clair River fish had a median growth rate of 0.031 mm/TU lower than the Wolf River fish reared during the same season (Figure 9). Similarly, a comparison of means shows that St. Clair River fish had a growth rate of 0.035 mm/TU lower than the corresponding Wolf River eggs reared at the Genoa NFH (Figure 9).

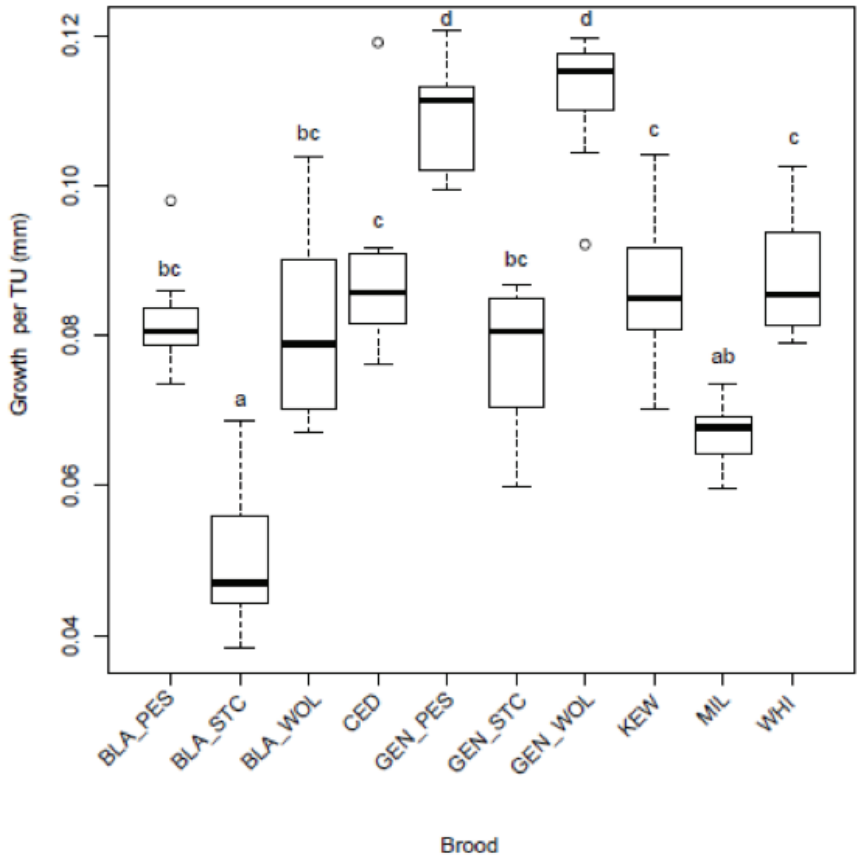


**Figure 9.** Growth of all broods. Differences in letter groupings indicate significant differences ($p < 0.05$) in growth rate between locations. Note that the difference in median growth rate between GEN_STC_18 and BLA_STC_18 is similar to the differences in median growth rate between the other GEN broods and their respective strains reared at other facilities.

## Health

The mean body condition factor was similar for fish across all broods (Figure 11) with a mean study value of 0.41 ± 0.1 (Appendix E, Table 36). The Cedar River brood had the lowest mean BCF of 0.31 ± 0.05 but it only significantly differed from Black River in 2017 (0.42 ± 0.08), Milwaukee River (0.46 ± 0.04), and Whitefish River (0.66 ± 0.23). The Whitefish River brood had the highest mean BCF of 0.66 ± 0.23. Mean BCF of the Whitefish River brood was significantly higher than all other broods and had the greatest range (0.23 to 0.94).

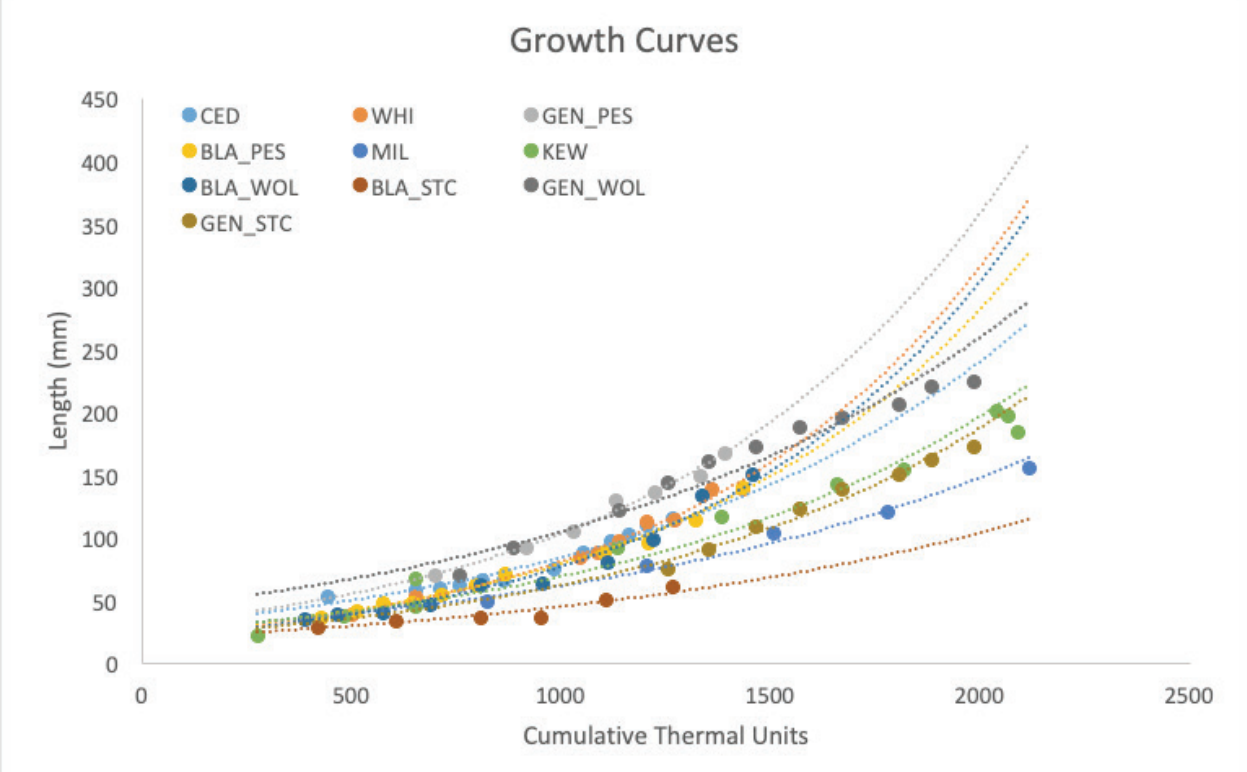


**Figure 10.** Growth curves for all study locations except the Maumee River SRF.

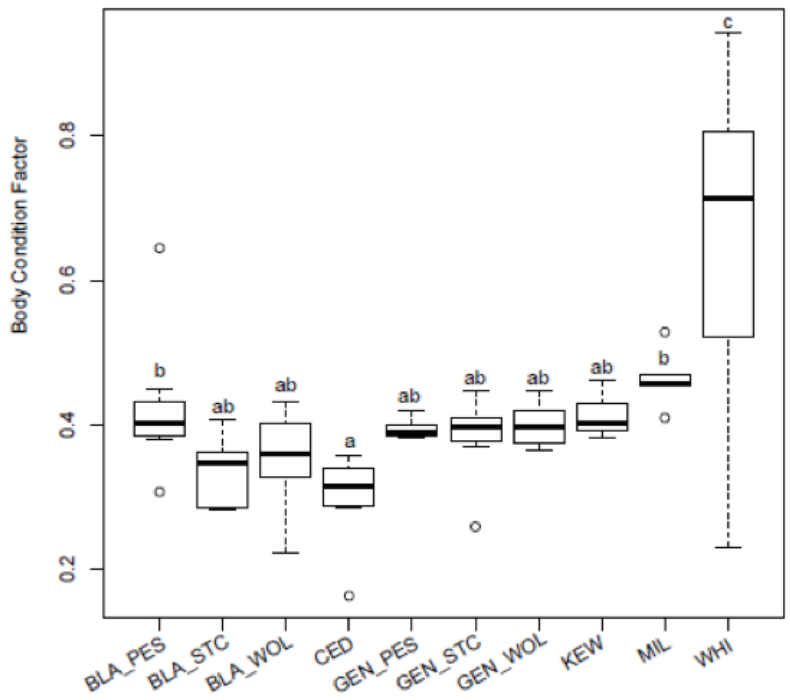


**Figure 11.** Body Condition factors at all reportable locations. Differences in letter groupings indicate significant differences ($p < 0.05$) in BCF.

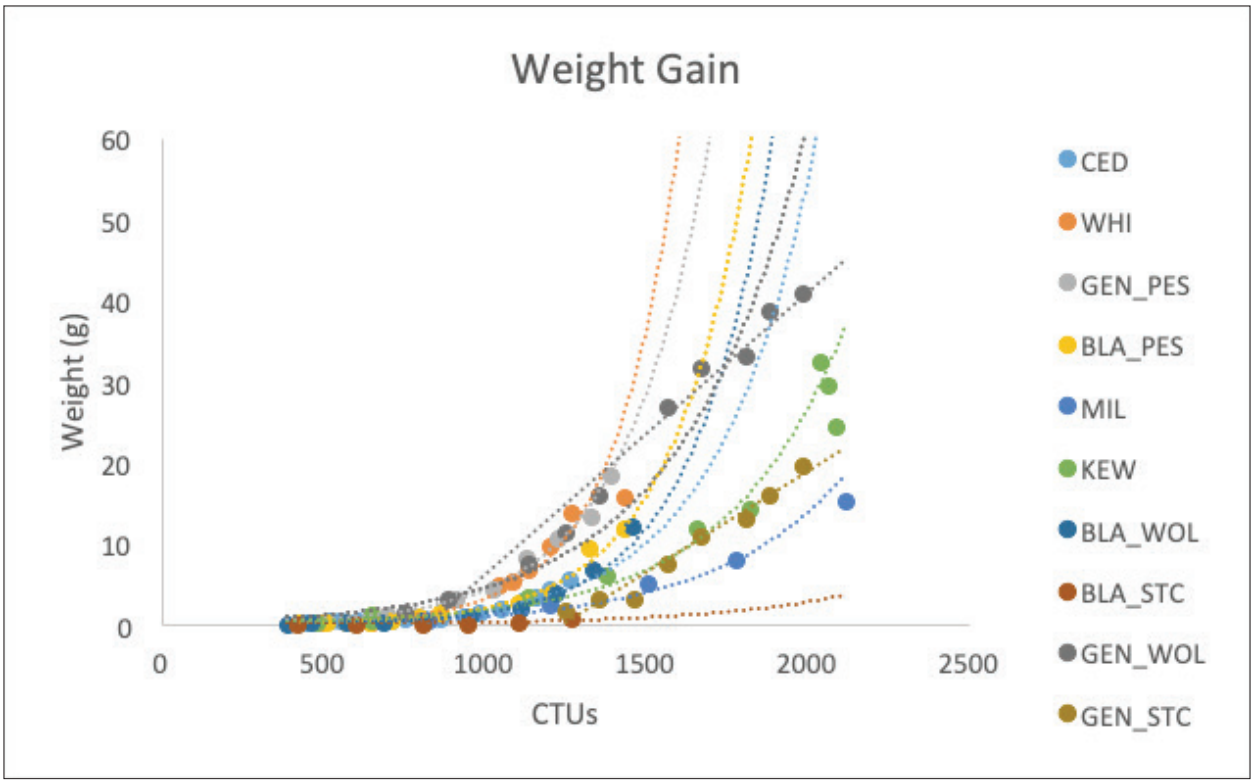


**Figure 12.** Comparison of weight gain for all broods with best-fit models. Note that best fit models for GEN_WOL and GEN_STC are linear whereas all other broods had exponential best-fit models.

## Thyroid Hormones

$T_3$ concentrations between the three egg source locations did not differ significantly ($F_{2,17} = 3.113$, $p = 0.07$). Eggs from the Peshtigo River and the St. Clair River had similar mean $T_3$ concentrations (±SD) of 18.3 (13.3) ng/g and 18.2 (±6.4) ng/g, respectively. Eggs from the Wolf River had a lower mean concentration of 9.0 (±3.1, Figure 13). A statistically significant difference was observed in concentrations of $T_4$. ($F_{2,17} = 8.48$, $p < 0.01$). Eggs from the St. Clair River had a T4 mean concentrations of 6.9 (±2.4) ng/g and Wolf River eggs had a mean concentration of 7.5 (±3.2) ng/g while Peshtigo River eggs had a mean of 1.9 (±1.1, Figure 14).

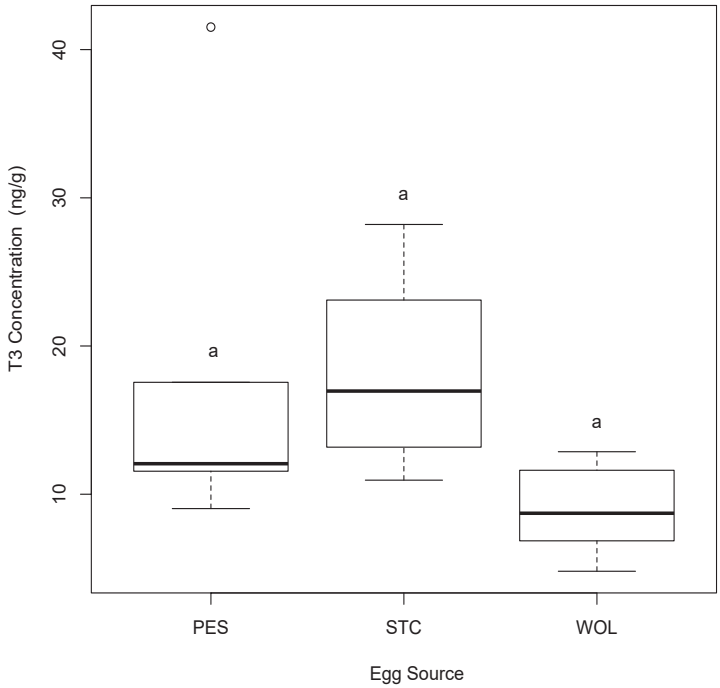


**Figure 13.** $T_3$ concentrations in eggs from all sources used in the assessment. There was no significant difference in $T_3$ concentrations by egg source.

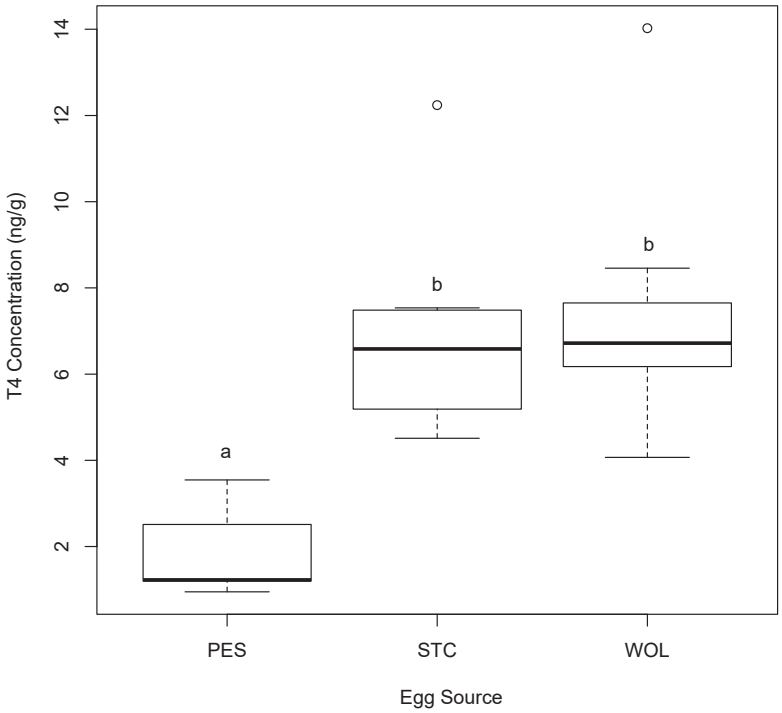


**Figure 14.** $T_4$ concentrations in eggs from all sources used in the assessment. Letters on the plot display groupings from ANOVA post-hoc tests

Thyroid hormone concentrations from carcasses at the time of transition to exogenous feeding were only available for the four broods reared in 2017. Result for thyroid hormone concentrations in carcasses were much higher than values reported in lake sturgeon and other fishes in the literature. While the reported concentrations will not be suitable for comparison to eggs outside of this assessment, they were used to analyze the eggs relative to each other under the assumption that the source of the magnification would have had an effect of equal magnitude on all samples processed in the same batch. Concentrations showed similar trends for T3 and T4 (Figure 15, Figure 16). BLA_PES sturgeon had the highest $T_3$ and $T_4$ concentrations ($T_3$: 8329.4 ±3487.9 ng/g; $T_4$:9203.5 ±7000.0 ng/g). ANOVA results showed that there were statistical differences between the broods in both $T_3$ ($F_{3,36} = 25.41$, $p < 0.001$) and $T_4$ ( $F_{3,36} = 6.67$, $p < 0.01$). A post-hoc Tukey analysis showed that T3 was statistically higher in BLA_PES sturgeon than in sturgeon from all other broods while $T_4$ was statistically higher than CED and WHI but not statistically higher than GEN_PES. In both hormones, the GEN_PES sturgeon had a higher mean concentration ($T_3$: 8329.4 ±3487.9 ng/g; $T_4$: 4665.7 ±3355.6 ng/g) than CED (T3: 2312.6 ±667.0 ng/g; $T_4$: 2455.9 ±1018.7 ng/g) and WHI ($T_3$: 1741.9 ±670.5 ng/g; $T_4$: 2208.7 ±1308.1 ng/g) sturgeon but the difference was not statistically significant. Differences in thyroid hormone concentrations did not align with the results of the growth analysis previously described in which there was no significant difference between mean growth rates of the BLA_PES, CED, and WHI broods while the GEN_PES brood had a statistically higher mean growth rate.

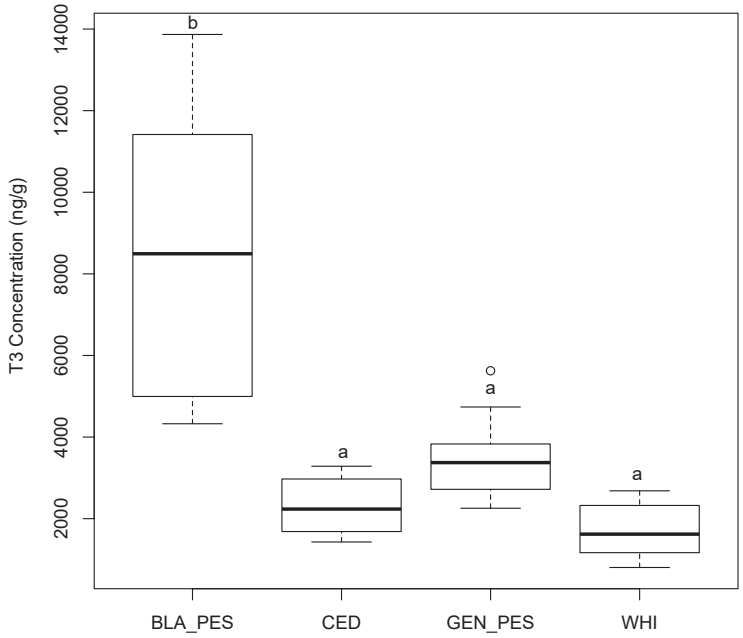


**Figure 15.** $T_3$ concentrations in tissues of sturgeon sampled during the period of transition to exogenous feeding. Letter groupings indicate statistically different groups determined by a Welch's ANOVA with Tukey HSD analysis.

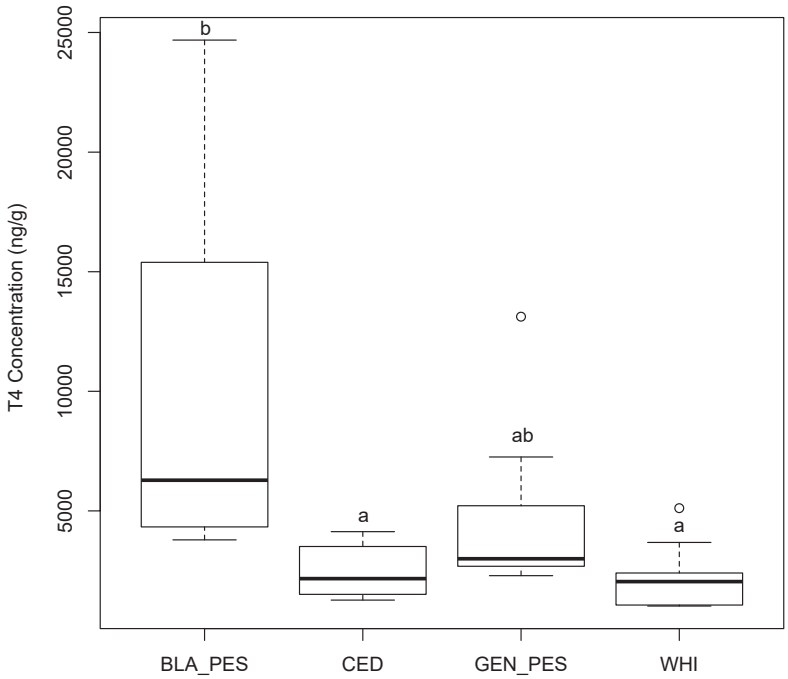


**Figure 16.** $T_4$ concentrations in tissues of sturgeon sampled during the period of transition to exogenous feeding. Letter groupings indicate statistically different groups determined by a Welch's ANOVA with Tukey HSD analysis.

Similar to the results of the thyroid hormone analysis of tissues at the period of transition to exogenous feeding, analysis of thyroid hormones in serum at the end of the rearing season showed that the BLA_PES brood had statistically different mean concentrations from all other locations for both $T_3$ ($F_{5,57} = 9.647$, $p < 0.001$) and $T_4$ ($F_{5,57} = 8.181$, $p < 0.001$). Mean $T_4$ concentrations were statistically lower (Figure 18) in BLA_WOL (3.1 ±0.3), GEN_PES (2.9 ±0.4), GEN_STC (3.0 ±0.4), GEN_WOL (3.1 ±0.5), and KEW (3.4 ±0.5) than in BLA_PES (5.2 ±2.2). However $T_3$ means, while statistically different, differed in the opposite direction (Figure 17) with BLA_PES having a lower mean $T_3$ concentration 22.7 ±2.5) than BLA_WOL (44.5 ±12.4), GEN_PES (42.5 ±10.5), GEN_STC (41.6 ±11.2), GEN_WOL (50.0 ±12.2), and KEW (50.9 ±11.2).

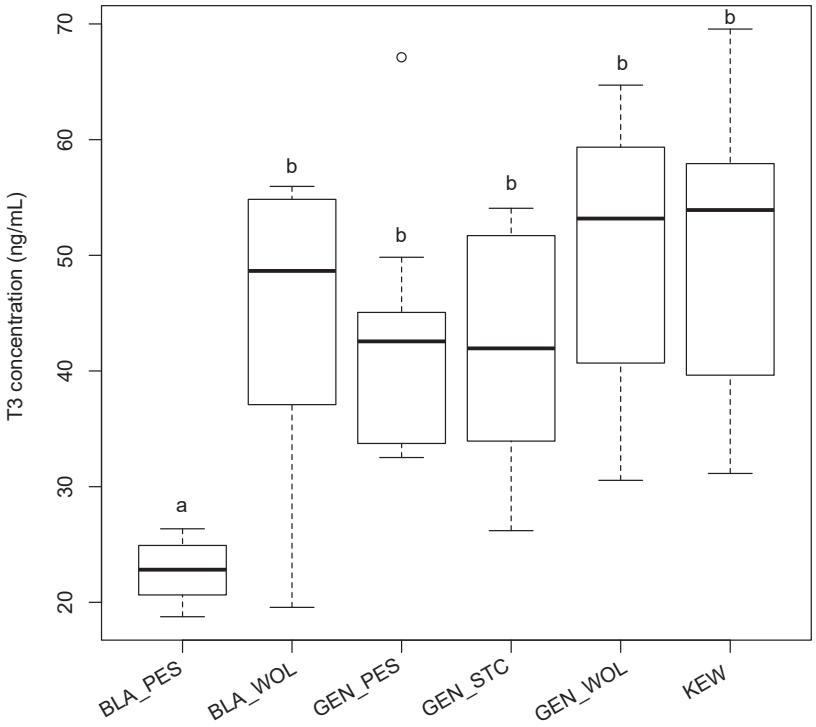


**Figure 17.** $T_3$ concentrations in serum at the end of the rearing season. Different letters indicate a statistical difference in mean $T_3$ concentrations for the broods.

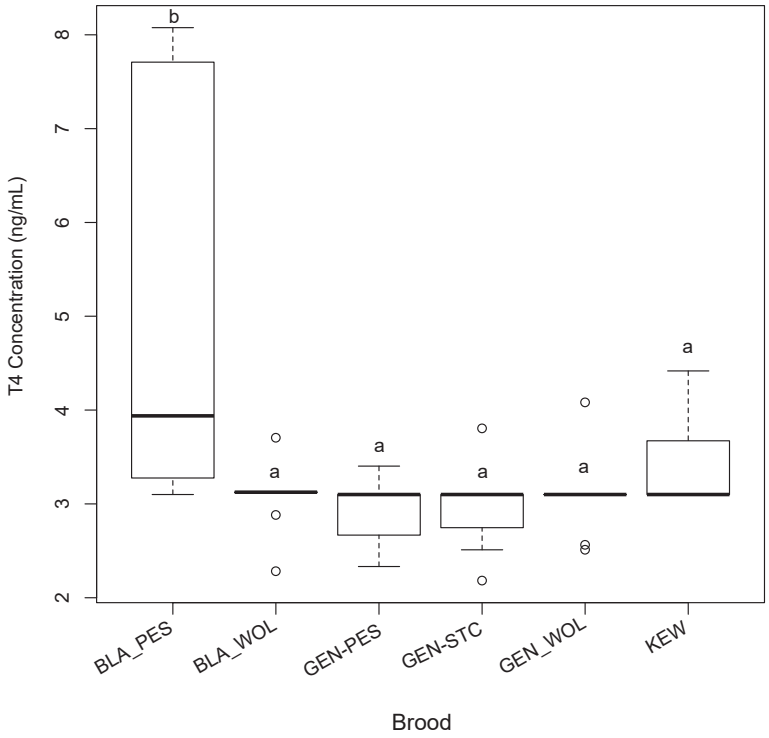


**Figure 18.** $T_4$ concentrations in serum at the end of the rearing season. Different letters indicate a statistical difference in mean T4 concentrations for the broods.

## Land Use

The Maumee River had the largest catchment of all the study locations with 689,823.7 acres. It was dominated by 521,743.4 acres (75.6%) of agricultural land. It also had the highest total developed area with 97,030.2 acres (14.1%) of developed land. Additionally, it had the largest area of open water with 9,939.1 acres (1.4%) and the smallest wetland area with 8,766.2 (1.3%) acres. The Kewaunee River had the smallest catchment with 90,731.3 acres. It was dominated by agriculture with 69,067.1 acres (76.1%). It had the least open water area (273.1 acres; 0.3%) and the least developed areas (5,811.0 acres; 6.4%). Whitefish River, Cedar River, Milwaukee River, and Black River all had catchments that were similar in size at 200,805.8, 241,607.6, 175,869.3, and 229,666.6 acres, respectively. Black River was the most forested (121,142.8 acres; 52.7%) and had the most woody and herbaceous cover (21,634.9 acres; 9.4%). It also had the least agriculture (6876.9 acres; 3.0%). Land cover for Genoa NFH was not analyzed due to its water supply being drawn from a well and the complexity of the surface water to groundwater interaction.

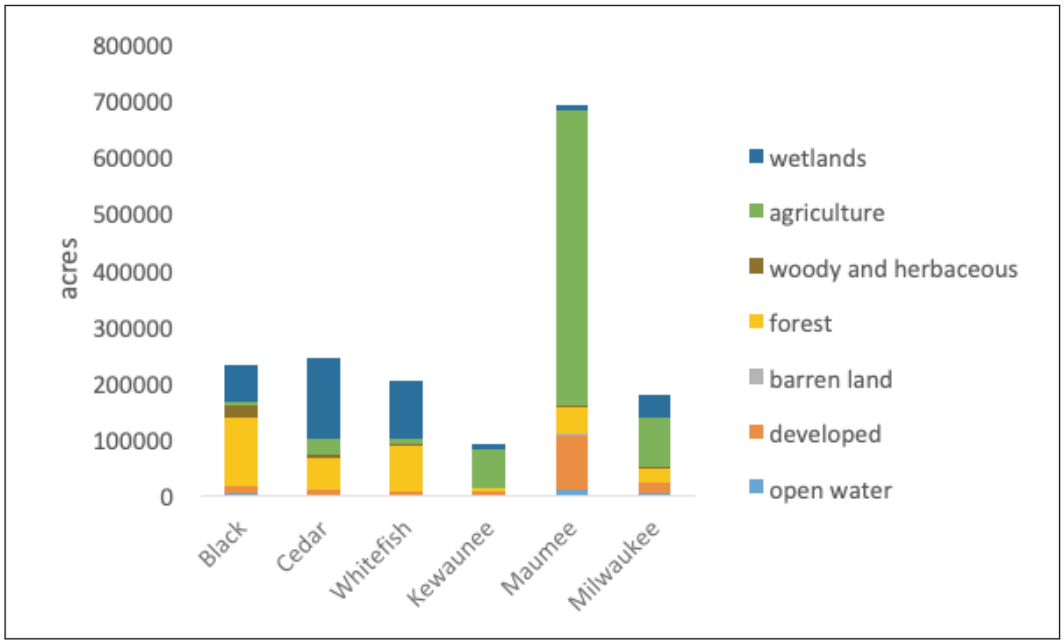


**Figure 19.** Land cover in acres of each land cover type present at each assessment location.

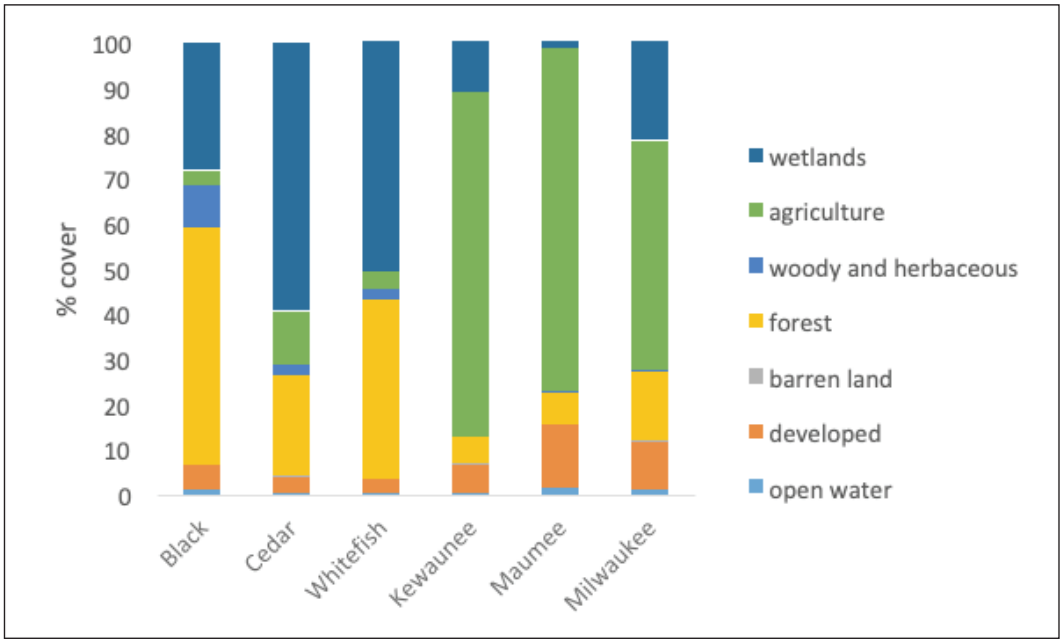


**Figure 20.** Percentage of total cover of each land cover type within the catchment of each assessment location.

# Discussion

The relative ranking of CECs in water samples is designed to be a comparison of overall exposure to all analyzed CECs. The highest relative ranking score for water was achieved by the Maumee River facility with a score that was 1.7 times larger than the second highest score, which belonged to the Milwaukee River facility. The Milwaukee River score was itself 1.7 times greater than the third highest scored location. These two locations are particularly notable because they are the only two of the nine ranked locations which have scores above the group mean. The high scores of the Maumee River and Milwaukee River locations are not unexpected as the analyte list was developed for CECs that generally coincide with either developed or agricultural areas. The Maumee and Milwaukee Rivers have the largest developed and agricultural areas of all the locations. The Maumee River location has 2.9 times the surface area contributing to analyte loading and includes the largest metropolitan areas of any of the locations (Appendix F, Table 38, Figure 46, and Figure 47). The Milwaukee River location ranked high among pharmaceuticals and is the study location that is second most influenced by an upstream developed area (Appendix F, Table 37). Of the seven land cover categories that were analyzed in this assessment, both as percent coverage and total area, percent coverage of developed land most closely approximated the relative ranking of water concentrations. Although analysis of additional sample groups would be necessary for confirmation, the trends noted in this assessment indicate that percent coverage of developed land may serve as the best cursory, coverage based, indicator of potential CEC exposure.

However, highest overall chemical concentrations do not necessarily indicate potential hazard. Analysis of hazard should take individual chemicals or classes of chemicals into consideration as they may have a greater impact as a sub-group than the composite of all detected CECs. The concentrations of PBDEs detected at the Whitefish River facility are an example of this from the present assessment. The Whitefish River facility had the third overall highest ranking of the nine facilities. Whitefish River water samples contained the highest concentrations of 10 of the 34 PBDEs detected during the assessment. When PBDEs were excluded from the ranking, the Whitefish River facility rank dropped to eighth. While the relative ranking is still a useful measure of overall CEC exposure, at the Whitefish River SRF, hazard is weighted towards PBDEs and less likely to be affected by CECs of all other classes. Additionally, specific effect categories may be more appropriate than overall effect categories. For achieving the immediate goals of SRF rearing, effects related to endocrine function are a greater consideration than other effect categories such as carcinogenicity, reproductive impairment, or altered behaviors. Although the latter examples are important considerations for the overall success of the species, they are more important to life stages that occur after release from a streamside rearing facility.

Analysis of CECs which exceeded published aquatic screening values further suggests that developed areas may be of greater concern to streamside rearing than agricultural areas. Of the 6 CECs with exceedances, 5 of them (4 pharmaceuticals and 1 personal care product) are associated with developed areas. The Maumee River and Milwaukee River samples had the greatest number of exceeded values and have the largest contributing developed land coverage of all the sampled locations.

The Genoa NFH was not included in the land use analysis because it draws water from a well. The hydrogeological characteristics of the area are not known so it could not be determined how land use might affect the water chemistry. Since CECs are primarily transported by run-off and direct discharge to waterbodies, it was suspected that the well water at the Genoa NFH would be less impacted by CECs and would serve as a reference site. However, the Genoa NFH water sample ranking results were similar to the majority of locations (Table 2, Figure 5). Between both sample years, the Genoa NFH had the highest average concentrations of amphetamine, 5 PBDEs, chlorpyriphos-methyl, HCB, Norfloxacin, o,p'-DDE, and oxychlordane. Of these analytes, amphetamine is the only one that ranked high in both years with the top two highest average concentrations across all locations. Additional sample years are needed for verification but high rankings in both years indicate amphetamine may be a CEC of particular concern for the Genoa NFH.

The inter year analysis (Table 3, Table 4, Table 5) was implemented to assess the likelihood that analytical results of water samples were under reporting CEC presence at assessment locations. Although it is widely recognized that analytical method detection limitations don't capture chemicals that are present in very low concentrations, the analysis in this assessment was designed to examine

if it is a factor at these locations. The proximity of detected concentrations to detection limits was used as the indicator potential type II errors. Of the 3 locations analyzed in multiple years, as high as 95% (n=19) of the analytes detected in only one year were detected in concentrations less than 3 times the detection limit. Different year exposures are likely more similar than the analytical results indicated. However, since detection limits were well beneath published ECs, non-detect CECs are not expected to have effects even if they are present. The expectation of no negative effects is based on current published studies which have a focus on acute and short-term exposures. Limited information about chronic exposure for the length of the SRF rearing season and about lake sturgeon specific exposure may not accurately represent the risk of CECs at detected concentrations.

Multiple CECs with a log $K_{OW}$ of greater than 3.5 were detected in water samples. These hydrophobic chemicals tend to not persist in the water column. Their presence in the water column in a single grab sample at a location may be due to a disturbance, such as a scouring event from high flows after precipitation. However, their presence in multiple samples taken weeks apart may indicate ongoing releases or remobilization. Multiple PBDEs, dieldrin, fluoxetine, gemfibrozil, HCB, p,p'-DDE, and sertraline were detected in at least two of three waters samples from some locations. Fluoxetine, gemfibrozil, and sertraline are current use pharmaceuticals and their continued release is generally expected.

As a reminder to the reader, receptor data for fish were limited so data were used from a wide range of vertebrates. As such, the following discussion is based on the best available information and should be used with caution. While ATP Binding Cassette Subfamily B Member 1 (ABCB1) had the most locations with multiple activity-inducing chemicals present, it is not expected to have a significant adverse impact on sturgeon rearing based on the known gene function. ABCB1 is associated with drug resistance which is a function not generally applicable to wildlife. Other multiple-location, multiple-chemical genes which are not expected to interfere with propagation are Cytochrome P450 family 1 subfamily A member 2 (CYP1A2) and nuclear receptor subfamily 1 group I member 3 (NR1I3). These genes also have functions in drug metabolism.

Cytochrome P450 family 3 subfamily A member 4 (CYP3A4), GLI family zinc finger 3 (GLI3), androgen receptor (AR), estrogen receptor 1 (ESR1), RAR related orphan receptor C (Rorc), and estrogen related receptor alpha (ESRRA) were the multiple-location, multiple-chemical genes that have a function that may impact the success of sturgeon propagation. CYP3A4 is involved in steroid hormone metabolism with known effects on both androgens and estrogens. CYP3A4 is also involved in the metabolism of approximately half of all drugs in modern use (PubChem 2020). With such a wide range of CECs that activate this gene, any location with anthropogenic wastewater inputs should expect increased activity from the CYP3A4 gene. AR, ESR1, and ESRRA are sex hormone receptors that have known activity from detected CECs. The interference with normal function of any of these 4 genes at embryonic developmental stages has the potential to affect sexual characteristics. Interference with the remaining two genes, GLI3 and Rorc, can result in abnormal physical development of reared sturgeon. The GLI3 gene has a role in the patterning of tissues during embryogenesis while Rorc regulates cellular differentiation. Rorc also has a role in immune function and regulation of circadian rhythms.

AR, GLI3, CYP1A2, and ESR1 are also among the genes with most agonists present within a single location. AR had the largest number of co-occurring agonists at a single location with 12 agonists present at the Maumee River facility (Table 8). It also had 8 agonists present in Milwaukee River water samples. Co-occurring thyroid hormone receptor beta (Thrb) agonists were not widely present among all assessment locations. However, it had multiple agonists at the two locations where they did co-occur. Thrb had the second highest number of all single-location agonists at the Maumee River facility. While thyroid impairment may not be widespread, it is potentially among the most impacted endpoints from CECs. Overall, there were 37 receptors that had 3 or more agonists detected from at least one location. The Maumee River had multiple agonists for 34 of the 37 receptors and the Milwaukee River had multiple agonists for 26 of the 37 receptors (Table 23). The Black River in 2017 had the third highest number of receptors with multiple agonists with a count of 8. The Maumee River and the Milwaukee River were the two assessment locations with large upstream developed areas, further implicating presence of developed areas as being of greatest concern when assessing impact of CECs on rearing.

Comparison of CEC concentrations in the eggs collected directly from the spawning female to the CEC concentrations in carcasses from fish culled at the transition to exogenous feeding indicates that the amount of time that the fish are exposed to rearing waters is long enough to alter body burdens. The rate of uptake is unknown for this period of development and it is thus unknown if any of the intermediate stages of development including blastulation, gastrulation, and neurulation had sufficient exposure to impact those stages. However, the changes in tissue concentrations demonstrated that CECs in the water do have the ability to impact reared fish as early as the exogenous feeding stage of development. Potentially impacted endpoints which occur at this stage include olfactory

imprinting, predator avoidance and feeding behaviors, and biological function.

The relative ranking of end of season tissue concentrations was evenly distributed across most of the broods with only the Peshtigo River strain reared at the Black River Sturgeon Research Facility having a notably higher score (Figure 8). This is in contrast to the water ranking which had greater variation in the scores. The similarity in scores in the tissue ranking indicate that overall water concentrations are not necessarily a reliable indicator of cumulative CEC uptake when assessing multiple CECs. This is possibly a result of lipophilic properties of some contaminants which makes them accumulate in tissues at different concentrations than the polar contaminants appear in water samples. The distribution of the overall CEC relative ranking was similar to the results of the thyroid hormone concentrations analysis. In both analyses, all broods were similar except for the Peshtigo River strain reared at the Black River Facility, which had statistically higher T4 concentrations and significantly lower T3 concentrations. The similarity between the relative ranking and thyroid hormone results may be coincidental as the relative ranking score for the brood was primarily due to high rankings for PBDEs which are known to have endocrine disrupting effects. CECs from the end of season tissue samples that may be of particular concern and may merit further study are 27 PBDEs, DEET, HCB, o,p'-DDD, p,p'-DDD, and p,p'-DDE, which were detected in 100% of end of season tissues for all locations.

The presence of CECs in the food may partially explain the even distribution of overall CECs in end of season tissues, as some of the facilities use the same commercial suppliers. Exposure from food sources could potentially expose sturgeon to levels of CECs which could negatively impact their growth and biology and therefore the overall rearing success and population recovery efforts. CEC concentrations in food may also be creating conditions for environmental exposure where unconsumed food washes out of the rearing tanks as CECs may accumulate where rearing waters are discharged. This is especially a concern at traditional facilities such as Genoa NFH because of the recirculation of the well water through on-site ponds. CECs in food that washes out into the pond may resuspend and be cycled back to sturgeon in the rearing tanks. Further investigation on the fate and effects of food waste in the hatchery setting could lead to a better understanding if CEC exposure from food sources is negatively impacting rearing success.

Growth curves for the broods (Appendix E, Table 21 through Table 31) showed that the majority of growth was explained by temperature ($R_2$ median: 0.99, range: 0.89 – 0.99). The high coefficients of determination indicate that the presence of CECs at current concentrations do not have a significant impact on growth of lake sturgeon reared at any of the assessment locations with the possible exception of the Maumee River facility. The Maumee River facility had the highest overall CEC concentrations in water and is the location where it is suspected that CECs have the highest probability of impacting rearing. Unfortunately, the unavailability of growth data, tissue CEC concentrations, and tissue TH concentrations prevented the sturgeon from that facility from being assessed. However, this assessment was able to collect those data from the Milwaukee River facility which had the second highest overall CEC presence of the assessment locations. The Milwaukee River facility had a coefficient of determination of 0.99 for growth in length as a function of thermal opportunity for growth. The St. Clair strain reared at Black River had the lowest coefficient of determination of 0.89, indicating it is the location where growth is most influenced by factors other than temperature. If this difference is attributable to CEC presence, then individual CECs or mechanism of action is a better indicator of adverse impact than overall CEC presence.

Of the three growth groups defined in this assessment (Figure 9), it is notable that both broods in the accelerated growth group were reared at the Genoa NFH. However, the third brood reared there, from the St. Clair strain, had only moderate growth. Although the St. Clair River strain at the Genoa NFH was in the overall moderate growth group, it did have a statistically increased growth rate in comparison to the St. Clair River strain reared at the Black River facility. Accounting for this, all strains reared at the Genoa NFH demonstrated accelerated growth relative to the same strains reared at other locations during this assessment. Though not enough rearing seasons were assessed in order to definitively establish the existence of a trend, our measurements may indicate that traditional hatcheries are able to grow fish to a larger size more effectively than SRFs. If efforts to track reared sturgeon do not indicate improved return to natal waters from SRF rearing, traditional rearing may be a better option for species propagation. Traditional rearing may also be a preferred option in fragmented habitat such as the Wolf River where circumstances do not exist for the local population to interbreed with sturgeon from a different GSU. Some of the variation in growth may be due to a wide range of daily temperatures present at SRFs that does not occur at the GNFH where temps remain in a narrower window, averaging 20-21°C. A feeding regimen based strictly on bodyweight may not be as advantageous at an SRF where, as the temperature increases, the fish are still being fed at the same rate but metabolizing the food faster resulting in underfeeding. Although it would require an increased amount of effort to implement, a feeding regimen such as proposed

in Aloisi et al. (2019) may be more appropriate at SRFs to compensate for the temperature fluctuations during the rearing season.

Fish health, assessed as Fulton's Body Condition Factor, revealed that health was similar across most of the broods (Figure 11). Exceptional BCFs were calculated for the Whitefish River facility. Both the range and the mean BCF for the rearing season were significantly greater at this facility. The increased BCF was driven by greater weights recorded for the sturgeon reared at this facility and there was no discernable relationship between the increased weight gain and any other variable. The large range of BCF may be partially explained by loss of power to the facility which shut off the pumps, preventing oxygenated water from being supplied to the rearing tanks. As a result, there was a loss of a majority of the fish and stress placed on the surviving fish. The timing of this event corresponds with the lowest BCF measurement. Exclusion of this measurement increases the mean BCF for the location to 0.72 which indicates a larger disparity between this brood and the others. The increased BCF may also be explained by the loss of a majority of the brood. It is possible that only the most fit fish survived the stress of hypoxia.

Assessment of the rate of weight gain revealed two notable observations. The first was that the St. Clair strain reared at the Black River facility had a lower coefficient of determination than other broods. It had a coefficient of determination of 0.83 (Appendix E, Figure 37). All other broods had coefficients of 0.95 to 0.99 (Appendix E, Figure 31 to Figure 40). This indicates that additional factors had a larger influence on weight gain in that brood. This aligns with the low coefficient of determination that was observed in the assessment of growth normalized to CTUs. However, the lower value was not observed in either the same strain reared at the Genoa NFH nor in the Wolf River strain reared at the same facility. The BCF for this brood was similar to most broods on account of both weight gain and growth being lower than the other broods. This suggests that the health of the brood is like the other broods but that it had a delay in physical development instead.

Also of note was that the broods reared at Genoa NFH in 2018 had a better fit from linear models for weight gain than from exponential models contrary to all other broods. GEN_WOL had a linear R2 of 0.97 and an exponential $R_2$ of 0.93 (Appendix E, Figure 40). GEN_STC had a linear R2 of 0.97 and an exponential $R_2$ of 0.95 (Appendix E, Figure 39). While most broods had a period of slower weight gain prior to hitting a threshold at which the rate of weight gain increased, these two broods had consistent weight gain from hatching (Figure 12). This provides additional evidence that traditional hatcheries are better able to cultivate fish when not considering additional ecological factors.

This assessment found few discernable relationships between sturgeon health and CECs, indicating that CECs at current concentrations may have little to no observed impact on the success of lake sturgeon propagation. The three findings of observed differences which may be attributed to CECs were reduced growth of the sturgeon reared at the Whitefish River SRF, reduced T4 concentrations in Peshtigo River eggs, and in increased thyroid hormone concentrations of the Peshtigo River strain reared at the Black River Sturgeon Research Facility. Though this assessment found limited observed impacts from CECs, it is recommended that future placement of SRFs should consider potential impacts from upstream developed areas since CECs were present and may have unobserved effects. Land use shows that developed areas contribute the most to overall CEC loading. The two most developed locations (MIL and MAU) had the most activity-inducing chemicals per receptor. Of the 6 screening values exceeded by detected CECs, 5 were exceeded in the Maumee River and 3 were exceeded in the Milwaukee River, again, the locations with the largest upstream developed areas. However, even when these areas can be avoided, exposure to CECs—especially PBDEs—will still occur due to the presence of CECs in fish feed.

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# Appendix A- Specifications of Study Facilities

**Table 11.** Individual SRF specifications

| Facility ID | Water Source | Flow rate | Filtration | Egg disinfection | Fertilization water source | Prolarval substrate | Temp control threshold | Food type | Food source | Feed rate |
|---|---|---|---|---|---|---|---|---|---|---|
| Genoa NFH | Well | Rearing tanks 2 gal/min 4 turnovers/hr (circular tank 52 gal.) | Zeobrite (Zeotech Corp) 3 µm | 100 ppm buffered iodine solution (38.6 ml per gal) | Same as the other eggs from the same broods | none | 65-70 C, ambient pond/well recirculate on | Brine shrimp/ bloodworms | Brine Shrimp Direct | per Bauman et al. 2016 |
| Black River | River | eggs-300 mL/min (6 turn overs/hour); Juveniles-3 L/min | 100 µm and 50 µm bag filters in series | 2 d post-fertilization until 24 h pre hatch, 500 mg/L hydrogen peroxide, 15 minute flow through | Same as the other eggs from the same broods | Bio Ball | none | Brine shrimp until 0.4 g batch weight; 1:1 brine shrimp:blood worms for a week; bloodworms until end of season | Brine Shrimp Direct | per Bauman et al. 2016 |
| Cedar River | River | Eggs-150 mL/min (6 turn overs/hour) | Zeobrite (Zeotech Corp) 4-10 µm | none | Cedar River | Bio Balls | none | Brine shrimp until 0.4 g batch weight; 1:1 brine shrimp:blood worms for a week; bloodworms until end of season | Brine Shrimp Direct | per Bauman et al. 2016 |
| Whitefish River | River | | Zeobrite (Zeotech Corp) 4-10 µm | none | Cedar River | Bio Balls | none | Brine shrimp until 0.4 g batch weight; 1:1 brine shrimp:blood worms for a week; bloodworms until end of season | Brine Shrimp Direct | per Bauman et al. 2016 |
| Milwaukee River | River | eggs-400 mL/min | 2 – 600 lb sand filters using Zeobest sand media | 3 d post-fertilization until 24 h pre hatch, 1000 ppm Parasite S, 15 minute flow through | Wolf River | Astroturf mats | 22° C | Brine shrimp/ bloodworms | Artemia International | per label |
| Kewaunee River | River | Eggs=approx 0.5gpm, fry to fingerling 1 to 3.5gpm | 2-600lb sand filters in parallel | 15 min 1,000ppm iodaphore on site and at SRF | Wolf River | Gravel cribs | none | Fry BS & bloodworms. Fingerling bloodworm and Krill @ 1 fish/gm | Artemia International and brine shrimp.com | Mostly to satiation but range of sm fingerling to lrg fingerling is 35% 20%BW 3-4x"s per day |
| Maumee River | River | Eggs: 500mL/min; Juveniles: | 40 µm drum filter (VEOLIA HDF501-1P) | UV filter (Pentair Smart UV® Sterilizer E150S) during eggs stage; 2 d post-fertilization until 24 h pre hatch: 500 mg/L hydrogen peroxide, 15 minute flow through | | Bio Balls | 25.6° C | Brine shrimp then bloodworms and mysis shrimp until end of season | McRobert's Sales (Brine Shrimp); Omega One (bloodworms), Piscine Energetics (Mysis shrimp) | per Bauman et al. 2016, but to satiation. |

# Appendix B-
# Supplemental Water Chemistry Data

## Lists of analytes sampled in water by frequency of detection

### Analytes not detected in any water samples

1,7-Dimethylxanthine
2-Hydroxy-ibuprofen
4-Epianhydrochlortetracycline
4-Epianhydrotetracycline (EATC)
4-Epichlortetracycline (ECTC)
4-Epioxytetracycline (EOTC)
4-Epitetracycline (ETC)
Acetaminophen
Albuterol
alpha chlordane
Amitriptyline
Amlodipine
Amsacrine
Anhydrochlortetracycline (ACTC)
Anhydrotetracycline (ATC)
Atorvastatin
Azathioprine
azinphos-methyl
Azithromycin
BDE# 30
BDE# 32
BDE# 35
BDE# 37
BDE# 75
BDE# 77
Benztropine
beta BHC
Betamethasone
Bisphenol A
Busulfan
Captan
Carbadox
Cefotaxime
Chlorpyriphos-Oxon
Chlortetracycline (CTC)
Cimetidine
Ciprofloxacin
Clarithromycin
Clinafloxacin
Clonidine
Clotrimazole
Cloxacillin
Codeine
Cyanazine
Cyclophosphamide
Cypermethrin
Daunorubicin
Dehydronifedipine
delta BHC
Demeclocycline
Diatrizoic Acid
Diazepam
diazinon
Diazinon-Oxon
Digoxigenin
Digoxin
Dimethoate
disulfoton
disulfoton sulfone
Doxorubicin
Doxycycline
Drospirenone
Enalapril
endosulfan I
endosulfan II
Endosulphan Sulphate
Endrin Ketone
Enrofloxacin
Ethion
Etoposide
Fenitrothion
Flumequine
Fluocinonide
Fluticasone propionate
fonofos
Furosemide
gamma chlordane
Glipizide
Glyburide
Heptachlor
Hydrocodone
Hydrocortisone
Ibuprofen
Isochlortetracycline (ICTC)
Lomefloxacin
malathion
Medroxyprogesterone Acetate
Melphalan
methoxychlor
Methylprednisolone
Metronidazole
Miconazole
Minocycline
mirex
Moxifloxacin
Norfluoxetine
Norgestimate
Norverapamil
o,p'-DDD
o,p'-DDT
octachlorostyrene
Ofloxacin
Ormetoprim
Oxacillin
Oxazepam
Oxolinic Acid
Oxytetracycline (OTC)
p,p'-DDD
p,p'-DDT
Parathion-Ethyl
Parathion-Methyl
Paroxetine
Penicillin V
Permethrin
Perthane
phorate
Phosmet
Pirimiphos-Methyl
Prednisolone
Prednisone
Promethazine
Propoxyphene
Propranolol
Quintozene
Rosuvastatin
Roxithromycin
Simvastatin
Sulfachloropyridazi
Sulfadiazine
Sulfamerazine
Sulfamethizole
Sulfanilamide
Sulfathiazole
Tamoxifen
Tecnazene
Teniposide
Terbufos
Tetracycline (TC)
Theophylline
trans-nonachlor
Trenbolone
Trenbolone acetate
Triclocarban
Triclosan
Tylosin
Verapamil
Virginiamycin M1
Warfarin
Zidovudine

**Analytes detected in < 25% of all water samples**

- 10-hydroxy-amitriptyline
- Aldrin
- alpha BHC
- Alprazolam
- Atenolol
- BDE# 10
- BDE# 105
- BDE# 116
- BDE# 119/120
- BDE# 12/13
- BDE# 126
- BDE# 128
- BDE# 140
- BDE# 15
- BDE# 181
- BDE# 190
- BDE# 51
- BDE# 7
- BDE# 71
- BDE# 79
- BDE# 8/11
- Benzoylecgonine
- Caffeine
- Carbamazepine
- Chlorothalonil
- Chlorpyriphos
- Chlorpyriphos-Methyl
- cis-nonachlor
- Citalopram
- Cocaine
- Colchicine
- Cotinine
- Dacthal
- Desmethyldiltiazem
- dieldrin
- Diltiazem
- Diphenhydramine
- endrin
- Fluoxetine
- gamma BHC
- Gemfibrozil
- Heptachlor Epoxide
- Hexazinone
- Hydrochlorothiazide
- Iopamidol
- Lincomycin
- Meprobamate
- Metoprolol
- Metribuzin
- Naproxen
- Norfloxacin
- o,p'-DDE
- oxychlordane
- Oxycodone
- p,p'-DDE
- Penicillin G
- Ranitidine
- Sarafloxacin
- Sertraline
- Sulfadimethoxine
- Sulfamethazine
- Thiabendazole
- Triamterene
- Trimethoprim
- Valsartan
- Venlafaxine

**Analytes detected in ≥ 25% but < 50% of all water samples**

- Ametryn
- Amphetamine
- Atrazine
- BDE# 138/166
- BDE# 155
- BDE# 66
- Metformin
- simazine
- Sulfamethoxazole

**Analytes detected in ≥ 50% but < 100% of all water samples**

- BDE# 153
- BDE# 154
- BDE# 17/25
- BDE# 183
- BDE# 203
- BDE# 206
- BDE# 207
- BDE# 208
- BDE# 209
- BDE# 28/33
- BDE# 49
- BDE# 85
- Desethylatrazine
- Erythromycin-H2O
- HCB

**Analytes detected in 100% of all water samples**

- BDE# 100
- BDE# 47
- BDE# 99
- DEET

**Table 12.** Comparison of detected water concentrations between study years at Black River SRF with analysis of potential Type II errors caused by proximity of detected concentrations to method detection limits. The % column indicates the relationship between the MDL of a non-detect and a concentration detected at the location. Bolded values indicate that the mean MDL of the year was greater than concentrations detected at the location in other years. Values reported in ppm wet weight. Multiple MDLs for an analyte indicate different MDLs between samples.

| Analyte | Black River 2018 MDLs | | | Mean MDL for 2018 | Mean detected concentration in 2017 | 2017 concen. as a % of 2018 MDL |
|---|---|---|---|---|---|---|
| **Aldrin** | 0.00000001010 | 0.00000003380 | 0.00000003120 | 0.00000002503 | 0.000000012 | **48%** |
| **BDE# 116** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.00000000198 | 196% |
| **BDE# 119/120** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.00000000113 | 112% |
| **BDE# 12/13** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.00000000253 | 250% |
| **BDE# 15** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.00000000176 | 174% |
| **BDE# 17/25** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.000000002253 | 223% |
| **BDE# 51** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.00000000114 | 113% |
| **BDE# 66** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.00000000194 | 192% |
| **BDE# 79** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.00000000129 | 128% |
| **BDE# 8/11** | 0.00000000100 | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.00000000294 | 291% |
| **Chlorothalonil** | 0.00000010100 | 0.00000010200 | 0.00000010200 | 0.00000010167 | 0.000000383 | 377% |
| **Cocaine** | 0.00000014100 | 0.00000015600 | 0.00000015000 | 0.00000014900 | 0.000000168 | 113% |
| **Colchicine** | 0.00000154000 | 0.00000304000 | 0.00000219000 | 0.00000225667 | 0.00000242 | 107% |
| **endrin** | 0.00000001010 | 0.00000007330 | 0.00000007650 | 0.00000005330 | 0.000000031 | **58%** |
| **BDE# 140** | 0.00000000186 | 0.00000000100 | 0.00000000101 | 0.00000000129 | 0.00000000289 | 224% |
| **BDE# 155** | 0.00000000132 | 0.00000000100 | 0.00000000100 | 0.00000000111 | 0.00000000111 | 100% |
| **BDE# 181** | 0.00000000151 | 0.00000000100 | 0.00000000101 | 0.00000000117 | 0.000000001505 | 128% |
| **Erythromycin-H2O** | 0.00000235000 | 0.00000232000 | 0.00000228000 | 0.00000231667 | 0.000002897 | 125% |
| **Heptachlor Epoxide** | 0.00000010900 | 0.00000003350 | 0.00000003900 | 0.00000006050 | 0.000000015 | **24%** |
| **Penicillin G** | 0.00000307000 | 0.00000303000 | 0.00000298000 | 0.00000302667 | 0.0000116 | 383% |

**Table 13.** Comparison of detected water concentrations between study years at Genoa NFH with analysis of potential Type II errors caused by proximity of detected concentrations to method detection limits. The % column indicates the relationship between the MDL of a non-detect and a concentration detected at the location. Bolded values indicate that the mean MDL of the year was greater than concentrations detecter at the location in other years. Values reported in ppm wet weight. Multiple MDLs for an analyte indicate different MDLs between samples.

| Analyte | Genoa NFH 2018 MDLs | | | Mean MDL for 2018 | Mean detected concentration in 2017 | 2017 concen. as a % of 2018 MDL |
|---|---|---|---|---|---|---|
| **Atrazine** | 0.00000103 | 0.00000381 | 0.0000052 | 0.000003346666663 | 0.00001027 | 307% |
| **BDE# 116** | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.000000001013333 | 0.0000000047 | 464% |
| **BDE# 155** | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.000000001013333 | 0.00000000161 | 159% |
| **BDE# 49** | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.000000001013333 | 0.000000003705 | 366% |
| **BDE# 51** | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.000000001013333 | 0.00000000151 | 149% |
| **BDE# 66** | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.000000001013333 | 0.00000000285 | 281% |
| **BDE# 71** | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.000000001013333 | 0.00000000292 | 288% |
| **BDE# 79** | 0.00000000102 | 0.00000000101 | 0.00000000101 | 0.000000001013333 | 0.00000000211 | 208% |
| **gamma BHC** | 0.0000000182 | 0.0000000435 | 0.0000000998 | 0.00000005383333 | 0.000000021 | **39%** |
| **Norfloxacin** | 0.0000141 | 0.0000139 | 0.000028 | 0.00001866666666 | 0.0000183 | **9%** |
| **o,p'-DDE** | 0.0000000415 | 0.0000000385 | 0.000000275 | 0.000000118333333 | 0.00000003 | **25%** |
| **Oxycodone** | 0.000000586 | 0.000000584 | 0.000000598 | 0.000000589333327 | 0.000000605 | 103% |
| **p,p'-DDE** | 0.0000000539 | 0.0000000497 | 0.000000366 | 0.00000015653333 | 0.000000056 | **36%** |

| Analyte | Genoa NFH 2017 MDLs | | | Mean MDL for 2017 | Mean detected concentration in 2018 | 2018 concen. as a % of 2017 MDL |
|---|---|---|---|---|---|---|
| **BDE# 181** | 0.00000000266 | 0.0000000034 | 0.00000000115 | 0.000000002403 | 0.00000000168 | **70%** |
| **Chlorpyriphos-Methyl** | 0.000000101 | 0.000000232 | 0.000000102 | 0.000000145 | 0.000000456 | 314% |
| **Erythromycin-H2O** | 0.00000228 | 0.0000023 | 0.00000232 | 0.0000023 | 0.00000286 | 124% |
| **Oxychlordane** | 0.0000000292 | 0.0000000582 | 0.000000029 | 0.0000000388 | 0.000000024 | **62%** |
| **Penicillin G** | 0.00000297 | 0.000003 | 0.00000302 | 0.000002997 | 0.00000798 | 266% |

**Table 14.** Comparison of detected water concentrations between study years at Maumee River SRF with analysis of potential Type II errors caused by proximity of detected concentrations to method detection limits. The % column indicates the relationship between the MDL of a non-detect and a concentration detected at the location. Bolded values indicate that the mean MDL of the year was greater than concentrations detected at the location in other years. Values reported in ppm wet weight. Multiple MDLs for an analyte indicate different MDLs between samples.

| Analyte | Maumee River 2018 MDLs | | | Mean MDL for 2018 | Mean detected concentration in 2016 | 2016 concen. as a % of 2018 MDL |
|---|---|---|---|---|---|---|
| **Albuterol** | 0.000000294 | 0.000000287 | 0.000000298 | 0.000000293 | 0.0000003435 | 117% |
| **alpha BHC** | 0.0000000292 | 0.0000000881 | 0.00000016 | 0.00000009243 | 0.0000000275 | **30%** |
| **Amitriptyline** | 0.00000036 | 0.000000434 | 0.000000536 | 0.000000443 | 0.0000007472 | 169% |
| **Chlorothalonil** | 0.000000101 | 0.000000101 | 0.000000301 | 0.0000001677 | 0.00000019 | 113% |
| **Cimetidine** | 0.000000587 | 0.000000574 | 0.000000596 | 0.0000005857 | 0.000000878 | 150% |
| **Clarithromycin** | 0.0000014 | 0.00000143 | 0.00000171 | 0.000001513 | 0.0000024467 | 162% |
| **Diphenhydramine** | 0.000000561 | 0.000000572 | 0.000000682 | 0.000000605 | 0.000001212 | 200% |
| **Endosulphan Sulphate** | 0.000000229 | 0.000000182 | 0.000000471 | 0.000000294 | 0.0000001813 | **62%** |
| **gamma BHC** | 0.0000000621 | 0.000000102 | 0.000000162 | 0.0000001087 | 0.0000000373 | **34%** |
| **gamma chlordane** | 0.0000000951 | 0.0000000625 | 0.000000275 | 0.0000001442 | 0.000000056 | **39%** |
| **Heptachlor** | 0.0000000971 | 0.0000000522 | 0.000000241 | 0.0000001301 | 0.000000016 | **12%** |
| **Oxolinic Acid** | 0.00000128 | 0.00000191 | 0.00000313 | 0.000002107 | 0.00000143 | **68%** |
| **Prednisone** | 0.0000141 | 0.00000572 | 0.0000446 | 0.000021473 | 0.0000286 | 133% |
| **Ranitidine** | 0.000000587 | 0.000000574 | 0.000000596 | 0.0000005857 | 0.00000109 | 186% |
| **Sertraline** | 0.000000374 | 0.000000751 | 0.000000525 | 0.00000055 | 0.0000005795 | 105% |
| **Sulfanilamide** | 0.000014 | 0.0000143 | 0.0000171 | 0.00001513 | 0.0000488 | 322% |
| **trans nonachlor** | 0.000000091 | 0.0000000574 | 0.00000027 | 0.00000013947 | 0.000000018 | **13%** |

| Analyte | Maumee River 2016 MDLs | | | | | | Mean MDL for 2016 | Mean detected concentration in 2018 | 2018 concen. as a % of 2016 MDL |
|---|---|---|---|---|---|---|---|---|---|
| **Aldrin** | 0.0000000106 | 0.000000011 | 0.000000012 | 0.000000063 | 0.00000008 | 0.00000005 | 0.000000038 | 0.000000085 | 225% |
| **Dacthal** | 0.000000106 | 0.00000011 | 0.000000104 | 0.000000123 | 0.00000011 | 0.000000109 | 0.0000001103 | 0.000000218 | 198% |
| **Desmethyldiltiazem** | 0.000000167 | 0.000000152 | 0.000000191 | 0.000000165 | 0.000000157 | 0.000000155 | 0.0000001645 | 0.000000216 | 131% |
| **Hexazinone** | 0.00000346 | 0.000000645 | 0.000000539 | 0.000000652 | | | 0.000001324 | 0.00000341 | 258% |
| **Metoprolol** | 0.00000765 | 0.00000922 | 0.0000087 | 0.00000982 | 0.00000988 | 0.00000648 | 0.000008625 | 0.00000848 | **98%** |
| **p,p' DDE** | 0.000000055 | 0.0000000494 | 0.00000004 | 0.0000000347 | 0.0000000843 | 0.0000000526 | 0.0000000527 | 0.0000001745 | 331% |

**Table 15.** Analytes detected in multiple years in the Black River, Maumee River, and at Genoa NFH.

| | BLA-17 | BLA-18 | GEN-17 | GEN-18 | MAU-16 | MAU-18 |
|---|---|---|---|---|---|---|
| **10-hydroxy-amitriptyline** | | | | | X | X |
| **Albuterol** | | | | | X | |
| **Aldrin** | X | | | | | X |
| **alpha BHC** | | | | | X | |
| **Alprazolam** | | | | | X | X |
| **Ametryn** | | | | | X | X |
| **Amitriptyline** | | | | | X | |
| **Amphetamine** | | | X | X | X | X |
| **Atenolol** | | | | | X | X |
| **Atrazine** | X | X | X | | X | X |
| **Benzoylecgonine** | | | | | X | X |
| **BDE# 8/11** | X | | | | | |
| **BDE# 12/13** | X | | | | | |
| **BDE# 15** | X | | | | | |
| **BDE# 17/25** | X | | X | X | | |
| **BDE# 28/33** | X | X | X | X | | |
| **BDE# 47** | X | X | X | X | | |
| **BDE# 49** | X | X | X | | | |
| **BDE# 51** | X | | X | | | |
| **BDE# 66** | X | | X | | | |
| **BDE# 71** | | | X | | | |
| **BDE# 79** | X | | X | | | |
| **BDE# 85** | X | X | X | X | | |
| **BDE# 99** | X | X | X | X | | |
| **BDE# 100** | X | X | X | X | | |
| **BDE# 116** | X | | X | | | |
| **BDE# 119/120** | X | | | | | |
| **BDE# 128** | X | X | | | | |
| **BDE# 138/166** | X | X | | | | |
| **BDE# 140** | | X | | | | |
| **BDE# 153** | X | X | X | X | | |
| **BDE# 154** | X | X | X | X | | |
| **BDE# 155** | | X | X | | | |
| **BDE# 181** | | X | | X | | |
| **BDE# 183** | X | X | X | X | | |
| **BDE# 190** | | | X | X | | |
| **BDE# 203** | X | X | X | X | | |
| **BDE# 206** | X | X | X | X | | |
| **BDE# 207** | X | X | X | X | | |
| **BDE# 208** | X | X | X | X | | |
| **BDE# 209** | X | X | X | X | | |

Table 15. *(continued)*

| | BLA-17 | BLA-18 | GEN-17 | GEN-18 | MAU-16 | MAU-18 |
|---|---|---|---|---|---|---|
| **Caffeine** | | | | | X | X |
| **Carbamazepine** | | | | | X | X |
| **Chlorothalonil** | X | | | | X | |
| **Chlorpyriphos** | | | | | X | X |
| **Chlorpyriphos-Methyl** | | | | X | | |
| **Cimetidine** | | | | | X | |
| **Citalopram** | | | | | X | X |
| **Clarithromycin** | | | | | X | |
| **Cocaine** | X | | | | | |
| **Colchicine** | X | | | | | |
| **Cotinine** | | | | | X | X |
| **Dacthal** | | | | | | X |
| **DEET** | X | X | X | X | X | X |
| **Desethylatrazine** | X | X | X | X | X | X |
| **Desmethyldiltiazem** | | | | | | X |
| **dieldrin** | | | | | X | X |
| **Diltiazem** | | | | | X | X |
| **Diphenhydramine** | | | | | X | |
| **Endosulphan Sulphate** | | | | | X | |
| **endrin** | X | | | | | |
| **Erythromycin-H2O** | | X | | X | X | X |
| **Fluoxetine** | | | | | X | X |
| **gamma BHC** | | | X | | X | |
| **gamma chlordane** | | | | | X | |
| **Gemfibrozil** | | | | | X | X |
| **HCB** | X | X | X | X | X | X |
| **Heptachlor** | | | | | X | |
| **Heptachlor Epoxide** | | X | | | X | X |
| **Hexazinone** | | | | | | X |
| **Iopamidol** | | | | | X | X |
| **Lincomycin** | | | | | X | X |
| **Meprobamate** | | | | | X | X |
| **Metformin** | X | X | | | X | X |
| **Metoprolol** | | | | | | X |
| **Naproxen** | | | | | X | X |
| **Norfloxacin** | | | X | | | |
| **o,p'-DDE** | | | X | | | |
| **Oxolinic Acid** | | | | | X | |
| **oxychlordane** | | | | X | | |
| **Oxycodone** | | | X | | X | X |
| **p,p'-DDE** | | | X | | | X |

**Table 15.** *(continued)*

| | BLA-17 | BLA-18 | GEN-17 | GEN-18 | MAU-16 | MAU-18 |
|---|---|---|---|---|---|---|
| **Prednisone** | | | | | X | |
| **Ranitidine** | | | | | X | |
| **Sertraline** | | | | | X | |
| **Sulfadimethoxine** | | | | | X | X |
| **Sulfamethazine** | | | | | X | X |
| **Sulfamethoxazole** | | | X | X | X | X |
| **Sulfanilamide** | | | | | X | |
| **Thiabendazole** | | | | | X | X |
| **trans-nonachlor** | | | | | X | |
| **Triamterene** | | | | | X | X |
| **Trimethoprim** | | | | | X | X |
| **Valsartan** | | | | | X | X |
| **Venlafaxine** | | | | | X | X |
| **Total Detections** | 35 | 27 | 33 | 25 | 52 | 41 |

**Table 16.** Water chemistry analytical results for 2017 samples. Concentrations are reported in parts per million. Blank values indicate sample did not meet quality control criteria. Values preceded by "<" indicated the detection limit which was not exceeded in the sample.

| | BLA-W1 | BLA-W2 | BLA-W3 | CED-W1 | CED-W2 | CED-W3 | GEN-W1 | GEN-W2 | GEN-W3 | WHI-W1 | WHI-W2 | WHI-W3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **sample collection date** | 5/11/2017 | 5/25/2017 | 8/15/2017 | 5/11/2017 | 5/24/2017 | 8/14/2017 | 5/12/2017 | 5/20/2017 | 8/15/2017 | 5/11/2017 | 5/25/2017 | 8/14/2017 |
| **1,7 Dimethylxanthine** | <0.0000613 | <0.0000605 | <0.0000596 | <0.0000594 | <0.0000601 | <0.00006 | <0.0000594 | <0.0000600 | <0.0000605 | <0.0000614 | <0.0000600 | <0.0000604 |
| **10-hydroxyamitriptyline** | <0.000000153 | <0.000000151 | <0.000000161 | <0.000000148 | <0.000000213 | <0.000000345 | <0.000000148 | <0.000000150 | <0.00000018 | <0.000000153 | <0.000000150 | <0.000000211 |
| **2-Hydroxyibuprofen** | <0.0000818 | <0.0000807 | <0.0000794 | <0.0000792 | <0.0000801 | <0.0000799 | <0.0000792 | <0.0000800 | <0.0000807 | <0.0000818 | <0.0000800 | <0.0000806 |
| **4-Epianhydrochlortetracycline** | <0.0000613 | <0.0000605 | <0.0000596 | <0.0000594 | <0.0000601 | <0.00006 | <0.0000594 | <0.0000600 | <0.0000605 | <0.0000614 | <0.0000600 | <0.0000604 |
| **4-Epianhydrotetracycline (EATC)** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | <0.0000150 | <0.000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000151 |
| **4-Epichlortetracycline (ECTC)** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | <0.0000150 | <0.000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000151 |
| **4-Epioxytetracycline (EOTC)** | <0.00000613 | <0.00000605 | <0.00000596 | <0.00000594 | <0.00000678 | <0.000006 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000690 | <0.00000624 |
| **4-Epitetracycline (ETC)** | <0.00000613 | <0.00000605 | <0.00000596 | <0.00000594 | <0.00000601 | <0.000006 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000604 |
| **Acetaminophen** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | <0.0000150 | <0.000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000151 |
| **Albuterol** | <0.000000302 | <0.000000303 | <0.000000306 | <0.000000303 | <0.000000301 | <0.000000308 | <0.000000296 | <0.000000298 | <0.000000339 | <0.000000304 | <0.000000308 | <0.000000305 |
| **Aldrin** | <0.0000000440 | <0.0000000215 | 0.000000012 | <0.0000000240 | <0.0000000196 | <0.0000000101 | <0.0000000101 | <0.0000000235 | <0.0000000102 | <0.0000000110 | <0.0000000206 | <0.0000000101 |
| **alpha BHC** | <0.0000000397 | <0.0000000260 | <0.0000000204 | <0.0000000174 | <0.0000000250 | <0.0000000132 | <0.0000000160 | <0.0000000277 | <0.0000000111 | <0.0000000181 | <0.0000000223 | <0.0000000114 |
| **alpha chlordane** | <0.0000000574 | <0.0000000382 | <0.0000000361 | <0.0000000270 | <0.0000000218 | <0.0000000223 | <0.0000000184 | <0.0000000401 | <0.0000000149 | <0.0000000380 | <0.0000000267 | <0.0000000101 |
| **Alprazolam** | <0.000000307 | <0.000000303 | <0.000000298 | <0.000000297 | <0.000000301 | <0.0000003 | <0.000000297 | <0.000000300 | <0.000000302 | <0.000000307 | <0.000000300 | <0.000000302 |
| **Ametryn** | <0.000000185 | | | <0.000000159 | | | <0.000000333 | | <0.000000102 | <0.000000147 | | |
| **Amitriptyline** | <0.000000307 | <0.000000586 | <0.00000046 | <0.000000297 | <0.000000718 | <0.000000688 | <0.000000297 | <0.000000300 | <0.000000302 | <0.000000307 | <0.000000487 | <0.000000898 |
| **Amlodipine** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.00000157 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000174 |
| **Amphetamine** | <0.00000151 | <0.00000152 | <0.00000153 | <0.00000151 | <0.00000151 | <0.00000154 | 0.0000168 | 0.0000102 | <0.00000369 | <0.00000152 | <0.00000154 | <0.00000153 |
| **Amsacrine** | <0.000000138 | <0.000000224 | <0.000000208 | <0.000000326 | <0.000000307 | <0.00000049 | <0.0000000792 | <0.0000000800 | <0.0000000849 | <0.0000000216 | <0.000000415 | <0.000000384 |
| **Anhydrochlortetracycline (ACTC** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | <0.0000150 | <0.000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000154 |
| **Anhydrotetracycline (ATC)** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | <0.0000150 | <0.000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000151 |
| **Atenolol** | <0.000000604 | <0.000000607 | <0.000000612 | <0.000000606 | <0.000000602 | <0.000000616 | <0.000000592 | <0.000000597 | <0.00000104 | <0.000000608 | <0.000000616 | <0.000000611 |
| **Atorvastatin** | <0.00000151 | <0.00000152 | <0.00000153 | <0.00000151 | <0.00000151 | <0.00000154 | <0.00000148 | <0.00000149 | <0.00000149 | <0.00000152 | <0.00000154 | <0.00000153 |
| **Atrazine** | <0.00000359 | 0.00000576 | <0.00000103 | <0.00000359 | 0.0000154 | <0.00000692 | 0.0000111 | 0.00000944 | <0.000000677 | <0.00000216 | 0.00000629 | <0.00000107 |
| **Azathioprine** | <0.00000204 | <0.00000202 | <0.00000199 | <0.00000198 | <0.00000200 | <0.000002 | <0.00000198 | <0.00000200 | <0.00000202 | <0.00000205 | <0.00000200 | <0.00000201 |
| **azinphos methyl** | <0.00000503 | <0.00000456 | <0.00000218 | <0.00000717 | <0.00000422 | <0.00000264 | <0.00000269 | <0.00000329 | <0.00000091 | <0.00000611 | <0.00000295 | <0.00000193 |
| **Azithromycin** | <0.00000271 | <0.00000151 | <0.00000497 | <0.00000318 | <0.00000187 | <0.000005 | <0.00000205 | <0.00000150 | <0.00000157 | <0.00000234 | <0.00000166 | <0.00000504 |
| **BDE# 10** | <0.00000000235 | <0.00000000207 | <0.00000000162 | <0.00000000301 | 0.00000001 | <0.00000000213 | <0.00000000483 | <0.00000000380 | <0.00000000341 | <0.00000000225 | <0.00000000537 | <0.00000000243 |
| **BDE# 100** | 0.00000000266 | 0.0000000122 | 0.0000000134 | 0.00000000236 | 0.0000000105 | 0.00000000628 | 0.00000000676 | 0.0000000302 | 0.0000000032 | 0.00000000356 | 0.0000000374 | 0.00000000322 |
| **BDE# 105** | <0.00000000201 | <0.00000000100 | <0.000000001 | <0.00000000144 | <0.00000000100 | <0.00000000101 | <0.00000000198 | <0.00000000269 | <0.00000000395 | <0.00000000129 | <0.00000000331 | <0.00000000109 |
| **BDE# 116** | <0.00000000274 | 0.00000000198 | <0.000000011 | <0.00000000197 | <0.00000000100 | <0.00000000107 | <0.00000000270 | 0.0000000047 | <0.00000000511 | <0.00000000175 | <0.00000000430 | <0.00000000141 |
| **BDE# 119/120** | <0.00000000176 | 0.00000000113 | <0.000000001 | <0.00000000127 | <0.00000000100 | 0.00000000118 | <0.00000000174 | <0.00000000204 | <0.00000000309 | <0.00000000113 | <0.00000000251 | 0.00000000113 |
| **BDE# 12/13** | <0.00000000130 | <0.00000000118 | 0.00000000253 | <0.00000000166 | <0.00000000100 | <0.00000000117 | <0.00000000267 | <0.00000000229 | <0.00000000184 | <0.00000000124 | <0.00000000323 | <0.00000000134 |
| **BDE# 126** | <0.0000000000996 | <0.00000000100 | <0.000000001 | <0.0000000000998 | <0.00000000100 | <0.00000000101 | <0.00000000101 | <0.00000000157 | <0.00000000179 | <0.0000000000997 | 0.00000000208 | <0.00000000101 |
| **BDE# 128** | 0.00000000254 | <0.00000000100 | <0.00000000243 | <0.00000000252 | <0.00000000255 | <0.00000000102 | <0.00000000326 | <0.00000000210 | <0.00000000714 | <0.00000000190 | 0.00000000668 | <0.00000000119 |
| **BDE# 138/166** | <0.00000000302 | <0.00000000125 | 0.0000000014 | 0.00000000387 | <0.00000000146 | 0.00000000155 | <0.00000000414 | <0.00000000447 | <0.00000000536 | <0.00000000256 | 0.0000000587 | 0.00000000191 |
| **BDE# 140** | <0.00000000186 | <0.00000000100 | <0.00000000101 | <0.00000000182 | <0.00000000100 | <0.00000000108 | <0.00000000255 | <0.00000000242 | <0.00000000342 | <0.00000000158 | 0.0000000139 | <0.00000000122 |
| **BDE# 15** | <0.00000000109 | <0.00000000100 | 0.00000000176 | <0.00000000140 | <0.00000000100 | <0.00000000101 | <0.00000000225 | <0.00000000196 | <0.00000000154 | <0.00000000105 | <0.00000000277 | 0.00000000127 |
| **BDE# 153** | <0.00000000182 | 0.00000000791 | 0.00000000427 | 0.00000000258 | 0.00000000488 | 0.00000000287 | 0.00000000264 | 0.0000000131 | <0.00000000349 | 0.00000000272 | 0.000000198 | 0.00000000206 |
| **BDE# 154** | <0.00000000143 | 0.00000000514 | 0.00000000362 | 0.00000000202 | 0.00000000452 | 0.00000000283 | 0.00000000258 | 0.0000000132 | <0.00000000252 | 0.00000000189 | 0.000000106 | 0.00000000169 |
| **BDE# 155** | <0.00000000132 | <0.00000000100 | <0.000000001 | <0.00000000128 | <0.00000000100 | <0.00000000101 | <0.00000000181 | 0.00000000161 | <0.00000000235 | 0.00000000114 | 0.00000000358 | <0.00000000101 |
| **BDE# 17/25** | 0.00000000145 | 0.0000000015 | 0.00000000381 | 0.00000000226 | 0.00000000389 | 0.00000000156 | <0.00000000179 | 0.0000000037 | 0.00000000311 | <0.00000000167 | 0.00000000262 | 0.00000000169 |
| **BDE# 181** | <0.00000000151 | <0.00000000100 | <0.00000000101 | <0.00000000294 | <0.00000000100 | <0.00000000101 | <0.00000000266 | <0.00000000340 | <0.00000000115 | <0.00000000167 | <0.00000000516 | <0.00000000113 |
| **BDE# 183** | <0.000000000996 | 0.00000000213 | 0.00000000144 | <0.00000000184 | 0.00000000241 | 0.00000000136 | 0.00000000463 | 0.00000000261 | 0.00000000129 | <0.00000000104 | 0.0000000143 | <0.00000000101 |
| **BDE# 190** | <0.00000000265 | <0.00000000161 | <0.00000000017 | <0.00000000517 | <0.00000000167 | <0.00000000129 | <0.00000000466 | <0.00000000623 | 0.00000000295 | <0.00000000293 | <0.00000000946 | <0.00000000191 |
| **BDE# 203** | <0.00000000206 | 0.00000000249 | 0.00000000461 | <0.00000000350 | <0.00000000128 | 0.00000000345 | <0.00000000329 | 0.0000000115 | 0.00000000311 | 0.00000000164 | <0.00000000641 | 0.00000000208 |
| **BDE# 206** | 0.0000000153 | 0.0000000119 | 0.0000000552 | 0.0000000197 | 0.0000000114 | 0.0000000341 | 0.0000000286 | <0.0000000371 | <0.00000000545 | 0.0000000729 | <0.0000000327 | 0.0000000341 |
| **BDE# 207** | <0.0000000135 | 0.0000000018 | 0.0000000583 | 0.0000000343 | 0.0000000223 | 0.0000000304 | 0.0000000293 | 0.0000000512 | 0.0000000358 | 0.000000118 | <0.0000000384 | 0.0000000513 |
| **BDE# 208** | <0.0000000146 | <0.00000000691 | 0.0000000199 | <0.0000000198 | <0.00000000957 | 0.0000000486 | 0.0000000436 | <0.0000000424 | 0.000000012 | 0.0000000481 | <0.0000000373 | 0.0000000396 |
| **BDE# 209** | 0.0000000128 | 0.0000000108 | 0.00000026 | 0.0000000135 | 0.0000000147 | <0.0000000214 | 0.0000000171 | 0.00000036 | <0.0000000189 | 0.00000122 | 0.0000000218 | <0.0000000212 |
| **BDE# 28/33** | <0.00000000130 | 0.0000000032 | 0.00000000493 | <0.00000000151 | 0.00000000175 | 0.00000000277 | 0.00000000229 | 0.00000000342 | <0.00000000219 | <0.00000000150 | 0.00000000284 | 0.00000000361 |
| **BDE# 30** | <0.00000000157 | <0.00000000100 | <0.000000001 | <0.00000000182 | <0.00000000102 | <0.00000000101 | <0.00000000196 | <0.00000000123 | <0.00000000255 | <0.00000000182 | <0.00000000148 | <0.00000000134 |
| **BDE# 32** | <0.00000000122 | <0.00000000100 | <0.000000001 | <0.00000000142 | <0.00000000100 | <0.00000000101 | <0.00000000152 | <0.00000000103 | <0.00000000197 | <0.00000000141 | <0.00000000123 | <0.00000000103 |
| **BDE# 35** | <0.000000000996 | <0.00000000100 | <0.000000001 | <0.00000000111 | <0.00000000100 | <0.00000000101 | <0.00000000119 | <0.00000000103 | <0.00000000143 | <0.00000000111 | <0.00000000103 | <0.00000000101 |
| **BDE# 37** | <0.000000000996 | <0.00000000100 | <0.000000001 | <0.00000000103 | <0.00000000100 | <0.00000000101 | <0.00000000110 | <0.00000000103 | <0.00000000134 | <0.00000000103 | <0.00000000100 | <0.00000000101 |
| **BDE# 47** | 0.0000000166 | 0.0000000712 | 0.0000000957 | 0.000000017 | 0.0000000569 | 0.0000000383 | 0.0000000288 | 0.000000183 | 0.0000000232 | 0.0000000217 | 0.0000000681 | 0.000000027 |
| **BDE# 49** | 0.00000000124 | 0.00000000213 | 0.00000000284 | 0.00000000109 | 0.00000000332 | 0.00000000117 | <0.00000000115 | 0.00000000544 | 0.00000000197 | 0.00000000175 | <0.00000000214 | <0.00000000101 |
| **BDE# 51** | <0.000000000996 | <0.00000000100 | 0.00000000114 | <0.000000000998 | <0.00000000100 | <0.00000000101 | <0.00000000101 | 0.00000000151 | <0.00000000101 | <0.0000000000997 | <0.00000000129 | <0.00000000101 |
| **BDE# 66** | <0.00000000120 | 0.00000000124 | 0.00000000264 | <0.00000000120 | 0.00000000145 | 0.0000000016 | <0.00000000132 | 0.00000000285 | <0.00000000142 | <0.0000000000997 | 0.00000000344 | <0.00000000101 |

**Table 16.** *(continued)*

| | BLA-W1 | BLA-W2 | BLA-W3 | CED-W1 | CED-W2 | CED-W3 | GEN-W1 | GEN-W2 | GEN-W3 | WHI-W1 | WHI-W2 | WHI-W3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BDE# 7** | <0.00000000200 | <0.00000000184 | <0.00000000138 | <0.00000000257 | <0.00000000149 | <0.00000000181 | <0.00000000412 | <0.00000000353 | <0.00000000295 | <0.00000000192 | <0.00000000498 | <0.00000000207 |
| **BDE# 71** | <0.00000000100 | <0.00000000100 | <0.000000001 | <0.000000000998 | <0.00000000100 | <0.00000000101 | <0.00000000110 | 0.00000000292 | <0.00000000122 | <0.000000000997 | <0.00000000187 | <0.00000000101 |
| **BDE# 75** | <0.000000000996 | <0.00000000100 | <0.000000001 | <0.000000000998 | <0.00000000100 | <0.00000000101 | <0.00000000101 | <0.00000000138 | <0.00000000101 | <0.000000000997 | <0.00000000161 | <0.00000000101 |
| **BDE# 77** | <0.000000000996 | <0.00000000100 | <0.000000001 | <0.000000000998 | <0.00000000100 | <0.00000000101 | <0.00000000101 | <0.00000000125 | <0.00000000101 | <0.000000000997 | <0.00000000151 | <0.00000000101 |
| **BDE# 79** | <0.000000000996 | <0.00000000100 | 0.00000000129 | <0.000000000998 | <0.00000000100 | <0.00000000101 | <0.00000000101 | 0.00000000211 | <0.00000000101 | <0.000000000997 | <0.00000000150 | <0.00000000101 |
| **BDE# 8/11** | <0.00000000152 | <0.00000000140 | 0.00000000294 | <0.00000000195 | <0.00000000113 | <0.00000000138 | <0.00000000313 | <0.00000000272 | <0.00000000223 | <0.00000000146 | <0.00000000384 | <0.00000000157 |
| **BDE# 85** | <0.00000000156 | 0.00000000172 | 0.00000000237 | <0.00000000112 | 0.00000000195 | 0.0000000016 | <0.00000000154 | 0.00000000449 | <0.00000000294 | <0.000000000998 | 0.0000000732 | 0.00000000151 |
| **BDE# 99** | 0.0000000112 | 0.0000000546 | 0.0000000478 | 0.000000015 | 0.0000000454 | 0.0000000266 | 0.0000000248 | 0.000000146 | 0.000000015 | 0.0000000187 | 0.000000404 | 0.0000000179 |
| **Benzoylecgonine** | <0.0000000307 | <0.000000303 | <0.000000298 | <0.000000297 | <0.000000301 | <0.0000003 | <0.000000297 | <0.000000300 | <0.000000302 | <0.000000307 | <0.000000300 | <0.000000302 |
| **Benztropine** | <0.000000511 | <0.000000505 | <0.000000497 | <0.000000495 | <0.000000501 | <0.0000005 | <0.000000495 | <0.000000500 | <0.000000504 | <0.000000512 | <0.000000500 | <0.000000504 |
| **beta BHC** | <0.0000000536 | <0.0000000389 | <0.0000000291 | <0.0000000128 | <0.0000000322 | <0.0000000143 | <0.0000000172 | <0.0000000576 | <0.0000000031 | <0.0000000250 | <0.0000000215 | <0.0000000152 |
| **Betamethasone** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Bisphenol A** | <0.000511 | <0.000505 | <0.000497 | <0.000495 | <0.000501 | <0.0005 | <0.000495 | <0.000500 | <0.000504 | <0.000512 | <0.000500 | <0.000504 |
| **Busulfan** | <0.00000228 | <0.00000225 | <0.000007 | <0.00000221 | <0.00000223 | <0.0000182 | <0.00000221 | <0.00000223 | <0.00000225 | <0.00000228 | <0.00000223 | <0.00000996 |
| **Caffeine** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | 0.0000212 | <0.000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000151 |
| **Captan** | <0.00000258 | <0.00000155 | <0.00000173 | <0.000000645 | <0.00000139 | <0.00000114 | <0.000000380 | <0.00000202 | <0.000000755 | <0.000000543 | <0.00000136 | <0.0000013 |
| **Carbadox** | <0.00000153 | <0.00000175 | <0.00000149 | <0.00000148 | <0.00000252 | <0.0000015 | <0.00000148 | <0.00000157 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Carbamazepine** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000352 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Cefotaxime** | <0.00000196 | <0.00000194 | <0.0000218 | <0.0000436 | <0.00000192 | <0.0000404 | <0.00000190 | <0.00000192 | <0.00000802 | <0.00000196 | <0.00000192 | <0.0000277 |
| **Chlorothalonil** | <0.0000000999 | 0.000000383 | <0.000000101 | <0.000000100 | <0.000000196 | <0.000000101 | <0.000000101 | <0.000000232 | <0.000000102 | <0.000000100 | 0.000000345 | <0.000000101 |
| **Chlorpyriphos** | <0.000000287 | <0.000000373 | <0.000000172 | <0.000000100 | <0.000000196 | <0.000000115 | <0.000000101 | <0.000000402 | <0.000000102 | <0.000000100 | <0.000000229 | <0.000000137 |
| **Chlorpyriphos Methyl** | <0.0000000999 | <0.000000215 | <0.000000101 | <0.000000100 | <0.000000196 | <0.000000101 | <0.000000101 | <0.000000232 | <0.000000102 | <0.000000100 | <0.000000206 | <0.000000101 |
| **Chlorpyriphos Oxon** | <0.000000290 | <0.000000215 | <0.00000016 | <0.000000111 | <0.000000196 | <0.000000133 | <0.000000128 | <0.000000232 | <0.000000102 | <0.000000149 | <0.000000206 | <0.000000111 |
| **Chlortetracycline (CTC)** | <0.00000613 | <0.00000605 | <0.0000199 | <0.00000594 | <0.00000601 | <0.00002 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.0000201 |
| **Cimetidine** | <0.000000604 | <0.000000607 | <0.000000612 | <0.000000606 | <0.000000602 | <0.000000616 | <0.000000592 | <0.000000597 | <0.000000595 | <0.000000608 | <0.000000616 | <0.000000611 |
| **Ciprofloxacin** | <0.0000163 | <0.0000157 | <0.00000765 | <0.0000481 | | <0.0000322 | <0.00000621 | <0.00000683 | <0.00000605 | <0.0000180 | | <0.0000184 |
| **cis nonachlor** | <0.0000000430 | <0.0000000340 | <0.0000000254 | 0.000000017 | <0.0000000196 | <0.0000000155 | <0.0000000140 | <0.0000000428 | <0.0000000446 | <0.0000000510 | <0.0000000263 | <0.0000000101 |
| **Citalopram** | <0.000000409 | <0.000000654 | <0.000000397 | <0.000000396 | <0.00000211 | <0.000000615 | <0.000000396 | <0.000000400 | <0.000000999 | <0.000000409 | <0.00000190 | <0.000000811 |
| **Clarithromycin** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Clinafloxacin** | <0.0000494 | <0.0000289 | <0.00002 | <0.000125 | | <0.0000512 | <0.0000136 | <0.0000101 | <0.0000114 | <0.0000787 | | <0.0000307 |
| **Clonidine** | <0.00000151 | <0.00000152 | <0.00000153 | <0.00000151 | <0.00000151 | <0.00000154 | <0.00000148 | <0.00000149 | <0.00000149 | <0.00000152 | <0.00000154 | <0.00000153 |
| **Clotrimazole** | <0.000000409 | <0.000000404 | <0.000000397 | <0.000000396 | <0.000000401 | <0.0000004 | <0.000000396 | <0.000000400 | <0.000000403 | <0.000000409 | <0.000000400 | <0.000000403 |
| **Cloxacillin** | <0.00000307 | <0.00000303 | <0.00000298 | <0.00000297 | <0.00000301 | <0.000003 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000307 | <0.00000300 | <0.00000302 |
| **Cocaine** | 0.000000168 | <0.000000151 | <0.000000149 | <0.000000148 | <0.000000194 | <0.000000255 | <0.000000148 | <0.000000150 | <0.000000151 | <0.000000153 | 0.000000179 | <0.000000216 |
| **Codeine** | <0.00000302 | <0.00000303 | <0.00000306 | <0.00000303 | <0.00000301 | <0.00000308 | <0.00000296 | <0.00000298 | <0.00000298 | <0.00000304 | <0.00000308 | <0.00000305 |
| **Colchicine** | 0.00000242 | <0.00000352 | <0.00000287 | <0.00000316 | <0.00000292 | <0.00000126 | <0.00000137 | <0.00000205 | <0.00000165 | <0.00000216 | <0.00000366 | <0.00000405 |
| **Cotinine** | <0.00000151 | <0.00000152 | <0.00000153 | <0.00000151 | <0.00000151 | <0.00000154 | <0.00000148 | <0.00000149 | <0.00000149 | <0.00000152 | <0.00000154 | <0.00000153 |
| **Cyanazine** | <0.00000422 | <0.00000566 | <0.00000295 | <0.00000206 | <0.00000484 | <0.0000022 | <0.00000166 | <0.00000760 | <0.0000017 | <0.00000220 | <0.00000440 | <0.00000233 |
| **Cyclophosphamide** | <0.000000818 | <0.000000807 | <0.000000794 | <0.000000792 | <0.000000801 | <0.000000861 | <0.000000792 | <0.000000800 | <0.000000807 | <0.000000818 | <0.000000800 | <0.000000806 |
| **Cypermethrin** | <0.00000320 | <0.00000162 | <0.000000588 | <0.000000377 | <0.00000130 | <0.000000422 | <0.000000305 | <0.00000199 | <0.000000397 | <0.000000395 | <0.00000122 | <0.000000544 |
| **Dacthal** | <0.0000000999 | <0.000000215 | <0.000000101 | <0.000000100 | <0.000000196 | <0.000000101 | <0.000000101 | <0.000000232 | <0.000000102 | <0.000000100 | <0.000000206 | <0.000000101 |
| **Daunorubicin** | <0.00000818 | <0.00000807 | <0.00000794 | <0.00000792 | <0.00000801 | <0.00000799 | <0.00000792 | <0.00000800 | <0.00000807 | <0.00000818 | <0.00000800 | <0.00000806 |
| **DEET** | 0.0000647 | 0.00000773 | 0.00000767 | 0.00000184 | 0.000002 | 0.000013 | 0.00000205 | 0.00000386 | 0.00000338 | 0.00000251 | 0.00000212 | 0.00000851 |
| **Dehydronifedipine** | <0.000000726 | <0.000000605 | <0.000000596 | <0.00000106 | <0.000000889 | <0.0000006 | <0.000000594 | <0.000000600 | <0.000000605 | <0.000000926 | <0.000000689 | <0.000000604 |
| **delta BHC** | <0.0000000568 | <0.0000000446 | <0.0000000317 | <0.0000000148 | <0.0000000360 | <0.0000000154 | <0.0000000202 | <0.0000000671 | <0.0000000192 | <0.0000000296 | <0.0000000239 | <0.0000000158 |
| **Demeclocycline** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | <0.0000150 | <0.000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000151 |
| **Desethylatrazine** | 0.00000142 | 0.00000243 | 0.000000488 | 0.00000258 | 0.00000819 | 0.00000553 | 0.00000567 | 0.00000607 | 0.00000176 | 0.00000131 | 0.00000439 | 0.00000141 |
| **Desmethyldiltiazem** | <0.0000000153 | <0.0000000151 | <0.0000000149 | <0.0000000148 | <0.0000000150 | <0.0000000015 | <0.0000000148 | <0.0000000150 | <0.0000000833 | <0.0000000153 | <0.0000000150 | <0.0000000151 |
| **Diatrizoic Acid** | <0.0000245 | <0.0000242 | <0.0000238 | <0.0000237 | <0.0000240 | <0.000165 | <0.0000238 | <0.0000240 | <0.0000475 | <0.0000246 | <0.0000240 | <0.0000408 |
| **Diazepam** | <0.0000000307 | <0.0000000303 | <0.0000000298 | <0.0000000297 | <0.0000000358 | <0.0000003 | <0.0000000297 | <0.0000000300 | <0.0000000302 | <0.0000000307 | <0.0000000300 | <0.0000000302 |
| **diazinon** | <0.0000000477 | <0.0000000691 | <0.0000000512 | <0.0000000524 | <0.0000000323 | <0.0000000373 | <0.0000000430 | <0.0000000232 | <0.0000000537 | <0.0000000329 | <0.0000000413 | <0.0000000182 |
| **Diazinon Oxon** | <0.0000000375 | <0.0000000965 | <0.00000043 | <0.0000000268 | <0.0000000839 | <0.0000000413 | <0.0000000242 | <0.0000000875 | <0.0000000265 | <0.0000000250 | <0.0000000655 | <0.0000000326 |
| **dieldrin** | <0.0000000305 | <0.0000000228 | <0.0000000025 | <0.0000000128 | <0.0000000196 | <0.0000000022 | <0.0000000101 | <0.0000000293 | <0.0000000015 | <0.0000000110 | <0.0000000240 | <0.0000000022 |
| **Digoxigenin** | <0.000139 | <0.0000292 | <0.000102 | <0.000227 | <0.0000618 | <0.000304 | <0.0000120 | <0.0000163 | <0.000059 | <0.000104 | <0.0000601 | <0.000251 |
| **Digoxin** | <0.00000613 | <0.00000605 | <0.00000596 | <0.00000594 | <0.00000601 | <0.0000006 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000604 |
| **Diltiazem** | <0.0000000616 | <0.0000000303 | <0.0000000298 | <0.00000116 | <0.0000000301 | <0.0000003 | <0.0000000318 | <0.0000000365 | <0.0000000302 | <0.0000000653 | <0.0000000300 | <0.0000000302 |
| **Dimethoate** | <0.00000626 | <0.00000648 | <0.0000053 | <0.00000225 | <0.00000623 | <0.0000032 | <0.00000184 | <0.0000132 | <0.00000424 | <0.00000211 | <0.00000423 | <0.00000332 |
| **Diphenhydramine** | <0.0000000613 | <0.0000000605 | <0.0000000596 | <0.0000000594 | <0.0000000601 | <0.0000006 | <0.0000000594 | <0.0000000600 | <0.0000000605 | <0.0000000614 | <0.0000000600 | <0.0000000604 |
| **disulfoton** | <0.0000000526 | <0.00000228 | <0.0000000868 | <0.0000000235 | <0.00000159 | <0.0000000748 | <0.0000000101 | <0.00000219 | <0.0000000464 | <0.0000000108 | <0.00000151 | <0.0000000706 |
| **disulfoton sulfone** | <0.0000000752 | <0.0000000270 | <0.0000000101 | <0.0000000101 | <0.0000000283 | <0.0000000101 | <0.0000000101 | <0.0000000700 | <0.0000000102 | <0.0000000116 | <0.0000000270 | |

**Table 16.** *(continued)*

| | BLA-W1 | BLA-W2 | BLA-W3 | CED-W1 | CED-W2 | CED-W3 | GEN-W1 | GEN-W2 | GEN-W3 | WHI-W1 | WHI-W2 | WHI-W3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Doxorubicin** | <0.0000245 | <0.0000242 | <0.0000238 | <0.0000237 | <0.0000240 | <0.000024 | <0.0000238 | <0.0000240 | <0.0000242 | <0.0000246 | <0.0000240 | <0.0000242 |
| **Doxycycline** | <0.00000613 | <0.00000605 | <0.00000596 | <0.00000594 | <0.00000601 | <0.000006 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000604 |
| **Drospirenone** | <0.00000818 | <0.00000807 | <0.00000794 | <0.00000792 | <0.00000801 | <0.00000799 | <0.00000792 | <0.00000800 | <0.00000807 | <0.00000818 | <0.00000800 | <0.00000806 |
| **Enalapril** | <0.000000302 | <0.000000303 | <0.000000306 | <0.000000303 | <0.000000301 | <0.000000308 | <0.000000296 | <0.000000298 | <0.000000298 | <0.000000304 | <0.000000308 | <0.000000305 |
| **endosulfan I** | <0.000000360 | <0.000000608 | <0.000000712 | <0.000000368 | <0.000000641 | <0.00000062 | <0.000000482 | <0.000000216 | <0.000000626 | <0.000000553 | <0.000000308 | <0.000000574 |
| **endosulfan II** | <0.000000234 | <0.000000294 | <0.000000245 | <0.000000337 | <0.000000229 | <0.000000214 | <0.000000268 | <0.000000137 | <0.000000238 | <0.000000132 | <0.000000230 | <0.000000278 |
| **Endosulphan Sulphate** | <0.0000000936 | <0.0000000766 | <0.000000107 | <0.0000000560 | <0.0000000590 | <0.0000000663 | <0.0000000315 | <0.000000184 | <0.000000182 | <0.0000000530 | <0.0000000693 | <0.0000000622 |
| **endrin** | <0.0000000440 | <0.0000000332 | 0.000000031 | <0.0000000250 | <0.0000000220 | <0.0000000134 | <0.0000000370 | <0.0000000692 | <0.0000000373 | <0.0000000370 | <0.0000000299 | <0.00000003 |
| **Endrin Ketone** | <0.0000000289 | <0.000000124 | <0.0000000922 | <0.0000000747 | <0.0000000937 | <0.0000000317 | <0.0000000566 | <0.000000183 | <0.000000036 | <0.0000000969 | <0.0000000907 | <0.0000000425 |
| **Enrofloxacin** | <0.00000307 | <0.00000333 | <0.00000298 | <0.00000484 | | <0.0000046 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000337 | | <0.00000388 |
| **Erythromycin H2O** | <0.00000235 | <0.00000232 | <0.00000228 | <0.00000228 | <0.00000230 | 0.00000236 | <0.00000228 | <0.00000230 | <0.00000232 | <0.00000235 | <0.00000230 | <0.00000232 |
| **Ethion** | <0.00000139 | <0.000000810 | <0.000000371 | <0.000000335 | <0.000000721 | <0.000000297 | <0.000000259 | <0.00000114 | <0.000000145 | <0.000000346 | <0.000000524 | <0.000000217 |
| **Etoposide** | <0.00000204 | <0.00000202 | <0.00000199 | <0.00000198 | <0.00000200 | <0.000002 | <0.00000198 | <0.00000200 | <0.00000202 | <0.00000205 | <0.00000200 | <0.00000201 |
| **Fenitrothion** | <0.00000117 | <0.000000754 | <0.000000299 | <0.000000290 | <0.000000558 | <0.000000188 | <0.000000265 | <0.00000120 | <0.000000123 | <0.000000362 | <0.000000566 | |
| **Flumequine** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000489 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Fluocinonide** | <0.00000613 | <0.00000605 | <0.00000596 | <0.00000594 | <0.00000601 | <0.000006 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000604 |
| **Fluoxetine** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Fluticasone propionate** | <0.00000204 | <0.00000202 | <0.00000199 | <0.00000211 | <0.00000200 | <0.000002 | <0.00000198 | <0.00000200 | <0.00000202 | <0.00000205 | <0.00000200 | <0.00000201 |
| **fonofos** | <0.0000000999 | <0.000000215 | | <0.000000100 | <0.000000196 | | <0.000000101 | <0.000000232 | <0.000000102 | <0.000000100 | <0.000000206 | |
| **Furosemide** | <0.0000409 | <0.0000796 | <0.0000397 | <0.0000396 | <0.0000689 | <0.00004 | <0.0000396 | <0.0000422 | <0.0000403 | <0.0000409 | <0.0000661 | <0.0000403 |
| **gamma BHC** | <0.0000000526 | <0.0000000586 | <0.0000000285 | <0.0000000198 | <0.0000000255 | <0.000000018 | 0.000000021 | <0.0000000310 | <0.0000000161 | <0.0000000318 | <0.0000000349 | <0.000000014 |
| **gamma chlordane** | <0.0000000600 | <0.0000000378 | <0.000000036 | <0.0000000299 | <0.0000000216 | <0.0000000222 | <0.0000000203 | <0.0000000430 | <0.0000000154 | <0.0000000490 | <0.0000000264 | <0.000000019 |
| **Gemfibrozil** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Glipizide** | <0.00000613 | <0.00000605 | <0.00000596 | <0.00000594 | <0.00000601 | <0.000006 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000604 |
| **Glyburide** | <0.00000307 | <0.00000303 | <0.00000298 | <0.00000297 | <0.00000301 | <0.000003 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000307 | <0.00000300 | <0.00000302 |
| **HCB** | <0.0000000240 | 0.000000024 | 0.00000005 | <0.0000000220 | 0.000000035 | 0.000000028 | 0.000000019 | 0.000000041 | 0.00000003 | <0.0000000160 | 0.000000042 | 0.000000029 |
| **Heptachlor** | <0.00000000999 | <0.0000000215 | <0.0000000118 | <0.0000000150 | <0.0000000196 | <0.0000000101 | <0.0000000101 | <0.0000000232 | <0.0000000102 | <0.0000000100 | <0.0000000206 | <0.0000000101 |
| **Heptachlor Epoxide** | <0.000000109 | <0.0000000335 | <0.000000039 | 0.000000026 | <0.0000000199 | <0.00000005 | <0.0000000151 | <0.0000000445 | <0.0000000042 | <0.0000000160 | <0.0000000280 | <0.000000057 |
| **Hexazinone** | <0.000000745 | <0.000000924 | <0.000000354 | <0.000000474 | <0.000000878 | <0.000000559 | <0.000000317 | <0.000000664 | <0.000000163 | <0.000000409 | <0.000000816 | 0.00000121 |
| **Hydrochlorothiazide** | <0.0000204 | <0.0000202 | <0.0000199 | <0.0000198 | 0.0000303 | <0.00002 | <0.0000198 | <0.0000200 | <0.0000673 | <0.0000205 | <0.0000342 | <0.0000201 |
| **Hydrocodone** | <0.00000151 | <0.00000152 | <0.00000153 | <0.00000151 | <0.00000151 | <0.00000154 | <0.00000148 | <0.00000149 | <0.00000149 | <0.00000152 | <0.00000154 | <0.00000153 |
| **Hydrocortisone** | <0.0000613 | <0.0000605 | <0.0000596 | <0.0000594 | <0.0000601 | <0.00006 | <0.0000594 | <0.0000600 | <0.0000605 | <0.0000614 | <0.0000600 | <0.0000604 |
| **Ibuprofen** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | <0.0000150 | <0.0000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000151 |
| **Iopamidol** | <0.000139 | <0.000103 | <0.0000794 | <0.000156 | <0.000179 | <0.0000799 | <0.0000792 | <0.0000800 | <0.0000807 | <0.000143 | <0.000212 | <0.0000806 |
| **Isochlortetracycline (ICTC)** | <0.00000613 | <0.00000605 | <0.00000596 | <0.00000594 | <0.00000601 | <0.000006 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000604 |
| **Lincomycin** | <0.00000307 | <0.00000303 | <0.00000298 | <0.00000297 | <0.00000301 | <0.000003 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000307 | <0.00000300 | <0.00000302 |
| **Lomefloxacin** | <0.00000475 | <0.00000683 | <0.00000433 | <0.0000112 | | <0.0000164 | <0.00000403 | <0.00000464 | <0.00000388 | <0.00000837 | | <0.0000106 |
| **malathion** | <0.00000155 | <0.00000232 | <0.00000135 | <0.000000471 | <0.00000174 | <0.000000942 | <0.000000433 | <0.00000412 | <0.00000061 | <0.000000532 | <0.00000172 | <0.000000936 |
| **Medroxyprogesterone Acetate** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.00000534 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000400 | <0.00000403 |
| **Melphalan** | <0.0000740 | <0.0000242 | <0.00011 | <0.0000855 | <0.0000240 | <0.000226 | <0.0000515 | <0.0000240 | <0.0000742 | <0.0000716 | <0.0000240 | <0.000112 |
| **Meprobamate** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.000004 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000400 | <0.00000403 |
| **Metformin** | 0.0000092 | 0.00000366 | <0.00000306 | <0.00000504 | 0.000252 | 0.00000501 | <0.00000329 | <0.00000298 | <0.0000241 | <0.00000304 | <0.00000308 | <0.00000305 |
| **methoxychlor** | <0.00000126 | <0.00000110 | <0.000000941 | <0.00000145 | <0.00000115 | <0.000000902 | <0.000000590 | <0.000000786 | <0.000000247 | <0.000000950 | <0.00000101 | <0.000000866 |
| **Methylprednisolone** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.000004 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000587 | <0.00000403 |
| **Metoprolol** | <0.0000124 | <0.00000151 | <0.0000115 | <0.0000105 | <0.0000176 | <0.0000305 | <0.00000299 | <0.00000150 | <0.00000389 | <0.00000961 | <0.0000129 | <0.0000168 |
| **Metronidazole** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.000004 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000400 | <0.00000403 |
| **Miconazole** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Minocycline** | <0.0000613 | <0.0000605 | <0.0000596 | <0.0000594 | <0.0000601 | <0.00006 | <0.0000594 | <0.0000600 | <0.0000605 | <0.0000614 | <0.0000600 | <0.0000604 |
| **mirex** | <0.00000000999 | <0.0000000215 | <0.0000000113 | <0.0000000100 | <0.0000000196 | <0.0000000101 | <0.0000000101 | <0.0000000232 | <0.0000000102 | <0.0000000100 | <0.0000000206 | <0.0000000101 |
| **Moxifloxacin** | <0.00000652 | <0.00000722 | <0.00000397 | <0.00000843 | <0.00000401 | <0.0000216 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000797 | <0.0000222 | <0.0000109 |
| **Naproxen** | <0.00000307 | <0.00000538 | <0.00000298 | <0.00000297 | <0.00000483 | <0.000003 | <0.00000297 | <0.00000300 | <0.0000042 | <0.00000307 | <0.00000582 | 0.00000362 |
| **Norfloxacin** | <0.0000637 | <0.0000399 | <0.0000237 | <0.000111 | | <0.0000682 | 0.0000183 | <0.0000178 | <0.0000151 | <0.0000571 | | <0.000038 |
| **Norfluoxetine** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Norgestimate** | <0.0000149 | <0.00000303 | <0.00000298 | <0.00000883 | <0.00000301 | <0.000003 | <0.00000702 | <0.00000300 | <0.00000302 | <0.00000743 | <0.00000300 | <0.00000302 |
| **Norverapamil** | <0.000000153 | <0.000000151 | <0.000000149 | <0.000000148 | <0.000000150 | <0.00000015 | <0.000000148 | <0.000000150 | <0.000000151 | <0.000000153 | <0.000000150 | <0.000000151 |
| **o,p DDD** | <0.000000199 | <0.000000240 | <0.0000000879 | <0.000000103 | <0.000000217 | <0.0000000571 | <0.0000000846 | <0.000000257 | <0.0000000595 | <0.000000116 | <0.000000198 | <0.000000065 |
| **o,p DDE** | <0.0000000924 | <0.0000000821 | <0.000000059 | <0.0000000504 | <0.0000000633 | <0.0000000319 | <0.0000000390 | <0.000000144 | 0.00000003 | <0.0000000521 | <0.0000000547 | <0.0000000361 |
| **o,p DDT** | <0.000000488 | <0.000000391 | <0.000000181 | <0.000000296 | <0.000000363 | <0.000000116 | <0.000000241 | <0.000000625 | <0.00000012 | <0.000000254 | <0.000000315 | <0.000000103 |
| **octachlorostyrene** | <0.0000000380 | <0.0000000362 | <0.0000000196 | <0.0000000115 | <0.0000000196 | <0.0000000101 | <0.0000000130 | <0.0000000371 | <0.0000000105 | <0.0000000134 | <0.0000000206 | <0.0000000182 |
| **Ofloxacin** | <0.00000208 | <0.00000162 | <0.00000167 | <0.00000232 | | <0.00000495 | <0.00000164 | <0.00000150 | <0.00000156 | <0.00000347 | | <0.00000262 |

**Table 16.** *(continued)*

| | BLA-W1 | BLA-W2 | BLA-W3 | CED-W1 | CED-W2 | CED-W3 | GEN-W1 | GEN-W2 | GEN-W3 | WHI-W1 | WHI-W2 | WHI-W3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ormetoprim** | <0.000000613 | <0.000000605 | <0.000000596 | <0.000000808 | <0.000000601 | <0.0000006 | <0.000000594 | <0.000000600 | <0.000000605 | <0.000000941 | <0.000000600 | <0.000000604 |
| **Oxacillin** | <0.00000307 | <0.00000303 | <0.00000298 | <0.00000297 | <0.00000301 | <0.000003 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000307 | <0.00000300 | <0.00000302 |
| **Oxazepam** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.000004 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000400 | <0.00000403 |
| **Oxolinic Acid** | <0.00000363 | <0.000000605 | <0.000000596 | <0.00000624 | <0.000000957 | <0.0000006 | <0.000000616 | <0.000000600 | <0.000000605 | <0.00000274 | <0.000000801 | <0.000000604 |
| **oxychlordane** | <0.0000000659 | <0.0000000452 | <0.000000022 | <0.0000000304 | <0.0000000223 | <0.000000062 | <0.0000000292 | <0.0000000582 | <0.000000029 | <0.0000000278 | <0.0000000308 | <0.0000000229 |
| **Oxycodone** | <0.000000688 | <0.000000607 | <0.000000612 | <0.000000606 | <0.000000602 | <0.000000684 | <0.000000592 | <0.000000597 | 0.000000605 | <0.000000608 | <0.000000616 | <0.000000611 |
| **Oxytetracycline (OTC)** | <0.00000613 | <0.00000605 | <0.00000604 | <0.00000594 | <0.00000601 | <0.00000649 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000673 |
| **p,p' DDD** | <0.000000265 | <0.000000228 | <0.000000101 | <0.000000132 | <0.000000219 | <0.0000000591 | <0.000000102 | <0.000000287 | <0.0000000675 | <0.000000119 | <0.000000182 | <0.0000000555 |
| **p,p' DDE** | <0.000000123 | <0.000000110 | <0.0000000774 | <0.0000000634 | <0.0000000852 | <0.0000000419 | <0.0000000491 | <0.000000188 | 0.000000056 | <0.0000000655 | <0.0000000736 | <0.0000000473 |
| **p,p' DDT** | <0.000000488 | <0.000000385 | <0.000000176 | <0.000000287 | <0.000000370 | <0.000000103 | <0.000000221 | <0.000000607 | <0.000000119 | <0.000000259 | <0.000000308 | <0.0000000964 |
| **Parathion-Ethyl** | <0.000000280 | <0.00000184 | <0.000000868 | <0.000000129 | <0.00000180 | <0.000000636 | <0.000000120 | <0.00000288 | <0.000000512 | <0.000000186 | <0.000000959 | <0.000000819 |
| **Parathion Methyl** | <0.00000350 | <0.00000445 | <0.0000036 | <0.00000136 | <0.00000326 | <0.00000232 | <0.00000155 | <0.00000595 | <0.00000231 | <0.00000185 | <0.00000350 | <0.00000181 |
| **Paroxetine** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.000004 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000400 | <0.00000403 |
| **Penicillin G** | <0.00000307 | <0.00000303 | <0.00000298 | <0.00000297 | <0.00000301 | <0.000003 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000307 | <0.00000300 | <0.00000302 |
| **Penicillin V** | <0.00000307 | <0.00000303 | <0.00000298 | <0.00000297 | <0.00000301 | <0.000003 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000307 | <0.00000300 | <0.00000302 |
| **Permethrin** | <0.000000620 | <0.000000834 | <0.000000345 | <0.000000423 | <0.000000848 | <0.000000437 | <0.000000252 | <0.000000838 | <0.000000234 | <0.000000358 | <0.000000692 | <0.000000346 |
| **Perthane** | <0.00000120 | <0.00000190 | <0.00000101 | <0.000000591 | <0.00000169 | <0.000000774 | <0.000000504 | <0.00000220 | <0.000000635 | <0.000000918 | <0.00000137 | <0.000000835 |
| **Phosmet** | <0.000000580 | <0.000000910 | <0.000000461 | <0.000000294 | <0.000000827 | <0.000000518 | <0.000000236 | <0.00000134 | <0.000000333 | <0.000000267 | <0.000000778 | <0.000000552 |
| **Pirimiphos Methyl** | <0.0000000999 | <0.000000215 | <0.000000101 | <0.000000100 | <0.000000196 | <0.000000101 | <0.000000101 | <0.000000232 | <0.000000102 | <0.000000100 | <0.000000206 | <0.000000101 |
| **Prednisolone** | <0.00000613 | <0.00000605 | <0.0000178 | <0.00000594 | <0.00000601 | <0.0000593 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.0000381 |
| **Prednisone** | <0.0000204 | <0.0000276 | <0.0000199 | <0.0000198 | <0.0000461 | <0.0000614 | <0.0000198 | <0.0000200 | <0.0000202 | <0.0000397 | <0.0000200 | <0.000119 |
| **Promethazine** | <0.000000409 | <0.000000404 | <0.000000397 | <0.000000396 | <0.000000401 | <0.0000004 | <0.000000396 | <0.000000400 | <0.000000403 | <0.000000409 | <0.000000400 | <0.000000403 |
| **Propoxyphene** | <0.000000307 | <0.000000303 | <0.000000298 | <0.000000297 | <0.000000301 | <0.0000003 | <0.000000297 | <0.000000300 | <0.000000302 | <0.000000307 | <0.000000300 | <0.000000302 |
| **Propranolol** | <0.00000204 | <0.00000202 | <0.00000199 | <0.00000198 | <0.00000200 | <0.000002 | <0.00000198 | <0.00000200 | <0.00000202 | <0.00000205 | <0.00000200 | <0.00000201 |
| **Quintozene** | <0.0000000999 | <0.000000215 | <0.000000101 | <0.000000100 | <0.000000196 | <0.000000101 | <0.000000101 | <0.000000232 | <0.000000102 | <0.000000122 | <0.000000206 | <0.000000101 |
| **Ranitidine** | <0.000000604 | <0.000000607 | <0.000000612 | <0.000000606 | <0.000000602 | <0.000000616 | <0.000000592 | <0.000000597 | <0.000000742 | <0.000000608 | <0.000000616 | <0.000000611 |
| **Rosuvastatin** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.000004 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000433 | <0.00000403 |
| **Roxithromycin** | <0.000000307 | <0.000000303 | <0.000000298 | <0.000000297 | <0.000000301 | <0.0000003 | <0.000000297 | <0.000000300 | <0.000000302 | <0.000000307 | <0.000000300 | <0.000000302 |
| **Sarafloxacin** | <0.0000153 | <0.0000151 | <0.0000162 | <0.0000169 | | <0.000037 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | | <0.0000234 |
| **Sertraline** | <0.000000409 | <0.000000449 | <0.000000397 | 0.00000064 | 0.000000869 | <0.000000742 | <0.000000396 | <0.000000400 | <0.000000403 | 0.000000841 | 0.00000059 | <0.000000449 |
| **Simvastatin** | <0.0000204 | <0.0000202 | <0.0000662 | <0.0000198 | <0.0000200 | <0.0000666 | <0.0000198 | <0.0000200 | <0.0000202 | <0.0000205 | <0.0000200 | <0.0000672 |
| **Sulfachloropyridazine** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Sulfadiazine** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Sulfadimethoxine** | <0.000000525 | <0.000000303 | <0.000000298 | <0.000000297 | <0.000000301 | <0.000000539 | <0.000000297 | <0.000000300 | <0.000000321 | <0.00000117 | <0.000000300 | <0.000000306 |
| **Sulfamerazine** | <0.000000613 | <0.000000605 | <0.000000658 | <0.000000594 | <0.000000762 | <0.0000018 | <0.000000594 | <0.000000600 | <0.000000605 | <0.000000614 | <0.000000781 | <0.00000155 |
| **Sulfamethazine** | <0.00000189 | <0.00000141 | <0.00000132 | <0.00000579 | <0.00000205 | <0.00000319 | <0.00000114 | <0.000000647 | <0.000000605 | <0.00000238 | <0.00000144 | <0.00000246 |
| **Sulfamethizole** | <0.000000880 | <0.000000605 | <0.000000832 | <0.00000111 | <0.000000601 | <0.00000095 | <0.000000648 | <0.000000600 | <0.000000673 | <0.000000822 | <0.000000600 | <0.000000843 |
| **Sulfamethoxazole** | <0.000000613 | <0.000000605 | <0.000000596 | <0.000000594 | 0.00000154 | <0.0000006 | 0.000000934 | 0.00000253 | <0.000000605 | <0.000000614 | <0.000000600 | <0.000000604 |
| **Sulfanilamide** | <0.0000153 | <0.0000151 | <0.0000149 | <0.0000148 | <0.0000150 | <0.000015 | <0.0000148 | <0.0000150 | <0.0000151 | <0.0000153 | <0.0000150 | <0.0000151 |
| **Sulfathiazole** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000208 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **Tamoxifen** | <0.000000409 | <0.000000404 | <0.000000397 | <0.000000396 | <0.000000401 | <0.0000004 | <0.000000396 | <0.000000400 | <0.000000403 | <0.000000409 | <0.000000400 | <0.000000403 |
| **Tecnazene** | <0.0000000999 | <0.000000215 | <0.000000101 | <0.000000100 | <0.000000196 | <0.000000101 | <0.000000101 | <0.000000232 | <0.000000102 | <0.000000100 | <0.000000206 | <0.000000101 |
| **Teniposide** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.000004 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000400 | <0.00000565 |
| **Tetracycline (TC)** | <0.00000613 | <0.00000605 | <0.00000603 | <0.00000594 | <0.00000601 | <0.00000633 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000648 |
| **Theophylline** | <0.0000613 | <0.0000605 | <0.0000596 | <0.0000594 | <0.0000601 | <0.00006 | <0.0000594 | <0.0000600 | <0.0000605 | <0.0000614 | <0.0000600 | <0.0000604 |
| **Thiabendazole** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000150 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000151 |
| **trans nonachlor** | <0.0000000575 | <0.0000000363 | <0.000000037 | <0.0000000299 | <0.0000000224 | <0.000000023 | <0.0000000190 | <0.0000000360 | <0.0000000145 | <0.0000000207 | <0.0000000268 | <0.000000021 |
| **Trenbolone** | <0.00000409 | <0.00000404 | <0.00000397 | <0.00000396 | <0.00000401 | <0.000004 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000400 | <0.00000403 |
| **Trenbolone acetate** | <0.000000307 | <0.000000303 | <0.000000298 | <0.000000497 | <0.000000380 | <0.00000069 | <0.000000297 | <0.000000300 | <0.000000302 | <0.000000307 | <0.000000300 | <0.00000044 |
| **Triamterene** | <0.000000302 | <0.000000303 | <0.000000306 | <0.000000303 | <0.000000301 | <0.000000321 | <0.000000296 | <0.000000298 | <0.000000298 | <0.000000304 | <0.000000308 | <0.000000305 |
| **Triclocarban** | <0.00000307 | <0.00000303 | <0.00000298 | <0.00000297 | <0.00000301 | <0.000003 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000307 | <0.00000300 | <0.00000302 |
| **Triclosan** | <0.0000613 | <0.0000605 | <0.0000596 | <0.0000594 | <0.0000601 | <0.00006 | <0.0000594 | <0.0000600 | <0.0000605 | <0.0000614 | <0.0000600 | <0.0000604 |
| **Trimethoprim** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000577 | <0.00000156 | <0.00000186 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000150 | <0.00000237 |
| **Tylosin** | <0.00000613 | <0.00000605 | <0.00000596 | <0.00000594 | <0.00000601 | <0.000006 | <0.00000594 | <0.00000600 | <0.00000605 | <0.00000614 | <0.00000600 | <0.00000604 |
| **Valsartan** | <0.00000409 | <0.00000404 | <0.0000132 | <0.00000396 | 0.00000575 | <0.0000133 | <0.00000396 | <0.00000400 | <0.00000403 | <0.00000409 | <0.00000400 | <0.0000134 |
| **Venlafaxine** | <0.000000818 | <0.00000323 | <0.00000318 | <0.000000792 | <0.00000321 | <0.0000032 | <0.000000792 | <0.00000320 | <0.00000323 | <0.000000818 | <0.00000320 | <0.00000322 |
| **Verapamil** | <0.000000153 | <0.000000151 | <0.000000149 | <0.000000148 | <0.000000150 | <0.00000015 | <0.000000148 | <0.000000150 | <0.000000151 | <0.000000153 | <0.000000150 | <0.000000151 |
| **Virginiamycin M1** | <0.00000307 | <0.00000303 | <0.00000298 | <0.00000926 | <0.00000322 | <0.00000384 | <0.00000297 | <0.00000300 | <0.00000302 | <0.00000340 | <0.00000300 | <0.00000302 |
| **Warfarin** | <0.00000153 | <0.00000151 | <0.00000149 | <0.00000148 | <0.00000296 | <0.0000015 | <0.00000148 | <0.00000150 | <0.00000151 | <0.00000153 | <0.00000257 | <0.00000151 |
| **Zidovudine** | <0.0000373 | <0.0000530 | <0.0000619 | <0.0000320 | <0.0000966 | <0.000126 | <0.0000238 | <0.0000240 | <0.0000358 | <0.0000246 | <0.0000338 | <0.000123 |

**Table 17.** Water chemistry analytical results for 2018 samples. Concentrations are reported in parts per million. Blank values indicate sample did not meet quality control criteria.

| | BLA W1 | BLA W2 | BLA W3 | GEN-W1 | GEN-W2 | GEN-W3 | KEW-W1 | KEW-W2 |
|---|---|---|---|---|---|---|---|---|
| **Sample collection date** | 5/5/2018 | 6/14/2018 | 8/14/2018 | 5/4/2018 | 5/25/2018 | 9/30/2018 | 5/4/2018 | 5/30/2018 |
| **1,7 Dimethylxanthine** | <0.00005629999999 | <0.0000623 | <0.00005999999999 | <0.00005629999999 | <0.00005559999999 | <0.0000561 | <0.0000541 | <0.0000576 |
| **10-hydroxyamitriptyline** | <0.000000165 | <0.000000156 | <0.00000015 | <0.00000014999999 | <0.000000139 | <0.00000014 | <0.000000135 | <0.000000144 |
| **2 Hydroxyibuprofen** | <0.0000751 | <0.00008309999999 | <0.00007999999999 | <0.0000751 | <0.0000742 | <0.00007479999999 | <0.00007209999999 | <0.0000767 |
| **4 Epianhydrochlortetracycline** | <0.00005629999999 | <0.0000623 | <0.00005999999999 | <0.00005629999999 | <0.00005559999999 | <0.0000561 | <0.0000541 | <0.0000576 |
| **4 Epianhydrotetracycline (EATC)** | <0.00001409999999 | <0.0000156 | <0.00001499999999 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **4 Epichlortetracycline (ECTC)** | <0.00001409999999 | <0.0000156 | <0.000018 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **4 Epioxytetracycline (EOTC)** | <0.00000562999999 | <0.00000701 | <0.000009 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000641 |
| **4 Epitetracycline (ETC)** | <0.00000562999999 | <0.00000669 | <0.00000753 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Acetaminophen** | <0.00001409999999 | <0.0000156 | <0.00001499999999 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **Albuterol** | <0.000000293 | <0.00000028499999 | <0.00000029 | <0.000000293 | <0.00000029199999 | <0.00000029899999 | <0.000000293 | <0.00000029 |
| **Aldrin** | <0.0000000101 | <0.0000000338 | <0.00000003119999 | <0.0000000101 | <0.0000000315 | <0.000000131 | <0.0000000101 | <0.0000000193 |
| **alpha BHC** | <0.0000000165 | <0.00000003549999 | <0.000000125 | <0.0000000217 | <0.0000000328 | <0.0000000918 | 0.000000029 | <0.0000000458 |
| **alpha chlordane** | <0.0000000101 | <0.0000000769 | <0.0000000727 | <0.00000001529999 | <0.0000000669 | <0.00000049099999 | <0.00000001149999 | <0.00000005939999 |
| **Alprazolam** | <0.00000028199999 | <0.000000312 | <0.0000003 | <0.00000028199999 | <0.000000278 | <0.000000281 | <0.00000027 | <0.000000288 |
| **Ametryn** | <0.00000013 | <0.00000017199999 | <0.00000010199999 | <0.000000101 | <0.00000012699999 | | <0.00000020499999 | <0.00000029899999 |
| **Amitriptyline** | <0.000000417 | <0.00000034399999 | <0.000000483 | <0.00000028199999 | <0.000000278 | <0.000000281 | <0.00000028699999 | <0.000000288 |
| **Amlodipine** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Amphetamine** | <0.00000147 | <0.00000142 | <0.00000144999999 | <0.00000147 | 0.0000064 | 0.00000187999999 | <0.00000147 | <0.00000144999999 |
| **Amsacrine** | <0.00000014599999 | <0.000000162 | <0.00000014299999 | <0.00000007509999 | <0.0000000742 | <0.00000009309999 | <0.00000018999999 | <0.0000000855 |
| **Anhydrochlortetracycline (ACTC)** | <0.00001409999999 | <0.0000156 | <0.00001499999999 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **Anhydrotetracycline (ATC)** | <0.00001409999999 | <0.0000156 | <0.0000157 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **Atenolol** | <0.000000587 | <0.000000569 | <0.00000058099999 | <0.000000586 | <0.00000058399999 | <0.00000059799999 | <0.000000587 | <0.00000058 |
| **Atorvastatin** | <0.00000147 | <0.00000142 | <0.00000144999999 | <0.00000147 | <0.00000146 | <0.0000015 | <0.00000147 | <0.00000144999999 |
| **Atrazine** | 0.00000768 | <0.0000014 | <0.00000113999999 | <0.00000102999999 | <0.00000381 | <0.0000052 | 0.0000396 | 0.0000149 |
| **Azathioprine** | <0.00000187999999 | <0.00000208 | <0.000002 | <0.00000187999999 | <0.00000185 | <0.00000187 | <0.0000018 | <0.00000192 |
| **azinphos methyl** | <0.00000144999999 | <0.00000268999999 | <0.00000462 | <0.0000000621 | <0.00000158 | <0.0000121 | <0.00000146 | <0.00000221 |
| **Azithromycin** | <0.00000201999999 | <0.00000155999999 | <0.00000162 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000171 | <0.00000144 |
| **BDE# 10** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 100** | 0.00000000237 | 0.00000000228 | 0.0000000127 | 0.00000000443 | 0.00000000273 | 0.00000000403 | 0.00000000617 | 0.00000000165 |
| **BDE# 105** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 116** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 119/120** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 12/13** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 126** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 128** | <0.000000001 | <0.00000000102 | 0.00000000117 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 138/166** | <0.000000001 | <0.00000000102 | 0.0000000123 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 140** | <0.000000001 | <0.00000000102 | 0.00000000289 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 15** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 153** | 0.00000000177 | <0.00000000102 | 0.0000000273 | 0.00000000386 | 0.00000000181 | 0.00000000187 | 0.00000000444 | 0.00000000203 |
| **BDE# 154** | 0.00000000147 | <0.00000000102 | 0.0000000184 | 0.00000000209 | <0.00000000101 | 0.00000000152 | 0.00000000332 | 0.00000000102 |
| **BDE# 155** | <0.000000001 | <0.00000000102 | 0.00000000111 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 17/25** | <0.000000001 | <0.00000000102 | <0.00000000101 | 0.00000000146 | <0.00000000101 | 0.00000000136 | 0.00000000189 | <0.00000000101 |
| **BDE# 181** | <0.000000001 | 0.00000000137 | 0.00000000164 | <0.00000000102 | 0.00000000168 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 183** | <0.000000001 | 0.00000000257 | 0.00000000459 | 0.00000000109 | 0.00000000181 | 0.0000000018 | 0.00000000244 | 0.00000000546 |
| **BDE# 190** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | 0.0000000012 | <0.00000000101 | <0.000000001 | 0.00000000874 |
| **BDE# 203** | 0.00000000175 | 0.00000000505 | 0.00000000234 | 0.0000000038 | 0.00000000532 | 0.00000000656 | 0.00000000731 | 0.0000000296 |
| **BDE# 206** | 0.00000000278 | 0.00000000671 | <0.00000000101 | 0.0000000588 | 0.0000000112 | 0.0000000733 | 0.0000000892 | 0.0000001 |
| **BDE# 207** | 0.0000000148 | 0.0000000163 | 0.0000000183 | 0.0000000485 | 0.0000000311 | 0.0000000997 | 0.000000176 | 0.000000181 |

**Table 17.** *(continued)*

| | BLA W1 | BLA W2 | BLA W3 | GEN-W1 | GEN-W2 | GEN-W3 | KEW-W1 | KEW-W2 |
|---|---|---|---|---|---|---|---|---|
| **BDE# 208** | 0.00000000187 | 0.0000000105 | 0.0000000151 | 0.0000000361 | 0.0000000186 | 0.0000000618 | 0.0000000131 | 0.0000000127 |
| **BDE# 209** | 0.000000105 | 0.0000000691 | 0.0000000784 | 0.000000667 | 0.000000295 | 0.000000431 | 0.00000241 | 0.00000283 |
| **BDE# 28/33** | 0.00000000109 | 0.00000000198 | 0.00000000107 | 0.00000000222 | 0.00000000172 | 0.00000000102 | 0.0000000011 | 0.00000000124 |
| **BDE# 30** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 32** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 35** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 37** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 47** | 0.0000000135 | 0.000000011 | 0.0000000171 | 0.0000000264 | 0.0000000138 | 0.0000000165 | 0.0000000272 | 0.00000000909 |
| **BDE# 49** | <0.000000001 | <0.00000000102 | 0.00000000138 | <0.00000000102 | <0.00000000101 | <0.00000000101 | 0.00000000216 | <0.00000000101 |
| **BDE# 51** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 66** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | 0.00000000135 | <0.00000000101 |
| **BDE# 7** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 71** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 75** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 77** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 79** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 8/11** | <0.000000001 | <0.00000000102 | <0.00000000101 | <0.00000000102 | <0.00000000101 | <0.00000000101 | <0.000000001 | <0.00000000101 |
| **BDE# 85** | <0.000000001 | <0.00000000102 | 0.0000000249 | 0.00000000103 | <0.00000000101 | 0.00000000119 | 0.00000000148 | 0.00000000133 |
| **BDE# 99** | 0.00000000981 | 0.00000000657 | 0.0000000849 | 0.0000000202 | 0.0000000109 | 0.000000013 | 0.0000000249 | 0.00000000838 |
| **Benzoylecgonine** | <0.00000028199999 | <0.000000312 | <0.0000003 | <0.00000028199999 | <0.000000278 | <0.000000281 | <0.00000027 | <0.000000288 |
| **Benztropine** | <0.00000046899999 | <0.000000519 | <0.0000005 | <0.00000046899999 | <0.000000464 | <0.000000468 | <0.000000451 | <0.00000048 |
| **beta BHC** | <0.0000000101 | <0.0000000479 | <0.0000000125 | <0.0000000213 | <0.0000000473 | <0.0000000187 | <0.0000000101 | <0.00000005689999 |
| **Betamethasone** | <0.00000469 | <0.00000155999999 | <0.0000015 | <0.00000469 | <0.00000138999999 | <0.0000014 | <0.00000450999999 | <0.00000144 |
| **Bisphenol A** | <0.00046899999999 | <0.00051899999999 | <0.0005 | <0.00046899999999 | <0.000464 | <0.000468 | <0.00045099999999 | <0.00047999999999 |
| **Busulfan** | <0.00000629 | <0.00000416 | <0.00000525 | <0.00000374999999 | <0.00000370999999 | <0.00000481 | <0.00000584999999 | <0.00000384 |
| **Caffeine** | <0.00001409999999 | <0.0000156 | <0.00001499999999 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **Captan** | <0.00000036299999 | <0.00000596 | <0.0000137 | <0.00000063 | <0.00000673 | <0.00003239999999 | <0.000000476 | <0.00000600999999 |
| **Carbadox** | <0.00000166999999 | <0.00000233 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000492999999 | <0.00000144 |
| **Carbamazepine** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Cefotaxime** | <0.0000243 | <0.00000623 | | <0.00001269999999 | <0.00000555999999 | <0.0000271 | <0.00003689999999 | <0.00000576 |
| **Chlorothalonil** | <0.000000101 | <0.00000010199999 | <0.00000010199999 | <0.000000101 | <0.000000101 | <0.000000207 | <0.000000101 | <0.000000101 |
| **Chlorpyriphos** | <0.000000223 | <0.00000023 | <0.000000338 | <0.00000029099999 | <0.00000035 | <0.00000173999999 | <0.00000036 | <0.000000267 |
| **Chlorpyriphos Methyl** | <0.000000101 | <0.00000010199999 | <0.00000010199999 | <0.000000101 | <0.000000101 | 0.000000456 | <0.000000101 | <0.000000101 |
| **Chlorpyriphos Oxon** | <0.00000015 | <0.000000466 | <0.000000579 | <0.00000012199999 | <0.00000041499999 | <0.0000018 | <0.000000161 | <0.000000357 |
| **Chlortetracycline (CTC)** | <0.00000562999999 | <0.00000623 | <0.00000750999999 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Cimetidine** | <0.000000587 | <0.000000569 | <0.00000058099999 | <0.000000586 | <0.00000058399999 | <0.00000059799999 | <0.000000587 | <0.00000058 |
| **Ciprofloxacin** | <0.00002939999999 | <0.000011 | <0.0000126 | <0.00000562999999 | <0.00000695999999 | <0.00000561 | <0.0000331 | <0.00000906 |
| **cis nonachlor** | <0.000000018 | <0.0000000541 | <0.0000000611 | <0.00000001329999 | <0.00000004599999 | <0.00000048399999 | <0.0000000101 | <0.00000004239999 |
| **Citalopram** | <0.000000917 | <0.00000041599999 | <0.000000782 | <0.000000375 | <0.00000042799999 | <0.000000374 | <0.000000717 | <0.00000071 |
| **Clarithromycin** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Clinafloxacin** | <0.00007409999999 | <0.00002189999999 | <0.0000315 | <0.00001359999999 | <0.0000087 | <0.00005489999999 | <0.00009259999999 | <0.0000108 |
| **Clonidine** | <0.00000147 | <0.00000142 | <0.00000144999999 | <0.00000147 | <0.00000146 | <0.0000015 | <0.00000147 | <0.00000144999999 |
| **Clotrimazole** | <0.000000375 | <0.00000041599999 | <0.0000004 | <0.000000375 | <0.000000371 | <0.000000374 | <0.00000036099999 | <0.000000384 |
| **Cloxacillin** | <0.00000281999999 | <0.00000311999999 | <0.000003 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.0000027 | <0.00000288 |
| **Cocaine** | <0.00000014099999 | <0.000000156 | <0.00000015 | <0.00000014099999 | <0.000000139 | <0.00000014 | <0.000000135 | <0.000000144 |
| **Codeine** | <0.00000293 | <0.00000285 | <0.00000289999999 | <0.00000293 | <0.00000292 | <0.00000299 | <0.00000293 | <0.00000289999999 |
| **Colchicine** | <0.00000153999999 | <0.00000303999999 | <0.00000218999999 | <0.00000083599999 | <0.00000087399999 | <0.000000748 | <0.00000175 | <0.00000124999999 |
| **Cotinine** | <0.00000147 | <0.00000142 | <0.00000144999999 | <0.00000147 | <0.00000146 | <0.0000015 | <0.00000147 | <0.00000144999999 |
| **Cyanazine** | <0.00000297 | <0.00000415 | <0.00000338 | <0.00000299 | <0.00000370999999 | <0.0000337 | <0.00000370999999 | <0.00000401 |

**Table 17.** *(continued)*

| | BLA W1 | BLA W2 | BLA W3 | GEN-W1 | GEN-W2 | GEN-W3 | KEW-W1 | KEW-W2 |
|---|---|---|---|---|---|---|---|---|
| **Cyclophosphamide** | <0.000000751 | <0.000000831 | <0.0000008 | <0.000000751 | <0.000000742 | <0.000000748 | <0.000000721 | <0.000000767 |
| **Cypermethrin** | <0.00000034599999 | <0.000000778 | <0.00000081299999 | <0.000000531 | <0.00000057499999 | <0.00000804 | <0.000000384 | <0.000000468 |
| **Dacthal** | <0.000000101 | <0.00000010199999 | <0.00000010199999 | <0.000000101 | <0.000000101 | <0.000000207 | <0.000000101 | <0.000000101 |
| **Daunorubicin** | <0.00000750999999 | <0.00000831 | <0.000008 | <0.00000750999999 | <0.00000741999999 | <0.00000748 | <0.00000721 | <0.00000767 |
| **DEET** | 0.00000396 | 0.0000599 | 0.0000157 | 0.00000325999999 | 0.00000467999999 | 0.0000532 | 0.0000224 | 0.0000735 |
| **Dehydronifedipine** | <0.00000056299999 | <0.000000623 | <0.0000006 | <0.00000056299999 | <0.000000556 | <0.000000561 | <0.00000068799999 | <0.000000576 |
| **delta BHC** | <0.0000000101 | <0.0000000459 | <0.000000126 | <0.0000000252 | <0.00000004459999 | <0.00000017699999 | <0.0000000101 | <0.0000000517 |
| **Demeclocycline** | <0.00001409999999 | <0.0000156 | <0.00001499999999 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **Desethylatrazine** | 0.00000478 | 0.00000095599999 | <0.000000167 | 0.00000467999999 | 0.00000201 | 0.00000171 | 0.00002499999999 | 0.0000103 |
| **Desmethyldiltiazem** | <0.00000014099999 | <0.000000156 | <0.00000015 | <0.00000014099999 | <0.000000139 | <0.00000014 | <0.000000135 | <0.000000144 |
| **Diatrizoic Acid** | <0.00002249999999 | <0.0000249 | <0.0000283 | <0.00002249999999 | <0.0000223 | <0.0000224 | <0.0000216 | <0.000023 |
| **Diazepam** | <0.00000028199999 | <0.000000312 | <0.0000003 | <0.00000028199999 | <0.000000278 | <0.000000281 | <0.00000027 | <0.000000288 |
| **diazinon** | <0.000000101 | <0.000000531 | <0.000000339 | <0.000000101 | <0.000000382 | <0.00000492999999 | <0.00000086299999 | <0.000000379 |
| **Diazinon Oxon** | <0.000000293 | <0.000000617 | <0.000000436 | <0.00000036 | <0.00000056 | <0.00000467999999 | <0.00000051499999 | <0.000000583 |
| **dieldrin** | <0.0000000101 | <0.0000000376 | <0.00000005789999 | <0.0000000101 | <0.000000034 | <0.000000261 | <0.00000002699999 | <0.0000000331 |
| **Digoxigenin** | <0.00005699999999 | <0.00011399999999 | <0.00015 | <0.0000231 | <0.0000378 | <0.00000561 | <0.000108 | <0.0000599 |
| **Digoxin** | <0.00000562999999 | <0.00000623 | <0.000006 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Diltiazem** | <0.00000028199999 | <0.000000312 | <0.0000003 | <0.00000028199999 | <0.000000278 | <0.000000281 | <0.000000278 | <0.000000288 |
| **Dimethoate** | <0.00000356999999 | <0.00000663999999 | <0.00000939 | <0.00000407 | <0.00000576999999 | <0.0000709 | <0.00000424 | <0.00000631 |
| **Diphenhydramine** | <0.00000056299999 | <0.000000623 | <0.0000006 | <0.00000056299999 | <0.000000556 | <0.000000561 | <0.000000541 | <0.000000576 |
| **disulfoton** | <0.000000206 | <0.00000113999999 | <0.00000102 | <0.000000341 | <0.00000082899999 | <0.00000775 | <0.00000026 | <0.00000061499999 |
| **disulfoton sulfone** | <0.000000228 | <0.00000021999999 | <0.000000241 | <0.000000225 | <0.000000223 | <0.00000218999999 | <0.000000308 | <0.000000207 |
| **Doxorubicin** | <0.00002249999999 | <0.0000249 | <0.000024 | <0.00002249999999 | <0.0000223 | <0.0000224 | <0.0000216 | <0.000023 |
| **Doxycycline** | <0.00000562999999 | <0.00000623 | <0.00000624999999 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Drospirenone** | <0.00000750999999 | <0.00000831 | <0.000008 | <0.00000750999999 | <0.00000741999999 | <0.0000103 | <0.00000721 | <0.00000767 |
| **Enalapril** | <0.000000293 | <0.00000028499999 | <0.00000029 | <0.000000293 | <0.00000029199999 | <0.00000029899999 | <0.000000293 | <0.00000029 |
| **Endosulfan I** | <0.000000549 | <0.000000424 | <0.00000042799999 | <0.00000058199999 | <0.000000458 | <0.00000112999999 | <0.000000512 | <0.000000506 |
| **Endosulfan II** | <0.000000109 | <0.000000357 | <0.0000002 | <0.000000253 | <0.00000022099999 | <0.0000011 | <0.00000020999999 | <0.000000124 |
| **Endosulphan Sulphate** | <0.0000000137 | <0.0000000106 | <0.00000014599999 | <0.00000002699999 | <0.0000000887 | <0.000000878 | <0.0000000145 | <0.000000109 |
| **endrin** | <0.0000000101 | <0.0000000733 | <0.00000007649999 | <0.000000031 | <0.0000000675 | <0.00000060099999 | 0.000000016 | <0.00000005859999 |
| **Endrin Ketone** | <0.0000000614 | <0.0000000217 | <0.00000035599999 | <0.00000009919999 | <0.000000219 | <0.00000432 | <0.0000000658 | <0.000000281 |
| **Enrofloxacin** | <0.00000370999999 | <0.00000311999999 | <0.00000329999999 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.00000499999999 | <0.00000288 |
| **Erythromycin H2O** | 0.00000368 | 0.00000258 | 0.00000243 | 0.00000347 | 0.00000225 | <0.00000214999999 | 0.00000311 | <0.00000221 |
| **Ethion** | <0.00000034699999 | <0.000000885 | <0.00000094899999 | <0.00000042299999 | <0.00000084599999 | <0.00000606 | <0.000000383 | <0.000000663 |
| **Etoposide** | <0.00000187999999 | <0.00000208 | <0.000002 | <0.00000187999999 | <0.00000185 | <0.00000187 | <0.0000018 | <0.00000192 |
| **Fenitrothion** | <0.00000043299999 | <0.000000436 | <0.00000036 | <0.000000517 | <0.000000398 | <0.00000289999999 | <0.000000525 | <0.000000327 |
| **Flumequine** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Fluocinonide** | <0.00000562999999 | <0.00000623 | <0.000006 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Fluoxetine** | <0.00000140999999 | <0.00000162999999 | <0.0000015 | <0.00000140999999 | <0.0000014 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Fluticasone propionate** | <0.00000187999999 | <0.00000208 | <0.000002 | <0.00000187999999 | <0.00000185 | <0.00000187 | <0.0000018 | <0.00000192 |
| **fonofos** | <0.000000101 | <0.00000010199999 | <0.00000010199999 | <0.000000101 | <0.000000101 | <0.00000035899999 | <0.000000101 | <0.000000101 |
| **Furosemide** | <0.0000375 | <0.0000416 | <0.00003999999999 | <0.0000375 | <0.0000371 | <0.00003739999999 | <0.00003609999999 | <0.0000384 |
| **gamma BHC** | <0.0000000111 | <0.0000000604 | <0.0000000756 | <0.0000000182 | <0.00000004349999 | <0.0000000998 | <0.00000001859999 | <0.0000000463 |
| **gamma chlordane** | <0.0000000101 | <0.00000009 | <0.00000007509999 | <0.0000000155 | <0.0000000782 | <0.000000522 | <0.000000021 | <0.00000006959999 |
| **Gemfibrozil** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Glipizide** | <0.00000562999999 | <0.00000623 | <0.000006 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Glyburide** | <0.00000281999999 | <0.00000311999999 | <0.000003 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.0000027 | <0.00000288 |
| **HCB** | 0.00000003 | <0.000000022 | <0.000000021 | <0.00000001299999 | 0.000000033 | 0.000000129 | 0.000000068 | 0.000000025 |
| **Heptachlor** | <0.0000000101 | <0.0000000727 | <0.00000006029999 | <0.0000000101 | <0.0000000718 | <0.000000318 | <0.0000000101 | <0.0000000434 |

**Table 17.** *(continued)*

| | BLA W1 | BLA W2 | BLA W3 | GEN-W1 | GEN-W2 | GEN-W3 | KEW-W1 | KEW-W2 |
|---|---|---|---|---|---|---|---|---|
| **Heptachlor Epoxide** | 0.000000015 | <0.00000007349999 | <0.00000008369999 | <0.0000000122 | <0.0000000683 | <0.000000448 | <0.0000000101 | <0.0000000681 |
| **Hexazinone** | <0.00000086599999 | <0.00000065 | <0.000000382 | <0.000000333 | <0.00000041499999 | <0.0000011 | <0.00000136 | <0.00000043299999 |
| **Hydrochlorothiazide** | <0.0000188 | <0.0000208 | <0.00001999999999 | <0.0000188 | <0.0000185 | <0.00001869999999 | <0.000018 | <0.0000192 |
| **Hydrocodone** | <0.00000147 | <0.00000142 | <0.00000144999999 | <0.00000147 | <0.00000146 | <0.0000015 | <0.00000147 | <0.00000144999999 |
| **Hydrocortisone** | <0.00005379999999 | <0.00005949999999 | <0.0000573 | <0.00005379999999 | <0.00005309999999 | <0.000179 | <0.0000516 | <0.00005499999999 |
| **Ibuprofen** | <0.00001409999999 | <0.0000156 | <0.00001499999999 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **Iopamidol** | <0.00033099999999 | <0.0000951 | <0.00007999999999 | <0.0000751 | <0.0000742 | <0.00007479999999 | <0.00009209999999 | <0.0000767 |
| **Isochlortetracycline (ICTC)** | <0.00000562999999 | <0.00000623 | <0.000006 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Lincomycin** | <0.00000281999999 | <0.00000311999999 | <0.000003 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.0000027 | <0.00000288 |
| **Lomefloxacin** | <0.0000137 | <0.00000411999999 | <0.00000874 | <0.00000374 | <0.00000517999999 | <0.00000280999999 | <0.0000201 | <0.00000419 |
| **malathion** | <0.000000961 | <0.00000272999999 | <0.00000209 | <0.00000120999999 | <0.00000201 | <0.0000128 | <0.00000118999999 | <0.00000161 |
| **Medroxyprogesterone Acetate** | <0.00000374999999 | <0.00000831 | <0.000004 | <0.00000374999999 | <0.00000741999999 | <0.00000374 | <0.00000360999999 | <0.00000767 |
| **Melphalan** | <0.0000348 | <0.000034 | <0.0000502 | <0.00003689999999 | <0.00003329999999 | <0.0000601 | <0.0000454 | <0.0000561 |
| **Meprobamate** | <0.00000374999999 | <0.0000042 | <0.00000403999999 | <0.00000374999999 | <0.00000374999999 | <0.00000378 | <0.00000360999999 | <0.00000388 |
| **Metformin** | 0.00000608999999 | <0.00000285 | <0.00000289999999 | <0.00000293 | <0.00000292 | <0.00000299 | <0.00000293 | 0.00000399 |
| **methoxychlor** | <0.000000769 | <0.00000142 | <0.00000114999999 | <0.000000259 | <0.00000070899999 | <0.00000266 | <0.00000066 | <0.00000094699999 |
| **Methyl prednisolone** | <0.0000103 | <0.0000042 | <0.00000403999999 | <0.00000374999999 | <0.00000374999999 | <0.00000378 | <0.00000562999999 | <0.00000388 |
| **Metoprolol** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Metribuzin** | <0.000000972 | <0.00000113999999 | <0.00000069299999 | <0.00000036 | <0.000000731 | <0.00000345 | <0.00000122 | <0.00000099 |
| **Metronidazole** | <0.00000374999999 | <0.00000416 | <0.000004 | <0.00000374999999 | <0.00000370999999 | <0.00000374 | <0.00000360999999 | <0.00000384 |
| **Miconazole** | <0.00000177 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000184 | <0.00000144 |
| **Minocycline** | <0.00005629999999 | <0.0000623 | <0.00005999999999 | <0.00005629999999 | <0.00005559999999 | <0.0000561 | <0.0000541 | <0.0000576 |
| **mirex** | <0.0000000101 | <0.00000001789999 | <0.000000022 | <0.0000000101 | <0.0000000129 | <0.00000023499999 | <0.0000000101 | <0.0000000175 |
| **Moxifloxacin** | <0.00000557 | <0.00000416 | <0.00000578 | <0.00000374999999 | <0.00000370999999 | <0.00000374 | <0.00000754 | <0.00000384 |
| **Naproxen** | <0.00000281999999 | <0.00000311999999 | <0.000003 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.0000027 | <0.00000288 |
| **Norfloxacin** | <0.0000579 | <0.0000202 | <0.0000348 | <0.00001409999999 | <0.00001389999999 | <0.000028 | <0.00004749999999 | <0.0000144 |
| **Norfluoxetine** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Norgestimate** | <0.00000928999999 | <0.00000311999999 | <0.00000592 | <0.00000548 | <0.00000277999999 | <0.00000280999999 | <0.00000693 | <0.00000288 |
| **Norverapamil** | <0.00000014099999 | <0.0000000156 | <0.00000015 | <0.00000014099999 | <0.0000000139 | <0.00000014 | <0.0000000135 | <0.0000000144 |
| **o,p DDD** | <0.00000007789999 | <0.0000000985 | <0.0000000131 | <0.0000000103 | <0.00000008699999 | <0.00000072499999 | <0.0000000706 | <0.00000008459999 |
| **o,p DDE** | <0.0000000021 | <0.0000000361 | <0.00000007159999 | <0.0000000415 | <0.0000000385 | <0.0000000275 | <0.0000000025 | <0.00000003429999 |
| **o,p DDT** | <0.0000000109 | <0.0000000257 | <0.00000021499999 | <0.00000014099999 | <0.00000020399999 | <0.00000162999999 | <0.00000012099999 | <0.00000024 |
| **Octachlorostyrene** | <0.00000001669999 | <0.00000003769999 | <0.00000010199999 | <0.00000002599999 | <0.00000006859999 | <0.0000000365 | <0.00000002009999 | <0.00000003949999 |
| **Ofloxacin** | <0.00000417 | <0.00000155999999 | <0.00000303 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000349 | <0.00000144 |
| **Ormetoprim** | <0.00000056299999 | <0.0000000707 | <0.0000006 | <0.00000056299999 | <0.0000000556 | <0.0000000561 | <0.0000000541 | <0.0000000576 |
| **Oxacillin** | <0.00000281999999 | <0.00000311999999 | <0.000003 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.0000027 | <0.00000288 |
| **Oxazepam** | <0.00000374999999 | <0.00000416 | <0.000004 | <0.00000374999999 | <0.00000370999999 | <0.00000374 | <0.00000360999999 | <0.00000384 |
| **Oxolinic Acid** | <0.00000236 | <0.0000000678 | <0.000002 | <0.00000187999999 | <0.0000000627 | <0.00000112 | <0.00000256999999 | <0.00000106 |
| **oxychlordane** | <0.0000000129 | <0.0000000763 | <0.0000000665 | 0.0000000024 | <0.0000000065 | <0.0000000403 | <0.00000001159999 | <0.0000000742 |
| **Oxycodone** | <0.0000000587 | <0.0000000569 | <0.00000058099999 | <0.0000000586 | <0.00000058399999 | <0.00000059799999 | <0.0000000587 | <0.00000058 |
| **Oxytetracycline (OTC)** | <0.00000562999999 | <0.00000623 | <0.00000713999999 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **p,p' DDD** | <0.0000000756 | <0.00000009449999 | <0.00000010699999 | <0.00000009339999 | <0.00000007879999 | <0.00000085599999 | <0.00000008759999 | <0.00000009429999 |
| **p,p' DDE** | <0.0000000273 | <0.0000000466 | <0.00000009229999 | <0.0000000539 | <0.0000000497 | <0.00000036599999 | 0.0000000049 | <0.0000000443 |
| **p,p' DDT** | <0.0000000976 | <0.0000000251 | <0.00000024 | <0.00000012099999 | <0.00000020999999 | <0.00000167999999 | <0.00000011299999 | <0.0000000251 |
| **Parathion-Ethyl** | <0.00000029899999 | <0.0000000444 | <0.0000000307 | <0.00000058799999 | <0.00000070999999 | <0.00000308999999 | <0.00000029899999 | <0.0000000278 |
| **Parathion-Methyl** | <0.00000274 | <0.00000628 | <0.00000429999999 | <0.0000028 | <0.00000529999999 | <0.00002039999999 | <0.00000318 | <0.00000458 |
| **Paroxetine** | <0.00000374999999 | <0.0000042 | <0.00000403999999 | <0.00000374999999 | <0.00000374999999 | <0.00000378 | <0.00000360999999 | <0.00000388 |
| **Penicillin G** | 0.00001159999999 | <0.00000311999999 | <0.000003 | 0.00000798 | <0.00000277999999 | <0.00000280999999 | 0.00000958 | <0.00000288 |
| **Penicillin V** | <0.00000281999999 | <0.00000311999999 | <0.000003 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.0000027 | <0.00000288 |

**Table 17.** *(continued)*

| | BLA W1 | BLA W2 | BLA W3 | GEN-W1 | GEN-W2 | GEN-W3 | KEW-W1 | KEW-W2 |
|---|---|---|---|---|---|---|---|---|
| **Permethrin** | <0.00000061499999 | <0.000000504 | <0.00000042999999 | <0.00000027 | <0.00000035 | <0.00000182 | <0.000000812 | <0.0000000397 |
| **Perthane** | <0.00000106 | <0.00000094699999 | <0.00000060199999 | <0.000000986 | <0.00000094399999 | <0.00000466 | <0.00000225 | <0.00000114999999 |
| **Phosmet** | <0.000000278 | <0.000000905 | <0.00000068 | <0.000000678 | <0.000000697 | <0.00000481 | <0.000000355 | <0.00000070299999 |
| **Pirimiphos-Methyl** | <0.000000101 | <0.00000010199999 | <0.00000010199999 | <0.000000101 | <0.000000101 | <0.000000524 | <0.000000101 | <0.000000101 |
| **Prednisolone** | <0.00001319999999 | <0.00000844999999 | <0.000006 | <0.00000562999999 | <0.00000555999999 | <0.00000663999999 | <0.00001539999999 | <0.00000607 |
| **Prednisone** | <0.0000248 | <0.0000283 | <0.00001999999999 | <0.0000188 | <0.0000185 | <0.00001869999999 | <0.0000316 | <0.0000192 |
| **Promethazine** | <0.000000375 | <0.00000041599999 | <0.0000004 | <0.000000375 | <0.000000371 | <0.000000374 | <0.00000036099999 | <0.000000384 |
| **Propoxyphene** | <0.00000028199999 | <0.000000312 | <0.0000003 | <0.00000028199999 | <0.000000278 | <0.000000281 | <0.00000027 | <0.000000288 |
| **Propranolol** | <0.00000187999999 | <0.00000208 | <0.000002 | <0.00000187999999 | <0.00000185 | <0.00000187 | <0.0000018 | <0.00000192 |
| **Quintozene** | <0.000000101 | <0.00000010199999 | <0.00000010199999 | <0.000000101 | <0.00000012 | <0.000000419 | <0.000000101 | <0.00000010699999 |
| **Ranitidine** | <0.000000587 | <0.000000569 | <0.00000058099999 | <0.000000586 | <0.00000058399999 | <0.00000059799999 | <0.000000587 | <0.00000058 |
| **Rosuvastatin** | <0.00000374999999 | <0.00000416 | <0.000004 | <0.00000374999999 | <0.00000370999999 | <0.00000374 | <0.00000360999999 | <0.00000384 |
| **Roxithromycin** | <0.00000028199999 | <0.000000312 | <0.0000003 | <0.00000028199999 | <0.000000278 | <0.000000281 | <0.00000027 | <0.000000288 |
| **Sarafloxacin** | <0.00001539999999 | <0.0000156 | <0.0000261 | <0.00001409999999 | <0.00001389999999 | <0.000018 | <0.0000231 | <0.0000144 |
| **Sertraline** | <0.000000375 | <0.00000041599999 | <0.0000004 | <0.000000375 | <0.000000371 | <0.000000374 | <0.00000036099999 | <0.000000384 |
| **Simazine** | <0.00000045199999 | <0.000000613 | <0.00000118 | <0.000000613 | <0.000000379 | <0.00000383 | 0.0000144 | 0.00000249999999 |
| **Simvastatin** | <0.0000188 | <0.0000208 | <0.00001999999999 | <0.0000188 | <0.0000185 | <0.00001869999999 | <0.000018 | <0.0000192 |
| **Sulfachloropyridazine** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Sulfadiazine** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Sulfadimethoxine** | <0.00000059 | <0.00000035 | <0.0000003 | <0.00000028199999 | <0.000000278 | <0.000000281 | 0.00000102 | <0.000000288 |
| **Sulfamerazine** | <0.00000073199999 | <0.000000623 | <0.0000006 | <0.00000056299999 | <0.000000556 | <0.000000561 | <0.000000704 | <0.000000576 |
| **Sulfamethazine** | <0.0000011 | <0.00000112 | <0.0000006 | <0.00000056299999 | <0.000000556 | <0.000000561 | <0.000001 | <0.00000070099999 |
| **Sulfamethizole** | <0.00000097299999 | <0.000000623 | <0.00000083999999 | <0.00000056299999 | <0.000000556 | <0.000000561 | <0.00000118999999 | <0.000000576 |
| **Sulfamethoxazole** | <0.00000056299999 | <0.000000623 | <0.0000006 | 0.00000311999999 | <0.000000556 | <0.000000561 | 0.00000142999999 | <0.000000576 |
| **Sulfanilamide** | <0.00001409999999 | <0.0000156 | <0.00001499999999 | <0.00001409999999 | <0.00001389999999 | <0.000014 | <0.0000135 | <0.0000144 |
| **Sulfathiazole** | <0.0000015 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000149 | <0.00000144 |
| **Tamoxifen** | <0.000000375 | <0.00000041599999 | <0.0000004 | <0.000000375 | <0.000000371 | <0.000000374 | <0.00000036099999 | <0.000000384 |
| **Tecnazene** | <0.000000101 | <0.000000156 | <0.00000010199999 | <0.000000101 | <0.00000015799999 | <0.0000004 | <0.000000101 | <0.00000012099999 |
| **Teniposide** | <0.00000374999999 | <0.00000416 | <0.000004 | <0.00000374999999 | <0.00000370999999 | <0.00000374 | <0.00000360999999 | <0.00000384 |
| **Tetracycline (TC)** | <0.00000562999999 | <0.00000703 | <0.00000835 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Theophylline** | <0.00005629999999 | <0.0000623 | <0.00005999999999 | <0.00005629999999 | <0.00005559999999 | <0.0000561 | <0.0000541 | <0.0000576 |
| **Thiabendazole** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000171 | <0.00000144 |
| **Transnonachlor** | <0.000000011 | <0.0000000722 | <0.00000007979999 | <0.0000000151 | <0.00000006719999 | <0.000000557 | <0.000000012 | <0.000000068 |
| **Trenbolone** | <0.00000374999999 | <0.0000042 | <0.00000403999999 | <0.00000374999999 | <0.00000374999999 | <0.00000378 | <0.00000360999999 | <0.00000388 |
| **Trenbolone acetate** | <0.00000028199999 | <0.000000312 | <0.000000463 | <0.00000028199999 | <0.000000278 | <0.000000281 | <0.000000337 | <0.000000288 |
| **Triamterene** | <0.000000293 | <0.00000028499999 | <0.00000029 | <0.000000293 | <0.00000029199999 | <0.00000029899999 | <0.000000293 | <0.00000029 |
| **Triclocarban** | <0.00000281999999 | <0.00000311999999 | <0.000003 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.0000027 | <0.00000288 |
| **Triclosan** | <0.00005629999999 | <0.0000623 | <0.00005999999999 | <0.00005629999999 | <0.00005559999999 | <0.0000561 | <0.0000541 | <0.0000576 |
| **Trimethoprim** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000217 | <0.00000162999999 |
| **Tylosin** | <0.00000562999999 | <0.00000623 | <0.00005999999999 | <0.00000562999999 | <0.00000555999999 | <0.00000561 | <0.00000541 | <0.00000576 |
| **Valsartan** | <0.00000374999999 | <0.0000042 | <0.00000403999999 | <0.00000374999999 | <0.00000374999999 | <0.00000378 | <0.00000360999999 | <0.00000388 |
| **Venlafaxine** | <0.0000015 | <0.00000041599999 | <0.0000008 | <0.0000015 | <0.000000371 | <0.00000299 | <0.00000144 | <0.000000384 |
| **Verapamil** | <0.00000014099999 | <0.000000156 | <0.00000015 | <0.00000014099999 | <0.000000139 | <0.00000014 | <0.000000135 | <0.000000144 |
| **Virginiamycin M1** | <0.00000343999999 | <0.00000311999999 | <0.000003 | <0.00000281999999 | <0.00000277999999 | <0.00000280999999 | <0.00000424 | <0.00000288 |
| **Warfarin** | <0.00000140999999 | <0.00000155999999 | <0.0000015 | <0.00000140999999 | <0.00000138999999 | <0.0000014 | <0.00000135 | <0.00000144 |
| **Zidovudine** | <0.000116 | <0.0000249 | <0.0000706 | <0.00002249999999 | <0.0000223 | <0.00004489999999 | <0.000136 | <0.000023 |

**Table 17.** *(continued)*

| | KEW-W3 | MAU-W1 | MAU-W2 | MAU-W3 | MIL-W1 | MIL-W2 | MIL-W3 |
|---|---|---|---|---|---|---|---|
| **Sample collection date** | 10/5/2018 | 6/15/2018 | 7/17/2018 | 10/5/2018 | 5/4/2018 | 5/21/2018 | 9/24/2018 |
| **1,7 Dimethylxanthine** | <0.0000585 | <0.0000561 | <0.0000572 | <0.0000682 | <0.00005699999999 | <0.000054 | <0.0000602 |
| **10-hydroxyamitriptyline** | <0.00000014599999 | <0.00000021099999 | <0.00000014299999 | 0.000000322 | <0.00000014299999 | 0.00000018 | <0.00000018399999 |
| **2 Hydroxyibuprofen** | <0.000078 | <0.00007479999999 | <0.0000762 | <0.00009099999999 | <0.00007599999999 | <0.000072 | <0.0000802 |
| **4 Epianhydrochlortetracycline** | <0.0000585 | <0.0000561 | <0.0000572 | <0.0000682 | <0.00005699999999 | <0.000054 | <0.0000602 |
| **4 Epianhydrotetracycline (EATC)** | <0.00001459999999 | <0.000014 | <0.00001459999999 | <0.0000171 | <0.0000143 | <0.0000135 | <0.00001499999999 |
| **4 Epichlortetracycline (ECTC)** | <0.00001459999999 | <0.000014 | <0.0000205 | <0.0000171 | <0.0000143 | <0.0000135 | <0.00001499999999 |
| **4 Epioxytetracycline (EOTC)** | <0.00000584999999 | <0.00000648 | <0.0000107 | <0.00000682 | <0.0000057 | <0.00000665 | <0.00000601999999 |
| **4 Epitetracycline (ETC)** | <0.00000584999999 | <0.00000645 | <0.00000967999999 | <0.00000682 | <0.0000057 | <0.00000667 | <0.00000601999999 |
| **Acetaminophen** | <0.00001459999999 | <0.000014 | <0.0000143 | <0.0000171 | <0.0000143 | <0.0000135 | <0.00001499999999 |
| **Albuterol** | <0.00000030399999 | <0.00000029399999 | <0.00000028699999 | <0.000000298 | <0.000000293 | <0.00000028599999 | <0.00000030099999 |
| **Aldrin** | <0.000000187 | <0.0000000548 | 0.000000085 | <0.000000101 | <0.0000000146 | <0.0000000407 | <0.00000024 |
| **alpha BHC** | <0.000000224 | <0.0000000292 | <0.00000008809999 | <0.00000016 | <0.00000002889999 | <0.00000003139999 | <0.0000000188 |
| **alpha chlordane** | <0.000000552 | <0.00000008119999 | <0.000000065 | <0.000000258 | <0.0000000161 | <0.0000000675 | <0.000000627 |
| **Alprazolam** | <0.00000029199999 | <0.000000281 | <0.00000028599999 | 0.000000554 | <0.00000028499999 | <0.00000027 | <0.00000030099999 |
| **Ametryn** | | 0.00000288 | 0.00000144999999 | | 0.00000024199999 | 0.000000278 | |
| **Amitriptyline** | <0.00000059 | <0.00000036 | <0.000000434 | <0.000000536 | <0.00000028499999 | <0.000000407 | <0.000000429 |
| **Amlodipine** | <0.00000146 | <0.0000014 | <0.00000142999999 | <0.00000171 | <0.00000142999999 | <0.00000135 | <0.0000015 |
| **Amphetamine** | <0.00000151999999 | 0.00000341 | 0.0000026 | 0.00000175999999 | <0.00000147 | 0.00000171 | <0.00000151 |
| **Amsacrine** | <0.000000412 | <0.00000010399999 | <0.000000192 | <0.000000332 | <0.000000139 | <0.000000166 | <0.00000017799999 |
| **Anhydrochlortetracycline (ACTC)** | <0.00001459999999 | <0.000014 | <0.0000143 | <0.0000171 | <0.0000143 | <0.0000135 | <0.00001499999999 |
| **Anhydrotetracycline (ATC)** | <0.00001459999999 | <0.000014 | <0.0000156 | <0.0000171 | <0.0000143 | <0.0000135 | <0.00001499999999 |
| **Atenolol** | <0.00000060799999 | 0.00000331 | <0.00000057399999 | 0.00000260999999 | <0.000000586 | 0.00000126 | 0.00000295 |
| **Atorvastatin** | <0.00000151999999 | <0.00000147 | <0.00000142999999 | <0.00000149 | <0.00000147 | <0.00000142999999 | <0.00000151 |
| **Atrazine** | 0.00002819999999 | 0.00927 | 0.000521 | 0.00013 | 0.0000437 | 0.00001929999999 | <0.00000821 |
| **Azathioprine** | <0.00000195 | <0.00000187 | <0.00000191 | <0.00000227 | <0.00000189999999 | <0.0000018 | <0.00000201 |
| **azinphos methyl** | <0.00002289999999 | <0.00000288 | <0.00000459999999 | <0.00002039999999 | <0.00000177 | <0.00000343999999 | <0.0000226 |
| **Azithromycin** | <0.00000169 | <0.0000014 | <0.00000158 | <0.00000208 | <0.00000187999999 | <0.00000135 | <0.0000015 |
| **BDE# 10** | <0.00000000102 | <0.000000001 | 0.00000000125 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 100** | 0.00000000462 | 0.0000000148 | 0.0000000175 | 0.0000000267 | 0.00000000403 | 0.00000000394 | 0.00000000409 |
| **BDE# 105** | <0.00000000102 | <0.000000001 | 0.00000000148 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 116** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 119/120** | <0.00000000102 | <0.000000001 | 0.00000000168 | 0.00000000259 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 12/13** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 126** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 128** | <0.00000000102 | 0.00000000116 | 0.00000000118 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 138/166** | 0.00000000136 | 0.00000000172 | 0.0000000135 | 0.00000000198 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 140** | <0.00000000102 | <0.000000001 | 0.00000000536 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 15** | <0.00000000102 | 0.00000000113 | <0.00000000103 | 0.00000000203 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 153** | 0.00000000189 | 0.00000000961 | 0.0000000299 | 0.0000000137 | 0.00000000296 | 0.00000000176 | 0.00000000343 |
| **BDE# 154** | 0.00000000146 | 0.00000000717 | 0.0000000253 | 0.0000000106 | 0.00000000203 | 0.00000000212 | 0.00000000249 |
| **BDE# 155** | <0.00000000102 | 0.00000000105 | 0.00000000193 | 0.00000000193 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 17/25** | <0.00000000102 | 0.00000000576 | 0.00000000306 | 0.00000000941 | 0.00000000204 | 0.00000000285 | 0.00000000232 |
| **BDE# 181** | <0.00000000102 | 0.00000000455 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 183** | 0.00000000213 | 0.0000000227 | 0.00000000642 | 0.00000000851 | 0.00000000109 | 0.00000000185 | 0.00000000201 |
| **BDE# 190** | <0.00000000102 | 0.00000000933 | <0.00000000103 | 0.00000000312 | <0.00000000101 | <0.00000000101 | <0.00000000114 |
| **BDE# 203** | 0.0000000464 | 0.0000000771 | 0.0000000131 | 0.0000000116 | 0.00000000204999 | 0.00000000584 | <0.00000000101 |
| **BDE# 206** | 0.000000627 | 0.000000117 | 0.0000000502 | 0.000000214 | 0.0000000106 | 0.00000000432 | 0.0000000133 |
| **BDE# 207** | 0.00000122 | 0.00000027 | 0.0000000811 | 0.000000289 | 0.0000000236 | 0.0000000187 | 0.000000157 |

**Table 17.** *(continued)*

| | KEW-W3 | MAU-W1 | MAU-W2 | MAU-W3 | MIL-W1 | MIL-W2 | MIL-W3 |
|---|---|---|---|---|---|---|---|
| **BDE# 208** | 0.000000665 | 0.000000195 | 0.0000000416 | 0.0000000496 | 0.0000000171 | 0.00000000703 | <0.0000000055 |
| **BDE# 209** | 0.0000132 | 0.00000179 | 0.000000552 | 0.00000124 | 0.0000000917 | 0.000000133 | 0.000000553 |
| **BDE# 28/33** | 0.00000000139 | 0.00000000526 | 0.00000000246 | 0.0000000071 | 0.00000000177 | 0.0000000015 | 0.00000000159 |
| **BDE# 30** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 32** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 35** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 37** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 47** | 0.0000000223 | 0.0000000744 | 0.0000000306 | 0.000000113 | 0.0000000237 | 0.0000000197 | 0.0000000264 |
| **BDE# 49** | 0.00000000153 | 0.00000000954 | 0.00000000383 | 0.0000000204 | 0.00000000209 | 0.00000000259 | 0.00000000171 |
| **BDE# 51** | <0.00000000102 | <0.000000001 | <0.00000000103 | 0.00000000186 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 66** | <0.00000000102 | 0.00000000467 | 0.0000000028 | 0.00000000993 | 0.00000000144 | <0.00000000101 | 0.00000000109 |
| **BDE# 7** | <0.00000000102 | 0.00000000135 | 0.00000000129 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 71** | <0.00000000102 | 0.00000000146 | <0.00000000103 | 0.00000000272 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 75** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 77** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 79** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | <0.00000000101 | <0.00000000101 |
| **BDE# 8/11** | <0.00000000102 | <0.000000001 | <0.00000000103 | <0.00000000134 | <0.00000000101 | 0.00000000115 | <0.00000000101 |
| **BDE# 85** | <0.00000000102 | 0.0000000028 | 0.0000000288 | 0.00000000482 | 0.00000000115 | <0.00000000101 | <0.00000000101 |
| **BDE# 99** | 0.0000000104 | 0.0000000608 | 0.000000101 | 0.0000000933 | 0.0000000173 | 0.0000000152 | 0.0000000165 |
| **Benzoylecgonine** | <0.00000035899999 | 0.00000213 | <0.00000028599999 | 0.00000189 | 0.000000335 | <0.00000027 | <0.000000557 |
| **Benztropine** | <0.000000487 | <0.000000468 | <0.000000476 | <0.000000569 | <0.00000047499999 | <0.00000045 | <0.00000050099999 |
| **beta BHC** | <0.000000317 | <0.0000000602 | <0.000000114 | <0.00000015299999 | <0.00000001629999 | <0.0000000541 | <0.000000337 |
| **Betamethasone** | <0.00000260999999 | <0.00000140999999 | <0.00000142999999 | <0.00000331999999 | <0.00000474999999 | <0.00000135 | <0.00000263 |
| **Bisphenol A** | <0.00048699999999 | <0.000468 | <0.00047599999999 | <0.000569 | <0.000475 | <0.00045 | <0.00050099999999 |
| **Busulfan** | <0.00000683 | <0.00000374 | <0.00000736 | <0.0000148 | <0.00000767 | <0.00000450999999 | <0.00000673 |
| **Caffeine** | <0.00001459999999 | 0.0000515 | 0.0000151 | 0.000084 | 0.0000248 | <0.0000135 | <0.00001499999999 |
| **Captan** | <0.00003439999999 | <0.00000474999999 | <0.00001059999999 | <0.00001929999999 | <0.00000059399999 | <0.00000624999999 | <0.00004579999999 |
| **Carbadox** | <0.0000022 | <0.0000014 | <0.00000307 | <0.00000199 | <0.00000837 | <0.00000214 | <0.0000015 |
| **Carbamazepine** | <0.00000146 | 0.00000571999999 | 0.0000063 | 0.0000255 | 0.00000628 | 0.00000661 | 0.00000648 |
| **Cefotaxime** | <0.00003929999999 | <0.00000561 | | <0.0000446 | <0.00004929999999 | <0.0000054 | <0.0000421 |
| **Chlorothalonil** | <0.00000020799999 | <0.000000101 | <0.000000101 | <0.00000030099999 | <0.000000101 | <0.000000101 | 0.0000018 |
| **Chlorpyriphos** | <0.00000158 | 0.000000446 | <0.000000218 | <0.000000663 | <0.00000035599999 | <0.000000288 | <0.00000095099999 |
| **Chlorpyriphos Methyl** | <0.000000309 | <0.000000101 | <0.000000101 | <0.00000030099999 | <0.000000101 | <0.000000101 | <0.000000489 |
| **Chlorpyriphos Oxon** | <0.00000171 | <0.00000035799999 | <0.000000755 | <0.000000964 | <0.000000171 | <0.000000503 | <0.00000196999999 |
| **Chlortetracycline (CTC)** | <0.00000623 | <0.00000588 | <0.00000848 | <0.00000682 | <0.0000057 | <0.00000600999999 | <0.00000613 |
| **Cimetidine** | <0.00000060799999 | <0.000000587 | <0.00000057399999 | <0.000000596 | <0.000000586 | <0.000000573 | <0.00000060199999 |
| **Ciprofloxacin** | <0.0000599 | <0.0000188 | <0.0000153 | <0.0000217 | <0.0000406 | <0.00002149999999 | <0.0000214 |
| **cis nonachlor** | <0.000000643 | <0.0000000566 | <0.0000000734 | <0.000000279 | <0.0000000103 | <0.0000000794 | <0.00000118 |
| **Citalopram** | <0.000000787 | 0.000000441 | <0.00000107 | <0.000000991 | <0.000000672 | <0.00000111 | 0.00000171999999 |
| **Clarithromycin** | <0.00000146 | <0.0000014 | <0.00000142999999 | <0.00000171 | <0.00000142999999 | <0.00000135 | <0.0000015 |
| **Clinafloxacin** | <0.000183 | <0.0000224 | <0.0000326 | <0.000101 | <0.000312 | <0.00003829999999 | <0.0000636 |
| **Clonidine** | <0.00000151999999 | <0.00000147 | <0.00000142999999 | <0.00000149 | <0.00000147 | <0.00000142999999 | <0.00000151 |
| **Clotrimazole** | <0.00000038999999 | <0.000000374 | <0.000000381 | <0.000000455 | <0.00000037999999 | <0.00000036 | <0.000000401 |
| **Cloxacillin** | <0.00000292 | <0.00000280999999 | <0.00000285999999 | <0.00000341 | <0.00000285 | <0.0000027 | <0.00000300999999 |
| **Cocaine** | <0.00000020799999 | <0.00000014 | <0.00000014299999 | <0.000000171 | <0.00000014299999 | <0.000000135 | <0.00000015 |
| **Codeine** | <0.00000303999999 | <0.00000294 | <0.00000287 | <0.00000298 | <0.00000293 | <0.00000285999999 | <0.00000300999999 |
| **Colchicine** | <0.00000268999999 | <0.00000175999999 | <0.00000276999999 | <0.00000465 | <0.00000237999999 | <0.00000126 | <0.00000232 |
| **Cotinine** | <0.00000151999999 | 0.00000654999999 | 0.00000360999999 | 0.0000241 | 0.00000233999999 | 0.00000175 | 0.00000184 |
| **Cyanazine** | <0.0000365 | <0.00000517999999 | <0.00000370999999 | <0.0000178 | <0.00000303 | <0.00000404999999 | <0.0000432 |

**Table 17.** *(continued)*

| | KEW-W3 | MAU-W1 | MAU-W2 | MAU-W3 | MIL-W1 | MIL-W2 | MIL-W3 |
|---|---|---|---|---|---|---|---|
| **Cyclophosphamide** | <0.00000077999999 | <0.000000748 | <0.00000111 | <0.00000091 | <0.00000075999999 | <0.00000072 | <0.000000802 |
| **Cypermethrin** | <0.0000109 | <0.000000419 | <0.00000102999999 | <0.00000396 | <0.000000558 | <0.00000047499999 | <0.00001219999999 |
| **Dacthal** | <0.00000020799999 | 0.000000218 | <0.000000101 | <0.00000030099999 | <0.000000101 | <0.000000101 | <0.000000246 |
| **Daunorubicin** | <0.0000078 | <0.00000748 | <0.00000762 | <0.0000091 | <0.00000759999999 | <0.0000072 | <0.00000802 |
| **DEET** | 0.000012 | 0.0000414 | 0.00002919999999 | 0.00005889999999 | 0.0000112 | 0.0000168 | 0.0000527 |
| **Dehydronifedipine** | <0.00000058499999 | <0.000000886 | <0.00000057199999 | <0.000000682 | <0.00000056999999 | <0.000000649 | <0.00000060199999 |
| **delta BHC** | <0.00000031099999 | <0.0000000558 | <0.000000126 | <0.00000014599999 | <0.0000000183 | <0.000000053 | <0.00000034 |
| **Demeclocycline** | <0.00001459999999 | <0.000014 | <0.0000143 | <0.0000171 | <0.0000143 | <0.0000135 | <0.00001499999999 |
| **Desethylatrazine** | 0.000026 | 0.00156 | 0.000129 | 0.00000730999999 | 0.0000238 | 0.0000151 | 0.00001689999999 |
| **Desmethyldiltiazem** | <0.00000014599999 | 0.00000021599999 | <0.00000014299999 | <0.000000171 | <0.00000014299999 | <0.000000135 | 0.000000155 |
| **Diatrizoic Acid** | <0.000165 | <0.0000224 | <0.0000293 | <0.00009979999999 | <0.000035 | <0.0000216 | <0.0000669 |
| **Diazepam** | <0.000000307 | <0.000000281 | <0.00000028599999 | <0.000000482 | <0.00000028499999 | <0.00000027 | <0.00000030099999 |
| **diazinon** | <0.00000659999999 | <0.000000667 | <0.000000314 | <0.00000392 | <0.000000101 | <0.000000562 | <0.00000645 |
| **Diazinon Oxon** | <0.00000561 | <0.000000634 | <0.00000071799999 | <0.00000505 | <0.000000213 | <0.000000652 | <0.0000123 |
| **dieldrin** | <0.000000277 | 0.00000108 | 0.000000394 | 0.000000231 | <0.000000024 | <0.0000000382 | <0.000000295 |
| **Digoxigenin** | <0.0000226 | <0.000185 | <0.00013199999999 | <0.0000185 | <0.00015099999999 | <0.00011399999999 | <0.00000601999999 |
| **Digoxin** | <0.00000584999999 | <0.00000561 | <0.00000571999999 | <0.00000682 | <0.0000057 | <0.0000054 | <0.00000601999999 |
| **Diltiazem** | <0.00000029199999 | 0.00000102999999 | <0.00000028599999 | 0.000000717 | 0.00000084599999 | 0.000000636 | 0.000000841 |
| **Dimethoate** | <0.0000715 | <0.00000517 | <0.00000676999999 | <0.0000428 | <0.00000430999999 | <0.00000606 | <0.0000858 |
| **Diphenhydramine** | <0.00000058499999 | <0.000000561 | <0.00000057199999 | <0.000000682 | 0.00000105 | 0.000000576 | 0.00000106 |
| **disulfoton** | <0.0000103 | <0.00000111 | <0.000000683 | <0.00000675 | <0.00000098499999 | <0.00000096499999 | <0.0000174 |
| **disulfoton sulfone** | <0.0000024 | <0.00000035799999 | <0.000000227 | <0.00000151999999 | <0.000000252 | <0.000000257 | <0.00000303 |
| **Doxorubicin** | <0.00002339999999 | <0.0000224 | <0.00002289999999 | <0.0000273 | <0.0000228 | <0.0000216 | <0.0000241 |
| **Doxycycline** | <0.00000584999999 | <0.00000561 | <0.00000728 | <0.00000682 | <0.0000057 | <0.0000054 | <0.00000601999999 |
| **Drospirenone** | <0.0000112 | <0.00000748 | <0.00000762 | <0.0000167 | <0.00000759999999 | <0.0000072 | <0.0000108 |
| **Enalapril** | <0.00000030399999 | <0.00000029399999 | <0.00000028699999 | <0.000000298 | <0.000000293 | <0.00000028599999 | <0.00000030099999 |
| **Endosulfan I** | <0.00000104 | <0.000000556 | <0.000000401 | <0.000000497 | <0.000000738 | <0.000000426 | <0.00000120999999 |
| **Endosulfan II** | <0.00000114999999 | <0.000000224 | <0.00000024399999 | <0.00000059199999 | <0.00000041799999 | <0.00000020499999 | <0.00000192999999 |
| **Endosulphan Sulphate** | <0.000000918 | <0.000000229 | <0.000000182 | <0.00000047099999 | <0.00000002149999 | <0.000000154 | <0.00000153 |
| **endrin** | <0.000000792 | <0.0000000719 | <0.0000000988 | <0.00000037999999 | <0.0000000134 | <0.00000010799999 | <0.0000015 |
| **Endrin Ketone** | <0.0000062 | <0.000000213 | <0.00000056699999 | <0.00000236 | <0.0000000868 | <0.00000048099999 | <0.0000093 |
| **Enrofloxacin** | <0.00000391 | <0.000003 | <0.00000419 | <0.00000341 | <0.00000375999999 | <0.00000322 | <0.00000319 |
| **Erythromycin-H2O** | 0.00000239 | 0.00000252999999 | 0.00000258 | 0.00000337 | 0.00000476999999 | 0.00000306 | 0.00000264 |
| **Ethion** | <0.0000072 | <0.000000745 | <0.000000861 | <0.00000375999999 | <0.000000393 | <0.00000102 | <0.00000965999999 |
| **Etoposide** | <0.00000195 | <0.00000756 | <0.00000191 | <0.00000227 | <0.00000189999999 | <0.0000018 | <0.00000201 |
| **Fenitrothion** | <0.00000302 | <0.000000502 | <0.00000037799999 | <0.00000169 | <0.00000058199999 | <0.00000050099999 | <0.00000412999999 |
| **Flumequine** | <0.00000146 | <0.00000179 | <0.00000142999999 | <0.00000323 | <0.00000185 | <0.00000185 | <0.0000015 |
| **Fluocinonide** | <0.00000584999999 | <0.00000561 | <0.00000571999999 | <0.00000682 | <0.0000057 | <0.0000054 | <0.00000601999999 |
| **Fluoxetine** | <0.00000146 | 0.000026 | 0.00000592 | 0.00000192999999 | <0.00000142999999 | 0.00000199 | <0.0000015 |
| **Fluticasone propionate** | <0.00000225999999 | <0.00000213 | <0.00000191 | <0.00000379999999 | <0.00000189999999 | <0.0000018 | <0.00000327999999 |
| **fonofos** | <0.00000047199999 | <0.000000101 | <0.000000101 | <0.00000030099999 | <0.000000101 | <0.000000101 | <0.000000419 |
| **Furosemide** | <0.000039 | <0.00003739999999 | <0.0000381 | <0.00004549999999 | <0.00003799999999 | <0.000036 | <0.0000401 |
| **gamma BHC** | <0.000000293 | <0.0000000621 | <0.00000010199999 | <0.000000162 | 0.00000002699999 | <0.0000000667 | <0.00000030599999 |
| **gamma chlordane** | <0.00000058799999 | <0.0000000951 | <0.0000000625 | <0.000000275 | <0.00000001629999 | <0.00000007899999 | <0.0000000667 |
| **Gemfibrozil** | <0.00000146 | 0.00000397 | <0.00000142999999 | 0.00000214 | 0.00000209 | <0.00000135 | 0.00000204 |
| **Glipizide** | <0.00000584999999 | <0.00000561 | <0.00000571999999 | <0.00000682 | <0.0000057 | <0.0000054 | <0.00000601999999 |
| **Glyburide** | <0.00000292 | <0.00000280999999 | <0.00000285999999 | <0.00000341 | <0.00000285 | <0.0000027 | <0.00000300999999 |
| **HCB** | 0.00000007599999 | 0.00000004 | 0.00000004299999 | 0.00000015299999 | 0.000000083 | 0.000000034 | 0.00000008899999 |
| **Heptachlor** | <0.000000436 | <0.0000000971 | <0.0000000522 | <0.000000241 | <0.0000000112 | <0.0000000933 | <0.000000524 |

**Table 17.** *(continued)*

| | KEW-W3 | MAU-W1 | MAU-W2 | MAU-W3 | MIL-W1 | MIL-W2 | MIL-W3 |
|---|---|---|---|---|---|---|---|
| **Heptachlor Epoxide** | <0.00000071599999 | 0.00000017299999 | <0.00000006049999 | <0.000000213 | <0.000000021 | <0.00000007649999 | <0.00000047399999 |
| **Hexazinone** | <0.00000165999999 | 0.00000341 | <0.00000033 | <0.0000011 | <0.00000081799999 | <0.00000063199999 | <0.00000216 |
| **Hydrochlorothiazide** | <0.0000195 | <0.00001869999999 | <0.0000191 | <0.0000227 | <0.00001899999999 | <0.000018 | <0.0000201 |
| **Hydrocodone** | <0.00000151999999 | <0.00000147 | <0.00000142999999 | <0.00000149 | <0.00000147 | <0.00000142999999 | <0.00000151 |
| **Hydrocortisone** | <0.000186 | <0.0000536 | <0.0000546 | <0.000217 | <0.00005449999999 | <0.0000515 | <0.000192 |
| **Ibuprofen** | <0.00001459999999 | <0.000014 | <0.0000143 | <0.0000171 | <0.0000143 | <0.0000135 | <0.00001499999999 |
| **Iopamidol** | <0.000128 | 0.000456 | 0.000425 | 0.00194 | 0.000274 | 0.000475 | <0.000178 |
| **Isochlortetracycline (ICTC)** | <0.00000584999999 | <0.00000561 | <0.00000582 | <0.00000682 | <0.0000057 | <0.0000054 | <0.00000601999999 |
| **Lincomycin** | <0.00000292 | 0.00000538999999 | <0.00000285999999 | <0.00000341 | <0.00000294 | <0.0000027 | <0.00000300999999 |
| **Lomefloxacin** | <0.0000129 | <0.00000655999999 | <0.0000099 | <0.00000341 | <0.0000112 | <0.00000809999999 | <0.00000300999999 |
| **malathion** | <0.0000143 | <0.00000126 | <0.00000157 | <0.00000935999999 | <0.00000109 | <0.00000192 | <0.0000207 |
| **Medroxyprogesterone Acetate** | <0.0000039 | <0.00000748 | <0.00000381 | <0.00000455 | <0.00000379999999 | <0.0000072 | <0.00000401 |
| **Melphalan** | <0.00009999999999 | <0.000042 | <0.0000997 | <0.0000958 | <0.00010499999999 | <0.0000371 | <0.0000565 |
| **Meprobamate** | <0.00000393999999 | <0.00000378 | <0.00000384999999 | 0.0000105 | <0.00000379999999 | <0.00000362999999 | <0.00000404999999 |
| **Metformin** | <0.00000303999999 | 0.000146 | 0.000107 | 0.0004 | 0.0000281 | 0.0000345 | 0.0000181 |
| **methoxychlor** | <0.00000769999999 | <0.00000109 | <0.00000081899999 | <0.00000210999999 | <0.00000072199999 | <0.00000138 | <0.00000568 |
| **Methyl prednisolone** | <0.0000138 | <0.00000378 | <0.00000384999999 | <0.00001789999999 | <0.00001059999999 | <0.00000362999999 | <0.00000828999999 |
| **Metoprolol** | <0.00000146 | 0.00000848 | <0.00000638 | <0.00000171 | <0.00001269999999 | 0.0000109 | <0.0000015 |
| **Metribuzin** | <0.0000035 | 0.00413 | <0.00002039999999 | <0.00000256999999 | 0.00000205 | 0.00000221 | <0.00000511 |
| **Metronidazole** | <0.0000039 | <0.00000374 | <0.00000381 | <0.00000455 | <0.00000379999999 | <0.0000036 | <0.00000401 |
| **Miconazole** | <0.00000146 | <0.0000014 | <0.00000142999999 | <0.00000171 | <0.00000293 | <0.00000135 | <0.0000015 |
| **Minocycline** | <0.0000585 | <0.0000561 | <0.0000572 | <0.0000682 | <0.00005699999999 | <0.000054 | <0.0000602 |
| **mirex** | <0.000000241 | <0.00000001969999 | <0.0000000301 | <0.00000010699999 | <0.0000000101 | <0.0000000383 | <0.00000034799999 |
| **Moxifloxacin** | <0.00001019999999 | <0.00000435 | <0.00000544 | <0.0000173 | <0.00000592 | <0.00000387 | <0.00000678999999 |
| **Naproxen** | <0.00000307 | 0.00000633999999 | <0.00000285999999 | 0.00000641 | <0.00000285 | <0.0000027 | <0.00000300999999 |
| **Norfloxacin** | <0.00009999999999 | <0.0000486 | <0.0000195 | <0.00007359999999 | <0.0000989 | <0.0000466 | <0.00001499999999 |
| **Norfluoxetine** | <0.00000146 | <0.0000014 | <0.00000142999999 | <0.00000171 | <0.00000142999999 | <0.00000135 | <0.0000015 |
| **Norgestimate** | <0.00000292 | <0.00000736 | <0.00000489 | <0.00000341 | <0.00001159999999 | <0.00000407 | <0.00000300999999 |
| **Norverapamil** | <0.00000014599999 | <0.00000014 | <0.00000014299999 | <0.00000020899999 | <0.00000014299999 | <0.000000135 | <0.000000155 |
| **o,p DDD** | <0.000000909 | <0.0000000501 | <0.000000129 | <0.000000497 | <0.0000000984 | <0.0000000947 | <0.00000091099999 |
| **o,p DDE** | <0.000000327 | <0.00000002589999 | <0.00000007149999 | <0.000000181 | <0.00000005319999 | <0.0000000379 | <0.00000036799999 |
| **o,p DDT** | <0.00000183 | <0.000000186 | <0.000000253 | <0.000000981 | <0.000000151 | <0.00000020499999 | <0.00000222 |
| **Octachlorostyrene** | <0.000000483 | <0.0000000505 | <0.0000000599 | <0.000000232 | <0.000000035 | <0.000000053 | <0.000000767 |
| **Ofloxacin** | <0.00000373 | <0.0000014 | <0.00000225 | <0.00000276 | <0.00000287 | <0.00000256 | <0.00000247 |
| **Ormetoprim** | <0.00000058499999 | <0.000000678 | <0.00000057199999 | <0.000000682 | <0.00000056999999 | <0.00000074599999 | <0.00000060199999 |
| **Oxacillin** | <0.00000292 | <0.00000280999999 | <0.00000285999999 | <0.00000341 | <0.00000285 | <0.0000027 | <0.00000300999999 |
| **Oxazepam** | <0.0000039 | <0.00000398 | <0.00000381 | <0.00000455 | <0.00000379999999 | <0.0000036 | <0.00000401 |
| **Oxolinic Acid** | <0.00000224 | <0.00000128 | <0.00000191 | <0.00000312999999 | <0.00000360999999 | <0.00000171 | <0.00000186 |
| **oxychlordane** | <0.000000397 | <0.0000000869 | <0.00000006719999 | <0.000000266 | <0.0000000231 | <0.00000010699999 | <0.000000339 |
| **Oxycodone** | <0.00000060799999 | 0.00000087699999 | <0.00000057399999 | <0.000000754 | <0.000000613 | 0.00000118 | 0.00000071299999 |
| **Oxytetracycline (OTC)** | <0.00000604 | <0.00000561 | <0.00000810999999 | <0.00000682 | <0.0000057 | <0.00000549 | <0.00000613 |
| **p,p' DDD** | <0.000000974 | <0.000000077 | <0.000000126 | <0.000000556 | <0.00000010499999 | <0.00000007649999 | <0.00000109 |
| **p,p' DDE** | <0.000000436 | 0.0000001 | <0.0000000921 | 0.00000024899999 | <0.0000000692 | 0.000000062 | <0.00000049099999 |
| **p,p' DDT** | <0.00000191 | <0.000000188 | <0.00000028199999 | <0.00000109 | <0.000000135 | <0.000000203 | <0.00000214999999 |
| **Parathion-Ethyl** | <0.00000294 | <0.000000678 | <0.000000414 | <0.00000209 | <0.00000041299999 | <0.000000493 | <0.00000481 |
| **Parathion-Methyl** | <0.0000218 | <0.00000395 | <0.00000358999999 | <0.000012 | <0.00000296 | <0.00000667999999 | <0.0000243 |
| **Paroxetine** | <0.00000393999999 | <0.00000378 | <0.00000384999999 | <0.00000458999999 | <0.00000379999999 | <0.00000362999999 | <0.00000404999999 |
| **Penicillin G** | <0.00000292 | <0.00000280999999 | <0.00000285999999 | <0.00000341 | 0.0000135 | <0.0000027 | <0.00000300999999 |
| **Penicillin V** | <0.00000292 | <0.00000280999999 | <0.00000285999999 | <0.00000341 | <0.00000285 | <0.0000027 | <0.00000300999999 |

**Table 17.** *(continued)*

| | KEW-W3 | MAU-W1 | MAU-W2 | MAU-W3 | MIL-W1 | MIL-W2 | MIL-W3 |
|---|---|---|---|---|---|---|---|
| **Permethrin** | <0.00000335 | <0.00000043299999 | <0.000000527 | <0.00000127 | <0.00000074899999 | <0.000000461 | <0.00000324 |
| **Perthane** | <0.00000574 | <0.00000166999999 | <0.000000731 | <0.00000466 | <0.00000129 | <0.00000163999999 | <0.00000736 |
| **Phosmet** | <0.00000526 | <0.000000983 | <0.000000614 | <0.00000297 | <0.000000328 | <0.000000794 | <0.00000632999999 |
| **Pirimiphos-Methyl** | <0.00000081299999 | <0.000000162 | <0.000000101 | <0.000000314 | <0.000000101 | <0.000000101 | <0.00000102999999 |
| **Prednisolone** | <0.0000159 | <0.00001409999999 | <0.00000571999999 | <0.0000446 | <0.0000057 | <0.0000155 | <0.0000185 |
| **Prednisone** | <0.0000654 | <0.00003299999999 | <0.0000377 | <0.000072 | <0.00002779999999 | <0.0000293 | <0.00007759999999 |
| **Promethazine** | <0.00000038999999 | <0.000000374 | <0.000000381 | <0.000000738 | <0.00000037999999 | <0.00000036 | <0.000000401 |
| **Propoxyphene** | <0.00000029199999 | <0.000000281 | <0.00000028599999 | <0.000000341 | <0.00000028499999 | <0.00000027 | <0.00000030099999 |
| **Propranolol** | <0.00000195 | <0.00000187 | <0.00000191 | <0.00000227 | <0.00000189999999 | <0.0000018 | <0.00000201 |
| **Quintozene** | <0.000000365 | <0.000000193 | <0.000000101 | <0.00000030099999 | <0.000000101 | <0.000000334 | <0.000000704 |
| **Ranitidine** | <0.00000060799999 | <0.000000587 | <0.00000057399999 | <0.000000596 | 0.000000861 | 0.00000083299999 | 0.00000142999999 |
| **Rosuvastatin** | <0.0000039 | <0.00000374 | <0.00000381 | <0.00000455 | <0.00000379999999 | <0.0000036 | <0.00000401 |
| **Roxithromycin** | <0.00000029199999 | <0.000000281 | <0.00000028599999 | <0.000000341 | <0.00000028499999 | <0.00000027 | <0.00000030099999 |
| **Sarafloxacin** | <0.00001459999999 | <0.0000153 | <0.00002119999999 | <0.0000171 | 0.0000174 | <0.0000135 | <0.00001499999999 |
| **Sertraline** | <0.00000038999999 | <0.000000374 | <0.000000751 | <0.000000525 | 0.000000466 | <0.00000036 | <0.000000401 |
| **Simazine** | <0.00000501999999 | 0.000135 | 0.00000948 | 0.0000315 | 0.00000191 | 0.00001219999999 | <0.00000466 |
| **Simvastatin** | <0.0000195 | <0.00001869999999 | <0.0000191 | <0.0000227 | <0.00001899999999 | <0.000018 | <0.0000201 |
| **Sulfachloropyridazine** | <0.00000146 | <0.0000014 | <0.00000142999999 | <0.00000171 | <0.00000142999999 | <0.00000135 | <0.0000015 |
| **Sulfadiazine** | <0.00000146 | <0.0000014 | <0.00000142999999 | <0.00000171 | <0.00000142999999 | <0.00000135 | <0.0000015 |
| **Sulfadimethoxine** | <0.00000059199999 | 0.00000122 | 0.00000050499999 | 0.00000307 | <0.000000404 | <0.000000402 | <0.00000030099999 |
| **Sulfamerazine** | <0.00000058499999 | <0.000000561 | <0.000000685 | <0.000000682 | <0.00000094099999 | <0.00000072199999 | <0.00000060199999 |
| **Sulfamethazine** | <0.000000859 | 0.00000196999999 | <0.000000774 | <0.000002 | <0.00000056999999 | <0.00000153999999 | <0.00000070799999 |
| **Sulfamethizole** | <0.00000058499999 | <0.000000561 | <0.000000876 | <0.000000682 | <0.00000118 | <0.00000054 | <0.00000060199999 |
| **Sulfamethoxazole** | 0.000000814 | 0.00000205999999 | 0.00000411 | 0.0000387 | 0.00000804 | 0.00000272999999 | 0.00000362 |
| **Sulfanilamide** | <0.00001459999999 | <0.000014 | <0.0000143 | <0.0000171 | <0.0000143 | <0.0000135 | <0.00001499999999 |
| **Sulfathiazole** | <0.00000146 | <0.0000014 | <0.00000142999999 | <0.00000171 | <0.00000173999999 | <0.00000135 | <0.0000015 |
| **Tamoxifen** | <0.00000038999999 | <0.000000374 | <0.000000381 | <0.000000455 | <0.00000037999999 | <0.00000036 | <0.000000401 |
| **Tecnazene** | <0.000000334 | <0.000000132 | <0.000000101 | <0.00000030099999 | <0.000000101 | <0.00000024899999 | <0.000000462 |
| **Teniposide** | <0.0000039 | <0.00001059999999 | <0.00000542 | <0.00000455 | <0.00000379999999 | <0.0000036 | <0.00000401 |
| **Tetracycline (TC)** | <0.00000584999999 | <0.00000669 | <0.00000997 | <0.00000682 | <0.0000057 | <0.00000684 | <0.00000601999999 |
| **Theophylline** | <0.000135 | <0.0000561 | <0.0000572 | <0.00011399999999 | <0.00005699999999 | <0.000054 | <0.0000602 |
| **Thiabendazole** | <0.00000146 | 0.00000516 | 0.00000461 | 0.0000087 | <0.00000149 | <0.00000135 | <0.0000015 |
| **Transnonachlor** | <0.000000654 | <0.000000091 | <0.000000574 | <0.00000027 | <0.00000000155 | <0.00000000755 | <0.00000000786 |
| **Trenbolone** | <0.00000393999999 | <0.00000378 | <0.00000384999999 | <0.00000458999999 | <0.00000379999999 | <0.00000362999999 | <0.00000404999999 |
| **Trenbolone acetate** | <0.000000489 | <0.000000281 | <0.00000028599999 | <0.00000042499999 | <0.00000036299999 | <0.00000028899999 | <0.000000332 |
| **Triamterene** | <0.00000030399999 | 0.00000166999999 | 0.00000221 | 0.00000387 | 0.0000015 | 0.0000032 | 0.00000291 |
| **Triclocarban** | <0.00000292 | <0.00000280999999 | <0.00000285999999 | <0.00000341 | <0.00000285 | <0.0000027 | <0.00000300999999 |
| **Triclosan** | <0.0000585 | <0.0000561 | <0.0000572 | <0.0000682 | <0.00005699999999 | <0.000054 | <0.0000602 |
| **Trimethoprim** | <0.00000146 | 0.00000325 | 0.00000351999999 | 0.00000729999999 | <0.00000142999999 | 0.00000235 | <0.0000015 |
| **Tylosin** | <0.00000584999999 | <0.00000561 | <0.0000572 | <0.00000682 | <0.0000057 | <0.0000054 | <0.00000601999999 |
| **Valsartan** | <0.00000393999999 | 0.00002839999999 | 0.00001719999999 | <0.00000458999999 | <0.00000379999999 | 0.0000089 | <0.00000404999999 |
| **Venlafaxine** | <0.00000311999999 | 0.00000528 | 0.00000268999999 | 0.00000709999999 | 0.00000444 | 0.00000782 | 0.0000123 |
| **Verapamil** | <0.00000014599999 | <0.00000014 | <0.00000014299999 | <0.000000171 | <0.00000014299999 | <0.000000135 | <0.00000015 |
| **Virginiamycin M1** | <0.00000292 | <0.00000280999999 | <0.0000031 | <0.00000341 | <0.00000285 | <0.0000027 | <0.00000300999999 |
| **Warfarin** | <0.00000146 | <0.0000014 | <0.00000142999999 | <0.00000171 | <0.00000142999999 | <0.00000135 | <0.0000015 |
| **Zidovudine** | <0.00004679999999 | <0.0000529 | <0.000261 | <0.0000546 | <0.000113 | <0.0000484 | <0.0000481 |

**Table 18.** Published aquatic screening values for fish that were exceeded in collected water samples.

| Analyte | Concentration type | Concentration value | Source | Description | Locations with exceedances |
|---|---|---|---|---|---|
| Atrazine | bounded LOAEL | 1.0 µg/L | Botelho 2015 | LOAEL for nuclear abnormalities in zebrafish erythrocytes | MAU |
| Sulfamethoxazole | PNEC | 0.03 µg/L | Sanderson et al. 2003 | Acute fish PNEC | MAU |
| DEET | SVLow | 0.00254 µg/L | Gefell et al. 2019 | Population relevant SVLow for growth effects | BLA 17, CED, GEN 17, WHI, BLA 18, GEN 18, KEW, MAU, MIL |
| DEET | SVLow | 0.00254 µg/L | Gefell et al. 2019 | Population relevant SVLow for mortality effects | BLA 17, CED, GEN 17, WHI, BLA 18, GEN 18, KEW, MAU, MIL |
| DEET | SVLow | 0.00254 µg/L | Gefell et al. 2019 | Population relevant SVLow for reproductive effects | BLA 17, CED, GEN 17, WHI, BLA 18, GEN 18, KEW, MAU, MIL |
| DEET | SVLow | 0.00102 µg/L | Gefell et al. 2019 | Comprehensive SVLow for growth effects | BLA 17, CED, GEN 17, WHI, BLA 18, GEN 18, KEW, MAU, MIL |
| DEET | SVLow | 0.00102 µg/L | Gefell et al. 2019 | Comprehensive SVLow for mortality effects | BLA 17, CED, GEN 17, WHI, BLA 18, GEN 18, KEW, MAU, MIL |
| DEET | SVLow | 0.00034 µg/L | Gefell et al. 2019 | Comprehensive SVLow for endocrine effects | BLA 17, CED, GEN 17, WHI, BLA 18, GEN 18, KEW, MAU, MIL |
| carbamazepine | SVLow | 0.0072 µg/L | Gefell et al. 2019 | Population relevant SVLow for developmental effects | MAU |
| carbamazepine | SVLow | 0.00127 µg/L | Gefell et al. 2019 | Population relevant SVLow for reproductive effects | MAU |
| carbamazepine | SVLow | 0.0102 µg/L | Gefell et al. 2019 | Comprehensive SVLow for behavioral effects | MAU |
| carbamazepine | SVLow | 0.0029 µg/L | Gefell et al. 2019 | Comprehensive SVLow for developmental effects | MAU |
| carbamazepine | SVLow | 0.00051 µg/L | Gefell et al. 2019 | Comprehensive SVLow for reproductive effects | MAU |
| carbamazepine | SVLow | 0.0026 µg/L | Gefell et al. 2019 | Comprehensive SVLow for circulatory/blood constituent effects | MAU |
| carbamazepine | SVLow | 0.00051 µg/L | Gefell et al. 2019 | Comprehensive SVLow for histopathology effects | MAU |
| carbamazepine | SVLow | 0.0026 µg/L | Gefell et al. 2019 | Comprehensive SVLow for neurological effects | MAU |
| carbamazepine | SVLow | 0.0026 µg/L | Gefell et al. 2019 | Comprehensive SVLow for physiology/metabolism effects | MAU |
| citalopram | SVLow | 0.00127 µg/L | Gefell et al. 2019 | Population relevant SVLow for behavioral effects | MIL |
| citalopram | SVLow | 0.00051 µg/L | Gefell et al. 2019 | Comprehensive SVLow for behavioral effects | MIL |
| venlafaxine | SVLow | 0.00127 µg/L | Gefell et al. 2019 | Population relevant SVLow for behavioral effects | MAU, MIL |
| venlafaxine | SVLow | 0.00702 µg/L | Gefell et al. 2019 | Population relevant SVLow for growth effects | MAU, MIL |
| venlafaxine | SVLow | 0.000647 µg/L | Gefell et al. 2019 | Population relevant SVLow for mortality effects | MAU, MIL |
| venlafaxine | SVLow | 0.000647 µg/L | Gefell et al. 2019 | Population relevant SVLow for reproductive effects | MAU, MIL |
| venlafaxine | SVLow | 0.0005111 µg/L | Gefell et al. 2019 | Comprehensive SVLow for behavioral effects | MAU, MIL |
| venlafaxine | SVLow | 0.00282 µg/L | Gefell et al. 2019 | Comprehensive SVLow for growth effects | MAU, MIL |
| venlafaxine | SVLow | 0.00026 µg/L | Gefell et al. 2019 | Comprehensive SVLow for mortality effects | MAU, MIL |
| venlafaxine | SVLow | 0.00026 µg/L | Gefell et al. 2019 | Comprehensive SVLow for reproductive effects | MAU, MIL |
| venlafaxine | SVLow | 0.0000681 µg/L | Gefell et al. 2019 | Comprehensive SVLow for endocrine effects | MAU, MIL |
| venlafaxine | SVLow | 0.000511 µg/L | Gefell et al. 2019 | Comprehensive SVLow for histopathology effects | MAU, MIL |

## Log $K_{ow}$ coefficients

**Table 19.** Mean Log $K_{ow}$ coefficients for analyzed pesticides. Values were taken from EPA's CompTox Chemistry Dashboard (https://comptox.epa.gov/dashboard)

| Analyte | Experimental | Predicted |
|---|---|---|
| **Aldrin** | 6.5 | 5.94 |
| **alpha BHC** | 3.72 | 3.9 |
| **alpha chlordane** | 6.16 | 5.91 |
| **Ametryn** | 2.98 | 3.06 |
| **Atrazine** | 2.61 | 2.67 |
| **azinphos-methyl** | 2.75 | 2.57 |
| **beta BHC** | 3.72 | 3.9 |
| **Captan** | 2.8 | 2.46 |
| **Chlorothalonil** | 3.05 | 3.36 |
| **Chlorpyriphos** | 4.96 | 4.84 |
| **Chlorpyriphos Methyl** | 4.31 | 4 |
| **Chlorpyriphos Oxon** | | 3.32 |
| **cis-nonachlor** | | 6.11 |
| **Cyanazine** | 2.22 | 2.24 |
| **Cypermethrin** | 6.6 | 6.11 |
| **Dacthal** | 4.28 | 3.9 |
| **delta BHC** | 0.72 | 3.9 |
| **Desethylatrazine** | 1.51 | 1.54 |
| **diazinon** | 3.81 | 3.73 |
| **Diazinon Oxon** | 2.07 | 2.03 |
| **dieldrin** | 5.4 | 5.13 |
| **Dimethoate** | 0.78 | 0.698 |
| **disulfoton** | 4.02 | 3.72 |
| **disulfoton sulfone** | 1.87 | 1.92 |
| **endosulfan I** | | 3.59 |
| **endosulfan II** | | 3.59 |
| **Endosulphan Sulphate** | 3.66 | 3.85 |
| **endrin** | 5.4 | 5.13 |
| **Endrin Ketone** | | 5.61 |
| **Ethion** | 5.07 | 4.65 |
| **Fenitrothion** | 3.3 | 3.28 |
| **fonofos** | 3.94 | 3.92 |
| **gamma BHC** | 3.72 | 3.9 |
| **gamma chlordane** | | 5.91 |
| **HCB** | 5.73 | 5.35 |
| **Heptachlor** | 6.1 | 5.71 |
| **Heptachlor Epoxide** | 4.98 | 5.11 |
| **Hexazinone** | 1.85 | 1.88 |
| **malathion** | 2.36 | 2.51 |
| **methoxychlor** | 5.08 | 4.99 |
| **Metribuzin** | 1.54 | 1.55 |
| **mirex** | 6.89 | 6.99 |
| **octachlorostyrene** | | 6.54 |
| **o,p' DDD** | | 5.8 |
| **o,p' DDE** | | 5.97 |
| **o,p' DDT** | | 6.31 |

**Table 19.** (*continued*)

| Analyte | Experimental | Predicted |
|---|---|---|
| **oxychlordane** | - | 5.09 |
| **Parathion-Ethyl** | 3.83 | 3.69 |
| **Parathion-Methyl** | 2.86 | 2.86 |
| **Permethrin** | 6.5 | 6.7 |
| **Perthane** | - | 6.13 |
| **phorate** | 3.56 | 3.53 |
| **Phosmet** | 2.78 | 2.81 |
| **Pirimiphos Methyl** | 4.2 | 3.82 |
| **p,p' DDD** | 6.02 | 5.76 |
| **p,p' DDE** | 6.51 | 6.02 |
| **p,p' DDT** | 6.91 | 6.29 |
| **Quintozene** | 4.64 | 4.57 |
| **Simazine** | 2.18 | 2.23 |
| **Tecnazene** | 4.38 | 4.06 |
| **Terbufos** | 4.48 | 4.3 |
| **trans-nonachlor** | - | 6.11 |

**Table 20.** Mean Log $K_{ow}$ coefficients for analyzed pharmaceuticals and personal care products. Values were taken from EPA's CompTox Chemistry Dashboard (https://comptox.epa.gov/dashboard).

| Analyte | Experimental | Predicted |
|---|---|---|
| **10 hydroxy amitriptyline** | | 3.26 |
| **1,7 Dimethylxanthine** | 0.22 | 0.682 |
| **2-Hydroxy-ibuprofen** | | 3.47 |
| **4 Epianhydrochlortetracycline** | | |
| **4 Epianhydrotetracycline (EATC)** | | 0.503 |
| **4 Epichlortetracycline (ECTC)** | | 0.454 |
| **4 Epioxytetracycline (EOTC)** | | |
| **4 Epitetracycline (ETC)** | | -1.2 |
| **Acetaminophen** | 0.46 | 0.33 |
| **Albuterol** | | 0.62 |
| **Alprazolam** | 2.12 | 2.65 |
| **Amitriptyline** | 4.92 | 4.6 |
| **Amlodipine** | 3 | 3.05 |
| **Amphetamine** | 1.76 | 1.75 |
| **Amsacrine** | | 3.09 |
| **Anhydrochlortetracycline (ACTC)** | | |
| **Anhydrotetracycline (ATC)** | | 388 |
| **Atenolol** | 0.16 | 0.04 |
| **Atorvastatin** | | 5.04 |
| **Azathioprine** | 0.1 | 0.08 |
| **Azithromycin** | 4.02 | 3.53 |

Table 20. (*continued*)

| Analyte | Experimental | Predicted |
|---|---|---|
| **Benzoylecgonine** | | 1.61 |
| **Benztropine** | | 4.2 |
| **Betamethasone** | 1.83 | 1.87 |
| **Bisphenol A** | 3.32 | 3.29 |
| **Busulfan** | 0.52 | 0.469 |
| **Caffeine** | 0.07 | 0.00537 |
| **Carbadox** | | 0.357 |
| **Carbamazepine** | 2.45 | 2.23 |
| **Cefotaxime** | | 0.28 |
| **Chlortetracycline (CTC)** | 0.62 | 0.547 |
| **Cimetidine** | 0.4 | 0.43 |
| **Ciprofloxacin** | 0.28 | 0.07 |
| **Citalopram** | | 3.08 |
| **Clarithromycin** | 3.16 | 3.03 |
| **Clinafloxacin** | | 0.79 |
| **Clonidine** | 1.59 | 1.67 |
| **Clotrimazole** | | 4.89 |
| **Cloxacillin** | 2.48 | 2.5 |
| **Cocaine** | 2.3 | 2.24 |
| **Codeine** | | 0.76 |
| **Colchicine** | 1.3 | 1.22 |
| **Cotinine** | 0.07 | 0.0579 |
| **Cyclophosphamide** | 0.63 | 0.63 |
| **Daunorubicin** | 1.83 | 1.79 |
| **DEET** | 2.18 | 2.13 |
| **Dehydronifedipine** | | 2.58 |
| **Demeclocycline** | | 0.811 |
| **Desmethyldiltiazem** | | 2.76 |
| **Diatrizoic Acid** | - | 1.44 |
| **Diazepam** | 2.82 | 2.68 |
| **Digoxigenin** | 1.1 | 1.4 |
| **Digoxin** | 1.26 | 1.16 |
| **Diltiazem** | 2.7 | 2.97 |
| **Diphenhydramine** | 3.27 | 3.24 |
| **Doxorubicin** | 1.27 | 1.31 |
| **Doxycycline** | -0.02 | -0.555 |
| **Drospirenone** | - | 3.51 |
| **Enalapril** | 0.07 | 1.51 |
| **Enrofloxacin** | - | 0.80 |
| **Erythromycin-H2O** | 3.06 | 2.76 |
| **Etoposide** | 0.6 | 0.34 |
| **Flumequine** | 1.6 | 2.03 |
| **Fluocinonide** | 3.19 | 3.08 |

Table 20. (*continued*)

| Analyte | Experimental | Predicted |
|---|---|---|
| **Fluoxetine** | 4.05 | 4.05 |
| **Fluticasone propionate** | | 3.47 |
| **Furosemide** | 2.03 | 2.16 |
| **Gemfibrozil** | | 4.28 |
| **Glipizide** | 1.91 | 2.02 |
| **Glyburide** | | 3.72 |
| **Hydrochlorothiazide** | 0.07 | 0.128 |
| **Hydrocodone** | | 1.42 |
| **Hydrocortisone** | 1.61 | 1.59 |
| **Ibuprofen** | 3.97 | 3.67 |
| **Iopamidol** | 2.42 | 2.16 |
| **Isochlortetracycline (ICTC)** | | 0.331 |
| **Lincomycin** | 0.2 | 0.46 |
| **Lomefloxacin** | -0.3 | 0.16 |
| **Medroxyprogesterone Acetate** | | 3.85 |
| **Melphalan** | 0.52 | 0.67 |
| **Meprobamate** | 0.7 | 0.82 |
| **Metformin** | | 1.37 |
| **Methylprednisolone** | | 1.86 |
| **Metoprolol** | 1.88 | 1.78 |
| **Metronidazole** | 0.02 | 0.0414 |
| **Miconazole** | | 5.25 |
| **Minocycline** | 0.05 | 0.195 |
| **Moxifloxacin** | | 1.17 |
| **Naproxen** | 3.18 | 2.91 |
| **Norfloxacin** | 1.03 | 0.304 |
| **Norfluoxetine** | | 3.53 |
| **Norgestimate** | | 5.08 |
| **Norverapamil** | | 4.11 |
| **Ofloxacin** | 0.39 | 0.000191 |
| **Ormetoprim** | 1.23 | 1.21 |
| **Oxacillin** | 2.38 | 2.08 |
| **Oxazepam** | 2.24 | 2.02 |
| **Oxolinic Acid** | 0.94 | 1.22 |
| **Oxycodone** | | 0.92 |
| **Oxytetracycline (OTC)** | -0.9 | 1.48 |
| **Paroxetine** | | 3.7 |
| **Penicillin G** | 1.83 | 1.76 |
| **Penicillin V** | 2.09 | 1.94 |
| **Prednisolone** | 1.62 | 1.55 |
| **Prednisone** | 1.46 | 1.57 |
| **Promethazine** | 4.81 | 4.41 |

Table 20. (*continued*)

| Analyte | Experimental | Predicted |
|---|---|---|
| **Promethazine** | 4.81 | 4.41 |
| **Propoxyphene** | 4.18 | 4.56 |
| **Propranolol** | 3.48 | 2.94 |
| **Ranitidine** | 0.27 | 0.465 |
| **Rosuvastatin** | | 1.61 |
| **Roxithromycin** | | 3.14 |
| **Sarafloxacin** | | 0.398 |
| **Sertraline** | | 4.85 |
| **Simvastatin** | 4.68 | 4.68 |
| **Sulfachloropyridazine** | | 0.681 |
| **Sulfadiazine** | 0.09 | 0.281 |
| **Sulfadimethoxine** | 1.63 | 1.23 |
| **Sulfamerazine** | 0.14 | 0.08 |
| **Sulfamethazine** | 0.19 | 0.338 |
| **Sulfamethizole** | 0.54 | 0.401 |
| **Sulfamethoxazole** | 0.89 | 0.777 |
| **Sulfanilamide** | 0.62 | 0.592 |
| **Sulfathiazole** | 0.05 | 0.171 |
| **Tamoxifen** | | 6.24 |
| **Teniposide** | 1.24 | 1.12 |
| **Tetracycline (TC)** | -1.3 | -1.2 |
| **Theophylline** | 0.02 | 0.127 |
| **Thiabendazole** | 2.47 | 2.2 |
| **Trenbolone** | | 2.65 |
| **Trenbolone acetate** | | 3.43 |
| **Triamterene** | 0.98 | 0.967 |
| **Triclocarban** | | 4.98 |
| **Triclosan** | 4.76 | 4.79 |
| **Trimethoprim** | 0.91 | 0.753 |
| **Tylosin** | 1.63 | 1.9 |
| **Valsartan** | | 3.27 |
| **Venlafaxine** | | 2.38 |
| **Verapamil** | 3.79 | 3.81 |
| **Virginiamycin M1** | | 2.85 |
| **Warfarin** | 2.7 | 2.67 |
| **Zidovudine** | 0.05 | 0.102 |

## Brine Shrimp

**Table 21.** Chemical analysis results for brine shrimp food samples. Only analytes which were detected in at least one sample are presented. Values prepended by "<" indicate the detection limit was not exceeded. Concentrations reported in ppm wet weight.

| Analyte | BLA 2017 | GEN 2017 | BLA 2018 | MAU 2018 | MIL 2018 | KEW 2018 | GEN 2018 |
|---|---|---|---|---|---|---|---|
| **alpha BHC** | < 0.0000113 | < 0.00000840 | <0.000029 | <0.0000368 | <0.0000098 | <0.0000115 | 0.000022 |
| **BDE# 100** | 0.00000914 | 0.00000608 | 0.0000129 | 0.000000767 | 0.000000775 | 0.000000937 | 0.00001249999999 |
| **BDE# 119/120** | 0.000000314 | < 0.000000237 | 0.00000094299999 | <0.000000138 | <0.000000111 | <0.000000131 | 0.00000059 |
| **BDE# 12/13** | 0.000000122 | < 0.000000134 | 0.00000033 | <0.000000138 | <0.000000111 | <0.000000131 | 0.000000263 |
| **BDE# 128** | 0.000000598 | < 0.00000153 | <0.000000116 | 0.000000144 | <0.000000111 | <0.000000131 | 0.00000019499999 |
| **BDE# 138/166** | 0.000000601 | < 0.000000666 | 0.000000393 | <0.000000138 | <0.000000111 | <0.000000131 | 0.00000017799999 |
| **BDE# 140** | 0.000000374 | < 0.000000556 | 0.000000181 | <0.000000138 | <0.000000111 | <0.000000131 | <0.000000116 |
| **BDE# 15** | 0.000000426 | 0.000000452 | 0.00000171999999 | <0.000000138 | <0.000000111 | <0.000000131 | 0.00000132 |
| **BDE# 153** | 0.00000203 | 0.000000965 | 0.00000217 | 0.000000367 | 0.000000228 | 0.000000187 | 0.00000205 |
| **BDE# 154** | 0.00000254 | 0.00000171 | 0.00000318 | 0.000000241 | 0.00000027 | 0.00000021099999 | 0.00000307999999 |
| **BDE# 155** | 0.000000258 | 0.000000563 | <0.000000116 | <0.000000138 | <0.000000111 | <0.000000131 | <0.000000116 |
| **BDE# 17/25** | 0.00000466 | 0.00000342 | 0.0000113 | 0.000000534 | 0.00000052 | 0.000000459 | 0.00000917999999 |
| **BDE# 183** | 0.000000614 | 0.000000371 | 0.00000069099999 | 0.0000012 | 0.000000166 | <0.000000131 | 0.000000397 |
| **BDE# 203** | 0.000000431 | 0.00000104 | 0.00000038499999 | 0.000000734 | 0.000000157 | 0.000000136 | 0.000000462 |
| **BDE# 206** | 0.000000639 | 0.00000309 | 0.00000112999999 | 0.00000171999999 | 0.000000896 | 0.00000111 | 0.00000204 |
| **BDE# 207** | 0.00000168 | 0.00000602 | 0.00000381 | 0.00000258 | 0.00000337 | 0.00000206999999 | 0.00000491999999 |
| **BDE# 208** | 0.0000015 | 0.00000367 | <0.000000345 | 0.00000133 | 0.00000137 | 0.00000204 | 0.000000906 |
| **BDE# 209** | 0.0000191 | 0.0000649 | 0.00001649999999 | 0.0000216 | 0.00002539999999 | 0.00002779999999 | 0.0000571 |
| **BDE# 28/33** | 0.00000296 | 0.00000229 | 0.00001059999999 | 0.000000386 | 0.000000328 | 0.00000058799999 | 0.00000632999999 |
| **BDE# 35** | 0.00000042 | < 0.000000114 | <0.00000029599999 | <0.000000138 | <0.000000111 | <0.000000131 | <0.00000018 |
| **BDE# 37** | 0.000000456 | 0.000000328 | 0.00000111 | <0.000000138 | <0.000000111 | <0.000000131 | 0.00000106 |
| **BDE# 47** | 0.0000479 | 0.0000199 | 0.000062 | 0.00000370999999 | 0.00000411 | 0.00000488 | 0.0000505 |
| **BDE# 49** | 0.00000842 | 0.00000553 | 0.00002389999999 | 0.00000096799999 | 0.00000113999999 | 0.00000124999999 | 0.0000183 |
| **BDE# 51** | 0.000000674 | 0.000000469 | 0.00000173999999 | <0.000000138 | <0.000000111 | <0.000000131 | 0.00000165999999 |
| **BDE# 66** | 0.00000261 | 0.00000129 | 0.00000576 | 0.00000020499999 | 0.000000265 | 0.000000317 | 0.00000476999999 |
| **BDE# 7** | 0.000000403 | 0.000000341 | 0.0000016 | <0.000000138 | <0.000000111 | <0.000000131 | 0.00000140999999 |
| **BDE# 71** | 0.000000447 | 0.000000471 | 0.000002 | <0.000000138 | <0.000000111 | 0.00000015 | 0.00000158 |
| **BDE# 75** | 0.000000147 | < 0.000000114 | 0.000000624 | <0.000000138 | <0.000000111 | <0.000000131 | 0.00000044199999 |
| **BDE# 77** | < 0.000000114 | < 0.000000114 | 0.000000199 | <0.000000138 | <0.000000111 | <0.000000131 | 0.00000014699999 |
| **BDE# 79** | < 0.000000114 | 0.000000267 | 0.0000004 | <0.000000138 | <0.000000111 | <0.000000131 | 0.000000313 |
| **BDE# 8/11** | 0.000000277 | 0.000000283 | 0.00000100999999 | <0.000000138 | <0.000000111 | <0.000000131 | 0.000000915 |
| **BDE# 85** | 0.000000826 | 0.000000601 | 0.00000102 | <0.000000138 | <0.000000111 | <0.000000131 | 0.000000762 |
| **BDE# 99** | 0.0000261 | 0.0000125 | 0.00003189999999 | 0.00000205 | 0.00000225 | 0.00000221 | 0.0000256 |

**Table 21.** (*continued*)

| Analyte | BLA 2017 | GEN 2017 | BLA 2018 | MAU 2018 | MIL 2018 | KEW 2018 | GEN 2018 |
|---|---|---|---|---|---|---|---|
| **cis-nonachlor** | < 0.0000130 | 0.000005 | <0.0000328 | <0.0000362 | <0.0000166 | <0.0000142 | <0.000023 |
| **DEET** | 0.0295 | 0.00117 | 0.00636 | 0.000789 | 0.000999 | 0.000781 | 0.00077 |
| **Diphenhydramine** | < 0.000239 | < 0.000240 | <0.000236 | <0.000233 | <0.000236 | <0.000233 | 0.00025 |
| **gamma BHC** | < 0.0000135 | < 0.00000990 | <0.0000268 | <0.0000369 | <0.000013 | <0.0000141 | 0.000017 |
| **HCB** | 0.00006 | 0.000106 | 0.000099 | 0.000018 | 0.000015 | 0.000018 | 0.000282 |
| **Metformin** | < 0.00283 | < 0.00294 | <0.00283 | <0.00254 | <0.00217 | 0.00484 | <0.00287999999999 |
| **o,p DDD** | < 0.0000182 | < 0.0000259 | <0.0000549 | <0.0000723 | <0.0000295 | <0.0000311 | 0.000046 |
| **p,p DDD** | 0.000043 | 0.000151 | 0.000336 | 0.000078 | 0.00004499999999 | 0.000052 | 0.000472 |
| **p,p DDE** | 0.000039 | 0.000052 | 0.000083 | <0.0000454 | 0.000031 | 0.000026 | 0.000161 |
| **p,p DDT** | < 0.0000704 | < 0.0000767 | <0.000092 | <0.000109 | <0.000079 | <0.0000475 | 0.000069 |
| **Thiabendazole** | 0.00119 | < 0.000600 | <0.00059099999999 | <0.00058099999999 | <0.00059099999999 | <0.00058099999999 | <0.00059099999999 |
| **trans nonachlor** | 0.000017 | < 0.0000240 | <0.0000296 | <0.0000378 | <0.0000196 | <0.000017 | <0.00001859999999 |

## Blood Worms

**Table 22.** Chemical analysis results for blood worm food samples. Only analytes which were detected in at least one sample are presented. Values prepended by "<" indicate the detection limit was not exceeded. Concentrations reported in ppm wet weight

| Analyte | BLA 2017 | GEN 2017 | BLA 2018 | MIL 2018 | KEW 2018 | GEN 2018 |
|---|---|---|---|---|---|---|
| **4 Epianhydrotetracycline (EATC)** | < 0.00598 | < 0.00000598 | <0.00595 | <0.00581 | 0.00735 | <0.00581 |
| **alpha BHC** | 0.000369 | 0.000045 | <0.000032 | <0.000026 | 0.000037 | 0.000108 |
| **Amitriptyline** | < 0.000120 | 0.000148 | <0.00011899999999 | <0.000116 | <0.000116 | <0.000116 |
| **Azithromycin** | 0.238 | 0.0106 | 0.0582 | <0.00118999999999 | <0.000773 | 0.0773 |
| **BDE# 10** | 0.000000154 | < 0.000000176 | <0.000000139 | <0.000000114 | <0.00000011299999 | <0.000000117 |
| **BDE# 100** | 0.0000155 | 0.0000026 | 0.00000545999999 | 0.00000358 | 0.0000024 | 0.00000307 |
| **BDE# 105** | 0.00000171 | < 0.000000206 | <0.000000439 | <0.00000017899999 | <0.000000161 | <0.000000223 |
| **BDE# 119/120** | 0.00000299 | 0.000000733 | 0.000000597 | 0.00000199 | 0.00000144999999 | 0.000000586 |
| **BDE# 12/13** | 0.00000866 | 0.00000163 | 0.00000112 | <0.000000114 | <0.00000011299999 | 0.00000128 |
| **BDE# 126** | 0.000000293 | < 0.000000111 | <0.000000188 | 0.00000049 | 0.000000264 | <0.000000117 |
| **BDE# 128** | 0.00000867 | < 0.00000243 | 0.00000250999999 | 0.000000302 | 0.000000384 | 0.00000377 |
| **BDE# 138/166** | 0.0000336 | 0.00000198 | 0.00000214999999 | 0.000000139 | 0.00000021499999 | 0.00000229999999 |
| **BDE# 140** | 0.0000105 | 0.00000252 | 0.000000882 | 0.000000125 | 0.000000197 | 0.00000108 |
| **BDE# 15** | 0.0000312 | 0.000004 | 0.00000638 | 0.00000013 | <0.00000011299999 | 0.0000121 |
| **BDE# 153** | 0.0000517 | 0.00000566 | 0.0000196 | 0.00000249 | 0.00000267 | 0.00001309999999 |
| **BDE# 154** | 0.000012 | 0.00000619 | 0.00000458999999 | 0.00000842999999 | 0.00000673 | 0.00000233 |
| **BDE# 155** | 0.000000664 | 0.0000018 | <0.000000139 | 0.00000403999999 | 0.0000028 | <0.000000117 |
| **BDE# 17/25** | 0.0000183 | 0.00000153 | 0.00000175999999 | 0.00000073 | 0.000000445 | 0.00000169999999 |
| **BDE# 181** | 0.00000264 | 0.000000501 | <0.00000116999999 | <0.000000114 | <0.00000011299999 | <0.00000108 |
| **BDE# 183** | 0.0000344 | 0.0000089 | 0.0000409 | 0.00000120999999 | 0.00000113999999 | 0.00003039999999 |
| **BDE# 190** | 0.00000701 | 0.00000117 | <0.00000192999999 | <0.000000114 | <0.00000011299999 | <0.00000179 |
| **BDE# 203** | 0.0000336 | 0.00000447 | 0.0000448 | 0.000000892 | 0.000000654 | 0.0000477 |
| **BDE# 206** | 0.000106 | 0.00000539 | 0.000113 | 0.00000192 | 0.00000094799999 | 0.000132 |
| **BDE# 207** | 0.000148 | 0.0000101 | 0.00013 | 0.00000503 | 0.00000372 | 0.000141 |
| **BDE# 208** | 0.000102 | 0.00000691 | 0.000103 | 0.00000287 | 0.00000319 | 0.000103 |
| **BDE# 209** | 0.000795 | 0.0000581 | 0.000531 | 0.000059 | 0.0000392 | 0.000537 |
| **BDE# 28/33** | 0.000101 | 0.00000368 | 0.00000898 | 0.00000178 | 0.00000102999999 | 0.0000104 |
| **BDE# 32** | 0.000000188 | < 0.000000111 | <0.000000139 | <0.000000114 | <0.00000011299999 | <0.000000131 |
| **BDE# 35** | 0.00000636 | 0.0000004 | 0.000000479 | <0.000000114 | <0.00000011299999 | 0.000000406 |
| **BDE# 37** | 0.0000225 | 0.000000549 | 0.00000196999999 | 0.000000161 | <0.00000011299999 | 0.00000201999999 |
| **BDE# 47** | 0.00024 | 0.0000105 | 0.0000521 | 0.00001249999999 | 0.00000736 | 0.0000401 |
| **BDE# 49** | 0.0000367 | 0.00000328 | 0.0000057 | 0.00000205999999 | 0.00000106 | 0.00000488 |
| **BDE# 51** | 0.000000664 | 0.000000243 | <0.000000139 | 0.00000035899999 | 0.000000149 | <0.000000117 |
| **BDE# 66** | 0.0000513 | 0.00000197 | 0.00000463 | 0.00000171 | 0.000000931 | 0.00000488 |
| **BDE# 7** | 0.000000455 | 0.000000318 | <0.000000139 | <0.000000114 | <0.00000011299999 | <0.000000117 |
| **BDE# 71** | 0.00000183 | 0.000000239 | 0.00000035899999 | <0.000000114 | <0.00000011299999 | 0.00000017299999 |

**Table 22.** (*continued*)

| Analyte | BLA 2017 | GEN 2017 | BLA 2018 | MIL 2018 | KEW 2018 | GEN 2018 |
|---|---|---|---|---|---|---|
| **BDE# 75** | 0.000000404 | < 0.000000111 | <0.000000139 | 0.000000135 | <0.00000011299999 | <0.000000117 |
| **BDE# 77** | 0.0000112 | 0.000000367 | 0.00000095899999 | 0.000000269 | 0.000000246 | 0.000000891 |
| **BDE# 79** | 0.00000173 | 0.000000222 | 0.00000036599999 | 0.00000116 | 0.000000686 | 0.000000323 |
| **BDE# 8/11** | 0.00000212 | 0.000000815 | 0.000000395 | <0.000000114 | <0.00000011299999 | 0.000000517 |
| **BDE# 85** | 0.00000984 | 0.00000052 | 0.00000360999999 | 0.00000016 | 0.000000162 | 0.00000187 |
| **BDE# 99** | 0.000157 | 0.0000089 | 0.0000409 | 0.00000673 | 0.00000537999999 | 0.0000236 |
| **beta BHC** | 0.00285 | 0.000305 | 0.000425 | 0.000056 | <0.0000483 | 0.000475 |
| **Chlorpyriphos** | 0.000376 | < 0.0000502 | <0.00014099999999 | <0.0000397 | <0.000077 | <0.0000893 |
| **Cimetidine** | 0.000243 | 0.000353 | <0.000588 | <0.000579 | <0.00056 | <0.000556 |
| **Ciprofloxacin** | 0.00254 | < 0.00239 | <0.00237999999999 | <0.00565 | <0.00233 | <0.00471 |
| **Clotrimazole** | 0.000908 | < 0.000159 | 0.000441 | <0.000155 | <0.000155 | 0.000644 |
| **Cotinine** | < 0.00149 | < 0.00139 | <0.00147 | <0.00145 | <0.0014 | 0.00341 |
| **Cypermethrin** | 0.00031 | < 0.000166 | <0.000493 | <0.000379 | <0.000451 | 0.000374 |
| **DEET** | 0.0633 | 0.00042 | 0.00483 | 0.05 | 0.0222 | 0.00179 |
| **delta BHC** | 0.00043 | < 0.0000360 | <0.0000335 | <0.0000281 | <0.0000433 | <0.000112 |
| **dieldrin** | < 0.0000126 | < 0.0000100 | <0.0000213 | <0.000039 | 0.000052 | <0.0000066 |
| **Diphenhydramine** | 0.000428 | < 0.000239 | 0.000402 | <0.000233 | <0.000233 | 0.000307 |
| **gamma BHC** | 0.000217 | < 0.0000141 | <0.0000281 | <0.0000184 | <0.0000469 | <0.0000192 |
| **HCB** | 0.000829 | 0.000675 | 0.00075 | 0.000226 | 0.000219 | 0.00107 |
| **Miconazole** | 0.00125 | < 0.000598 | 0.00104 | <0.000793 | <0.00058099999999 | 0.00128 |
| **mirex** | 0.000062 | < 0.00000780 | 0.000025 | <0.0000066 | <0.000021 | <0.000015 |
| **Norfloxacin** | 0.0094 | < 0.00598 | <0.00595 | <0.00751 | <0.00581 | <0.00873 |
| **o,p DDD** | 0.00002 | 0.00369 | <0.0000968 | <0.00002779999999 | <0.0000423 | <0.0000272 |
| **o,p DDE** | < 0.0000291 | 0.0678 | <0.0000353 | <0.0000191 | <0.0000234 | <0.0000203 |
| **o,p DDT** | < 0.0000886 | < 0.0000889 | <0.000162 | <0.0000351 | <0.0000664 | <0.0000368 |
| **octachlorostyrene** | < 0.00000810 | < 0.00000900 | <0.0000212 | <0.0000088 | <0.000019 | 0.000013 |
| **Ofloxacin** | 0.00913 | < 0.000598 | 0.00349 | <0.00118999999999 | <0.00058099999999 | 0.00338 |
| **Oxycodone** | 0.000826 | < 0.000556 | <0.000588 | <0.000604 | <0.00213 | <0.00152 |
| **Oxytetracycline (OTC)** | < 0.00239 | < 0.00000239 | 0.00248 | <0.00233 | <0.00233 | <0.00233 |
| **p,p DDD** | 0.000076 | 0.0069 | 0.000186 | 0.000046 | 0.000041 | 0.000064 |
| **p,p DDE** | 0.000715 | 0.132 | 0.000242 | 0.000358 | 0.000234 | 0.000284 |
| **p,p DDT** | < 0.0000773 | < 0.0000818 | <0.000189 | <0.0000381 | <0.0000708 | 0.000067 |
| **Permethrin** | 0.000565 | < 0.000227 | <0.000355 | <0.000387 | <0.000455 | <0.000277 |
| **Roxithromycin** | 0.00018 | 0.000187 | <0.00011899999999 | <0.00019 | <0.000116 | <0.000136 |
| **Triamterene** | 0.0045 | 0.00105 | 0.000519 | <0.00032 | <0.000327 | 0.000987 |
| **Triclocarban** | 0.883 | 0.0119 | 0.0833 | <0.00116 | <0.00116 | 0.0986 |
| **Triclosan** | 0.173 | < 0.0239 | 0.0413 | <0.0233 | <0.0233 | 0.035 |

# Appendix D-
# Receptor Activity for Detected Analytes

**Table 23.** Receptors with known responses to multiple analytes detected in water at each location.

| Receptor | Receptor Categories | BLA 17 | KEW | GEN 18 | WHI | BLA 18 | GEN 17 | CED | MIL | MAU |
|---|---|---|---|---|---|---|---|---|---|---|
| **AR** | reproductive / developmental | 3 | | | | | | | 8 | 12 |
| **GLI3** | developmental | 4 | 3 | | | | | | 8 | 10 |
| **Thrb** | Endocrine / hormone | | | | | | | | 4 | 10 |
| **CYP1A2** | physiological / metabolic | | | | | | | 3 | 8 | 9 |
| **CYP2D6** | physiological / metabolic | | | | | | | | 9 | 9 |
| **CYP3A4** | physiological / metabolic | 3 | | | 3 | | | | 9 | 8 |
| **ESR1** | reproductive | 4 | | | | | | | 6 | 9 |
| **ABCB1** | immunological / neurological | | 4 | 4 | | | 4 | 4 | 6 | 8 |
| **Rorc** | immunological / circulatory / blood constituents / physiological / metabolic / developmental | 3 | | | | | | | 5 | 8 |
| **CYP2C19** | physiological / metabolic | | | | | | | | 7 | 7 |
| **CYP2C9** | physiological / metabolic | | | | | | | | 6 | 7 |
| **ESRRA** | reproductive | 3 | | | | | | | 4 | 7 |
| **NR1I3** | physiological / metabolic | 3 | | | | | | | 4 | 7 |
| **KCNH2** | circulatory / blood constituents / physiological / metabolic | | | | | | | | 6 | 6 |
| **RARA** | developmental / circulatory / blood constituents / genotoxicity / cancer / reproductive | | | | | | | | 4 | 6 |
| **AHR** | physiological / metabolic | | | | | | | | 3 | 5 |
| **HTR2B** | neurological / circulatory / blood constituents | | | | | | | | 5 | 4 |
| **HTR2C** | neurological / behavioral / endocrine / hormone / physiological / metabolic | | | | | | | | 5 | 4 |
| **JUN** | cancer | | | | | | | | | 5 |
| **SLC6A2** | neurological | | | | | | | | 5 | 4 |
| **SLC6A3** | neurological / behavioral | | | | | | | | 5 | 4 |
| **SLC6A4** | neurological / behavioral | | | | | | | | 5 | 4 |
| **TSHR** | Endocrine / hormone | | | | | | | | 3 | 5 |
| **HTR2A** | neurological / behavioral / circulatory / blood constituents | | | | | | | | 4 | 3 |
| **NR1I2** | physiological / metabolic / endocrine / hormone | | | | | | | | | 4 |
| **NR3C1** | physiological / metabolic / immunotoxicity / genotoxicity / growth / cancer | | | | | | | | | 4 |
| **RXRA** | endocrine / hormone / genotoxicity | | | | | | | | | 4 |
| **ALB** | circulatory / blood constituents / physiological / metabolic | | | | | | | | | 3 |
| **ATAD5** | genotoxicity | | | | | | | | | 3 |
| **ESR2** | reproductive | | | | | | | | 3 | |
| **HDAC9** | developmental / genetic | | | | | | | | | 3 |
| **NFE2L2** | immunological | | | | | | | | | 3 |
| **NR1H4** | physiological / metabolic / immunological | 3 | 3 | | | | | | | |
| **PPARG** | physiological / metabolic / circulatory / blood constituents / genotoxicity / cancer | | | | | | | | | 3 |
| **SIGMAR1** | endocrine / hormone / immunological / neurological / physiological / metabolic | | | | | | | | 3 | |
| **TDP1** | genotoxicity / neurological | | | | | | | | 3 | 3 |
| **VDR** | physiological / metabolic / immunological | | | | | | | | | 3 |

**Table 24.** Receptors with the greatest number of agonists detected among all end of season carcass samples.

| Receptor | Effect Categories | Rank | # Detected Agonists |
|---|---|---|---|
| Ar | developmental / reproductive | 1 | 29 |
| Cyp1a2 | physiological / metabolic | 2 | 22 |
| Cyp3a4 | physiological / metabolic | 2 | 22 |
| Thrb | endocrine / hormone | 4 | 21 |
| Cyp2d6 | physiological / metabolic | 5 | 20 |
| Esr1 | reproductive | 5 | 20 |
| Gli3 | developmental | 7 | 19 |
| Esrra | reproductive | 8 | 18 |
| Cyp2c19 | physiological / metabolic | 9 | 17 |
| Nr1i3 | physiological / metabolic | 9 | 17 |
| Cyp2c9 | physiological / metabolic | 11 | 16 |
| Kcnh2 | circulatory / blood constituents / physiological / metabolic | 12 | 15 |
| Nfe2l2 | immunological | 12 | 15 |
| Rorc | immunological / circulatory / blood constituents / physiological / metabolic / developmental | 12 | 15 |
| Rara | developmental / circulatory / blood constituents / genotoxicity / cancer / reproductive | 15 | 14 |
| Tdp1 | genotoxicity / neurological | 15 | 14 |
| Nr3c1 | physiological / metabolic / immunotoxicity / genotoxicity / growth / cancer | 17 | 13 |
| Tshr | endocrine / hormone | 17 | 13 |
| Htr2b | neurological / circulatory / blood constituents | 19 | 12 |
| Htr2a | neurological / behavioral / circulatory / blood constituents | 20 | 11 |
| Htr2c | neurological / behavioral / endocrine / hormone / physiological /metabolic | 20 | 11 |
| Nr1i2 | physiologic / metabolic / endocrine /hormone | 20 | 11 |

**Table 25.** Receptors with known response to multiple analytes detected in Black River 2017 water samples.

| Receptor | Agonists | | | |
|---|---|---|---|---|
| ABCB1 | erythromycin | erythromycin | | |
| AR | colchicine | chlorothalonil | endrin | |
| ATAD5 | colchicine | chlorothalonil | | |
| CYP19A1 | chlorothalonil | endrin | | |
| CYP1A2 | colchicine | erythromycin | | |
| CYP2C19 | colchicine | erythromycin | | |
| CYP2C9 | colchicine | erythromycin | | |
| CYP2D6 | colchicine | erythromycin | | |
| CYP3A4 | colchicine | erythromycin | chlorothalonil | |
| ESR1 | colchicine | DEET | erythromycin | chlorothalonil |
| ESRRA | colchicine | chlorothalonil | endrin | |
| GLI3 | colchicine | atrazine | chlorothalonil | endrin |
| HPGD | DEET | chlorothalonil | | |
| HSPB1 | chlorothalonil | endrin | | |
| NR1H4 | colchicine | chlorothalonil | endrin | |
| NR1I2 | colchicine | chlorothalonil | | |
| NR1I3 | colchicine | chlorothalonil | endrin | |
| RARA | colchicine | chlorothalonil | | |
| Rorc | colchicine | chlorothalonil | endrin | |
| TDP1 | colchicine | chlorothalonil | | |
| TSHR | chlorothalonil | endrin | | |
| VDR | colchicine | chlorothalonil | | |

**Table 26.** Receptors with known response to multiple analytes detected in Genoa NFH 2018 water samples.

| Receptor | Agonists | | | |
|---|---|---|---|---|
| ABCB1 | erythromycin | sulfamethoxazole | erythromycin | sulfamethoxazole |
| ESR1 | DEET | erythromycin | | |

**Table 27.** Receptors with known response to multiple analytes detected in Kewaunee River water samples.

| Receptor | Agonists | | | |
|---|---|---|---|---|
| ABCB1 | erythromycin | sulfamethoxazole | erythromycin | sulfamethoxazole |
| AR | endrin | p,p' DDE | | |
| ESR1 | DEET | erythromycin | | |
| GLI3 | atrazine | endrin | simazine | |
| Rorc | endrin | p,p' DDE | simazine | |
| TSHR | endrin | p,p' DDE | | |

**Table 28.** Receptors with known response to multiple analytes detected in Whitefish River water samples.

| Receptor | Agonists | | |
|---|---|---|---|
| CYP1A2 | naproxen | sertraline | |
| CYP2C19 | naproxen | sertraline | |
| CYP2D6 | naproxen | sertraline | |
| CYP3A4 | naproxen | sertraline | chlorothalonil |
| ESR1 | DEET | chlorothalonil | |
| GLI3 | atrazine | chlorothalonil | |
| HPGD | DEET | chlorothalonil | |

Table 29. **Receptors with known response to multiple analytes detected in Black River 2018 water samples.**

| Receptor | Agonists | |
|---|---|---|
| ABCB1 | erythromycin | erythromycin |
| ESR1 | DEET | erythromycin |
| GLI3 | atrazine | heptachlor epoxide |

**Table 30.** Receptors with known response to multiple analytes detected in Genoa NFH 2017 water samples.

| Receptor | Agonists | | | |
|---|---|---|---|---|
| ABCB1 | norfloxacin | sulfamethoxazole | norfloxacin | sulfamethoxazole |
| AR | o,p' DDE | p,p' DDE | | |
| ESR2 | o,p' DDE | p,p' DDE | | |
| NR1I3 | oxycodone | o,p' DDE | | |

**Table 31.** Receptors with known response to multiple analytes detected in Cedar River water samples.

| Receptor | Agonists | | | |
|---|---|---|---|---|
| ABCB1 | erythromycin | sulfamethoxazole | erythromycin | sulfamethoxazole |
| AR | caffeine | heptachlor epoxide | | |
| CYP1A2 | caffeine | erythromycin | sertraline | |
| CYP2C19 | caffeine | erythromycin | sertraline | |
| CYP2C9 | caffeine | erythromycin | | |
| CYP2D6 | caffeine | erythromycin | sertraline | |
| CYP3A4 | caffeine | erythromycin | sertraline | |
| ESR1 | caffeine | DEET | erythromycin | |
| GLI3 | caffeine | atrazine | heptachlor epoxide | |
| KCNH2 | caffeine | erythromycin | sertraline | |
| TSHR | caffeine | heptachlor epoxide | | |

**Table 32.** Receptors with known response to multiple analytes detected in Milwaukee River water samples

| Receptor | Agonists | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ABCB1 | cotinine | erythromycin | sulfamethoxazole | cotinine | erythromycin | sulfamethoxazole | | | |
| ADORA3 | atenolol | caffeine | | | | | | | |
| Adra1b | citalopram | sertraline | | | | | | | |
| ADRA2A | fluoxetine | sertraline | | | | | | | |
| ADRA2B | fluoxetine | sertraline | | | | | | | |
| ADRB1 | atenolol | metoprolol | | | | | | | |
| ADRB2 | atenolol | metoprolol | | | | | | | |
| AHR | DEET | gemfibrozil | triamterene | | | | | | |
| ALB | erythromycin | fluoxetine | | | | | | | |
| AR | carbamazepine | fluoxetine | caffeine | iopamidol | triamterene | trimethoprim | chlorothalonil | p,p' DDE | |
| ATAD5 | triamterene | chlorothalonil | | | | | | | |
| ATXN2 | fluoxetine | sertraline | | | | | | | |
| Cacna1c | fluoxetine | sertraline | | | | | | | |
| CHRM1 | fluoxetine | sertraline | | | | | | | |
| CHRM5 | fluoxetine | sertraline | | | | | | | |
| CYP1A2 | caffeine | carbamazepine | erythromycin | fluoxetine | gemfibrozil | ranitidine | sertraline | triamterene | |
| CYP2C19 | caffeine | carbamazepine | erythromycin | fluoxetine | ranitidine | sertraline | trimethoprim | | |
| CYP2C9 | caffeine | carbamazepine | erythromycin | gemfibrozil | ranitidine | trimethoprim | | | |
| CYP2D6 | caffeine | carbamazepine | erythromycin | fluoxetine | metoprolol | ranitidine | sertraline | triamterene | trimethoprim |
| CYP2J2 | metoprolol | sertraline | | | | | | | |
| CYP3A4 | caffeine | carbamazepine | erythromycin | fluoxetine | ranitidine | sertraline | trimethoprim | chlorothalonil | p,p' DDE |
| DRD1 | fluoxetine | sertraline | | | | | | | |
| ESR1 | caffeine | DEET | erythromycin | fluoxetine | triamterene | chlorothalonil | | | |
| ESR2 | fluoxetine | chlorothalonil | p,p' DDE | | | | | | |
| ESRRA | caffeine | gemfibrozil | triamterene | chlorothalonil | | | | | |
| GLI3 | caffeine | fluoxetine | triamterene | trimethoprim | ametryn | atrazine | chlorothalonil | simazine | |
| HDAC9 | gemfibrozil | triamterene | | | | | | | |
| HPGD | DEET | chlorothalonil | | | | | | | |
| HSPB1 | triamterene | chlorothalonil | | | | | | | |
| Htr1a | amphetamine | fluoxetine | | | | | | | |
| HTR2A | amphetamine | fluoxetine | norfluoxetine | sertraline | | | | | |
| HTR2B | amphetamine | citalopram | fluoxetine | norfluoxetine | sertraline | | | | |
| HTR2C | amphetamine | citalopram | fluoxetine | norfluoxetine | sertraline | | | | |
| IDH1 | sertraline | triamterene | | | | | | | |
| KCNH2 | caffeine | citalopram | erythromycin | fluoxetine | norfluoxetine | sertraline | | | |
| NR1H4 | triamterene | chlorothalonil | | | | | | | |
| NR1I2 | ametryn | chlorothalonil | | | | | | | |
| NR1I3 | fluoxetine | oxycodone | ametryn | chlorothalonil | | | | | |

**Table 32.** *(Continued)*

| Receptor | Agonists | | | | |
|---|---|---|---|---|---|
| NR3C1 | carbamazepine | iopamidol | | | |
| PPARD | triamterene | chlorothalonil | | | |
| PPARG | triamterene | chlorothalonil | | | |
| RARA | fluoxetine | gemfibrozil | ametryn | chlorothalonil | |
| Rorc | caffeine | gemfibrozil | chlorothalonil | p,p' DDE | simazine |
| RXRA | gemfibrozil | triamterene | | | |
| SIGMAR1 | citalopram | fluoxetine | sertraline | | |
| SLC6A2 | amphetamine | citalopram | fluoxetine | sertraline | venlafaxine |
| SLC6A3 | amphetamine | citalopram | fluoxetine | sertraline | venlafaxine |
| SLC6A4 | amphetamine | citalopram | fluoxetine | sertraline | venlafaxine |
| STK33 | fluoxetine | sertraline | | | |
| TDP1 | fluoxetine | triamterene | chlorothalonil | | |
| Thrb | fluoxetine | triamterene | chlorothalonil | p,p' DDE | |
| TP53 | triamterene | chlorothalonil | | | |
| TSHR | caffeine | chlorothalonil | p,p' DDE | | |

**Table 33.** Receptors with known response to multiple analytes detected in Maumee River water samples.

| Receptor | Agonists | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABCB1 | cotinine | diltiazem | erythromycin H20 | sulfamethoxazole | cotinine | diltiazem | erythromycin H2O | sulfamethoxazole | | | | |
| ACHE | caffeine | chlorpyrifos oxon | | | | | | | | | | |
| ADORA3 | atenolol | caffeine | | | | | | | | | | |
| ADRB1 | atenolol | metoprolol | | | | | | | | | | |
| ADRB2 | atenolol | metoprolol | | | | | | | | | | |
| AHR | DEET | gemfibrozil | thiabendazole | triamterene | dacthal | | | | | | | |
| ALB | erythromycin H2O | fluoxetine | lincomycin | | | | | | | | | |
| AR | alprazolam | carbamazepine | fluoxetine | caffeine | iopamidol | triamterene | trimethoprim | chlorpyrifos oxon | chlorpyrifos | dieldrin | heptachlor epoxide | p,p DDE |
| ATAD5 | alprazolam | thiabendazole | triamterene | | | | | | | | | |
| Cacna1c | diltiazem | fluoxetine | | | | | | | | | | |
| CYP1A2 | caffeine | carbamazepine | diltiazem | erythromycin H2O | fluoxetine | gemfibrozil | naproxen | thiabendazole | triamterene | | | |
| CYP2C19 | caffeine | carbamazepine | diltiazem | erythromycin H2O | fluoxetine | naproxen | trimethoprim | | | | | |
| CYP2C9 | caffeine | carbamazepine | diltiazem | erythromycin H2O | gemfibrozil | naproxen | trimethoprim | | | | | |
| CYP2D6 | caffeine | carbamazepine | diltiazem | erythromycin H2O | fluoxetine | metoprolol | naproxen | triamterene | trimethoprim | | | |
| CYP3A4 | caffeine | carbamazepine | diltiazem | erythromycin H2O | fluoxetine | naproxen | trimethoprim | p,p DDE | | | | |
| ESR1 | alprazolam | caffeine | DEET | erythromycin H2O | fluoxetine | sulfamethazine | thiabendazole | triamterene | dieldrin | | | |
| ESR2 | fluoxetine | p,p DDE | | | | | | | | | | |
| ESRRA | caffeine | diltiazem | gemfibrozil | thiabendazole | triamterene | dacthal | dieldrin | | | | | |
| Gabra1 | alprazolam | meprobamate | | | | | | | | | | |
| GABRA3 | alprazolam | meprobamate | | | | | | | | | | |
| GABRA4 | alprazolam | meprobamate | | | | | | | | | | |
| GABRA5 | alprazolam | meprobamate | | | | | | | | | | |
| GABRA6 | alprazolam | meprobamate | | | | | | | | | | |
| GABRB1 | alprazolam | meprobamate | | | | | | | | | | |
| GABRB2 | alprazolam | meprobamate | | | | | | | | | | |
| GABRB3 | alprazolam | meprobamate | | | | | | | | | | |
| GABRD | alprazolam | meprobamate | | | | | | | | | | |
| GABRE | alprazolam | meprobamate | | | | | | | | | | |
| GABRG1 | alprazolam | meprobamate | | | | | | | | | | |
| GABRG2 | alprazolam | meprobamate | | | | | | | | | | |
| GABRG3 | alprazolam | meprobamate | | | | | | | | | | |
| GABRP | alprazolam | meprobamate | | | | | | | | | | |
| GABRQ | alprazolam | meprobamate | | | | | | | | | | |
| GLI3 | caffeine | fluoxetine | meprobamate | triamterene | trimethoprim | ametryn | atrazine | dieldrin | heptachlor epoxi | simazine | | |
| HDAC9 | gemfibrozil | thiabendazole | triamterene | | | | | | | | | |
| HIF1A | triamterene | chlorpyrifos oxon | | | | | | | | | | |
| Htr1a | amphetamine | fluoxetine | | | | | | | | | | |
| HTR2A | amphetamine | fluoxetine | norfluoxetine | | | | | | | | | |
| HTR2B | amphetamine | citalopram | fluoxetine | norfluoxetine | | | | | | | | |
| HTR2C | amphetamine | citalopram | fluoxetine | norfluoxetine | | | | | | | | |
| JUN | fluoxetine | chlorpyrifos methyl | dacthal | dieldrin | heptachlor epoxide | | | | | | | |
| KCNH2 | caffeine | citalopram | diltiazem | erythromycin H2O | fluoxetine | norfluoxetine | | | | | | |
| NFE2L2 | caffeine | dacthal | dieldrin | | | | | | | | | |
| NR1H4 | triamterene | dieldrin | | | | | | | | | | |
| NR1I2 | thiabendazole | ametryn | dieldrin | heptachlor epoxide | | | | | | | | |
| NR1I3 | fluoxetine | oxycodone | thiabendazole | ametryn | chlorpyrifos-meth | dacthal | dieldrin | | | | | |
| NR3C1 | alprazolam | carbamazepine | iopamidol | dieldrin | | | | | | | | |
| PPARD | triamterene | chlorpyrifos oxon | | | | | | | | | | |

**Table 33.** Receptors with known response to multiple analytes detected in Maumee River water samples.

| Receptor | Agonists | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PPARG | triamterene | chlorpyrifos methyl | chlorpyrifos oxon | | | | | | |
| RARA | fluoxetine | gemfibrozil | thiabendazole | ametryn | dieldrin | heptachlor epoxide | | | |
| Rorc | alprazolam | caffeine | gemfibrozil | chlorpyrifos oxon | chlorpyrifos | dieldrin | p,p DDE | simazine | |
| RXRA | gemfibrozil | sulfamethazine | thiabendazole | triamterene | | | | | |
| SIGMAR1 | citalopram | fluoxetine | | | | | | | |
| SLC22A1 | citalopram | diltiazem | | | | | | | |
| SLC6A2 | amphetamine | citalopram | fluoxetine | venlafaxine | | | | | |
| SLC6A3 | amphetamine | citalopram | fluoxetine | venlafaxine | | | | | |
| SLC6A4 | amphetamine | citalopram | fluoxetine | venlafaxine | | | | | |
| TDP1 | diltiazem | fluoxetine | triamterene | | | | | | |
| Thrb | alprazolam | diltiazem | fluoxetine | sulfamethazine | triamterene | chlorpyrifos oxon | dacthal | dieldrin | heptachlor epoxi p,p DDE |
| TSHR | caffeine | chlorpyrifos | dieldrin | heptachlor epoxide | p,p DDE | | | | |
| VDR | chlorpyrifos methyl | chlorpyrifos oxon | chlorpyrifos | | | | | | |

**Table 34.** Receptors with known activity in response to chemicals detected in water samples.

| Receptor | Receptor Name |
|---|---|
| ABCB1 | ATP Binding Cassette Subfamily B Member 1 (Gene) |
| ACHE | acetylcholinesterase |
| ADORA2A | Adenosine A2a Receptor |
| ADORA2B | adenosine A2b receptor |
| ADORA3 | adenosine A3 receptor |
| Adra1b | Adrenoceptor Alpha 1B |
| ADRA2A | adrenoceptor alpha 2A |
| ADRA2B | adrenoceptor alpha 2B |
| ADRB1 | adrenoceptor beta 1 |
| ADRB2 | adrenoceptor beta 2 |
| AHR | aryl hydrocarbon receptor |
| ALB | Albumin |
| AR | Androgen Receptor |
| ATAD5 | ATPase family AAA domain containing 5 |
| ATXN2 | ataxin 2 |
| Cacna1c | Calcium Voltage Gated Channel Subunit Alpha1 C |
| CHRM1 | cholinergic receptor muscarinic 1 |
| CHRM5 | cholinergic receptor muscarinic 5 |
| CYP19A1 | cytochrome P450 family 19 subfamily A member 1 |
| CYP1A2 | cytochrome P450 family 1 subfamily A member 2 |
| CYP2C19 | cytochrome P450 family 2 subfamily C member 19 |
| CYP2C9 | cytochrome P450 family 2 subfamily C member 9 |
| CYP2D6 | cytochrome P450 family 2 subfamily D member 6 |
| CYP2J2 | cytochrome P450 family 2 subfamily J member 2 |
| CYP3A4 | cytochrome P450 family 3 subfamily A member 4 |
| DRD1 | dopamine receptor D1 |
| ESR1 | estrogen receptor 1 |
| ESR2 | estrogen receptor 2 |
| ESRRA | estrogen related receptor alpha |
| Gabra1 | gamma-aminobutyric acid type A receptor alpha1 subunit |
| GABRA3 | gamma-aminobutyric acid type A receptor alpha3 subunit |
| GABRA4 | gamma-aminobutyric acid type A receptor alpha4 subunit |
| GABRA5 | gamma-aminobutyric acid type A receptor alpha5 subunit |
| GABRA6 | gamma-aminobutyric acid type A receptor alpha6 subunit |
| GABRB1 | gamma-aminobutyric acid type A receptor beta1 subunit |
| GABRB2 | gamma-aminobutyric acid type A receptor beta2 subunit |
| GABRB3 | gamma-aminobutyric acid type A receptor beta3 subunit |
| GABRD | gamma-aminobutyric acid type A receptor delta subunit |
| GABRE | gamma-aminobutyric acid type A receptor epsilon subunit |
| GABRG1 | gamma-aminobutyric acid type A receptor gamma1 subunit |
| GABRG2 | gamma-aminobutyric acid type A receptor gamma2 subunit |
| GABRG3 | gamma-aminobutyric acid type A receptor gamma3 subunit |
| GABRP | gamma-aminobutyric acid type A receptor pi subunit |
| GABRQ | gamma-aminobutyric acid type A receptor theta subunit |
| GLI3 | GLI family zinc finger 3 |

**Table 34.** *(Continued)*

| Receptor | Receptor Name |
|---|---|
| HDAC9 | histone deacetylase 9 |
| HIF1A | hypoxia inducible factor 1 subunit alpha |
| HPGD | 15-hydroxyprostaglandin dehydrogenase |
| HSPB1 | heat shock protein family B (small) member 1 |
| Htr1a | 5-hydroxytryptamine receptor 1A |
| HTR2A | 5-hydroxytryptamine receptor 2A |
| HTR2B | 5-hydroxytryptamine receptor 2B |
| HTR2C | 5-hydroxytryptamine receptor 2C |
| IDH1 | isocitrate dehydrogenase (NADP(+)) 1, cytosolic |
| KCNH2 | potassium voltage-gated channel subfamily H member 2 |
| NFE2L2 | nuclear factor, erythroid 2 like 2 |
| NR1H4 | nuclear receptor subfamily 1 group H member 4 |
| NR1I2 | nuclear receptor subfamily 1 group I member 2 |
| NR1I3 | nuclear receptor subfamily 1 group I member 3 |
| NR3C1 | nuclear receptor subfamily 3 group C member 1 |
| PPARD | peroxisome proliferator activated receptor delta |
| PPARG | peroxisome proliferator activated receptor gamma |
| RARA | retinoic acid receptor alpha |
| Rorc | RAR related orphan receptor gamma |
| RXRA | retinoid X receptor alpha |
| SIGMAR1 | sigma non opioid intracellular receptor 1 |
| SLC22A1 | solute carrier family 22 member 1 |
| SLC6A2 | solute carrier family 6 member 2 |
| SLC6A3 | solute carrier family 6 member 3 |
| SLC6A4 | solute carrier family 6 member 4 |
| STK33 | serine/threonine kinase 33 |
| TDP1 | tyrosyl DNA phosphodiesterase 1 |
| Thrb | thyroid hormone receptor beta |
| TP53 | tumor protein p53 |
| TSHR | thyroid stimulating hormone receptor |
| VDR | vitamin D receptor |

**Table 35.** Receptor response categories for all receptors with 3 or more potential agonists detected in a least one sample medium.

| Receptor | Response Category 1 | Response Category 2 | Response Category 3 | Response Category 4 | Response Category 5 |
|---|---|---|---|---|---|
| ABCB1 | Immunological | Neurological | | | |
| ACHE | Neurological | Physiological / Metabolic | | | |
| ADORA1 | Physiological / Metabolic | Neurological | | | |
| ADORA2A | Circulatory / Blood Constituents | Immunological | Neurological | | |
| ADORA3 | Neurological | Genotoxicity | Physiological / Metabolic | Histopathology | |
| Adra1a | Circulatory / Blood Constituents | Genotoxicity | | | |
| Adra1b | Circulatory / Blood Constituents | Cancer | Genotoxicity | | |
| ADRA1D | Genotoxicity | | | | |
| ADRA2A | Neurological | Circulatory / Blood Constituents | | | |
| ADRA2B | Neurological | | | | |
| ADRA2C | Neurological | Circulatory / Blood Constituents | | | |
| ADRB1 | Physiological / Metabolic | Circulatory / Blood Constituents | Neurological | | |
| ADRB2 | Physiological / Metabolic | | | | |
| ADRB3 | Neurological | Physiological / Metabolic | | | |
| AHR | Physiological / Metabolic | | | | |
| ALB | Circulatory / Blood Constituents | Physiological / Metabolic | | | |
| AR | Reproductive | Developmental | | | |
| ATAD5 | Genotoxicity | | | | |

**Table 35.** *(Continued)*

| Receptor | Response Category 1 | Response Category 2 | Response Category 3 | Response Category 4 | Response Category 5 |
|---|---|---|---|---|---|
| ATXN2 | Neurological | Physiological / Metabolic | | | |
| BARD1 | Genotoxicity | Cancer | | | |
| BAZ2B | Circulatory / Blood Constituents | | | | |
| Cacna1c | Physiological / Metabolic | Circulatory / Blood Constituents | Developmental | | |
| Cacna1s | Physiological / Metabolic | | | | |
| CBFB | Circulatory / Blood Constituents | Development | | | |
| CBX1 | Genotoxicity | | | | |
| CHRM1 | Neurological | Physiological / Metabolic | | | |
| CHRM2 | Neurological | Circulatory / Blood Constituents | | | |
| CHRM3 | Neurological | Physiological / Metabolic | Endocrine / Hormone | | |
| CYP17A1 | Physiological / Metabolic | Endocrine / Hormone | Immunological | Reproductive | |
| CYP19A1 | Reproductive | | | | |
| CYP1A2 | Physiological / Metabolic | | | | |
| CYP2C19 | Physiological / Metabolic | | | | |
| CYP2C9 | Physiological / Metabolic | | | | |
| CYP2D6 | Physiological / Metabolic | | | | |
| CYP2J2 | Physiological / Metabolic | | | | |
| CYP3A4 | Physiological / Metabolic | | | | |

**Table 35.** *(Continued)*

| Receptor | Response Category 1 | Response Category 2 | Response Category 3 | Response Category 4 | Response Category 5 |
|---|---|---|---|---|---|
| cyp51 | | | | | |
| CYP51A1 | Physiological / Metabolic | | | | |
| DRD1 | Neurological | Behavioral | Developmental | | |
| DRD2 | Neurological | Behavioral | | | |
| DRD3 | Neurological | | | | |
| DRD4 | Neurological | Behavioral | | | |
| Ephx1 | Physiological / Metabolic | | | | |
| ESR1 | Reproductive | | | | |
| ESR2 | Reproductive | | | | |
| ESRRA | Reproductive | | | | |
| FYN | Immunological | Physiological / Metabolic | | | |
| GLI3 | Developmental | | | | |
| GMNN | Developmental | | | | |
| HCRTR1 | Behavioral | | | | |
| HDAC9 | Developmental | Genetic | | | |
| HIF1A | Physiological / Metabolic | Developmental | | | |
| HPGD | Physiological / Metabolic | Circulatory / Blood Constituents | | | |
| HRH1 | Physiological / Metabolic | Neurological | Endocrine / Hormones | | |

**Table 35.** *(Continued)*

| Receptor | Response Category 1 | Response Category 2 | Response Category 3 | Response Category 4 | Response Category 5 |
|---|---|---|---|---|---|
| HRH2 | Physiological / Metabolic | | | | |
| HSPB1 | Physiological / Metabolic | | | | |
| Htr1a | Neurological | Behavioral | | | |
| Htr1b | Neurological | Behavioral | Circulatory / Blood Constituents | | |
| Htr1d | Neurological | Behavioral | | | |
| Htr1f | Neurological | | | | |
| HTR2A | Neurological | Behavioral | Circulatory / Blood Constituents | | |
| HTR2B | Neurological | Circulatory / Blood Constituents | | | |
| HTR2C | Neurological | Behavioral | Endocrine / Hormonal | Physiological / Metabolic | |
| Htr5a | Neurological | Behavioral | Genotoxicity | | |
| HTR6 | Neurological | Behavioral | Genotoxicity | | |
| HTT | Neurological | Developmental | | | |
| IDH1 | Physiological / Metabolic | Immunological | | | |
| Ido2 | Immunological | Neurological | | | |
| IL1B | Immunological | Physiological / Metabolic | | | |
| Impa1 | Neurological | | | | |
| ITGA4 | Physiological / Metabolic | | | | |
| JUN | Cancer | | | | |

**Table 35.** *(Continued)*

| Receptor | Response Category 1 | Response Category 2 | Response Category 3 | Response Category 4 | Response Category 5 |
|---|---|---|---|---|---|
| KCNH2 | Circulatory / Blood Constituents | Physiological / Metabolic | | | |
| KCNK3 | Neurological | | | | |
| KLK7 | Physiological / Metabolic | Cancer | | | |
| MAPK1 | Physiological / Metabolic | Genotoxicity | | | |
| MC4R | Endocrine / Hormone | Physiological / Metabolic | | | |
| MC5R | Endocrine / Hormone | Physiological / Metabolic | | | |
| MDM2 | Immunological | Genotoxicity | Cancer | | |
| MDM4 | Cancer | | | | |
| NFE2L2 | Immunological | | | | |
| NR1H4 | Physiological / Metabolic | Immunological | | | |
| NR1I2 | Physiological / Metabolic | Endocrine / Hormone | | | |
| NR1I3 | Physiological / Metabolic | | | | |
| NR3C1 | Physiological / Metabolic | Immunotoxicity | Genotoxicity | Growth | Cancer |
| OPRD1 | Neurological | | | | |
| OPRK1 | Neurological | Behavioral | | | |
| OPRM1 | Neurological | Behavioral | | | |
| PAX8 | Developmental | Physiological / Metabolic | Endocrine / Hormone | | |
| Pmp22 | Developmental | Neurological | | | |

**Table 35.** *(Continued)*

| Receptor | Response Category 1 | Response Category 2 | Response Category 3 | Response Category 4 | Response Category 5 |
|---|---|---|---|---|---|
| PPARD | Developmental | Neurological | Physiological / Metabolic | | |
| PPARG | Physiological / Metabolic | Circulatory / Blood Constituents | Genotoxicity | Cancer | |
| Ppp1r15a | Physiological / Metabolic | | | | |
| Ptafr | Physiological / Metabolic | Immunotoxicity | | | |
| PTBP1 | Immunotoxicity | Developmental | | | |
| PTGS2 | Physiological / Metabolic | Genotoxicity | Immunotoxicity | | |
| RARA | Developmental | Circulatory / Blood Constituents | Genotoxicity | Cancer | Reproductive |
| Rorc | Immunological | Circulatory / Blood Constituents | Physiological / Metabolic | Developmental | |
| RUNX1 | Circulatory / Blood Constituents | | | | |
| RXFP1 | Reproduction | | | | |
| RXRA | Endocrine / Hormone | Genotoxicity | | | |
| SCN2A | Neurological | Physiological / Metabolic | Behavioral | | |
| SCN5A | Circulatory / Blood Constituents | | | | |
| SCN9A | Neurological | | | | |
| SIGMAR1 | Endocrine / Hormone | Immunological | Neurological | Physiological / Metabolic | |
| SLC22A1 | Physiological / Metabolic | | | | |
| SLC5A7 | Neurological | | | | |
| SLC6A2 | Neurological | | | | |

**Table 35.** *(Continued)*

| Receptor | Response Category 1 | Response Category 2 | Response Category 3 | Response Category 4 | Response Category 5 |
|---|---|---|---|---|---|
| SLC6A3 | Neurological | Behavioral | | | |
| SLC6A4 | Neurological | Behavioral | | | |
| SMAD3 | Physiological / Metabolic | | | | |
| STK33 | Physiological / Metabolic | | | | |
| TAAR1 | Neurological | Circulatory / Blood Constituents | Immunological | | |
| TACR1 | Neurological | Behavioral | | | |
| TACR2 | Neurological | Physiological / Metabolic | Circulatory / Blood Constituents | | |
| TBXAS1 | Circulatory / Blood Constituents | Physiological / Metabolic | | | |
| TDP1 | Genotoxicity | Neurological | | | |
| Thrb | Endocrine / Hormone | | | | |
| TNFRSF10B | Physiological / Metabolic | | | | |
| TP53 | Genotoxicity | Physiological / Metabolic | Cancer | | |
| TSHR | Endocrine / Hormone | | | | |
| VDR | Physiological / Metabolic | Immunological | | | |

# Appendix E-
# Supplemental Growth and Health Data

## Growth

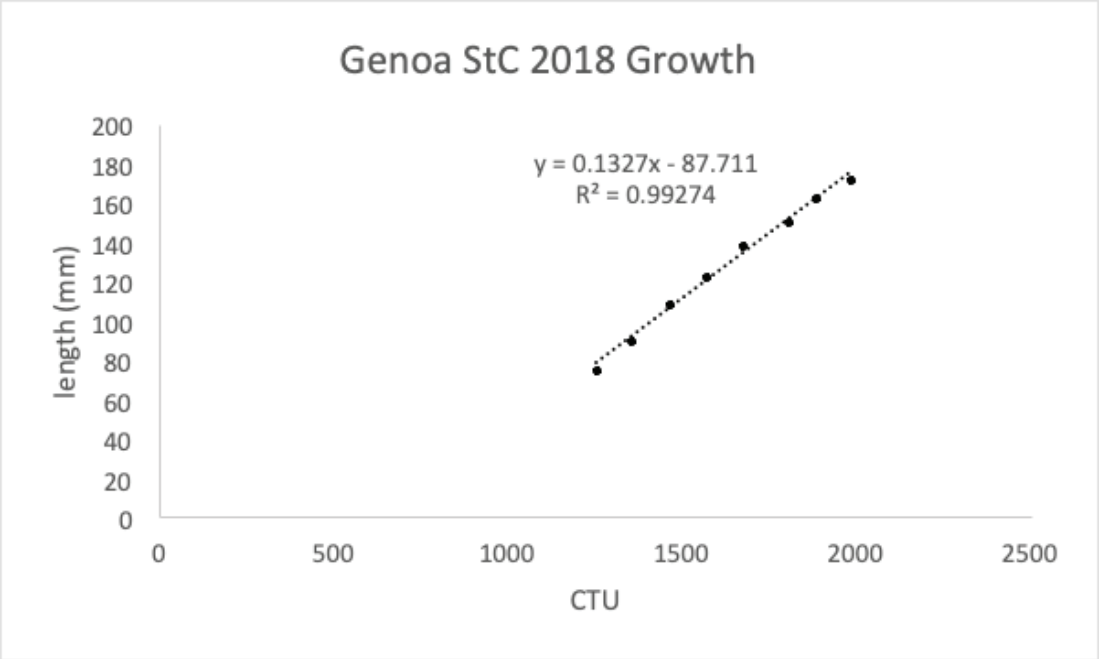


**Figure 21.** Best fit model with equation and coefficient of determination for growth of the St. Clair River strain reared at Genoa NFH in 2018.

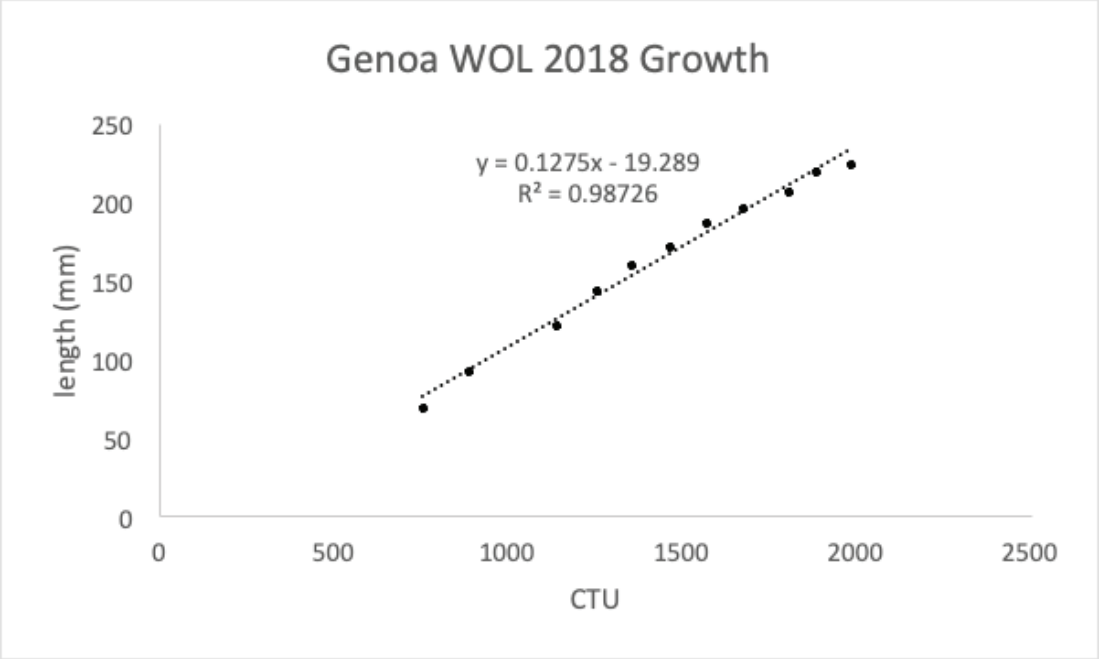


**Figure 22.** Best fit model with equation and coefficient of determination for growth of the Wolf River strain reared at Genoa NFH in 2018.

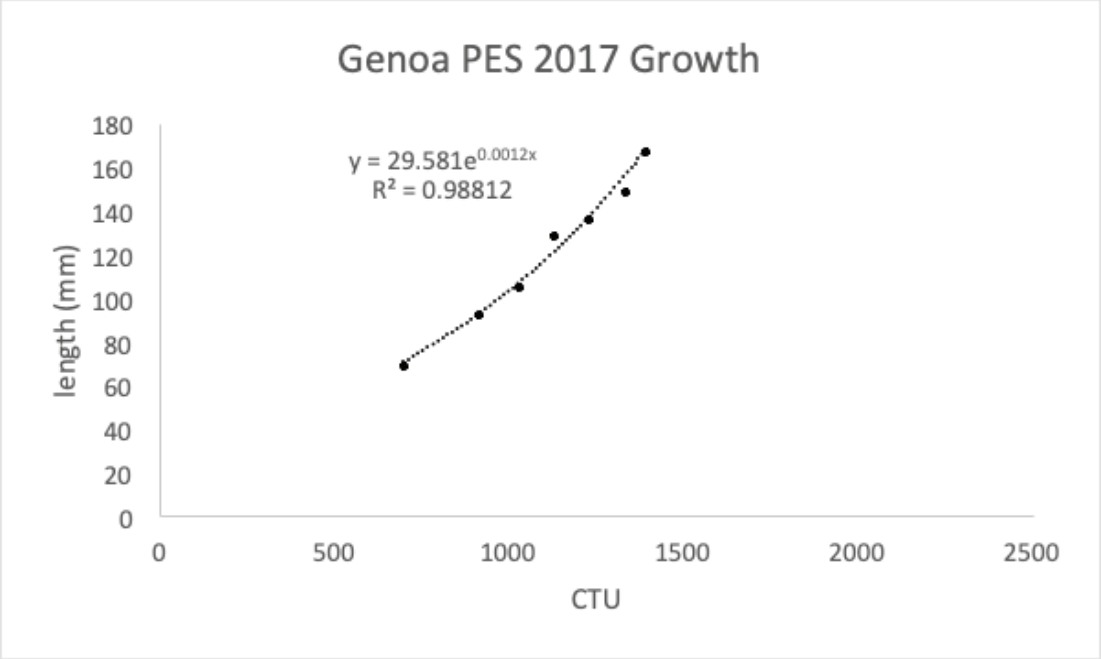


**Figure 23.** Best fit model with equation and coefficient of determination for growth of the Peshtigo River strain reared at Genoa NFH in 2017.

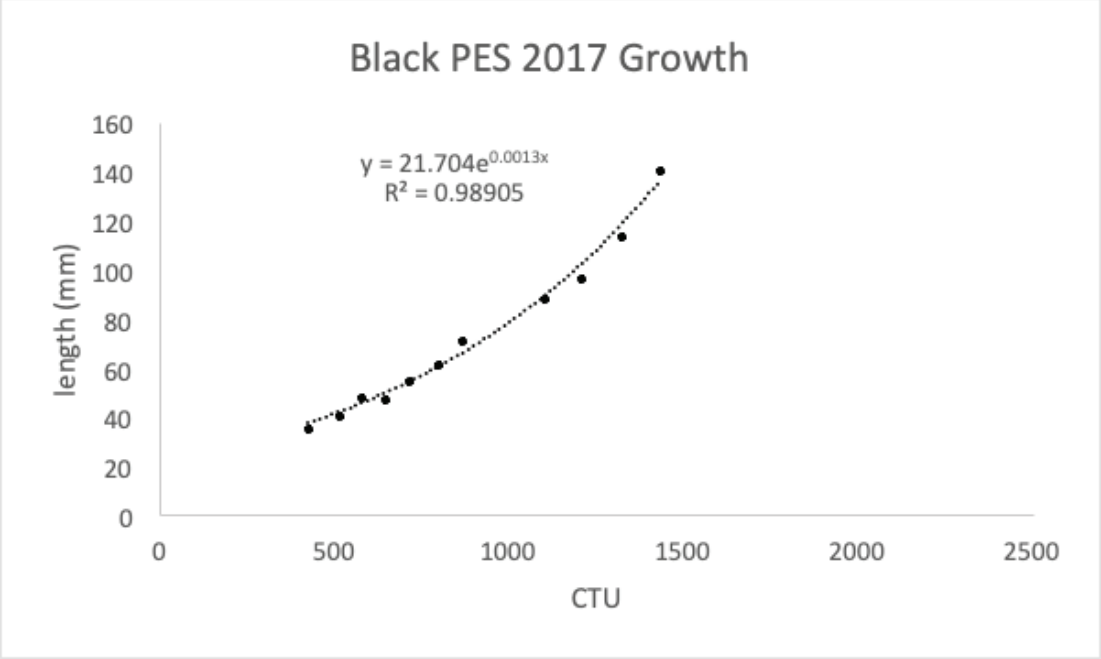


**Figure 24.** Best fit model with equation and coefficient of determination for growth of the Peshtigo River strain reared at the Black River facility in 2017.

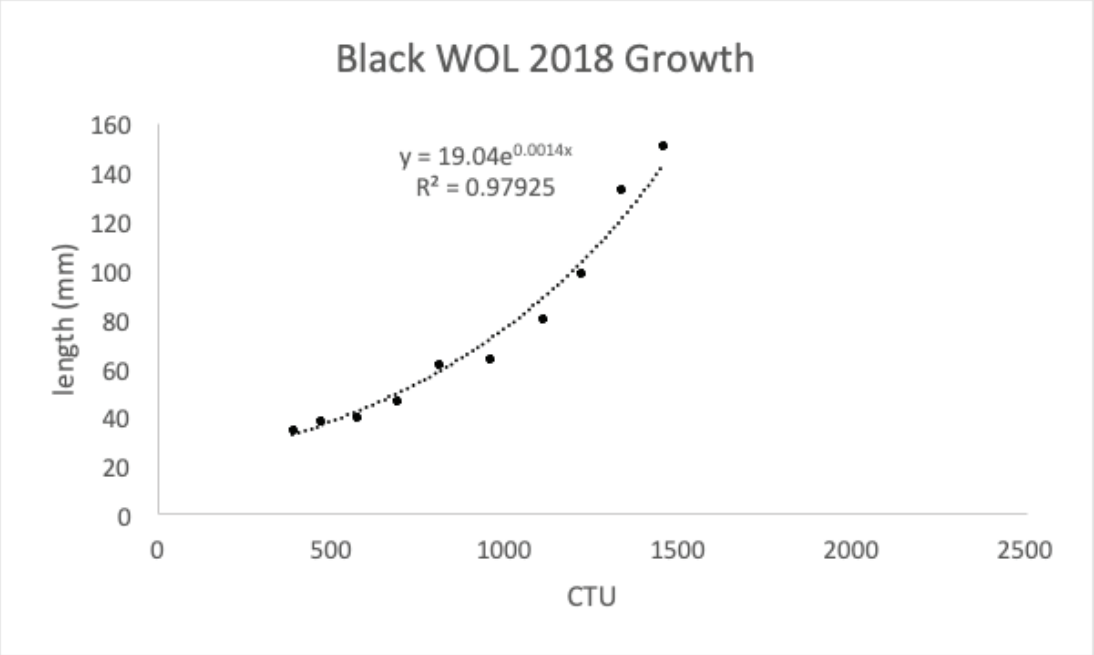


**Figure 25.** Best fit model with equation and coefficient of determination for growth of the Wolf River strain reared at the Black River facility in 2018.

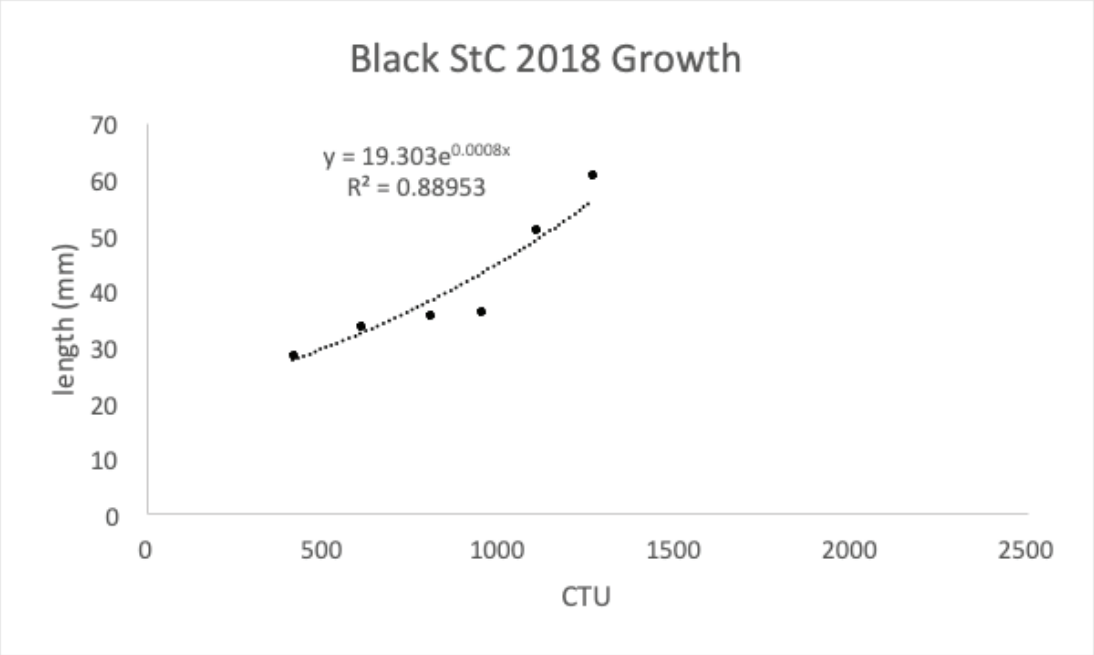


**Figure 26.** Best fit model with equation and coefficient of determination for growth of the St. Clair River strain reared at the Black River facility in 2018.

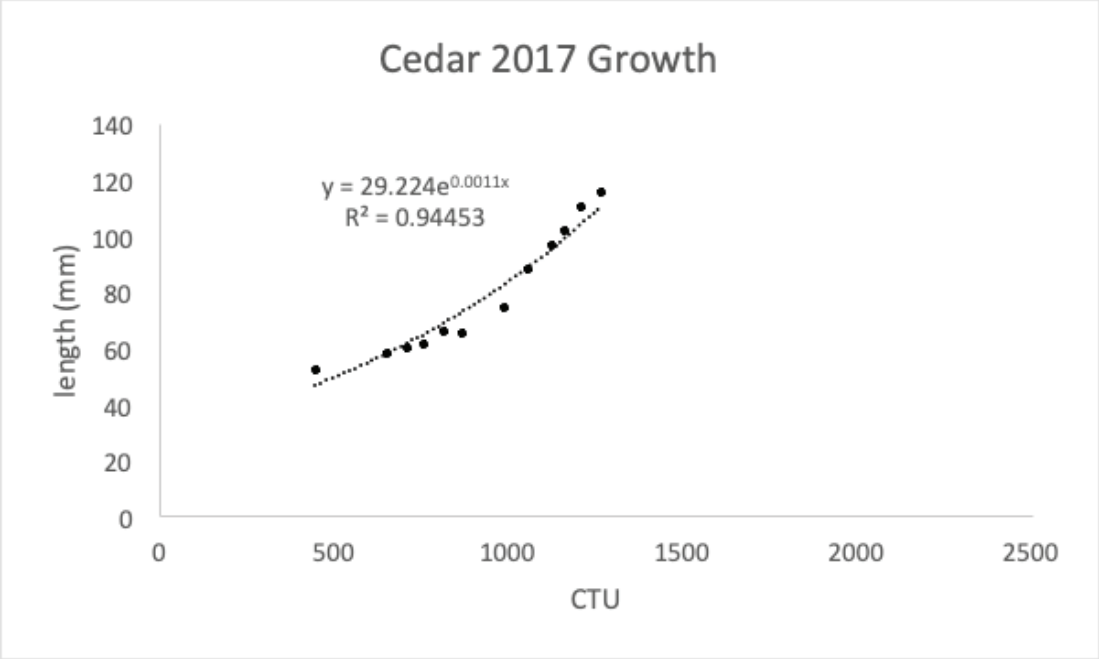


**Figure 27.** Best fit model with equation and coefficient of determination for growth of the Peshtigo River strain reared at the Cedar River SRF in 2017.

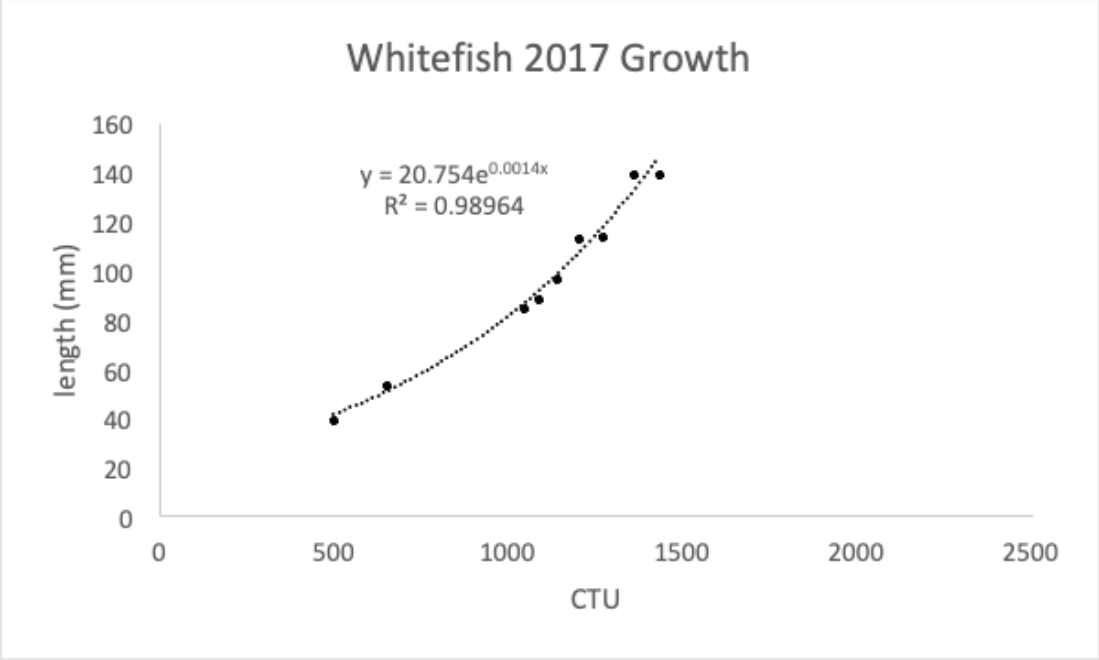


**Figure 28.** Best fit model with equation and coefficient of determination for growth of the Peshtigo River strain reared at the Whitefish River SRF in 2017.

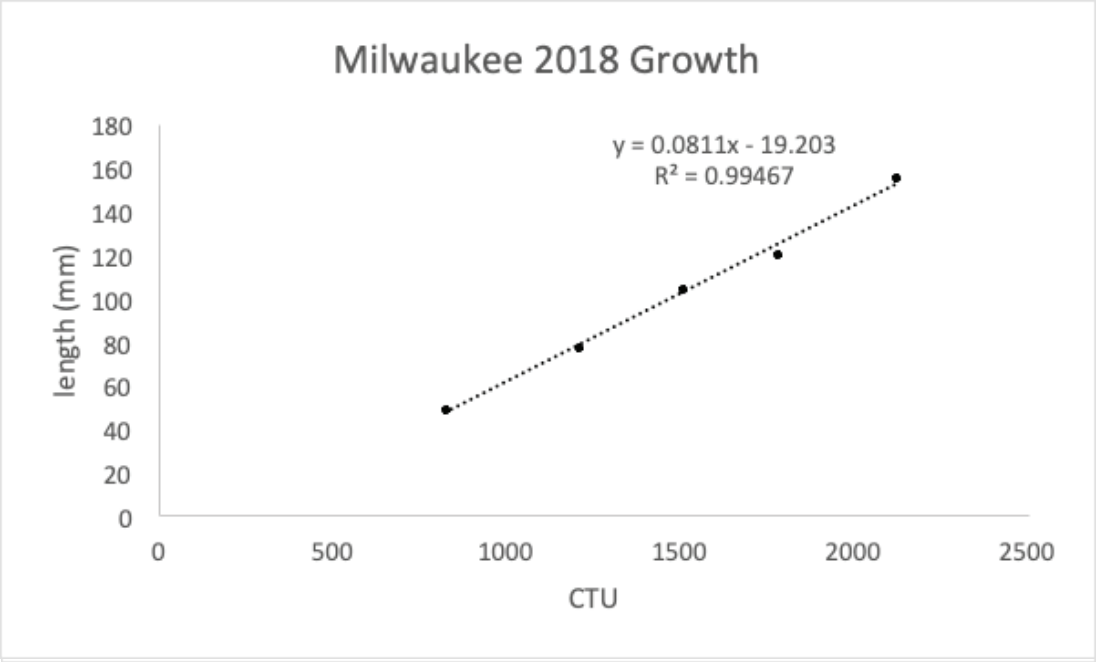


**Figure 29.** Best fit model with equation and coefficient of determination for growth of the Wolf River strain reared at the Milwaukee SRF in 2018.

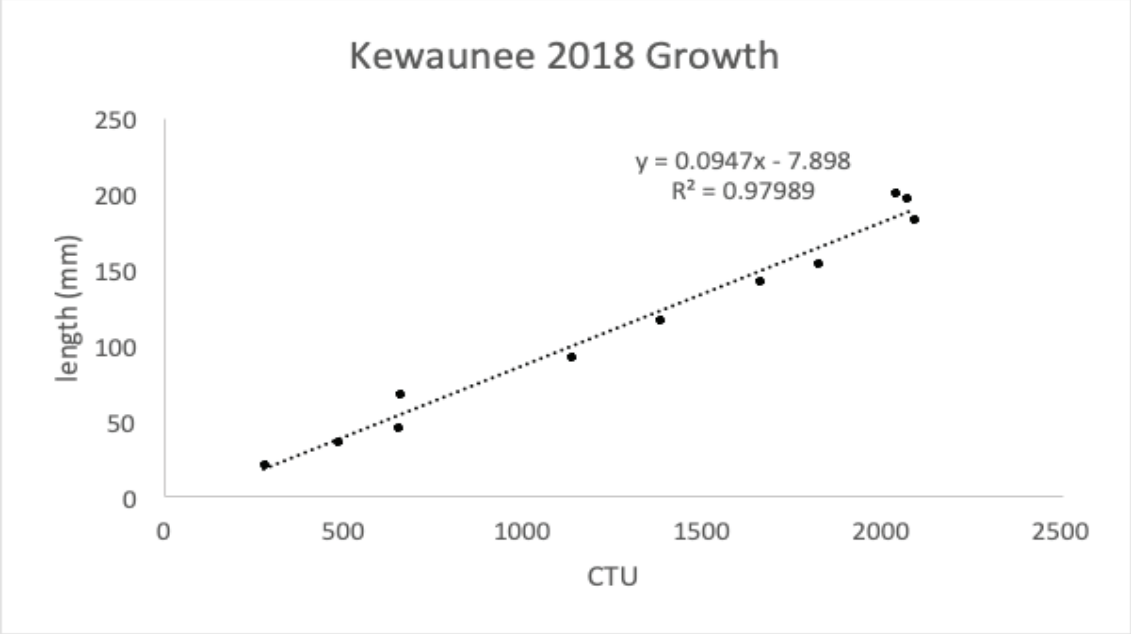


**Figure 30.** Best fit model with equation and coefficient of determination for growth of the Wolf River strain reared at the Kewaunee River SRF in 2018.

**Table 36.** Summary Statistics of Body Condition Factors for all broods except the St. Clair brood reared at the Maumee River facility.

| Brood | Mean BCF | SD | IQR | 0% | 25% | 50% | 75% | 100% | n |
|---|---|---|---|---|---|---|---|---|---|
| **BLA_PES** | 0.420894 | 0.083682 | 0.048555 | 0.307122 | 0.384047 | 0.402525 | 0.432602 | 0.644263 | 11 |
| **BLA_STC** | 0.338924 | 0.047444 | 0.059772 | 0.283177 | 0.300047 | 0.348273 | 0.359819 | 0.406186 | 6 |
| **BLA_WOL** | 0.352958 | 0.062751 | 0.069627 | 0.222737 | 0.331015 | 0.358933 | 0.400641 | 0.431887 | 10 |
| **CED** | 0.305153 | 0.051881 | 0.049623 | 0.16351 | 0.287093 | 0.315289 | 0.336716 | 0.356285 | 12 |
| **GEN_PES** | 0.394795 | 0.013365 | 0.014922 | 0.38129 | 0.385584 | 0.390882 | 0.400506 | 0.419211 | 7 |
| **GEN_STC** | 0.384363 | 0.055621 | 0.028476 | 0.259075 | 0.380281 | 0.397016 | 0.408757 | 0.446693 | 8 |
| **GEN_WOL** | 0.398277 | 0.028518 | 0.043885 | 0.364787 | 0.375761 | 0.396293 | 0.419645 | 0.446824 | 10 |
| **KEW** | 0.408476 | 0.02457 | 0.031951 | 0.382353 | 0.39206 | 0.401351 | 0.424011 | 0.461003 | 10 |
| **MIL** | 0.463936 | 0.042424 | 0.012504 | 0.409557 | 0.456395 | 0.456786 | 0.468899 | 0.52804 | 5 |
| **WHI** | 0.656255 | 0.227005 | 0.250088 | 0.231146 | 0.549834 | 0.713092 | 0.799922 | 0.942833 | 8 |

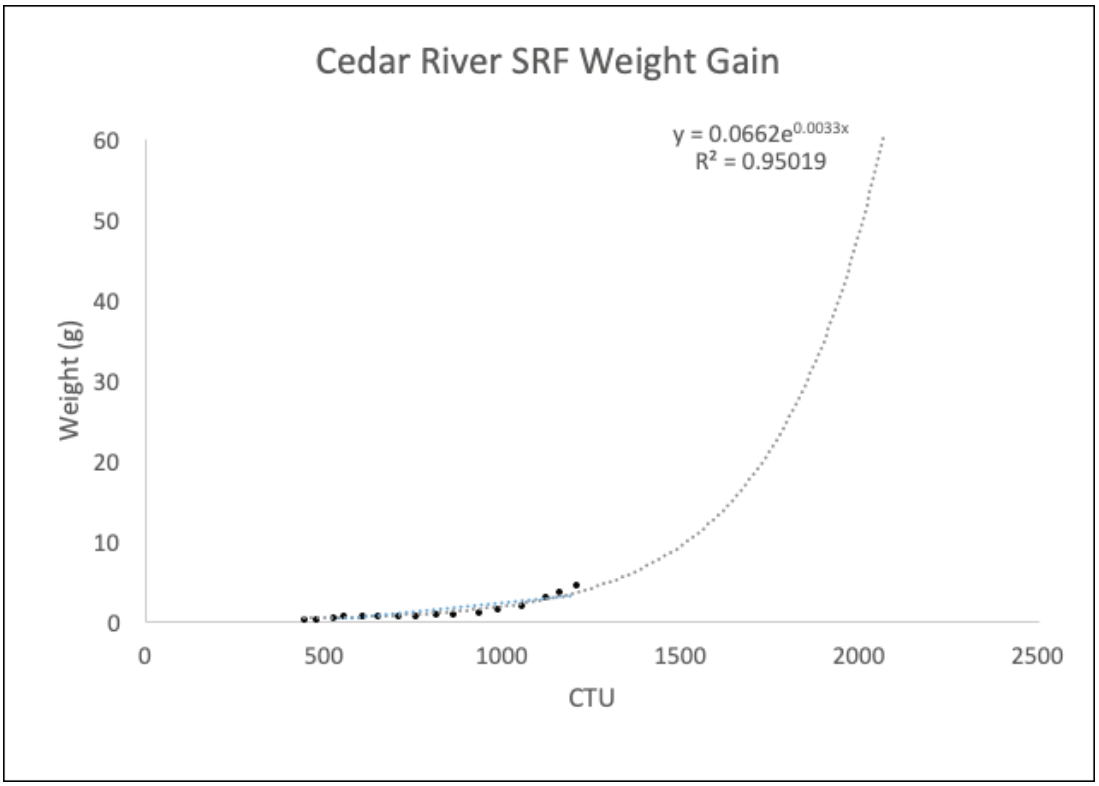


**Figure 31.** Exponential regression for weight gained plotted against thermal opportunity for growth for the Cedar River brood in 2017.

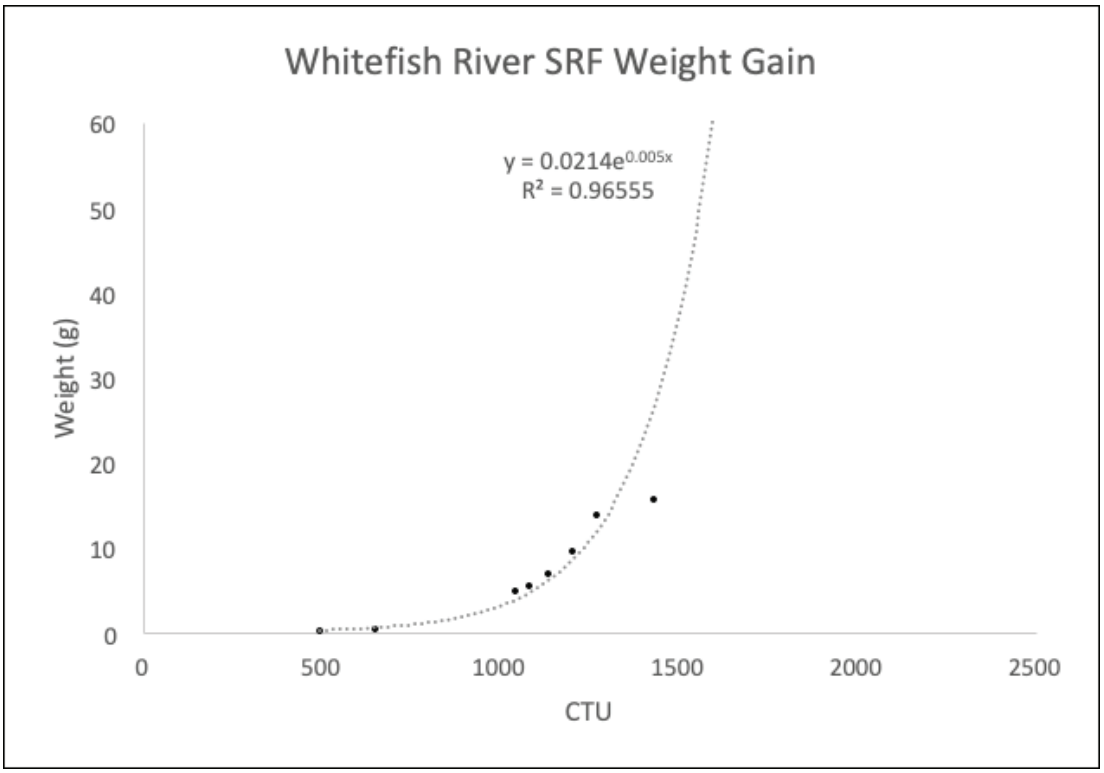


**Figure 32.** Exponential regression for weight gained plotted against thermal opportunity for growth for the Whitefish River brood in 2017.

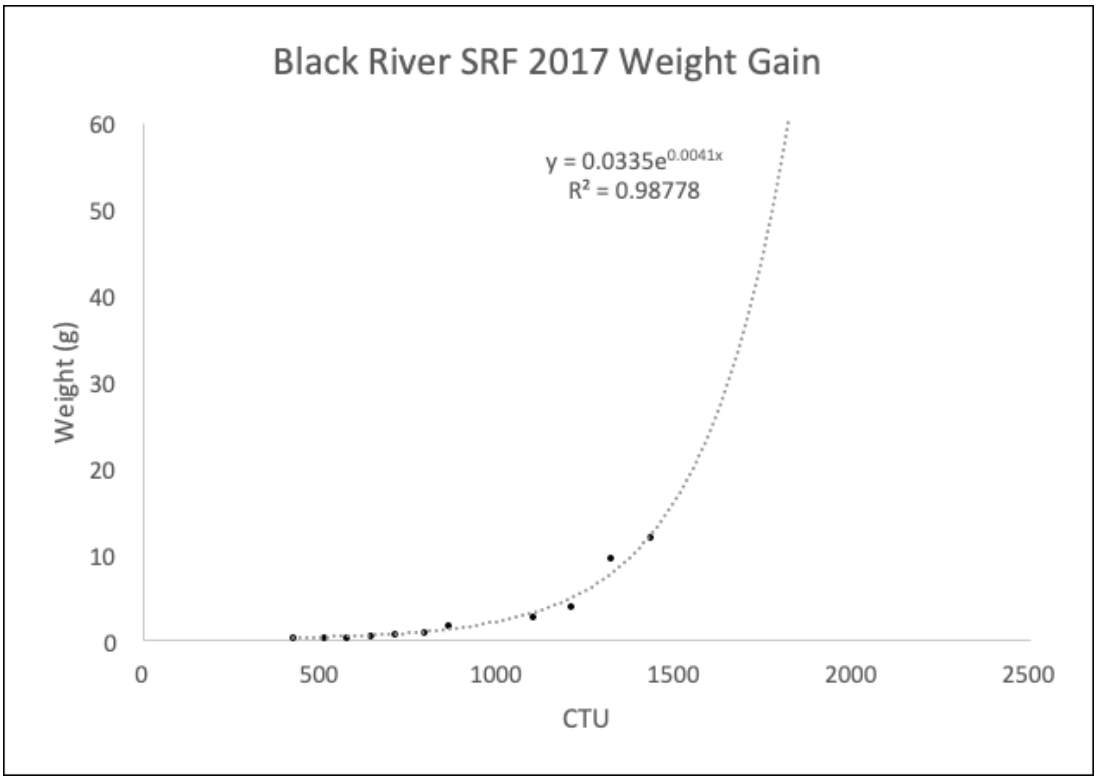


**Figure 33.** Exponential regression for weight gained plotted against thermal opportunity for growth for the Peshtigo strain reared at the Black River facility in 2017.

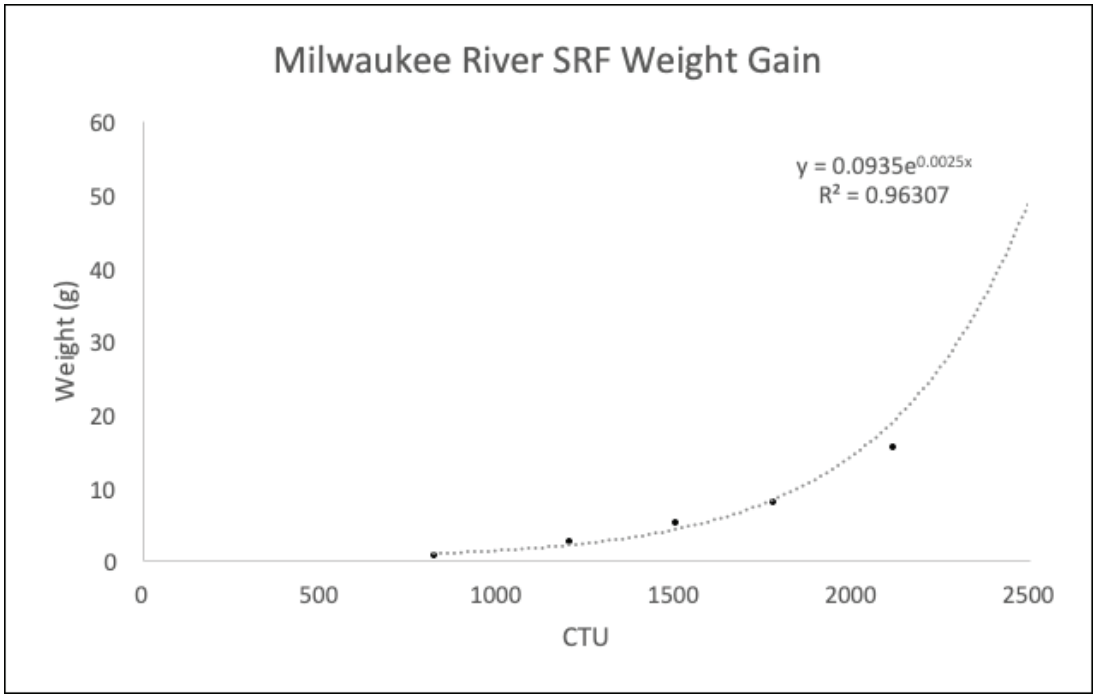


**Figure 34.** Exponential regression for weight gained plotted against thermal opportunity for growth for the Milwaukee River brood in 2018.

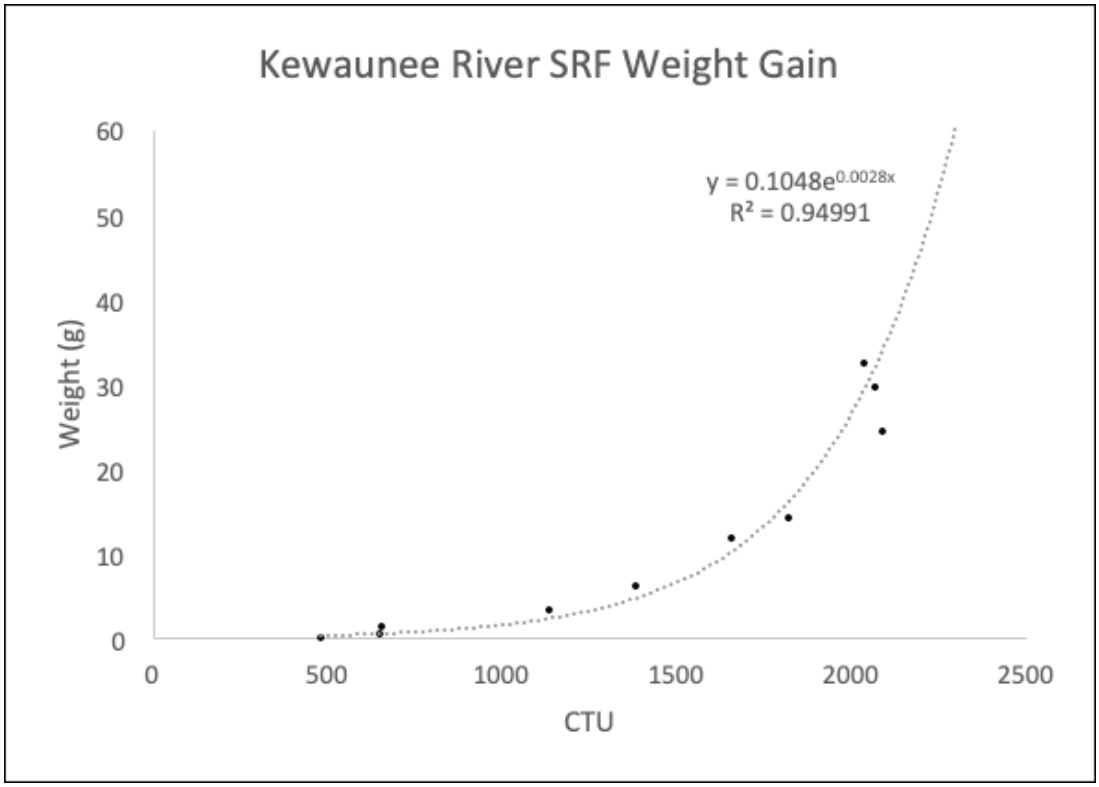


**Figure 35.** Exponential re**gression for weight gained plotted against thermal opportunity for growth for the Kewaunee River brood in 2018.**

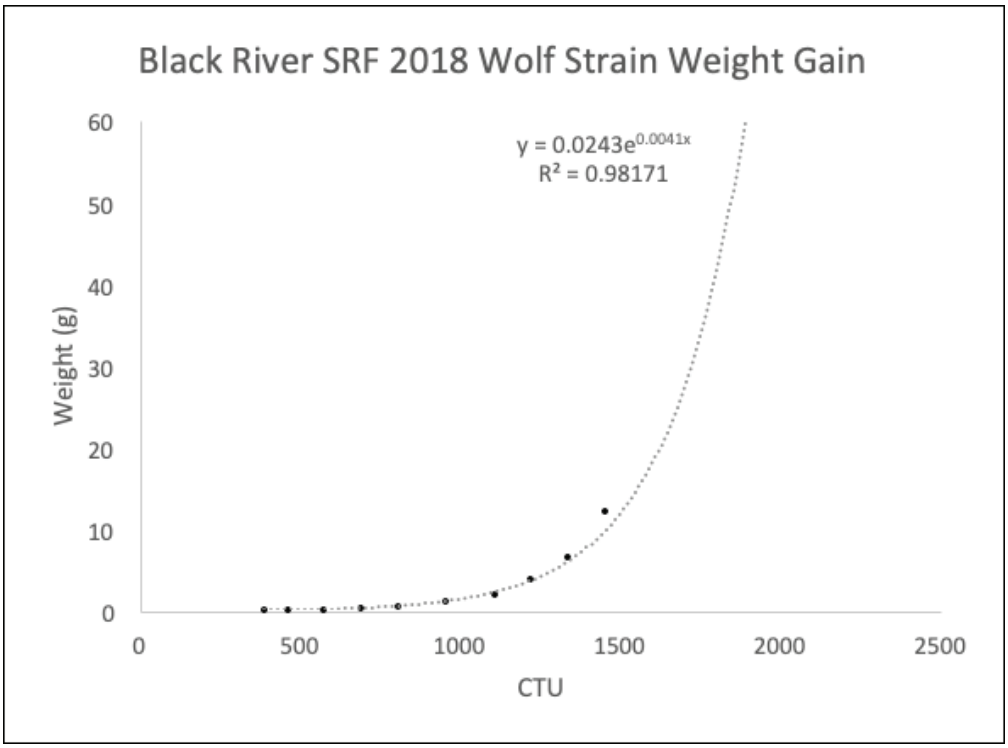


**Figure 36.** Exponential regression for weight gained plotted against thermal opportunity for growth for the Wolf River strain reared at the Black River facility in 2018.

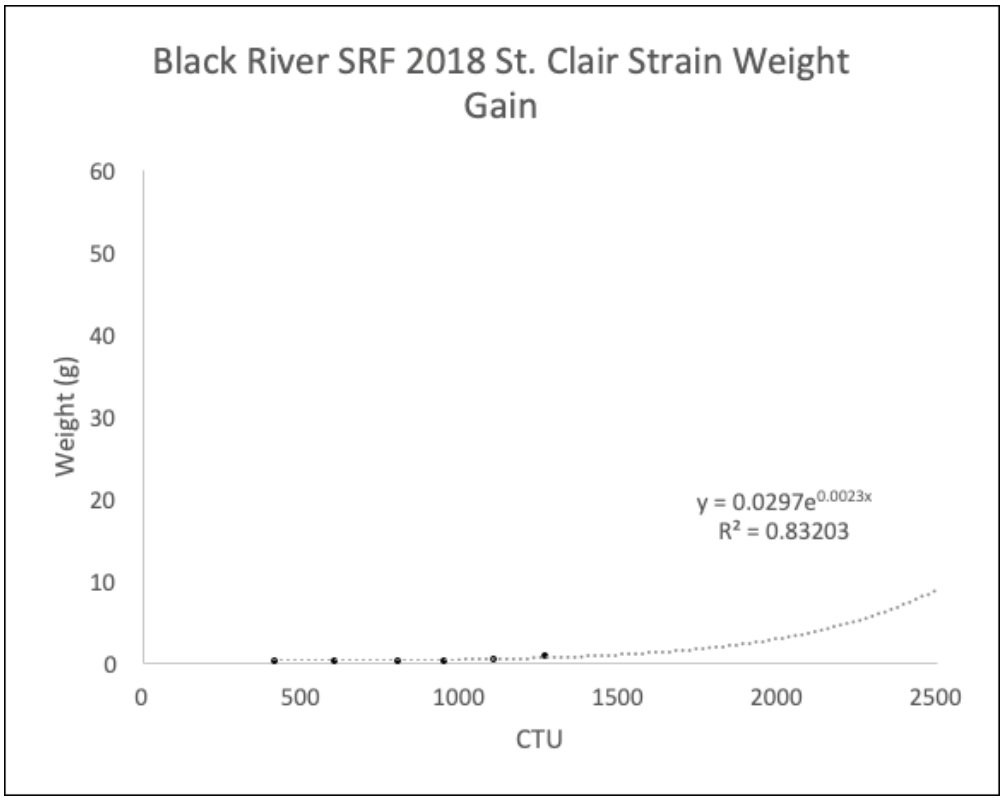


**Figure 37.** Exponential regression for weight gained plotted against thermal opportunity for growth for the Peshtigo strain reared at the Black River facility in 2017.

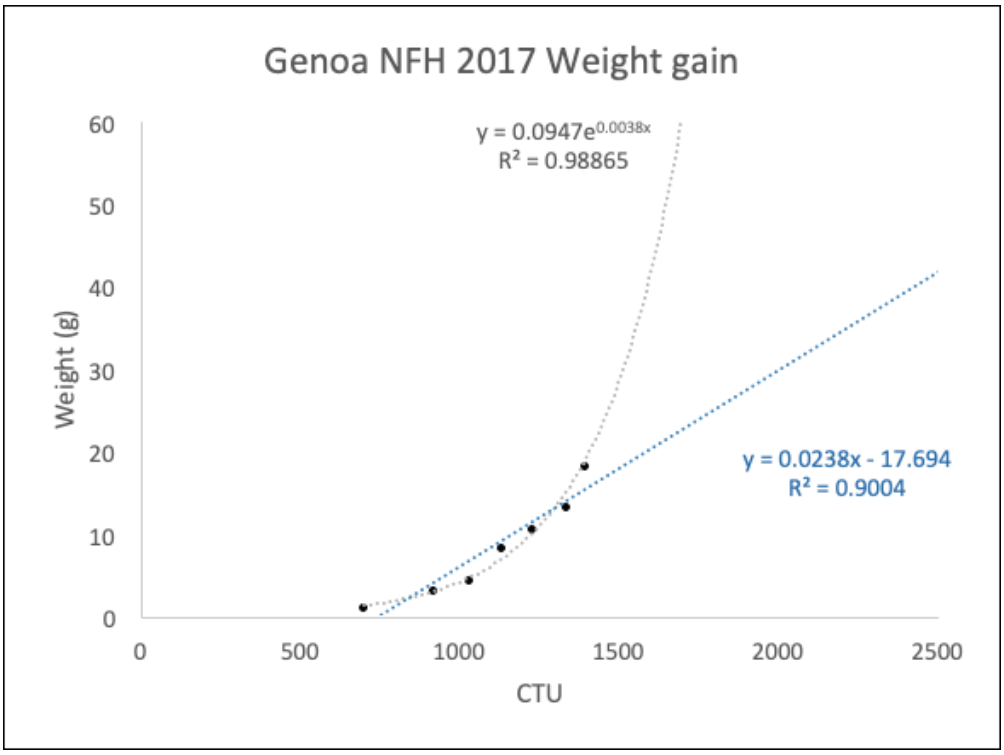


**Figure 38.** Exponential regression for weight gained plotted against thermal opportunity for growth for the Milwaukee River brood in 2018.

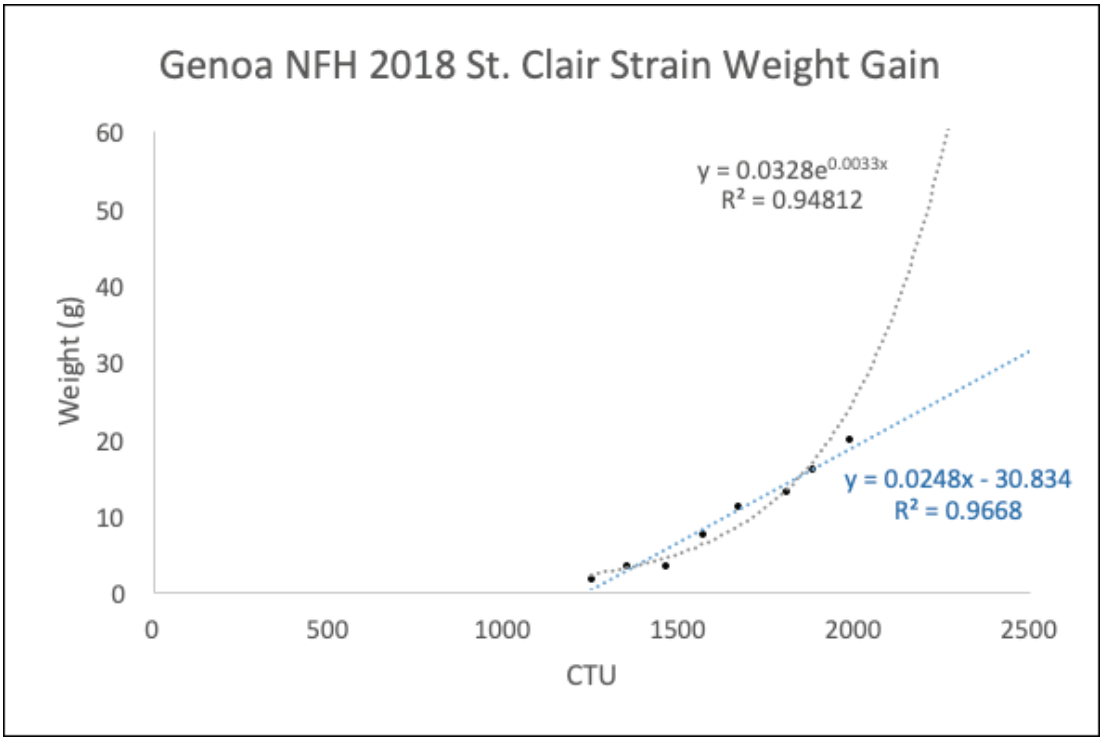


**Figure 39.** Linear regression for weight gained plotted against thermal opportunity for growth for the St. Clair River strain reared at Genoa NFH in 2018. An exponential regression is also presented as it had a high correlation coefficient.

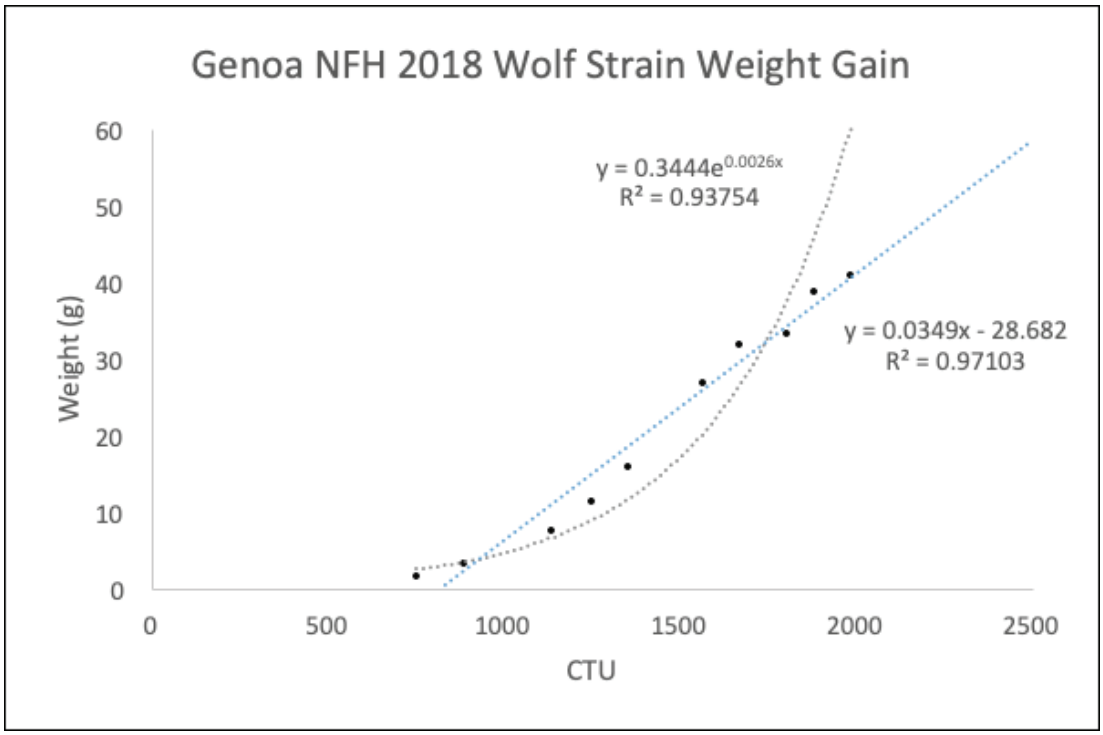


**Figure 40.** Linear regression for weight gained plotted against thermal opportunity for growth for the Wolf River strain reared at Genoa NFH in 2018. An exponential regression is also presented as it had a high correlation coefficient.

# Appendix F -

# Land Cover Classification of Catchment Areas for SRFs

**Table 37.** NLCD land use characteristics for the catchment areas of the Whitefish River, Cedar River, and Milwaukee River SRFs. Bold values indicate consolidated categories that consist of the combined values of the original NLCD categories. Rows are colored according to their graphical representation on the NLCD maps.

| | Whitefish River | | Cedar River | | Milwaukee River | |
|---|---|---|---|---|---|---|
| | | area (acres) | HUC10 | area (acres) | HUC10 | area (acres) |
| | 403011101 | 200,805.80 | 403010904 | 241,607.60 | 404000302 | 175,869.30 |
| | | | | | | |
| **Land Cover Classification** | **% cover** | **acres** | **% cover** | **acres** | **% cover** | **acres** |
| **Open Water** | **0.40%** | **779.3** | **0.40%** | **1,077.90** | **1.20%** | **2,071.00** |
| Developed, Open Space | 2.60% | 5,221.40 | 2.50% | 6,076.10 | 4.40% | 7,730.80 |
| Developed, Low Intensity | 0.40% | 747.7 | 1.00% | 2,339.10 | 3.90% | 6,936.00 |
| Developed, Medium Intensity | 0.00% | 34.5 | 0.10% | 304 | 1.70% | 2,911.20 |
| Developed, High Intensity | 0.00% | 2.9 | 0.00% | 80.3 | 0.50% | 878.3 |
| **Developed** | **3.00%** | **6,006.40** | **3.60%** | **8,799.50** | **10.50%** | **18,456.30** |
| **Barren Land** | **0.10%** | **196.2** | **0.10%** | **298.4** | **0.20%** | **319.6** |
| Deciduous Forest | 25.40% | 51,092.40 | 14.30% | 34,656.40 | 10.10% | 17,714.60 |
| Evergreen Forest | 3.70% | 7,341.50 | 2.30% | 5,632.00 | 1.80% | 3,145.20 |
| Mixed Forest | 10.50% | 21,088.90 | 5.60% | 13,486.40 | 3.30% | 5,810.20 |
| **Forest** | **39.60%** | **79,522.80** | **22.30%** | **53,774.80** | **15.20%** | **26,669.90** |
| Shrub/Scrub | 0.90% | 1,776.10 | 0.50% | 1,208.20 | 0.20% | 363.6 |
| Herbaceous | 1.50% | 3,013.80 | 2.00% | 4,908.40 | 0.20% | 303.6 |
| **Woody and herbaceous** | **2.40%** | **4,789.90** | **2.50%** | **6,116.60** | **0.40%** | **667.2** |
| Hay/Pasture | 2.20% | 4,429.20 | 1.30% | 3,260.50 | 13.40% | 23,627.70 |
| Cultivated Crops | 1.50% | 2,945.30 | 10.10% | 24,490.50 | 37.40% | 65,698.10 |
| **Agriculture** | **3.70%** | **7,374.40** | **11.50%** | **27,750.90** | **50.80%** | **89,325.90** |
| Woody Wetlands | 49.60% | 99,659.90 | 57.50% | 138,809.10 | 17.00% | 29,887.20 |
| Emergent Herbaceous Wetlands | 1.20% | 2,476.90 | 2.10% | 4,980.20 | 4.80% | 8,472.30 |
| **Wetlands** | **50.90%** | **102,136.80** | **59.50%** | **143,789.30** | **21.80%** | **38,359.50** |

**Table 38.** NLCD land use characteristics for the catchment areas of the Kewaunee River, Black River, and Maumee River SRFs. Bold values indicate consolidated categories that consist of the combined values of the original NLCD categories. Rows are colored according to their graphical representation on the NLCD maps.

| | Kewaunee River | | Black River | | Maumee River | |
|---|---|---|---|---|---|---|
| | HUC10 | area (acres) | HUC10 | area (acres) | HUC8 | area (acres) |
| | 403010203 | 90,731.3 | 407000502 | 229,666.6 | 04100009 | 689,823.7 |
| **Land Cover Classification** | **% cover** | **acres** | **% cover** | **acres** | **% cover** | **acres** |
| **Open Water** | **0.3%** | **273.1** | **1.3%** | **3,018.6** | **1.4%** | **9,939.1** |
| Developed, Open Space | 2.9% | 2,665.3 | 3.9% | 8,961.5 | 6.1% | 41,874.5 |
| Developed, Low Intensity | 2.8% | 2,558.8 | 1.1% | 2,488.6 | 5.0% | 34,302.5 |
| Developed, Medium Intensity | 0.5% | 443.7 | 0.1% | 205.5 | 2.0% | 14,134.4 |
| Developed, High Intensity | 0.2% | 143.2 | 0.0% | 47.6 | 1.0% | 6,718.8 |
| **Developed** | **6.4%** | **5,811.0** | **5.1%** | **11,703.2** | **14.1%** | **97,030.2** |
| **Barren Land** | **0.2%** | **171.9** | **0.0%** | **60.3** | **0.2%** | **1,273.0** |
| Deciduous Forest | 4.6% | 4,152.3 | 27.6% | 63,460.8 | 6.4% | 44,486.5 |
| Evergreen Forest | 0.3% | 255.3 | 11.7% | 26,926.0 | 0.3% | 1,956.0 |
| Mixed Forest | 1.0% | 919.0 | 13.4% | 30,756.1 | 0.2% | 1,396.7 |
| **Forest** | **5.9%** | **5,326.6** | **52.7%** | **121,142.8** | **6.9%** | **47,839.1** |
| Shrub/Scrub | 0.1% | 71.6 | 4.2% | 9,673.1 | 0.0% | 90.3 |
| Herbaceous | 0.1% | 57.2 | 5.2% | 11,961.8 | 0.5% | 3,142.2 |
| **Woody and herbaceous** | **0.1%** | **128.8** | **9.4%** | **21,634.9** | **0.5%** | **3,232.5** |
| Hay/Pasture | 10.3% | 9,304.4 | 0.8% | 1,759.2 | 1.6% | 11,163.7 |
| Cultivated Crops | 65.9% | 59,762.8 | 2.2% | 5,117.8 | 74.0% | 510,579.8 |
| **Agriculture** | **76.1%** | **69,067.1** | **3.0%** | **6,876.9** | **75.6%** | **521,743.4** |
| Woody Wetlands | 10.2% | 9,238.1 | 27.6% | 63,485.5 | 1.1% | 7,798.8 |
| Emergent Herbaceous Wetlands | 0.8% | 714.6 | 0.8% | 1,744.5 | 0.1% | 967.4 |
| **Wetlands** | **11.0%** | **9,952.7** | **28.4%** | **65,229.9** | **1.3%** | **8,766.2** |

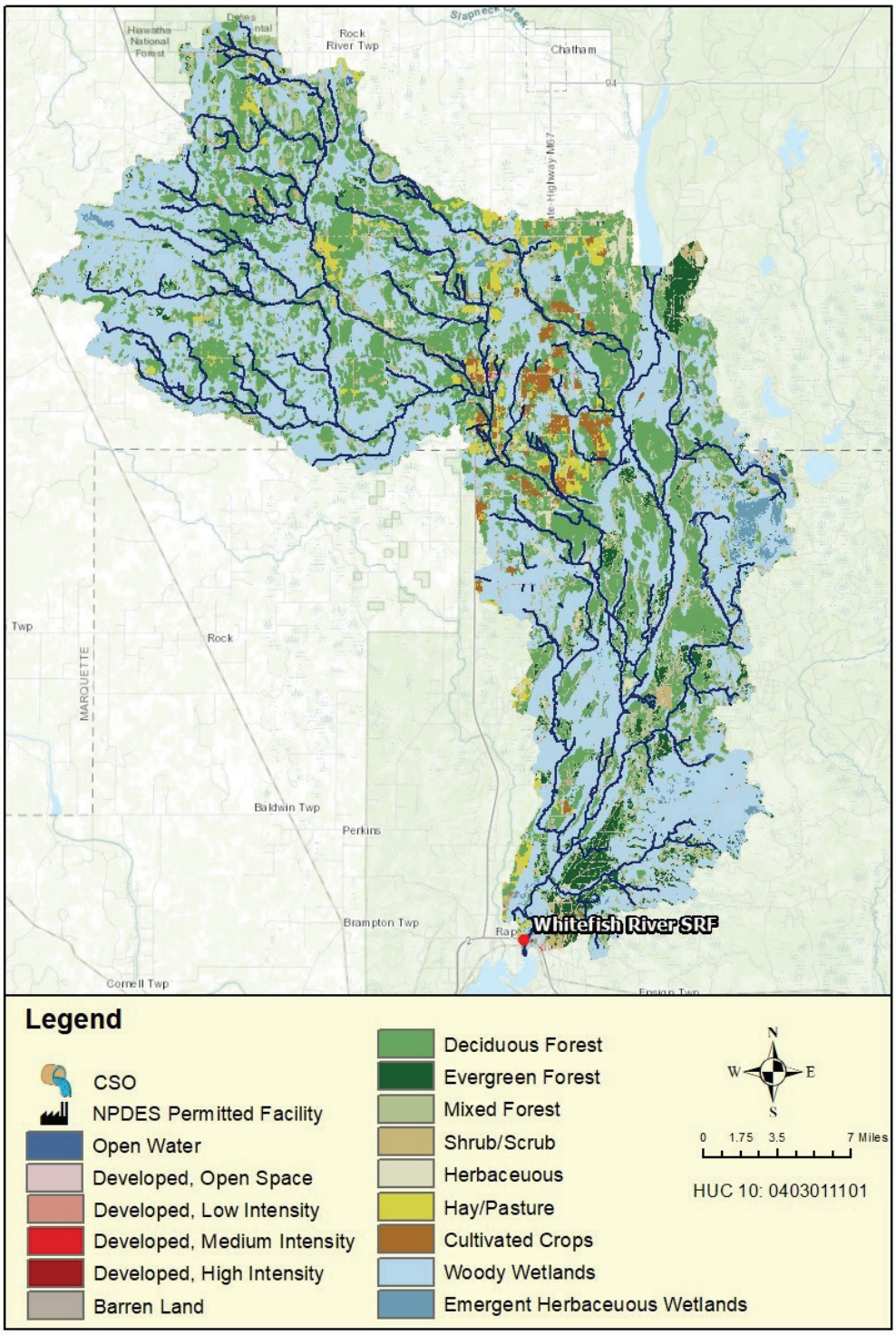


**Figure 41.** Map of land cover classification for the catchment area of the Whitefish River SRF

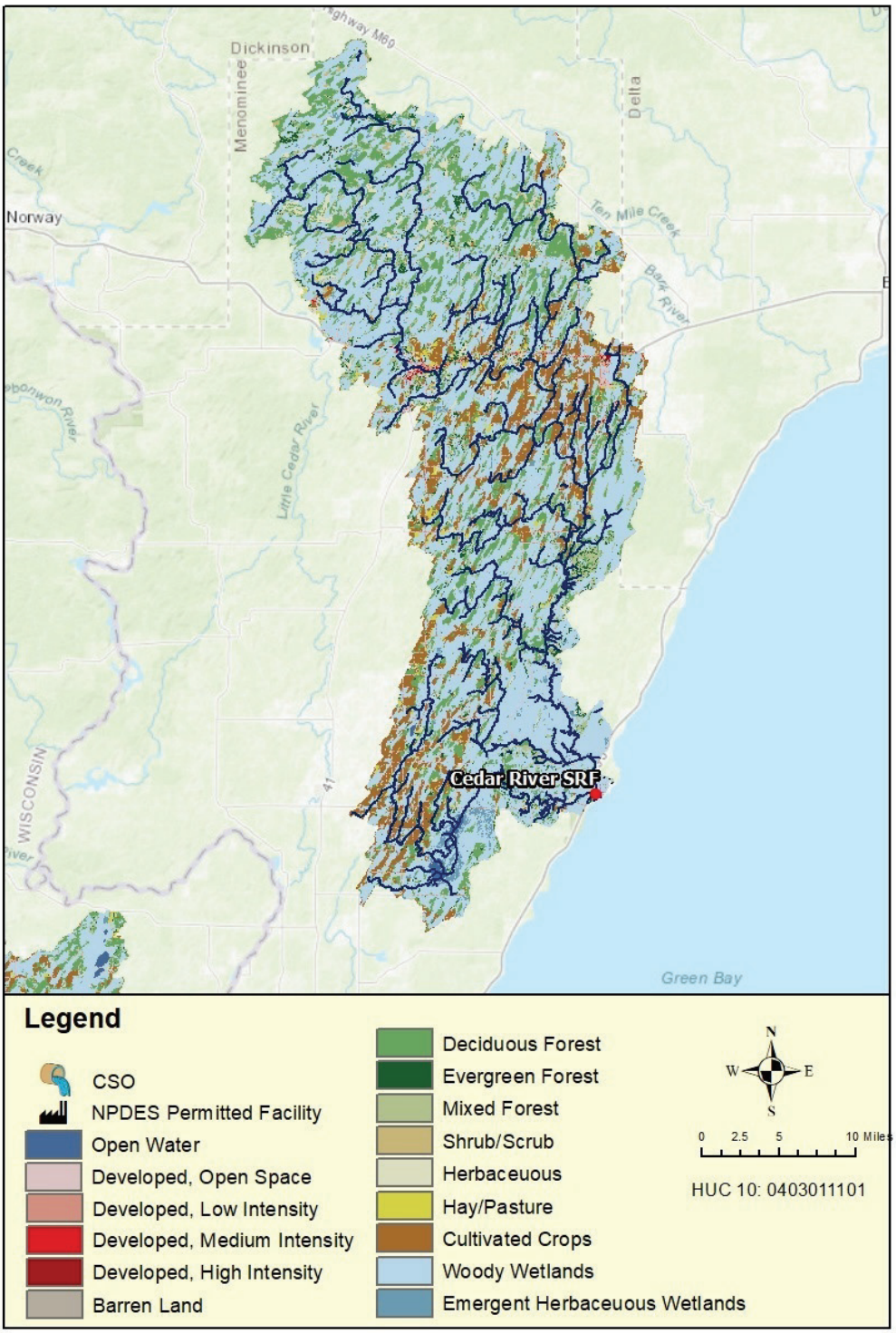


**Figure 42.** Map of land cover classification for the catchment area of the Cedar River S**RF.**

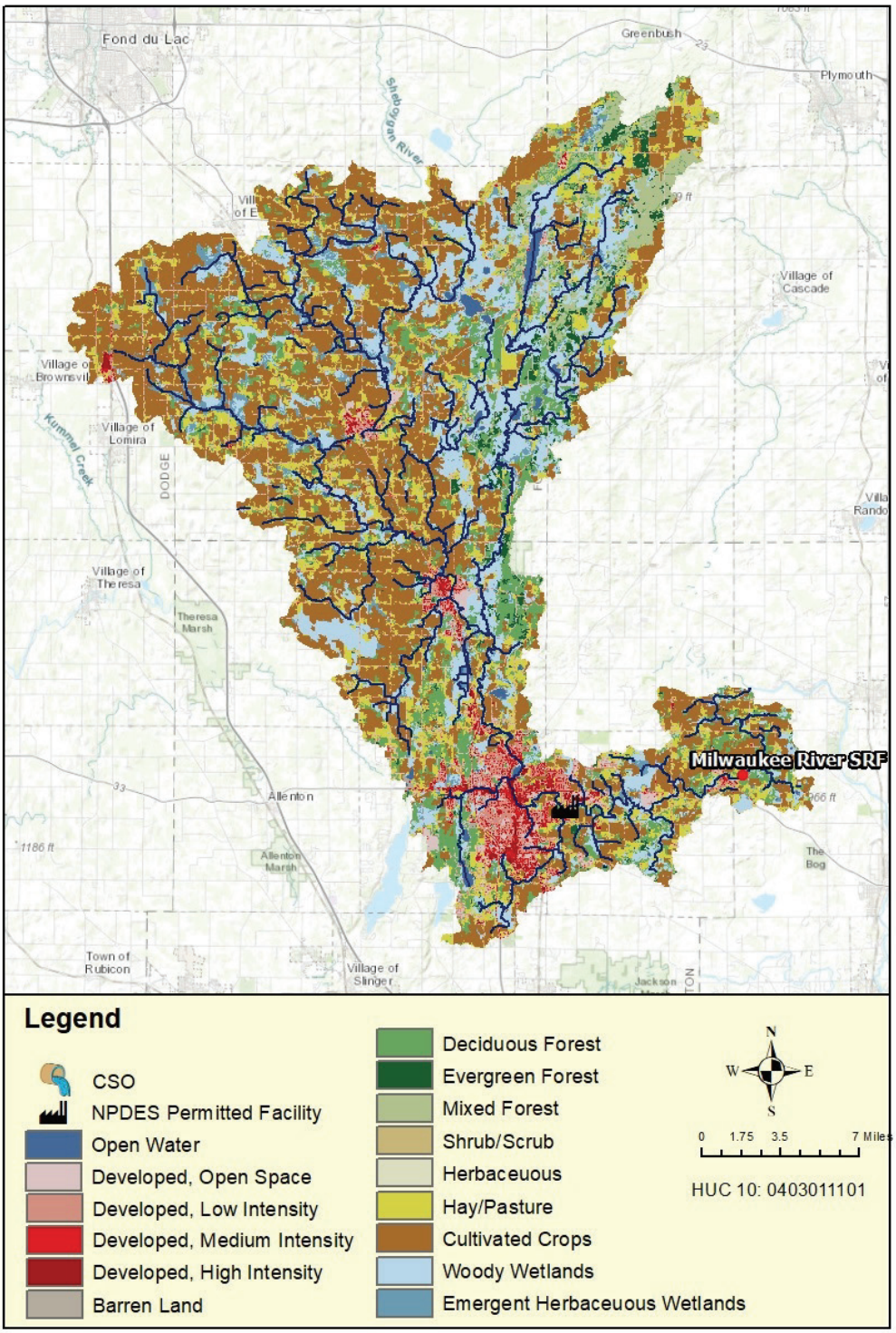


**Figure 43.** Map of land cover classification for the catchment area of the Milwaukee River SRF.

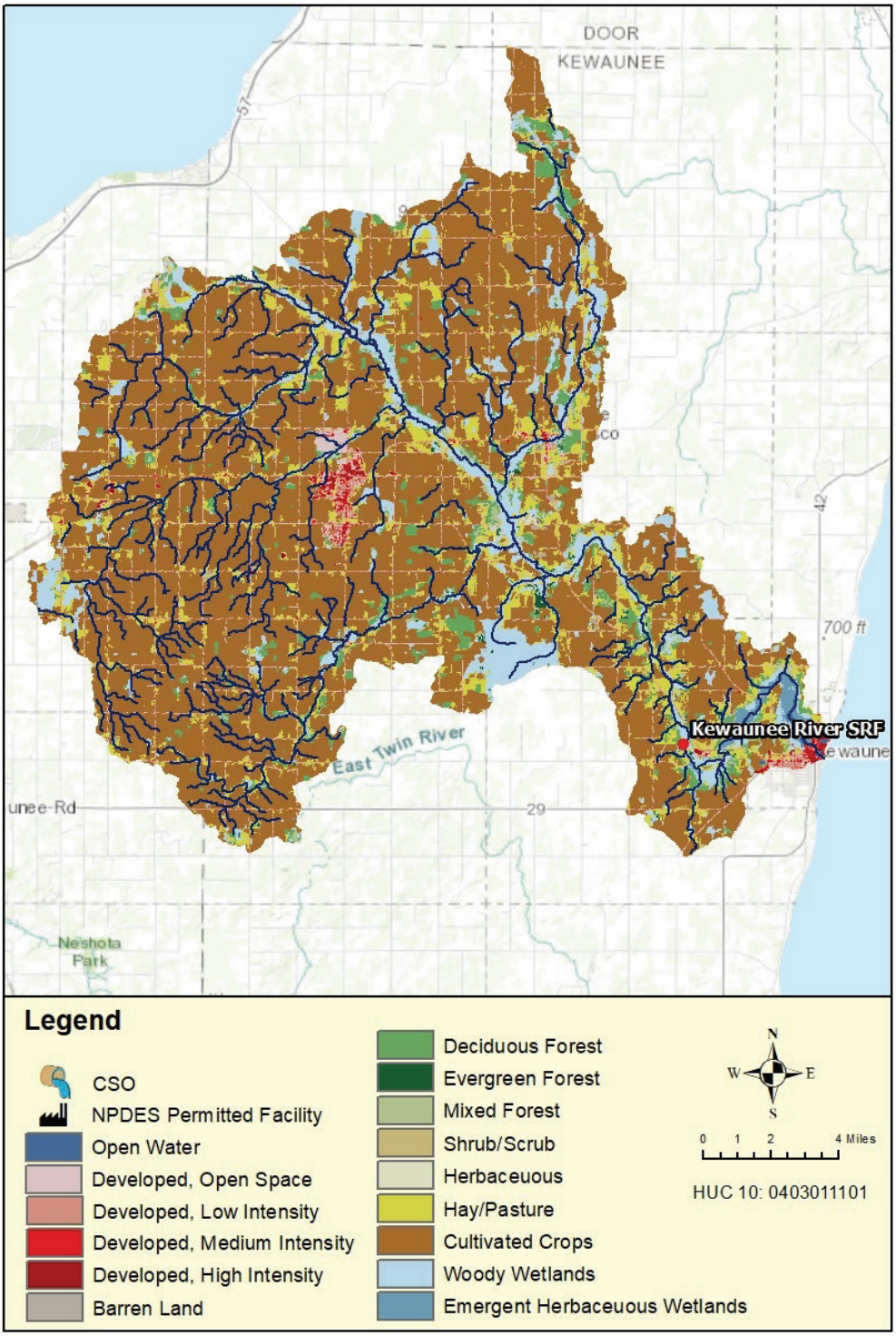


**Figure 44.** Map of land cover classification for the catchment area of the Kewaunee River SRF.

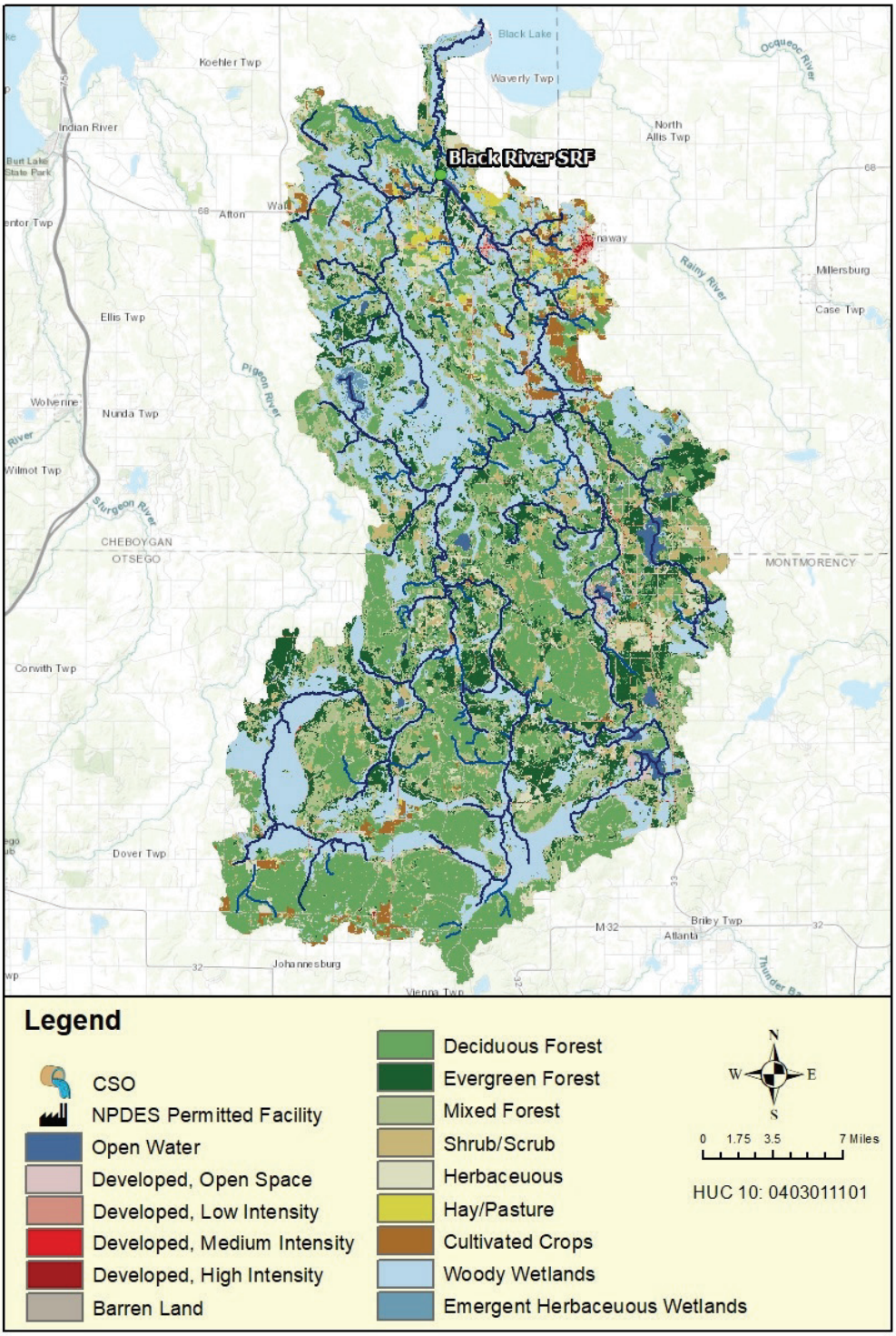


**Figure 45.** Map of land cover classification for the catchment area of the Black River SRF.

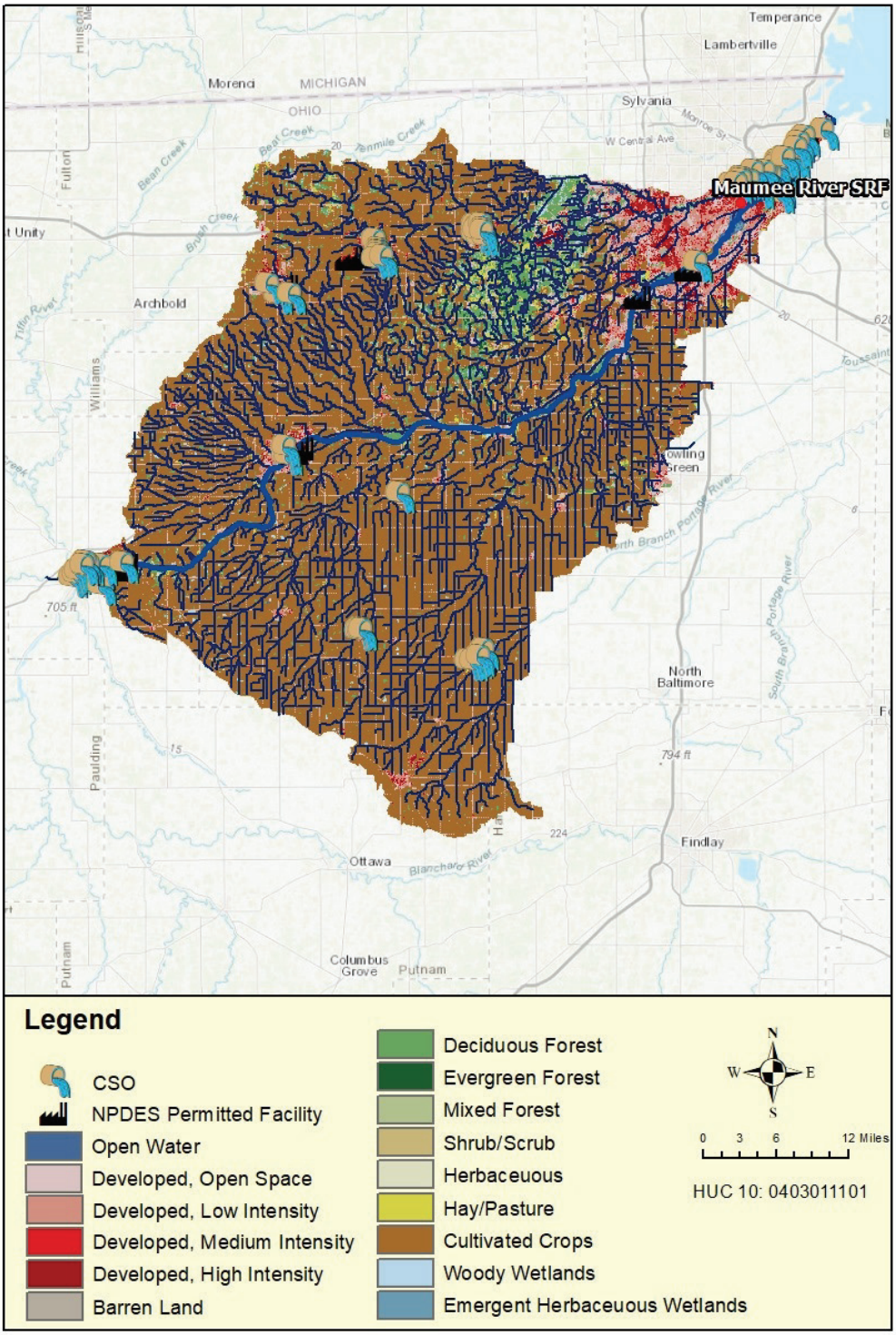


**Figure 46.** Map of land cover classification for the catchment area of the Maumee River SRF.

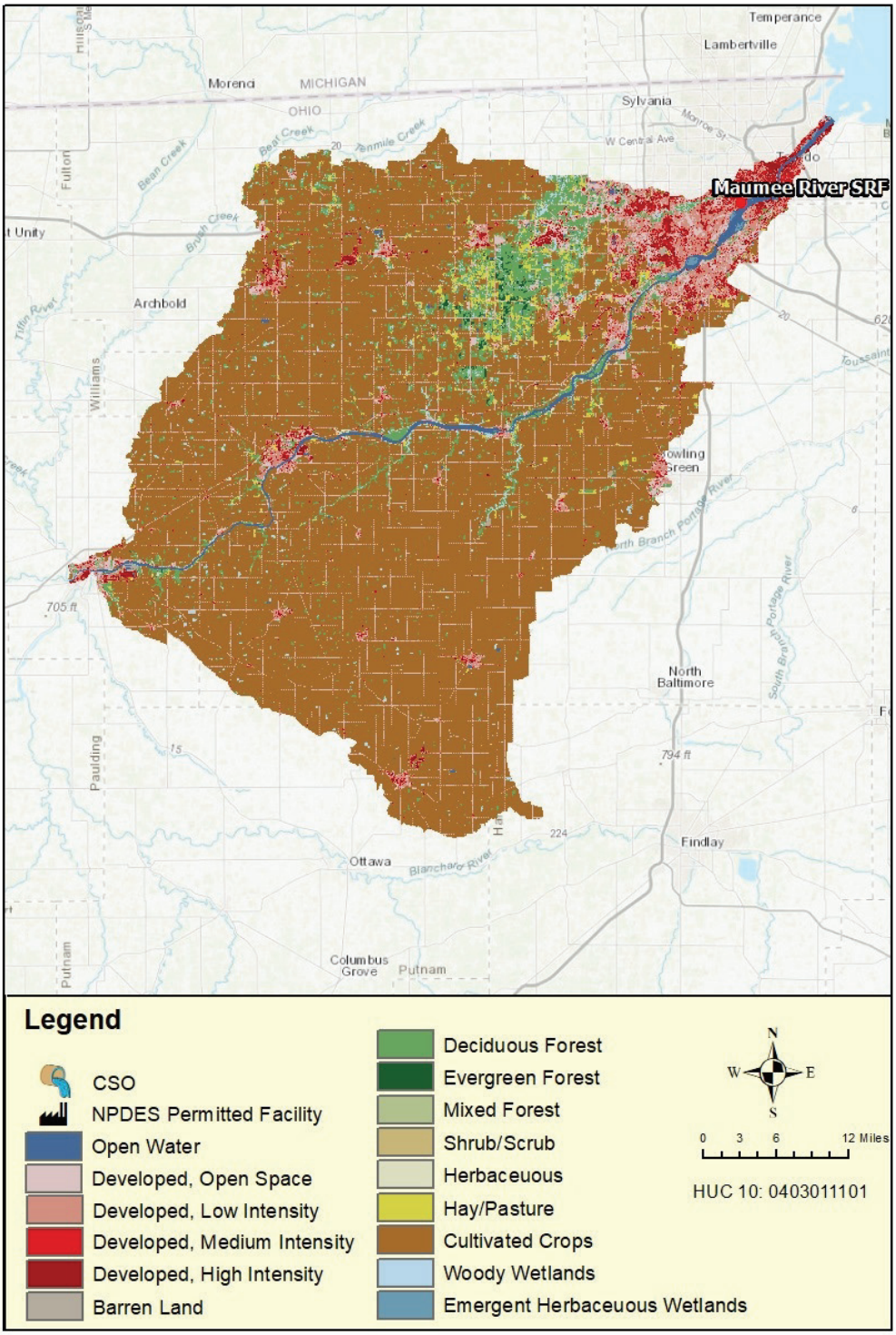


**Figure 47.** Map of land cover classification for the catchment area of the Maumee River SRF. NPDES permitted outfalls, CSOs, and tributaries have been removed for better visibility.

# Appendix G - Thyroid Hormone Data

## Triiodothyronine ($T_3$)

**Table 39.** $T_3$ concentrations measured in composite egg samples. Each column represents an individual sample. Concentrations are reported in ng/g.

| Source River | Egg $T_3$ concentrations | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PES** | 11.6 | 9 | 12.1 | 17.6 | 41.5 | | | |
| **WOL** | 12.9 | 6.3 | 4.8 | 11.4 | 7.4 | 11.9 | 8.7 | |
| **STC** | 17.4 | 10.9 | 27 | 12.1 | 14.2 | 16.6 | 28.2 | 19.2 |

**Table 40.** $T_3$ concentrations measured in composite fish carcasses sacrificed at the time of transition to exogenous feeding. Each column represents an individual sample. Concentrations are reported in ng/g.

| Brood | Carcass $T_3$ concentrations[1] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **CED** | 3286 | 2005 | 1597 | 1685 | 2081 | 2393 | 2974 | 1431 | 3177 | 2498 |
| **WHI** | 806 | 1352 | 2326 | 1894 | 2315 | 1115 | 2684 | 1298 | 2462 | 1168 |
| **BLA** | 11549 | 4370 | 11415 | 4326 | 10586 | 5201 | 13866 | 4996 | 9269 | 7716 |
| **GEN_PES** | 4737 | 2257 | 5625 | 3612 | 2606 | 3831 | 3287 | 2731 | 2719 | 3462 |

1 Concentrations were outside of published concentration ranges Values are included here as they were used for a relative concentration analysis under the assumption that the cause of the magnification was equal across all samples processed in the same batch.

**Table 41.** $T_3$ concentrations measured in composite serum samples of juvenile fish sacrificed at the end of the rearing season, concurrent with the release of the fish into stocking locations. Each column represents an individual sample. Concentrations are reported in ng/mL.

| Brood | Serum $T_3$ concentrations | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CED** | 6.4 | | | | | | | | | | | | |
| **BLA** | 22.9 | 24.9 | 20.9 | 20.6 | 24.2 | 20.4 | 25.4 | 22.7 | 26.4 | 18.8 | | | |
| **GEN_PES** | 35.0 | 49.8 | 33.1 | 67.1 | 43.2 | 32.5 | 45.1 | 43.5 | 33.7 | 41.9 | | | |
| **GEN_STC** | 34.1 | 26.2 | 51.7 | 28.1 | 49.5 | 33.9 | 54.1 | 34.4 | 53.9 | 50.1 | | | |
| **KEW** | 39.6 | 57.9 | 48.3 | 50.9 | 31.1 | 53.9 | 57.7 | 61.2 | 39.1 | 60.6 | 69.6 | 54.3 | 37.1 |

## Thyroxine ($T_4$)

**Table 42.** $T_4$ concentrations measured in composite egg samples. Each column represents an individual sample. Concentrations are measured in ng/g.

| Brood | Carcass $T_4$ concentrations | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **CED** | 2279 | 2064 | 4134 | 1513 | 1270 | 2867 | 3635 | 1495 | 3513 | 1789 |
| **WHI** | 1030 | 1433 | 2403 | 2246 | 2078 | 1026 | 5112 | 1064 | 3684 | 2011 |
| **BLA_PES** | 15393 | 3791 | 15536 | 4794 | 3902 | 4330 | 24681 | 5689 | 6876 | 7043 |
| **GEN_PES** | 13120 | 2686 | 7255 | 2897 | 2727 | 4691 | 5215 | 2665 | 3107 | 2294 |

**Table 43.** $T_4$ concentrations measured in composite fish carcasses sacrificed at the time of transition to exogenous feeding. Each column represents an individual sample. Concentrations are reported in ng/g.

| Brood | Carcass $T_4$ concentrations | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **CED** | 2279 | 2064 | 4134 | 1513 | 1270 | 2867 | 3635 | 1495 | 3513 | 1789 |
| **WHI** | 1030 | 1433 | 2403 | 2246 | 2078 | 1026 | 5112 | 1064 | 3684 | 2011 |
| **BLA_PES** | 15393 | 3791 | 15536 | 4794 | 3902 | 4330 | 24681 | 5689 | 6876 | 7043 |
| **GEN_PES** | 13120 | 2686 | 7255 | 2897 | 2727 | 4691 | 5215 | 2665 | 3107 | 2294 |

**Table 44.** $T_4$ concentrations measured in composite serum samples of juvenile fish sacrificed at the end of the rearing season, concurrent with the release of the fish into stocking locations. Each column represents an individual sample. Concentrations are reported in ng/mL.

| Brood | Serum $T_4$ concentrations | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CED** | 6.4 | | | | | | | | | | | | |
| **BLA_PES** | 3.9 | 7.7 | 3.1 | 8.1 | 3.1 | 7.8 | 4 | 7.3 | 3.3 | 3.6 | | | |
| **GEN_PES** | 3.1 | 3.1 | 2.4 | 3.4 | 3.1 | 2.7 | 3.1 | 3.1 | 2.3 | 3.1 | | | |
| **GEN_STC** | 3.1 | 2.7 | 3.1 | 2.2 | 3.1 | 3.8 | 3.1 | 2.5 | 3.1 | 3.1 | | | |
| **GEN_WOL** | 3.1 | 3.1 | 2.6 | 3.1 | 3.1 | 4.1 | 3.1 | 3.1 | 2.5 | 3.1 | | | |
| **KEW** | 4.2 | 3.1 | 3.1 | 3.1 | 3.7 | 3.1 | 3.1 | 3.1 | 4.4 | 3.1 | 4.2 | 3.1 | 3.3 |
| **BLA_WOL** | 3.1 | 3.1 | 2.9 | 3.1 | 3.1 | 2.3 | 3.1 | 3.1 | 3.7 | 3.1 | | | |

**Table 45.** $T_4$ concentrations measured in composite egg samples. Each column represents an individual sample. Concentrations are measured in ng/g.

| Date | 0:51 | 1:51 | 2:51 | 3:51 | 4:51 | 5:51 | 6:51 | 7:51 | 8:51 | 9:51 | 10:51 | 11:51 | 12:51 | 13:51 | 14:51 | 15:51 | 16:51 | 17:51 | 18:51 | 19:51 | 20:51 | 21:51 | 22:51 | 23:51 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5/10/2017** | 7.6 | 7.5 | 7.4 | 7.4 | 7.4 | 7.4 | 7.5 | 7.9 | 10.2 | 11.3 | 12.3 | 15.9 | 19.1 | 15.7 | 13.3 | 14.5 | 14.2 | 13.8 | 13.3 | 12.5 | 11.4 | 10.8 | 10.4 | 10.3 | 11.2 | 5.4 | 5.4 |
| **5/11/2017** | 10.2 | 10.3 | 10.2 | 10.1 | 10.2 | 9.7 | 9.6 | 9.5 | 10.4 | 12.9 | 14.6 | 15.0 | 16.3 | 15.5 | 13.3 | 14.6 | 14.3 | 14.2 | 13.5 | 13.4 | 13.4 | 13.3 | 13.3 | 13.4 | 12.5 | 6.7 | 12.2 |
| **5/12/2017** | 13.5 | 13.6 | 13.8 | 13.7 | 13.4 | 14.0 | 13.8 | 14.2 | 13.1 | 13.2 | 13.2 | 13.3 | 13.9 | 15.2 | 15.8 | 15.5 | 16.3 | 16.6 | 15.8 | 16.2 | 14.8 | 14.8 | 15.1 | 14.4 | 14.5 | 8.7 | 20.8 |
| **5/13/2017** | 14.3 | 14.4 | 14.3 | 14.4 | 14.7 | 14.8 | 14.8 | 14.8 | 15.2 | 14.9 | 15.2 | 14.5 | 14.5 | 14.9 | 15.2 | 15.5 | 15.6 | 15.9 | 16.8 | 16.4 | 15.9 | 15.7 | 15.7 | 15.6 | 15.2 | 9.4 | 30.2 |
| **5/14/2017** | 15.6 | 15.6 | 15.6 | 15.6 | 15.5 | 15.4 | 15.2 | 15.2 | 15.2 | 15.4 | 15.6 | 15.3 | 15.5 | 15.6 | 15.9 | 16.2 | 17.3 | 17.1 | 16.6 | 17.1 | 16.3 | 16.0 | 15.9 | 15.7 | 15.8 | 10.0 | 40.2 |
| **5/15/2017** | 15.5 | 15.5 | 15.5 | 15.5 | 15.3 | 15.2 | 15.1 | 15.0 | 15.2 | 15.4 | 15.4 | 15.4 | 15.5 | 15.5 | 15.5 | 15.7 | 15.9 | 15.5 | 15.4 | 15.2 | 15.1 | 15.2 | 14.9 | 15.1 | 15.3 | 9.5 | 49.8 |
| **5/16/2017** | 14.9 | 14.6 | 15.1 | 14.5 | 14.5 | 14.7 | 14.8 | 14.5 | 14.6 | 14.9 | 14.8 | 14.7 | 14.7 | 15.0 | 15.3 | 15.7 | 15.5 | 15.3 | 15.2 | 15.3 | 15.1 | 14.9 | 15.0 | 15.1 | 14.9 | 9.1 | 58.9 |
| **5/17/2017** | 15.0 | 14.9 | 14.7 | 14.7 | 14.6 | 14.5 | 14.6 | 14.5 | 14.9 | 15.3 | 15.5 | 15.4 | 15.8 | 16.0 | 16.5 | 17.3 | 16.8 | 16.7 | 16.7 | 16.3 | 16.4 | 16.2 | 16.3 | 16.4 | 15.7 | 9.9 | 68.8 |
| **5/18/2017** | 16.6 | 16.1 | 15.8 | 15.8 | 16.1 | 15.8 | 15.7 | 15.9 | 15.7 | 16.2 | 16.4 | 15.8 | 15.7 | 15.6 | 15.6 | 15.5 | 15.5 | 15.5 | 15.5 | 15.3 | 15.0 | 14.8 | 14.5 | 14.1 | 15.6 | 9.8 | 78.6 |
| **5/19/2017** | 13.8 | 13.7 | 13.4 | 13.2 | 13.0 | 12.7 | 12.6 | 12.5 | 12.6 | 12.7 | 12.9 | 13.0 | 13.2 | 13.3 | 13.3 | 13.3 | 13.3 | 13.1 | 12.9 | 12.9 | 12.5 | 12.1 | 11.7 | 11.4 | 12.9 | 7.1 | 85.6 |
| **5/20/2017** | 11.1 | 10.9 | 10.7 | 10.6 | 10.5 | 10.5 | 10.4 | 10.4 | 10.6 | 10.7 | 10.9 | 11.2 | 11.4 | 11.6 | 11.6 | 11.5 | 11.4 | 11.2 | 11.1 | 10.9 | 10.7 | 10.7 | 10.5 | 10.4 | 10.9 | 5.1 | 90.7 |
| **5/21/2017** | 10.3 | 10.3 | 10.2 | 10.2 | 10.2 | 10.3 | 10.3 | 10.3 | 10.4 | 10.4 | 10.5 | 10.4 | 10.5 | 10.7 | 10.8 | 10.8 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.6 | 10.6 | 10.5 | 4.7 | 95.4 |
| **5/22/2017** | 10.5 | 10.5 | 10.4 | 10.4 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.4 | 10.7 | 10.8 | 11.1 | 11.4 | 11.6 | 11.8 | 11.7 | 11.6 | 11.5 | 11.4 | 11.3 | 11.2 | 11.1 | 10.9 | 10.9 | 5.1 | 100.5 |
| **5/23/2017** | 10.8 | 10.8 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.8 | 10.9 | 11.0 | 11.1 | 11.2 | 11.4 | 11.3 | 11.2 | 11.1 | 11.4 | 11.3 | 11.2 | 11.2 | 11.1 | 11.0 | 10.8 | 11.0 | 5.2 | 105.7 |
| **5/24/2017** | 10.8 | 10.7 | 10.7 | 10.7 | 10.6 | 10.6 | 10.5 | 10.5 | 10.6 | 10.7 | 10.7 | 10.8 | 11.0 | 11.0 | 11.1 | 11.2 | 11.2 | 11.3 | 11.4 | 11.3 | 11.2 | 11.1 | 11.0 | 10.9 | 10.9 | 5.1 | 110.8 |
| **5/25/2017** | 10.9 | 10.8 | 10.8 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.8 | 11.1 | 11.2 | 11.6 | 12.0 | 12.7 | 13.2 | 13.7 | 13.9 | 13.8 | 13.8 | 13.8 | 13.6 | 13.3 | 13.0 | 12.7 | 12.1 | 6.3 | 117.1 |
| **5/26/2017** | 12.6 | 12.4 | 12.2 | 12.1 | 12.1 | 12.0 | 12.0 | 12.1 | 12.3 | 12.7 | 13.0 | 13.3 | 13.7 | 14.2 | 14.7 | 14.6 | 14.8 | 15.1 | 15.1 | 15.0 | 14.9 | 14.7 | 14.6 | 14.6 | 13.5 | 7.7 | 124.9 |
| **5/27/2017** | 14.5 | 14.4 | 14.2 | 14.1 | 14.1 | 14.0 | 14.0 | 14.0 | 14.1 | 14.3 | 14.7 | 15.1 | 15.7 | 16.3 | 16.9 | 17.3 | 17.3 | 17.2 | 17.3 | 17.3 | 17.1 | 17.0 | 16.8 | 16.7 | 15.6 | 9.8 | 134.7 |
| **5/28/2017** | 16.6 | 16.5 | 16.5 | 16.4 | 16.3 | 16.2 | 16.2 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.3 | 16.7 | 17.5 | 17.9 | 18.2 | 18.0 | 18.0 | 18.0 | 17.9 | 17.7 | 17.5 | 17.3 | 16.9 | 11.1 | 145.8 |
| **5/29/2017** | 17.1 | 16.9 | 16.7 | 16.5 | 16.3 | 16.3 | 16.0 | 16.0 | 16.1 | 16.3 | 16.4 | 16.7 | 17.0 | 17.2 | 17.2 | 17.3 | 17.6 | 18.0 | 18.0 | 18.0 | 17.8 | 17.5 | 17.3 | 17.1 | 17.0 | 11.2 | 157.0 |
| **5/30/2017** | 16.9 | 16.7 | 16.5 | 16.3 | 16.2 | 16.1 | 16.0 | 15.9 | 15.9 | 16.0 | 16.2 | 16.4 | 16.3 | 16.4 | 16.4 | 16.6 | 16.6 | 16.6 | 16.4 | 16.3 | 16.2 | 16.0 | 16.0 | 15.8 | 16.3 | 10.5 | 167.5 |
| **5/31/2017** | 15.6 | 15.4 | 15.2 | 15.1 | 14.9 | 14.8 | 14.7 | 14.6 | 14.5 | 14.6 | 14.9 | 15.2 | 15.6 | 16.0 | 16.3 | 16.5 | 16.6 | 16.7 | 16.8 | 16.7 | 16.5 | 16.2 | 16.0 | 15.7 | 15.6 | 9.8 | 177.3 |
| **6/1/2017** | 15.4 | 15.2 | 14.9 | 14.6 | 14.4 | 14.2 | 14.0 | 13.9 | 14.1 | 14.3 | 14.5 | 14.9 | 15.4 | 15.9 | 16.0 | 16.3 | 16.6 | 17.0 | 17.0 | 16.9 | 16.8 | 16.6 | 16.4 | 16.2 | 15.5 | 9.7 | 187.0 |
| **6/2/2017** | 16.0 | 15.8 | 15.5 | 15.3 | 15.2 | 15.1 | 14.9 | 14.8 | 14.9 | 15.0 | 15.3 | 15.8 | 16.1 | 16.5 | 17.0 | 17.5 | 17.9 | 18.3 | 18.7 | 19.0 | 19.2 | 19.4 | 19.4 | 19.3 | 16.7 | 10.9 | 197.9 |
| **6/3/2017** | 19.2 | 19.0 | 18.9 | 18.7 | 18.6 | 18.5 | 18.4 | 18.3 | 18.3 | 18.4 | 18.4 | 18.6 | 18.8 | 19.0 | 19.1 | 19.4 | 19.7 | 20.0 | 20.4 | 20.5 | 20.6 | 20.5 | 20.4 | 20.4 | 19.3 | 13.5 | 211.4 |
| **6/4/2017** | 20.4 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.2 | 20.1 | 20.2 | 20.3 | 20.5 | 20.9 | 21.4 | 21.7 | 22.0 | 22.1 | 22.5 | 22.8 | 22.9 | 23.0 | 22.9 | 22.9 | 22.7 | 22.6 | 21.4 | 15.6 | 227.0 |
| **6/5/2017** | 22.4 | 22.3 | 22.1 | 22.0 | 21.8 | 21.5 | 21.3 | 21.0 | 20.8 | 17.8 | 17.9 | 18.1 | 19.6 | 19.7 | 19.6 | 20.5 | 19.9 | 21.2 | 20.1 | 20.1 | 20.0 | 19.9 | 19.7 | 19.5 | 20.4 | 14.6 | 241.6 |
| **6/6/2017** | 19.5 | 19.3 | 19.1 | 19.0 | 18.8 | 19.0 | 18.5 | 18.3 | 18.2 | 18.3 | 18.4 | 18.9 | 19.0 | 19.4 | 19.9 | 20.1 | 20.2 | 20.4 | 20.4 | 20.3 | 20.1 | 19.9 | 19.8 | 19.7 | 19.4 | 13.6 | 255.1 |
| **6/7/2017** | 19.6 | 19.5 | 19.4 | 19.4 | 19.2 | 19.1 | 19.0 | 18.9 | 18.8 | 18.8 | 19.1 | 19.8 | 20.1 | 20.5 | 21.0 | 21.4 | 21.7 | 21.9 | 21.8 | 21.2 | 20.7 | 20.3 | 19.9 | 20.2 | 20.0 | 14.2 | 269.4 |
| **6/8/2017** | 20.3 | 20.3 | 19.9 | 19.5 | 19.4 | 19.4 | 19.3 | 19.3 | 19.3 | 19.7 | 20.0 | 20.3 | 20.2 | 20.5 | 20.7 | 20.9 | 21.2 | 21.1 | 21.1 | 20.1 | 20.6 | 20.1 | 20.1 | 19.9 | 20.1 | 14.3 | 283.7 |
| **6/9/2017** | 19.8 | 19.7 | 19.7 | 19.8 | 19.8 | 19.4 | 19.3 | 18.9 | 19.2 | 19.4 | 20.2 | 19.9 | 20.6 | 22.0 | 22.1 | 22.3 | 22.1 | 22.5 | 22.6 | 22.3 | 21.7 | 20.8 | 20.6 | 20.4 | 20.6 | 14.8 | 298.6 |
| **6/10/2017** | 20.2 | 20.0 | 19.8 | 19.7 | 19.6 | 19.5 | 19.3 | 19.3 | 19.3 | 19.4 | 19.4 | 19.5 | 19.8 | 20.4 | 20.5 | 20.8 | 21.1 | 21.4 | 21.2 | 21.0 | 21.4 | 20.9 | 20.8 | 20.6 | 20.2 | 14.4 | 313.0 |
| **6/11/2017** | 20.8 | 20.9 | 21.1 | 20.9 | 21.4 | 21.5 | 21.2 | 21.1 | 21.7 | 21.6 | 21.9 | 22.4 | 22.7 | 22.7 | 22.5 | 21.4 | 21.0 | 20.8 | 20.8 | 20.9 | 20.8 | 20.6 | 20.8 | 20.6 | 21.3 | 15.5 | 328.5 |
| **6/12/2017** | 20.3 | 20.6 | 20.4 | 20.1 | 19.9 | 19.7 | 19.5 | 19.4 | 19.8 | 19.7 | 19.6 | 19.7 | 20.1 | 20.5 | 21.0 | 21.3 | 21.5 | 21.6 | 21.5 | 21.3 | 21.0 | 20.7 | 20.4 | 20.3 | 20.4 | 14.6 | 343.1 |
| **6/13/2017** | 20.2 | 20.1 | 20.0 | 20.0 | 19.9 | 19.9 | 19.9 | 20.0 | 20.1 | 20.4 | 20.9 | 21.3 | 21.7 | 22.0 | 22.0 | 21.7 | 22.0 | 22.2 | 22.2 | 22.1 | 21.8 | 21.3 | 20.7 | 20.5 | 21.0 | 15.2 | 358.3 |
| **6/14/2017** | 20.3 | 20.2 | 20.0 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 20.0 | 19.9 | 19.9 | 20.0 | 20.8 | 21.2 | 21.0 | 20.6 | 20.3 | 20.1 | 19.9 | 19.8 | 19.6 | 19.4 | 20.1 | 14.3 | 372.6 |
| **6/15/2017** | 19.2 | 19.1 | 18.9 | 18.8 | 18.7 | 18.6 | 18.6 | 18.7 | 19.0 | 19.3 | 19.5 | 19.5 | 19.6 | 20.0 | 20.5 | 20.9 | 20.6 | 20.9 | 21.0 | 21.0 | 20.8 | 20.6 | 20.2 | 20.0 | 19.8 | 14.0 | 386.5 |

**Table 45.** (*continued*)

| Date | 0:51 | 1:51 | 2:51 | 3:51 | 4:51 | 5:51 | 6:51 | 7:51 | 8:51 | 9:51 | 10:51 | 11:51 | 12:51 | 13:51 | 14:51 | 15:51 | 16:51 | 17:51 | 18:51 | 19:51 | 20:51 | 21:51 | 22:51 | 23:51 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6/16/2017** | 19.9 | 19.7 | 19.5 | 19.4 | 19.4 | 19.3 | 19.4 | 19.5 | 19.6 | 19.9 | 19.9 | 20.2 | 20.5 | 20.7 | 21.0 | 21.3 | 21.6 | 21.3 | 21.1 | 21.0 | 20.8 | 20.7 | 20.5 | 20.4 | 20.3 | 14.5 | 401.0 |
| **6/17/2017** | 20.2 | 20.0 | 20.0 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 20.1 | 20.4 | 20.8 | 21.1 | 21.6 | 22.0 | 22.1 | 22.1 | 22.1 | 22.0 | 21.8 | 21.7 | 21.4 | 21.1 | 20.9 | 20.9 | 15.1 | 416.1 |
| **6/18/2017** | 20.7 | 20.6 | 20.4 | 20.4 | 20.3 | 20.3 | 20.1 | 20.1 | 20.0 | 20.0 | 20.3 | 20.1 | 19.9 | 19.9 | 19.9 | 20.2 | 20.4 | 20.5 | 20.5 | 20.2 | 19.9 | 19.7 | 19.4 | 19.2 | 20.2 | 14.4 | 430.4 |
| **6/19/2017** | 19.1 | 18.9 | 18.8 | 18.7 | 18.5 | 18.4 | 18.4 | 18.4 | 18.4 | 18.6 | 18.5 | 18.6 | 18.5 | 18.7 | 18.7 | 18.5 | 18.4 | 18.4 | 18.4 | 18.3 | 18.2 | 18.1 | 18.0 | 17.9 | 18.5 | 12.7 | 443.1 |
| **6/20/2017** | 17.7 | 17.6 | 17.5 | 17.4 | 17.3 | 17.2 | 17.1 | 17.1 | 17.1 | 17.2 | 17.3 | 17.4 | 17.7 | 17.9 | 17.9 | 18.0 | 18.0 | 18.0 | 18.0 | 17.8 | 17.6 | 17.4 | 17.1 | 17.0 | 17.5 | 11.7 | 454.8 |
| **6/21/2017** | 16.8 | 16.7 | 16.6 | 16.4 | 16.3 | 16.4 | 16.2 | 16.2 | 16.4 | 16.6 | 16.8 | 17.2 | 17.4 | 17.8 | 18.1 | 18.4 | 18.6 | 18.6 | 18.5 | 18.3 | 18.0 | 17.7 | 17.5 | 17.3 | 17.3 | 11.5 | 466.3 |
| **6/22/2017** | 17.2 | 17.2 | 17.2 | 17.3 | 17.3 | 17.3 | 17.4 | 17.4 | 17.5 | 17.8 | 17.8 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.9 | 17.8 | 17.7 | 11.9 | 478.2 |
| **6/23/2017** | 17.8 | 17.9 | 17.8 | 17.9 | 17.8 | 17.8 | 17.7 | 17.7 | 17.8 | 18.0 | 18.0 | 18.2 | 18.5 | 19.0 | 19.5 | 19.8 | 19.8 | 19.7 | 19.6 | 19.5 | 19.3 | 19.0 | 18.7 | 18.5 | 18.5 | 12.7 | 490.9 |
| **6/24/2017** | 18.3 | 18.1 | 18.0 | 17.9 | 17.9 | 17.9 | 17.9 | 17.9 | 18.0 | 18.1 | 18.4 | 18.5 | 18.8 | 18.5 | 18.2 | 18.2 | 18.2 | 18.0 | 18.0 | 18.0 | 17.8 | 17.7 | 17.5 | 17.3 | 18.0 | 12.2 | 503.2 |
| **6/25/2017** | 17.2 | 17.2 | 17.0 | 16.9 | 16.8 | 16.8 | 16.7 | 16.7 | 16.9 | 17.1 | 17.0 | 17.0 | 17.1 | 17.2 | 17.2 | 17.1 | 17.0 | 16.9 | 16.8 | 16.6 | 16.5 | 16.4 | 16.3 | 16.2 | 16.9 | 11.1 | 514.2 |
| **6/26/2017** | 16.0 | 16.0 | 15.9 | 15.8 | 15.7 | 15.6 | 15.5 | 15.5 | 15.5 | 15.6 | 15.7 | 15.9 | 15.9 | 16.1 | 16.3 | 16.3 | 16.2 | 16.2 | 16.5 | 16.4 | 16.2 | 16.0 | 15.7 | 15.5 | 15.9 | 10.1 | 524.3 |
| **6/27/2017** | 15.3 | 15.1 | 15.0 | 14.8 | 14.7 | 14.6 | 14.6 | 14.6 | 14.5 | 14.9 | 15.2 | 15.5 | 15.9 | 16.2 | 16.5 | 16.7 | 17.0 | 17.0 | 17.0 | 16.8 | 16.5 | 16.2 | 16.0 | 15.8 | 15.7 | 9.9 | 534.2 |
| **6/28/2017** | 15.7 | 15.6 | 15.5 | 15.5 | 15.4 | 15.4 | 15.4 | 15.6 | 15.6 | 15.9 | 16.1 | 16.2 | 16.2 | 16.3 | 16.3 | 16.3 | 16.3 | 16.2 | 16.2 | 16.2 | 16.1 | 16.1 | 16.0 | 16.0 | 15.9 | 10.1 | 544.4 |
| **6/29/2017** | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.1 | 16.2 | 16.4 | 16.5 | 16.6 | 16.9 | 17.2 | 17.1 | 17.3 | 17.3 | 17.3 | 17.3 | 17.2 | 17.1 | 17.0 | 16.9 | 16.6 | 10.8 | 555.1 |
| **6/30/2017** | 16.9 | 16.8 | 16.7 | 16.7 | 16.7 | 16.7 | 16.6 | 16.6 | 16.8 | 16.7 | 17.1 | 17.4 | 17.8 | 18.1 | 18.3 | 18.5 | 18.4 | 18.7 | 18.7 | 18.5 | 18.5 | 18.4 | 18.2 | 18.1 | 17.6 | 11.8 | 566.9 |
| **7/1/2017** | 18.0 | 18.0 | 17.9 | 17.8 | 17.8 | 17.8 | 17.8 | 17.9 | 18.0 | 18.0 | 18.3 | 18.6 | 18.9 | 19.3 | 19.8 | 20.1 | 20.3 | 20.4 | 20.0 | 19.9 | 19.8 | 19.5 | 19.3 | 19.1 | 18.8 | 13.0 | 580.0 |
| **7/2/2017** | 19.0 | 18.9 | 18.8 | 18.7 | 18.6 | 18.5 | 18.4 | 18.5 | 18.5 | 18.7 | 18.9 | 19.1 | 19.4 | 19.9 | 20.3 | 20.5 | 20.7 | 20.9 | 20.9 | 20.6 | 20.5 | 20.2 | 19.9 | 19.8 | 19.5 | 13.7 | 593.7 |
| **7/3/2017** | 19.7 | 19.5 | 19.3 | 19.1 | 18.9 | 18.7 | 18.6 | 18.5 | 18.7 | 18.9 | 19.2 | 19.3 | 19.8 | 20.2 | 20.6 | 21.0 | 21.2 | 21.2 | 21.1 | 20.9 | 20.6 | 20.2 | 19.9 | 19.8 | 19.8 | 14.0 | 607.7 |
| **7/4/2017** | 19.4 | 19.2 | 19.0 | 18.8 | 18.6 | 18.4 | 18.2 | 18.3 | 18.3 | 18.5 | 18.7 | 19.1 | 19.7 | 20.2 | 20.5 | 20.9 | 21.1 | 21.2 | 21.2 | 21.2 | 20.9 | 20.7 | 20.5 | 20.2 | 19.7 | 13.9 | 621.6 |
| **7/5/2017** | 20.0 | 19.9 | 19.6 | 19.4 | 19.3 | 19.1 | 19.0 | 19.0 | 19.0 | 19.1 | 19.3 | 19.8 | 19.9 | 20.7 | 20.6 | 20.9 | 21.0 | 21.0 | 21.0 | 21.0 | 20.9 | 20.7 | 20.6 | 20.5 | 20.1 | 14.3 | 635.8 |
| **7/6/2017** | 20.4 | 20.2 | 20.1 | 20.0 | 19.9 | 19.9 | 19.8 | 19.8 | 19.8 | 19.9 | 19.9 | 20.2 | 20.3 | 20.0 | 20.1 | 20.8 | 21.3 | 21.5 | 21.5 | 21.7 | 21.4 | 21.3 | 20.8 | 20.7 | 20.5 | 14.7 | 650.5 |
| **7/7/2017** | 20.7 | 20.5 | 20.4 | 19.9 | 19.8 | 19.5 | 19.6 | 19.7 | 19.6 | 19.7 | 19.7 | 19.9 | 20.4 | 20.9 | 21.3 | 21.7 | 21.9 | 22.1 | 21.9 | 21.6 | 21.5 | 21.1 | 20.8 | 20.6 | 20.6 | 14.8 | 665.3 |
| **7/8/2017** | 20.4 | 20.2 | 19.9 | 19.8 | 19.5 | 19.3 | 19.3 | 19.1 | 19.1 | 19.4 | 19.5 | 19.8 | 20.3 | 20.7 | 21.0 | 21.5 | 21.8 | 22.0 | 22.0 | 21.9 | 21.6 | 21.3 | 21.0 | 20.9 | 20.5 | 14.7 | 680.0 |
| **7/9/2017** | 20.7 | 20.5 | 20.3 | 20.1 | 19.9 | 19.9 | 19.7 | 19.7 | 19.7 | 19.9 | 19.9 | 20.2 | 20.4 | 20.9 | 21.3 | 20.8 | 20.8 | 21.0 | 20.9 | 20.7 | 20.6 | 20.5 | 20.3 | 20.2 | 20.4 | 14.6 | 694.5 |
| **7/10/2017** | 20.1 | 20.0 | 19.9 | 19.9 | 19.7 | 19.5 | 19.5 | 19.6 | 19.5 | 19.5 | 19.5 | 19.7 | 20.0 | 20.1 | 20.5 | 20.8 | 21.2 | 21.4 | 21.5 | 21.5 | 21.3 | 21.1 | 20.9 | 20.8 | 20.3 | 14.5 | 709.0 |
| **7/11/2017** | 20.5 | 20.4 | 20.3 | 20.1 | 20.0 | 19.9 | 20.0 | 19.8 | 19.9 | 20.0 | 20.1 | 20.5 | 20.9 | 21.2 | 21.7 | 21.9 | 22.1 | 22.3 | 22.4 | 22.2 | 22.2 | 22.1 | 22.0 | 22.0 | 21.0 | 15.2 | 724.3 |
| **7/12/2017** | 21.9 | 21.8 | 22.1 | 22.1 | 21.5 | 21.7 | 21.3 | 21.2 | 21.0 | 22.0 | 20.9 | 21.0 | 21.5 | 21.8 | 22.0 | 22.2 | 22.2 | 22.3 | 22.6 | 22.3 | 22.2 | 22.1 | 22.0 | 21.8 | 21.8 | 16.0 | 740.3 |
| **7/13/2017** | 21.7 | 21.5 | 21.3 | 21.2 | 21.0 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.4 | 20.3 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.3 | 20.3 | 20.3 | 20.2 | 20.1 | 20.0 | 19.9 | 20.6 | 14.8 | 755.1 |
| **7/14/2017** | 19.8 | 19.7 | 19.5 | 19.4 | 19.2 | 19.1 | 19.0 | 18.9 | 18.8 | 18.8 | 18.8 | 18.9 | 19.0 | 19.2 | 19.5 | 19.7 | 19.8 | 19.9 | 19.9 | 19.9 | 19.9 | 19.8 | 19.6 | 19.4 | 19.4 | 13.6 | 768.7 |
| **7/15/2017** | 19.2 | 19.0 | 18.9 | 18.8 | 18.7 | 18.6 | 18.4 | 18.3 | 18.4 | 18.5 | 18.6 | 19.1 | 19.4 | 19.9 | 20.3 | 20.7 | 20.9 | 21.1 | 21.0 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 19.6 | 13.8 | 782.5 |
| **7/16/2017** | 20.4 | 20.2 | 20.1 | 19.9 | 19.9 | 19.7 | 19.5 | 19.3 | 19.2 | 19.2 | 19.3 | 19.5 | 19.9 | 20.4 | 20.8 | 21.3 | 21.6 | 21.7 | 21.7 | 21.6 | 21.5 | 21.3 | 21.1 | 20.9 | 20.4 | 14.6 | 797.1 |
| **7/17/2017** | 20.7 | 20.5 | 20.2 | 20.0 | 19.9 | 19.7 | 19.6 | 19.4 | 19.2 | 19.3 | 19.5 | 19.6 | 19.9 | 20.2 | 20.4 | 20.9 | 21.0 | 21.0 | 21.0 | 21.0 | 20.9 | 20.7 | 20.6 | 20.5 | 20.2 | 14.4 | 811.5 |
| **7/18/2017** | 20.5 | 20.5 | 20.3 | 20.4 | 20.5 | 20.6 | 20.3 | 19.9 | 20.1 | 20.5 | 21.3 | 21.6 | 22.1 | 22.4 | 23.0 | 23.3 | 23.4 | 23.4 | 23.0 | 22.0 | 21.9 | 22.0 | 22.0 | 22.3 | 21.6 | 15.8 | 827.3 |
| **7/19/2017** | 22.2 | 22.0 | 21.9 | 22.8 | 22.6 | 21.9 | 21.6 | 21.6 | 21.2 | 21.4 | 21.8 | 22.4 | 23.2 | 23.7 | 24.3 | 24.6 | 24.8 | 24.8 | 24.3 | 23.7 | 23.5 | 22.8 | 22.8 | 23.1 | 22.9 | 17.1 | 844.4 |
| **7/20/2017** | 23.0 | 23.1 | 23.2 | 23.2 | 22.8 | 22.4 | 22.4 | 22.4 | 23.0 | 23.0 | 23.0 | 23.4 | 23.6 | 24.2 | 24.5 | 25.0 | 25.3 | 25.1 | 24.9 | 24.8 | 24.4 | 24.2 | 24.1 | 23.9 | 23.7 | 17.9 | 862.3 |
| **7/21/2017** | 23.2 | 23.1 | 23.6 | 23.7 | 23.6 | 23.7 | 22.7 | 23.4 | 23.4 | 23.8 | 23.9 | 23.5 | 24.2 | 24.5 | 24.9 | 25.3 | 25.5 | 25.4 | 25.3 | 25.2 | 25.1 | 24.7 | 24.4 | 24.4 | 24.2 | 18.4 | 880.7 |
| **7/22/2017** | 24.4 | 24.5 | 24.4 | 24.2 | 24.4 | 24.4 | 24.3 | 24.4 | 24.5 | 24.2 | 23.9 | 24.0 | 24.3 | 24.5 | 24.9 | 24.6 | 25.3 | 25.1 | 25.7 | 25.4 | 25.1 | 24.7 | 24.6 | 24.4 | 24.6 | 18.8 | 899.5 |

**Table 45.** (*continued*)

| Date | 0:51 | 1:51 | 2:51 | 3:51 | 4:51 | 5:51 | 6:51 | 7:51 | 8:51 | 9:51 | 10:51 | 11:51 | 12:51 | 13:51 | 14:51 | 15:51 | 16:51 | 17:51 | 18:51 | 19:51 | 20:51 | 21:51 | 22:51 | 23:51 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7/23/2017** | 24.2 | 24.3 | 23.9 | 23.8 | 23.6 | 23.7 | 23.6 | 23.8 | 23.9 | 24.0 | 23.4 | 23.5 | 23.4 | 23.9 | 24.0 | 24.5 | 24.1 | 24.2 | 23.9 | 23.4 | 23.1 | 23.2 | 22.8 | 22.6 | 23.7 | 17.9 | 917.4 |
| **7/24/2017** | 22.4 | 22.2 | 22.4 | 22.2 | 22.2 | 21.9 | 21.7 | 21.9 | 21.5 | 21.5 | 22.2 | 21.9 | 22.6 | 23.0 | 23.3 | 23.6 | 24.0 | 24.0 | 23.8 | 23.6 | 23.2 | 22.7 | 22.3 | 22.0 | 22.6 | 16.8 | 934.1 |
| **7/25/2017** | 21.9 | 21.7 | 21.5 | 21.3 | 21.2 | 21.1 | 20.8 | 20.8 | 20.9 | 21.4 | 22.2 | 22.2 | 22.1 | 22.3 | 22.4 | 22.6 | 22.4 | 22.6 | 22.8 | 22.6 | 22.4 | 22.3 | 22.3 | 22.0 | 21.9 | 16.1 | 950.3 |
| **7/26/2017** | 21.8 | 21.7 | 21.8 | 21.9 | 22.0 | 22.1 | 22.1 | 21.8 | 22.2 | 22.2 | 22.2 | 22.4 | 22.1 | 22.0 | 22.3 | 22.0 | 22.0 | 22.0 | 22.6 | 22.7 | 22.2 | 22.4 | 22.0 | 21.6 | 22.1 | 16.3 | 966.6 |
| **7/27/2017** | 21.4 | 21.7 | 21.4 | 21.1 | 21.0 | 20.9 | 20.8 | 20.4 | 20.5 | 20.7 | 21.2 | 21.8 | 22.3 | 22.8 | 23.3 | 23.6 | 24.4 | 24.1 | 23.5 | 23.4 | 22.9 | 22.4 | 22.4 | 22.2 | 22.1 | 16.3 | 982.9 |
| **7/28/2017** | 22.2 | 21.7 | 21.4 | 21.2 | 21.2 | 21.2 | 21.3 | 21.2 | 21.3 | 21.6 | 22.2 | 22.3 | 22.4 | 22.9 | 23.4 | 23.9 | 24.2 | 24.4 | 24.0 | 23.9 | 23.7 | 23.3 | 22.9 | 22.6 | 22.5 | 16.7 | 999.6 |
| **7/29/2017** | 22.2 | 22.0 | 21.7 | 21.3 | 20.9 | 20.8 | 20.9 | 20.8 | 20.8 | 21.6 | 22.0 | 22.4 | 22.8 | 23.2 | 23.7 | 24.1 | 24.1 | 24.5 | 24.4 | 24.1 | 23.7 | 23.4 | 23.1 | 23.0 | 22.6 | 16.8 | 1016.3 |
| **7/30/2017** | 22.7 | 22.4 | 22.2 | 22.0 | 21.9 | 21.8 | 21.7 | 21.7 | 22.0 | 22.4 | 23.3 | 23.1 | 23.5 | 24.0 | 24.3 | 24.7 | 25.0 | 24.0 | 23.7 | 23.5 | 23.3 | 23.2 | 23.2 | 23.1 | 23.0 | 17.2 | 1033.5 |
| **7/31/2017** | 23.0 | 22.7 | 22.5 | 22.3 | 22.3 | 22.4 | 22.5 | 22.3 | 22.6 | 22.8 | 23.3 | 24.1 | 24.0 | 24.4 | 24.8 | 25.3 | 25.6 | 25.5 | 25.4 | 25.3 | 25.5 | 25.1 | 24.9 | 24.9 | 23.9 | 18.1 | 1051.6 |
| **8/1/2017** | 24.7 | 24.4 | 24.2 | 24.1 | 24.0 | 24.0 | 24.0 | 24.0 | 24.1 | 24.4 | 24.8 | 25.3 | 25.3 | 25.8 | 26.0 | 25.7 | 25.3 | 25.3 | 25.5 | 25.4 | 25.1 | 24.8 | 24.4 | 24.4 | 24.8 | 19.0 | 1070.6 |
| **8/2/2017** | 24.2 | 24.0 | 23.9 | 23.6 | 23.4 | 23.4 | 23.3 | 23.3 | 23.1 | 23.0 | 23.1 | 23.3 | 24.1 | 24.4 | 24.4 | 24.4 | 24.6 | 24.5 | 24.4 | 24.2 | 23.9 | 23.6 | 23.3 | 23.0 | 23.8 | 18.0 | 1088.6 |
| **8/3/2017** | 22.9 | 22.6 | 22.5 | 22.4 | 22.1 | 22.0 | 21.9 | 21.7 | 21.7 | 21.9 | 21.8 | 21.9 | 21.8 | 21.7 | 21.5 | 21.5 | 21.8 | 21.9 | 21.8 | 21.8 | 21.5 | 21.6 | 21.6 | 21.4 | 21.9 | 16.1 | 1104.7 |
| **8/4/2017** | 21.3 | 21.3 | 21.1 | 20.7 | 20.9 | 20.8 | 20.8 | 20.6 | 20.2 | 19.9 | 20.1 | 20.0 | 19.9 | 19.9 | 19.9 | 19.9 | 19.8 | 19.8 | 19.9 | 19.8 | 19.7 | 19.5 | 19.4 | 19.2 | 20.2 | 14.4 | 1119.0 |
| **8/5/2017** | 19.0 | 18.9 | 18.7 | 18.5 | 18.4 | 18.2 | 18.1 | 18.0 | 18.0 | 18.0 | 18.1 | 18.4 | 18.9 | 19.1 | 19.2 | 19.5 | 19.7 | 19.7 | 19.6 | 19.5 | 19.4 | 19.2 | 19.0 | 18.9 | 18.8 | 13.0 | 1132.1 |
| **8/6/2017** | 18.8 | 18.7 | 18.6 | 18.5 | 18.4 | 18.3 | 18.2 | 18.1 | 18.1 | 18.4 | 18.4 | 18.8 | 19.3 | 19.8 | 20.2 | 20.0 | 20.0 | 20.0 | 19.9 | 19.5 | 19.7 | 19.5 | 19.5 | 19.0 | 19.1 | 13.3 | 1145.4 |
| **8/7/2017** | 18.7 | 18.7 | 18.6 | 18.5 | 18.2 | 18.1 | 18.4 | 18.6 | 18.3 | 18.1 | 18.4 | 19.1 | 19.8 | 19.9 | 20.0 | 20.3 | 20.2 | 20.2 | 20.1 | 19.9 | 19.7 | 19.7 | 19.8 | 19.2 | 19.2 | 13.4 | 1158.8 |
| **8/8/2017** | 19.1 | 18.8 | 18.7 | 18.5 | 18.4 | 18.3 | 18.3 | 18.2 | 18.2 | 18.4 | 18.7 | 19.1 | 19.7 | 20.2 | 20.4 | 20.9 | 21.2 | 21.1 | 21.0 | 20.8 | 20.8 | 20.7 | 20.7 | 20.6 | 19.6 | 13.8 | 1172.6 |
| **8/9/2017** | 20.3 | 20.3 | 20.1 | 20.0 | 19.9 | 20.1 | 20.2 | 20.2 | 20.2 | 20.4 | 20.5 | 20.8 | 21.3 | 21.6 | 22.0 | 22.3 | 22.5 | 22.7 | 22.6 | 22.5 | 22.2 | 22.2 | 22.0 | 22.0 | 21.2 | 15.4 | 1188.0 |
| **8/10/2017** | 22.0 | 21.9 | 21.7 | 21.5 | 21.4 | 21.6 | 21.4 | 21.4 | 21.4 | 20.7 | 21.5 | 21.3 | 21.6 | 21.5 | 22.0 | 22.0 | 22.4 | 22.0 | 22.0 | 21.7 | 21.6 | 21.5 | 21.4 | 21.3 | 21.6 | 15.8 | 1203.8 |
| **8/11/2017** | 21.1 | 20.9 | 21.0 | 20.7 | 20.6 | 20.6 | 20.6 | 20.3 | 20.3 | 20.4 | 20.6 | 20.4 | 20.9 | 20.9 | 21.2 | 21.3 | 21.4 | 20.9 | 20.7 | 20.6 | 20.4 | 20.4 | 20.2 | 20.1 | 20.7 | 14.9 | 1218.7 |
| **8/12/2017** | 19.9 | 19.9 | 19.9 | 19.6 | 19.4 | 19.3 | 19.2 | 19.1 | 19.1 | 19.4 | 19.6 | 20.0 | 20.6 | 21.0 | 21.2 | 21.4 | 21.5 | 21.9 | 21.8 | 21.9 | 21.8 | 21.4 | 21.2 | 20.7 | 20.4 | 14.6 | 1233.3 |
| **8/13/2017** | 20.5 | 20.3 | 20.2 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.6 | 19.8 | 20.0 | 20.4 | 20.9 | 21.4 | 22.0 | 22.2 | 22.3 | 22.5 | 22.2 | 22.2 | 22.0 | 21.8 | 21.6 | 21.6 | 20.9 | 15.1 | 1248.4 |
| **8/14/2017** | 21.4 | 21.3 | 21.1 | 20.9 | 20.7 | 20.5 | 20.5 | 20.4 | 20.5 | 20.6 | 20.9 | 21.1 | 21.4 | 21.5 | 21.7 | 21.6 | 21.5 | 21.7 | 21.7 | 21.7 | 21.4 | 21.4 | 21.3 | 21.1 | 21.2 | 15.4 | 1263.8 |

**Table 46.** Hourly recorded water temperatures in degrees Celsius at the Whitefish River SRF in 2017. Temperature was measured from the head tank. Daily thermal units (TU) and cumulative thermal units (CTU) are calculated for the Peshtigo River strain as mean daily temperature –5.8°C as described in Kempinger 1988.

| Date | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5/10/2017** | 8.8 | 7.7 | 6.7 | 6.1 | 5.5 | 4.9 | 4.7 | 4.7 | 5.2 | 6.2 | 8.0 | 10.3 | 13.3 | 16.7 | 20.0 | 22.3 | 23.4 | 23.1 | 21.2 | 10.8 | 10.7 | 10.6 | 10.7 | 10.7 | 11.3 | 5.5 | 5.5 |
| **5/11/2017** | 10.7 | 10.7 | 10.7 | 10.8 | 10.8 | 10.7 | 10.7 | 10.6 | 10.7 | 10.7 | 10.9 | 11.2 | 11.6 | 11.7 | 12.4 | 12.7 | 13.0 | 13.1 | 13.2 | 13.2 | 13.2 | 13.0 | 12.9 | 12.8 | 11.8 | 6.0 | 11.5 |
| **5/12/2017** | 12.8 | 12.7 | 12.6 | 12.5 | 12.4 | 12.2 | 12.1 | 12.0 | 12.0 | 12.1 | 12.1 | 12.4 | 12.7 | 12.9 | 13.8 | 13.9 | 14.1 | 14.2 | 14.3 | 14.3 | 14.4 | 14.2 | 14.0 | 13.9 | 13.1 | 7.3 | 18.8 |
| **5/13/2017** | 13.8 | 13.7 | 13.6 | 13.5 | 13.5 | 13.3 | 13.3 | 13.1 | 13.1 | 13.0 | 13.1 | 13.1 | 13.3 | 13.6 | 13.9 | 14.1 | 14.1 | 14.7 | 14.6 | 14.7 | 14.6 | 14.4 | 14.2 | 14.1 | 13.8 | 8.0 | 26.8 |
| **5/14/2017** | 14.0 | 13.8 | 13.6 | 13.4 | 13.3 | 13.3 | 13.2 | 13.0 | 12.9 | 12.9 | 12.9 | 12.8 | 12.8 | 12.9 | 13.2 | 13.2 | 13.5 | 13.8 | 13.9 | 13.9 | 13.8 | 13.7 | 13.5 | 13.4 | 13.4 | 7.6 | 34.3 |
| **5/15/2017** | 13.3 | 13.2 | 13.1 | 12.8 | 12.6 | 12.5 | 12.3 | 12.1 | 12.2 | 12.3 | 12.5 | 12.7 | 12.9 | 13.1 | 13.4 | 13.6 | 13.4 | 13.5 | 13.5 | 13.2 | 13.1 | 13.0 | 12.6 | 12.6 | 12.9 | 7.1 | 41.4 |
| **5/16/2017** | 12.4 | 12.3 | 12.3 | 12.2 | 12.1 | 12.1 | 12.1 | 12.1 | 12.2 | 12.3 | 12.4 | 12.5 | 12.7 | 12.9 | 13.3 | 13.5 | 13.5 | 13.5 | 13.6 | 13.6 | 13.6 | 13.5 | 13.4 | 13.3 | 12.8 | 7.0 | 48.4 |
| **5/17/2017** | 13.3 | 13.2 | 13.2 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.3 | 13.3 | 13.6 | 13.8 | 14.3 | 14.8 | 14.8 | 15.1 | 15.7 | 15.7 | 15.5 | 15.5 | 15.4 | 15.4 | 15.4 | 15.3 | 14.2 | 8.4 | 56.8 |
| **5/18/2017** | 15.3 | 15.3 | 15.3 | 15.3 | 15.2 | 15.0 | 14.9 | 14.7 | 14.4 | 14.4 | 14.2 | 14.0 | 13.9 | 13.8 | 13.7 | 13.6 | 13.6 | 13.4 | 13.1 | 12.9 | 12.4 | 12.1 | 11.9 | 11.6 | 13.9 | 8.1 | 65.0 |
| **5/19/2017** | 11.3 | 11.0 | 10.8 | 10.6 | 10.3 | 9.9 | 9.6 | 9.5 | 9.6 | 9.7 | 9.7 | 9.9 | 10.2 | 10.4 | 10.5 | 10.7 | 10.8 | 10.9 | 10.9 | 10.8 | 10.9 | 10.7 | 10.6 | 10.5 | 10.4 | 4.6 | 69.6 |
| **5/20/2017** | 10.2 | 10.1 | 9.9 | 9.6 | 9.4 | 9.2 | 8.9 | 8.9 | 9.1 | 9.2 | 9.3 | 9.6 | 9.9 | 10.2 | 10.4 | 10.7 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 9.9 | 4.1 | 73.7 |
| **5/21/2017** | 10.5 | 10.5 | 10.5 | 10.4 | 10.3 | 10.2 | 10.2 | 10.1 | 10.0 | 10.1 | 10.0 | 10.0 | 10.0 | 10.0 | 10.1 | 10.2 | 10.3 | 10.4 | 10.5 | 10.5 | 10.5 | 10.5 | 10.4 | 10.4 | 10.2 | 4.4 | 78.1 |
| **5/22/2017** | 10.4 | 10.4 | 10.4 | 10.3 | 10.3 | 10.2 | 10.2 | 10.1 | 10.1 | 10.2 | 10.2 | 10.3 | 10.5 | 10.5 | 10.7 | 10.8 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.0 | 10.6 | 4.8 | 82.9 |
| **5/23/2017** | 10.9 | 10.8 | 10.7 | 10.6 | 10.4 | 10.3 | 10.1 | 10.0 | 10.0 | 10.1 | 10.2 | 10.2 | 10.2 | 10.3 | 10.5 | 10.7 | 10.8 | 10.9 | 11.0 | 11.0 | 11.0 | 11.0 | 10.9 | 10.9 | 10.6 | 4.8 | 87.7 |
| **5/24/2017** | 10.8 | 10.8 | 10.7 | 10.7 | 10.7 | 10.6 | 10.5 | 10.4 | 10.4 | 10.3 | 10.3 | 10.5 | 10.6 | 10.7 | 10.9 | 11.0 | 11.0 | 11.1 | 11.1 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 | 10.8 | 5.0 | 92.7 |
| **5/25/2017** | 11.1 | 11.1 | 11.0 | 10.9 | 10.8 | 10.8 | 10.7 | 10.7 | 10.7 | 10.7 | 10.9 | 11.4 | 11.9 | 12.2 | 12.6 | 12.9 | 13.4 | 13.7 | 13.8 | 13.8 | 13.9 | 14.0 | 13.9 | 13.9 | 12.1 | 6.3 | 99.0 |
| **5/26/2017** | 13.8 | 13.8 | 13.8 | 13.7 | 13.6 | 13.4 | 13.3 | 13.3 | 13.3 | 13.4 | 13.7 | 14.0 | 14.1 | 14.4 | 14.7 | 15.0 | 15.5 | 15.8 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 14.5 | 8.7 | 107.7 |
| **5/27/2017** | 16.0 | 16.0 | 15.9 | 15.8 | 15.7 | 15.6 | 15.5 | 15.4 | 15.4 | 15.4 | 15.7 | 16.0 | 16.0 | 16.6 | 17.1 | 17.5 | 17.8 | 18.0 | 18.1 | 18.3 | 18.1 | 18.0 | 18.0 | 18.0 | 16.6 | 10.8 | 118.6 |
| **5/28/2017** | 17.9 | 17.9 | 17.8 | 17.8 | 17.7 | 17.6 | 17.4 | 17.3 | 17.2 | 17.1 | 16.8 | 16.7 | 16.5 | 16.4 | 16.3 | 16.7 | 17.2 | 17.1 | 17.1 | 17.0 | 17.0 | 16.8 | 16.7 | 16.5 | 17.1 | 11.3 | 129.9 |
| **5/29/2017** | 16.3 | 16.1 | 16.0 | 15.9 | 15.8 | 15.7 | 15.5 | 15.4 | 15.3 | 15.2 | 15.0 | 15.3 | 15.6 | 16.0 | 16.0 | 16.0 | 16.3 | 16.4 | 16.3 | 16.4 | 16.4 | 16.3 | 16.3 | 16.2 | 15.9 | 10.1 | 140.0 |
| **5/30/2017** | 16.2 | 16.2 | 16.0 | 16.0 | 15.9 | 15.7 | 15.5 | 15.3 | 15.2 | 15.2 | 15.2 | 15.4 | 15.4 | 15.5 | 15.6 | 15.6 | 15.8 | 16.0 | 15.7 | 15.7 | 15.6 | 15.5 | 15.4 | 15.2 | 15.6 | 9.8 | 149.8 |
| **5/31/2017** | 15.1 | 15.0 | 14.9 | 14.6 | 14.5 | 14.3 | 14.2 | 14.0 | 13.9 | 13.8 | 13.8 | 13.8 | 13.9 | 14.0 | 13.9 | 14.1 | 14.7 | 14.7 | 14.9 | 14.9 | 14.8 | 14.6 | 14.3 | 14.1 | 14.4 | 8.6 | 158.3 |
| **6/1/2017** | 13.9 | 13.8 | 13.5 | 13.3 | 13.1 | 12.9 | 12.7 | 12.7 | 12.6 | 12.7 | 12.8 | 13.1 | 13.5 | 13.3 | 13.5 | 13.8 | 14.1 | 14.3 | 14.3 | 14.3 | 14.3 | 14.1 | 13.9 | 13.8 | 13.5 | 7.7 | 166.1 |
| **6/2/2017** | 13.7 | 13.6 | 13.5 | 13.4 | 13.2 | 13.2 | 13.1 | 13.0 | 13.0 | 13.3 | 13.6 | 14.0 | 14.4 | 14.9 | 15.2 | 15.9 | 16.2 | 16.5 | 16.7 | 16.9 | 16.9 | 16.7 | 16.5 | 16.4 | 14.7 | 8.9 | 175.0 |
| **6/3/2017** | 16.3 | 16.2 | 16.2 | 16.1 | 16.0 | 16.0 | 15.7 | 15.6 | 15.7 | 15.7 | 15.7 | 15.8 | 16.0 | 16.4 | 16.4 | 16.7 | 16.9 | 16.9 | 16.9 | 16.8 | 16.8 | 16.7 | 16.7 | 16.7 | 16.3 | 10.5 | 185.5 |
| **6/4/2017** | 16.6 | 16.6 | 16.6 | 16.6 | 16.6 | 16.6 | 16.5 | 16.3 | 16.2 | 16.5 | 16.5 | 16.8 | 17.1 | 17.6 | 18.2 | 18.6 | 18.2 | 18.5 | 18.4 | 18.1 | 18.1 | 18.0 | 17.9 | 17.8 | 17.3 | 11.5 | 197.0 |
| **6/5/2017** | 17.6 | 17.5 | 17.4 | 17.2 | 17.0 | 16.8 | 16.3 | 16.2 | 16.1 | 16.2 | 16.7 | 17.2 | 17.7 | 18.4 | 18.5 | 18.3 | 18.6 | 18.7 | 18.9 | 18.9 | 18.8 | 18.6 | 18.4 | 18.2 | 17.7 | 11.9 | 208.9 |
| **6/6/2017** | 18.1 | 17.9 | 17.7 | 17.5 | 17.2 | 17.0 | 16.7 | 16.4 | 16.3 | 16.3 | 16.4 | 16.7 | 17.0 | 17.4 | 17.9 | 18.2 | 18.5 | 18.6 | 18.8 | 18.9 | 18.8 | 18.7 | 18.5 | 18.3 | 17.7 | 11.9 | 220.7 |
| **6/7/2017** | 18.1 | 18.0 | 18.0 | 17.8 | 17.5 | 17.3 | 17.0 | 16.9 | 16.9 | 17.0 | 17.1 | 17.2 | 17.6 | 18.0 | 18.2 | 18.6 | 18.9 | 19.2 | 19.3 | 19.3 | 19.4 | 19.2 | 19.0 | 18.9 | 18.1 | 12.3 | 233.0 |
| **6/8/2017** | 18.7 | 18.6 | 18.5 | 18.3 | 18.2 | 18.1 | 18.0 | 18.0 | 18.0 | 18.0 | 18.2 | 18.5 | 18.3 | 18.7 | 18.8 | 19.3 | 19.3 | 19.6 | 19.5 | 19.3 | 19.4 | 19.4 | 19.2 | 19.0 | 18.7 | 12.9 | 245.9 |
| **6/9/2017** | 18.9 | 18.8 | 18.7 | 18.5 | 18.3 | 18.1 | 18.0 | 17.8 | 17.8 | 17.8 | 17.9 | 18.0 | 18.4 | 18.6 | 18.7 | 19.1 | 19.3 | 19.6 | 19.8 | 19.9 | 19.6 | 19.4 | 19.1 | 18.9 | 18.7 | 12.9 | 258.8 |
| **6/10/2017** | 18.7 | 18.5 | 18.2 | 18.1 | 18.0 | 17.9 | 17.7 | 17.6 | 17.7 | 17.8 | 17.7 | 17.7 | 18.0 | 18.1 | 18.7 | 18.7 | 19.1 | 19.4 | 19.6 | 19.6 | 19.5 | 19.5 | 19.4 | 19.3 | 18.5 | 12.7 | 271.5 |
| **6/11/2017** | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 | 19.2 | 19.1 | 19.2 | 19.3 | 19.6 | 19.9 | 20.1 | 20.4 | 20.4 | 20.6 | 20.3 | 20.2 | 19.9 | 19.7 | 19.9 | 19.7 | 19.6 | 19.5 | 19.3 | 19.7 | 13.9 | 285.4 |

**Table 46.** (*continued*)

| Date | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6/12/2017** | 19.2 | 19.1 | 19.0 | 18.8 | 18.6 | 18.3 | 18.0 | 18.0 | 18.1 | 18.3 | 18.4 | 18.7 | 19.3 | 18.3 | 18.8 | 19.3 | 19.5 | 19.9 | 20.1 | 20.2 | 20.2 | 20.0 | 19.9 | 19.9 | 19.1 | 13.3 | 298.7 |
| **6/13/2017** | 19.8 | 19.7 | 19.5 | 19.3 | 19.1 | 19.0 | 18.8 | 18.6 | 18.7 | 18.8 | 19.2 | 19.5 | 19.9 | 20.3 | 20.3 | 20.6 | 20.7 | 20.9 | 21.1 | 21.1 | 21.0 | 21.0 | 20.8 | 20.6 | 19.9 | 14.1 | 312.8 |
| **6/14/2017** | 20.4 | 20.3 | 20.1 | 20.0 | 19.9 | 19.7 | 19.5 | 19.3 | 19.2 | 19.0 | 18.7 | 18.6 | 18.6 | 18.8 | 18.8 | 19.0 | 19.2 | 19.3 | 19.2 | 19.1 | 18.9 | 18.8 | 18.7 | 18.7 | 19.2 | 13.4 | 326.3 |
| **6/15/2017** | 18.7 | 18.6 | 18.5 | 18.3 | 18.1 | 18.0 | 17.9 | 17.7 | 17.7 | 17.7 | 17.8 | 17.9 | 18.0 | 18.7 | 18.5 | 19.0 | 19.6 | 19.7 | 19.9 | 20.1 | 19.9 | 20.0 | 19.9 | 19.9 | 18.8 | 13.0 | 339.2 |
| **6/16/2017** | 19.9 | 19.8 | 19.6 | 19.5 | 19.4 | 19.2 | 19.1 | 18.9 | 18.9 | 19.0 | 19.2 | 19.6 | 20.1 | 20.4 | 20.7 | 21.0 | 21.1 | 21.2 | 20.9 | 20.7 | 20.8 | 20.7 | 20.6 | 20.5 | 20.0 | 14.2 | 353.4 |
| **6/17/2017** | 20.4 | 20.3 | 20.1 | 20.0 | 19.8 | 19.6 | 19.5 | 19.4 | 19.2 | 19.3 | 19.3 | 19.6 | 19.9 | 20.4 | 20.6 | 20.7 | 20.9 | 21.1 | 21.3 | 21.3 | 21.1 | 21.0 | 20.9 | 20.8 | 20.3 | 14.5 | 367.9 |
| **6/18/2017** | 20.6 | 20.5 | 20.3 | 20.0 | 19.8 | 19.4 | 19.2 | 18.9 | 18.8 | 18.5 | 18.4 | 18.1 | 18.1 | 18.1 | 17.8 | 17.6 | 17.7 | 17.6 | 17.5 | 17.6 | 17.6 | 17.5 | 17.3 | 17.2 | 18.5 | 12.7 | 380.6 |
| **6/19/2017** | 17.1 | 16.9 | 16.8 | 16.6 | 16.5 | 16.3 | 16.2 | 16.1 | 16.2 | 16.3 | 16.7 | 16.7 | 16.8 | 16.9 | 17.0 | 16.4 | 16.7 | 16.8 | 16.7 | 16.6 | 16.6 | 16.5 | 16.4 | 16.3 | 16.6 | 10.8 | 391.4 |
| **6/20/2017** | 16.3 | 16.2 | 16.1 | 16.0 | 15.9 | 15.8 | 15.7 | 15.6 | 15.6 | 15.7 | 15.8 | 15.7 | 16.0 | 16.3 | 16.1 | 16.1 | 16.3 | 16.4 | 16.4 | 16.6 | 16.6 | 16.5 | 16.3 | 16.1 | 16.1 | 10.3 | 401.7 |
| **6/21/2017** | 16.0 | 15.9 | 15.7 | 15.5 | 15.3 | 15.1 | 14.9 | 14.9 | 15.0 | 15.2 | 15.5 | 15.9 | 16.3 | 16.7 | 17.1 | 17.5 | 17.1 | 17.4 | 17.7 | 17.8 | 17.7 | 17.6 | 17.5 | 17.4 | 16.3 | 10.5 | 412.2 |
| **6/22/2017** | 17.4 | 17.2 | 17.1 | 17.0 | 16.9 | 16.8 | 16.7 | 16.6 | 16.6 | 16.7 | 16.8 | 17.2 | 17.5 | 17.8 | 17.6 | 17.5 | 17.5 | 17.5 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.2 | 11.4 | 423.7 |
| **6/23/2017** | 17.5 | 17.4 | 17.3 | 17.2 | 17.1 | 17.0 | 16.9 | 16.8 | 16.8 | 16.9 | 17.2 | 17.4 | 17.7 | 18.6 | 18.3 | 18.5 | 18.8 | 19.1 | 19.3 | 19.5 | 19.5 | 19.5 | 19.3 | 19.1 | 18.0 | 12.2 | 435.9 |
| **6/24/2017** | 18.9 | 18.6 | 18.4 | 18.2 | 18.0 | 17.8 | 17.5 | 17.3 | 17.2 | 17.2 | 17.2 | 17.4 | 17.7 | 17.7 | 17.5 | 17.5 | 17.2 | 17.1 | 17.0 | 16.9 | 16.9 | 16.8 | 16.7 | 16.7 | 17.5 | 11.7 | 447.6 |
| **6/25/2017** | 16.5 | 16.4 | 16.3 | 16.1 | 16.0 | 15.9 | 15.7 | 15.5 | 15.5 | 15.5 | 15.5 | 15.7 | 15.9 | 16.2 | 16.3 | 16.3 | 16.4 | 16.4 | 16.5 | 16.5 | 16.5 | 16.4 | 16.3 | 16.3 | 16.1 | 10.3 | 457.9 |
| **6/26/2017** | 16.2 | 16.1 | 16.0 | 16.0 | 15.9 | 15.8 | 15.6 | 15.5 | 15.4 | 15.4 | 15.5 | 15.5 | 15.5 | 15.7 | 15.4 | 15.4 | 15.5 | 15.6 | 15.9 | 16.0 | 16.0 | 15.8 | 15.5 | 15.3 | 15.7 | 9.9 | 467.8 |
| **6/27/2017** | 15.2 | 15.0 | 14.8 | 14.6 | 14.4 | 14.2 | 13.9 | 13.8 | 13.8 | 13.8 | 14.1 | 14.3 | 14.7 | 15.4 | 15.2 | 15.4 | 15.8 | 16.0 | 16.3 | 16.5 | 16.6 | 16.5 | 16.4 | 16.3 | 15.1 | 9.3 | 477.1 |
| **6/28/2017** | 16.2 | 16.2 | 16.1 | 16.0 | 15.9 | 15.7 | 15.5 | 15.3 | 15.3 | 15.6 | 15.8 | 16.0 | 16.1 | 16.2 | 16.3 | 16.2 | 16.3 | 16.3 | 16.3 | 16.3 | 16.3 | 16.3 | 16.3 | 16.3 | 16.0 | 10.2 | 487.3 |
| **6/29/2017** | 16.2 | 16.2 | 16.2 | 16.1 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.2 | 16.7 | 16.9 | 17.0 | 17.3 | 17.4 | 17.4 | 17.4 | 17.5 | 17.5 | 17.4 | 17.4 | 17.3 | 16.7 | 10.9 | 498.2 |
| **6/30/2017** | 17.2 | 17.1 | 17.1 | 17.0 | 16.9 | 16.8 | 16.7 | 16.6 | 16.6 | 16.6 | 16.8 | 17.0 | 17.4 | 17.6 | 18.0 | 18.2 | 18.4 | 18.5 | 18.9 | 18.9 | 18.9 | 18.8 | 18.7 | 18.6 | 17.6 | 11.8 | 510.1 |
| **7/1/2017** | 18.5 | 18.4 | 18.3 | 18.1 | 18.0 | 18.0 | 17.9 | 17.7 | 17.6 | 17.6 | 17.4 | 17.6 | 17.7 | 18.0 | 18.3 | 18.7 | 19.2 | 19.2 | 19.6 | 19.7 | 19.5 | 19.4 | 19.3 | 19.2 | 18.4 | 12.6 | 522.7 |
| **7/2/2017** | 19.1 | 19.1 | 19.0 | 19.0 | 18.9 | 18.7 | 18.6 | 18.4 | 18.3 | 18.1 | 18.2 | 18.3 | 18.7 | 18.8 | 19.0 | 19.5 | 19.8 | 20.1 | 20.2 | 20.4 | 20.3 | 20.1 | 19.9 | 19.9 | 19.2 | 13.4 | 536.1 |
| **7/3/2017** | 19.6 | 19.5 | 19.3 | 19.1 | 18.9 | 18.7 | 18.4 | 18.2 | 18.1 | 18.1 | 18.2 | 18.3 | 18.7 | 18.9 | 19.2 | 19.4 | 19.8 | 20.0 | 20.3 | 20.4 | 20.3 | 20.4 | 20.3 | 20.1 | 19.3 | 13.5 | 549.6 |
| **7/4/2017** | 19.9 | 19.8 | 19.7 | 19.6 | 19.4 | 19.2 | 19.0 | 18.8 | 18.7 | 18.8 | 18.8 | 19.0 | 18.9 | 19.1 | 19.4 | 19.8 | 19.9 | 20.2 | 20.5 | 20.8 | 20.9 | 20.8 | 20.7 | 20.6 | 19.7 | 13.9 | 563.4 |
| **7/5/2017** | 20.5 | 20.4 | 20.2 | 20.1 | 20.0 | 19.9 | 19.8 | 19.7 | 19.7 | 19.7 | 19.7 | 19.8 | 19.9 | 19.7 | 19.9 | 20.0 | 20.5 | 20.5 | 20.7 | 20.7 | 20.8 | 20.8 | 20.8 | 20.7 | 20.2 | 14.4 | 577.8 |
| **7/6/2017** | 20.7 | 20.6 | 20.6 | 20.5 | 20.5 | 20.4 | 20.4 | 20.4 | 20.4 | 20.5 | 20.7 | 20.7 | 20.5 | 20.5 | 20.5 | 22.0 | 23.2 | 24.1 | 24.3 | 24.6 | 24.8 | 24.5 | 24.4 | 23.9 | 21.8 | 16.0 | 593.9 |
| **7/7/2017** | 23.7 | 23.5 | 23.3 | 23.0 | 22.8 | 22.5 | 22.2 | 22.0 | 22.0 | 22.0 | 22.0 | 22.1 | 20.2 | 20.5 | 20.7 | 21.1 | 21.3 | 21.6 | 21.6 | 21.6 | 21.4 | 21.2 | 20.9 | 20.7 | 21.8 | 16.0 | 609.9 |
| **7/8/2017** | 20.5 | 20.3 | 20.1 | 19.9 | 19.8 | 19.6 | 19.3 | 19.2 | 19.4 | 19.4 | 19.4 | 19.4 | 19.7 | 19.5 | 19.5 | 19.5 | 19.8 | 19.8 | 20.0 | 20.3 | 20.1 | 19.9 | 19.7 | 19.4 | 19.7 | 13.9 | 623.8 |
| **7/9/2017** | 19.4 | 19.3 | 19.3 | 19.2 | 19.1 | 19.0 | 18.8 | 18.7 | 18.7 | 19.0 | 19.2 | 19.4 | 20.3 | 19.9 | 19.9 | 19.9 | 20.0 | 20.0 | 19.9 | 19.9 | 19.9 | 19.8 | 19.6 | 19.5 | 19.5 | 13.7 | 637.5 |
| **7/10/2017** | 19.3 | 19.3 | 19.2 | 18.9 | 18.6 | 18.3 | 18.1 | 17.9 | 17.9 | 17.8 | 17.9 | 18.0 | 18.2 | 18.6 | 19.0 | 19.5 | 19.8 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.0 | 13.2 | 650.7 |
| **7/11/2017** | 19.8 | 19.8 | 19.7 | 19.6 | 19.5 | 19.5 | 19.4 | 19.2 | 19.2 | 19.3 | 19.5 | 19.8 | 19.9 | 19.9 | 20.1 | 20.4 | 20.6 | 20.7 | 20.7 | 20.7 | 20.7 | 20.6 | 20.6 | 20.7 | 20.0 | 14.2 | 664.9 |
| **7/12/2017** | 20.6 | 20.6 | 20.5 | 20.4 | 20.3 | 20.1 | 20.0 | 19.9 | 19.8 | 19.8 | 19.7 | 19.7 | 19.7 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.8 | 19.7 | 19.7 | 19.5 | 19.4 | 19.9 | 14.1 | 679.0 |
| **7/13/2017** | 19.3 | 19.3 | 19.2 | 19.1 | 19.0 | 18.9 | 18.7 | 18.7 | 18.6 | 18.4 | 18.5 | 18.3 | 18.3 | 18.3 | 18.2 | 18.2 | 18.3 | 18.2 | 18.0 | 18.0 | 17.9 | 17.7 | 17.4 | 17.3 | 18.4 | 12.6 | 691.6 |
| **7/14/2017** | 17.1 | 16.9 | 16.8 | 16.7 | 16.5 | 16.4 | 16.3 | 16.1 | 16.1 | 16.0 | 16.1 | 16.4 | 16.7 | 16.8 | 17.3 | 17.7 | 18.0 | 18.3 | 18.4 | 18.6 | 18.5 | 18.4 | 18.0 | 18.0 | 17.2 | 11.4 | 703.0 |

**Table 46.** (*continued*)

| Date | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7/15/2017** | 17.9 | 17.7 | 17.5 | 17.2 | 17.0 | 16.9 | 16.6 | 16.6 | 16.6 | 16.9 | 17.2 | 17.6 | 18.0 | 18.2 | 18.7 | 19.2 | 19.6 | 19.9 | 19.9 | 19.9 | 19.9 | 19.8 | 19.6 | 19.4 | 18.2 | 12.4 | 715.4 |
| **7/16/2017** | 19.2 | 19.1 | 19.0 | 18.8 | 18.4 | 18.3 | 18.1 | 18.0 | 17.8 | 17.9 | 18.0 | 18.1 | 18.4 | 18.6 | 19.0 | 19.2 | 19.6 | 19.7 | 19.9 | 19.9 | 19.8 | 19.6 | 19.3 | 19.1 | 18.9 | 13.1 | 728.5 |
| **7/17/2017** | 18.9 | 18.7 | 18.6 | 18.3 | 18.0 | 17.9 | 17.6 | 17.5 | 17.3 | 17.2 | 17.3 | 17.4 | 17.8 | 18.0 | 18.4 | 18.3 | 18.7 | 19.0 | 19.1 | 19.3 | 19.2 | 19.1 | 18.9 | 18.9 | 18.3 | 12.5 | 741.0 |
| **7/18/2017** | 18.7 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.5 | 18.4 | 18.5 | 18.8 | 18.9 | 19.1 | 19.3 | 19.6 | 19.9 | 20.2 | 20.9 | 20.8 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.5 | 19.5 | 13.7 | 754.7 |
| **7/19/2017** | 20.5 | 20.5 | 20.3 | 20.1 | 19.9 | 19.8 | 19.4 | 19.1 | 19.1 | 19.1 | 19.4 | 19.8 | 20.2 | 20.4 | 20.6 | 21.0 | 21.1 | 21.4 | 21.6 | 21.6 | 21.6 | 21.4 | 21.3 | 21.2 | 20.4 | 14.6 | 769.3 |
| **7/20/2017** | 21.1 | 21.0 | 20.9 | 20.7 | 20.6 | 20.4 | 20.1 | 19.9 | 19.9 | 19.8 | 19.9 | 20.1 | 20.5 | 20.7 | 21.2 | 21.4 | 21.7 | 21.8 | 22.1 | 22.2 | 22.1 | 22.0 | 22.1 | 22.0 | 21.0 | 15.2 | 784.6 |
| **7/21/2017** | 21.9 | 21.8 | 21.7 | 21.5 | 21.3 | 21.3 | 21.1 | 20.9 | 20.8 | 20.9 | 21.0 | 20.9 | 21.2 | 21.0 | 21.2 | 21.2 | 21.6 | 21.4 | 21.5 | 21.6 | 21.6 | 21.5 | 21.5 | 21.4 | 21.3 | 15.5 | 800.1 |
| **7/22/2017** | 21.4 | 21.3 | 21.2 | 21.2 | 21.1 | 21.0 | 20.9 | 20.9 | 20.9 | 21.2 | 21.0 | 21.1 | 21.2 | 21.2 | 21.5 | 21.6 | 21.7 | 21.8 | 22.4 | 22.0 | 22.0 | 22.0 | 21.9 | 21.9 | 21.4 | 15.6 | 815.7 |
| **7/23/2017** | 21.8 | 21.7 | 21.6 | 21.5 | 21.4 | 21.3 | 21.2 | 21.2 | 21.2 | 21.1 | 21.2 | 21.1 | 20.9 | 20.9 | 20.9 | 21.1 | 21.0 | 20.8 | 20.7 | 20.6 | 20.4 | 20.3 | 20.2 | 20.0 | 21.0 | 15.2 | 830.9 |
| **7/24/2017** | 19.9 | 19.7 | 19.5 | 19.3 | 19.1 | 18.9 | 18.7 | 18.5 | 18.4 | 18.4 | 18.6 | 18.8 | 19.1 | 19.3 | 19.4 | 19.8 | 20.3 | 20.5 | 20.7 | 20.5 | 20.7 | 20.5 | 20.4 | 20.2 | 19.6 | 13.8 | 844.6 |
| **7/25/2017** | 20.1 | 20.0 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.5 | 19.4 | 19.5 | 19.7 | 19.9 | 19.9 | 20.2 | 20.5 | 20.4 | 20.9 | 21.1 | 21.2 | 21.3 | 21.0 | 21.0 | 20.7 | 20.5 | 20.2 | 14.4 | 859.1 |
| **7/26/2017** | 20.5 | 20.4 | 20.4 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.4 | 20.4 | 20.4 | 20.5 | 20.5 | 20.6 | 20.6 | 21.0 | 20.9 | 21.3 | 21.3 | 21.2 | 21.2 | 20.9 | 20.7 | 20.6 | 14.8 | 873.9 |
| **7/27/2017** | 20.5 | 20.3 | 20.2 | 20.1 | 19.9 | 19.9 | 19.8 | 19.5 | 19.6 | 19.7 | 19.8 | 20.0 | 20.3 | 20.8 | 21.2 | 21.5 | 21.6 | 21.6 | 21.7 | 21.6 | 21.6 | 21.3 | 21.1 | 20.9 | 20.6 | 14.8 | 888.7 |
| **7/28/2017** | 20.8 | 20.6 | 20.4 | 20.3 | 20.2 | 20.0 | 19.9 | 19.9 | 19.9 | 20.0 | 20.2 | 20.7 | 20.7 | 21.6 | 21.4 | 21.7 | 21.8 | 21.9 | 22.1 | 22.0 | 21.9 | 21.7 | 21.5 | 21.3 | 20.9 | 15.1 | 903.8 |
| **7/29/2017** | 21.1 | 20.9 | 20.8 | 20.7 | 20.5 | 20.3 | 20.1 | 19.9 | 19.9 | 19.9 | 20.3 | 20.6 | 20.6 | 20.7 | 20.8 | 21.2 | 21.4 | 21.6 | 21.7 | 22.2 | 22.0 | 22.0 | 21.8 | 21.6 | 20.9 | 15.1 | 919.0 |
| **7/30/2017** | 21.4 | 21.1 | 20.9 | 20.7 | 20.6 | 20.4 | 20.2 | 20.1 | 20.1 | 20.4 | 20.6 | 20.7 | 21.0 | 21.2 | 21.7 | 21.5 | 21.5 | 22.0 | 22.2 | 22.2 | 22.7 | 22.5 | 22.3 | 22.0 | 21.3 | 15.5 | 934.4 |
| **7/31/2017** | 21.9 | 21.8 | 21.6 | 21.4 | 21.4 | 21.1 | 20.9 | 20.9 | 21.0 | 21.2 | 21.6 | 21.7 | 21.8 | 22.1 | 22.1 | 22.5 | 22.5 | 22.9 | 23.3 | 23.1 | 23.3 | 23.4 | 23.3 | 23.1 | 22.1 | 16.3 | 950.7 |
| **8/1/2017** | 23.0 | 23.0 | 22.8 | 22.6 | 22.5 | 22.4 | 22.2 | 22.0 | 22.1 | 22.2 | 22.2 | 22.3 | 22.4 | 22.8 | 22.5 | 22.6 | 23.1 | 23.3 | 23.2 | 23.4 | 23.4 | 23.2 | 23.0 | 22.9 | 22.7 | 16.9 | 967.6 |
| **8/2/2017** | 22.7 | 22.7 | 22.5 | 22.3 | 22.1 | 22.0 | 21.9 | 21.8 | 21.7 | 21.8 | 21.7 | 21.9 | 22.0 | 22.2 | 22.3 | 22.4 | 22.5 | 22.7 | 22.6 | 22.6 | 22.4 | 22.1 | 22.0 | 21.7 | 22.2 | 16.4 | 984.0 |
| **8/3/2017** | 21.6 | 21.5 | 21.3 | 21.0 | 20.8 | 20.7 | 20.5 | 20.3 | 20.3 | 20.1 | 20.2 | 20.3 | 20.4 | 20.4 | 20.4 | 20.2 | 20.1 | 20.0 | 20.0 | 20.1 | 19.8 | 19.8 | 19.7 | 19.5 | 20.4 | 14.6 | 998.6 |
| **8/4/2017** | 19.3 | 19.0 | 18.8 | 18.5 | 18.3 | 18.1 | 18.0 | 17.9 | 17.7 | 17.5 | 17.3 | 17.2 | 17.1 | 17.0 | 17.1 | 17.2 | 17.4 | 17.3 | 17.6 | 17.4 | 17.3 | 17.1 | 16.9 | 16.7 | 17.6 | 11.8 | 1010.5 |
| **8/5/2017** | 16.6 | 16.4 | 16.2 | 16.1 | 16.0 | 15.9 | 15.6 | 15.4 | 15.6 | 15.8 | 16.0 | 16.5 | 16.4 | 16.7 | 17.0 | 16.9 | 16.9 | 17.2 | 17.4 | 17.3 | 17.3 | 17.3 | 17.2 | 17.2 | 16.5 | 10.7 | 1021.2 |
| **8/6/2017** | 17.0 | 16.9 | 16.8 | 16.7 | 16.5 | 16.2 | 16.1 | 16.0 | 16.0 | 16.2 | 16.3 | 16.7 | 17.2 | 17.6 | 17.7 | 17.9 | 17.8 | 17.8 | 17.9 | 18.0 | 18.0 | 17.8 | 17.6 | 17.4 | 17.1 | 11.3 | 1032.5 |
| **8/7/2017** | 17.3 | 17.1 | 16.9 | 16.7 | 16.5 | 16.4 | 16.3 | 16.0 | 16.2 | 16.3 | 16.6 | 16.8 | 17.0 | 17.4 | 17.4 | 17.6 | 17.9 | 18.2 | 18.4 | 18.4 | 18.5 | 18.3 | 18.1 | 18.0 | 17.3 | 11.5 | 1044.0 |
| **8/8/2017** | 17.9 | 17.7 | 17.7 | 17.5 | 17.5 | 17.4 | 17.4 | 17.3 | 17.4 | 17.5 | 17.8 | 18.0 | 18.2 | 18.5 | 18.7 | 19.3 | 19.7 | 19.5 | 19.5 | 19.5 | 19.5 | 19.3 | 19.1 | 19.1 | 18.4 | 12.6 | 1056.5 |
| **8/9/2017** | 18.9 | 18.8 | 18.8 | 18.7 | 18.7 | 18.6 | 18.6 | 18.5 | 18.5 | 18.8 | 19.0 | 19.1 | 19.2 | 19.4 | 19.7 | 19.9 | 20.1 | 20.4 | 20.6 | 20.7 | 20.9 | 20.9 | 20.8 | 20.7 | 19.5 | 13.7 | 1070.2 |
| **8/10/2017** | 20.7 | 20.6 | 20.6 | 20.5 | 20.5 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.2 | 20.1 | 19.9 | 19.9 | 19.6 | 19.3 | 19.3 | 19.1 | 19.0 | 18.9 | 18.6 | 18.6 | 18.5 | 18.5 | 19.8 | 14.0 | 1084.2 |
| **8/11/2017** | 18.3 | 18.2 | 18.1 | 18.0 | 18.0 | 17.9 | 17.8 | 17.7 | 17.7 | 17.7 | 17.7 | 17.9 | 17.8 | 17.9 | 18.0 | 18.3 | 18.3 | 18.4 | 18.4 | 18.4 | 18.3 | 18.3 | 18.1 | 18.0 | 18.1 | 12.3 | 1096.5 |
| **8/12/2017** | 18.0 | 17.8 | 17.7 | 17.6 | 17.5 | 17.3 | 17.2 | 17.0 | 17.0 | 17.1 | 17.3 | 17.5 | 17.7 | 18.0 | 18.3 | 18.6 | 19.2 | 19.2 | 19.5 | 19.5 | 19.5 | 19.4 | 19.3 | 19.2 | 18.2 | 12.4 | 1108.8 |
| **8/13/2017** | 19.0 | 18.9 | 18.8 | 18.7 | 18.6 | 18.4 | 18.2 | 18.0 | 18.0 | 18.1 | 18.2 | 18.2 | 18.4 | 18.6 | 18.5 | 18.9 | 19.4 | 19.4 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.8 | 18.9 | 13.1 | 1121.9 |
| **8/14/2017** | 19.8 | 19.8 | 19.7 | 19.7 | 19.7 | 19.6 | 19.4 | 19.4 | 19.4 | 19.5 | 19.6 | 19.8 | 19.8 | 19.9 | 19.8 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.8 | 19.6 | 19.6 | 19.3 | 19.7 | 13.9 | 1135.8 |

**Table 47.** Hourly recorded water temperatures in degrees Celsius at Genoa NFH in 2017. Temperature was measured from the rearing tank. Daily thermal units (TU) and cumulative thermal units (CTU) are calculated for the Peshtigo River strain as mean daily temperature –5.8°C as described in Kempinger 1988.

| Date | 0:48 | 1:48 | 2:48 | 3:48 | 4:48 | 5:48 | 6:48 | 7:48 | 8:48 | 9:48 | 10:48 | 11:48 | 12:48 | 13:48 | 14:48 | 15:48 | 16:48 | 17:48 | 18:48 | 19:48 | 20:48 | 21:48 | 22:48 | 23:48 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5/10/2017** | | | | | | | | | | | | | | 14.4 | | | | | | | | | | | 14.4 | 8.6 | 8.6 |
| **5/11/2017** | | | | | | | | | | | | | | 22.4 | 13.9 | 14.4 | 14.9 | 15.2 | 15.5 | 15.9 | 17.8 | 17.8 | 17.7 | 17.5 | 16.6 | 10.8 | 19.4 |
| **5/12/2017** | 17.3 | 17.1 | 17.0 | 16.8 | 16.6 | 16.4 | 16.3 | 16.0 | 16.0 | 15.9 | 15.9 | 16.0 | 16.2 | 16.4 | 16.6 | 16.9 | 17.3 | 17.5 | 17.6 | 17.6 | 17.8 | 17.7 | 17.5 | 17.3 | 16.8 | 11.0 | 30.4 |
| **5/13/2017** | 17.2 | 17.0 | 16.8 | 16.7 | 16.6 | 16.4 | 16.2 | 16.1 | 16.0 | 16.0 | 16.0 | 16.3 | 16.5 | 16.7 | 17.1 | 17.6 | 17.9 | 18.3 | 18.5 | 18.9 | 19.1 | 19.1 | 18.9 | 18.8 | 17.3 | 11.5 | 41.9 |
| **5/14/2017** | 18.6 | 18.4 | 18.1 | 17.9 | 17.6 | 17.4 | 17.1 | 16.8 | 16.6 | 16.6 | 16.8 | 17.1 | 17.7 | 18.3 | 19.1 | 19.8 | 20.2 | 20.8 | 20.9 | 21.1 | 20.9 | 20.7 | 20.5 | 20.1 | 18.7 | 12.9 | 54.8 |
| **5/15/2017** | 19.6 | 19.2 | 18.8 | 18.4 | 18.1 | 17.8 | 17.5 | 17.2 | 16.9 | 16.6 | 16.8 | 17.2 | 17.8 | 18.1 | 18.7 | 19.0 | 19.3 | 19.3 | 19.3 | 19.3 | 19.2 | 19.2 | 19.0 | 18.9 | 18.4 | 12.6 | 67.4 |
| **5/16/2017** | 18.7 | 18.6 | 18.0 | 18.0 | 18.0 | 17.9 | 17.9 | 17.7 | 17.7 | 17.8 | 17.9 | 18.2 | 19.0 | 19.9 | 20.2 | 20.7 | 21.6 | 22.0 | 22.5 | 22.7 | 22.7 | 22.4 | 22.0 | 22.0 | 19.8 | 14.0 | 81.4 |
| **5/17/2017** | 21.6 | 21.4 | 21.1 | 20.9 | 20.5 | 20.2 | 20.0 | 19.9 | 19.7 | 19.6 | 19.8 | 19.8 | 19.7 | 19.7 | 19.9 | 20.3 | 20.8 | 21.3 | 21.4 | 20.9 | 20.5 | 20.4 | 20.2 | 19.9 | 20.4 | 14.6 | 96.0 |
| **5/18/2017** | 19.7 | 19.5 | 19.2 | 19.0 | 18.8 | 18.7 | 18.5 | 18.3 | 18.1 | 18.0 | 17.9 | 17.6 | 17.5 | 17.4 | 17.6 | 17.8 | 18.0 | 18.4 | 18.6 | 18.7 | 18.6 | 18.4 | 18.2 | 18.0 | 18.4 | 12.6 | 108.5 |
| **5/19/2017** | 17.9 | 17.6 | 17.4 | 17.1 | 16.9 | 16.6 | 16.3 | 16.1 | 15.9 | 15.7 | 15.4 | 15.2 | 15.0 | 14.9 | 14.9 | 14.9 | 15.0 | 15.0 | 15.1 | 15.1 | 15.1 | 15.0 | 14.9 | 14.8 | 15.7 | 9.9 | 118.5 |
| **5/20/2017** | 14.8 | 14.7 | 14.6 | 14.5 | 14.3 | 14.2 | 14.1 | 14.0 | 13.9 | 13.8 | 13.8 | 13.8 | 13.8 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.8 | 14.1 | 8.3 | 126.7 |
| **5/21/2017** | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.8 | 13.8 | 13.8 | 13.7 | 13.8 | 8.0 | 134.8 |
| **5/22/2017** | 13.7 | 13.6 | 13.5 | 13.4 | 13.3 | 13.2 | 13.2 | 13.1 | 13.0 | 13.0 | 13.2 | 13.5 | 13.8 | 14.1 | 14.5 | 14.9 | 15.4 | 15.9 | 16.0 | 16.1 | 16.2 | 16.2 | 16.2 | 16.1 | 14.4 | 8.6 | 143.3 |
| **5/23/2017** | 16.1 | 16.0 | 16.0 | 15.8 | 15.8 | 15.7 | 15.7 | 15.6 | 15.6 | 15.5 | 15.6 | 15.6 | 15.6 | 15.7 | 19.6 | 20.8 | 15.9 | 16.1 | 16.0 | 16.1 | 16.1 | 16.1 | 16.0 | 16.0 | 16.2 | 10.4 | 153.7 |
| **5/24/2017** | 16.0 | 15.7 | 15.7 | 15.5 | 15.4 | 15.3 | 15.2 | 15.0 | 14.9 | 14.9 | 14.8 | 14.8 | 14.8 | 14.8 | 15.0 | 15.0 | 15.0 | 15.2 | 15.3 | 15.3 | 15.2 | 15.3 | 15.2 | 15.1 | 15.2 | 9.4 | 163.1 |
| **5/25/2017** | 15.0 | 14.9 | 14.8 | 14.7 | 14.6 | 14.5 | 14.4 | 14.3 | 14.3 | 14.3 | 14.3 | 14.4 | 14.7 | 15.2 | 15.6 | 16.2 | 16.7 | 17.2 | 17.3 | 17.5 | 17.6 | 17.5 | 17.4 | 17.3 | 15.6 | 9.8 | 172.9 |
| **5/26/2017** | 17.4 | 17.2 | 17.2 | 17.2 | 17.1 | 17.0 | 17.0 | 16.9 | 16.8 | 16.8 | 17.0 | 17.3 | 17.4 | 17.7 | 17.8 | 17.9 | 18.0 | 18.5 | 18.9 | 19.0 | 19.0 | 18.8 | 18.7 | 18.6 | 17.7 | 11.9 | 184.8 |
| **5/27/2017** | 18.5 | 18.4 | 18.2 | 18.1 | 18.0 | 18.0 | 17.9 | 17.7 | 17.7 | 17.7 | 17.7 | 17.9 | 18.3 | 18.6 | 19.1 | 19.2 | 19.4 | 19.5 | 19.6 | 19.4 | 19.5 | 19.5 | 19.3 | 19.3 | 18.6 | 12.8 | 197.6 |
| **5/28/2017** | 19.3 | 19.3 | 19.1 | 19.1 | 19.0 | 18.9 | 18.8 | 18.7 | 18.7 | 18.7 | 19.1 | 19.5 | 20.0 | 20.3 | 20.5 | 20.5 | 20.7 | 20.8 | 20.9 | 20.9 | 20.9 | 20.7 | 20.7 | 20.6 | 19.8 | 14.0 | 211.6 |
| **5/29/2017** | 20.4 | 20.2 | 20.0 | 19.9 | 19.7 | 19.5 | 19.4 | 19.2 | 19.1 | 19.1 | 19.1 | 19.1 | 19.2 | 19.4 | 19.4 | 19.6 | 19.8 | 19.9 | 19.9 | 19.9 | 19.8 | 19.6 | 19.4 | 19.3 | 19.6 | 13.8 | 225.4 |
| **5/30/2017** | 19.1 | 19.0 | 18.9 | 18.7 | 18.5 | 18.4 | 18.2 | 18.1 | 18.0 | 17.9 | 18.0 | 18.1 | 18.1 | 18.3 | 18.7 | 18.8 | 19.2 | 19.4 | 19.4 | 19.4 | 19.3 | 19.2 | 19.1 | 19.0 | 18.7 | 12.9 | 238.3 |
| **5/31/2017** | 18.8 | 18.7 | 18.6 | 18.5 | 18.3 | 18.1 | 18.0 | 17.9 | 17.8 | 17.9 | 18.0 | 18.1 | 18.0 | 18.5 | 18.8 | 18.8 | 19.4 | 19.6 | 19.8 | 19.8 | 19.9 | 19.8 | 19.8 | 19.6 | 18.8 | 13.0 | 251.3 |
| **6/1/2017** | 19.4 | 19.2 | 19.0 | 18.8 | 18.5 | 18.3 | 18.0 | 17.9 | 17.7 | 17.7 | 17.9 | 18.0 | 18.5 | 18.8 | 18.8 | 19.6 | 20.1 | 20.2 | 20.3 | 20.4 | 20.4 | 20.3 | 20.1 | 20.0 | 19.1 | 13.3 | 264.6 |
| **6/2/2017** | 19.8 | 19.6 | 19.4 | 19.2 | 19.0 | 18.8 | 18.5 | 18.3 | 18.2 | 18.1 | 18.3 | 18.5 | 18.7 | 19.8 | 20.1 | 20.7 | 21.1 | 21.3 | 21.6 | 21.6 | 21.5 | 21.4 | 21.4 | 21.3 | 19.8 | 14.0 | 278.6 |
| **6/3/2017** | 21.2 | 21.1 | 21.1 | 21.0 | 20.9 | 20.9 | 20.8 | 20.8 | 20.7 | 20.8 | 21.1 | 21.5 | 21.8 | 22.1 | 22.7 | 23.1 | 23.6 | 23.7 | 23.8 | 23.7 | 23.4 | 23.7 | 23.5 | 23.5 | 22.1 | 16.3 | 294.9 |
| **6/4/2017** | 23.4 | 23.3 | 23.2 | 23.1 | 23.0 | 22.8 | 22.7 | 22.5 | 22.5 | 22.5 | 22.7 | 23.0 | 23.1 | 23.3 | 23.5 | 24.0 | 24.0 | 24.2 | 24.2 | 24.2 | 24.1 | 23.9 | 23.6 | 23.3 | 23.3 | 17.5 | 312.4 |
| **6/5/2017** | 23.0 | 22.7 | 22.4 | 22.1 | 21.8 | 21.5 | 21.3 | 20.9 | 20.7 | 20.7 | 20.8 | 20.9 | 21.2 | 21.4 | 21.8 | 22.0 | 22.2 | 22.3 | 22.3 | 22.5 | 22.3 | 22.5 | 22.2 | 22.1 | 21.8 | 16.0 | 328.5 |
| **6/6/2017** | 22.0 | 21.8 | 21.6 | 21.4 | 21.1 | 20.9 | 20.7 | 20.5 | 20.4 | 20.4 | 20.4 | 20.8 | 21.1 | 21.2 | 21.6 | 21.8 | 22.0 | 22.4 | 22.4 | 22.6 | 22.6 | 22.6 | 22.5 | 22.3 | 21.5 | 15.7 | 344.2 |
| **6/7/2017** | 22.2 | 22.0 | 21.8 | 21.6 | 21.3 | 21.1 | 20.9 | 20.6 | 20.5 | 20.5 | 20.8 | 21.4 | 21.7 | 21.9 | 22.2 | 22.5 | 23.1 | 23.5 | 23.6 | 23.7 | 23.7 | 23.4 | 23.3 | 23.1 | 22.1 | 16.3 | 360.5 |
| **6/8/2017** | 22.9 | 22.6 | 22.4 | 22.2 | 22.0 | 21.7 | 21.5 | 21.3 | 21.2 | 21.1 | 21.1 | 21.3 | 21.7 | 22.1 | 22.4 | 22.9 | 23.3 | 23.2 | 23.2 | 23.3 | 23.3 | 23.2 | 23.1 | 23.0 | 22.3 | 16.5 | 377.0 |
| **6/9/2017** | 22.8 | 22.6 | 22.4 | 22.2 | 22.1 | 22.0 | 21.8 | 21.5 | 21.4 | 21.5 | 21.8 | 22.0 | 22.2 | 22.5 | 22.6 | 23.1 | 23.8 | 24.0 | 24.3 | 24.2 | 24.3 | 24.2 | 24.1 | 24.0 | 22.8 | 17.0 | 394.0 |
| **6/10/2017** | 23.9 | 23.7 | 23.5 | 23.3 | 23.2 | 23.1 | 22.9 | 22.8 | 22.7 | 22.7 | 23.0 | 23.5 | 23.8 | 24.1 | 24.4 | 24.7 | 25.0 | 24.9 | 25.0 | 24.8 | 24.5 | 24.4 | 24.2 | 23.9 | 23.8 | 18.0 | 412.1 |
| **6/11/2017** | 23.7 | 23.5 | 23.3 | 23.1 | 22.9 | 22.8 | 22.6 | 22.4 | 22.3 | 21.9 | 22.3 | 22.3 | 22.4 | 22.4 | 22.4 | 22.9 | 23.1 | 23.6 | 23.6 | 23.6 | 23.5 | 23.2 | 22.9 | 22.7 | 22.9 | 17.1 | 429.2 |
| **6/12/2017** | 22.6 | 22.4 | 22.3 | 22.0 | 22.0 | 21.9 | 21.7 | 21.6 | 21.5 | 21.5 | 21.7 | 21.9 | 22.0 | 22.4 | 22.8 | 22.9 | 22.5 | 21.9 | 21.5 | 21.6 | 21.4 | 21.1 | 20.7 | 20.8 | 21.9 | 16.1 | 445.2 |
| **6/13/2017** | 20.5 | 20.3 | 20.2 | 20.0 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.5 | 19.6 | 19.9 | 20.2 | 20.5 | 20.9 | 21.7 | 21.6 | 22.0 | 22.3 | 22.4 | 22.4 | 22.4 | 22.2 | 22.2 | 20.8 | 15.0 | 460.2 |
| **6/14/2017** | 22.1 | 22.0 | 22.0 | 21.9 | 21.8 | 22.0 | 21.8 | 21.6 | 21.6 | 21.6 | 21.5 | 21.8 | 21.9 | 21.8 | 21.7 | 21.6 | 21.7 | 22.0 | 22.1 | 22.3 | 22.3 | 22.2 | 22.2 | 22.1 | 21.9 | 16.1 | 476.3 |
| **6/15/2017** | 22.0 | 22.0 | 21.9 | 21.8 | 21.8 | 21.7 | 21.7 | 21.6 | 21.5 | 21.5 | 21.8 | 22.0 | 22.2 | 22.5 | 22.9 | 23.1 | 23.0 | 23.4 | 23.3 | 23.3 | 23.2 | 22.9 | 22.7 | 22.4 | 22.3 | 16.5 | 492.8 |

**Table 47.** (*continued*)

| Date | 0:48 | 1:48 | 2:48 | 3:48 | 4:48 | 5:48 | 6:48 | 7:48 | 8:48 | 9:48 | 10:48 | 11:48 | 12:48 | 13:48 | 14:48 | 15:48 | 16:48 | 17:48 | 18:48 | 19:48 | 20:48 | 21:48 | 22:48 | 23:48 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6/16/2017** | 22.2 | 21.9 | 21.6 | 21.3 | 21.1 | 20.8 | 20.6 | 20.5 | 20.4 | 20.5 | 20.5 | 20.6 | 20.5 | 20.5 | 20.8 | 21.0 | 21.8 | 22.0 | 21.7 | 21.2 | 21.0 | 20.8 | 20.7 | 20.4 | 21.0 | 15.2 | 508.1 |
| **6/17/2017** | 20.2 | 20.0 | 19.9 | 19.8 | 19.6 | 19.4 | 19.2 | 19.0 | 18.9 | 18.9 | 19.0 | 19.2 | 19.4 | 19.4 | 19.4 | 19.9 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.5 | 19.3 | 19.1 | 19.5 | 13.7 | 521.7 |
| **6/18/2017** | 18.7 | 18.7 | 18.8 | 18.6 | 18.4 | 18.2 | 18.0 | 17.9 | 17.8 | 17.6 | 17.7 | 17.9 | 17.9 | 18.0 | 18.0 | 18.1 | 18.1 | 18.0 | 18.3 | 18.4 | 18.1 | 18.0 | 17.9 | 17.7 | 18.1 | 12.3 | 534.1 |
| **6/19/2017** | 17.5 | 17.4 | 17.3 | 17.2 | 17.1 | 16.9 | 16.8 | 16.6 | 16.8 | 17.3 | 17.5 | 17.8 | 18.0 | 18.2 | 18.5 | 18.7 | 18.9 | 19.2 | 19.4 | 19.5 | 19.5 | 19.5 | 19.4 | 19.3 | 18.1 | 12.3 | 546.3 |
| **6/20/2017** | 19.2 | 19.0 | 18.8 | 18.7 | 18.5 | 18.4 | 18.2 | 18.1 | 18.0 | 18.0 | 18.0 | 18.2 | 18.3 | 19.0 | 19.5 | 20.0 | 20.4 | 20.7 | 21.0 | 21.1 | 21.2 | 21.1 | 21.0 | 20.7 | 19.4 | 13.6 | 559.9 |
| **6/21/2017** | 20.4 | 20.1 | 19.9 | 19.7 | 19.5 | 19.3 | 19.0 | 18.8 | 18.7 | 18.9 | 19.5 | 20.3 | 20.7 | 20.9 | 21.2 | 22.0 | 22.9 | 23.2 | 23.0 | 23.0 | 22.9 | 22.5 | 22.4 | 22.2 | 20.9 | 15.1 | 575.0 |
| **6/22/2017** | 22.0 | 21.9 | 21.7 | 21.6 | 21.4 | 21.2 | 21.1 | 21.1 | 21.0 | 20.8 | 20.6 | 20.5 | 20.3 | 20.2 | 20.1 | 20.1 | 20.3 | 20.3 | 20.1 | 20.1 | 20.2 | 20.1 | 20.0 | 19.9 | 20.7 | 14.9 | 589.9 |
| **6/23/2017** | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.4 | 19.3 | 19.2 | 19.2 | 19.3 | 19.6 | 19.8 | 19.9 | 20.2 | 20.5 | 20.2 | 20.5 | 20.5 | 20.6 | 20.6 | 20.6 | 20.5 | 20.3 | 20.1 | 19.9 | 14.1 | 604.0 |
| **6/24/2017** | 20.0 | 19.9 | 19.7 | 19.5 | 19.4 | 19.2 | 19.0 | 18.7 | 18.6 | 18.6 | 18.6 | 18.6 | 18.9 | 19.1 | 19.3 | 19.6 | 19.6 | 19.7 | 19.8 | 19.7 | 19.7 | 19.6 | 19.4 | 19.2 | 19.3 | 13.5 | 617.5 |
| **6/25/2017** | 19.1 | 18.9 | 18.7 | 18.5 | 18.4 | 18.2 | 18.0 | 18.0 | 17.9 | 17.9 | 17.9 | 18.0 | 18.0 | 18.1 | 18.2 | 18.7 | 18.8 | 18.9 | 19.0 | 19.1 | 19.0 | 19.0 | 18.9 | 18.7 | 18.5 | 12.7 | 630.2 |
| **6/26/2017** | 18.6 | 18.4 | 18.3 | 18.1 | 18.0 | 17.9 | 17.7 | 17.6 | 17.5 | 17.5 | 17.7 | 17.8 | 18.0 | 18.2 | 18.4 | 18.6 | 18.9 | 19.1 | 19.3 | 19.5 | 19.5 | 19.4 | 19.3 | 19.2 | 18.4 | 12.6 | 642.9 |
| **6/27/2017** | 19.0 | 18.9 | 18.7 | 18.6 | 18.4 | 18.3 | 18.1 | 18.0 | 17.8 | 17.9 | 18.0 | 18.3 | 18.6 | 19.0 | 19.2 | 19.8 | 20.2 | 20.4 | 20.5 | 20.8 | 20.6 | 20.5 | 20.3 | 20.2 | 19.2 | 13.4 | 656.2 |
| **6/28/2017** | 20.0 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.4 | 19.3 | 19.2 | 19.2 | 19.1 | 19.0 | 19.1 | 19.2 | 19.2 | 19.1 | 19.0 | 19.1 | 19.0 | 19.0 | 19.0 | 19.0 | 18.9 | 18.9 | 19.2 | 13.4 | 669.7 |
| **6/29/2017** | 18.9 | 18.8 | 18.8 | 18.8 | 18.7 | 18.6 | 18.6 | 18.5 | 18.5 | 18.7 | 18.8 | 19.0 | 19.3 | 19.6 | 19.9 | 20.0 | 20.3 | 20.5 | 20.6 | 20.8 | 20.9 | 20.9 | 20.9 | 20.9 | 19.6 | 13.8 | 683.5 |
| **6/30/2017** | 20.8 | 20.7 | 20.7 | 20.5 | 20.4 | 20.3 | 20.2 | 20.2 | 20.1 | 20.2 | 20.2 | 20.3 | 20.6 | 20.7 | 21.2 | 21.5 | 22.0 | 22.0 | 22.0 | 22.2 | 22.3 | 22.4 | 22.3 | 22.2 | 21.1 | 15.3 | 698.8 |
| **7/1/2017** | 22.1 | 22.0 | 21.9 | 21.8 | 21.6 | 21.5 | 21.4 | 21.2 | 21.1 | 21.2 | 21.2 | 21.2 | 21.2 | 21.5 | 21.9 | 22.0 | 22.1 | 22.4 | 22.4 | 22.5 | 22.5 | 22.4 | 22.3 | 22.1 | 21.8 | 16.0 | 714.8 |
| **7/2/2017** | 22.0 | 21.9 | 21.8 | 21.7 | 21.6 | 21.4 | 21.3 | 21.2 | 21.1 | 21.1 | 21.1 | 21.3 | 21.5 | 21.3 | 21.3 | 21.5 | 21.8 | 22.0 | 22.2 | 22.2 | 22.4 | 22.2 | 22.1 | 21.9 | 21.7 | 15.9 | 730.6 |
| **7/3/2017** | 21.7 | 21.5 | 21.2 | 21.0 | 20.7 | 20.6 | 20.3 | 20.1 | 19.9 | 19.9 | 20.0 | 20.2 | 20.5 | 20.8 | 21.2 | 21.2 | 21.3 | 21.6 | 21.8 | 21.8 | 21.9 | 21.8 | 21.6 | 21.5 | 21.0 | 15.2 | 745.8 |
| **7/4/2017** | 21.3 | 21.2 | 21.0 | 20.9 | 20.6 | 20.4 | 20.2 | 20.0 | 19.8 | 19.9 | 19.9 | 20.1 | 20.3 | 20.7 | 20.9 | 21.4 | 21.6 | 21.8 | 22.0 | 22.1 | 22.1 | 22.0 | 21.8 | 21.7 | 21.0 | 15.2 | 761.0 |
| **7/5/2017** | 21.6 | 21.4 | 21.2 | 21.1 | 20.9 | 20.8 | 20.6 | 20.5 | 20.4 | 20.4 | 20.7 | 20.9 | 21.3 | 21.5 | 22.0 | 22.2 | 22.3 | 22.6 | 22.7 | 22.7 | 22.5 | 22.5 | 22.4 | 22.2 | 21.6 | 15.8 | 776.8 |
| **7/6/2017** | 22.0 | 22.0 | 21.8 | 21.6 | 21.5 | 21.3 | 21.1 | 20.9 | 20.7 | 20.7 | 20.9 | 21.0 | 21.4 | 21.7 | 22.0 | 22.2 | 22.1 | 22.4 | 22.4 | 22.5 | 22.4 | 22.2 | 22.1 | 22.0 | 21.7 | 15.9 | 792.7 |
| **7/7/2017** | 21.9 | 21.7 | 21.6 | 21.5 | 21.4 | 21.2 | 21.1 | 20.9 | 20.8 | 20.5 | 20.3 | 20.6 | 21.2 | 21.2 | 21.3 | 21.4 | 21.9 | 21.9 | 22.0 | 21.9 | 21.8 | 21.8 | 21.6 | 21.5 | 21.4 | 15.6 | 808.2 |
| **7/8/2017** | 21.3 | 21.1 | 20.9 | 20.6 | 20.4 | 20.3 | 20.1 | 19.9 | 19.7 | 19.8 | 20.1 | 20.2 | 20.3 | 20.8 | 21.0 | 21.2 | 21.5 | 21.4 | 21.4 | 21.6 | 21.5 | 21.4 | 21.2 | 21.1 | 20.8 | 15.0 | 823.2 |
| **7/9/2017** | 20.9 | 20.7 | 20.5 | 20.2 | 20.0 | 19.8 | 19.6 | 19.4 | 19.2 | 19.1 | 19.5 | 19.9 | 20.3 | 20.5 | 20.4 | 20.3 | 20.4 | 20.3 | 20.3 | 20.2 | 20.1 | 20.1 | 20.1 | 20.0 | 20.1 | 14.3 | 837.5 |
| **7/10/2017** | 19.9 | 19.7 | 19.5 | 19.0 | 19.0 | 19.1 | 19.0 | 18.8 | 18.8 | 18.8 | 19.0 | 19.3 | 19.5 | 19.9 | 20.3 | 20.4 | 20.4 | 20.7 | 20.7 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 19.8 | 14.0 | 851.5 |
| **7/11/2017** | 20.4 | 20.3 | 20.1 | 20.0 | 19.9 | 19.9 | 19.7 | 19.5 | 19.3 | 19.4 | 19.9 | 20.3 | 20.8 | 21.3 | 21.5 | 21.6 | 21.9 | 22.0 | 22.2 | 22.3 | 22.4 | 22.4 | 22.4 | 22.5 | 20.9 | 15.1 | 866.6 |
| **7/12/2017** | 22.6 | 22.6 | 22.5 | 22.5 | 22.5 | 22.4 | 22.3 | 22.2 | 22.1 | 22.1 | 22.3 | 22.5 | 22.8 | 23.3 | 23.6 | 24.0 | 23.7 | 23.7 | 23.6 | 23.3 | 23.3 | 23.3 | 23.0 | 22.7 | 22.9 | 17.1 | 883.7 |
| **7/13/2017** | 22.6 | 22.3 | 22.0 | 22.0 | 21.7 | 21.6 | 21.3 | 21.1 | 20.9 | 20.8 | 20.8 | 20.6 | 20.7 | 20.7 | 20.7 | 20.7 | 21.1 | 21.2 | 21.4 | 21.1 | 20.9 | 20.9 | 20.7 | 20.7 | 21.2 | 15.4 | 899.1 |
| **7/14/2017** | 20.6 | 20.2 | 20.0 | 19.9 | 19.8 | 19.6 | 19.1 | 18.8 | 18.9 | 19.2 | 19.3 | 19.4 | 19.7 | 19.9 | 20.2 | 20.7 | 21.1 | 21.3 | 21.4 | 21.5 | 21.6 | 21.5 | 21.4 | 21.3 | 20.3 | 14.5 | 913.6 |
| **7/15/2017** | 21.1 | 21.0 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.3 | 20.3 | 20.5 | 20.9 | 21.2 | 21.5 | 21.8 | 22.0 | 22.3 | 22.6 | 22.8 | 22.9 | 23.0 | 22.9 | 22.9 | 22.9 | 21.5 | 15.7 | 929.3 |
| **7/16/2017** | 22.9 | 22.9 | 22.8 | 22.7 | 22.7 | 22.6 | 22.5 | 22.4 | 22.2 | 22.0 | 22.0 | 22.0 | 22.0 | 22.3 | 22.6 | 22.8 | 22.8 | 22.9 | 22.9 | 23.0 | 23.0 | 22.9 | 22.8 | 22.6 | 22.6 | 16.8 | 946.1 |
| **7/17/2017** | 22.4 | 22.2 | 22.0 | 21.9 | 21.7 | 21.5 | 21.3 | 21.1 | 20.9 | 20.8 | 20.8 | 21.0 | 21.3 | 21.6 | 21.9 | 22.2 | 22.3 | 22.5 | 22.7 | 22.8 | 22.8 | 22.6 | 22.5 | 22.3 | 21.9 | 16.1 | 962.2 |
| **7/18/2017** | 22.1 | 22.0 | 21.8 | 21.6 | 21.5 | 21.3 | 21.1 | 21.0 | 21.0 | 20.9 | 21.0 | 21.2 | 21.4 | 21.9 | 22.4 | 22.8 | 23.2 | 23.3 | 23.3 | 23.2 | 22.9 | 22.9 | 22.8 | 22.7 | 22.0 | 16.2 | 978.4 |
| **7/19/2017** | 22.5 | 22.4 | 22.4 | 22.2 | 22.1 | 22.0 | 21.9 | 21.8 | 21.7 | 21.9 | 21.8 | 22.0 | 22.0 | 22.4 | 22.7 | 23.0 | 23.5 | 23.9 | 23.9 | 23.7 | 23.4 | 23.1 | 22.8 | 22.6 | 22.6 | 16.8 | 995.2 |
| **7/20/2017** | 22.5 | 22.3 | 22.1 | 22.0 | 21.9 | 21.4 | 21.4 | 21.4 | 21.3 | 21.3 | 21.5 | 21.7 | 21.9 | 22.2 | 22.5 | 22.9 | 23.2 | 23.4 | 23.6 | 23.7 | 23.7 | 23.5 | 23.5 | 23.3 | 22.4 | 16.6 | 1011.8 |
| **7/21/2017** | 23.3 | 23.1 | 22.9 | 22.8 | 22.6 | 22.4 | 22.2 | 22.1 | 22.0 | 21.9 | 21.9 | 21.7 | 21.5 | 21.4 | 21.5 | 21.4 | 21.4 | 21.3 | 21.2 | 21.3 | 21.2 | 21.2 | 21.0 | 20.9 | 21.8 | 16.0 | 1027.9 |

**Table 47.** (*continued*)

| Date | 0:48 | 1:48 | 2:48 | 3:48 | 4:48 | 5:48 | 6:48 | 7:48 | 8:48 | 9:48 | 10:48 | 11:48 | 12:48 | 13:48 | 14:48 | 15:48 | 16:48 | 17:48 | 18:48 | 19:48 | 20:48 | 21:48 | 22:48 | 23:48 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7/22/2017** | 20.8 | 20.8 | 20.7 | 20.6 | 20.6 | 20.5 | 20.5 | 20.4 | 20.3 | 20.2 | 20.2 | 20.3 | 20.3 | 20.3 | 20.4 | 20.7 | 20.8 | 20.9 | 21.1 | 21.2 | 21.3 | 21.2 | 21.2 | 21.0 | 20.7 | 14.9 | 1042.7 |
| **7/23/2017** | 20.9 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.3 | 20.2 | 20.3 | 20.3 | 20.4 | 20.4 | 20.6 | 21.0 | 21.1 | 21.3 | 21.5 | 21.6 | 21.7 | 21.5 | 21.6 | 21.5 | 21.3 | 20.9 | 15.1 | 1057.8 |
| **7/24/2017** | 21.2 | 21.0 | 20.9 | 20.7 | 20.5 | 20.4 | 20.2 | 20.0 | 20.0 | 19.9 | 19.9 | 19.9 | 19.9 | 20.0 | 20.3 | 20.4 | 20.6 | 20.7 | 21.0 | 21.0 | 21.0 | 20.8 | 20.7 | 20.6 | 20.5 | 14.7 | 1072.5 |
| **7/25/2017** | 20.4 | 20.2 | 20.1 | 19.9 | 19.7 | 19.6 | 19.4 | 19.3 | 19.2 | 19.1 | 19.2 | 19.3 | 19.0 | 18.9 | 19.2 | 19.7 | 19.9 | 20.3 | 20.4 | 20.5 | 20.4 | 20.3 | 20.2 | 20.1 | 19.8 | 14.0 | 1086.5 |
| **7/26/2017** | 20.0 | 20.0 | 19.9 | 19.9 | 19.8 | 19.7 | 19.7 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 19.7 | 19.7 | 19.8 | 19.7 | 19.7 | 19.6 | 19.8 | 19.6 | 19.7 | 19.6 | 19.5 | 19.5 | 19.7 | 13.9 | 1100.4 |
| **7/27/2017** | 19.3 | 19.3 | 19.1 | 19.0 | 18.9 | 18.7 | 18.7 | 18.5 | 18.5 | 18.6 | 18.6 | 18.7 | 19.0 | 19.3 | 19.5 | 19.6 | 19.9 | 20.0 | 20.2 | 20.2 | 20.4 | 20.2 | 20.2 | 20.1 | 19.4 | 13.6 | 1113.9 |
| **7/28/2017** | 19.9 | 19.9 | 19.7 | 19.5 | 19.4 | 19.3 | 19.1 | 19.0 | 18.8 | 18.9 | 19.0 | 19.0 | 19.2 | 19.5 | 19.7 | 19.9 | 20.1 | 20.3 | 20.5 | 20.6 | 20.6 | 20.5 | 20.4 | 20.2 | 19.7 | 13.9 | 1127.8 |
| **7/29/2017** | 20.0 | 19.9 | 19.7 | 19.4 | 19.2 | 18.9 | 18.7 | 18.6 | 18.4 | 18.5 | 18.6 | 18.7 | 19.0 | 19.3 | 19.8 | 19.9 | 20.1 | 20.3 | 20.4 | 20.5 | 20.4 | 20.3 | 20.1 | 19.9 | 19.5 | 13.7 | 1141.6 |
| **7/30/2017** | 19.9 | 19.7 | 19.5 | 19.3 | 19.1 | 19.0 | 18.8 | 18.7 | 18.4 | 18.4 | 18.6 | 18.7 | 19.0 | 19.4 | 19.7 | 20.0 | 20.5 | 20.8 | 21.1 | 21.1 | 20.7 | 20.6 | 20.4 | 20.3 | 19.7 | 13.9 | 1155.4 |
| **7/31/2017** | 20.1 | 19.9 | 19.8 | 19.7 | 19.6 | 19.4 | 19.3 | 19.1 | 19.0 | 19.0 | 19.1 | 19.3 | 19.6 | 19.8 | 20.2 | 20.2 | 20.6 | 20.7 | 20.7 | 20.7 | 20.5 | 20.3 | 20.2 | 20.0 | 19.9 | 14.1 | 1169.5 |
| **8/1/2017** | 19.9 | 19.8 | 19.7 | 19.5 | 19.4 | 19.3 | 19.1 | 18.9 | 18.7 | 18.7 | 18.8 | 19.0 | 19.2 | 19.5 | 19.9 | 20.1 | 20.3 | 20.6 | 20.8 | 20.8 | 20.5 | 20.4 | 20.3 | 20.1 | 19.7 | 13.9 | 1183.4 |
| **8/2/2017** | 20.0 | 19.9 | 19.8 | 19.6 | 19.5 | 19.4 | 19.2 | 19.1 | 19.0 | 18.9 | 19.0 | 19.1 | 19.4 | 19.5 | 19.8 | 19.9 | 20.2 | 20.2 | 20.2 | 20.4 | 20.4 | 20.2 | 20.2 | 20.1 | 19.7 | 13.9 | 1197.3 |
| **8/3/2017** | 20.0 | 19.9 | 19.9 | 19.8 | 19.6 | 19.5 | 19.4 | 19.3 | 19.1 | 19.1 | 19.1 | 18.9 | 18.9 | 19.1 | 19.6 | 19.7 | 19.9 | 19.8 | 19.5 | 19.3 | 19.1 | 18.9 | 18.7 | 18.6 | 19.3 | 13.5 | 1210.9 |
| **8/4/2017** | 18.3 | 18.1 | 18.0 | 17.8 | 17.7 | 17.5 | 17.4 | 17.4 | 17.4 | 17.5 | 17.6 | 18.0 | 18.2 | 18.5 | 19.0 | 19.4 | 19.8 | 20.0 | 20.2 | 20.4 | 20.5 | 20.5 | 20.5 | 20.4 | 18.8 | 13.0 | 1223.8 |
| **8/5/2017** | 20.3 | 20.2 | 20.1 | 20.0 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.5 | 19.7 | 19.9 | 20.1 | 20.4 | 20.7 | 21.0 | 21.3 | 21.5 | 21.5 | 21.5 | 21.5 | 21.4 | 21.3 | 21.2 | 20.5 | 14.7 | 1238.5 |
| **8/6/2017** | 21.1 | 21.0 | 21.0 | 20.9 | 20.8 | 20.7 | 20.6 | 20.6 | 20.5 | 20.3 | 20.4 | 20.4 | 20.5 | 20.5 | 20.5 | 20.6 | 20.6 | 20.8 | 20.9 | 21.0 | 20.9 | 20.9 | 20.8 | 20.7 | 20.7 | 14.9 | 1253.4 |
| **8/7/2017** | 20.6 | 20.5 | 20.4 | 20.4 | 20.2 | 20.2 | 20.1 | 19.9 | 19.9 | 19.9 | 20.0 | 20.2 | 20.4 | 20.7 | 20.9 | 21.3 | 21.6 | 21.8 | 21.9 | 22.0 | 22.0 | 22.0 | 21.8 | 21.7 | 20.9 | 15.1 | 1268.5 |
| **8/8/2017** | 21.6 | 21.4 | 21.2 | 21.1 | 20.9 | 20.8 | 20.6 | 20.5 | 20.3 | 20.3 | 20.5 | 20.8 | 21.1 | 21.3 | 21.4 | 21.4 | 21.8 | 22.1 | 22.2 | 22.4 | 22.4 | 22.3 | 22.2 | 22.0 | 21.4 | 15.6 | 1284.1 |
| **8/9/2017** | 22.0 | 21.8 | 21.7 | 21.5 | 21.4 | 21.2 | 21.1 | 20.9 | 20.8 | 20.7 | 20.8 | 21.0 | 21.3 | 21.5 | 21.7 | 22.0 | 21.9 | 21.9 | 22.0 | 21.9 | 21.9 | 21.9 | 21.8 | 21.7 | 21.5 | 15.7 | 1299.7 |
| **8/10/2017** | 21.6 | 21.5 | 21.4 | 21.3 | 21.2 | 21.1 | 20.9 | 20.8 | 20.7 | 20.5 | 20.9 | 21.0 | 21.2 | 21.6 | 21.8 | 22.0 | 22.4 | 22.5 | 22.5 | 22.4 | 22.6 | 22.5 | 22.4 | 22.3 | 21.6 | 15.8 | 1315.6 |
| **8/11/2017** | 22.1 | 22.0 | 22.0 | 21.8 | 21.7 | 21.6 | 21.4 | 21.3 | 21.2 | 20.9 | 20.9 | 20.9 | 21.1 | 21.3 | 21.7 | 22.0 | 22.1 | 22.4 | 22.5 | 22.6 | 22.6 | 22.5 | 22.4 | 22.2 | 21.8 | 16.0 | 1331.6 |
| **8/12/2017** | 22.0 | 21.9 | 21.7 | 21.5 | 21.3 | 21.1 | 20.9 | 20.8 | 20.6 | 20.6 | 20.7 | 20.7 | 20.9 | 21.2 | 21.5 | 21.9 | 22.1 | 22.3 | 22.5 | 22.6 | 22.6 | 22.5 | 22.3 | 22.1 | 21.6 | 15.8 | 1347.4 |
| **8/13/2017** | 22.0 | 21.8 | 21.6 | 21.4 | 21.2 | 21.1 | 20.9 | 20.7 | 20.5 | 20.5 | 20.5 | 20.6 | 20.6 | 20.7 | 20.9 | 21.2 | 21.4 | 21.4 | 21.4 | 21.3 | 21.2 | 21.2 | 21.1 | 21.0 | 21.1 | 15.3 | 1362.7 |
| **8/14/2017** | 20.8 | 20.7 | 20.6 | 20.4 | 20.3 | 20.2 | 20.1 | 20.0 | 19.9 | 19.9 | 19.9 | 20.1 | 20.4 | 20.7 | 28.0 | 21.3 | 21.4 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.4 | 21.3 | 21.0 | 15.2 | 1377.9 |
| **8/15/2017** | 21.2 | 21.1 | 21.0 | 20.9 | 20.9 | 20.8 | 20.6 | 20.6 | 20.5 | 20.4 | 20.3 | 20.3 | 20.4 | 20.6 | 12.9 | 24.4 | 15.9 | 11.3 | 10.0 | 10.1 | 10.3 | 9.9 | 9.3 | 8.8 | 17.2 | 11.4 | 1389.3 |

**Table 48.** Hourly recorded water temperatures in degrees Celsius at the Black River Sturgeon Research Facility in 2017. Temperature was measured from the head tank. Daily thermal units (TU) and cumulative thermal units (CTU) are calculated for the Peshtigo River strain as mean daily temperature –5.8°C as described in Kempinger 1988.

| Date | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5/10/2017** | | | | | | | | | | | | | | 14.2 | | | | | | | | | | | 14.2 | 8.4 | 8.4 |
| **5/11/2017** | | | | | | | | | | | | | | | | | | | | | | 14.7 | 14.9 | 14.6 | 14.7 | 8.9 | 17.3 |
| **5/12/2017** | 14.4 | 14.1 | 14.0 | 13.8 | 13.7 | 13.6 | 13.4 | 13.3 | 13.4 | 13.5 | 13.8 | 14.0 | 14.6 | 15.3 | 15.6 | 15.6 | 15.5 | 14.9 | 14.6 | 13.8 | 13.8 | 14.1 | 14.2 | 13.9 | 14.2 | 8.4 | 25.7 |
| **5/13/2017** | 13.9 | 13.8 | 13.8 | 13.9 | 13.9 | 13.8 | 13.8 | 13.8 | 13.9 | 13.9 | 13.9 | 14.3 | 14.7 | 15.2 | 15.7 | 16.0 | 15.9 | 15.7 | 15.3 | 15.6 | 15.2 | 15.1 | 15.1 | 15.1 | 14.6 | 8.8 | 34.6 |
| **5/14/2017** | 14.8 | 14.7 | 14.6 | 14.4 | 14.2 | 14.0 | 13.8 | 13.8 | 13.7 | 13.8 | 13.9 | 13.5 | 13.4 | 13.5 | 14.0 | 14.7 | 14.9 | 15.2 | 15.3 | 15.2 | 14.9 | 14.6 | 14.5 | 14.3 | 14.3 | 8.5 | 43.1 |
| **5/15/2017** | 14.2 | 14.1 | 14.0 | 14.0 | 13.9 | 13.8 | 13.8 | 13.8 | 13.9 | 14.2 | 14.6 | 15.1 | 16.0 | 16.7 | 17.7 | 16.5 | 17.5 | 16.8 | 16.0 | 15.9 | 15.5 | 16.0 | 17.4 | 16.9 | 15.4 | 9.6 | 52.7 |
| **5/16/2017** | 17.1 | 16.7 | 16.6 | 16.4 | 16.2 | 16.1 | 16.1 | 16.0 | 15.9 | 15.9 | 16.0 | 16.1 | 16.1 | 16.4 | 17.0 | 17.5 | 17.7 | 17.8 | 17.5 | 17.4 | 17.2 | 16.9 | 16.6 | 16.4 | 16.7 | 10.9 | 63.5 |
| **5/17/2017** | 16.2 | 16.1 | 16.0 | 16.1 | 16.1 | 16.1 | 16.3 | 16.4 | 16.6 | 16.7 | 17.0 | 17.5 | 17.8 | 18.2 | 18.9 | 18.0 | 18.5 | 18.7 | 19.0 | 19.1 | 19.1 | 19.1 | 19.1 | 19.0 | 17.6 | 11.8 | 75.3 |
| **5/18/2017** | 19.0 | 18.9 | 18.8 | 18.8 | 18.6 | 17.9 | 18.2 | 18.2 | 18.2 | 18.5 | 18.8 | 19.1 | 18.9 | 18.8 | 18.8 | 19.0 | 19.0 | 18.8 | 18.3 | 17.5 | 16.8 | 16.5 | 16.5 | 16.8 | 18.3 | 12.5 | 87.8 |
| **5/19/2017** | 16.7 | 16.5 | 16.6 | 16.6 | 16.6 | 16.5 | 16.5 | 16.4 | 16.4 | 16.5 | 16.7 | 17.0 | 17.4 | 17.7 | 18.0 | 18.0 | 18.2 | 18.2 | 18.1 | 18.0 | 17.8 | 17.6 | 17.4 | 17.2 | 17.2 | 11.4 | 99.2 |
| **5/20/2017** | 16.9 | 16.7 | 16.6 | 16.4 | 16.3 | 16.2 | 16.1 | 16.1 | 16.0 | 16.0 | 16.0 | 16.6 | 16.9 | 17.3 | 17.6 | 17.7 | 17.7 | 17.5 | 17.2 | 16.8 | 16.7 | 16.5 | 16.4 | 16.3 | 16.7 | 10.9 | 110.1 |
| **5/21/2017** | 16.3 | 16.2 | 15.9 | 15.6 | 15.5 | 15.5 | 15.5 | 15.4 | 15.5 | 15.4 | 15.5 | 15.6 | 15.8 | 15.9 | 16.0 | 16.3 | 16.5 | 16.7 | 16.8 | 16.4 | 15.8 | 15.7 | 14.8 | 14.9 | 15.8 | 10.0 | 120.1 |
| **5/22/2017** | 15.5 | 15.4 | 15.2 | 15.1 | 15.0 | 14.9 | 14.8 | 14.8 | 14.7 | 14.8 | 14.9 | 15.0 | 15.0 | 15.1 | 14.9 | 14.8 | 15.0 | 14.9 | 15.0 | 15.0 | 14.8 | 14.7 | 14.7 | 14.6 | 14.9 | 9.1 | 129.2 |
| **5/23/2017** | 14.5 | 14.5 | 14.4 | 14.3 | 14.2 | 14.2 | 14.2 | 14.2 | 14.4 | 14.5 | 14.7 | 15.0 | 15.5 | 15.8 | 15.9 | 15.8 | 15.8 | 16.2 | 16.2 | 16.8 | 16.1 | 16.0 | 15.7 | 16.0 | 15.2 | 9.4 | 138.6 |
| **5/24/2017** | 16.0 | 16.0 | 15.5 | 15.2 | 15.6 | 15.5 | 15.4 | 15.4 | 15.4 | 15.4 | 15.4 | 15.4 | 15.6 | 15.7 | 15.7 | 15.9 | 16.0 | 16.0 | 15.8 | 15.8 | 15.4 | 15.2 | 15.0 | 15.0 | 15.5 | 9.7 | 148.4 |
| **5/25/2017** | 15.4 | 15.3 | 15.3 | 15.2 | 15.1 | 15.1 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.1 | 15.1 | 15.2 | 15.2 | 15.2 | 15.1 | 15.1 | 15.0 | 14.9 | 15.1 | 9.3 | 157.7 |
| **5/26/2017** | 14.7 | 14.7 | 14.7 | 14.6 | 14.5 | 14.5 | 14.4 | 14.4 | 14.5 | 14.7 | 14.8 | 15.1 | 15.5 | 15.8 | 15.7 | 15.9 | 16.7 | 16.0 | 16.7 | 16.6 | 15.8 | 17.6 | 16.8 | 16.8 | 15.5 | 9.7 | 167.3 |
| **5/27/2017** | 16.7 | 16.3 | 16.2 | 16.0 | 16.2 | 16.4 | 16.2 | 16.1 | 16.1 | 16.4 | 16.8 | 17.1 | 17.6 | 18.0 | 18.7 | 19.3 | 18.8 | 19.1 | 18.7 | 17.3 | 16.8 | 16.8 | 16.6 | 16.5 | 17.1 | 11.3 | 178.7 |
| **5/28/2017** | 16.9 | 17.5 | 17.6 | 17.6 | 17.6 | 17.5 | 17.5 | 17.5 | 17.6 | 17.8 | 18.0 | 18.0 | 18.3 | 18.3 | 18.0 | 17.2 | 17.2 | 17.3 | 17.7 | 17.4 | 17.9 | 18.0 | 17.9 | 17.8 | 17.7 | 11.9 | 190.5 |
| **5/29/2017** | 17.7 | 17.6 | 17.5 | 17.3 | 17.2 | 17.1 | 17.0 | 16.9 | 16.9 | 17.2 | 17.5 | 17.8 | 18.0 | 18.0 | 18.0 | 18.3 | 18.0 | 17.7 | 17.6 | 17.4 | 17.2 | 17.1 | 17.0 | 16.9 | 17.4 | 11.6 | 202.2 |
| **5/30/2017** | 16.9 | 16.9 | 16.9 | 16.8 | 16.8 | 16.8 | 16.9 | 16.9 | 17.0 | 17.3 | 17.4 | 17.5 | 17.9 | 18.1 | 18.0 | 18.0 | 18.0 | 17.9 | 17.9 | 17.6 | 17.3 | 17.2 | 17.1 | 17.0 | 17.3 | 11.5 | 213.7 |
| **5/31/2017** | 17.0 | 16.9 | 16.9 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | 17.0 | 16.9 | 16.7 | 16.6 | 16.6 | 16.4 | 16.3 | 16.1 | 16.0 | 16.7 | 10.9 | 224.6 |
| **6/1/2017** | 16.0 | 15.9 | 15.7 | 15.6 | 15.6 | 15.5 | 15.4 | 15.4 | 15.4 | 15.8 | 16.1 | 16.5 | 16.4 | 15.8 | 15.5 | 15.7 | 16.0 | 16.3 | 16.4 | 16.3 | 16.0 | 15.6 | 15.5 | 15.4 | 15.8 | 10.0 | 234.7 |
| **6/2/2017** | 15.3 | 15.3 | 15.2 | 15.1 | 15.1 | 15.1 | 15.1 | 15.0 | 15.2 | 15.7 | 16.3 | 16.2 | 16.7 | 16.7 | 17.1 | 17.4 | 17.2 | 16.8 | 16.4 | 16.5 | 16.1 | 16.0 | 16.3 | 16.2 | 16.0 | 10.2 | 244.9 |
| **6/3/2017** | 16.3 | 16.4 | 16.6 | 16.5 | 16.5 | 16.4 | 16.3 | 16.2 | 16.4 | 16.7 | 17.1 | 17.4 | 17.8 | 18.1 | 18.3 | 18.7 | 19.2 | 19.3 | 19.2 | 19.1 | 18.8 | 18.7 | 18.5 | 18.3 | 17.6 | 11.8 | 256.7 |
| **6/4/2017** | 18.1 | 17.8 | 17.8 | 17.7 | 17.6 | 17.5 | 17.4 | 17.4 | 17.5 | 17.6 | 17.2 | 17.0 | 17.1 | 17.2 | 17.1 | 17.5 | 17.4 | 17.6 | 17.5 | 17.5 | 17.7 | 18.2 | 18.2 | 18.2 | 17.6 | 11.8 | 268.4 |
| **6/5/2017** | 18.2 | 18.2 | 18.2 | 18.1 | 18.0 | 17.9 | 17.8 | 17.7 | 17.7 | 17.5 | 17.6 | 17.8 | 17.9 | 18.2 | 19.1 | 18.8 | 18.7 | 20.1 | 19.6 | 19.4 | 18.8 | 18.8 | 18.6 | 18.5 | 18.4 | 12.6 | 281.0 |
| **6/6/2017** | 18.3 | 18.2 | 18.1 | 18.0 | 18.1 | 18.0 | 18.0 | 18.0 | 18.1 | 18.3 | 18.8 | 19.3 | 19.8 | 19.3 | 19.9 | 20.0 | 21.0 | 21.6 | 21.8 | 21.7 | 21.5 | 21.3 | 21.2 | 20.9 | 19.6 | 13.8 | 294.8 |
| **6/7/2017** | 20.7 | 20.4 | 20.2 | 20.0 | 19.9 | 19.7 | 19.5 | 19.5 | 19.7 | 20.0 | 20.2 | 20.4 | 20.8 | 21.8 | 20.9 | 20.9 | 20.9 | 20.8 | 20.7 | 21.3 | 21.0 | 21.0 | 20.9 | 21.0 | 20.5 | 14.7 | 309.5 |
| **6/8/2017** | 21.1 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.4 | 20.6 | 20.8 | 21.4 | 21.4 | 21.5 | 21.8 | 21.9 | 22.1 | 21.8 | 21.4 | 21.1 | 21.0 | 20.9 | 21.0 | 21.6 | 21.5 | 21.1 | 15.3 | 324.8 |
| **6/9/2017** | 21.6 | 21.7 | 21.6 | 21.6 | 21.6 | 21.5 | 21.5 | 21.5 | 21.5 | 21.6 | 21.7 | 22.0 | 22.9 | 23.4 | 23.1 | 22.0 | 22.0 | 21.7 | 21.7 | 21.4 | 21.9 | 23.0 | 22.9 | 22.7 | 22.0 | 16.2 | 341.0 |
| **6/10/2017** | 22.5 | 22.2 | 22.1 | 21.9 | 21.8 | 21.5 | 21.5 | 21.5 | 21.7 | 21.8 | 22.0 | 22.1 | 22.6 | 23.2 | 23.6 | 23.7 | 24.0 | 24.0 | 23.9 | 23.6 | 23.5 | 23.2 | 23.0 | 22.9 | 22.6 | 16.8 | 357.8 |
| **6/11/2017** | 22.7 | 22.6 | 22.5 | 22.3 | 22.1 | 22.0 | 21.9 | 21.9 | 21.9 | 21.5 | 21.5 | 21.6 | 22.0 | 22.0 | 22.0 | 22.2 | 22.9 | 21.9 | 21.2 | 22.6 | 22.4 | 22.4 | 22.3 | 22.2 | 22.1 | 16.3 | 374.2 |
| **6/12/2017** | 22.1 | 22.0 | 22.0 | 21.8 | 21.8 | 21.7 | 21.7 | 21.7 | 21.8 | 21.9 | 22.1 | 22.5 | 22.6 | 22.4 | 22.1 | 22.0 | 22.0 | 22.4 | 22.4 | 22.5 | 22.6 | 22.7 | 22.7 | 22.7 | 22.2 | 16.4 | 390.5 |
| **6/13/2017** | 22.7 | 22.6 | 22.5 | 22.4 | 22.3 | 22.2 | 22.2 | 22.2 | 22.2 | 22.4 | 22.5 | 23.0 | 23.6 | 24.3 | 24.6 | 24.9 | 25.2 | 25.2 | 25.2 | 25.1 | 25.0 | 24.8 | 24.6 | 24.4 | 23.6 | 17.8 | 408.3 |
| **6/14/2017** | 24.2 | 24.1 | 23.9 | 23.8 | 23.6 | 23.6 | 23.4 | 23.3 | 23.2 | 23.3 | 23.4 | 23.5 | 23.7 | 23.8 | 23.9 | 23.9 | 24.0 | 24.0 | 24.0 | 23.9 | 23.7 | 23.5 | 23.4 | 23.3 | 23.7 | 17.9 | 426.2 |

**Table 48.** (*continued*)

| Date | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6/15/2017** | 23.1 | 23.0 | 22.9 | 22.8 | 22.7 | 22.6 | 22.6 | 22.6 | 22.6 | 23.0 | 23.0 | 23.0 | 22.9 | 23.0 | 23.0 | 23.0 | 23.0 | 23.2 | 23.3 | 23.1 | 23.1 | 22.8 | 22.9 | 23.1 | 22.9 | 17.1 | 443.3 |
| **6/16/2017** | 23.0 | 23.1 | 23.0 | 22.9 | 22.8 | 22.7 | 22.6 | 22.6 | 22.7 | 22.9 | 23.2 | 23.4 | 23.3 | 23.6 | 23.9 | 23.9 | 24.0 | 24.8 | 25.5 | 24.9 | 24.7 | 24.5 | 24.4 | 24.2 | 23.6 | 17.8 | 461.1 |
| **6/17/2017** | 24.0 | 23.8 | 23.6 | 23.5 | 23.5 | 23.4 | 23.4 | 23.3 | 23.3 | 23.2 | 23.2 | 23.5 | 24.1 | 24.2 | 24.3 | 24.4 | 24.4 | 24.2 | 24.4 | 24.3 | 24.0 | 24.0 | 24.1 | 24.0 | 23.8 | 18.0 | 479.2 |
| **6/18/2017** | 23.9 | 23.8 | 23.8 | 23.7 | 23.6 | 23.5 | 23.4 | 23.4 | 23.5 | 23.6 | 23.5 | 24.1 | 24.3 | 24.4 | 24.4 | 24.2 | 23.7 | 23.3 | 22.8 | 22.6 | 22.4 | 22.4 | 22.3 | 22.2 | 23.4 | 17.6 | 496.8 |
| **6/19/2017** | 22.1 | 22.1 | 22.1 | 22.0 | 22.0 | 22.0 | 21.9 | 21.9 | 22.0 | 22.2 | 22.4 | 22.4 | 22.2 | 22.3 | 22.4 | 22.7 | 22.9 | 22.8 | 23.0 | 22.8 | 22.5 | 22.4 | 22.2 | 22.2 | 22.3 | 16.5 | 513.3 |
| **6/20/2017** | 22.1 | 22.0 | 22.0 | 21.9 | 21.8 | 21.7 | 21.5 | 21.4 | 21.6 | 21.8 | 22.0 | 22.0 | 21.5 | 21.4 | 21.8 | 21.9 | 21.6 | 21.8 | 21.7 | 21.7 | 21.5 | 21.3 | 21.1 | 21.0 | 21.6 | 15.8 | 529.2 |
| **6/21/2017** | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.5 | 20.4 | 20.5 | 20.7 | 21.2 | 21.5 | 21.7 | 21.3 | 21.1 | 21.6 | 21.8 | 21.5 | 21.4 | 21.3 | 21.4 | 21.4 | 21.9 | 21.7 | 21.1 | 15.3 | 544.5 |
| **6/22/2017** | 21.6 | 21.4 | 21.4 | 21.3 | 21.2 | 21.1 | 21.1 | 21.0 | 21.0 | 20.9 | 20.9 | 21.2 | 21.3 | 21.3 | 21.7 | 20.6 | 20.4 | 20.1 | 19.7 | 19.7 | 19.6 | 19.9 | 19.9 | 19.9 | 20.7 | 14.9 | 559.4 |
| **6/23/2017** | 20.4 | 20.3 | 20.3 | 20.3 | 20.3 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.0 | 19.9 | 19.9 | 20.2 | 19.9 | 19.7 | 19.7 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 19.8 | 19.9 | 20.0 | 14.2 | 573.7 |
| **6/24/2017** | 19.9 | 20.1 | 20.2 | 20.1 | 20.0 | 19.9 | 20.0 | 19.9 | 20.1 | 20.2 | 20.2 | 20.1 | 20.1 | 19.9 | 20.0 | 20.3 | 20.8 | 20.6 | 21.1 | 21.0 | 20.7 | 20.3 | 20.6 | 20.6 | 20.3 | 14.5 | 588.2 |
| **6/25/2017** | 20.6 | 20.5 | 20.5 | 20.5 | 20.4 | 20.3 | 20.3 | 20.2 | 20.2 | 20.5 | 20.8 | 21.0 | 20.7 | 20.8 | 20.6 | 20.7 | 20.8 | 20.8 | 20.8 | 20.7 | 20.7 | 20.7 | 20.6 | 20.5 | 20.6 | 14.8 | 603.0 |
| **6/26/2017** | 20.5 | 20.4 | 20.3 | 20.3 | 20.2 | 20.1 | 20.1 | 20.1 | 20.1 | 19.9 | 19.9 | 19.9 | 20.2 | 20.3 | 19.9 | 19.6 | 19.5 | 19.4 | 19.6 | 19.6 | 19.6 | 19.5 | 19.4 | 19.3 | 19.9 | 14.1 | 617.1 |
| **6/27/2017** | 19.2 | 19.1 | 19.0 | 18.9 | 18.8 | 18.7 | 18.7 | 18.6 | 18.7 | 19.1 | 19.4 | 19.4 | 19.6 | 19.4 | 19.4 | 19.3 | 19.9 | 19.6 | 19.9 | 19.8 | 19.4 | 19.6 | 19.5 | 19.5 | 19.3 | 13.5 | 630.5 |
| **6/28/2017** | 19.4 | 19.3 | 19.2 | 19.1 | 18.9 | 18.8 | 18.6 | 18.6 | 18.8 | 19.2 | 19.3 | 19.6 | 19.6 | 19.9 | 20.4 | 20.6 | 20.5 | 20.5 | 20.2 | 20.2 | 20.2 | 20.1 | 20.1 | 20.0 | 19.6 | 13.8 | 644.4 |
| **6/29/2017** | 19.9 | 19.9 | 19.7 | 19.5 | 19.3 | 19.1 | 19.0 | 18.8 | 18.7 | 19.1 | 18.9 | 18.9 | 19.0 | 19.3 | 19.9 | 20.2 | 18.3 | 18.3 | 18.0 | 18.0 | 17.9 | 17.6 | 18.0 | 18.5 | 18.9 | 13.1 | 657.5 |
| **6/30/2017** | 18.6 | 18.7 | 18.8 | 18.9 | 18.9 | 19.0 | 19.0 | 19.0 | 19.2 | 19.4 | 19.3 | 19.2 | 18.9 | 19.1 | 19.0 | 19.1 | 19.1 | 18.7 | 18.9 | 19.2 | 19.4 | 19.4 | 19.6 | 19.6 | 19.1 | 13.3 | 670.7 |
| **7/1/2017** | 19.6 | 19.6 | 19.5 | 19.5 | 19.5 | 19.4 | 19.4 | 19.5 | 19.5 | 19.7 | 19.6 | 19.6 | 19.6 | 19.6 | 19.7 | 19.9 | 19.9 | 19.9 | 20.0 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.6 | 13.8 | 684.6 |
| **7/2/2017** | 19.5 | 19.4 | 19.3 | 19.3 | 19.3 | 19.2 | 19.2 | 19.2 | 19.3 | 19.5 | 19.8 | 20.3 | 20.4 | 20.3 | 20.2 | 20.1 | 19.8 | 19.7 | 19.9 | 20.0 | 20.0 | 19.7 | 19.8 | 19.7 | 19.7 | 13.9 | 698.5 |
| **7/3/2017** | 19.7 | 19.6 | 19.6 | 19.5 | 19.5 | 19.5 | 19.4 | 19.4 | 19.4 | 19.8 | 20.1 | 20.1 | 20.1 | 19.9 | 19.9 | 20.1 | 20.2 | 20.2 | 20.4 | 20.2 | 20.2 | 20.1 | 20.2 | 20.2 | 19.9 | 14.1 | 712.6 |
| **7/4/2017** | 20.2 | 20.2 | 20.3 | 20.2 | 20.1 | 20.1 | 20.0 | 20.0 | 20.1 | 20.3 | 20.8 | 21.5 | 22.7 | 23.0 | 22.0 | 22.8 | 21.5 | 21.0 | 20.7 | 22.0 | 21.9 | 21.7 | 22.0 | 21.9 | 21.1 | 15.3 | 727.9 |
| **7/5/2017** | 22.1 | 22.0 | 21.6 | 21.7 | 21.7 | 21.6 | 21.5 | 21.5 | 21.6 | 21.8 | 22.0 | 22.4 | 22.2 | 22.0 | 22.0 | 21.9 | 21.9 | 21.8 | 21.3 | 21.2 | 21.2 | 21.0 | 22.2 | 22.6 | 21.8 | 16.0 | 743.9 |
| **7/6/2017** | 22.8 | 23.0 | 23.0 | 23.0 | 22.9 | 22.7 | 22.8 | 22.8 | 22.9 | 23.3 | 23.0 | 22.9 | 22.8 | 22.8 | 21.8 | 21.2 | 21.1 | 22.3 | 22.8 | 22.9 | 22.9 | 22.8 | 22.8 | 22.7 | 22.7 | 16.9 | 760.7 |
| **7/7/2017** | 22.7 | 22.7 | 22.7 | 22.7 | 22.7 | 22.6 | 22.6 | 22.6 | 22.7 | 22.8 | 23.0 | 22.8 | 22.6 | 22.5 | 22.4 | 22.4 | 22.5 | 22.3 | 22.1 | 22.1 | 22.4 | 22.5 | 22.6 | 22.6 | 22.6 | 16.8 | 777.5 |
| **7/8/2017** | 22.5 | 22.5 | 22.4 | 22.3 | 22.2 | 22.1 | 22.0 | 21.8 | 22.0 | 22.1 | 22.6 | 22.6 | 23.0 | 23.1 | 23.0 | 22.7 | 22.4 | 22.4 | 22.8 | 22.8 | 22.9 | 22.8 | 22.8 | 22.7 | 22.5 | 16.7 | 794.3 |
| **7/9/2017** | 22.7 | 22.6 | 22.6 | 22.5 | 22.5 | 22.4 | 22.4 | 22.4 | 22.5 | 22.6 | 22.8 | 22.8 | 23.1 | 23.0 | 23.1 | 22.8 | 22.8 | 23.0 | 22.8 | 22.9 | 22.8 | 22.8 | 22.7 | 22.7 | 22.7 | 16.9 | 811.2 |
| **7/10/2017** | 22.6 | 22.6 | 22.6 | 22.5 | 22.4 | 22.4 | 22.3 | 22.4 | 22.5 | 22.6 | 23.0 | 23.2 | 23.5 | 23.9 | 25.4 | 25.6 | 24.4 | 23.6 | 23.7 | 23.7 | 23.8 | 23.5 | 23.4 | 23.3 | 23.3 | 17.5 | 828.7 |
| **7/11/2017** | 23.2 | 23.3 | 23.4 | 23.6 | 23.5 | 23.4 | 23.4 | 23.2 | 23.3 | 23.5 | 23.7 | 24.4 | 25.0 | 24.9 | 24.9 | 24.5 | 25.4 | 25.2 | 24.3 | 24.2 | 23.6 | 23.3 | 23.7 | 23.8 | 23.9 | 18.1 | 846.8 |
| **7/12/2017** | 23.8 | 23.8 | 24.0 | 24.1 | 23.9 | 24.0 | 24.1 | 24.1 | 24.2 | 24.2 | 24.1 | 24.1 | 24.1 | 24.0 | 23.9 | 23.9 | 23.9 | 23.9 | 23.8 | 23.7 | 23.5 | 23.4 | 23.3 | 23.1 | 23.8 | 18.0 | 864.9 |
| **7/13/2017** | 23.0 | 22.9 | 22.8 | 22.7 | 22.6 | 22.5 | 22.4 | 22.3 | 22.3 | 22.3 | 22.2 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.0 | 22.0 | 22.0 | 21.9 | 21.8 | 21.7 | 21.7 | 22.3 | 16.5 | 881.3 |
| **7/14/2017** | 21.6 | 21.5 | 21.4 | 21.4 | 21.3 | 21.1 | 20.9 | 20.9 | 20.8 | 20.9 | 21.0 | 20.9 | 20.7 | 20.7 | 20.7 | 20.8 | 21.0 | 20.9 | 21.1 | 20.9 | 21.0 | 21.0 | 21.0 | 20.9 | 21.0 | 15.2 | 896.5 |
| **7/15/2017** | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.3 | 20.3 | 20.3 | 20.3 | 20.5 | 20.9 | 21.2 | 21.1 | 21.2 | 20.8 | 20.7 | 20.5 | 20.3 | 21.2 | 21.1 | 21.4 | 21.3 | 21.3 | 21.4 | 20.8 | 15.0 | 911.5 |
| **7/16/2017** | 21.4 | 21.5 | 21.5 | 21.5 | 21.5 | 21.1 | 20.5 | 20.3 | 20.2 | 20.3 | 20.3 | 20.5 | 21.0 | 21.7 | 22.0 | 22.0 | 22.1 | 22.3 | 22.2 | 22.4 | 22.0 | 21.8 | 21.8 | 21.7 | 21.4 | 15.6 | 927.1 |
| **7/17/2017** | 21.5 | 21.3 | 21.2 | 21.0 | 20.8 | 20.7 | 20.6 | 20.5 | 20.5 | 20.7 | 21.2 | 21.7 | 21.6 | 22.2 | 22.0 | 21.6 | 22.9 | 22.1 | 23.4 | 22.9 | 21.6 | 21.8 | 21.5 | 21.4 | 21.5 | 15.7 | 942.9 |
| **7/18/2017** | 21.3 | 21.3 | 21.7 | 21.7 | 21.7 | 21.6 | 21.5 | 21.4 | 21.5 | 21.7 | 22.0 | 22.4 | 22.1 | 22.3 | 22.3 | 22.6 | 23.4 | 23.2 | 23.9 | 23.2 | 22.6 | 21.9 | 21.7 | 21.7 | 22.1 | 16.3 | 959.2 |
| **7/19/2017** | 22.5 | 22.8 | 23.0 | 22.4 | 21.9 | 21.6 | 21.6 | 21.9 | 22.0 | 22.1 | 22.0 | 22.0 | 21.9 | 22.0 | 22.1 | 22.5 | 22.8 | 22.8 | 22.5 | 22.2 | 22.3 | 23.4 | 23.7 | 23.8 | 22.4 | 16.6 | 975.8 |
| **7/20/2017** | 23.7 | 23.7 | 23.6 | 23.6 | 23.5 | 23.5 | 23.4 | 23.4 | 23.4 | 23.5 | 23.7 | 24.1 | 24.2 | 24.1 | 23.7 | 23.2 | 23.1 | 22.8 | 23.0 | 23.8 | 24.2 | 24.3 | 24.3 | 24.2 | 23.6 | 17.8 | 993.6 |

**Table 48.** (*continued*)

| Date | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7/21/2017** | 24.2 | 24.1 | 24.0 | 24.0 | 23.9 | 23.9 | 23.8 | 23.8 | 23.8 | 24.0 | 24.2 | 24.7 | 24.6 | 24.7 | 24.7 | 24.5 | 24.4 | 24.4 | 24.1 | 24.5 | 24.6 | 24.7 | 24.7 | 24.7 | 24.3 | 18.5 | 1012.1 |
| **7/22/2017** | 24.7 | 24.7 | 24.6 | 24.6 | 24.5 | 24.5 | 24.5 | 24.4 | 24.5 | 24.6 | 24.6 | 24.6 | 24.8 | 24.8 | 25.0 | 25.2 | 25.5 | 25.7 | 25.8 | 25.7 | 25.6 | 25.5 | 25.4 | 25.2 | 25.0 | 19.2 | 1031.3 |
| **7/23/2017** | 25.1 | 25.0 | 24.8 | 24.7 | 24.6 | 24.6 | 24.5 | 24.4 | 24.4 | 24.4 | 24.4 | 24.4 | 24.5 | 24.4 | 24.4 | 24.2 | 24.3 | 24.2 | 24.1 | 23.9 | 23.8 | 23.7 | 23.5 | 23.2 | 24.3 | 18.5 | 1049.8 |
| **7/24/2017** | 23.2 | 23.2 | 23.1 | 23.0 | 22.9 | 22.9 | 22.8 | 22.6 | 22.6 | 22.6 | 22.9 | 22.6 | 22.8 | 22.9 | 22.9 | 23.1 | 23.1 | 23.2 | 23.1 | 23.3 | 23.3 | 23.3 | 23.3 | 23.2 | 23.0 | 17.2 | 1067.0 |
| **7/25/2017** | 23.1 | 22.9 | 22.8 | 22.7 | 22.5 | 22.4 | 22.3 | 22.2 | 22.3 | 22.4 | 22.6 | 23.2 | 23.8 | 24.4 | 24.5 | 25.2 | 25.6 | 25.1 | 24.8 | 24.3 | 23.8 | 24.1 | 23.6 | 23.9 | 23.5 | 17.7 | 1084.7 |
| **7/26/2017** | 24.0 | 24.0 | 23.9 | 23.8 | 23.7 | 23.6 | 23.5 | 23.3 | 23.2 | 23.1 | 23.1 | 23.1 | 23.1 | 23.1 | 23.0 | 22.9 | 23.0 | 23.0 | 23.0 | 22.9 | 22.6 | 22.4 | 22.3 | 22.2 | 23.2 | 17.4 | 1102.1 |
| **7/27/2017** | 22.3 | 22.3 | 22.3 | 22.3 | 22.2 | 22.0 | 22.0 | 22.0 | 21.9 | 21.9 | 22.0 | 21.9 | 22.3 | 22.6 | 23.1 | 23.1 | 22.9 | 22.8 | 22.8 | 23.0 | 22.8 | 22.8 | 22.6 | 22.5 | 22.4 | 16.6 | 1118.7 |
| **7/28/2017** | 22.5 | 22.5 | 22.6 | 22.7 | 22.6 | 22.5 | 22.3 | 22.3 | 22.3 | 22.4 | 22.5 | 22.7 | 22.9 | 23.2 | 23.5 | 23.8 | 24.1 | 24.3 | 24.4 | 24.4 | 24.2 | 24.0 | 23.8 | 23.6 | 23.2 | 17.4 | 1136.1 |
| **7/29/2017** | 23.4 | 23.2 | 23.0 | 22.8 | 22.6 | 22.4 | 22.3 | 22.1 | 22.1 | 22.2 | 22.3 | 22.4 | 22.4 | 22.4 | 22.4 | 22.2 | 22.2 | 22.4 | 22.4 | 22.2 | 22.2 | 22.1 | 22.1 | 22.3 | 22.4 | 16.6 | 1152.8 |
| **7/30/2017** | 22.5 | 22.7 | 22.7 | 22.6 | 22.5 | 22.5 | 22.4 | 22.3 | 22.3 | 22.5 | 22.8 | 23.0 | 22.7 | 22.5 | 22.4 | 22.4 | 22.4 | 22.2 | 22.6 | 22.9 | 22.7 | 22.9 | 23.0 | 23.0 | 22.6 | 16.8 | 1169.6 |
| **7/31/2017** | 23.0 | 23.0 | 23.0 | 22.9 | 22.9 | 22.8 | 22.7 | 22.7 | 22.7 | 23.0 | 23.1 | 23.2 | 23.3 | 23.4 | 23.3 | 23.1 | 23.2 | 23.4 | 24.2 | 23.9 | 23.8 | 24.5 | 24.6 | 24.6 | 23.3 | 17.5 | 1187.1 |
| **8/1/2017** | 24.5 | 24.4 | 24.3 | 24.2 | 24.2 | 24.1 | 24.0 | 23.9 | 23.9 | 24.0 | 24.3 | 24.4 | 24.5 | 24.4 | 24.5 | 24.6 | 24.9 | 25.0 | 24.4 | 24.2 | 23.5 | 23.4 | 23.7 | 24.3 | 24.2 | 18.4 | 1205.6 |
| **8/2/2017** | 24.6 | 24.7 | 24.8 | 24.7 | 24.6 | 24.4 | 24.4 | 24.4 | 24.4 | 24.3 | 24.4 | 24.4 | 24.5 | 24.7 | 24.4 | 24.1 | 23.9 | 24.4 | 24.4 | 24.4 | 24.4 | 24.6 | 24.5 | 24.2 | 24.4 | 18.6 | 1224.2 |
| **8/3/2017** | 23.8 | 23.5 | 23.6 | 23.6 | 23.6 | 23.7 | 23.6 | 23.6 | 23.6 | 23.6 | 23.6 | 23.6 | 23.7 | 23.7 | 23.7 | 23.7 | 23.8 | 23.8 | 23.7 | 23.6 | 23.5 | 23.4 | 23.3 | 23.2 | 23.6 | 17.8 | 1242.0 |
| **8/4/2017** | 23.1 | 22.9 | 22.8 | 22.8 | 22.7 | 22.6 | 22.5 | 22.6 | 22.5 | 22.7 | 22.7 | 22.9 | 22.8 | 22.4 | 22.2 | 23.2 | 22.7 | 23.0 | 22.6 | 22.3 | 22.1 | 22.0 | 21.8 | 21.5 | 22.6 | 16.8 | 1258.7 |
| **8/5/2017** | 21.4 | 21.3 | 21.2 | 21.1 | 21.1 | 21.0 | 20.9 | 20.9 | 20.9 | 20.9 | 21.1 | 21.3 | 21.5 | 21.5 | 21.7 | 21.7 | 21.9 | 21.7 | 21.6 | 21.7 | 21.6 | 21.6 | 21.5 | 21.4 | 21.3 | 15.5 | 1274.3 |
| **8/6/2017** | 21.3 | 21.2 | 21.1 | 21.0 | 20.9 | 20.8 | 20.7 | 20.7 | 20.7 | 20.8 | 21.1 | 21.4 | 21.4 | 21.5 | 21.9 | 21.4 | 21.2 | 21.1 | 21.3 | 21.6 | 21.6 | 21.6 | 21.7 | 21.7 | 21.2 | 15.4 | 1289.7 |
| **8/7/2017** | 21.6 | 21.5 | 21.4 | 21.4 | 21.3 | 21.2 | 21.1 | 20.9 | 20.7 | 20.9 | 20.9 | 21.0 | 21.0 | 21.0 | 20.8 | 21.1 | 21.2 | 21.4 | 21.6 | 21.4 | 21.3 | 21.2 | 21.3 | 21.3 | 21.2 | 15.4 | 1305.1 |
| **8/8/2017** | 21.3 | 21.3 | 21.3 | 21.2 | 21.1 | 21.0 | 20.9 | 20.9 | 20.9 | 21.0 | 21.2 | 21.0 | 20.9 | 20.8 | 20.8 | 20.7 | 20.6 | 20.4 | 20.3 | 20.8 | 20.9 | 21.0 | 21.0 | 21.4 | 20.9 | 15.1 | 1320.2 |
| **8/9/2017** | 21.5 | 21.5 | 21.5 | 21.5 | 21.4 | 21.4 | 21.3 | 21.3 | 21.3 | 21.5 | 21.6 | 22.0 | 21.9 | 21.8 | 21.9 | 21.8 | 21.6 | 21.3 | 21.1 | 20.9 | 20.8 | 21.1 | 21.4 | 21.6 | 21.4 | 15.6 | 1335.9 |
| **8/10/2017** | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.2 | 22.8 | 22.9 | 23.0 | 22.9 | 23.0 | 23.0 | 23.2 | 23.3 | 23.3 | 23.2 | 23.1 | 22.9 | 22.5 | 16.7 | 1352.6 |
| **8/11/2017** | 22.8 | 22.7 | 22.6 | 22.5 | 22.4 | 22.3 | 22.2 | 22.2 | 22.2 | 22.3 | 22.5 | 22.4 | 22.5 | 22.4 | 21.7 | 21.8 | 21.9 | 21.8 | 21.6 | 21.4 | 21.8 | 21.8 | 21.7 | 21.7 | 22.1 | 16.3 | 1368.9 |
| **8/12/2017** | 21.7 | 21.6 | 21.6 | 21.5 | 21.2 | 21.2 | 21.3 | 21.3 | 21.3 | 21.3 | 21.3 | 21.2 | 21.3 | 21.4 | 21.3 | 21.4 | 21.5 | 21.4 | 21.5 | 21.5 | 21.3 | 21.4 | 21.5 | 21.5 | 21.4 | 15.6 | 1384.5 |
| **8/13/2017** | 21.6 | 21.5 | 21.4 | 21.4 | 21.3 | 21.2 | 21.2 | 21.1 | 21.2 | 21.3 | 21.7 | 21.7 | 22.0 | 22.0 | 22.0 | 21.8 | 21.8 | 21.7 | 21.4 | 21.4 | 21.7 | 21.8 | 21.7 | 21.8 | 21.5 | 15.7 | 1400.2 |
| **8/14/2017** | 21.9 | 21.9 | 21.9 | 21.9 | 21.8 | 21.8 | 21.7 | 21.7 | 21.7 | 21.8 | 22.0 | 22.1 | 22.5 | 22.7 | 22.7 | 22.9 | 23.0 | 22.9 | 23.0 | 23.3 | 23.0 | 22.9 | 22.8 | 22.6 | 22.3 | 16.5 | 1416.8 |
| **8/15/2017** | 22.4 | 22.3 | 22.2 | 22.1 | 22.0 | 22.0 | 21.9 | 21.9 | 21.9 | 22.0 | 22.0 | 21.9 | 21.7 | 21.6 | 21.6 | 21.5 | 21.6 | 21.8 | 21.8 | 21.7 | 21.6 | 21.5 | 21.6 | 21.6 | 21.8 | 16.0 | 1432.8 |

**Table 49.** Hourly recorded water temperatures in degrees Celsius at the Kewaunee River SRF in 2018. Temperature was measured from the head tank. Daily thermal units (TU) and cumulative thermal units (CTU) are calculated for the Wolf River Strain as mean daily temperature –5.8°C as described in Kempinger 1988.

| Date | 0:24 | 1:24 | 2:24 | 3:24 | 4:24 | 5:24 | 6:24 | 7:24 | 8:24 | 9:24 | 10:24 | 11:24 | 12:24 | 13:24 | 14:24 | 15:24 | 16:24 | 17:24 | 18:24 | 19:24 | 20:24 | 21:24 | 22:24 | 23:24 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/4/2018 | | | | | | | | | | | | | | | | | | | | 22.0 | 12.2 | 12.0 | 11.8 | 11.8 | 14.0 | 8.2 | 8.2 |
| 5/5/2018 | 11.8 | 11.7 | 11.7 | 11.7 | 11.7 | 11.7 | 11.7 | 11.8 | 12.1 | 12.6 | 13.5 | 13.8 | 14.0 | 14.1 | 14.3 | 14.4 | 14.5 | 14.8 | 14.9 | 14.8 | 14.5 | 14.4 | 14.3 | 14.2 | 13.3 | 7.5 | 15.7 |
| 5/6/2018 | 14.1 | 14.1 | 14.1 | 14.1 | 14.0 | 13.9 | 13.8 | 13.7 | 13.7 | 13.8 | 14.3 | 14.1 | 14.3 | 14.5 | 14.9 | 14.9 | 15.0 | 15.0 | 15.3 | 15.0 | 14.7 | 14.5 | 14.4 | 14.2 | 14.4 | 8.6 | 24.2 |
| 5/7/2018 | 14.0 | 13.8 | 13.7 | 13.5 | 13.4 | 13.1 | 13.0 | 12.9 | 13.2 | 13.6 | 13.6 | 14.0 | 13.8 | 14.2 | 14.3 | 14.2 | 15.1 | 15.3 | 15.4 | 15.1 | 14.8 | 14.6 | 14.5 | 14.4 | 14.1 | 8.3 | 32.5 |
| 5/8/2018 | 14.3 | 14.1 | 14.0 | 13.8 | 13.8 | 13.7 | 13.6 | 13.6 | 14.0 | 14.7 | 15.2 | 15.8 | 16.0 | 16.2 | 16.5 | 16.7 | 17.1 | 17.4 | 17.7 | 17.6 | 17.3 | 17.1 | 17.0 | 16.8 | 15.6 | 9.8 | 42.3 |
| 5/9/2018 | 16.5 | 16.2 | 15.9 | 15.6 | 15.3 | 15.1 | 14.9 | 14.8 | 14.7 | 14.6 | 14.4 | 14.4 | 14.1 | 13.9 | 13.8 | 13.8 | 13.8 | 13.8 | 14.0 | 13.8 | 13.8 | 13.7 | 13.7 | 13.7 | 14.5 | 8.7 | 51.0 |
| 5/10/2018 | 13.7 | 13.5 | 13.4 | 13.4 | 13.3 | 13.3 | 13.2 | 13.1 | 13.1 | 13.1 | 13.4 | 13.6 | 13.8 | 13.8 | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 | 13.7 | 13.4 | 13.2 | 13.0 | 12.8 | 13.5 | 7.7 | 58.7 |
| 5/11/2018 | 12.6 | 12.5 | 12.4 | 12.2 | 12.0 | 11.8 | 11.6 | 11.4 | 11.3 | 11.2 | 11.1 | 11.1 | 11.0 | 10.8 | 10.8 | 10.7 | 10.7 | 10.6 | 10.6 | 10.5 | 10.4 | 10.3 | 10.2 | 10.2 | 11.2 | 5.4 | 64.0 |
| 5/12/2018 | 10.1 | 10.1 | 10.0 | 9.9 | 9.8 | 9.6 | 9.4 | 9.3 | 9.5 | 9.9 | 10.2 | 10.1 | 10.5 | 10.7 | 10.8 | 11.0 | 11.3 | 11.4 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.5 | 10.5 | 4.7 | 68.8 |
| 5/13/2018 | 11.3 | 11.1 | 10.9 | 10.7 | 10.6 | 10.4 | 10.3 | 10.2 | 10.7 | 11.1 | 11.3 | 11.5 | 11.8 | 11.9 | 12.2 | 12.6 | 13.0 | 13.3 | 13.8 | 13.8 | 13.8 | 13.9 | 14.0 | 13.9 | 12.0 | 6.2 | 75.0 |
| 5/14/2018 | 13.8 | 13.7 | 13.6 | 13.4 | 13.3 | 13.1 | 12.9 | 12.9 | 13.0 | 13.1 | 13.7 | 14.1 | 14.3 | 14.7 | 14.8 | 15.4 | 15.7 | 16.0 | 16.0 | 16.3 | 16.3 | 16.5 | 16.5 | 16.4 | 14.6 | 8.8 | 83.7 |
| 5/15/2018 | 16.4 | 16.3 | 16.2 | 16.0 | 15.9 | 15.8 | 15.6 | 15.5 | 15.6 | 16.0 | 15.7 | 16.0 | 16.0 | 16.3 | 16.5 | 16.8 | 17.2 | 17.3 | 17.6 | 17.6 | 17.5 | 17.5 | 17.3 | 17.1 | 16.5 | 10.7 | 94.4 |
| 5/16/2018 | 16.8 | 16.5 | 16.1 | 15.8 | 15.5 | 15.2 | 14.8 | 14.6 | 14.8 | 15.0 | 15.0 | 15.2 | 15.5 | 15.8 | 16.1 | 16.5 | 17.1 | 17.5 | 18.0 | 18.0 | 18.0 | 18.0 | 18.1 | 18.0 | 16.3 | 10.5 | 105.0 |
| 5/17/2018 | 17.9 | 17.7 | 17.4 | 17.1 | 16.8 | 16.5 | 16.2 | 16.0 | 15.8 | 15.9 | 15.9 | 15.8 | 15.9 | 16.0 | 16.2 | 16.5 | 16.7 | 17.0 | 17.1 | 17.1 | 17.0 | 16.9 | 16.8 | 16.7 | 16.6 | 10.8 | 115.8 |
| 5/18/2018 | 16.5 | 16.3 | 16.0 | 15.8 | 15.5 | 15.2 | 14.8 | 14.6 | 14.6 | 14.5 | 14.4 | 14.4 | 14.6 | 14.9 | 15.2 | 15.6 | 16.0 | 16.2 | 16.6 | 16.7 | 16.7 | 16.8 | 16.8 | 16.8 | 15.7 | 9.9 | 125.6 |
| 5/19/2018 | 16.7 | 16.6 | 16.3 | 16.2 | 16.0 | 15.8 | 15.6 | 15.4 | 15.3 | 15.1 | 14.9 | 14.8 | 14.7 | 14.6 | 15.0 | 14.9 | 15.0 | 15.3 | 15.4 | 15.1 | 14.9 | 14.9 | 14.9 | 14.8 | 15.3 | 9.5 | 135.2 |
| 5/20/2018 | 14.7 | 14.6 | 14.4 | 14.3 | 14.0 | 13.8 | 13.7 | 13.4 | 13.3 | 13.4 | 13.6 | 13.6 | 13.6 | 13.8 | 14.1 | 14.4 | 14.8 | 15.2 | 15.6 | 15.5 | 15.5 | 15.5 | 15.4 | 15.3 | 14.4 | 8.6 | 143.7 |
| 5/21/2018 | 15.1 | 14.8 | 14.6 | 14.3 | 13.9 | 13.7 | 13.3 | 13.1 | 12.9 | 12.7 | 12.7 | 12.6 | 12.6 | 12.9 | 12.7 | 12.9 | 13.1 | 13.0 | 13.1 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | 13.3 | 7.5 | 151.3 |
| 5/22/2018 | 13.2 | 13.1 | 13.1 | 13.0 | 12.9 | 12.7 | 12.6 | 12.5 | 12.5 | 12.5 | 12.5 | 12.7 | 12.9 | 13.1 | 13.6 | 14.0 | 14.4 | 14.8 | 15.2 | 15.3 | 15.4 | 15.6 | 15.7 | 15.7 | 13.7 | 7.9 | 159.2 |
| 5/23/2018 | 15.7 | 15.6 | 15.5 | 15.4 | 15.2 | 15.1 | 14.9 | 14.7 | 15.1 | 15.3 | 15.4 | 15.6 | 15.9 | 16.1 | 16.5 | 17.0 | 17.4 | 17.9 | 18.1 | 18.3 | 18.5 | 18.6 | 18.7 | 18.7 | 16.5 | 10.7 | 169.8 |
| 5/24/2018 | 18.6 | 18.5 | 18.2 | 18.0 | 17.8 | 17.5 | 17.2 | 17.0 | 17.1 | 17.3 | 17.3 | 17.4 | 17.7 | 18.0 | 18.2 | 18.7 | 19.2 | 19.6 | 19.9 | 19.9 | 19.9 | 20.0 | 19.9 | 19.9 | 18.5 | 12.7 | 182.5 |
| 5/25/2018 | 19.9 | 19.8 | 19.7 | 19.5 | 19.3 | 19.1 | 18.8 | 18.7 | 19.0 | 19.2 | 19.3 | 19.2 | 19.7 | 19.9 | 20.4 | 20.9 | 21.3 | 21.7 | 22.0 | 22.0 | 22.0 | 22.1 | 22.1 | 22.0 | 20.3 | 14.5 | 197.0 |
| 5/26/2018 | 22.0 | 22.0 | 21.6 | 21.4 | 21.1 | 20.8 | 20.5 | 20.3 | 20.5 | 20.6 | 20.6 | 20.6 | 20.9 | 21.2 | 21.5 | 21.8 | 22.2 | 22.7 | 23.2 | 23.2 | 23.1 | 23.1 | 22.6 | 22.4 | 21.7 | 15.9 | 212.9 |
| 5/27/2018 | 22.2 | 22.0 | 22.0 | 21.9 | 21.6 | 21.4 | 21.1 | 20.9 | 20.9 | 21.2 | 21.2 | 21.3 | 21.2 | 21.5 | 21.8 | 22.1 | 22.6 | 22.9 | 23.3 | 23.3 | 23.2 | 23.1 | 23.0 | 22.8 | 22.0 | 16.2 | 229.1 |
| 5/28/2018 | 22.6 | 22.4 | 22.2 | 22.0 | 21.8 | 21.5 | 21.3 | 21.1 | 20.9 | 20.7 | 20.4 | 20.5 | 20.7 | 21.0 | 20.9 | 21.0 | 21.3 | 21.6 | 21.9 | 21.9 | 21.9 | 21.8 | 21.7 | 21.7 | 21.4 | 15.6 | 244.7 |
| 5/29/2018 | 21.6 | 21.5 | 21.4 | 21.2 | 21.0 | 20.8 | 20.6 | 20.4 | 20.5 | 20.6 | 20.5 | 20.4 | 20.3 | 20.3 | 20.9 | 21.7 | 22.3 | 22.9 | 23.2 | 23.1 | 22.9 | 22.7 | 22.5 | 22.3 | 21.5 | 15.7 | 260.4 |
| 5/30/2018 | 22.2 | 22.0 | 21.9 | 21.7 | 21.4 | 21.0 | 20.6 | 20.3 | 20.1 | 20.0 | 20.0 | 19.9 | 20.0 | 20.2 | 20.4 | 20.5 | 20.6 | 21.0 | 21.2 | 21.1 | 21.1 | 21.0 | 21.0 | 20.9 | 20.8 | 15.0 | 275.5 |
| 5/31/2018 | 20.9 | 20.8 | 20.7 | 20.5 | 20.4 | 20.3 | 20.2 | 20.0 | 20.0 | 20.0 | 19.9 | 19.9 | 20.0 | 20.1 | 20.4 | 20.6 | 21.0 | 21.4 | 21.8 | 21.8 | 21.9 | 21.9 | 21.8 | 21.7 | 20.8 | 15.0 | 290.4 |
| 6/1/2018 | 21.6 | 21.5 | 21.4 | 21.2 | 21.0 | 20.6 | 20.3 | 20.1 | 19.9 | 19.9 | 19.6 | 19.6 | 19.6 | 19.7 | 19.9 | 20.1 | 20.4 | 20.8 | 20.9 | 20.7 | 20.5 | 20.3 | 20.1 | 19.9 | 20.4 | 14.6 | 305.0 |
| 6/2/2018 | 19.8 | 19.6 | 19.4 | 19.2 | 19.0 | 18.7 | 18.5 | 18.2 | 18.0 | 17.8 | 17.7 | 17.6 | 17.6 | 17.6 | 17.8 | 18.0 | 18.3 | 18.6 | 18.7 | 18.8 | 18.8 | 18.8 | 18.6 | 18.4 | 18.5 | 12.7 | 317.7 |
| 6/3/2018 | 18.2 | 18.1 | 17.9 | 17.9 | 17.8 | 17.7 | 17.5 | 17.4 | 17.5 | 17.5 | 17.5 | 17.3 | 17.6 | 17.3 | 17.4 | 17.7 | 17.6 | 17.8 | 17.8 | 17.8 | 17.7 | 17.6 | 17.5 | 17.4 | 17.6 | 11.8 | 329.5 |
| 6/4/2018 | 17.4 | 17.2 | 17.0 | 16.8 | 16.6 | 16.4 | 16.2 | 16.0 | 16.2 | 16.2 | 16.2 | 16.3 | 16.6 | 16.9 | 17.3 | 17.8 | 18.2 | 18.6 | 18.9 | 19.0 | 19.1 | 19.0 | 19.0 | 18.8 | 17.4 | 11.6 | 341.1 |
| 6/5/2018 | 18.6 | 18.4 | 18.3 | 18.1 | 18.0 | 17.7 | 17.4 | 17.1 | 17.0 | 16.8 | 16.6 | 16.6 | 16.8 | 16.8 | 17.0 | 17.3 | 17.7 | 18.0 | 18.3 | 18.2 | 18.2 | 18.1 | 18.0 | 17.8 | 17.6 | 11.8 | 352.9 |
| 6/6/2018 | 17.6 | 17.4 | 17.2 | 16.9 | 16.7 | 16.3 | 16.0 | 15.9 | 15.9 | 16.0 | 15.6 | 15.6 | 15.6 | 15.5 | 15.3 | 15.4 | 15.4 | 15.4 | 15.5 | 15.5 | 15.4 | 15.3 | 15.2 | 15.2 | 15.9 | 10.1 | 363.0 |
| 6/7/2018 | 15.1 | 15.0 | 14.9 | 14.8 | 14.7 | 14.5 | 14.4 | 14.3 | 14.6 | 14.7 | 14.8 | 15.0 | 15.3 | 15.6 | 16.0 | 16.5 | 17.0 | 17.5 | 17.9 | 18.0 | 18.0 | 18.1 | 18.0 | 18.0 | 15.9 | 10.1 | 373.2 |
| 6/8/2018 | 17.9 | 17.8 | 17.7 | 17.6 | 17.5 | 17.4 | 17.3 | 17.1 | 17.1 | 17.0 | 16.9 | 17.0 | 17.2 | 17.4 | 17.7 | 18.0 | 18.2 | 18.4 | 18.7 | 18.9 | 19.0 | 18.9 | 18.8 | 18.7 | 17.8 | 12.0 | 385.2 |

**Table 49.** (*continued*)

| Date | 0:24 | 1:24 | 2:24 | 3:24 | 4:24 | 5:24 | 6:24 | 7:24 | 8:24 | 9:24 | 10:24 | 11:24 | 12:24 | 13:24 | 14:24 | 15:24 | 16:24 | 17:24 | 18:24 | 19:24 | 20:24 | 21:24 | 22:24 | 23:24 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6/9/2018** | 18.6 | 18.6 | 18.5 | 18.4 | 18.4 | 18.3 | 18.2 | 18.1 | 18.0 | 18.0 | 18.0 | 18.2 | 18.0 | 18.0 | 18.3 | 18.6 | 18.8 | 18.9 | 19.1 | 19.2 | 19.3 | 19.2 | 19.1 | 19.0 | 18.5 | 12.7 | 398.0 |
| **6/10/2018** | 18.9 | 18.8 | 18.7 | 18.6 | 18.5 | 18.4 | 18.2 | 18.1 | 18.0 | 18.0 | 17.9 | 17.8 | 17.9 | 17.8 | 17.7 | 17.6 | 17.6 | 17.6 | 17.6 | 17.5 | 17.4 | 17.3 | 17.2 | 17.0 | 17.9 | 12.1 | 410.1 |
| **6/11/2018** | 16.9 | 16.7 | 16.5 | 16.4 | 16.2 | 16.1 | 16.0 | 15.8 | 16.0 | 16.0 | 16.0 | 16.0 | 16.2 | 16.1 | 17.1 | 18.0 | 18.5 | 18.8 | 19.1 | 19.1 | 19.2 | 19.2 | 19.2 | 19.1 | 17.3 | 11.5 | 421.5 |
| **6/12/2018** | 18.9 | 18.7 | 18.7 | 18.5 | 18.5 | 18.4 | 18.3 | 18.3 | 18.4 | 18.4 | 18.4 | 18.5 | 18.7 | 19.2 | 19.5 | 19.7 | 19.9 | 20.4 | 20.6 | 20.8 | 21.0 | 21.1 | 21.1 | 21.1 | 19.4 | 13.6 | 435.1 |
| **6/13/2018** | 21.0 | 20.9 | 20.8 | 20.7 | 20.6 | 20.6 | 20.6 | 20.5 | 20.8 | 21.0 | 21.1 | 21.2 | 21.3 | 21.5 | 21.7 | 21.9 | 22.1 | 22.3 | 22.7 | 22.6 | 22.5 | 22.4 | 22.3 | 22.0 | 21.5 | 15.7 | 450.8 |
| **6/14/2018** | 21.9 | 21.6 | 21.3 | 21.0 | 20.7 | 20.5 | 20.2 | 20.1 | 20.4 | 20.7 | 20.8 | 20.7 | 20.7 | 20.8 | 21.0 | 21.2 | 21.5 | 21.8 | 22.0 | 22.0 | 21.8 | 21.7 | 21.5 | 21.3 | 21.1 | 15.3 | 466.1 |
| **6/15/2018** | 21.0 | 20.8 | 20.5 | 20.2 | 19.9 | 19.7 | 19.5 | 19.4 | 19.4 | 19.4 | 19.3 | 19.0 | 18.8 | 18.6 | 18.4 | 18.4 | 18.2 | 18.3 | 18.3 | 18.2 | 18.1 | 18.0 | 17.9 | 17.7 | 19.0 | 13.2 | 479.4 |
| **6/16/2018** | 17.6 | 17.5 | 17.4 | 17.3 | 17.2 | 17.1 | 17.0 | 16.9 | 16.9 | 17.3 | 17.4 | 17.8 | 18.0 | 17.8 | 17.8 | 18.0 | 18.6 | 19.0 | 19.1 | 19.0 | 19.1 | 19.1 | 19.1 | 19.2 | 18.0 | 12.2 | 491.5 |
| **6/17/2018** | 19.2 | 19.2 | 19.1 | 19.1 | 19.1 | 19.0 | 19.0 | 19.0 | 19.0 | 19.3 | 19.8 | 20.1 | 20.4 | 20.7 | 21.1 | 21.6 | 22.0 | 22.5 | 23.0 | 23.2 | 23.3 | 23.5 | 23.6 | 23.6 | 20.8 | 15.0 | 506.5 |
| **6/18/2018** | 23.6 | 23.4 | 23.3 | 23.2 | 23.2 | 23.2 | 23.1 | 23.0 | 22.9 | 22.8 | 22.7 | 22.7 | 22.7 | 22.6 | 22.4 | 22.2 | 22.0 | 22.0 | 22.0 | 21.9 | 21.7 | 21.5 | 21.3 | 21.2 | 22.5 | 16.7 | 523.3 |
| **6/19/2018** | 21.0 | 20.8 | 20.6 | 20.5 | 20.3 | 20.1 | 19.9 | 19.9 | 19.6 | 19.5 | 19.4 | 19.4 | 19.4 | 19.5 | 19.3 | 19.3 | 19.5 | 19.7 | 19.6 | 19.5 | 19.4 | 19.3 | 19.3 | 19.3 | 19.7 | 13.9 | 537.2 |
| **6/20/2018** | 19.2 | 19.2 | 19.1 | 19.0 | 18.8 | 18.7 | 18.6 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.6 | 19.0 | 19.3 | 19.5 | 19.8 | 19.9 | 20.2 | 20.1 | 20.0 | 20.0 | 20.0 | 19.9 | 19.2 | 13.4 | 550.6 |
| **6/21/2018** | 19.9 | 19.8 | 19.6 | 19.4 | 19.3 | 19.1 | 18.8 | 18.7 | 18.9 | 19.0 | 18.9 | 18.7 | 18.8 | 19.2 | 19.4 | 19.7 | 19.9 | 20.0 | 20.4 | 20.3 | 20.2 | 20.2 | 20.2 | 20.1 | 19.5 | 13.7 | 564.4 |
| **6/22/2018** | 20.0 | 19.9 | 19.9 | 19.8 | 19.5 | 19.3 | 19.0 | 18.8 | 19.0 | 19.1 | 18.6 | 19.0 | 19.1 | 19.1 | 19.1 | 19.5 | 19.9 | 20.0 | 20.1 | 20.1 | 20.1 | 20.2 | 20.1 | 20.0 | 19.6 | 13.8 | 578.1 |
| **6/23/2018** | 19.9 | 19.8 | 19.7 | 19.6 | 19.3 | 19.1 | 18.9 | 18.7 | 19.0 | 19.3 | 19.3 | 19.2 | 19.3 | 19.3 | 19.6 | 19.9 | 20.4 | 20.7 | 21.0 | 21.3 | 21.2 | 21.2 | 21.1 | 21.0 | 19.9 | 14.1 | 592.2 |
| **6/24/2018** | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.3 | 20.2 | 20.3 | 20.6 | 20.7 | 20.5 | 20.7 | 20.8 | 20.9 | 21.1 | 21.5 | 21.8 | 22.0 | 22.0 | 22.1 | 22.0 | 21.9 | 21.8 | 21.1 | 15.3 | 607.5 |
| **6/25/2018** | 21.6 | 21.3 | 21.1 | 20.9 | 20.7 | 20.4 | 20.1 | 20.0 | 19.9 | 19.8 | 19.9 | 19.9 | 20.0 | 20.1 | 20.4 | 20.8 | 21.3 | 21.7 | 22.0 | 22.1 | 22.1 | 22.1 | 22.0 | 21.7 | 20.9 | 15.1 | 622.6 |
| **6/26/2018** | 21.5 | 21.2 | 21.0 | 20.7 | 20.5 | 20.2 | 20.0 | 19.9 | 19.9 | 19.9 | 19.7 | 19.6 | 19.7 | 19.9 | 19.9 | 20.2 | 20.2 | 20.4 | 20.4 | 20.4 | 20.3 | 20.2 | 20.1 | 19.9 | 20.2 | 14.4 | 637.0 |
| **6/27/2018** | 19.8 | 19.7 | 19.6 | 19.5 | 19.4 | 19.3 | 19.2 | 19.1 | 19.0 | 19.3 | 19.4 | 19.3 | 19.5 | 19.9 | 20.1 | 20.4 | 20.7 | 21.2 | 21.5 | 21.6 | 21.6 | 21.7 | 21.7 | 21.6 | 20.2 | 14.4 | 651.4 |
| **6/28/2018** | 21.4 | 21.2 | 21.1 | 20.9 | 20.7 | 20.6 | 20.4 | 20.3 | 20.6 | 20.8 | 20.8 | 20.9 | 21.2 | 21.5 | 22.0 | 22.5 | 23.2 | 23.8 | 24.3 | 24.4 | 24.5 | 24.5 | 24.4 | 24.3 | 22.1 | 16.3 | 667.7 |
| **6/29/2018** | 24.0 | 23.7 | 23.4 | 23.2 | 23.0 | 22.7 | 22.5 | 22.4 | 22.5 | 22.6 | 22.7 | 22.7 | 23.0 | 23.4 | 23.9 | 24.4 | 24.8 | 25.4 | 25.8 | 26.0 | 26.1 | 26.2 | 26.0 | 25.8 | 24.0 | 18.2 | 685.9 |
| **6/30/2018** | 25.6 | 25.4 | 25.1 | 24.9 | 24.7 | 24.6 | 24.5 | 24.5 | 24.6 | 24.6 | 24.8 | 24.9 | 25.3 | 25.8 | 26.4 | 27.1 | 27.8 | 28.5 | 29.0 | 29.1 | 29.1 | 29.0 | 28.8 | 28.5 | 26.4 | 20.6 | 706.4 |
| **7/1/2018** | 28.1 | 27.7 | 27.3 | 26.9 | 26.6 | 26.3 | 26.0 | 25.9 | 25.7 | 25.7 | 25.7 | 25.7 | 26.0 | 26.3 | 26.8 | 27.4 | 27.9 | 28.0 | 28.3 | 28.4 | 28.3 | 28.1 | 27.8 | 27.4 | 27.0 | 21.2 | 727.6 |
| **7/2/2018** | 27.0 | 26.5 | 26.1 | 25.7 | 25.3 | 24.9 | 24.5 | 24.2 | 24.1 | 23.9 | 23.8 | 23.7 | 23.9 | 24.2 | 24.6 | 25.2 | 25.9 | 26.5 | 26.9 | 27.0 | 27.0 | 27.0 | 26.8 | 26.5 | 25.5 | 19.7 | 747.3 |
| **7/3/2018** | 26.1 | 25.7 | 25.2 | 24.8 | 24.4 | 24.2 | 23.9 | 23.6 | 23.6 | 23.6 | 23.7 | 23.7 | 23.9 | 24.2 | 24.5 | 25.2 | 25.8 | 26.4 | 27.0 | 27.0 | 27.0 | 27.0 | 26.8 | 26.6 | 25.2 | 19.4 | 766.7 |
| **7/4/2018** | 26.3 | 25.9 | 25.5 | 25.0 | 24.6 | 24.4 | 24.1 | 23.9 | 23.9 | 23.9 | 24.1 | 24.1 | 24.4 | 24.7 | 25.3 | 26.0 | 26.9 | 27.5 | 28.1 | 28.0 | 27.7 | 27.8 | 27.5 | 27.2 | 25.7 | 19.9 | 786.5 |
| **7/5/2018** | 26.8 | 26.4 | 26.0 | 25.7 | 25.4 | 25.1 | 24.9 | 24.7 | 24.7 | 24.8 | 24.8 | 24.9 | 24.9 | 25.1 | 25.4 | 25.8 | 26.2 | 26.5 | 26.8 | 26.8 | 26.7 | 26.7 | 26.5 | 26.3 | 25.8 | 20.0 | 806.5 |
| **7/6/2018** | 26.0 | 25.5 | 25.0 | 24.5 | 24.1 | 23.7 | 23.3 | 22.9 | 22.8 | 22.7 | 22.5 | 22.4 | 22.4 | 22.5 | 22.7 | 23.2 | 23.6 | 24.1 | 24.5 | 24.5 | 24.5 | 24.5 | 24.4 | 24.2 | 23.8 | 18.0 | 824.5 |
| **7/7/2018** | 23.8 | 23.4 | 22.9 | 22.4 | 22.0 | 21.5 | 21.0 | 20.7 | 20.6 | 20.6 | 20.6 | 20.6 | 20.7 | 21.0 | 21.5 | 22.0 | 22.7 | 23.5 | 24.1 | 24.2 | 24.2 | 24.1 | 24.0 | 23.8 | 22.3 | 16.5 | 841.0 |
| **7/8/2018** | 23.5 | 23.1 | 22.7 | 22.2 | 21.8 | 21.4 | 20.9 | 20.6 | 20.6 | 20.7 | 20.7 | 20.7 | 20.8 | 21.1 | 21.6 | 22.2 | 23.0 | 23.8 | 24.5 | 24.7 | 24.8 | 24.7 | 24.6 | 24.5 | 22.5 | 16.7 | 857.7 |
| **7/9/2018** | 24.3 | 24.0 | 23.6 | 23.1 | 22.7 | 22.3 | 22.0 | 21.8 | 21.7 | 21.8 | 21.9 | 22.0 | 22.0 | 22.1 | 22.6 | 23.2 | 23.9 | 24.3 | 24.8 | 25.2 | 25.3 | 25.5 | 25.6 | 25.5 | 23.4 | 17.6 | 875.2 |
| **7/10/2018** | 25.4 | 25.2 | 24.9 | 24.5 | 24.3 | 23.9 | 23.5 | 23.2 | 23.2 | 23.2 | 23.2 | 23.1 | 23.2 | 23.3 | 23.7 | 24.2 | 24.7 | 25.3 | 25.6 | 25.9 | 25.9 | 25.8 | 25.7 | 25.5 | 24.4 | 18.6 | 893.9 |
| **7/11/2018** | 25.3 | 24.9 | 24.4 | 24.1 | 23.6 | 23.1 | 22.7 | 22.3 | 22.1 | 22.2 | 22.4 | 22.0 | 22.0 | 22.2 | 22.5 | 23.0 | 23.5 | 24.2 | 24.4 | 24.7 | 24.8 | 24.8 | 24.7 | 24.6 | 23.5 | 17.7 | 911.6 |
| **7/12/2018** | 24.4 | 24.2 | 23.8 | 23.4 | 23.1 | 22.7 | 22.4 | 22.1 | 22.0 | 21.9 | 21.8 | 21.8 | 21.6 | 21.5 | 21.5 | 21.7 | 22.0 | 22.1 | 22.4 | 22.5 | 22.5 | 22.5 | 22.6 | 22.6 | 22.5 | 16.7 | 928.3 |
| **7/13/2018** | 22.5 | 22.5 | 22.4 | 22.2 | 22.1 | 22.0 | 21.9 | 21.8 | 21.7 | 21.8 | 22.0 | 22.1 | 22.3 | 22.5 | 22.5 | 23.1 | 23.5 | 23.8 | 24.0 | 24.2 | 24.3 | 24.3 | 24.3 | 24.2 | 22.8 | 17.0 | 945.3 |
| **7/14/2018** | 24.1 | 23.9 | 23.7 | 23.5 | 23.3 | 23.1 | 23.0 | 22.8 | 22.8 | 22.9 | 23.2 | 23.2 | 23.3 | 23.6 | 24.1 | 24.5 | 25.1 | 25.6 | 26.2 | 26.4 | 26.5 | 26.5 | 26.4 | 26.2 | 24.3 | 18.5 | 963.8 |

**Table 49.** (*continued*)

| Date | 0:24 | 1:24 | 2:24 | 3:24 | 4:24 | 5:24 | 6:24 | 7:24 | 8:24 | 9:24 | 10:24 | 11:24 | 12:24 | 13:24 | 14:24 | 15:24 | 16:24 | 17:24 | 18:24 | 19:24 | 20:24 | 21:24 | 22:24 | 23:24 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7/15/2018** | 26.0 | 25.6 | 25.2 | 24.9 | 24.5 | 24.3 | 24.1 | 23.8 | 23.7 | 23.6 | 23.8 | 24.0 | 24.2 | 24.4 | 24.7 | 25.1 | 25.7 | 26.2 | 26.5 | 26.7 | 26.7 | 26.7 | 26.6 | 26.4 | 25.1 | 19.3 | 983.2 |
| **7/16/2018** | 26.2 | 26.0 | 25.8 | 25.5 | 25.2 | 24.9 | 24.7 | 24.5 | 24.5 | 24.5 | 24.4 | 24.5 | 24.6 | 24.9 | 25.2 | 25.7 | 26.2 | 26.7 | 27.1 | 27.1 | 27.1 | 27.0 | 26.8 | 26.6 | 25.7 | 19.9 | 1003.0 |
| **7/17/2018** | 26.3 | 26.0 | 25.5 | 25.1 | 24.6 | 24.2 | 23.7 | 23.3 | 23.2 | 23.1 | 22.9 | 22.8 | 22.7 | 22.6 | 22.8 | 23.2 | 23.6 | 24.0 | 24.3 | 24.4 | 24.3 | 24.3 | 24.1 | 23.9 | 23.9 | 18.1 | 1021.2 |
| **7/18/2018** | 23.7 | 23.3 | 22.9 | 22.5 | 22.1 | 21.7 | 21.2 | 20.8 | 20.7 | 20.7 | 20.2 | 20.3 | 20.4 | 20.7 | 21.1 | 21.7 | 22.4 | 23.1 | 23.7 | 23.9 | 24.0 | 23.9 | 23.7 | 23.5 | 22.2 | 16.4 | 1037.5 |
| **7/19/2018** | 23.3 | 22.9 | 22.6 | 22.2 | 21.9 | 21.5 | 21.1 | 20.7 | 20.6 | 20.5 | 20.4 | 20.5 | 20.6 | 21.1 | 21.6 | 22.2 | 23.1 | 23.8 | 24.2 | 24.4 | 24.5 | 24.4 | 24.4 | 24.4 | 22.4 | 16.6 | 1054.1 |
| **7/20/2018** | 24.3 | 24.1 | 23.9 | 23.6 | 23.3 | 22.9 | 22.6 | 22.4 | 22.2 | 22.1 | 22.0 | 22.0 | 22.0 | 21.9 | 22.0 | 22.0 | 22.2 | 22.2 | 22.4 | 22.4 | 22.2 | 22.2 | 22.1 | 22.0 | 22.6 | 16.8 | 1070.9 |
| **7/21/2018** | 21.9 | 21.8 | 21.6 | 21.4 | 21.3 | 21.1 | 21.0 | 20.8 | 20.8 | 20.7 | 20.6 | 20.6 | 20.6 | 20.6 | 20.7 | 20.9 | 21.0 | 21.2 | 21.3 | 21.4 | 21.4 | 21.5 | 21.5 | 21.4 | 21.1 | 15.3 | 1086.2 |
| **7/22/2018** | 21.3 | 21.2 | 21.1 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.3 | 20.3 | 20.3 | 20.3 | 20.6 | 20.9 | 21.1 | 21.4 | 21.9 | 22.2 | 22.4 | 22.6 | 22.7 | 22.7 | 22.6 | 21.3 | 15.5 | 1101.7 |
| **7/23/2018** | 22.5 | 22.2 | 22.0 | 21.9 | 21.6 | 21.4 | 21.2 | 21.1 | 21.1 | 21.1 | 21.0 | 21.1 | 21.2 | 21.3 | 21.4 | 21.7 | 21.8 | 22.0 | 22.2 | 22.1 | 22.1 | 22.0 | 22.0 | 21.8 | 21.7 | 15.9 | 1117.5 |
| **7/24/2018** | 21.6 | 21.4 | 21.2 | 20.9 | 20.7 | 20.4 | 20.2 | 20.0 | 20.0 | 20.1 | 20.2 | 20.3 | 20.5 | 20.8 | 21.3 | 22.0 | 22.7 | 23.3 | 24.0 | 24.3 | 24.4 | 24.5 | 24.5 | 24.4 | 21.8 | 16.0 | 1133.5 |
| **7/25/2018** | 24.2 | 23.9 | 23.5 | 23.2 | 22.8 | 22.5 | 22.2 | 22.0 | 21.9 | 21.9 | 21.9 | 21.9 | 22.0 | 22.0 | 22.4 | 22.9 | 23.4 | 23.9 | 24.4 | 24.5 | 24.6 | 24.7 | 24.6 | 24.5 | 23.2 | 17.4 | 1150.9 |
| **7/26/2018** | 24.3 | 24.1 | 23.8 | 23.5 | 23.1 | 22.8 | 22.4 | 22.2 | 22.1 | 22.0 | 22.0 | 21.9 | 21.9 | 22.0 | 22.1 | 22.4 | 22.9 | 23.3 | 23.6 | 23.7 | 23.7 | 23.6 | 23.6 | 23.5 | 22.9 | 17.1 | 1168.0 |
| **7/27/2018** | 23.3 | 23.0 | 22.7 | 22.3 | 22.0 | 21.8 | 21.5 | 21.3 | 21.0 | 20.9 | 20.9 | 20.8 | 20.8 | 21.0 | 21.0 | 21.1 | 21.5 | 21.7 | 21.9 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.7 | 15.9 | 1183.9 |
| **7/28/2018** | 21.8 | 21.6 | 21.3 | 21.0 | 20.6 | 20.3 | 19.9 | 19.7 | 19.6 | 19.6 | 19.5 | 19.5 | 19.6 | 19.7 | 20.0 | 20.6 | 21.3 | 22.1 | 22.8 | 23.1 | 23.2 | 23.2 | 23.1 | 23.0 | 21.1 | 15.3 | 1199.2 |
| **7/29/2018** | 22.9 | 22.6 | 22.3 | 22.0 | 21.7 | 21.3 | 20.9 | 20.6 | 20.4 | 20.5 | 20.5 | 20.6 | 20.7 | 20.9 | 21.4 | 21.7 | 22.1 | 22.7 | 23.0 | 23.1 | 23.1 | 23.1 | 22.9 | 22.7 | 21.8 | 16.0 | 1215.2 |
| **7/30/2018** | 22.5 | 22.2 | 22.0 | 21.7 | 21.3 | 21.0 | 20.6 | 20.3 | 20.3 | 20.3 | 20.1 | 20.2 | 20.3 | 20.5 | 20.6 | 21.1 | 21.5 | 21.9 | 22.2 | 22.3 | 22.3 | 22.3 | 22.2 | 22.0 | 21.3 | 15.5 | 1230.8 |
| **7/31/2018** | 22.0 | 21.8 | 21.5 | 21.2 | 20.8 | 20.5 | 20.1 | 19.9 | 19.8 | 19.8 | 19.7 | 19.7 | 19.7 | 19.9 | 20.3 | 20.8 | 21.5 | 22.0 | 22.4 | 22.6 | 22.8 | 22.8 | 22.7 | 22.6 | 21.1 | 15.3 | 1246.1 |
| **8/1/2018** | 22.4 | 22.1 | 21.9 | 21.6 | 21.4 | 21.1 | 20.9 | 20.7 | 20.6 | 20.5 | 20.5 | 20.6 | 20.7 | 20.8 | 21.0 | 21.5 | 21.9 | 22.0 | 22.3 | 22.5 | 22.6 | 22.7 | 22.8 | 22.7 | 21.6 | 15.8 | 1261.8 |
| **8/2/2018** | 22.5 | 22.3 | 22.1 | 21.9 | 21.7 | 21.5 | 21.2 | 21.1 | 21.0 | 20.8 | 20.8 | 20.7 | 20.7 | 20.6 | 20.6 | 20.7 | 20.6 | 20.7 | 20.7 | 20.7 | 20.7 | 20.6 | 20.5 | 20.5 | 21.1 | 15.3 | 1277.1 |
| **8/3/2018** | 20.4 | 20.3 | 20.1 | 19.9 | 19.8 | 19.7 | 19.5 | 19.3 | 19.2 | 19.4 | 19.4 | 19.5 | 19.6 | 20.4 | 21.0 | 21.6 | 22.1 | 22.2 | 22.6 | 22.9 | 22.9 | 22.9 | 22.9 | 22.8 | 20.9 | 15.1 | 1292.1 |
| **8/4/2018** | 22.5 | 22.3 | 22.0 | 21.8 | 21.5 | 21.3 | 21.1 | 21.0 | 20.9 | 21.1 | 21.3 | 21.4 | 21.7 | 22.4 | 22.7 | 23.0 | 23.5 | 24.0 | 24.5 | 24.6 | 24.7 | 24.7 | 24.7 | 24.6 | 22.6 | 16.8 | 1309.0 |
| **8/5/2018** | 24.4 | 24.3 | 24.1 | 23.8 | 23.6 | 23.3 | 23.1 | 22.9 | 22.9 | 23.0 | 23.0 | 23.1 | 23.3 | 23.7 | 24.4 | 24.9 | 25.5 | 25.6 | 26.0 | 26.2 | 26.2 | 26.3 | 26.3 | 26.2 | 24.4 | 18.6 | 1327.6 |
| **8/6/2018** | 26.1 | 25.9 | 25.6 | 25.3 | 25.0 | 24.7 | 24.4 | 24.3 | 24.1 | 23.9 | 23.8 | 23.8 | 23.8 | 23.8 | 24.0 | 24.4 | 24.6 | 24.5 | 24.7 | 24.8 | 24.9 | 25.0 | 25.0 | 24.9 | 24.6 | 18.8 | 1346.5 |
| **8/7/2018** | 24.8 | 24.6 | 24.4 | 24.1 | 23.8 | 23.5 | 23.2 | 22.9 | 22.6 | 22.5 | 22.3 | 22.3 | 22.4 | 22.5 | 22.5 | 22.7 | 22.9 | 23.1 | 23.2 | 23.3 | 23.4 | 23.3 | 23.1 | 23.0 | 23.2 | 17.4 | 1363.8 |
| **8/8/2018** | 22.7 | 22.4 | 22.1 | 21.9 | 21.5 | 21.2 | 20.9 | 20.7 | 20.4 | 20.5 | 20.5 | 20.6 | 20.7 | 21.1 | 21.7 | 22.1 | 22.4 | 23.0 | 23.5 | 23.6 | 23.8 | 24.0 | 24.1 | 24.1 | 22.1 | 16.3 | 1380.1 |
| **8/9/2018** | 24.0 | 23.9 | 23.7 | 23.5 | 23.3 | 23.0 | 22.7 | 22.4 | 22.3 | 22.3 | 22.3 | 22.5 | 22.5 | 23.1 | 23.9 | 24.3 | 24.7 | 24.8 | 25.3 | 25.4 | 25.5 | 25.5 | 25.5 | 25.3 | 23.8 | 18.0 | 1398.1 |
| **8/10/2018** | 25.1 | 24.7 | 24.4 | 24.0 | 23.6 | 23.2 | 22.8 | 22.4 | 22.2 | 22.1 | 22.1 | 22.1 | 22.1 | 22.8 | 23.6 | 24.0 | 24.6 | 24.8 | 25.4 | 25.6 | 25.7 | 25.6 | 25.5 | 25.4 | 23.9 | 18.1 | 1416.3 |
| **8/11/2018** | 25.2 | 25.0 | 24.7 | 24.4 | 24.0 | 23.6 | 23.2 | 22.9 | 22.6 | 22.5 | 22.6 | 22.6 | 22.7 | 23.1 | 23.7 | 24.1 | 24.4 | 24.6 | 25.1 | 25.3 | 25.4 | 25.4 | 25.3 | 25.2 | 24.1 | 18.3 | 1434.5 |
| **8/12/2018** | 25.0 | 24.7 | 24.4 | 24.1 | 23.7 | 23.4 | 23.1 | 22.7 | 22.4 | 22.4 | 22.3 | 22.3 | 22.4 | 22.8 | 23.4 | 23.8 | 24.3 | 24.7 | 25.3 | 25.5 | 25.7 | 25.6 | 25.5 | 25.3 | 24.0 | 18.2 | 1452.7 |
| **8/13/2018** | 25.1 | 24.8 | 24.4 | 24.1 | 23.7 | 23.4 | 23.0 | 22.6 | 22.3 | 22.2 | 22.1 | 22.1 | 22.2 | 22.9 | 23.6 | 24.2 | 24.7 | 24.9 | 25.4 | 25.6 | 25.7 | 25.6 | 25.4 | 25.3 | 24.0 | 18.2 | 1470.9 |
| **8/14/2018** | 25.2 | 25.0 | 24.7 | 24.4 | 24.2 | 23.9 | 23.6 | 23.3 | 23.1 | 23.0 | 23.0 | 23.0 | 23.1 | 23.7 | 24.6 | 25.0 | 25.5 | 25.5 | 26.0 | 26.2 | 26.3 | 26.3 | 26.2 | 26.1 | 24.6 | 18.8 | 1489.7 |
| **8/15/2018** | 26.0 | 25.8 | 25.6 | 25.3 | 25.0 | 24.7 | 24.4 | 24.2 | 24.0 | 23.8 | 23.7 | 23.7 | 23.7 | 23.8 | 24.1 | 24.4 | 25.0 | 25.6 | 26.1 | 26.2 | 26.3 | 26.3 | 26.2 | 26.0 | 25.0 | 19.2 | 1508.9 |
| **8/16/2018** | 25.8 | 25.6 | 25.3 | 24.9 | 24.7 | 24.4 | 24.2 | 23.9 | 23.7 | 23.6 | 23.6 | 23.6 | 23.7 | 23.7 | 23.8 | 24.3 | 24.6 | 24.9 | 25.3 | 25.5 | 25.6 | 25.6 | 25.5 | 25.4 | 24.6 | 18.8 | 1527.7 |
| **8/17/2018** | 25.3 | 25.1 | 24.8 | 24.5 | 24.3 | 24.0 | 23.7 | 23.5 | 23.3 | 23.2 | 23.2 | 23.1 | 23.1 | 23.3 | 23.7 | 24.1 | 24.5 | 25.1 | 25.5 | 25.7 | 25.8 | 25.7 | 25.6 | 25.5 | 24.4 | 18.6 | 1546.3 |
| **8/18/2018** | 25.3 | 25.0 | 24.7 | 24.4 | 24.1 | 23.8 | 23.5 | 23.1 | 22.8 | 22.7 | 22.5 | 22.3 | 22.2 | 22.3 | 22.4 | 22.8 | 23.3 | 23.8 | 24.2 | 24.4 | 24.4 | 24.3 | 24.2 | 24.0 | 23.6 | 17.8 | 1564.1 |
| **8/19/2018** | 23.8 | 23.5 | 23.2 | 22.8 | 22.4 | 22.1 | 21.9 | 21.5 | 21.2 | 21.1 | 21.0 | 21.0 | 21.0 | 21.3 | 21.5 | 22.0 | 22.7 | 23.4 | 23.9 | 24.2 | 24.3 | 24.3 | 24.2 | 24.1 | 22.6 | 16.8 | 1580.9 |

**Table 49.** (*continued*)

| Date | 0:24 | 1:24 | 2:24 | 3:24 | 4:24 | 5:24 | 6:24 | 7:24 | 8:24 | 9:24 | 10:24 | 11:24 | 12:24 | 13:24 | 14:24 | 15:24 | 16:24 | 17:24 | 18:24 | 19:24 | 20:24 | 21:24 | 22:24 | 23:24 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **8/20/2018** | 23.9 | 23.7 | 23.4 | 23.0 | 22.7 | 22.3 | 22.1 | 21.9 | 21.7 | 21.5 | 21.5 | 21.4 | 21.3 | 21.3 | 21.3 | 21.4 | 21.6 | 22.0 | 22.1 | 22.2 | 22.4 | 22.4 | 22.5 | 22.5 | 22.2 | 16.4 | 1597.3 |
| **8/21/2018** | 22.5 | 22.5 | 22.4 | 22.2 | 22.1 | 22.0 | 21.9 | 21.7 | 21.5 | 21.4 | 21.3 | 21.2 | 21.2 | 21.1 | 21.3 | 21.3 | 21.5 | 21.6 | 21.6 | 21.7 | 21.7 | 21.7 | 21.6 | 21.5 | 21.7 | 15.9 | 1613.2 |
| **8/22/2018** | 21.3 | 21.0 | 20.7 | 20.3 | 20.0 | 19.7 | 19.4 | 19.0 | 18.8 | 18.8 | 18.7 | 18.7 | 18.8 | 19.0 | 19.4 | 19.9 | 20.5 | 21.3 | 21.8 | 22.0 | 22.0 | 22.0 | 21.9 | 21.8 | 20.3 | 14.5 | 1627.6 |
| **8/23/2018** | 21.7 | 21.4 | 21.1 | 20.8 | 20.4 | 20.1 | 19.8 | 19.5 | 19.2 | 19.2 | 19.1 | 19.1 | 19.1 | 19.3 | 19.7 | 20.2 | 21.0 | 21.8 | 22.3 | 22.6 | 22.6 | 22.6 | 22.5 | 22.4 | 20.7 | 14.9 | 1642.6 |
| **8/24/2018** | 22.3 | 22.1 | 21.9 | 21.6 | 21.3 | 21.0 | 20.8 | 20.6 | 20.4 | 20.2 | 20.0 | 20.0 | 19.9 | 19.9 | 19.9 | 19.9 | 20.1 | 20.2 | 20.3 | 20.4 | 20.4 | 20.5 | 20.5 | 20.5 | 20.6 | 14.8 | 1657.4 |
| **8/25/2018** | 20.4 | 20.4 | 20.2 | 20.1 | 20.0 | 19.9 | 19.9 | 19.8 | 19.7 | 19.6 | 19.6 | 19.6 | 19.7 | 19.9 | 20.0 | 20.3 | 20.6 | 21.1 | 21.4 | 21.6 | 21.8 | 21.9 | 22.0 | 21.9 | 20.5 | 14.7 | 1672.1 |
| **8/26/2018** | 21.8 | 21.6 | 21.4 | 21.2 | 20.9 | 20.6 | 20.3 | 20.1 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 20.2 | 20.6 | 21.2 | 21.8 | 22.1 | 22.2 | 22.3 | 22.3 | 22.3 | 22.2 | 22.1 | 21.1 | 15.3 | 1687.4 |
| **8/27/2018** | 22.0 | 21.9 | 21.7 | 21.5 | 21.3 | 21.1 | 21.0 | 20.9 | 20.8 | 20.8 | 20.9 | 20.9 | 21.0 | 21.0 | 21.2 | 21.3 | 21.6 | 21.8 | 22.0 | 22.0 | 22.2 | 22.3 | 22.3 | 22.2 | 21.5 | 15.7 | 1703.1 |
| **8/28/2018** | 22.1 | 22.0 | 21.9 | 21.8 | 21.7 | 21.6 | 21.4 | 21.3 | 21.2 | 21.3 | 21.3 | 21.2 | 21.3 | 21.3 | 21.4 | 21.4 | 21.5 | 21.3 | 21.2 | 21.1 | 20.9 | 20.8 | 20.6 | 20.5 | 21.3 | 15.5 | 1718.6 |
| **8/29/2018** | 20.3 | 20.2 | 20.1 | 19.9 | 19.9 | 19.8 | 19.7 | 19.6 | 19.4 | 19.4 | 19.4 | 19.4 | 19.3 | 19.4 | 19.4 | 19.5 | 19.7 | 19.7 | 19.7 | 19.6 | 19.5 | 19.4 | 19.3 | 19.1 | 19.6 | 13.8 | 1732.4 |
| **8/30/2018** | 18.9 | 18.8 | 18.6 | 18.5 | 18.3 | 18.2 | 18.0 | 18.0 | 17.8 | 17.9 | 18.0 | 18.0 | 18.0 | 18.1 | 18.3 | 18.5 | 18.7 | 18.8 | 18.8 | 18.8 | 18.7 | 18.6 | 18.4 | 18.2 | 18.4 | 12.6 | 1745.0 |
| **8/31/2018** | 18.0 | 17.9 | 17.7 | 17.6 | 17.4 | 17.3 | 17.2 | 17.1 | 17.1 | 17.1 | 17.3 | 17.5 | 17.7 | 17.9 | 18.1 | 18.5 | 18.9 | 19.2 | 19.4 | 19.5 | 19.6 | 19.6 | 19.6 | 19.6 | 18.2 | 12.4 | 1757.4 |
| **9/1/2018** | 19.5 | 19.4 | 19.2 | 19.1 | 19.0 | 18.9 | 18.8 | 18.8 | 18.7 | 18.8 | 18.8 | 19.0 | 19.3 | 19.4 | 19.6 | 19.8 | 19.9 | 20.2 | 20.3 | 20.5 | 20.6 | 20.6 | 20.6 | 20.6 | 19.6 | 13.8 | 1771.1 |
| **9/2/2018** | 20.5 | 20.4 | 20.3 | 20.1 | 19.9 | 19.9 | 19.8 | 19.6 | 19.6 | 19.5 | 19.6 | 19.7 | 19.9 | 20.2 | 20.6 | 21.0 | 21.3 | 21.4 | 21.5 | 21.6 | 21.6 | 21.6 | 21.7 | 21.7 | 20.5 | 14.7 | 1785.8 |
| **9/3/2018** | 21.7 | 21.6 | 21.5 | 21.4 | 21.3 | 21.1 | 21.0 | 20.8 | 20.6 | 20.5 | 20.5 | 20.5 | 20.6 | 20.7 | 20.8 | 21.1 | 21.2 | 21.3 | 21.4 | 21.4 | 21.4 | 21.4 | 21.3 | 21.3 | 21.1 | 15.3 | 1801.1 |
| **9/4/2018** | 21.3 | 21.2 | 21.2 | 21.1 | 21.0 | 20.9 | 20.8 | 20.6 | 20.4 | 20.3 | 20.3 | 20.5 | 20.7 | 21.0 | 21.2 | 21.5 | 21.7 | 21.8 | 21.9 | 21.9 | 21.9 | 21.8 | 21.8 | 21.7 | 21.2 | 15.4 | 1816.5 |
| **9/5/2018** | 21.7 | 21.6 | 21.6 | 21.7 | 21.7 | 21.8 | 21.9 | 22.0 | 22.0 | 22.1 | 22.1 | 22.1 | 22.1 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.1 | 22.0 | 22.0 | 21.9 | 21.8 | 22.0 | 16.2 | 1832.7 |
| **9/6/2018** | 21.7 | 21.6 | 21.4 | 21.2 | 21.1 | 20.9 | 20.7 | 20.5 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | 20.4 | 20.4 | 20.6 | 20.7 | 20.8 | 20.7 | 20.6 | 20.5 | 20.2 | 20.0 | 19.8 | 20.6 | 14.8 | 1847.5 |
| **9/7/2018** | 19.5 | 19.2 | 19.0 | 18.7 | 18.4 | 18.2 | 18.0 | 17.9 | 17.7 | 17.7 | 17.8 | 17.8 | 18.0 | 18.0 | 18.2 | 18.3 | 18.5 | 18.6 | 18.6 | 18.6 | 18.5 | 18.4 | 18.2 | 18.0 | 18.3 | 12.5 | 1860.1 |
| **9/8/2018** | 17.9 | 17.6 | 17.4 | 17.2 | 16.9 | 16.7 | 16.6 | 16.4 | 16.2 | 16.2 | 16.2 | 16.3 | 16.4 | 16.7 | 16.9 | 17.2 | 17.5 | 17.7 | 17.8 | 17.9 | 18.0 | 18.0 | 18.0 | 17.8 | 17.1 | 11.3 | 1871.4 |
| **9/9/2018** | 17.6 | 17.5 | 17.2 | 17.0 | 16.7 | 16.5 | 16.2 | 16.0 | 15.9 | 15.9 | 16.0 | 16.0 | 16.0 | 16.2 | 16.5 | 16.8 | 17.1 | 17.4 | 17.4 | 17.5 | 17.6 | 17.6 | 17.5 | 17.5 | 16.8 | 11.0 | 1882.4 |
| **9/10/2018** | 17.4 | 17.2 | 16.9 | 16.6 | 16.4 | 16.0 | 15.8 | 15.5 | 15.3 | 15.1 | 15.1 | 15.0 | 15.1 | 15.3 | 15.6 | 16.0 | 16.4 | 16.7 | 16.8 | 17.0 | 17.0 | 17.1 | 17.0 | 17.0 | 16.2 | 10.4 | 1892.8 |
| **9/11/2018** | 16.9 | 16.8 | 16.6 | 16.4 | 16.2 | 16.0 | 15.8 | 15.5 | 15.3 | 15.2 | 15.2 | 15.2 | 15.3 | 15.6 | 16.0 | 16.6 | 17.1 | 17.6 | 17.7 | 17.9 | 17.9 | 18.0 | 18.0 | 18.0 | 16.5 | 10.7 | 1903.5 |
| **9/12/2018** | 18.0 | 18.0 | 17.9 | 17.8 | 17.7 | 17.5 | 17.3 | 17.1 | 16.9 | 16.8 | 16.9 | 16.9 | 17.0 | 17.3 | 17.7 | 18.1 | 18.7 | 19.2 | 19.5 | 19.6 | 19.6 | 19.6 | 19.5 | 19.4 | 18.1 | 12.3 | 1915.8 |
| **9/13/2018** | 19.3 | 19.2 | 19.0 | 18.9 | 18.7 | 18.4 | 18.1 | 17.9 | 17.5 | 17.3 | 17.4 | 17.4 | 17.4 | 17.6 | 17.9 | 18.3 | 18.8 | 19.3 | 19.6 | 19.6 | 19.6 | 19.5 | 19.3 | 19.1 | 18.5 | 12.7 | 1928.5 |
| **9/14/2018** | 18.9 | 18.8 | 18.6 | 18.4 | 18.2 | 18.0 | 17.9 | 17.6 | 17.4 | 17.2 | 17.3 | 17.4 | 17.4 | 17.7 | 18.0 | 18.4 | 19.0 | 19.5 | 19.8 | 19.9 | 20.0 | 19.9 | 19.9 | 19.8 | 18.5 | 12.7 | 1941.3 |
| **9/15/2018** | 19.7 | 19.5 | 19.4 | 19.3 | 19.2 | 19.1 | 19.0 | 18.8 | 18.6 | 18.5 | 18.6 | 18.6 | 18.7 | 18.9 | 19.2 | 19.6 | 20.0 | 20.5 | 20.7 | 20.9 | 20.9 | 20.9 | 20.8 | 20.6 | 19.6 | 13.8 | 1955.1 |
| **9/16/2018** | 20.4 | 20.3 | 20.1 | 19.9 | 19.9 | 19.7 | 19.6 | 19.3 | 19.1 | 19.0 | 19.0 | 19.0 | 19.2 | 19.4 | 19.7 | 20.0 | 20.4 | 20.8 | 21.1 | 21.3 | 21.5 | 21.5 | 21.4 | 21.3 | 20.1 | 14.3 | 1969.4 |
| **9/17/2018** | 21.0 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.2 | 20.1 | 20.0 | 19.9 | 20.0 | 20.1 | 20.2 | 20.4 | 20.7 | 21.1 | 21.5 | 21.9 | 22.1 | 22.3 | 22.5 | 22.5 | 22.4 | 22.2 | 21.0 | 15.2 | 1984.6 |
| **9/18/2018** | 22.0 | 21.8 | 21.5 | 21.3 | 21.1 | 20.9 | 20.7 | 20.5 | 20.3 | 20.1 | 20.0 | 19.9 | 19.9 | 19.8 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.6 | 19.5 | 19.4 | 19.3 | 19.1 | 20.2 | 14.4 | 1999.0 |
| **9/19/2018** | 19.0 | 18.8 | 18.7 | 18.5 | 18.4 | 18.3 | 18.2 | 18.0 | 18.0 | 17.9 | 17.8 | 17.7 | 17.7 | 17.7 | 17.8 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.6 | 17.5 | 18.0 | 12.2 | 2011.2 |
| **9/20/2018** | 17.5 | 17.4 | 17.3 | 17.3 | 17.3 | 17.2 | 17.2 | 17.2 | 17.1 | 17.1 | 17.1 | 17.1 | 17.2 | 17.3 | 17.4 | 17.5 | 17.7 | 17.8 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.1 | 17.5 | 11.7 | 2022.9 |
| **9/21/2018** | 18.1 | 18.1 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.3 | 18.2 | 18.2 | 18.3 | 18.3 | 18.4 | 18.5 | 18.4 | 18.2 | 18.2 | 18.0 | 17.9 | 17.6 | 17.4 | 18.2 | 12.4 | 2035.2 |
| **9/22/2018** | 17.2 | 16.9 | 16.6 | 16.2 | 15.9 | 15.6 | 15.2 | 14.9 | 14.5 | 14.3 | 14.3 | 14.3 | 14.3 | 14.4 | 14.8 | 15.2 | 15.6 | 15.8 | 15.9 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.5 | 9.7 | 2044.9 |
| **9/23/2018** | 15.9 | 15.7 | 15.5 | 15.3 | 15.0 | 14.7 | 14.4 | 14.2 | 13.9 | 13.8 | 13.9 | 13.9 | 14.0 | 14.2 | 14.6 | 15.1 | 15.5 | 15.8 | 15.9 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.1 | 9.3 | 2054.2 |
| **9/24/2018** | 16.0 | 15.9 | 15.7 | 15.6 | 15.4 | 15.2 | 15.0 | 14.8 | 14.7 | 14.6 | 14.5 | 14.5 | 14.6 | 14.7 | 15.0 | 15.2 | 15.6 | 15.9 | 16.0 | 16.2 | 16.3 | 16.4 | 16.5 | 16.6 | 15.5 | 9.7 | 2063.8 |

**Table 49.** (*continued*)

| Date | 0:24 | 1:24 | 2:24 | 3:24 | 4:24 | 5:24 | 6:24 | 7:24 | 8:24 | 9:24 | 10:24 | 11:24 | 12:24 | 13:24 | 14:24 | 15:24 | 16:24 | 17:24 | 18:24 | 19:24 | 20:24 | 21:24 | 22:24 | 23:24 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **9/25/2018** | 16.6 | 16.7 | 16.8 | 16.8 | 16.7 | 16.7 | 16.6 | 16.6 | 16.5 | 16.4 | 16.6 | 16.7 | 16.8 | 17.0 | 17.4 | 17.8 | 18.1 | 18.4 | 18.5 | 18.6 | 18.6 | 18.6 | 18.5 | 18.3 | 17.4 | 11.6 | 2075.4 |
| **9/26/2018** | 18.1 | 18.0 | 17.9 | 17.7 | 17.5 | 17.2 | 16.9 | 16.5 | 16.2 | 16.0 | 15.9 | 15.6 | 15.5 | 15.5 | 15.6 | 15.9 | 16.2 | 16.4 | 16.5 | 16.4 | 16.3 | 16.1 | 16.0 | 15.9 | 16.5 | 10.7 | 2086.1 |
| **9/27/2018** | 15.7 | 15.5 | 15.3 | 15.1 | 15.0 | 14.7 | 14.5 | 14.3 | 14.0 | 13.9 | 13.8 | 13.8 | 13.8 | 13.9 | 14.2 | 14.5 | 14.8 | 15.0 | 15.1 | 15.1 | 15.1 | 15.1 | 15.0 | 14.9 | 14.7 | 8.9 | 2095.0 |
| **9/28/2018** | 14.9 | 14.8 | 14.8 | 14.7 | 14.7 | 14.6 | 14.5 | 14.4 | 14.2 | 14.1 | 14.0 | 13.8 | 13.8 | 13.8 | 13.8 | 13.9 | 14.0 | 14.0 | 14.0 | 14.0 | 13.8 | 13.8 | 13.6 | 13.4 | 14.2 | 8.4 | 2103.3 |
| **9/29/2018** | 13.2 | 12.9 | 12.7 | 12.5 | 12.2 | 12.0 | 11.8 | 11.5 | 11.3 | 11.2 | 11.1 | 11.1 | 10.9 | 10.9 | 10.9 | 11.0 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.0 | 10.9 | 10.8 | 11.5 | 5.7 | 2109.0 |
| **9/30/2018** | 10.7 | 10.7 | 10.7 | 10.6 | 10.6 | 10.6 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.6 | 10.6 | 10.7 | 10.7 | 10.8 | 10.9 | 11.0 | 11.0 | 11.1 | 11.1 | 11.1 | 11.1 | 10.7 | 4.9 | 2114.0 |
| **10/1/2018** | 11.0 | 11.0 | 11.0 | 10.9 | 10.9 | 10.9 | 10.8 | 10.8 | 10.8 | 10.8 | 10.9 | 10.9 | 11.0 | 11.2 | 11.2 | 11.3 | 11.4 | 11.4 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.2 | 5.4 | 2119.3 |
| **10/2/2018** | 11.5 | 11.5 | 11.5 | 11.5 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.8 | 11.9 | 12.0 | 12.1 | 12.2 | 12.3 | 12.4 | 12.4 | 12.4 | 12.5 | 12.5 | 11.9 | 6.1 | 2125.4 |
| **10/3/2018** | 12.4 | 12.4 | 12.4 | 12.3 | 12.3 | 12.3 | 12.3 | 12.4 | 12.5 | 12.5 | 12.7 | 12.8 | 13.0 | 13.2 | 13.4 | 13.6 | 13.9 | 14.2 | 14.5 | 14.6 | 14.8 | 14.9 | 15.1 | 15.3 | 13.3 | 7.5 | 2132.9 |
| **10/4/2018** | 15.4 | 15.5 | 15.4 | 15.4 | 15.3 | 15.0 | 14.8 | 14.6 | 14.4 | 14.2 | 14.0 | 14.0 | 13.9 | 13.9 | 13.9 | 14.0 | 14.2 | 14.2 | 14.2 | 14.2 | 14.1 | 14.1 | 14.0 | 14.0 | 14.5 | 8.7 | 2141.6 |
| **10/5/2018** | 13.9 | 13.8 | 13.7 | 13.5 | 13.3 | 13.2 | 13.0 | 12.9 | 12.7 | 12.5 | 12.4 | 12.4 | 12.4 | 12.3 | 12.3 | 12.3 | 12.3 | 12.5 | 13.2 | 19.7 | 20.0 | 20.2 | 20.4 | 20.7 | 14.4 | 8.6 | 2150.2 |

**Table 50.** Hourly recorded water temperatures in degrees Celsius at the Milwaukee River SRF in 2018. Temperature was measured from the head tank. Daily thermal units (TU) and cumulative thermal units (CTU) are calculated for the Wolf River strain as mean daily temperature –5.8°C as described in Kempinger 1988.

| Date | 0:20 | 1:20 | 2:20 | 3:20 | 4:20 | 5:20 | 6:20 | 7:20 | 8:20 | 9:20 | 10:20 | 11:20 | 12:20 | 13:20 | 14:20 | 15:20 | 16:20 | 17:20 | 18:20 | 19:20 | 20:20 | 21:20 | 22:20 | 23:20 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5/4/2018** | | | | | | | | | | | | | | | | | | 26.0 | 27.6 | 28.0 | 28.5 | 16.3 | 16.0 | 15.8 | 22.6 | 16.8 | 16.8 |
| **5/5/2018** | 15.5 | 15.3 | 15.0 | 14.8 | 14.6 | 14.3 | 14.0 | 13.8 | 13.7 | 13.8 | 14.3 | 15.0 | 15.7 | 16.3 | 17.2 | 18.0 | 18.5 | 18.8 | 18.7 | 18.4 | 18.0 | 17.7 | 17.3 | 16.9 | 16.1 | 10.3 | 27.1 |
| **5/6/2018** | 16.6 | 16.3 | 16.0 | 15.8 | 15.7 | 15.6 | 15.3 | 15.2 | 15.1 | 15.0 | 15.2 | 15.6 | 16.1 | 16.6 | 17.4 | 18.1 | 18.6 | 18.9 | 18.9 | 18.6 | 18.3 | 18.0 | 17.7 | 17.4 | 16.7 | 10.9 | 38.0 |
| **5/7/2018** | 17.1 | 16.7 | 16.4 | 16.1 | 15.9 | 15.6 | 15.3 | 15.0 | 14.8 | 15.0 | 15.3 | 16.0 | 16.5 | 17.2 | 17.9 | 18.7 | 19.3 | 19.6 | 19.6 | 19.4 | 19.2 | 18.8 | 18.5 | 18.2 | 17.2 | 11.4 | 49.4 |
| **5/8/2018** | 18.0 | 17.9 | 17.6 | 17.4 | 17.3 | 17.2 | 17.0 | 16.9 | 16.7 | 16.8 | 17.2 | 17.8 | 18.2 | 19.0 | 19.9 | 20.7 | 21.1 | 21.1 | 21.0 | 20.9 | 20.7 | 20.3 | 20.1 | 19.9 | 18.8 | 13.0 | 62.3 |
| **5/9/2018** | 19.7 | 19.4 | 19.2 | 18.9 | 18.6 | 18.4 | 18.2 | 18.0 | 17.9 | 17.5 | 17.3 | 17.1 | 17.0 | 17.1 | 17.2 | 18.0 | 18.1 | 18.2 | 18.3 | 18.3 | 18.3 | 18.1 | 18.0 | 17.9 | 18.1 | 12.3 | 74.7 |
| **5/10/2018** | 17.7 | 17.6 | 17.5 | 17.4 | 17.3 | 17.2 | 17.1 | 16.9 | 16.8 | 16.7 | 16.6 | 16.6 | 16.7 | 17.1 | 17.8 | 18.2 | 18.0 | 18.0 | 18.1 | 17.9 | 17.6 | 17.2 | 16.8 | 16.5 | 17.3 | 11.5 | 86.2 |
| **5/11/2018** | 16.2 | 15.9 | 15.6 | 15.4 | 15.1 | 14.8 | 14.6 | 14.3 | 14.1 | 13.8 | 13.4 | 13.2 | 13.1 | 13.1 | 12.9 | 12.9 | 12.8 | 12.7 | 12.5 | 12.4 | 12.3 | 12.1 | 12.0 | 11.8 | 13.6 | 7.8 | 94.0 |
| **5/12/2018** | 11.7 | 11.6 | 11.4 | 11.2 | 11.1 | 10.9 | 10.8 | 10.7 | 10.7 | 10.7 | 10.8 | 11.1 | 11.6 | 12.0 | 12.5 | 12.9 | 13.0 | 12.7 | 12.7 | 12.6 | 12.4 | 12.2 | 12.1 | 11.9 | 11.7 | 5.9 | 99.9 |
| **5/13/2018** | 11.7 | 11.6 | 11.5 | 11.4 | 11.3 | 11.2 | 11.1 | 11.1 | 11.1 | 11.2 | 11.4 | 11.8 | 12.3 | 13.1 | 13.8 | 14.5 | 14.8 | 14.9 | 15.0 | 15.0 | 14.9 | 14.7 | 14.5 | 14.4 | 12.9 | 7.1 | 107.0 |
| **5/14/2018** | 14.4 | 14.4 | 14.3 | 14.2 | 14.1 | 14.0 | 14.0 | 13.9 | 13.9 | 13.9 | 14.1 | 14.3 | 14.7 | 15.1 | 15.4 | 16.0 | 16.7 | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | 16.8 | 16.7 | 15.2 | 9.4 | 116.4 |
| **5/15/2018** | 16.6 | 16.6 | 16.5 | 16.6 | 16.5 | 16.5 | 16.4 | 16.3 | 16.2 | 16.3 | 16.6 | 17.1 | 17.5 | 18.0 | 18.6 | 19.2 | 19.6 | 19.7 | 19.6 | 19.4 | 19.1 | 18.8 | 18.5 | 18.2 | 17.7 | 11.9 | 128.3 |
| **5/16/2018** | 18.0 | 17.8 | 17.6 | 17.3 | 17.1 | 16.8 | 16.6 | 16.3 | 16.2 | 16.4 | 16.8 | 17.3 | 18.0 | 18.8 | 19.7 | 20.4 | 21.0 | 21.3 | 21.3 | 21.2 | 20.9 | 20.6 | 20.3 | 20.1 | 18.7 | 12.9 | 141.2 |
| **5/17/2018** | 19.9 | 19.9 | 19.7 | 19.4 | 19.2 | 18.9 | 18.6 | 18.3 | 18.0 | 17.9 | 18.0 | 18.2 | 18.6 | 19.4 | 20.0 | 20.5 | 20.5 | 20.7 | 20.5 | 20.3 | 19.9 | 19.5 | 19.2 | 18.8 | 19.3 | 13.5 | 154.7 |
| **5/18/2018** | 18.6 | 18.3 | 18.1 | 17.9 | 17.6 | 17.3 | 17.1 | 16.7 | 16.6 | 16.5 | 16.7 | 17.0 | 17.4 | 18.1 | 18.9 | 19.7 | 20.4 | 20.6 | 20.3 | 19.9 | 19.6 | 19.3 | 19.0 | 18.9 | 18.4 | 12.6 | 167.3 |
| **5/19/2018** | 18.8 | 18.7 | 18.4 | 18.1 | 18.0 | 17.8 | 17.6 | 17.5 | 17.4 | 17.3 | 17.2 | 17.2 | 17.5 | 17.7 | 17.8 | 18.0 | 18.6 | 19.1 | 19.1 | 19.1 | 19.0 | 18.6 | 18.3 | 18.0 | 18.1 | 12.3 | 179.6 |
| **5/20/2018** | 17.9 | 17.6 | 17.4 | 17.2 | 16.9 | 16.7 | 16.4 | 16.2 | 16.0 | 15.9 | 15.9 | 15.8 | 15.8 | 15.8 | 16.2 | 16.7 | 17.2 | 17.6 | 17.8 | 17.5 | 17.1 | 16.6 | 16.3 | 16.0 | 16.7 | 10.9 | 190.5 |
| **5/21/2018** | 15.7 | 15.5 | 15.3 | 15.2 | 15.0 | 14.8 | 14.7 | 14.6 | 14.5 | 14.5 | 14.5 | 14.7 | 15.1 | 15.0 | 15.0 | 14.9 | 14.8 | 14.7 | 14.6 | 14.5 | 14.4 | 14.3 | 14.2 | 14.1 | 14.8 | 9.0 | 199.4 |
| **5/22/2018** | 14.0 | 13.9 | 13.9 | 13.8 | 13.8 | 13.8 | 13.7 | 13.6 | 13.6 | 13.7 | 13.8 | 14.0 | 14.3 | 14.8 | 15.1 | 15.6 | 15.9 | 16.1 | 16.5 | 16.4 | 16.3 | 16.1 | 16.0 | 15.9 | 14.8 | 9.0 | 208.4 |
| **5/23/2018** | 15.7 | 15.6 | 15.5 | 15.4 | 15.3 | 15.1 | 14.9 | 14.8 | 14.8 | 15.1 | 15.5 | 16.0 | 16.4 | 17.3 | 18.1 | 18.6 | 18.9 | 19.2 | 19.2 | 19.0 | 18.8 | 18.6 | 18.4 | 18.3 | 16.9 | 11.1 | 219.5 |
| **5/24/2018** | 18.1 | 18.0 | 18.0 | 17.8 | 17.6 | 17.4 | 17.2 | 17.0 | 17.0 | 17.3 | 17.7 | 18.2 | 18.9 | 19.9 | 20.9 | 21.7 | 22.1 | 22.3 | 22.2 | 22.1 | 21.9 | 21.6 | 21.4 | 21.2 | 19.5 | 13.7 | 233.1 |
| **5/25/2018** | 21.0 | 20.9 | 20.7 | 20.5 | 20.3 | 20.0 | 19.8 | 19.6 | 19.5 | 19.7 | 20.1 | 22.7 | 21.3 | 22.2 | 23.3 | 23.7 | 24.0 | 24.0 | 20.7 | 21.0 | 21.0 | 21.1 | 21.4 | 21.7 | 21.3 | 15.5 | 248.6 |
| **5/26/2018** | 21.7 | 22.0 | 22.3 | 22.1 | 22.0 | 21.7 | 21.5 | 21.3 | 21.3 | 21.3 | 21.6 | 22.0 | 21.7 | 20.7 | 20.4 | 20.5 | 20.6 | 20.2 | 20.7 | 20.5 | 21.2 | 20.8 | 21.2 | 21.1 | 21.3 | 15.5 | 264.1 |
| **5/27/2018** | 21.5 | 21.2 | 21.3 | 21.3 | 21.7 | 21.9 | 22.0 | 22.4 | 22.3 | 22.1 | 21.3 | 21.6 | 20.8 | 20.3 | 20.1 | 20.2 | 21.2 | 21.3 | 21.1 | 20.9 | 21.0 | 21.0 | 21.2 | 21.2 | 21.3 | 15.5 | 279.5 |
| **5/28/2018** | 21.2 | 21.2 | 21.2 | 21.4 | 21.4 | 21.6 | 21.6 | 21.7 | 22.0 | 21.6 | 21.3 | 21.4 | 21.6 | 21.4 | 21.0 | 20.7 | 20.8 | 21.1 | 21.1 | 21.2 | 21.0 | 21.2 | 21.5 | 21.3 | 21.3 | 15.5 | 295.0 |
| **5/29/2018** | 21.6 | 21.6 | 21.6 | 21.7 | 21.7 | 22.0 | 22.0 | 22.4 | 22.2 | 22.2 | 22.3 | 20.9 | 21.6 | 22.1 | 20.6 | 20.5 | 20.7 | 20.8 | 20.8 | 20.6 | 21.1 | 21.1 | 21.2 | 21.2 | 21.4 | 15.6 | 310.7 |
| **5/30/2018** | 21.2 | 21.3 | 21.2 | 21.3 | 21.3 | 21.1 | 21.2 | 21.4 | 21.3 | 21.5 | 21.4 | 21.2 | 21.0 | 21.0 | 20.9 | 20.7 | 20.4 | 20.9 | 21.1 | 20.9 | 20.9 | 21.1 | 21.2 | 21.2 | 21.1 | 15.3 | 326.0 |
| **5/31/2018** | 21.5 | 21.6 | 21.5 | 21.7 | 21.3 | 21.8 | 21.7 | 22.0 | 22.0 | 21.9 | 21.7 | 21.0 | 20.8 | 20.6 | 20.9 | 20.1 | 20.4 | 20.4 | 20.3 | 20.4 | 20.0 | 20.6 | 20.6 | 20.9 | 21.1 | 15.3 | 341.2 |
| **6/1/2018** | 21.0 | 20.9 | 20.8 | 20.8 | 20.8 | 21.0 | 21.7 | 21.8 | 22.5 | 22.1 | 22.0 | 22.3 | 22.4 | 21.7 | 20.9 | 20.5 | 21.1 | 21.0 | 21.0 | 21.1 | 21.5 | 21.9 | 22.4 | 22.0 | 21.5 | 15.7 | 356.9 |
| **6/2/2018** | 21.6 | 21.3 | 21.1 | 20.8 | 20.6 | 20.4 | 20.2 | 19.9 | 19.8 | 19.7 | 19.4 | 19.4 | 19.6 | 19.9 | 20.2 | 20.5 | 20.8 | 21.0 | 21.1 | 21.2 | 21.0 | 20.5 | 20.1 | 19.9 | 20.4 | 14.6 | 371.5 |
| **6/3/2018** | 19.7 | 19.4 | 19.2 | 19.0 | 19.0 | 18.9 | 18.8 | 18.7 | 18.9 | 19.0 | 19.1 | 19.6 | 20.0 | 20.3 | 20.1 | 20.5 | 20.8 | 20.6 | 20.5 | 20.1 | 19.9 | 19.8 | 19.5 | 19.4 | 19.6 | 13.8 | 385.3 |
| **6/4/2018** | 19.2 | 19.0 | 18.7 | 18.4 | 18.2 | 18.0 | 17.8 | 17.5 | 17.4 | 17.4 | 17.6 | 17.9 | 18.7 | 19.6 | 20.6 | 19.8 | 21.6 | 21.8 | 21.8 | 21.8 | 21.5 | 21.2 | 20.8 | 20.8 | 19.4 | 13.6 | 399.0 |
| **6/5/2018** | 20.6 | 20.5 | 20.3 | 20.2 | 20.0 | 19.8 | 19.4 | 19.0 | 18.7 | 18.5 | 18.2 | 18.6 | 18.9 | 19.6 | 20.5 | 19.3 | 18.8 | 22.2 | 21.8 | 22.0 | 21.5 | 20.8 | 20.2 | 19.8 | 20.0 | 14.2 | 413.2 |
| **6/6/2018** | 19.4 | 19.0 | 18.7 | 18.4 | 18.1 | 18.0 | 17.7 | 17.4 | 17.3 | 17.4 | 17.7 | 18.2 | 18.5 | 18.4 | 18.5 | 18.7 | 19.5 | 19.8 | 19.9 | 20.1 | 20.0 | 19.9 | 19.4 | 19.2 | 18.7 | 12.9 | 426.1 |
| **6/7/2018** | 18.9 | 18.7 | 18.4 | 18.3 | 18.1 | 18.0 | 18.0 | 17.9 | 18.0 | 18.1 | 18.6 | 19.5 | 20.2 | 21.3 | 22.2 | 20.4 | 20.2 | 20.7 | 20.5 | 20.9 | 21.5 | 22.2 | 21.6 | 21.2 | 19.7 | 13.9 | 440.0 |

**Table 50.** (*continued*)

| Date | 0:20 | 1:20 | 2:20 | 3:20 | 4:20 | 5:20 | 6:20 | 7:20 | 8:20 | 9:20 | 10:20 | 11:20 | 12:20 | 13:20 | 14:20 | 15:20 | 16:20 | 17:20 | 18:20 | 19:20 | 20:20 | 21:20 | 22:20 | 23:20 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6/8/2018** | 20.8 | 20.5 | 20.2 | 20.1 | 19.9 | 19.8 | 19.6 | 19.5 | 19.4 | 19.3 | 19.4 | 20.0 | 20.4 | 21.3 | 22.0 | 20.6 | 20.8 | 21.2 | 20.7 | 21.1 | 21.3 | 22.2 | 21.9 | 21.5 | 20.6 | 14.8 | 454.8 |
| **6/9/2018** | 21.3 | 21.1 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.4 | 20.5 | 20.5 | 20.8 | 21.1 | 21.3 | 21.8 | 22.0 | 22.0 | 21.9 | 21.7 | 21.5 | 21.3 | 21.1 | 20.8 | 20.6 | 21.1 | 15.3 | 470.0 |
| **6/10/2018** | 20.4 | 20.3 | 20.2 | 20.1 | 19.9 | 19.9 | 19.8 | 19.5 | 19.3 | 19.2 | 19.0 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.3 | 19.4 | 19.4 | 19.3 | 19.2 | 19.1 | 19.0 | 18.9 | 19.5 | 13.7 | 483.7 |
| **6/11/2018** | 18.8 | 18.7 | 18.6 | 18.5 | 18.4 | 18.3 | 18.0 | 17.9 | 17.9 | 17.9 | 18.0 | 18.4 | 19.0 | 19.8 | 20.2 | 20.7 | 21.1 | 21.7 | 21.7 | 21.6 | 21.1 | 20.8 | 20.5 | 20.2 | 19.5 | 13.7 | 497.4 |
| **6/12/2018** | 19.9 | 19.8 | 19.6 | 19.6 | 19.5 | 19.5 | 19.4 | 19.4 | 19.4 | 19.4 | 19.5 | 19.8 | 20.0 | 20.5 | 21.4 | 20.5 | 20.3 | 20.7 | 20.4 | 20.6 | 20.9 | 21.5 | 22.3 | 21.9 | 20.2 | 14.4 | 511.8 |
| **6/13/2018** | 21.7 | 21.5 | 21.3 | 21.2 | 21.1 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 21.1 | 21.4 | 22.0 | 20.8 | 20.2 | 19.3 | 19.5 | 20.0 | 19.6 | 20.2 | 19.9 | 20.4 | 20.4 | 21.3 | 20.7 | 14.9 | 526.7 |
| **6/14/2018** | 22.4 | 22.1 | 21.7 | 21.4 | 21.1 | 20.8 | 20.7 | 20.6 | 20.6 | 20.9 | 21.3 | 22.0 | 20.5 | 19.8 | 19.2 | 19.4 | 19.7 | 19.9 | 19.9 | 19.8 | 20.3 | 20.2 | 21.3 | 22.3 | 20.7 | 14.9 | 541.7 |
| **6/15/2018** | 21.9 | 21.5 | 21.1 | 20.8 | 20.5 | 20.3 | 20.1 | 20.0 | 20.2 | 20.5 | 20.6 | 20.6 | 20.3 | 20.1 | 20.2 | 20.9 | 21.6 | 22.0 | 22.3 | 22.3 | 22.1 | 21.8 | 21.4 | 21.1 | 21.0 | 15.2 | 556.9 |
| **6/16/2018** | 20.8 | 20.6 | 20.5 | 20.3 | 20.3 | 20.2 | 20.2 | 20.2 | 20.3 | 20.5 | 20.7 | 21.6 | 22.1 | 21.1 | 20.6 | 20.3 | 20.0 | 20.1 | 20.1 | 20.4 | 20.2 | 20.3 | 20.6 | 20.6 | 20.5 | 14.7 | 571.6 |
| **6/17/2018** | 20.6 | 20.7 | 20.9 | 21.2 | 21.1 | 21.0 | 21.2 | 21.1 | 21.0 | 20.7 | 20.5 | 20.7 | 20.4 | 21.0 | 21.7 | 22.1 | 22.6 | 22.8 | 23.0 | 22.9 | 22.6 | 22.1 | 21.8 | 21.5 | 21.5 | 15.7 | 587.3 |
| **6/18/2018** | 21.3 | 21.1 | 21.0 | 20.8 | 20.7 | 20.9 | 20.5 | 20.8 | 20.7 | 20.4 | 20.7 | 21.0 | 22.1 | 23.2 | 22.8 | 21.5 | 21.0 | 20.2 | 24.6 | 25.2 | 23.3 | 23.0 | 22.5 | 22.2 | 21.7 | 15.9 | 603.3 |
| **6/19/2018** | 22.0 | 21.7 | 21.7 | 21.1 | 20.7 | 21.1 | 21.8 | 22.0 | 22.4 | 22.4 | 22.0 | 22.3 | 21.9 | 22.0 | 22.2 | 22.0 | 22.3 | 22.1 | 22.0 | 22.0 | 21.8 | 21.6 | 21.4 | 21.2 | 21.8 | 16.0 | 619.3 |
| **6/20/2018** | 21.0 | 20.8 | 20.7 | 20.6 | 20.5 | 20.5 | 20.4 | 20.3 | 20.2 | 20.2 | 20.2 | 20.4 | 20.7 | 21.0 | 21.1 | 21.3 | 21.5 | 22.1 | 21.7 | 21.7 | 22.2 | 21.9 | 21.6 | 21.3 | 21.0 | 15.2 | 634.5 |
| **6/21/2018** | 21.0 | 20.8 | 20.5 | 20.3 | 20.1 | 20.0 | 19.9 | 19.9 | 19.9 | 19.9 | 20.0 | 20.3 | 20.4 | 20.5 | 20.5 | 20.7 | 21.0 | 21.1 | 21.1 | 20.9 | 20.7 | 20.5 | 20.3 | 20.0 | 20.4 | 14.6 | 649.1 |
| **6/22/2018** | 19.9 | 19.8 | 19.6 | 19.5 | 19.4 | 19.3 | 19.1 | 19.0 | 18.9 | 18.8 | 18.8 | 18.7 | 18.7 | 19.0 | 19.4 | 19.9 | 20.4 | 20.9 | 21.0 | 21.0 | 20.8 | 20.5 | 20.1 | 19.9 | 19.7 | 13.9 | 663.0 |
| **6/23/2018** | 19.7 | 19.5 | 19.3 | 19.1 | 18.8 | 18.6 | 18.5 | 18.4 | 18.4 | 18.5 | 19.0 | 19.3 | 20.2 | 21.3 | 21.2 | 20.6 | 20.7 | 21.0 | 20.7 | 22.0 | 21.9 | 22.0 | 22.1 | 22.2 | 20.1 | 14.3 | 677.3 |
| **6/24/2018** | 22.0 | 21.8 | 21.5 | 21.4 | 21.2 | 21.1 | 20.9 | 20.7 | 20.7 | 20.7 | 20.9 | 21.7 | 21.1 | 20.9 | 21.5 | 21.7 | 22.0 | 22.3 | 22.3 | 22.0 | 21.5 | 21.0 | 21.2 | 21.3 | 21.4 | 15.6 | 692.9 |
| **6/25/2018** | 21.7 | 22.2 | 22.0 | 21.8 | 21.5 | 21.2 | 20.9 | 20.8 | 20.8 | 20.8 | 21.0 | 21.0 | 21.6 | 22.0 | 21.6 | 21.6 | 21.5 | 22.0 | 22.0 | 22.0 | 21.6 | 21.7 | 21.6 | 21.8 | 21.5 | 15.7 | 708.6 |
| **6/26/2018** | 22.2 | 22.0 | 21.7 | 21.4 | 21.1 | 20.9 | 20.7 | 20.5 | 20.5 | 20.6 | 20.5 | 21.5 | 21.7 | 21.9 | 21.8 | 21.4 | 22.0 | 21.9 | 21.8 | 21.5 | 21.4 | 21.2 | 21.0 | 20.9 | 21.3 | 15.5 | 724.2 |
| **6/27/2018** | 20.7 | 20.6 | 20.5 | 20.5 | 20.4 | 20.3 | 20.2 | 20.2 | 20.2 | 20.3 | 20.4 | 20.7 | 21.2 | 21.9 | 21.3 | 21.6 | 22.0 | 21.9 | 20.9 | 21.0 | 20.8 | 20.9 | 21.4 | 22.0 | 20.9 | 15.1 | 739.3 |
| **6/28/2018** | 22.0 | 21.7 | 21.7 | 21.6 | 21.3 | 21.1 | 20.9 | 20.7 | 20.7 | 20.9 | 21.4 | 22.0 | 21.3 | 20.7 | 21.6 | 21.9 | 21.6 | 22.0 | 21.9 | 22.0 | 21.8 | 21.4 | 21.4 | 21.2 | 21.4 | 15.6 | 754.9 |
| **6/29/2018** | 21.0 | 21.4 | 21.3 | 21.2 | 21.5 | 21.4 | 21.7 | 22.0 | 21.9 | 21.4 | 21.3 | 21.6 | 21.6 | 21.6 | 23.0 | 24.1 | 24.9 | 25.3 | 25.0 | 24.7 | 24.5 | 24.1 | 23.6 | 23.1 | 22.6 | 16.8 | 771.7 |
| **6/30/2018** | 22.6 | 22.5 | 22.0 | 21.7 | 21.6 | 21.3 | 21.6 | 21.7 | 21.2 | 21.2 | 22.0 | 21.2 | 21.4 | 22.0 | 24.5 | 25.2 | 25.8 | 26.1 | 26.2 | 26.1 | 25.7 | 25.4 | 24.8 | 24.2 | 23.2 | 17.4 | 789.2 |
| **7/1/2018** | 23.7 | 23.2 | 23.0 | 22.7 | 22.5 | 22.1 | 22.0 | 21.9 | 21.9 | 22.0 | 22.2 | 22.4 | 23.4 | 24.4 | 25.2 | 25.7 | 25.7 | 25.4 | 24.8 | 24.4 | 24.3 | 24.1 | 23.7 | 23.3 | 23.5 | 17.7 | 806.9 |
| **7/2/2018** | 22.8 | 22.2 | 21.9 | 21.5 | 21.1 | 20.7 | 20.4 | 20.4 | 19.9 | 19.9 | 20.0 | 21.2 | 21.2 | 22.0 | 22.9 | 24.1 | 24.8 | 25.2 | 27.1 | 27.0 | 26.6 | 25.9 | 25.3 | 24.5 | 22.9 | 17.1 | 823.9 |
| **7/3/2018** | 24.1 | 23.6 | 23.1 | 22.6 | 22.2 | 21.8 | 21.4 | 21.0 | 20.8 | 20.9 | 21.0 | 21.9 | 22.7 | 23.7 | 24.7 | 25.7 | 26.2 | 26.5 | 26.9 | 27.1 | 26.7 | 26.1 | 25.6 | 25.0 | 23.8 | 18.0 | 841.9 |
| **7/4/2018** | 24.5 | 24.3 | 23.9 | 23.5 | 23.2 | 22.9 | 22.6 | 22.4 | 22.3 | 22.5 | 23.0 | 24.0 | 24.2 | 24.6 | 25.9 | 27.1 | 27.6 | 27.9 | 28.1 | 27.8 | 26.6 | 25.4 | 24.8 | 24.6 | 24.7 | 18.9 | 860.9 |
| **7/5/2018** | 24.2 | 24.3 | 23.9 | 23.6 | 23.2 | 23.4 | 23.1 | 22.8 | 23.0 | 23.9 | 24.7 | 25.5 | 26.0 | 26.6 | 26.9 | 24.9 | 25.1 | 26.1 | 26.2 | 26.2 | 25.9 | 25.4 | 24.8 | 24.4 | 24.7 | 18.9 | 879.8 |
| **7/6/2018** | 23.9 | 23.2 | 22.9 | 22.3 | 22.0 | 21.6 | 21.4 | 21.0 | 20.8 | 20.8 | 20.9 | 21.1 | 20.4 | 22.6 | 23.5 | 24.3 | 24.1 | 24.4 | 24.5 | 24.4 | 23.9 | 23.3 | 22.5 | 21.9 | 22.6 | 16.8 | 896.6 |
| **7/7/2018** | 21.3 | 21.4 | 21.4 | 22.3 | 21.9 | 21.4 | 21.0 | 20.7 | 20.5 | 20.7 | 21.3 | 22.0 | 23.0 | 24.3 | 25.5 | 26.7 | 27.4 | 27.9 | 28.0 | 27.8 | 27.2 | 26.4 | 25.4 | 24.6 | 23.7 | 17.9 | 914.5 |
| **7/8/2018** | 24.0 | 23.3 | 22.7 | 22.2 | 21.7 | 21.3 | 20.9 | 20.5 | 20.4 | 20.7 | 21.2 | 21.9 | 22.9 | 24.3 | 25.6 | 27.0 | 28.0 | 28.7 | 28.5 | 28.4 | 28.0 | 27.4 | 26.7 | 25.9 | 24.2 | 18.4 | 933.0 |
| **7/9/2018** | 25.2 | 24.6 | 24.2 | 23.6 | 23.1 | 22.7 | 22.3 | 22.0 | 21.9 | 22.1 | 22.2 | 23.0 | 24.0 | 24.9 | 26.3 | 27.5 | 28.0 | 24.4 | 24.6 | 24.4 | 24.3 | 24.0 | 23.6 | 23.2 | 24.0 | 18.2 | 951.2 |
| **7/10/2018** | 22.8 | 22.6 | 22.3 | 22.0 | 21.9 | 21.6 | 21.2 | 20.9 | 20.7 | 20.7 | 20.8 | 21.3 | 22.0 | 22.7 | 23.6 | 24.4 | 24.7 | 24.4 | 24.2 | 23.8 | 23.4 | 22.8 | 22.3 | 22.0 | 22.5 | 16.7 | 967.8 |
| **7/11/2018** | 21.6 | 21.3 | 20.9 | 21.8 | 21.7 | 21.6 | 21.7 | 21.9 | 22.5 | 21.8 | 21.2 | 21.2 | 20.4 | 21.1 | 21.9 | 22.6 | 23.2 | 23.5 | 23.6 | 23.3 | 22.9 | 22.4 | 22.0 | 21.4 | 22.0 | 16.2 | 984.0 |
| **7/12/2018** | 21.0 | 21.5 | 21.9 | 21.6 | 21.9 | 21.7 | 21.8 | 22.0 | 22.0 | 21.7 | 21.4 | 21.1 | 20.8 | 21.3 | 21.7 | 21.6 | 22.0 | 22.2 | 22.6 | 22.7 | 22.6 | 22.5 | 22.2 | 22.0 | 21.8 | 16.0 | 1000.0 |
| **7/13/2018** | 21.7 | 21.4 | 21.1 | 20.9 | 20.7 | 20.5 | 21.4 | 21.1 | 21.0 | 20.6 | 20.5 | 21.2 | 21.3 | 22.0 | 22.7 | 23.8 | 24.8 | 25.3 | 25.4 | 25.3 | 24.9 | 24.4 | 23.8 | 23.2 | 22.5 | 16.7 | 1016.7 |

**Table 50.** (*continued*)

| Date | 0:20 | 1:20 | 2:20 | 3:20 | 4:20 | 5:20 | 6:20 | 7:20 | 8:20 | 9:20 | 10:20 | 11:20 | 12:20 | 13:20 | 14:20 | 15:20 | 16:20 | 17:20 | 18:20 | 19:20 | 20:20 | 21:20 | 22:20 | 23:20 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7/14/2018** | 22.7 | 22.5 | 22.3 | 22.1 | 22.0 | 21.8 | 21.6 | 21.5 | 21.4 | 21.4 | 21.5 | 21.1 | 21.4 | 21.4 | 21.3 | 21.3 | 21.2 | 20.5 | 22.8 | 21.7 | 21.6 | 21.4 | 21.0 | 21.9 | 21.6 | 15.8 | 1032.5 |
| **7/15/2018** | 21.8 | 21.7 | 21.8 | 21.8 | 21.6 | 21.5 | 21.6 | 21.6 | 21.2 | 21.1 | 21.2 | 21.3 | 22.0 | 22.0 | 22.7 | 23.4 | 24.2 | 24.4 | 25.1 | 24.9 | 24.6 | 24.4 | 23.9 | 23.4 | 22.6 | 16.8 | 1049.3 |
| **7/16/2018** | 23.1 | 22.7 | 22.4 | 22.2 | 22.0 | 21.8 | 21.8 | 21.7 | 21.6 | 21.6 | 21.8 | 22.3 | 23.0 | 23.6 | 22.0 | 21.7 | 23.3 | 23.3 | 23.2 | 22.9 | 22.5 | 22.0 | 21.5 | 21.1 | 22.3 | 16.5 | 1065.8 |
| **7/17/2018** | 20.6 | 20.3 | 20.0 | 19.8 | 20.5 | 20.2 | 19.9 | 19.7 | 19.5 | 19.5 | 19.7 | 18.1 | 18.2 | 18.6 | 19.3 | 19.9 | 20.1 | 21.3 | 23.5 | 23.2 | 22.7 | 22.2 | 21.7 | 21.0 | 20.4 | 14.6 | 1080.4 |
| **7/18/2018** | 20.4 | 20.0 | 19.7 | 20.7 | 20.9 | 21.8 | 21.9 | 21.6 | 21.4 | 21.5 | 21.8 | 21.4 | 19.9 | 20.6 | 21.4 | 21.6 | 22.1 | 22.5 | 22.0 | 22.3 | 22.0 | 21.6 | 21.0 | 20.5 | 21.3 | 15.5 | 1095.9 |
| **7/19/2018** | 20.0 | 20.2 | 20.7 | 21.2 | 22.1 | 21.8 | 21.5 | 21.1 | 20.9 | 21.0 | 21.4 | 22.0 | 19.7 | 19.8 | 21.1 | 22.4 | 22.8 | 22.7 | 22.6 | 22.3 | 22.0 | 21.8 | 21.5 | 21.3 | 21.4 | 15.6 | 1111.5 |
| **7/20/2018** | 21.1 | 20.9 | 20.6 | 20.4 | 20.2 | 20.0 | 19.9 | 19.8 | 20.0 | 19.7 | 19.8 | 19.6 | 20.6 | 20.8 | 21.3 | 21.7 | 22.1 | 22.2 | 21.8 | 22.0 | 21.7 | 21.4 | 21.1 | 20.9 | 20.8 | 15.0 | 1126.5 |
| **7/21/2018** | 20.7 | 20.4 | 20.3 | 20.1 | 19.9 | 19.8 | 19.7 | 19.6 | 19.6 | 19.5 | 19.5 | 21.8 | 20.8 | 20.1 | 20.1 | 20.4 | 20.4 | 20.4 | 20.3 | 20.2 | 20.0 | 19.9 | 19.9 | 20.0 | 20.2 | 14.4 | 1140.9 |
| **7/22/2018** | 20.9 | 20.7 | 21.6 | 22.0 | 21.9 | 21.8 | 21.7 | 21.5 | 21.5 | 21.4 | 21.4 | 21.2 | 21.5 | 21.9 | 20.2 | 21.1 | 21.9 | 22.4 | 22.7 | 21.2 | 22.1 | 21.8 | 21.3 | 20.9 | 21.5 | 15.7 | 1156.6 |
| **7/23/2018** | 20.5 | 20.2 | 19.9 | 21.7 | 21.8 | 21.5 | 21.3 | 21.1 | 21.0 | 21.1 | 21.2 | 21.4 | 20.7 | 19.7 | 20.9 | 21.2 | 21.3 | 21.4 | 21.5 | 21.5 | 21.5 | 21.3 | 20.9 | 20.5 | 21.0 | 15.2 | 1171.8 |
| **7/24/2018** | 20.2 | 19.9 | 19.9 | 20.0 | 20.4 | 22.0 | 21.7 | 21.5 | 21.3 | 21.5 | 21.9 | 19.6 | 20.1 | 20.7 | 21.5 | 21.6 | 23.1 | 23.7 | 24.0 | 23.7 | 23.4 | 22.9 | 22.3 | 21.8 | 21.6 | 15.8 | 1187.6 |
| **7/25/2018** | 21.3 | 20.9 | 20.6 | 20.3 | 20.0 | 20.5 | 20.6 | 22.0 | 22.0 | 21.8 | 21.3 | 20.8 | 19.9 | 20.7 | 21.3 | 21.7 | 22.6 | 23.0 | 23.0 | 22.8 | 22.5 | 22.0 | 21.6 | 21.3 | 21.4 | 15.6 | 1203.2 |
| **7/26/2018** | 21.0 | 20.5 | 20.0 | 20.7 | 20.8 | 20.4 | 21.1 | 21.3 | 21.9 | 22.2 | 21.2 | 20.9 | 20.5 | 21.1 | 21.7 | 22.2 | 22.3 | 21.8 | 22.0 | 21.9 | 21.5 | 21.0 | 20.6 | 20.2 | 21.2 | 15.4 | 1218.6 |
| **7/27/2018** | 19.9 | 19.9 | 20.9 | 21.9 | 22.0 | 21.7 | 21.4 | 21.1 | 21.0 | 21.0 | 21.1 | 21.1 | 21.8 | 22.0 | 19.9 | 19.8 | 19.9 | 21.2 | 20.4 | 20.4 | 20.2 | 20.0 | 20.0 | 20.6 | 20.8 | 15.0 | 1233.6 |
| **7/28/2018** | 22.1 | 21.8 | 21.5 | 21.1 | 20.7 | 20.4 | 20.1 | 19.9 | 19.8 | 19.8 | 19.9 | 20.5 | 21.4 | 22.1 | 20.0 | 20.5 | 20.9 | 21.0 | 21.2 | 21.2 | 20.9 | 20.6 | 20.3 | 19.9 | 20.7 | 14.9 | 1248.6 |
| **7/29/2018** | 19.9 | 22.0 | 21.8 | 21.4 | 21.0 | 20.7 | 20.4 | 20.2 | 20.0 | 20.1 | 20.5 | 21.2 | 22.0 | 19.9 | 20.9 | 21.7 | 22.0 | 22.6 | 22.8 | 22.2 | 21.9 | 21.3 | 20.8 | 20.5 | 21.2 | 15.4 | 1263.9 |
| **7/30/2018** | 20.3 | 20.9 | 19.9 | 19.6 | 21.8 | 21.5 | 21.1 | 20.7 | 20.5 | 20.5 | 20.8 | 21.5 | 20.8 | 21.2 | 22.1 | 23.1 | 23.9 | 24.1 | 23.7 | 23.4 | 23.0 | 22.5 | 22.0 | 21.6 | 21.7 | 15.9 | 1279.8 |
| **7/31/2018** | 21.1 | 20.7 | 20.2 | 21.8 | 21.5 | 21.1 | 20.8 | 20.4 | 20.2 | 20.3 | 20.4 | 20.9 | 21.5 | 20.6 | 19.9 | 20.4 | 21.5 | 21.8 | 22.1 | 22.0 | 22.0 | 21.7 | 21.3 | 21.0 | 21.0 | 15.2 | 1295.1 |
| **8/1/2018** | 20.7 | 20.3 | 20.0 | 20.6 | 22.0 | 21.7 | 21.4 | 21.1 | 20.9 | 21.1 | 21.5 | 21.8 | 20.7 | 20.4 | 21.5 | 22.2 | 22.7 | 23.2 | 23.2 | 23.1 | 22.9 | 22.5 | 22.1 | 21.7 | 21.6 | 15.8 | 1310.9 |
| **8/2/2018** | 21.4 | 21.1 | 20.8 | 20.5 | 20.3 | 20.1 | 19.9 | 19.8 | 19.6 | 19.6 | 19.7 | 20.0 | 20.4 | 20.7 | 20.8 | 21.3 | 21.4 | 21.6 | 22.0 | 22.1 | 22.0 | 21.6 | 21.2 | 20.8 | 20.8 | 15.0 | 1325.9 |
| **8/3/2018** | 20.4 | 20.2 | 19.9 | 20.3 | 20.3 | 22.0 | 21.9 | 21.7 | 21.6 | 21.6 | 21.8 | 20.4 | 20.6 | 21.1 | 20.9 | 21.8 | 22.6 | 23.0 | 22.9 | 22.7 | 22.4 | 22.0 | 21.7 | 21.3 | 21.5 | 15.7 | 1341.6 |
| **8/4/2018** | 21.0 | 20.7 | 20.5 | 20.2 | 20.0 | 19.9 | 19.7 | 20.7 | 21.0 | 21.1 | 19.7 | 20.4 | 21.2 | 22.0 | 23.0 | 23.8 | 24.0 | 24.2 | 24.1 | 24.0 | 23.9 | 23.7 | 23.4 | 23.1 | 21.9 | 16.1 | 1357.6 |
| **8/5/2018** | 22.7 | 22.5 | 22.1 | 22.0 | 21.8 | 21.6 | 21.4 | 21.2 | 21.1 | 21.1 | 21.3 | 21.9 | 22.0 | 22.5 | 23.4 | 24.3 | 24.8 | 25.2 | 25.2 | 25.1 | 24.7 | 24.7 | 24.3 | 23.8 | 22.9 | 17.1 | 1374.8 |
| **8/6/2018** | 23.4 | 23.2 | 22.9 | 22.7 | 22.3 | 22.1 | 21.9 | 21.6 | 21.4 | 21.3 | 20.9 | 21.8 | 21.9 | 21.5 | 22.0 | 22.8 | 23.2 | 23.6 | 23.8 | 23.6 | 23.2 | 22.9 | 22.6 | 22.2 | 22.4 | 16.6 | 1391.4 |
| **8/7/2018** | 22.0 | 21.8 | 21.5 | 21.3 | 21.0 | 20.7 | 20.6 | 20.4 | 20.4 | 20.3 | 20.4 | 21.8 | 22.0 | 22.3 | 22.6 | 22.7 | 22.8 | 22.9 | 22.6 | 22.2 | 22.0 | 21.9 | 21.4 | 21.1 | 21.6 | 15.8 | 1407.2 |
| **8/8/2018** | 20.8 | 20.5 | 20.2 | 20.0 | 19.8 | 21.2 | 21.1 | 20.9 | 20.8 | 20.8 | 21.1 | 21.5 | 19.7 | 20.5 | 21.4 | 22.0 | 22.9 | 23.0 | 23.4 | 23.3 | 23.1 | 22.8 | 22.2 | 21.9 | 21.5 | 15.7 | 1422.9 |
| **8/9/2018** | 21.5 | 21.2 | 20.9 | 20.7 | 20.6 | 20.4 | 20.2 | 20.0 | 19.9 | 20.0 | 20.2 | 20.4 | 20.9 | 21.7 | 22.2 | 22.8 | 22.9 | 22.7 | 20.4 | 22.4 | 22.2 | 22.0 | 21.6 | 21.3 | 21.2 | 15.4 | 1438.3 |
| **8/10/2018** | 21.0 | 20.6 | 20.3 | 19.9 | 21.9 | 21.8 | 21.5 | 21.2 | 20.9 | 21.1 | 21.4 | 22.0 | 19.6 | 20.2 | 21.3 | 22.2 | 22.9 | 23.2 | 23.4 | 23.2 | 22.7 | 22.2 | 21.6 | 21.0 | 21.5 | 15.7 | 1454.1 |
| **8/11/2018** | 20.5 | 20.1 | 19.8 | 20.3 | 21.2 | 22.1 | 21.9 | 21.6 | 21.5 | 21.5 | 21.7 | 19.8 | 20.3 | 21.2 | 22.0 | 23.0 | 23.7 | 24.1 | 24.0 | 24.4 | 24.1 | 23.6 | 23.1 | 22.6 | 22.0 | 16.2 | 1470.3 |
| **8/12/2018** | 22.1 | 21.8 | 21.5 | 21.1 | 20.8 | 20.4 | 20.0 | 19.8 | 21.9 | 21.9 | 22.0 | 20.8 | 21.4 | 22.3 | 23.3 | 24.4 | 24.9 | 25.2 | 25.3 | 25.0 | 24.6 | 24.1 | 23.5 | 22.9 | 22.5 | 16.7 | 1487.0 |
| **8/13/2018** | 22.3 | 21.9 | 21.5 | 21.2 | 20.8 | 20.4 | 20.0 | 19.8 | 19.5 | 21.7 | 19.9 | 20.5 | 21.2 | 22.2 | 23.4 | 24.4 | 25.2 | 25.5 | 25.6 | 25.3 | 24.8 | 24.3 | 23.7 | 23.2 | 22.4 | 16.6 | 1503.6 |
| **8/14/2018** | 22.8 | 22.4 | 22.0 | 21.8 | 21.5 | 21.1 | 20.8 | 20.6 | 20.4 | 20.4 | 20.6 | 20.1 | 20.6 | 21.3 | 22.1 | 22.7 | 23.2 | 23.3 | 23.2 | 23.4 | 23.1 | 22.7 | 22.4 | 22.0 | 21.9 | 16.1 | 1519.7 |
| **8/15/2018** | 21.6 | 21.3 | 20.9 | 20.6 | 20.3 | 20.1 | 21.0 | 21.0 | 20.7 | 20.4 | 20.3 | 20.3 | 20.4 | 22.1 | 21.7 | 22.2 | 23.0 | 23.4 | 23.3 | 23.0 | 22.8 | 22.5 | 22.0 | 21.7 | 21.5 | 15.7 | 1535.4 |
| **8/16/2018** | 21.3 | 21.1 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.3 | 20.2 | 20.2 | 20.2 | 20.8 | 21.1 | 21.9 | 22.7 | 23.2 | 23.9 | 24.1 | 22.4 | 23.9 | 23.7 | 23.2 | 22.7 | 22.4 | 21.8 | 16.0 | 1551.4 |
| **8/17/2018** | 22.1 | 22.0 | 21.9 | 21.7 | 21.4 | 21.2 | 21.1 | 20.9 | 20.7 | 20.6 | 20.5 | 20.6 | 20.2 | 20.1 | 20.1 | 20.3 | 21.1 | 21.7 | 22.1 | 22.3 | 22.0 | 21.9 | 21.3 | 20.9 | 21.2 | 15.4 | 1566.8 |
| **8/18/2018** | 20.5 | 20.3 | 20.1 | 19.9 | 19.8 | 19.6 | 19.3 | 22.0 | 21.9 | 21.8 | 22.0 | 22.3 | 19.9 | 20.7 | 21.2 | 22.0 | 22.2 | 23.1 | 23.1 | 22.8 | 22.5 | 22.1 | 21.8 | 21.4 | 21.3 | 15.5 | 1582.4 |

**Table 50.** (*continued*)

| Date | 0:20 | 1:20 | 2:20 | 3:20 | 4:20 | 5:20 | 6:20 | 7:20 | 8:20 | 9:20 | 10:20 | 11:20 | 12:20 | 13:20 | 14:20 | 15:20 | 16:20 | 17:20 | 18:20 | 19:20 | 20:20 | 21:20 | 22:20 | 23:20 | Daily Mean | Daily TU | CTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **8/19/2018** | 21.0 | 20.6 | 20.2 | 19.9 | 22.2 | 21.9 | 21.6 | 21.3 | 21.1 | 21.0 | 21.3 | 21.7 | 20.2 | 21.2 | 22.0 | 22.7 | 23.6 | 24.1 | 24.1 | 23.9 | 23.5 | 22.9 | 22.3 | 21.9 | 21.9 | 16.1 | 1598.5 |
| **8/20/2018** | 21.6 | 21.3 | 21.0 | 20.8 | 20.5 | 20.3 | 20.1 | 20.5 | 22.0 | 22.1 | 20.0 | 20.3 | 20.8 | 20.8 | 21.0 | 21.3 | 21.4 | 21.5 | 21.4 | 21.3 | 21.2 | 21.0 | 20.7 | 20.4 | 21.0 | 15.2 | 1613.6 |
| **8/21/2018** | 20.0 | 21.9 | 21.5 | 21.3 | 21.3 | 21.2 | 21.2 | 21.1 | 21.2 | 21.4 | 21.4 | 21.4 | 21.7 | 22.0 | 20.6 | 22.0 | 20.7 | 21.3 | 21.9 | 21.9 | 22.0 | 21.8 | 21.6 | 21.4 | 21.4 | 15.6 | 1629.2 |
| **8/22/2018** | 21.2 | 21.0 | 20.8 | 20.6 | 20.4 | 20.2 | 20.0 | 19.9 | 19.9 | 19.8 | 19.8 | 19.9 | 20.7 | 21.3 | 22.0 | 19.9 | 20.2 | 20.1 | 20.1 | 21.3 | 19.8 | 21.8 | 21.4 | 21.1 | 20.6 | 14.8 | 1644.0 |
| **8/23/2018** | 20.9 | 20.7 | 20.5 | 20.4 | 20.2 | 20.0 | 19.9 | 19.6 | 19.4 | 19.4 | 19.6 | 19.9 | 20.4 | 21.2 | 22.0 | 19.7 | 20.1 | 20.2 | 20.2 | 20.8 | 20.3 | 21.4 | 22.0 | 21.8 | 20.4 | 14.6 | 1658.6 |
| **8/24/2018** | 21.5 | 21.3 | 21.0 | 20.8 | 20.7 | 20.5 | 20.5 | 20.4 | 20.5 | 20.5 | 20.6 | 20.4 | 20.7 | 20.7 | 20.7 | 21.0 | 21.6 | 21.7 | 21.4 | 21.1 | 20.9 | 20.7 | 20.6 | 20.5 | 20.8 | 15.0 | 1673.7 |
| **8/25/2018** | 20.3 | 20.2 | 20.1 | 20.1 | 20.1 | 20.2 | 20.2 | 20.2 | 20.3 | 20.4 | 20.6 | 21.0 | 21.5 | 20.0 | 20.4 | 21.0 | 21.4 | 21.6 | 21.6 | 21.4 | 21.2 | 20.8 | 20.5 | 20.2 | 20.7 | 14.9 | 1688.5 |
| **8/26/2018** | 19.9 | 20.8 | 22.0 | 21.8 | 21.6 | 21.5 | 21.3 | 21.2 | 21.1 | 21.1 | 21.5 | 22.0 | 20.3 | 21.0 | 21.7 | 22.4 | 22.9 | 22.9 | 22.6 | 22.2 | 21.6 | 21.2 | 20.9 | 20.6 | 21.5 | 15.7 | 1704.2 |
| **8/27/2018** | 20.2 | 20.1 | 19.9 | 19.9 | 19.9 | 19.8 | 19.9 | 21.8 | 21.9 | 22.0 | 22.0 | 21.7 | 20.5 | 20.3 | 19.9 | 19.4 | 19.6 | 19.8 | 20.2 | 20.2 | 20.1 | 21.3 | 20.6 | 19.8 | 20.4 | 14.6 | 1718.9 |
| **8/28/2018** | 19.9 | 19.8 | 19.7 | 19.8 | 19.7 | 19.6 | 19.6 | 21.8 | 22.1 | 22.0 | 22.0 | 22.2 | 20.8 | 21.3 | 20.6 | 20.4 | 20.5 | 20.6 | 20.2 | 20.2 | 20.2 | 20.1 | 20.0 | 19.9 | 20.5 | 14.7 | 1733.6 |
| **8/29/2018** | 19.8 | 19.7 | 19.7 | 19.6 | 19.6 | 22.0 | 22.0 | 22.0 | 21.8 | 21.8 | 21.4 | 21.6 | 21.7 | 21.8 | 22.0 | 22.0 | 22.0 | 22.0 | 21.9 | 21.8 | 21.7 | 21.6 | 21.4 | 21.1 | 21.3 | 15.5 | 1749.1 |
| **8/30/2018** | 21.1 | 21.0 | 20.9 | 20.8 | 20.6 | 20.5 | 20.3 | 20.1 | 20.0 | 20.0 | 20.0 | 19.9 | 20.0 | 20.1 | 20.4 | 20.5 | 20.7 | 20.7 | 20.6 | 20.6 | 20.6 | 20.5 | 20.3 | 20.2 | 20.5 | 14.7 | 1763.8 |
| **8/31/2018** | 20.1 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.4 | 19.4 | 19.3 | 19.3 | 19.4 | 19.6 | 19.8 | 20.0 | 20.4 | 20.8 | 20.8 | 21.0 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.0 | 20.2 | 14.4 | 1778.2 |
| **9/1/2018** | 21.0 | 21.0 | 21.0 | 21.0 | 20.9 | 20.9 | 20.9 | 20.8 | 20.8 | 20.8 | 20.9 | 20.9 | 20.9 | 21.0 | 21.0 | 21.1 | 21.3 | 21.6 | 21.6 | 21.6 | 21.6 | 21.5 | 21.5 | 21.4 | 21.1 | 15.3 | 1793.5 |
| **9/2/2018** | 21.4 | 21.4 | 21.4 | 21.4 | 21.4 | 21.3 | 21.3 | 21.2 | 21.2 | 21.2 | 21.2 | 21.3 | 21.5 | 21.7 | 21.9 | 20.8 | 20.6 | 20.4 | 21.5 | 22.0 | 22.2 | 22.2 | 22.1 | 22.1 | 21.4 | 15.6 | 1809.1 |
| **9/3/2018** | 22.1 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.9 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.9 | 22.0 | 16.2 | 1825.3 |
| **9/4/2018** | 21.9 | 21.8 | 21.9 | 21.9 | 21.3 | 21.8 | 21.8 | 21.7 | 21.7 | 21.7 | 21.8 | 21.9 | 21.3 | 19.9 | 21.6 | 23.2 | 22.3 | 22.5 | 21.6 | 20.7 | 22.9 | 23.4 | 23.4 | 23.4 | 22.0 | 16.2 | 1841.5 |
| **9/5/2018** | 23.3 | 23.3 | 23.3 | 23.2 | 23.2 | 23.1 | 23.1 | 23.0 | 23.0 | 23.0 | 23.0 | 23.1 | 23.2 | 23.1 | 23.1 | 23.0 | 23.0 | 23.0 | 23.0 | 22.8 | 22.8 | 22.7 | 22.7 | 22.6 | 23.0 | 17.2 | 1858.7 |
| **9/6/2018** | 22.5 | 22.3 | 22.2 | 22.1 | 22.0 | 21.9 | 21.8 | 21.6 | 21.5 | 21.3 | 21.2 | 21.1 | 21.2 | 21.5 | 21.8 | 22.0 | 22.0 | 22.1 | 22.0 | 21.9 | 21.7 | 21.5 | 21.3 | 21.1 | 21.7 | 15.9 | 1874.6 |
| **9/7/2018** | 20.9 | 20.8 | 20.6 | 20.4 | 20.2 | 20.1 | 19.9 | 19.7 | 19.6 | 19.5 | 19.6 | 19.7 | 19.7 | 19.8 | 19.8 | 19.9 | 19.9 | 19.9 | 19.9 | 19.6 | 19.6 | 19.5 | 19.4 | 19.3 | 19.9 | 14.1 | 1888.7 |
| **9/8/2018** | 19.2 | 19.0 | 18.9 | 18.7 | 18.6 | 18.4 | 18.3 | 18.2 | 18.1 | 18.0 | 18.0 | 18.0 | 18.1 | 18.3 | 18.6 | 18.7 | 19.1 | 19.0 | 18.9 | 18.9 | 18.8 | 18.6 | 18.5 | 18.5 | 18.6 | 12.8 | 1901.5 |
| **9/9/2018** | 18.5 | 18.4 | 18.3 | 18.2 | 18.0 | 18.0 | 17.8 | 17.7 | 17.5 | 17.4 | 17.3 | 17.2 | 17.5 | 17.8 | 18.2 | 18.6 | 18.8 | 18.9 | 18.8 | 18.7 | 18.5 | 18.4 | 18.2 | 18.1 | 18.1 | 12.3 | 1913.8 |
| **9/10/2018** | 18.0 | 18.0 | 17.9 | 17.7 | 17.6 | 17.4 | 17.4 | 17.2 | 17.1 | 17.0 | 16.9 | 17.0 | 17.3 | 17.4 | 17.6 | 18.0 | 18.3 | 18.5 | 18.5 | 18.4 | 18.3 | 18.1 | 18.0 | 17.9 | 17.7 | 11.9 | 1925.7 |
| **9/11/2018** | 17.8 | 17.8 | 17.7 | 17.6 | 17.5 | 17.4 | 17.3 | 17.1 | 17.0 | 16.9 | 16.9 | 17.2 | 17.5 | 18.0 | 18.4 | 19.0 | 19.2 | 19.4 | 19.4 | 19.2 | 19.1 | 19.0 | 18.9 | 18.9 | 18.1 | 12.3 | 1938.0 |
| **9/12/2018** | 18.8 | 18.8 | 18.7 | 18.6 | 18.5 | 18.4 | 18.3 | 18.2 | 18.0 | 18.0 | 18.0 | 18.4 | 18.6 | 19.1 | 19.7 | 20.2 | 20.5 | 20.6 | 20.5 | 20.4 | 20.1 | 20.0 | 19.9 | 19.9 | 19.2 | 13.4 | 1951.4 |
| **9/13/2018** | 19.7 | 19.6 | 19.4 | 19.3 | 19.0 | 18.8 | 18.7 | 18.5 | 18.4 | 18.3 | 18.4 | 18.7 | 19.1 | 19.6 | 20.1 | 20.7 | 21.0 | 20.9 | 20.8 | 20.5 | 20.2 | 20.0 | 19.9 | 19.8 | 19.6 | 13.8 | 1965.1 |
| **9/14/2018** | 19.7 | 19.6 | 19.5 | 19.3 | 19.1 | 18.9 | 18.7 | 18.5 | 18.4 | 18.3 | 18.5 | 19.0 | 19.4 | 19.9 | 20.4 | 21.2 | 21.7 | 21.6 | 21.6 | 21.4 | 21.1 | 20.9 | 20.8 | 20.7 | 19.9 | 14.1 | 1979.2 |
| **9/15/2018** | 20.6 | 20.4 | 20.3 | 20.0 | 19.9 | 19.7 | 19.5 | 19.4 | 19.2 | 19.2 | 19.4 | 19.5 | 19.9 | 20.6 | 21.4 | 22.1 | 22.5 | 22.7 | 22.6 | 22.3 | 22.0 | 21.7 | 21.5 | 21.4 | 20.7 | 14.9 | 1994.2 |
| **9/16/2018** | 21.2 | 21.1 | 20.9 | 20.7 | 20.4 | 20.1 | 19.9 | 19.7 | 19.5 | 19.4 | 19.4 | 20.0 | 20.5 | 21.2 | 22.0 | 22.9 | 23.3 | 23.5 | 23.4 | 23.2 | 22.8 | 22.6 | 22.4 | 22.3 | 21.4 | 15.6 | 2009.7 |
| **9/17/2018** | 22.2 | 22.2 | 22.1 | 22.0 | 22.0 | 21.7 | 21.5 | 21.2 | 21.0 | 20.8 | 20.9 | 21.1 | 21.6 | 22.3 | 23.1 | 21.6 | 21.2 | 21.3 | 21.1 | 21.0 | 22.5 | 23.6 | 23.4 | 23.4 | 21.9 | 16.1 | 2025.8 |
| **9/18/2018** | 23.3 | 23.1 | 22.9 | 22.7 | 22.4 | 22.2 | 22.0 | 21.7 | 21.4 | 21.2 | 21.1 | 21.1 | 21.0 | 20.9 | 20.9 | 21.0 | 21.1 | 21.2 | 21.2 | 21.2 | 21.0 | 20.8 | 20.7 | 20.6 | 21.5 | 15.7 | 2041.5 |
| **9/19/2018** | 20.4 | 20.2 | 20.0 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.4 | 19.4 | 19.3 | 19.5 | 19.6 | 19.8 | 19.9 | 20.1 | 20.0 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.4 | 19.4 | 19.7 | 13.9 | 2055.4 |
| **9/20/2018** | 19.3 | 19.2 | 19.2 | 19.2 | 19.1 | 19.0 | 18.9 | 18.8 | 18.8 | 18.8 | 18.8 | 18.9 | 19.1 | 19.5 | 19.7 | 19.9 | 19.9 | 20.0 | 20.2 | 20.1 | 20.0 | 20.0 | 20.0 | 19.9 | 19.4 | 13.6 | 2069.1 |
| **9/21/2018** | 19.9 | 19.9 | 20.0 | 20.1 | 20.1 | 20.1 | 19.9 | 19.9 | 19.7 | 19.7 | 19.6 | 19.7 | 19.8 | 20.0 | 20.2 | 20.3 | 20.1 | 20.0 | 19.9 | 19.5 | 19.1 | 18.9 | 18.6 | 18.3 | 19.7 | 13.9 | 2083.0 |
| **9/22/2018** | 18.0 | 17.8 | 17.6 | 17.2 | 16.9 | 16.6 | 16.2 | 16.0 | 15.8 | 15.6 | 15.3 | 15.8 | 16.0 | 16.5 | 17.2 | 17.4 | 17.9 | 18.1 | 18.0 | 17.8 | 17.4 | 17.1 | 16.9 | 16.7 | 16.9 | 11.1 | 2094.1 |
| **9/23/2018** | 16.5 | 16.3 | 16.1 | 16.0 | 15.8 | 15.6 | 15.3 | 15.0 | 14.8 | 14.6 | 14.6 | 14.8 | 15.3 | 16.0 | 16.8 | 17.6 | 18.0 | 18.3 | 18.0 | 18.0 | 17.6 | 17.3 | 17.1 | 16.9 | 16.3 | 10.5 | 2104.7 |
| **9/24/2018** | 16.7 | 16.7 | 16.6 | 16.5 | 16.4 | 16.3 | 16.1 | 16.0 | 15.8 | 15.6 | 15.7 | 16.0 | 16.4 | 16.9 | 17.6 | 18.4 | 18.4 | 18.4 | 18.2 | 18.1 | 18.1 | 18.0 | 18.0 | 18.1 | 17.1 | 11.3 | 2115.9 |

**Table 51.** Hourly recorded water temperatures in degrees Celsius at Genoa NFH in 2018. Temperature was measured from the rearing tank. Daily thermal units (TU) and cumulative thermal units (CTU) are calculated for the Wolf River and St. Clair River strains as mean daily temperature –5.8°C as described in Kempinger 1988.

| Date | 0:22 | 1:22 | 2:22 | 3:22 | 4:22 | 5:22 | 6:22 | 7:22 | 8:22 | 9:22 | 10:22 | 11:22 | 12:22 | 13:22 | 14:22 | 15:22 | 16:22 | 17:22 | 18:22 | 19:22 | 20:22 | 21:22 | 22:22 | 23:22 | Daily Mean | Daily TU | CTU (Wolf) | CTU (St Clair) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5/4/2018** | 21.9 | 21.8 | 21.7 | 21.6 | 20.0 | 18.3 | 20.8 | 21.3 | 19.9 | 15.5 | 16.0 | 33.2 | 20.0 | 19.7 | 19.8 | 19.6 | 19.7 | 19.9 | 20.0 | 16.6 | 16.9 | 16.3 | 16.5 | 16.0 | 18.3 | 12.5 | 12.5 | |
| **5/5/2018** | 16.1 | 15.8 | 15.7 | 15.6 | 15.4 | 15.2 | 15.1 | 15.0 | 14.9 | 15.1 | 15.2 | 15.9 | 16.0 | 16.2 | 16.8 | 16.9 | 17.4 | 17.5 | 17.7 | 17.5 | 17.5 | 17.3 | 17.1 | 16.5 | 16.2 | 10.4 | 22.9 | |
| **5/6/2018** | 17.3 | 16.4 | 16.7 | 16.2 | 16.3 | 16.0 | 16.0 | 15.9 | 15.9 | 15.8 | 15.7 | 15.9 | 16.2 | 16.2 | 16.8 | 16.6 | 16.8 | 17.4 | 17.3 | 17.4 | 17.5 | 17.3 | 17.2 | 17.0 | 16.6 | 10.8 | 33.7 | |
| **5/7/2018** | 17.0 | 16.7 | 16.5 | 16.3 | 16.1 | 16.0 | 15.7 | 15.6 | 15.5 | 15.5 | 16.0 | 16.1 | 16.8 | 17.0 | 17.7 | 17.8 | 17.9 | 17.9 | 17.9 | 17.8 | 17.6 | 17.5 | 17.2 | 17.1 | 16.8 | 11.0 | 44.6 | |
| **5/8/2018** | 16.9 | 16.8 | 16.6 | 16.4 | 16.3 | 16.1 | 16.0 | 15.9 | 15.8 | 15.8 | 17.8 | 17.0 | 17.0 | 17.6 | 17.8 | 18.4 | 18.0 | 18.0 | 18.2 | 17.7 | 17.8 | 17.5 | 17.4 | 17.4 | 17.1 | 11.3 | 55.9 | |
| **5/9/2018** | 17.3 | 17.4 | 17.0 | 17.7 | 16.7 | 16.7 | 17.4 | 16.9 | 16.8 | 17.5 | 17.5 | 17.4 | 17.5 | 17.5 | 17.4 | 18.0 | 18.2 | 18.4 | 18.2 | 18.3 | 18.2 | 18.2 | 18.3 | 18.2 | 17.6 | 11.8 | 67.8 | |
| **5/10/2018** | 18.1 | 18.1 | 18.0 | 18.0 | 18.1 | 18.1 | 18.3 | 18.3 | 18.4 | 18.3 | 18.3 | 18.5 | 18.5 | 18.3 | 18.3 | 18.4 | 16.4 | 16.0 | 16.0 | 15.8 | 15.7 | 15.6 | 15.6 | 15.6 | 17.5 | 11.7 | 79.4 | |
| **5/11/2018** | 15.4 | 15.3 | 15.4 | 15.5 | 15.6 | 15.7 | 15.8 | 15.7 | 15.8 | 15.7 | 15.8 | 15.8 | 15.7 | 15.8 | 15.7 | 15.8 | 15.7 | 15.7 | 15.7 | 15.7 | 15.6 | 15.7 | 15.7 | 15.6 | 15.6 | 9.8 | 89.2 | |
| **5/12/2018** | 15.6 | 15.7 | 15.7 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.7 | 15.7 | 15.6 | 15.7 | 15.7 | 15.7 | 15.6 | 15.7 | 15.8 | 15.7 | 15.7 | 15.8 | 15.7 | 15.8 | 15.7 | 15.6 | 9.8 | 99.1 | |
| **5/13/2018** | 15.7 | 15.6 | 15.7 | 15.7 | 15.7 | 15.7 | 15.7 | 15.6 | 15.7 | 15.7 | 15.6 | 15.7 | 15.7 | 15.7 | 15.7 | 15.7 | 15.6 | 15.7 | 15.8 | 15.7 | 15.7 | 15.7 | 15.7 | 15.7 | 15.7 | 9.9 | 108.9 | |
| **5/14/2018** | 15.8 | 15.7 | 15.7 | 15.7 | 15.8 | 15.7 | 15.7 | 15.7 | 15.7 | 15.6 | 15.6 | 15.4 | 15.3 | 15.3 | 15.2 | 15.3 | 14.7 | 15.0 | 15.1 | 15.2 | 15.2 | 15.1 | 15.2 | 15.3 | 15.4 | 9.6 | 118.5 | |
| **5/15/2018** | 15.2 | 15.3 | 15.2 | 15.2 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.5 | 15.7 | 15.5 | 15.0 | 15.1 | 15.7 | 17.4 | 17.6 | 17.5 | 17.5 | 17.3 | 17.2 | 17.5 | 17.6 | 17.5 | 16.1 | 10.3 | 128.8 | |
| **5/16/2018** | 17.5 | 17.6 | 17.6 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 18.0 | 18.6 | 18.8 | 18.8 | 18.9 | 18.9 | 17.8 | 18.0 | 18.1 | 18.4 | 18.3 | 18.4 | 18.4 | 18.0 | 18.0 | 17.8 | 18.1 | 12.3 | 141.1 | |
| **5/17/2018** | 17.7 | 17.5 | 17.4 | 17.2 | 17.1 | 16.9 | 16.7 | 16.6 | 16.6 | 16.6 | 17.0 | 17.2 | 17.6 | 18.0 | 25.6 | 18.4 | 18.4 | 18.4 | 18.3 | 18.4 | 18.1 | 18.1 | 18.3 | 18.5 | 17.9 | 12.1 | 153.2 | |
| **5/18/2018** | 18.8 | 18.6 | 18.5 | 18.3 | 18.0 | 17.7 | 17.4 | 17.2 | 17.1 | 17.1 | 17.4 | 18.0 | 18.6 | 19.2 | 20.1 | 20.6 | 19.0 | 18.4 | 18.4 | 18.2 | 18.2 | 18.1 | 18.0 | 17.9 | 18.3 | 12.5 | 165.7 | |
| **5/19/2018** | 17.8 | 17.7 | 17.6 | 17.3 | 17.2 | 17.0 | 16.9 | 16.9 | 16.7 | 16.8 | 17.0 | 17.5 | 17.9 | 18.3 | 18.4 | 18.3 | 18.3 | 18.1 | 18.2 | 18.2 | 17.9 | 17.7 | 17.9 | 17.4 | 17.6 | 11.8 | 177.5 | |
| **5/20/2018** | 17.6 | 17.4 | 17.4 | 17.1 | 17.0 | 16.8 | 16.6 | 16.5 | 16.4 | 16.4 | 16.3 | 16.3 | 16.3 | 16.3 | 16.3 | 16.3 | 16.3 | 16.4 | 16.5 | 16.5 | 16.6 | 16.5 | 16.5 | 16.4 | 16.6 | 10.8 | 188.4 | |
| **5/21/2018** | 16.4 | 16.4 | 16.3 | 16.3 | 16.2 | 16.2 | 16.1 | 16.1 | 16.0 | 16.0 | 15.9 | 16.1 | 16.1 | 16.1 | 16.2 | 16.0 | 16.0 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.0 | 16.0 | 16.2 | 10.4 | 198.7 | |
| **5/22/2018** | 16.0 | 16.0 | 16.0 | 15.9 | 15.9 | 15.8 | 15.8 | 15.8 | 15.8 | 15.9 | 15.9 | 16.0 | 16.2 | 16.4 | 16.7 | 16.9 | 17.0 | 17.3 | 17.6 | 17.6 | 17.6 | 17.6 | 17.5 | 17.4 | 16.5 | 10.7 | 209.4 | |
| **5/23/2018** | 17.3 | 17.2 | 17.1 | 17.0 | 16.9 | 16.8 | 16.7 | 16.6 | 16.6 | 16.5 | 16.5 | 16.8 | 17.3 | 17.8 | 18.4 | 18.6 | 18.7 | 19.1 | 19.4 | 19.2 | 19.1 | 18.9 | 18.7 | 18.6 | 17.7 | 11.9 | 221.4 | |
| **5/24/2018** | 18.5 | 18.4 | 18.3 | 18.2 | 18.1 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.4 | 18.8 | 19.4 | 20.1 | 20.6 | 21.2 | 21.5 | 21.6 | 21.9 | 21.8 | 21.6 | 21.5 | 21.2 | 21.0 | 19.7 | 13.9 | 235.2 | |
| **5/25/2018** | 20.8 | 20.7 | 20.6 | 20.4 | 20.4 | 20.2 | 20.1 | 20.0 | 20.0 | 21.5 | 19.6 | 19.8 | 20.6 | 22.0 | 21.5 | 22.0 | 22.1 | 22.2 | 22.0 | 20.9 | 21.1 | 20.9 | 20.7 | 20.5 | 20.9 | 15.1 | 250.3 | |
| **5/26/2018** | 20.4 | 20.2 | 20.0 | 19.9 | 19.8 | 19.6 | 19.5 | 19.4 | 19.3 | 19.3 | 19.6 | 19.9 | 20.4 | 20.9 | 21.5 | 22.0 | 22.3 | 22.5 | 22.5 | 22.4 | 22.1 | 21.9 | 21.6 | 21.4 | 20.8 | 15.0 | 265.3 | |
| **5/27/2018** | 21.3 | 21.1 | 21.0 | 20.8 | 20.6 | 20.5 | 20.3 | 20.2 | 20.1 | 20.2 | 20.3 | 20.7 | 21.0 | 21.3 | 21.7 | 21.9 | 22.1 | 22.4 | 22.6 | 22.7 | 22.6 | 22.4 | 22.2 | 22.0 | 21.3 | 15.5 | 280.8 | |
| **5/28/2018** | 21.9 | 21.8 | 21.6 | 21.4 | 21.2 | 21.0 | 20.8 | 20.6 | 20.4 | 20.4 | 20.3 | 20.4 | 21.0 | 21.3 | 21.9 | 22.5 | 22.7 | 22.9 | 23.0 | 23.0 | 22.7 | 22.5 | 22.3 | 22.2 | 21.7 | 15.9 | 296.7 | |
| **5/29/2018** | 22.0 | 21.9 | 21.8 | 21.7 | 21.5 | 21.4 | 21.2 | 21.0 | 21.0 | 21.0 | 21.2 | 21.6 | 22.0 | 22.6 | 23.1 | 23.5 | 23.5 | 23.7 | 23.6 | 23.4 | 23.2 | 23.0 | 22.7 | 22.6 | 22.3 | 16.5 | 313.1 | |
| **5/30/2018** | 22.3 | 22.2 | 21.7 | 21.6 | 21.4 | 21.4 | 21.2 | 20.8 | 20.7 | 20.8 | 20.7 | 20.8 | 21.1 | 21.1 | 21.3 | 21.5 | 21.3 | 21.4 | 21.4 | 21.3 | 21.3 | 21.2 | 21.1 | 21.0 | 21.3 | 15.5 | 328.6 | |
| **5/31/2018** | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.3 | 20.2 | 20.2 | 20.4 | 20.5 | 20.7 | 21.1 | 21.5 | 21.9 | 22.1 | 22.5 | 22.7 | 22.9 | 22.9 | 22.9 | 22.8 | 22.6 | 22.4 | 21.5 | 15.7 | 344.2 | |
| **6/1/2018** | 22.2 | 22.1 | 22.0 | 21.8 | 21.5 | 21.4 | 21.2 | 20.9 | 20.9 | 21.0 | 21.2 | 21.7 | 21.8 | 22.0 | 22.2 | 22.6 | 22.7 | 22.9 | 22.8 | 22.6 | 22.6 | 22.4 | 22.2 | 22.1 | 22.0 | 16.2 | 360.4 | |
| **6/2/2018** | 22.0 | 21.8 | 21.6 | 21.3 | 20.8 | 20.5 | 20.1 | 19.9 | 19.6 | 19.4 | 19.2 | 19.1 | 18.7 | 18.9 | 18.8 | 19.0 | 19.2 | 19.2 | 19.2 | 19.2 | 19.1 | 18.9 | 18.9 | 18.8 | 19.7 | 13.9 | 374.3 | |
| **6/3/2018** | 18.5 | 18.4 | 18.3 | 18.0 | 17.9 | 17.7 | 17.4 | 17.4 | 17.2 | 16.7 | 16.6 | 16.6 | 16.7 | 16.8 | 16.9 | 17.2 | 17.4 | 17.6 | 17.8 | 17.9 | 17.8 | 17.9 | 18.0 | 17.9 | 17.5 | 11.7 | 386.0 | |
| **6/4/2018** | 17.8 | 17.6 | 17.5 | 17.3 | 17.2 | 17.0 | 16.9 | 16.8 | 16.9 | 17.1 | 17.5 | 17.9 | 18.4 | 18.9 | 19.4 | 19.8 | 19.7 | 20.2 | 20.2 | 20.2 | 20.2 | 20.2 | 20.2 | 20.1 | 18.5 | 12.7 | 398.8 | |

**Table 51.** (*continued*)

| Date | 0:22 | 1:22 | 2:22 | 3:22 | 4:22 | 5:22 | 6:22 | 7:22 | 8:22 | 9:22 | 10:22 | 11:22 | 12:22 | 13:22 | 14:22 | 15:22 | 16:22 | 17:22 | 18:22 | 19:22 | 20:22 | 21:22 | 22:22 | 23:22 | Daily Mean | Daily TU | CTU (Wolf) | CTU (St Clair) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6/5/2018** | 20.1 | 20.0 | 19.8 | 19.7 | 19.6 | 19.6 | 19.4 | 19.3 | 19.3 | 19.4 | 19.6 | 19.9 | 20.2 | 20.5 | 21.3 | 21.6 | 21.8 | 22.1 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.3 | 20.7 | 14.9 | 413.7 | |
| **6/6/2018** | 22.1 | 22.0 | 21.8 | 21.6 | 21.3 | 21.1 | 20.9 | 20.7 | 20.4 | 20.4 | 20.1 | 20.5 | 20.5 | 20.9 | 21.2 | 21.2 | 21.6 | 21.6 | 21.9 | 21.8 | 21.8 | 21.7 | 21.5 | 21.4 | 21.2 | 15.4 | 429.1 | |
| **6/7/2018** | 21.2 | 21.1 | 20.8 | 20.7 | 20.5 | 20.3 | 20.1 | 19.9 | 19.9 | 17.4 | 14.8 | 14.9 | 15.2 | 15.2 | 16.3 | 21.8 | 22.0 | 22.1 | 22.2 | 22.2 | 22.3 | 22.3 | 22.2 | 22.1 | 19.9 | 14.1 | 443.2 | |
| **6/8/2018** | 22.0 | 21.9 | 21.7 | 21.6 | 21.3 | 21.2 | 21.0 | 20.8 | 20.5 | 20.2 | 20.2 | 20.3 | 20.3 | 20.2 | 20.1 | 20.1 | 20.4 | 20.5 | 20.6 | 20.6 | 20.5 | 20.3 | 20.3 | 20.2 | 20.7 | 14.9 | 458.2 | |
| **6/9/2018** | 20.1 | 19.9 | 19.9 | 19.9 | 19.8 | 19.7 | 19.6 | 19.4 | 19.5 | 19.5 | 19.6 | 19.9 | 20.5 | 20.4 | 20.9 | 21.0 | 21.1 | 21.3 | 21.4 | 21.2 | 21.2 | 21.1 | 20.8 | 20.9 | 20.4 | 14.6 | 472.7 | |
| **6/10/2018** | 20.8 | 20.6 | 20.4 | 20.3 | 20.2 | 20.1 | 20.0 | 19.9 | 19.9 | 19.8 | 19.8 | 19.8 | 19.9 | 19.9 | 19.9 | 19.9 | 20.0 | 20.0 | 20.2 | 20.3 | 20.2 | 20.0 | 19.9 | 19.9 | 20.1 | 14.3 | 487.0 | |
| **6/11/2018** | 19.8 | 19.7 | 19.5 | 19.4 | 19.4 | 19.3 | 19.2 | 19.1 | 19.1 | 19.2 | 19.4 | 19.7 | 19.9 | 20.0 | 20.4 | 20.9 | 21.2 | 21.5 | 21.5 | 21.4 | 21.3 | 21.2 | 21.2 | 21.1 | 20.2 | 14.4 | 501.3 | |
| **6/12/2018** | 21.0 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.4 | 20.2 | 20.2 | 20.2 | 20.2 | 20.2 | 20.2 | 20.2 | 20.2 | 20.3 | 20.5 | 20.6 | 20.7 | 20.7 | 20.7 | 20.7 | 20.6 | 20.5 | 20.5 | 14.7 | 516.0 | |
| **6/13/2018** | 20.4 | 20.3 | 20.1 | 20.2 | 20.1 | 19.9 | 19.8 | 19.7 | 19.6 | 19.6 | 19.8 | 20.0 | 20.3 | 20.6 | 21.1 | 21.5 | 21.9 | 22.0 | 22.2 | 22.1 | 22.1 | 22.0 | 22.0 | 21.8 | 20.8 | 15.0 | 531.0 | |
| **6/14/2018** | 21.6 | 21.4 | 21.2 | 21.0 | 20.8 | 20.6 | 20.5 | 20.3 | 20.1 | 20.1 | 20.0 | 19.9 | 19.9 | 19.9 | 20.1 | 20.4 | 20.7 | 21.0 | 21.1 | 21.0 | 21.0 | 20.9 | 20.7 | 20.6 | 20.6 | 14.8 | 545.9 | 14.8 |
| **6/15/2018** | 20.4 | 20.3 | 20.2 | 20.1 | 19.9 | 19.9 | 19.8 | 19.6 | 19.6 | 19.7 | 19.8 | 20.0 | 20.3 | 20.8 | 21.2 | 21.6 | 21.8 | 22.0 | 22.1 | 22.1 | 22.1 | 22.0 | 21.9 | 21.8 | 20.8 | 15.0 | 560.9 | 29.8 |
| **6/16/2018** | 21.8 | 21.5 | 21.3 | 21.1 | 20.9 | 20.9 | 20.7 | 20.4 | 20.4 | 20.3 | 20.3 | 20.4 | 20.7 | 21.0 | 21.3 | 21.5 | 21.6 | 21.6 | 21.5 | 21.5 | 21.4 | 21.3 | 21.1 | 21.0 | 21.1 | 15.3 | 576.1 | 45.1 |
| **6/17/2018** | 20.9 | 20.7 | 20.6 | 20.4 | 20.2 | 20.1 | 19.9 | 19.9 | 19.9 | 20.0 | 20.0 | 20.3 | 20.6 | 21.1 | 21.3 | 21.6 | 21.8 | 21.9 | 22.0 | 21.9 | 21.8 | 21.4 | 21.5 | 21.3 | 20.9 | 15.1 | 591.2 | 60.2 |
| **6/18/2018** | 21.1 | 21.0 | 20.8 | 20.7 | 20.4 | 20.4 | 20.3 | 20.3 | 20.3 | 20.4 | 20.4 | 20.6 | 20.7 | 20.9 | 21.0 | 21.1 | 21.3 | 21.3 | 21.6 | 21.7 | 21.6 | 21.6 | 21.6 | 21.6 | 20.9 | 15.1 | 606.3 | 75.3 |
| **6/19/2018** | 21.6 | 21.4 | 21.3 | 21.2 | 21.1 | 20.9 | 20.7 | 20.4 | 20.2 | 20.0 | 20.0 | 19.9 | 19.9 | 19.8 | 19.8 | 19.7 | 19.6 | 19.6 | 19.5 | 19.4 | 19.4 | 19.3 | 19.1 | 19.2 | 20.1 | 14.3 | 620.7 | 89.6 |
| **6/20/2018** | 19.1 | 19.0 | 18.9 | 18.8 | 18.8 | 18.6 | 18.6 | 18.4 | 18.7 | 18.7 | 18.9 | 19.1 | 19.3 | 19.6 | 19.8 | 19.9 | 20.0 | 20.0 | 20.1 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 19.4 | 13.6 | 634.2 | 103.2 |
| **6/21/2018** | 19.9 | 19.9 | 19.9 | 19.9 | 19.8 | 19.7 | 19.6 | 19.5 | 19.3 | 19.2 | 19.1 | 19.1 | 19.1 | 19.0 | 19.1 | 19.1 | 19.1 | 19.0 | 19.0 | 19.0 | 19.0 | 18.9 | 18.9 | 18.8 | 19.3 | 13.5 | 647.7 | 116.7 |
| **6/22/2018** | 18.7 | 18.7 | 18.6 | 18.5 | 18.4 | 18.4 | 18.3 | 18.2 | 18.1 | 18.2 | 18.4 | 18.6 | 19.0 | 19.3 | 19.8 | 19.9 | 20.1 | 20.4 | 20.5 | 20.8 | 20.8 | 20.8 | 20.6 | 20.5 | 19.3 | 13.5 | 661.2 | 130.2 |
| **6/23/2018** | 20.4 | 20.3 | 20.2 | 20.1 | 19.9 | 19.9 | 19.8 | 19.6 | 19.6 | 19.6 | 19.7 | 19.9 | 20.5 | 20.8 | 21.0 | 21.1 | 21.2 | 21.2 | 21.1 | 21.1 | 21.2 | 21.0 | 20.9 | 20.8 | 20.5 | 14.7 | 675.9 | 144.9 |
| **6/24/2018** | 20.6 | 20.5 | 20.3 | 20.2 | 20.1 | 19.9 | 19.9 | 19.7 | 19.6 | 19.6 | 19.8 | 20.0 | 20.3 | 21.0 | 21.3 | 21.5 | 21.9 | 22.0 | 22.2 | 22.2 | 22.1 | 22.0 | 22.0 | 21.8 | 20.9 | 15.1 | 691.0 | 159.9 |
| **6/25/2018** | 21.7 | 21.5 | 21.4 | 21.1 | 20.9 | 20.7 | 20.5 | 20.2 | 20.0 | 19.9 | 20.1 | 20.3 | 20.5 | 20.9 | 21.2 | 21.4 | 21.5 | 21.6 | 21.6 | 21.4 | 21.3 | 21.2 | 21.0 | 20.8 | 20.9 | 15.1 | 706.1 | 175.1 |
| **6/26/2018** | 20.6 | 20.4 | 20.2 | 20.0 | 19.9 | 19.8 | 19.7 | 19.6 | 19.4 | 19.4 | 19.3 | 19.1 | 19.2 | 19.4 | 19.9 | 20.1 | 20.4 | 20.2 | 20.0 | 20.0 | 20.1 | 19.9 | 19.9 | 19.7 | 19.8 | 14.0 | 720.1 | 189.1 |
| **6/27/2018** | 19.5 | 19.4 | 19.3 | 19.2 | 19.1 | 19.0 | 18.8 | 20.7 | 19.1 | 19.0 | 19.0 | 19.3 | 19.2 | 19.2 | 19.4 | 21.9 | 31.9 | 30.4 | 33.7 | 34.1 | 32.2 | 30.7 | 28.6 | 27.3 | 23.3 | 17.5 | 737.7 | 206.6 |
| **6/28/2018** | 26.2 | 25.0 | 23.9 | 22.9 | 22.2 | 21.9 | 21.7 | 22.7 | 27.7 | 30.6 | 19.6 | 19.9 | 20.3 | 20.9 | 21.2 | 21.4 | 21.6 | 21.7 | 21.7 | 21.7 | 21.7 | 21.6 | 21.5 | 21.4 | 22.5 | 16.7 | 754.4 | 223.3 |
| **6/29/2018** | 21.4 | 21.1 | 21.0 | 20.8 | 20.7 | 20.6 | 20.3 | 20.3 | 20.2 | 20.5 | 20.8 | 21.2 | 21.5 | 21.9 | 22.1 | 22.5 | 22.8 | 23.0 | 23.2 | 23.3 | 23.3 | 23.3 | 23.2 | 23.2 | 21.8 | 16.0 | 770.3 | 239.3 |
| **6/30/2018** | 23.1 | 23.0 | 22.8 | 22.7 | 22.6 | 22.4 | 22.3 | 22.2 | 22.2 | 22.3 | 22.6 | 22.7 | 23.0 | 23.5 | 23.8 | 24.1 | 24.3 | 24.3 | 24.0 | 24.0 | 23.6 | 23.2 | 23.2 | 23.0 | 23.1 | 17.3 | 787.7 | 256.6 |
| **7/1/2018** | 22.7 | 22.6 | 22.2 | 22.2 | 22.1 | 21.9 | 21.9 | 21.7 | 21.6 | 21.5 | 21.6 | 21.7 | 22.0 | 22.3 | 22.5 | 22.7 | 22.9 | 22.7 | 22.7 | 22.7 | 22.4 | 22.1 | 22.0 | 21.9 | 22.2 | 16.4 | 804.1 | 273.0 |
| **7/2/2018** | 21.7 | 21.5 | 21.3 | 21.1 | 20.9 | 20.7 | 20.5 | 20.4 | 20.2 | 20.3 | 20.6 | 20.7 | 21.1 | 21.5 | 22.0 | 22.3 | 22.6 | 22.8 | 22.8 | 22.9 | 22.9 | 22.7 | 22.6 | 22.5 | 21.6 | 15.8 | 819.9 | 288.8 |
| **7/3/2018** | 22.4 | 22.1 | 22.0 | 21.9 | 21.6 | 21.4 | 21.1 | 20.9 | 20.7 | 20.8 | 20.9 | 21.1 | 21.5 | 21.8 | 22.1 | 22.4 | 22.7 | 22.9 | 23.0 | 23.1 | 23.1 | 23.0 | 22.9 | 22.8 | 22.0 | 16.2 | 836.1 | 305.0 |
| **7/4/2018** | 22.6 | 22.4 | 22.3 | 22.1 | 22.0 | 22.0 | 21.8 | 21.6 | 21.4 | 21.5 | 21.7 | 21.8 | 22.1 | 22.6 | 22.9 | 22.8 | 22.7 | 22.5 | 22.8 | 22.7 | 22.7 | 22.6 | 22.4 | 22.3 | 22.3 | 16.5 | 852.6 | 321.5 |
| **7/5/2018** | 22.2 | 22.1 | 22.0 | 21.9 | 21.8 | 21.6 | 21.5 | 21.4 | 21.2 | 21.4 | 21.3 | 21.3 | 21.3 | 21.7 | 21.8 | 22.0 | 22.3 | 22.4 | 22.6 | 22.9 | 22.8 | 22.7 | 22.6 | 22.3 | 22.0 | 16.2 | 868.7 | 337.7 |
| **7/6/2018** | 22.2 | 22.0 | 21.8 | 21.6 | 21.4 | 21.1 | 20.9 | 20.6 | 20.3 | 20.5 | 20.6 | 20.8 | 20.8 | 21.1 | 21.7 | 21.8 | 22.0 | 22.1 | 22.3 | 22.2 | 22.2 | 22.2 | 22.0 | 21.9 | 21.5 | 15.7 | 884.4 | 353.4 |

**Table 51.** (*continued*)

| Date | 0:22 | 1:22 | 2:22 | 3:22 | 4:22 | 5:22 | 6:22 | 7:22 | 8:22 | 9:22 | 10:22 | 11:22 | 12:22 | 13:22 | 14:22 | 15:22 | 16:22 | 17:22 | 18:22 | 19:22 | 20:22 | 21:22 | 22:22 | 23:22 | Daily Mean | Daily TU | CTU (Wolf) | CTU (St Clair) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7/7/2018** | 21.7 | 21.5 | 21.2 | 21.0 | 20.8 | 20.6 | 20.3 | 20.0 | 19.9 | 19.9 | 20.1 | 20.3 | 20.7 | 21.1 | 21.5 | 21.7 | 21.8 | 22.0 | 22.2 | 22.0 | 21.9 | 21.7 | 21.6 | 21.4 | 21.1 | 15.3 | 899.7 | 368.7 |
| **7/8/2018** | 21.2 | 20.9 | 20.7 | 20.3 | 20.2 | 20.0 | 19.9 | 20.1 | 19.7 | 19.9 | 20.0 | 20.3 | 20.7 | 21.2 | 21.3 | 21.7 | 21.8 | 22.0 | 22.0 | 21.9 | 21.7 | 21.5 | 21.3 | 21.1 | 20.9 | 15.1 | 914.8 | 383.8 |
| **7/9/2018** | 21.0 | 20.8 | 20.6 | 20.4 | 20.2 | 19.9 | 19.8 | 19.7 | 19.8 | 19.9 | 20.0 | 20.4 | 20.6 | 21.1 | 21.2 | 21.4 | 21.7 | 21.7 | 21.9 | 21.9 | 22.0 | 21.9 | 21.8 | 21.7 | 20.9 | 15.1 | 929.9 | 398.9 |
| **7/10/2018** | 21.6 | 21.4 | 21.4 | 21.3 | 21.2 | 21.0 | 20.8 | 20.7 | 20.8 | 20.7 | 20.8 | 20.9 | 21.0 | 21.0 | 21.2 | 21.2 | 21.1 | 21.0 | 20.9 | 20.9 | 20.7 | 20.6 | 20.5 | 20.3 | 21.0 | 15.2 | 945.1 | 414.0 |
| **7/11/2018** | 20.2 | 20.0 | 19.9 | 20.0 | 20.0 | 19.9 | 19.9 | 19.8 | 19.9 | 19.8 | 19.9 | 20.3 | 20.6 | 21.2 | 21.5 | 21.6 | 21.7 | 21.8 | 21.9 | 21.8 | 21.9 | 21.7 | 21.6 | 21.5 | 20.8 | 15.0 | 960.0 | 429.0 |
| **7/12/2018** | 21.3 | 21.1 | 21.0 | 20.8 | 20.7 | 20.5 | 20.3 | 20.3 | 20.1 | 20.4 | 20.4 | 20.5 | 20.6 | 20.9 | 21.2 | 21.7 | 21.7 | 21.8 | 22.0 | 22.0 | 22.1 | 22.0 | 21.4 | 21.2 | 21.1 | 15.3 | 975.3 | 444.3 |
| **7/13/2018** | 21.8 | 21.6 | 21.5 | 21.5 | 21.4 | 20.8 | 21.2 | 21.0 | 21.1 | 21.0 | 21.1 | 21.0 | 21.4 | 21.4 | 21.6 | 21.7 | 21.8 | 21.9 | 22.0 | 21.8 | 22.0 | 21.7 | 21.6 | 21.5 | 21.4 | 15.6 | 991.0 | 459.9 |
| **7/14/2018** | 21.4 | 21.2 | 21.1 | 21.0 | 20.9 | 20.8 | 20.6 | 20.6 | 20.6 | 20.7 | 20.4 | 20.4 | 20.5 | 20.7 | 21.1 | 20.8 | 20.9 | 20.9 | 21.0 | 21.0 | 21.0 | 21.1 | 20.9 | 20.8 | 20.9 | 15.1 | 1006.0 | 475.0 |
| **7/15/2018** | 20.7 | 20.6 | 20.6 | 20.5 | 20.4 | 20.3 | 20.3 | 20.1 | 20.2 | 20.2 | 20.2 | 20.3 | 20.6 | 21.1 | 21.3 | 21.7 | 21.9 | 21.9 | 22.1 | 21.9 | 21.9 | 21.8 | 21.7 | 21.7 | 21.0 | 15.2 | 1021.2 | 490.2 |
| **7/16/2018** | 21.6 | 21.5 | 21.4 | 21.3 | 21.2 | 21.1 | 20.8 | 20.8 | 20.7 | 20.7 | 20.6 | 20.8 | 21.1 | 21.6 | 21.9 | 22.0 | 22.1 | 22.1 | 22.0 | 22.3 | 22.1 | 22.0 | 21.8 | 21.6 | 21.5 | 15.7 | 1036.9 | 505.8 |
| **7/17/2018** | 21.5 | 21.3 | 21.0 | 20.8 | 20.6 | 20.4 | 20.2 | 20.0 | 20.0 | 19.9 | 20.1 | 20.4 | 20.3 | 20.6 | 21.0 | 21.1 | 21.3 | 21.5 | 21.6 | 21.6 | 21.5 | 21.3 | 21.1 | 20.9 | 20.8 | 15.0 | 1051.9 | 520.9 |
| **7/18/2018** | 20.7 | 20.5 | 20.3 | 20.1 | 19.9 | 19.7 | 19.5 | 19.3 | 19.4 | 19.4 | 19.5 | 19.8 | 19.9 | 20.4 | 20.5 | 21.1 | 21.3 | 21.5 | 21.5 | 21.4 | 21.4 | 21.2 | 21.1 | 20.9 | 20.4 | 14.6 | 1066.5 | 535.5 |
| **7/19/2018** | 20.8 | 20.5 | 20.3 | 20.1 | 19.9 | 19.9 | 19.7 | 19.6 | 19.5 | 19.6 | 19.6 | 19.7 | 19.8 | 19.9 | 19.9 | 19.9 | 19.8 | 19.8 | 19.7 | 19.6 | 19.5 | 19.3 | 19.2 | 19.1 | 19.8 | 14.0 | 1080.5 | 549.4 |
| **7/20/2018** | 18.9 | 18.9 | 19.0 | 18.8 | 18.7 | 18.7 | 18.5 | 18.1 | 18.0 | 18.2 | 18.3 | 18.4 | 18.3 | 18.5 | 18.8 | 18.7 | 18.8 | 19.0 | 19.5 | 19.5 | 19.4 | 19.5 | 19.7 | 19.3 | 18.8 | 13.0 | 1093.5 | 562.4 |
| **7/21/2018** | 19.0 | 19.0 | 19.0 | 18.8 | 18.8 | 18.5 | 18.5 | 18.7 | 18.7 | 18.6 | 18.8 | 18.9 | 19.3 | 19.9 | 20.0 | 20.3 | 20.7 | 21.0 | 21.1 | 21.1 | 21.3 | 21.2 | 21.0 | 20.8 | 19.7 | 13.9 | 1107.4 | 576.4 |
| **7/22/2018** | 20.7 | 20.6 | 20.4 | 20.2 | 20.1 | 19.9 | 19.9 | 19.7 | 19.7 | 19.6 | 19.6 | 19.7 | 19.9 | 19.9 | 19.9 | 20.1 | 20.2 | 20.4 | 20.5 | 20.5 | 20.4 | 20.5 | 20.4 | 20.3 | 20.1 | 14.3 | 1121.7 | 590.7 |
| **7/23/2018** | 20.1 | 20.0 | 19.9 | 19.8 | 19.6 | 19.5 | 19.4 | 19.2 | 19.3 | 19.4 | 19.6 | 19.8 | 20.0 | 20.4 | 21.0 | 21.3 | 21.5 | 21.7 | 21.8 | 21.9 | 21.9 | 21.8 | 21.6 | 21.6 | 20.5 | 14.7 | 1136.4 | 605.4 |
| **7/24/2018** | 21.4 | 21.2 | 21.0 | 20.8 | 20.6 | 20.4 | 20.3 | 20.2 | 20.2 | 20.2 | 20.3 | 20.7 | 21.0 | 21.1 | 21.4 | 21.7 | 21.9 | 22.0 | 22.1 | 22.0 | 22.1 | 22.0 | 21.9 | 21.7 | 21.2 | 15.4 | 1151.8 | 620.8 |
| **7/25/2018** | 21.4 | 21.2 | 21.0 | 20.8 | 20.6 | 20.4 | 20.2 | 19.9 | 20.0 | 20.2 | 20.5 | 20.8 | 21.1 | 21.5 | 21.7 | 21.9 | 22.0 | 22.0 | 21.8 | 21.6 | 21.6 | 21.3 | 21.2 | 20.8 | 21.1 | 15.3 | 1167.1 | 636.0 |
| **7/26/2018** | 20.6 | 20.5 | 20.4 | 20.2 | 20.0 | 19.9 | 19.7 | 19.6 | 19.5 | 19.6 | 19.5 | 19.5 | 19.7 | 19.6 | 19.6 | 19.6 | 19.7 | 19.7 | 19.9 | 19.7 | 19.8 | 19.6 | 19.5 | 19.4 | 19.8 | 14.0 | 1181.0 | 650.0 |
| **7/27/2018** | 19.3 | 19.2 | 19.0 | 18.9 | 18.8 | 18.7 | 18.5 | 18.3 | 18.2 | 18.5 | 18.7 | 18.8 | 19.0 | 19.2 | 19.5 | 19.8 | 19.9 | 20.0 | 20.2 | 20.2 | 20.2 | 20.0 | 19.9 | 19.7 | 19.3 | 13.5 | 1194.5 | 663.5 |
| **7/28/2018** | 19.5 | 19.2 | 19.0 | 18.8 | 18.6 | 18.4 | 18.2 | 18.1 | 18.3 | 18.4 | 18.7 | 19.0 | 19.4 | 19.8 | 19.9 | 20.4 | 20.5 | 20.5 | 20.7 | 20.6 | 20.6 | 20.4 | 20.2 | 20.0 | 19.5 | 13.7 | 1208.2 | 677.1 |
| **7/29/2018** | 19.9 | 19.7 | 19.4 | 19.3 | 19.0 | 18.9 | 18.7 | 18.6 | 18.5 | 18.8 | 19.0 | 19.3 | 19.7 | 19.9 | 20.3 | 20.5 | 20.8 | 20.9 | 20.7 | 20.7 | 20.7 | 20.7 | 20.5 | 20.3 | 19.8 | 14.0 | 1222.2 | 691.1 |
| **7/30/2018** | 20.1 | 19.9 | 19.8 | 19.6 | 19.4 | 19.2 | 19.1 | 18.9 | 18.9 | 19.1 | 19.5 | 19.7 | 19.9 | 20.2 | 20.3 | 20.5 | 20.8 | 21.0 | 21.3 | 21.3 | 21.3 | 21.3 | 21.0 | 20.8 | 20.1 | 14.3 | 1236.5 | 705.4 |
| **7/31/2018** | 20.6 | 20.4 | 20.2 | 20.0 | 19.9 | 19.8 | 19.7 | 19.4 | 19.4 | 19.7 | 19.9 | 19.9 | 20.3 | 20.6 | 20.8 | 21.1 | 21.3 | 21.5 | 21.6 | 21.8 | 21.9 | 21.7 | 21.5 | 21.3 | 20.6 | 14.8 | 1251.3 | 720.2 |
| **8/1/2018** | 21.2 | 21.0 | 20.8 | 20.5 | 18.6 | 18.5 | 19.9 | 19.9 | 19.9 | 20.0 | 20.4 | 20.8 | 20.9 | 20.9 | 20.9 | 21.2 | 21.0 | 21.0 | 21.3 | 21.3 | 21.0 | 20.7 | 20.6 | 20.4 | 20.5 | 14.7 | 1266.0 | 735.0 |
| **8/2/2018** | 20.3 | 20.2 | 20.1 | 19.9 | 19.8 | 19.7 | 19.6 | 19.4 | 19.3 | 19.1 | 19.1 | 19.3 | 19.4 | 19.5 | 19.7 | 19.9 | 20.0 | 19.9 | 20.0 | 20.0 | 19.9 | 19.8 | 19.5 | 19.2 | 19.7 | 13.9 | 1279.9 | 748.9 |
| **8/3/2018** | 19.1 | 18.8 | 18.7 | 18.5 | 18.3 | 18.2 | 18.0 | 18.0 | 18.0 | 18.1 | 18.4 | 18.9 | 19.2 | 19.3 | 19.6 | 20.0 | 20.4 | 20.5 | 20.6 | 20.6 | 20.6 | 20.5 | 20.4 | 20.3 | 19.3 | 13.5 | 1293.4 | 762.4 |
| **8/4/2018** | 20.2 | 20.1 | 20.0 | 19.9 | 19.9 | 19.8 | 19.7 | 19.5 | 19.6 | 19.7 | 19.9 | 20.2 | 20.5 | 20.5 | 20.9 | 21.1 | 21.1 | 20.9 | 20.7 | 20.6 | 20.6 | 20.5 | 20.4 | 20.3 | 20.3 | 14.5 | 1307.9 | 776.8 |
| **8/5/2018** | 20.2 | 20.0 | 19.9 | 19.9 | 19.8 | 19.7 | 19.6 | 19.6 | 19.4 | 19.5 | 19.6 | 19.8 | 20.3 | 20.3 | 20.6 | 20.9 | 21.1 | 21.3 | 21.2 | 21.2 | 20.9 | 20.7 | 20.7 | 20.6 | 20.3 | 14.5 | 1322.4 | 791.3 |
| **8/6/2018** | 20.5 | 20.4 | 20.4 | 20.3 | 20.2 | 20.1 | 20.0 | 20.0 | 19.8 | 19.9 | 19.9 | 20.0 | 20.2 | 20.3 | 19.9 | 20.4 | 20.6 | 20.8 | 20.8 | 20.8 | 20.7 | 20.6 | 20.5 | 20.4 | 20.3 | 14.5 | 1336.9 | 805.8 |
| **8/7/2018** | 20.2 | 20.2 | 20.1 | 20.0 | 19.9 | 19.9 | 19.8 | 19.7 | 19.6 | 19.6 | 19.6 | 19.7 | 19.8 | 19.9 | 20.1 | 20.1 | 20.3 | 20.4 | 20.4 | 20.3 | 20.2 | 20.2 | 20.1 | 19.9 | 20.0 | 14.2 | 1351.1 | 820.1 |

**Table 51.** (*continued*)

| Date | 0:22 | 1:22 | 2:22 | 3:22 | 4:22 | 5:22 | 6:22 | 7:22 | 8:22 | 9:22 | 10:22 | 11:22 | 12:22 | 13:22 | 14:22 | 15:22 | 16:22 | 17:22 | 18:22 | 19:22 | 20:22 | 21:22 | 22:22 | 23:22 | Daily Mean | Daily TU | CTU (Wolf) | CTU (St Clair) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **8/8/2018** | 19.9 | 19.8 | 19.7 | 19.7 | 19.6 | 19.4 | 19.3 | 19.2 | 19.2 | 19.2 | 19.4 | 19.7 | 20.1 | 20.7 | 21.1 | 21.3 | 21.7 | 21.8 | 21.9 | 21.7 | 21.7 | 21.5 | 21.3 | 21.2 | 20.4 | 14.6 | 1365.7 | 834.7 |
| **8/9/2018** | 21.1 | 20.9 | 20.8 | 20.7 | 20.6 | 20.5 | 20.5 | 20.4 | 20.3 | 20.5 | 20.8 | 21.0 | 21.3 | 21.6 | 21.7 | 21.9 | 22.1 | 22.4 | 22.6 | 22.7 | 22.7 | 22.5 | 22.4 | 22.3 | 21.4 | 15.6 | 1381.3 | 850.3 |
| **8/10/2018** | 22.1 | 22.0 | 21.9 | 21.7 | 21.6 | 21.4 | 21.3 | 21.1 | 20.8 | 21.0 | 21.3 | 21.5 | 21.8 | 22.1 | 22.5 | 22.6 | 23.0 | 23.0 | 23.2 | 23.0 | 22.8 | 22.7 | 22.5 | 22.4 | 22.1 | 16.3 | 1397.6 | 866.5 |
| **8/11/2018** | 22.2 | 22.0 | 21.9 | 21.8 | 21.6 | 21.5 | 21.3 | 21.2 | 21.2 | 21.3 | 21.5 | 21.7 | 21.8 | 22.0 | 22.2 | 22.5 | 22.6 | 22.9 | 23.1 | 23.1 | 22.9 | 22.8 | 22.6 | 22.5 | 22.1 | 16.3 | 1413.9 | 882.8 |
| **8/12/2018** | 22.3 | 22.1 | 22.0 | 21.8 | 21.7 | 21.5 | 21.4 | 21.2 | 21.1 | 21.2 | 21.4 | 21.6 | 22.1 | 22.3 | 22.5 | 22.8 | 23.0 | 23.2 | 23.1 | 23.1 | 22.9 | 22.8 | 22.6 | 22.4 | 22.2 | 16.4 | 1430.2 | 899.2 |
| **8/13/2018** | 22.3 | 22.2 | 22.0 | 21.9 | 21.8 | 21.6 | 21.4 | 21.3 | 20.8 | 20.9 | 20.9 | 21.1 | 21.5 | 21.8 | 22.0 | 22.1 | 22.3 | 22.3 | 22.2 | 22.1 | 22.0 | 21.8 | 21.6 | 21.3 | 21.7 | 15.9 | 1446.2 | 915.1 |
| **8/14/2018** | 21.2 | 21.0 | 20.8 | 20.6 | 20.4 | 20.3 | 20.1 | 20.0 | 19.9 | 19.9 | 20.0 | 20.2 | 20.5 | 23.0 | 24.9 | 25.2 | 24.7 | 24.2 | 23.9 | 23.6 | 23.3 | 23.0 | 22.7 | 22.5 | 21.9 | 16.1 | 1462.3 | 931.3 |
| **8/15/2018** | 22.3 | 22.1 | 22.0 | 21.9 | 21.8 | 21.6 | 21.3 | 21.1 | 21.5 | 22.1 | 22.8 | 23.8 | 24.6 | 25.2 | 25.1 | 25.6 | 24.4 | 23.8 | 23.4 | 23.2 | 22.7 | 22.4 | 22.1 | 22.0 | 22.9 | 17.1 | 1479.4 | 948.3 |
| **8/16/2018** | 21.8 | 21.6 | 21.5 | 21.4 | 21.2 | 21.1 | 21.0 | 21.0 | 21.2 | 21.7 | 23.1 | 21.5 | 21.4 | 21.0 | 21.5 | 21.2 | 20.6 | 20.1 | 19.8 | 19.7 | 19.9 | 19.9 | 19.9 | 20.0 | 21.0 | 15.2 | 1494.5 | 963.5 |
| **8/17/2018** | 20.1 | 20.2 | 19.9 | 20.0 | 20.2 | 20.2 | 20.3 | 20.2 | 19.9 | 19.9 | 20.0 | 19.9 | 19.9 | 19.9 | 19.6 | 19.4 | 19.3 | 19.5 | 19.5 | 19.6 | 19.8 | 19.8 | 19.7 | 19.9 | 19.9 | 14.1 | 1508.6 | 977.5 |
| **8/18/2018** | 20.0 | 20.1 | 19.8 | 19.9 | 20.1 | 20.2 | 20.3 | 20.3 | 20.4 | 20.2 | 20.0 | 20.2 | 20.2 | 19.8 | 19.9 | 19.8 | 19.7 | 19.9 | 19.6 | 19.7 | 19.7 | 19.7 | 19.9 | 20.0 | 20.0 | 14.2 | 1522.8 | 991.7 |
| **8/19/2018** | 19.9 | 19.9 | 20.0 | 20.1 | 20.2 | 20.3 | 20.4 | 20.4 | 20.5 | 20.5 | 20.1 | 20.1 | 20.0 | 19.7 | 19.9 | 19.7 | 19.6 | 19.8 | 19.5 | 19.7 | 19.7 | 19.7 | 19.9 | 19.8 | 20.0 | 14.2 | 1536.9 | 1005.9 |
| **8/20/2018** | 19.8 | 19.9 | 20.1 | 19.9 | 19.9 | 20.0 | 20.1 | 20.2 | 20.0 | 20.3 | 19.9 | 19.8 | 19.9 | 19.8 | 19.4 | 19.6 | 19.8 | 20.1 | 20.3 | 20.1 | 19.9 | 20.0 | 20.1 | 20.3 | 20.0 | 14.2 | 1551.1 | 1020.1 |
| **8/21/2018** | 20.3 | 20.3 | 20.4 | 20.4 | 20.5 | 20.5 | 20.5 | 20.2 | 19.8 | 20.1 | 19.9 | 20.1 | 20.0 | 20.0 | 20.6 | 20.8 | 20.9 | 20.8 | 20.5 | 20.7 | 20.9 | 21.0 | 21.0 | 21.1 | 20.5 | 14.7 | 1565.8 | 1034.7 |
| **8/22/2018** | 21.1 | 21.1 | 21.1 | 21.2 | 21.2 | 21.2 | 21.1 | 21.4 | 21.5 | 21.6 | 21.6 | 22.0 | 21.6 | 21.0 | 21.0 | 20.7 | 20.4 | 20.6 | 20.6 | 20.2 | 20.4 | 20.6 | 20.7 | 20.8 | 21.0 | 15.2 | 1581.0 | 1050.0 |
| **8/23/2018** | 20.9 | 20.8 | 20.7 | 20.7 | 20.6 | 20.6 | 20.6 | 20.6 | 20.8 | 20.7 | 20.7 | 21.2 | 20.8 | 20.2 | 20.3 | 20.7 | 20.8 | 20.4 | 20.2 | 20.2 | 19.9 | 20.0 | 20.1 | 20.2 | 20.5 | 14.7 | 1595.8 | 1064.7 |
| **8/24/2018** | 20.3 | 20.4 | 20.4 | 20.4 | 20.2 | 20.2 | 20.3 | 20.4 | 20.2 | 20.1 | 20.3 | 20.6 | 20.8 | 20.3 | 20.7 | 20.6 | 20.6 | 20.5 | 20.5 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.5 | 14.7 | 1610.4 | 1079.4 |
| **8/25/2018** | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 20.8 | 20.9 | 21.3 | 21.6 | 21.9 | 22.5 | 22.4 | 22.0 | 21.4 | 21.3 | 21.2 | 20.7 | 20.7 | 20.8 | 20.8 | 20.4 | 20.6 | 21.1 | 15.3 | 1625.7 | 1094.7 |
| **8/26/2018** | 20.7 | 20.7 | 20.8 | 20.9 | 20.9 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.6 | 20.5 | 20.7 | 20.5 | 20.3 | 20.5 | 20.6 | 20.5 | 20.3 | 20.5 | 20.6 | 20.7 | 20.7 | 14.9 | 1640.7 | 1109.6 |
| **8/27/2018** | 20.5 | 20.4 | 20.5 | 20.7 | 20.7 | 20.8 | 20.9 | 20.9 | 20.5 | 20.2 | 20.4 | 20.1 | 19.9 | 20.0 | 19.9 | 19.8 | 19.8 | 20.2 | 20.0 | 20.1 | 20.3 | 20.4 | 20.5 | 20.3 | 20.3 | 14.5 | 1655.2 | 1124.2 |
| **8/28/2018** | 20.4 | 20.5 | 20.6 | 20.7 | 20.8 | 20.8 | 20.8 | 20.4 | 20.5 | 20.6 | 20.2 | 20.2 | 20.5 | 20.3 | 20.3 | 20.6 | 20.4 | 20.6 | 20.9 | 21.1 | 21.2 | 21.3 | 21.3 | 21.2 | 20.7 | 14.9 | 1670.1 | 1139.0 |
| **8/29/2018** | 21.3 | 21.5 | 21.6 | 21.7 | 21.7 | 21.8 | 21.8 | 21.7 | 21.6 | 21.7 | 21.6 | 21.1 | 21.1 | 21.1 | 21.1 | 20.7 | 20.4 | 20.5 | 20.6 | 20.7 | 20.8 | 20.9 | 20.9 | 20.9 | 21.2 | 15.4 | 1685.5 | 1154.4 |
| **8/30/2018** | 21.0 | 21.1 | 21.0 | 21.0 | 21.0 | 21.0 | 20.9 | 20.9 | 20.9 | 20.9 | 21.0 | 21.3 | 21.5 | 20.8 | 20.6 | 20.7 | 20.6 | 20.3 | 20.4 | 20.2 | 20.3 | 20.4 | 20.5 | 20.6 | 20.8 | 15.0 | 1700.5 | 1169.4 |
| **8/30/2018** | 20.7 | 20.7 | 20.8 | 20.8 | 20.8 | 20.8 | 20.9 | 20.9 | 21.0 | 20.9 | 20.6 | 20.9 | 20.8 | 20.4 | 20.7 | 20.5 | 20.2 | 20.3 | 20.5 | 20.3 | 20.2 | 20.3 | 20.5 | 20.6 | 20.6 | 14.8 | 1715.3 | 1184.3 |
| **9/1/2018** | 20.6 | 20.7 | 20.6 | 20.3 | 20.4 | 20.5 | 20.6 | 20.7 | 20.7 | 20.8 | 20.5 | 20.1 | 20.3 | 20.3 | 20.1 | 20.2 | 20.1 | 20.1 | 20.2 | 20.3 | 20.0 | 20.1 | 20.2 | 20.3 | 20.4 | 14.6 | 1729.9 | 1198.9 |
| **9/2/2018** | 20.4 | 20.5 | 20.5 | 20.6 | 20.4 | 20.2 | 20.3 | 20.4 | 20.5 | 20.5 | 20.6 | 20.6 | 20.6 | 20.7 | 20.7 | 20.7 | 20.8 | 20.7 | 20.4 | 20.5 | 20.5 | 20.6 | 20.6 | 20.7 | 20.6 | 14.8 | 1744.7 | 1213.6 |
| **9/3/2018** | 20.7 | 20.7 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.9 | 20.9 | 20.9 | 20.9 | 20.7 | 20.5 | 20.5 | 20.6 | 20.7 | 20.7 | 20.8 | 20.8 | 20.9 | 20.9 | 20.8 | 15.0 | 1759.6 | 1228.6 |
| **9/4/2018** | 20.9 | 20.9 | 20.6 | 20.5 | 20.6 | 20.7 | 20.7 | 20.8 | 20.6 | 20.2 | 19.9 | 20.5 | 21.3 | 20.8 | 20.5 | 20.3 | 20.1 | 20.3 | 20.4 | 20.2 | 20.2 | 20.4 | 20.6 | 20.5 | 20.5 | 14.7 | 1774.4 | 1243.3 |
| **9/5/2018** | 20.3 | 20.5 | 20.6 | 20.8 | 20.9 | 20.9 | 21.0 | 20.5 | 20.7 | 20.4 | 20.2 | 20.9 | 20.9 | 20.6 | 20.6 | 20.3 | 20.1 | 20.4 | 20.5 | 20.6 | 20.7 | 20.8 | 20.9 | 20.9 | 20.6 | 14.8 | 1789.2 | 1258.2 |
| **9/6/2018** | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.1 | 21.5 | 21.4 | 21.6 | 21.9 | 21.5 | 21.5 | 22.2 | 21.7 | 20.8 | 20.3 | 20.5 | 20.3 | 20.4 | 20.5 | 20.7 | 20.7 | 21.1 | 15.3 | 1804.5 | 1273.4 |
| **9/7/2018** | 20.8 | 20.8 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 21.6 | 21.7 | 21.2 | 20.5 | 21.4 | 21.3 | 20.6 | 20.5 | 20.6 | 20.7 | 20.7 | 20.8 | 20.9 | 20.9 | 15.1 | 1819.6 | 1288.6 |
| **9/8/2018** | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.9 | 20.9 | 20.9 | 20.9 | 21.0 | 21.0 | 21.0 | 21.1 | 21.1 | 21.1 | 21.1 | 20.9 | 15.1 | 1834.7 | 1303.7 |
| **9/9/2018** | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.0 | 21.0 | 21.0 | 21.0 | 20.9 | 20.9 | 20.9 | 20.9 | 21.1 | 21.2 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.2 | 21.1 | 21.1 | 21.1 | 15.3 | 1850.0 | 1318.9 |

**Table 51.** (*continued*)

| Date | 0:22 | 1:22 | 2:22 | 3:22 | 4:22 | 5:22 | 6:22 | 7:22 | 8:22 | 9:22 | 10:22 | 11:22 | 12:22 | 13:22 | 14:22 | 15:22 | 16:22 | 17:22 | 18:22 | 19:22 | 20:22 | 21:22 | 22:22 | 23:22 | Daily Mean | Daily TU | CTU (Wolf) | CTU (St Clair) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **9/10/2018** | 21.1 | 21.1 | 21.1 | 21.0 | 21.0 | 21.0 | 20.9 | 20.9 | 20.9 | 20.9 | 21.1 | 21.6 | 23.2 | 22.4 | 22.0 | 22.0 | 21.6 | 20.9 | 20.9 | 20.9 | 21.0 | 21.0 | 21.1 | 21.1 | 21.3 | 15.5 | 1865.5 | 1334.4 |
| **9/11/2018** | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.0 | 21.0 | 21.0 | 21.0 | 21.6 | 21.4 | 20.7 | 20.3 | 20.6 | 20.4 | 20.3 | 20.5 | 20.6 | 20.7 | 20.8 | 20.9 | 20.9 | 21.0 | 20.9 | 15.1 | 1880.5 | 1349.5 |
| **9/12/2018** | 21.0 | 21.0 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.2 | 21.2 | 21.0 | 20.6 | 20.6 | 21.0 | 20.5 | 20.6 | 21.3 | 21.2 | 20.5 | 20.3 | 20.4 | 20.6 | 20.7 | 20.7 | 20.9 | 15.1 | 1895.6 | 1364.6 |
| **9/13/2018** | 20.8 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.1 | 20.7 | 20.2 | 20.4 | 20.4 | 20.3 | 20.0 | 20.0 | 20.2 | 20.4 | 20.1 | 20.3 | 20.4 | 20.6 | 20.7 | 20.6 | 14.8 | 1910.4 | 1379.4 |
| **9/14/2018** | 20.7 | 20.8 | 20.9 | 20.9 | 20.9 | 21.0 | 21.0 | 21.0 | 21.0 | 20.8 | 20.3 | 20.4 | 20.5 | 20.2 | 20.1 | 20.0 | 20.0 | 20.3 | 20.2 | 20.0 | 20.2 | 20.4 | 20.5 | 20.6 | 20.5 | 14.7 | 1925.2 | 1394.1 |
| **9/15/2018** | 20.7 | 20.3 | 20.5 | 20.6 | 20.7 | 20.8 | 20.8 | 20.9 | 20.9 | 21.0 | 21.0 | 20.9 | 20.5 | 20.4 | 20.6 | 20.4 | 20.1 | 20.2 | 20.4 | 20.1 | 20.1 | 20.3 | 20.5 | 20.6 | 20.6 | 14.8 | 1940.0 | 1408.9 |
| **9/16/2018** | 20.7 | 20.4 | 20.5 | 20.6 | 20.7 | 20.8 | 20.9 | 20.9 | 21.0 | 21.0 | 21.0 | 21.0 | 20.5 | 20.5 | 20.6 | 20.4 | 20.2 | 20.3 | 20.4 | 20.1 | 20.2 | 20.4 | 20.6 | 20.7 | 20.6 | 14.8 | 1954.8 | 1423.7 |
| **9/17/2018** | 20.8 | 20.9 | 20.9 | 21.0 | 21.0 | 21.0 | 21.1 | 20.9 | 20.4 | 20.1 | 19.9 | 19.7 | 19.7 | 19.7 | 19.6 | 19.5 | 19.5 | 19.4 | 19.6 | 19.9 | 19.9 | 19.9 | 20.0 | 20.2 | 20.2 | 14.4 | 1969.2 | 1438.1 |
| **9/18/2018** | 20.3 | 20.4 | 20.5 | 20.5 | 20.6 | 20.6 | 20.7 | 20.4 | 20.2 | 20.4 | 20.6 | 20.7 | 21.0 | 20.8 | 21.4 | 21.4 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 21.0 | 21.0 | 20.8 | 15.0 | 1984.1 | 1453.1 |

**Table 52.** Daily mean water temperatures in degrees Celsius at the Black River Sturgeon Research Facility in 2018. Hourly measurements were not available. Temperature was measured from the head tank. Daily thermal units (TU) and cumulative thermal units (CTU) are calculated for the Wolf River and St. Clair River strains as mean daily temperature –5.8°C as described in Kempinger 1988.

| Date | Daily Mean | Daily TU | CTU (Wolf) | CTU (St Clair) |
|---|---|---|---|---|
| **5/4/2018** | 13.9 | 8.1 | 8.1 | |
| **5/5/2018** | 12.9 | 7.1 | 15.2 | |
| **5/6/2018** | 11.5 | 5.7 | 20.8 | |
| **5/7/2018** | 12.3 | 6.5 | 27.3 | |
| **5/8/2018** | 11.9 | 6.1 | 33.4 | |
| **5/9/2018** | 14.1 | 8.3 | 41.7 | |
| **5/10/2018** | 15.3 | 9.5 | 51.2 | |
| **5/11/2018** | 14.9 | 9.1 | 60.4 | |
| **5/12/2018** | 14.6 | 8.8 | 69.2 | |
| **5/13/2018** | 14.4 | 8.6 | 77.8 | |
| **5/14/2018** | 14.1 | 8.3 | 86.1 | |
| **5/15/2018** | 15.0 | 9.2 | 95.3 | |
| **5/16/2018** | 16.5 | 10.7 | 106.0 | |
| **5/17/2018** | 17.2 | 11.4 | 117.5 | |
| **5/18/2018** | 18.1 | 12.3 | 129.8 | |
| **5/19/2018** | 17.7 | 11.9 | 141.8 | |
| **5/20/2018** | 16.9 | 11.1 | 152.9 | |
| **5/21/2018** | 16.1 | 10.3 | 163.2 | |
| **5/22/2018** | 16.9 | 11.1 | 174.3 | |
| **5/23/2018** | 16.8 | 11.0 | 185.2 | |
| **5/24/2018** | 17.1 | 11.3 | 196.5 | |
| **5/25/2018** | 18.5 | 12.7 | 209.2 | |
| **5/26/2018** | 20.0 | 14.2 | 223.4 | |
| **5/27/2018** | 22.3 | 16.5 | 239.8 | |
| **5/28/2018** | 22.9 | 17.1 | 256.9 | |
| **5/29/2018** | 23.6 | 17.8 | 274.8 | |
| **5/30/2018** | 24.3 | 18.5 | 293.3 | |
| **5/31/2018** | 24.1 | 18.3 | 311.5 | |
| **6/1/2018** | 23.3 | 17.5 | 329.0 | |
| **6/2/2018** | 22.4 | 16.6 | 345.6 | |
| **6/3/2018** | 21.5 | 15.7 | 361.4 | |
| **6/4/2018** | 20.0 | 14.2 | 375.6 | |
| **6/5/2018** | 18.2 | 12.4 | 388.0 | |
| **6/6/2018** | 17.5 | 11.7 | 399.7 | |
| **6/7/2018** | 17.2 | 11.4 | 411.1 | |
| **6/8/2018** | 17.6 | 11.8 | 422.9 | |
| **6/9/2018** | 18.8 | 13.0 | 436.0 | |
| **6/10/2018** | 20.4 | 14.6 | 450.5 | |
| **6/11/2018** | 20.1 | 14.3 | 464.8 | |
| **6/12/2018** | 20.3 | 14.5 | 479.3 | |
| **6/13/2018** | 20.4 | 14.6 | 493.9 | |
| **6/14/2018** | 20.5 | 14.7 | 508.6 | 14.7 |
| **6/15/2018** | 20.7 | 14.9 | 523.4 | 35.3 |
| **6/16/2018** | 21.9 | 16.1 | 539.5 | 57.2 |
| **6/17/2018** | 22.0 | 16.2 | 555.7 | 79.2 |
| **6/18/2018** | 22.1 | 16.3 | 572.0 | 101.3 |

**Table 52.** *(Continued)*

| Date | Daily Mean | Daily TU | CTU (Wolf) | CTU (St Clair) |
|---|---|---|---|---|
| **6/19/2018** | 22.3 | 16.5 | 588.5 | 123.5 |
| **6/20/2018** | 23.0 | 17.2 | 605.6 | 146.5 |
| **6/21/2018** | 22.5 | 16.7 | 622.3 | 169.0 |
| **6/22/2018** | 22.9 | 17.1 | 639.5 | 191.9 |
| **6/23/2018** | 22.6 | 16.8 | 656.3 | 214.6 |
| **6/24/2018** | 21.8 | 16.0 | 672.2 | 236.3 |
| **6/25/2018** | 21.2 | 15.4 | 687.6 | 257.5 |
| **6/26/2018** | 21.4 | 15.6 | 703.3 | 278.9 |
| **6/27/2018** | 21.4 | 15.6 | 718.9 | 300.4 |
| **6/28/2018** | 20.8 | 15.0 | 733.9 | 321.2 |
| **6/29/2018** | 21.1 | 15.3 | 749.3 | 342.3 |
| **6/30/2018** | 23.5 | 17.7 | 767.0 | 365.8 |
| **7/1/2018** | 24.8 | 19.0 | 786.0 | 390.7 |
| **7/2/2018** | 27.5 | 21.7 | 807.7 | 418.2 |
| **7/3/2018** | 27.0 | 21.2 | 828.9 | 445.2 |
| **7/4/2018** | 27.7 | 21.9 | 850.8 | 472.9 |
| **7/5/2018** | 27.8 | 22.0 | 872.7 | 500.6 |
| **7/6/2018** | 27.3 | 21.5 | 894.2 | 527.9 |
| **7/7/2018** | 26.1 | 20.3 | 914.5 | 554.0 |
| **7/8/2018** | 25.6 | 19.8 | 934.3 | 579.6 |
| **7/9/2018** | 25.3 | 19.5 | 953.8 | 604.9 |
| **7/10/2018** | 25.2 | 19.4 | 973.2 | 630.1 |
| **7/11/2018** | 25.0 | 19.2 | 992.4 | 655.1 |
| **7/12/2018** | 25.5 | 19.7 | 1012.1 | 680.6 |
| **7/13/2018** | 25.1 | 19.3 | 1031.4 | 705.7 |
| **7/14/2018** | 24.2 | 18.4 | 1049.8 | 729.8 |
| **7/15/2018** | 25.1 | 19.3 | 1069.1 | 754.9 |
| **7/16/2018** | 25.5 | 19.7 | 1088.8 | 780.5 |
| **7/17/2018** | 25.2 | 19.4 | 1108.2 | 805.7 |
| **7/18/2018** | 24.4 | 18.6 | 1126.8 | 830.1 |
| **7/19/2018** | 23.9 | 18.1 | 1144.9 | 854.0 |
| **7/20/2018** | 24.1 | 18.3 | 1163.3 | 878.1 |
| **7/21/2018** | 24.3 | 18.5 | 1181.7 | 902.4 |
| **7/22/2018** | 23.8 | 18.0 | 1199.8 | 926.2 |
| **7/23/2018** | 23.3 | 17.5 | 1217.3 | 949.5 |
| **7/24/2018** | 23.0 | 17.2 | 1234.5 | 972.5 |
| **7/25/2018** | 22.7 | 16.9 | 1251.3 | 995.2 |
| **7/26/2018** | 22.7 | 16.9 | 1268.2 | 1017.9 |
| **7/27/2018** | 22.7 | 16.9 | 1285.1 | 1040.6 |
| **7/28/2018** | 22.3 | 16.5 | 1301.6 | 1062.9 |
| **7/29/2018** | 21.7 | 15.9 | 1317.6 | 1084.6 |
| **7/30/2018** | 22.0 | 16.2 | 1333.7 | 1106.6 |
| **7/31/2018** | 22.6 | 16.8 | 1350.5 | 1129.2 |
| **8/1/2018** | 23.2 | 17.4 | 1367.9 | 1152.4 |
| **8/2/2018** | 22.6 | 16.8 | 1384.7 | 1175.0 |
| **8/3/2018** | 22.4 | 16.6 | 1401.3 | 1197.4 |

**Table 52.** *(Continued)*

| Date | Daily Mean | Daily TU | CTU (Wolf) | CTU (St Clair) |
|---|---|---|---|---|
| **8/4/2018** | 22.1 | 16.3 | 1417.6 | 1219.5 |
| **8/5/2018** | 22.9 | 17.1 | 1434.7 | 1242.4 |
| **8/6/2018** | 24.1 | 18.3 | 1453.0 | 1266.5 |
| **8/7/2018** | 23.9 | 18.1 | 1471.1 | 1290.3 |
| **8/8/2018** | 23.4 | 17.6 | 1488.6 | 1313.7 |
| **8/9/2018** | 23.0 | 17.2 | 1505.9 | 1336.7 |
| **8/10/2018** | 23.3 | 17.5 | 1523.3 | 1360.0 |
| **8/11/2018** | 23.6 | 17.8 | 1541.1 | 1383.6 |
| **8/12/2018** | 23.7 | 17.9 | 1559.0 | 1407.3 |
| **8/13/2018** | 24.5 | 18.7 | 1577.7 | 1431.8 |
| **8/14/2018** | 24.5 | 18.7 | 1596.4 | 1456.2 |

# Appendix I -
## Supplemental Tissue Chemistry Data

### Lists of analytes sampled in water by frequency of detection

**Analytes not detected in any end of season carcass samples**

4-Epianhydrochlor-tetracycline
4-Epianhydrote-tracycline (EATC)
4-Epichlortetracycline (ECTC)
4-Epioxytetracycline (EOTC)
4-Epitetracycline (ETC)
Acetaminophen
Albuterol
Ametryn
Amlodipine
Amsacrine
Anhydrochlor-tetracycline (ACTC)
Anhydrotetracycline (ATC)
Atenolol
Atorvastatin
Azathioprine
azinphos-methyl
BDE# 30
BDE# 105
Benzoylecgonine
Betamethasone
Bisphenol A
Busulfan
Carbamazepine
Chlorothalonil
Chlorpyriphos-Methyl
Chlorpyriphos-Oxon
Chlortetracycline (CTC)
Cimetidine
Clarithromycin
Clinafloxacin
Clonidine
Cotinine
Cyanazine
Cypermethrin
Demeclocycline
Desethylatrazine
Desmethyldiltiazem
Diazepam
diazinon
Diazinon-Oxon
Digoxin
Dimethoate
disulfoton
disulfoton sulfone
Doxorubicin
Doxycycline
Drospirenone
Enalapril
endrin
Endrin Ketone
Ethion
Etoposide
Fenitrothion
Fluocinonide
fonofos
Furosemide
Gemfibrozil
Glipizide
Glyburide
Heptachlor
Hexazinone
Hydrochlorothiazide
Hydrocodone
Hydrocortisone
Isochlortetracycline (ICTC)
Lincomycin
Lomefloxacin
malathion
Medroxyprogesterone Acetate
Meprobamate
methoxychlor
Methylprednisolone
Metoprolol
Metribuzin
Metronidazole
Minocycline
Moxifloxacin
Norfloxacin
Norfluoxetine
Norgestimate
Norverapamil
o,p'-DDT
Ormetoprim
Oxacillin
Oxazepam
Oxytetracycline (OTC)
Parathion-Ethyl
Parathion-Methyl
Paroxetine
Penicillin G
Penicillin V
Permethrin
Perthane
phorate
Phosmet
Pirimiphos-Methyl
Promethazine
Propoxyphene
Quintozene
Rosuvastatin
Sarafloxacin
Simazine
Simvastatin
Sulfachloropyridazine
Sulfadiazine
Sulfadimethoxine
Sulfamethazine
Sulfamethoxazole
Sulfanilamide
Sulfathiazole
Tamoxifen
Tecnazene
Terbufos
Tetracycline (TC)
Theophylline
Trenbolone
Trenbolone acetate
Triclosan
Trimethoprim
Tylosin
Valsartan
Verapamil
Warfarin
Zidovudine

**Analytes detected in < 25% of all end of season carcass samples**

10-hydroxy-amitriptyline
2-Hydroxy-ibuprofen
Alprazolam
Benztropine
Caffeine
Captan
Carbadox
Cefotaxime
Chlorpyriphos
Ciprofloxacin
Clotrimazole
Cloxacillin
Cocaine
Codeine
Colchicine
Cyclophosphamide
Dacthal
Dehydronifedipine
delta BHC
Diatrizoic Acid
Digoxigenin
Diltiazem
endosulfan I
endosulfan II
Endosulphan Sulphate
Enrofloxacin
Erythromycin-H2O
Fluoxetine
Fluticasone propionate
gamma BHC
Ibuprofen
Metformin
Naproxen
Oxolinic Acid
p,p'-DDT
Prednisone
Propranolol
Ranitidine
Roxithromycin
Sertraline
Sulfamethizole
Thiabendazole
Venlafaxine

**Analytes detected in≧ 25% but < 50% of all end of season carcass samples**

Aldrin
Amphetamine
Atrazine
BDE# 116
BDE# 190
BDE# 85
Citalopram
Daunorubicin
Diphenhydramine
Iopamidol
Melphalan
Miconazole
Ofloxacin
oxychlordane
Oxycodone
Prednisolone
Sulfamerazine
Teniposide
trans-nonachlor
Triamterene
Triclocarban
Virginiamycin M1

**Analytes detected in≧50% but < 100% of all end of season carcass samples**

alpha BHC
alpha chlordane
Amitriptyline
Azithromycin
BDE# 10
BDE# 181
BDE# 32
BDE# 35
BDE# 37
BDE# 7
BDE# 77
BDE# 79
beta BHC
cis-nonachlor
dieldrin
Flumequine
gamma chlordane
Heptachlor Epoxide
mirex
o,p'-DDE
octachlorostyrene
trans-nonachlor

**Analytes detected in 100% of all end of season carcass samples**

BDE# 100
BDE# 119/120
BDE# 12/13
BDE# 126
BDE# 128
BDE# 138/166
BDE# 140
BDE# 15
BDE# 153
BDE# 154
BDE# 155
BDE# 17/25
BDE# 183
BDE# 203
BDE# 206
BDE# 207
BDE# 208
BDE# 209
BDE# 28/33
BDE# 47
BDE# 49
BDE# 51
BDE# 66
BDE# 71
BDE# 75
BDE# 8/11
BDE# 99
DEET
HCB
o,p'-DDD
p,p'-DDD
p,p'-DDE

## Egg chemistry concentrations

**Table 53.** Egg tissue chemistry analytical results for 2017 samples. Concentrations are reported in parts per million wet weight except for lipid and moisture which are presented as percentages. Blank values indicate sample did not meet quality control criteria. All samples were collected from the same female.

| Analyte | PES 1 | PES 2 | PES 3 |
|---|---|---|---|
| **% Lipid** | 10.9 | 11.1 | 11.1 |
| **% Moisture** | 64.2 | 64.2 | 64.2 |
| **1,7-Dimethylxanthine** | <0.0240 | <0.0238 | <0.0240 |
| **10-hydroxy-amitriptyline** | 0.0000797 | 0.0000806 | 0.000132 |
| **2-Hydroxy-ibuprofen** | <0.0320 | <0.0317 | <0.0320 |
| **4 Epianhydrochlortetracycline** | <0.0240 | <0.0238 | <0.0240 |
| **4 Epianhydrotetracycline (EATC)** | <0.00600 | <0.00595 | <0.00600 |
| **4 Epichlortetracycline (ECTC)** | <0.00600 | <0.00595 | <0.00600 |
| **4-Epioxytetracycline (EOTC)** | <0.00240 | <0.00238 | <0.00240 |
| **4 Epitetracycline (ETC)** | <0.00240 | <0.00238 | <0.00240 |
| **Acetaminophen** | <0.00600 | <0.00595 | <0.00600 |
| **Albuterol** | <0.000291 | <0.000288 | <0.000297 |
| **Aldrin** | 0.000023 | <0.0000210 | <0.0000296 |
| **alpha BHC** | 0.000045 | 0.000045 | 0.000051 |
| **alpha chlordane** | 0.00122 | 0.00135 | 0.00146 |
| **Alprazolam** | <0.000120 | <0.000119 | <0.000120 |
| **Ametryn** | <0.0000648 | <0.000163 | <0.000165 |
| **Amitriptyline** | <0.000120 | <0.000119 | <0.000120 |
| **Amlodipine** | <0.000600 | <0.000595 | <0.000600 |
| **Amphetamine** | <0.00146 | <0.00144 | <0.00149 |
| **Amsacrine** | <0.0000320 | <0.0000318 | <0.0000320 |
| **Anhydrochlortetracycline (ACTC)** | <0.00600 | <0.00595 | <0.00600 |
| **Anhydrotetracycline (ATC)** | <0.00600 | <0.00595 | <0.00600 |
| **Atenolol** | <0.000583 | <0.000577 | <0.000594 |
| **Atorvastatin** | <0.00146 | <0.00144 | <0.00149 |
| **Atrazine** | <0.000366 | <0.00306 | <0.00416 |
| **Azathioprine** | <0.000800 | <0.000794 | <0.000800 |
| **azinphos methyl** | <0.000699 | <0.000775 | <0.000958 |
| **Azithromycin** | <0.000600 | <0.000595 | <0.000600 |
| **BDE# 10** | <0.000000886 | <0.000000313 | <0.00000106 |
| **BDE# 100** | 0.000684 | 0.000697 | 0.000693 |
| **BDE# 105** | <0.00000138 | <0.000000994 | <0.00000183 |
| **BDE# 116** | <0.00000201 | <0.00000139 | <0.00000266 |
| **BDE# 119/120** | 0.0000383 | 0.0000367 | 0.0000412 |
| **BDE# 12/13** | 0.000000574 | 0.000000914 | 0.00000105 |
| **BDE# 126** | <0.000000573 | 0.00000183 | 0.00000156 |
| **BDE# 128** | <0.000000966 | 0.00000207 | <0.00000281 |
| **BDE# 138/166** | <0.000000673 | <0.000000500 | <0.00000105 |
| **BDE# 140** | 0.000000522 | <0.000000353 | <0.000000709 |
| **BDE# 15** | 0.00000564 | 0.00000655 | 0.00000531 |
| **BDE# 153** | 0.000107 | 0.000111 | 0.000108 |
| **BDE# 154** | 0.000299 | 0.000306 | 0.000302 |

**Table 53.** *(Continued)*

| Analyte | PES 1 | PES 2 | PES 3 |
|---|---|---|---|
| **BDE# 155** | 0.0000316 | 0.0000565 | 0.0000515 |
| **BDE# 17/25** | 0.0000371 | 0.0000224 | 0.0000452 |
| **BDE# 181** | <0.000000164 | 0.000000224 | <0.000000243 |
| **BDE# 183** | 0.000000728 | 0.00000128 | 0.00000183 |
| **BDE# 190** | <0.000000328 | <0.000000406 | <0.000000485 |
| **BDE# 203** | <0.000000256 | <0.000000168 | 0.00000166 |
| **BDE# 206** | 0.00000162 | 0.00000102 | 0.000002 |
| **BDE# 207** | 0.00000412 | 0.0000039 | <0.00000242 |
| **BDE# 208** | 0.00000515 | 0.00000213 | <0.00000231 |
| **BDE# 209** | 0.0000193 | 0.0000195 | <0.0000214 |
| **BDE# 28/33** | 0.000492 | 0.000541 | 0.000561 |
| **BDE# 30** | <0.00000239 | <0.000000555 | <0.00000183 |
| **BDE# 32** | <0.00000188 | 0.00000154 | 0.00000196 |
| **BDE# 35** | 0.00000475 | 0.00000427 | 0.00000545 |
| **BDE# 37** | <0.00000130 | 0.00000175 | <0.000000993 |
| **BDE# 47** | 0.00248 | 0.0026 | 0.00261 |
| **BDE# 49** | 0.000628 | 0.00065 | 0.000669 |
| **BDE# 51** | 0.0000469 | 0.0000471 | 0.0000519 |
| **BDE# 66** | 0.0000398 | 0.0000334 | 0.000034 |
| **BDE# 7** | <0.000000766 | <0.000000272 | <0.000000914 |
| **BDE# 71** | 0.0000304 | 0.0000204 | 0.0000338 |
| **BDE# 75** | 0.0000078 | 0.00000773 | 0.00000809 |
| **BDE# 77** | 0.000000993 | 0.00000053 | <0.000000182 |
| **BDE# 79** | 0.0000123 | 0.00000877 | 0.0000155 |
| **BDE# 8/11** | 0.000000791 | 0.00000125 | 0.00000109 |
| **BDE# 85** | <0.00000110 | <0.000000787 | <0.00000146 |
| **BDE# 99** | 0.0000485 | 0.0000487 | 0.0000503 |
| **Benzoylecgonine** | <0.000120 | <0.000119 | <0.000120 |
| **Benztropine** | <0.000200 | <0.000198 | <0.000200 |
| **beta BHC** | <0.0000121 | <0.0000350 | <0.0000340 |
| **Betamethasone** | <0.000600 | <0.000595 | <0.000600 |
| **Bisphenol A** | <0.200 | <0.198 | <0.200 |
| **Busulfan** | <0.000892 | <0.000885 | <0.000892 |
| **Caffeine** | 0.00867 | <0.00595 | <0.00600 |
| **Captan** | <0.000437 | <0.000454 | <0.000443 |
| **Carbadox** | <0.000600 | <0.000595 | <0.000600 |
| **Carbamazepine** | <0.000600 | <0.000595 | <0.000600 |
| **Cefotaxime** | <0.00264 | <0.00400 | <0.00282 |
| **Chlorothalonil** | <0.0000530 | <0.0000516 | <0.0000508 |
| **Chlorpyriphos** | <0.0000904 | <0.000105 | <0.000103 |
| **Chlorpyriphos Methyl** | <0.0000530 | <0.0000516 | <0.0000508 |
| **Chlorpyriphos Oxon** | <0.0000609 | <0.000107 | <0.000104 |

**Table 53.** *(Continued)*

| Analyte | PES-1 | PES-2 | PES-3 |
|---|---|---|---|
| **Chlortetracycline (CTC)** | <0.00240 | <0.00238 | <0.00240 |
| **Cimetidine** | <0.000583 | <0.000577 | <0.000594 |
| **Ciprofloxacin** | <0.00406 | <0.00446 | <0.00434 |
| **cis-nonachlor** | 0.00135 | 0.00136 | 0.00128 |
| **Citalopram** | <0.000160 | <0.000159 | <0.000160 |
| **Clarithromycin** | <0.000600 | <0.000595 | <0.000600 |
| **Clinafloxacin** | <0.00304 | <0.00395 | <0.00270 |
| **Clonidine** | <0.00146 | <0.00144 | <0.00149 |
| **Clotrimazole** | <0.000160 | <0.000159 | <0.000160 |
| **Cloxacillin** | <0.00120 | <0.00119 | <0.00120 |
| **Cocaine** | <0.0000600 | <0.0000595 | <0.0000600 |
| **Codeine** | <0.00291 | <0.00288 | <0.00297 |
| **Colchicine** | <0.000320 | <0.000317 | <0.000320 |
| **Cotinine** | <0.00146 | <0.00144 | <0.00149 |
| **Cyanazine** | <0.000578 | <0.00270 | <0.00214 |
| **Cyclophosphamide** | <0.000320 | <0.000317 | <0.000320 |
| **Cypermethrin** | <0.000978 | <0.000432 | <0.000837 |
| **Dacthal** | 0.0000723 | <0.0000516 | <0.0000508 |
| **Daunorubicin** | <0.00320 | <0.00317 | <0.00320 |
| **DEET** | 0.000845 | 0.000777 | 0.000912 |
| **Dehydronifedipine** | <0.000240 | <0.000238 | <0.000240 |
| **delta BHC** | <0.0000149 | <0.0000565 | <0.0000518 |
| **Demeclocycline** | <0.00600 | <0.00595 | <0.00600 |
| **Desethylatrazine** | <0.0000530 | <0.0000516 | <0.0000508 |
| **Desmethyldiltiazem** | | <0.0000595 | |
| **Diatrizoic Acid** | <0.00960 | <0.0170 | <0.00960 |
| **Diazepam** | <0.000120 | <0.000119 | <0.000120 |
| **diazinon** | <0.000235 | <0.000641 | <0.000771 |
| **Diazinon-Oxon** | <0.0000818 | <0.000290 | <0.000313 |
| **dieldrin** | 0.00321 | 0.00327 | 0.00307 |
| **Digoxigenin** | <0.00500 | <0.00852 | <0.00950 |
| **Digoxin** | <0.00240 | <0.00238 | <0.00240 |
| **Diltiazem** | <0.000120 | <0.000119 | <0.000120 |
| **Dimethoate** | <0.00172 | <0.00120 | <0.00132 |
| **Diphenhydramine** | <0.000240 | <0.000238 | <0.000240 |
| **disulfoton sulfone** | <0.000101 | <0.0000627 | <0.0000716 |
| **Doxorubicin** | <0.00960 | <0.00952 | <0.00960 |
| **Doxycycline** | <0.00240 | <0.00238 | <0.00240 |
| **Drospirenone** | <0.00331 | <0.00317 | <0.00433 |
| **Enalapril** | <0.000291 | <0.000288 | <0.000297 |
| **endosulfan I** | <0.000140 | <0.000294 | <0.000298 |
| **endosulfan II** | <0.000472 | <0.000558 | <0.000402 |

**Table 53.** *(Continued)*

| Analyte | PES-1 | PES-2 | PES-3 |
|---|---|---|---|
| **Endosulphan Sulphate** | 0.00013 | <0.000127 | <0.000107 |
| **endrin** | 0.000049 | 0.000043 | 0.000056 |
| **Endrin Ketone** | <0.0000805 | <0.0000490 | <0.0000772 |
| **Enrofloxacin** | <0.00120 | <0.00140 | <0.00123 |
| **Erythromycin-H2O** | <0.000920 | <0.000913 | <0.000920 |
| **Ethion** | <0.000133 | <0.000149 | <0.000176 |
| **Etoposide** | <0.00437 | <0.00127 | <0.00526 |
| **Fenitrothion** | <0.0000808 | <0.000240 | <0.000199 |
| **Flumequine** | <0.000600 | <0.000595 | <0.000600 |
| **Fluocinonide** | <0.00240 | <0.00238 | <0.00240 |
| **Fluoxetine** | <0.000600 | <0.000595 | <0.000600 |
| **Fluticasone propionate** | <0.000800 | <0.000794 | <0.000800 |
| **fonofos** | <0.0000530 | <0.0000925 | <0.000111 |
| **Furosemide** | <0.0160 | <0.0159 | <0.0160 |
| **gamma BHC** | <0.0000260 | <0.0000230 | 0.000036 |
| **gamma chlordane** | 0.000325 | 0.000301 | 0.000374 |
| **Gemfibrozil** | <0.000600 | <0.000595 | <0.000600 |
| **Glipizide** | <0.00240 | <0.00238 | <0.00240 |
| **Glyburide** | <0.00120 | <0.00119 | <0.00120 |
| **HCB** | 0.000967 | 0.000973 | 0.000958 |
| **Heptachlor** | <0.00000530 | <0.0000443 | <0.0000442 |
| **Heptachlor Epoxide** | 0.000563 | 0.000546 | 0.000574 |
| **Hexazinone** | <0.000955 | <0.00129 | <0.00100 |
| **Hydrochlorothiazide** | <0.00800 | <0.00794 | <0.00800 |
| **Hydrocodone** | <0.00146 | <0.00144 | <0.00149 |
| **Hydrocortisone** | <0.0240 | <0.0238 | <0.0240 |
| **Ibuprofen** | <0.00600 | <0.00595 | <0.00600 |
| **Iopamidol** | <0.0320 | <0.0317 | <0.0379 |
| **Isochlortetracycline (ICTC)** | <0.00240 | <0.00238 | <0.00240 |
| **Lincomycin** | <0.00120 | <0.00119 | <0.00120 |
| **Lomefloxacin** | <0.00228 | <0.00230 | <0.00290 |
| **malathion** | <0.000295 | <0.000149 | <0.000199 |
| **Medroxyprogesterone Acetate** | <0.00160 | <0.00159 | <0.00160 |
| **Melphalan** | <0.0180 | <0.00952 | <0.00960 |
| **Meprobamate** | <0.00160 | <0.00159 | <0.00160 |
| **Metformin** | <0.00291 | <0.00288 | <0.00297 |
| **methoxychlor** | <0.000659 | <0.000446 | <0.00135 |
| **Methylprednisolone** | <0.00160 | <0.00159 | <0.00160 |
| **Metoprolol** | <0.00182 | <0.000595 | <0.000600 |
| **Metronidazole** | <0.00160 | <0.00159 | <0.00160 |
| **Miconazole** | <0.000600 | <0.000595 | <0.000600 |
| **Minocycline** | <0.0240 | <0.0238 | <0.0240 |

| Analyte | PES-1 | PES-2 | PES-3 |
|---|---|---|---|
| **mirex** | 0.000086 | <0.0000750 | 0.000107 |
| **Moxifloxacin** | <0.00160 | <0.00159 | <0.00160 |
| **Naproxen** | <0.00120 | <0.00331 | <0.00120 |
| **Norfloxacin** | <0.00600 | <0.00795 | <0.00600 |
| **Norfluoxetine** | <0.000600 | 0.000674 | <0.000600 |
| **Norgestimate** | <0.00159 | <0.00150 | <0.00161 |
| **Norverapamil** | <0.0000600 | <0.0000595 | <0.0000600 |
| **o,p'-DDD** | 0.000446 | 0.000435 | 0.000439 |
| **o,p'-DDE** | 0.000333 | 0.00035 | 0.000457 |
| **o,p'-DDT** | 0.000179 | 0.000187 | 0.000182 |
| **octachlorostyrene** | 0.000119 | <0.0000768 | <0.0000814 |
| **Ofloxacin** | <0.000766 | <0.000729 | <0.000600 |
| **Ormetoprim** | <0.000240 | <0.000238 | <0.000240 |
| **Oxacillin** | <0.00120 | <0.00119 | <0.00120 |
| **Oxazepam** | <0.00160 | <0.00159 | <0.00160 |
| **Oxolinic Acid** | <0.000240 | <0.000238 | <0.000240 |
| **oxychlordane** | 0.000325 | 0.000341 | 0.000344 |
| **Oxycodone** | <0.000583 | <0.000577 | <0.000594 |
| **Oxytetracycline (OTC)** | <0.00240 | <0.00238 | <0.00240 |
| **p,p'-DDD** | 0.00286 | 0.00281 | 0.00284 |
| **p,p'-DDE** | 0.0254 | 0.0296 | 0.025 |
| **p,p'-DDT** | 0.000317 | 0.000323 | 0.000309 |
| **Parathion-Ethyl** | <0.000152 | <0.000184 | <0.000200 |
| **Parathion-Methyl** | <0.00153 | <0.00139 | <0.00136 |
| **Paroxetine** | <0.00160 | <0.00159 | <0.00160 |
| **Penicillin G** | <0.00120 | <0.00119 | <0.00120 |
| **Penicillin V** | <0.00120 | <0.00119 | <0.00120 |
| **Permethrin** | <0.000398 | <0.000454 | <0.000557 |
| **Perthane** | <0.000851 | <0.000747 | <0.000958 |
| **Phosmet** | <0.000279 | <0.000544 | <0.000387 |
| **Pirimiphos-Methyl** | <0.0000530 | <0.0000873 | <0.0000947 |
| **Prednisolone** | <0.00240 | <0.00238 | <0.00240 |
| **Prednisone** | <0.00800 | <0.00794 | <0.00800 |
| **Promethazine** | <0.000160 | <0.000271 | 0.00123 |
| **Propoxyphene** | <0.000120 | <0.000119 | <0.000120 |
| **Propranolol** | <0.000800 | <0.000794 | <0.000800 |
| **Quintozene** | <0.0000530 | <0.0000516 | <0.0000508 |
| **Ranitidine** | <0.000583 | <0.000577 | <0.000594 |
| **Rosuvastatin** | <0.00160 | <0.00159 | <0.00160 |
| **Roxithromycin** | <0.000120 | <0.000119 | <0.000120 |
| **Sarafloxacin** | <0.00600 | <0.0272 | <0.00600 |
| **Sertraline** | 0.000415 | 0.00045 | 0.000461 |

**Table 53.** *(Continued)*

| Analyte | PES-1 | PES-2 | PES-3 |
|---|---|---|---|
| **Simvastatin** | <0.00800 | <0.00794 | <0.00800 |
| **Sulfachloropyridazine** | <0.000600 | <0.000595 | <0.000600 |
| **Sulfadiazine** | <0.000600 | <0.000595 | <0.000600 |
| **Sulfadimethoxine** | <0.000120 | <0.000119 | <0.000120 |
| **Sulfamerazine** | <0.000240 | <0.000238 | <0.000240 |
| **Sulfamethazine** | <0.000240 | <0.000238 | <0.000240 |
| **Sulfamethizole** | <0.000240 | <0.000238 | <0.000240 |
| **Sulfamethoxazole** | <0.000240 | <0.000238 | <0.000240 |
| **Sulfanilamide** | <0.00600 | <0.00595 | <0.00600 |
| **Sulfathiazole** | <0.000600 | <0.000595 | <0.000600 |
| **Tamoxifen** | <0.000160 | <0.000159 | <0.000160 |
| **Tecnazene** | <0.0000530 | <0.0000906 | <0.000116 |
| **Teniposide** | <0.00160 | <0.00159 | <0.00160 |
| **Terbufos** | <0.000131 | <0.000191 | <0.000190 |
| **Tetracycline (TC)** | <0.00240 | <0.00238 | <0.00240 |
| **Theophylline** | <0.0240 | <0.0238 | <0.0240 |
| **Thiabendazole** | <0.000600 | <0.000595 | <0.000600 |
| **trans-nonachlor** | 0.00246 | 0.0025 | 0.00234 |
| **Trenbolone** | <0.00160 | <0.00159 | <0.00160 |
| **Trenbolone acetate** | <0.000120 | <0.000119 | <0.000123 |
| **Triamterene** | <0.000291 | <0.000288 | <0.000297 |
| **Triclocarban** | <0.00120 | <0.00119 | <0.00132 |
| **Triclosan** | <0.0240 | <0.0238 | <0.0240 |
| **Trimethoprim** | <0.000600 | <0.000595 | <0.000600 |
| **Tylosin** | <0.00240 | <0.00238 | <0.00240 |
| **Valsartan** | <0.00160 | <0.00159 | <0.00160 |
| **Venlafaxine** | <0.00128 | <0.00127 | <0.00128 |
| **Verapamil** | <0.0000600 | <0.0000595 | <0.0000600 |
| **Virginiamycin M1** | <0.00120 | <0.00119 | <0.00120 |
| **Warfarin** | <0.000600 | <0.000595 | <0.000600 |
| **Zidovudine** | <0.00960 | <0.0107 | <0.00960 |

**Table 54.** Egg tissue chemistry analytical results for 2018 samples. Concentrations are reported in parts per million wet weight except for lipid and moisture which are reported as percentages. Blank values indicate the sample did not meet quality control criteria. Each sample was collected from a different female.

| Analyte | WOL-1 | WOL-2 | WOL-4 | WOL-5 | WOL-6 |
|---|---|---|---|---|---|
| **% Lipid** | 8.23 | 7.34 | 9.44 | 6.86 | 6.96 |
| **% Moisture** | 76.2 | 76.2 | 76.2 | 76.2 | 76.2 |
| **1,7-Dimethylxanthine** | <0.0246 | <0.0236 | <0.0238 | <0.0233 | <0.02439999999999 |
| **10-hydroxyamitriptyline** | 0.000131 | 0.000198 | 0.000124 | <0.0000755 | 0.000221 |
| **2 Hydroxyibuprofen** | <0.03279999999999 | <0.0315 | <0.0317 | <0.031 | <0.0325 |
| **4 Epianhydrochlortetracycline** | <0.0246 | <0.0236 | <0.0238 | <0.0233 | <0.02439999999999 |
| **4 Epianhydrotetracycline (EATC)** | <0.00615 | <0.00591 | <0.00595 | <0.00581 | <0.00609999999999 |
| **4 Epichlortetracycline (ECTC)** | <0.00615 | <0.00591 | <0.00595 | <0.00581 | <0.00609999999999 |
| **4 Epioxytetracycline (EOTC)** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **4 Epitetracycline (ETC)** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **Acetaminophen** | <0.00718 | <0.00605999999999 | <0.00597 | <0.00651 | <0.00687 |
| **Albuterol** | <0.000306 | <0.000278 | <0.000313 | <0.000294 | <0.000263 |
| **Aldrin** | <0.0000102 | <0.0000111 | <0.0000175 | <0.000011 | <0.00001689999999 |
| **alpha BHC** | 0.00008 | 0.000109 | <0.0000396 | <0.0000241 | <0.000054 |
| **alpha chlordane** | 0.000959 | <0.000955 | 0.00102 | 0.000915 | 0.000635 |
| **Alprazolam** | <0.000123 | <0.000118 | <0.00011899999999 | <0.000116 | <0.000122 |
| **Amitriptyline** | 0.000184 | <0.00013 | <0.00011899999999 | <0.000224 | <0.000122 |
| **Amlodipine** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Amphetamine** | <0.00153 | <0.00139 | <0.00156 | <0.00147 | <0.00132 |
| **Amsacrine** | <0.0000328 | <0.0000398 | <0.000039 | <0.000031 | <0.0000325 |
| **Anhydrochlortetracycline (ACTC)** | <0.00615 | <0.00591 | <0.00595 | <0.00581 | <0.00609999999999 |
| **Anhydrotetracycline (ATC)** | <0.00615 | <0.00591 | <0.00595 | <0.00581 | <0.00609999999999 |
| **Atenolol** | <0.000612 | <0.000556 | <0.000625 | <0.000588 | <0.000526 |
| **Atorvastatin** | <0.00153 | <0.00139 | <0.00156 | <0.00147 | <0.00132 |
| **Atrazine** | <0.00184 | <0.00123 | <0.001 | <0.00196 | <0.00156 |
| **Azathioprine** | <0.00082 | <0.000787 | <0.000794 | <0.000775 | <0.00081299999999 |
| **azinphos methyl** | <0.00227 | <0.00166 | <0.0015 | <0.00151 | <0.00234 |
| **Azithromycin** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **BDE# 10** | <0.000000229 | <0.000000222 | <0.00000022099999 | <0.00000021399999 | <0.00000020799999 |
| **BDE# 100** | 0.000324 | 0.000294 | 0.000439 | 0.000309 | 0.000211 |
| **BDE# 105** | <0.000000555 | <0.000000778 | <0.000000994 | <0.000000768 | <0.00000048 |
| **BDE# 116** | <0.00000068799999 | <0.000000964 | <0.00000122999999 | <0.000000952 | <0.00000061 |
| **BDE# 119/120** | 0.00000987 | 0.000017 | 0.0000155 | 0.0000104 | 0.00000621 |
| **BDE# 12/13** | 0.00000187 | 0.00000181 | 0.00000167 | 0.00000146 | 0.000000916 |
| **BDE# 126** | 0.00000327 | 0.00000753 | 0.00000769 | 0.00000566 | 0.0000029 |
| **BDE# 128** | 0.00000126 | 0.00000269 | 0.00000184 | 0.000000901 | 0.000000617 |
| **BDE# 138/166** | <0.000000229 | <0.000000222 | <0.00000022099999 | <0.00000021399999 | 0.00000023 |
| **BDE# 140** | <0.000000229 | <0.000000222 | 0.000000305 | <0.00000021399999 | <0.00000020799999 |

**Table 54.** (*continued*)

| Analyte | WOL-1 | WOL-2 | WOL-4 | WOL-5 | WOL-6 |
|---|---|---|---|---|---|
| **BDE# 15** | 0.00000648 | 0.0000042 | 0.00000726 | 0.00000428 | 0.00000439 |
| **BDE# 153** | 0.0000464 | 0.0000568 | 0.0000465 | 0.0000268 | 0.0000351 |
| **BDE# 154** | 0.0000621 | 0.000109 | 0.000139 | 0.0000681 | 0.0000524 |
| **BDE# 155** | 0.0000335 | 0.0000787 | 0.0000733 | 0.0000569 | 0.0000232 |
| **BDE# 17/25** | 0.0000215 | 0.0000113 | 0.0000232 | 0.0000129 | 0.0000217 |
| **BDE# 181** | <0.000000229 | <0.000000222 | <0.00000022099999 | <0.00000021399999 | <0.00000020799999 |
| **BDE# 183** | 0.000000836 | 0.00000207 | 0.00000119 | 0.000000348 | 0.000000623 |
| **BDE# 190** | 0.000000363 | 0.000000364 | <0.00000022099999 | <0.00000021399999 | <0.00000020799999 |
| **BDE# 203** | 0.0000012 | 0.00000179 | 0.000000635 | 0.000000788 | <0.00000020799999 |
| **BDE# 206** | 0.00000734 | 0.00002 | 0.00000411 | 0.0000061 | 0.00000716 |
| **BDE# 207** | 0.0000133 | 0.0000301 | 0.00000715 | 0.0000124 | 0.0000122 |
| **BDE# 208** | 0.00000733 | 0.0000187 | 0.00000598 | 0.00000641 | 0.00000837 |
| **BDE# 209** | 0.000137 | 0.000263 | 0.0000568 | 0.000104 | 0.0000831 |
| **BDE# 28/33** | 0.000236 | 0.000163 | 0.00055 | 0.000208 | 0.000178 |
| **BDE# 30** | <0.000000453 | <0.000000392 | <0.000000604 | <0.000000446 | <0.000000443 |
| **BDE# 32** | 0.00000202 | 0.00000228 | 0.00000201 | 0.00000181 | 0.00000145 |
| **BDE# 35** | 0.00000293 | 0.0000018 | 0.00000443 | 0.00000166 | 0.00000237 |
| **BDE# 37** | 0.00000146 | 0.00000144 | 0.0000016 | 0.00000118 | 0.00000126 |
| **BDE# 47** | 0.00206 | 0.0015 | 0.00222 | 0.00127 | 0.00132 |
| **BDE# 49** | 0.000833 | 0.000679 | 0.00078 | 0.000628 | 0.00042 |
| **BDE# 51** | 0.0000734 | 0.0000725 | 0.0000708 | 0.0000505 | 0.0000445 |
| **BDE# 66** | 0.0000367 | 0.0000284 | 0.0000341 | 0.0000179 | 0.0000303 |
| **BDE# 7** | 0.00000123 | 0.00000062 | 0.000000881 | 0.000000508 | 0.000000986 |
| **BDE# 71** | 0.0000035 | 0.00000321 | 0.00000506 | 0.00000318 | 0.00000322 |
| **BDE# 75** | 0.00000331 | 0.00000265 | 0.00000484 | 0.00000325 | 0.00000293 |
| **BDE# 77** | 0.000000298 | 0.000000348 | 0.000000575 | 0.000000388 | 0.000000395 |
| **BDE# 79** | 0.0000031 | 0.00000252 | 0.00000435 | 0.00000278 | 0.00000225 |
| **BDE# 8/11** | 0.00000401 | 0.00000339 | 0.00000309 | 0.00000323 | 0.00000188 |
| **BDE# 85** | <0.000000395 | <0.000000553 | <0.000000707 | <0.000000546 | <0.000000357 |
| **BDE# 99** | 0.0000339 | 0.0000321 | 0.000028 | 0.00000906 | 0.0000566 |
| **Benzoylecgonine** | <0.000123 | <0.000118 | <0.00011899999999 | <0.000116 | <0.000122 |
| **Benztropine** | <0.000205 | <0.000197 | <0.000198 | <0.000194 | <0.000203 |
| **beta BHC** | 0.000096 | <0.000108 | <0.0000504 | <0.0000479 | <0.00008 |
| **Betamethasone** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Bisphenol A** | <0.205 | <0.197 | <0.198 | <0.194 | <0.203 |
| **Busulfan** | <0.00164 | <0.00157 | <0.0016 | <0.00165 | <0.00163 |
| **Caffeine** | <0.00615 | <0.00591 | <0.00595 | 0.00664 | <0.00609999999999 |

[1] Sample is a composite of eggs collected from all seven of the WOL females.

**Table 54.** (*continued*)

| Analyte | WOL-1 | WOL-2 | WOL-4 | WOL-5 | WOL-6 |
|---|---|---|---|---|---|
| **Captan** | <0.00385 | <0.00663 | <0.00499 | <0.00501 | <0.00594 |
| **Carbadox** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Carbamazepine** | <0.000615 | 0.000776 | 0.0013 | <0.00058099999999 | 0.000718 |
| **Cefotaxime** | | | | | |
| **Chlorothalonil** | <0.000081 | <0.0000809 | <0.0000795 | <0.000081 | <0.0000784 |
| **Chlorpyriphos** | <0.000246 | <0.00045 | <0.000343 | <0.000295 | <0.000389 |
| **Chlorpyriphos Methyl** | <0.000081 | <0.0000809 | <0.0000795 | <0.000081 | <0.0000784 |
| **Chlorpyriphos Oxon** | <0.000184 | <0.000288 | <0.000193 | <0.00017999999999 | <0.000298 |
| **Chlortetracycline (CTC)** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **Cimetidine** | <0.000612 | <0.000556 | <0.000625 | <0.000588 | <0.000526 |
| **Ciprofloxacin** | <0.00344 | <0.00236 | <0.00791 | <0.00233 | <0.00244 |
| **Clarithromycin** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Clinafloxacin** | <0.0133 | <0.00367 | <0.00423 | <0.00291 | <0.00343 |
| **Clonidine** | <0.00153 | <0.00139 | <0.00156 | <0.00147 | <0.00132 |
| **Clotrimazole** | <0.000164 | <0.000157 | <0.000159 | <0.000155 | <0.000163 |
| **Cloxacillin** | <0.00123 | <0.00118 | <0.00118999999999 | <0.00116 | <0.00122 |
| **Cocaine** | <0.0000615 | <0.0000591 | <0.00005949999999 | <0.0000581 | <0.000061 |
| **Codeine** | <0.00306 | <0.00278 | <0.00313 | <0.00294 | <0.00263 |
| **Colchicine** | <0.000328 | <0.000503 | <0.000317 | <0.00031 | <0.000325 |
| **Cotinine** | <0.00153 | <0.00139 | <0.00156 | <0.00147 | <0.00132 |
| **Cyanazine** | <0.00304 | <0.00359 | <0.00396 | <0.00311 | <0.00455 |
| **Cyclophosphamide** | <0.000328 | <0.000315 | <0.000317 | <0.00031 | <0.000325 |
| **Cypermethrin** | <0.000808 | <0.000712 | <0.000674 | <0.000613 | <0.00126 |
| **Dacthal** | <0.000081 | <0.0000809 | <0.0000795 | <0.000081 | <0.0000784 |
| **Daunorubicin** | <0.00328 | <0.00315 | <0.00317 | <0.0031 | <0.00325 |
| **DEET** | 0.000561 | 0.000525 | 0.000965 | 0.000681 | 0.000785 |
| **Dehydronifedipine** | <0.000246 | <0.000236 | <0.000491 | <0.000233 | <0.000244 |
| **delta BHC** | <0.000096 | <0.000314 | <0.0000531 | <0.0000531 | 0.000103 |
| **Demeclocycline** | <0.00615 | <0.00591 | <0.00595 | <0.00581 | <0.00609999999999 |
| **Desethylatrazine** | <0.000081 | <0.0000809 | <0.0000795 | <0.000081 | <0.0000784 |
| **Desmethyldiltiazem** | | 0.000112 | 0.0000609 | | <0.000318 |
| **Diatrizoic Acid** | <0.00984 | <0.00945 | <0.01019999999999 | <0.0093 | <0.00976 |
| **Diazepam** | <0.000123 | <0.000118 | <0.00011899999999 | <0.000116 | <0.000122 |
| **diazinon** | <0.000981 | <0.00035999999999 | <0.00055 | <0.00046 | <0.000949 |
| **Diazinon Oxon** | <0.000593 | <0.000637 | <0.000575 | <0.000634 | <0.000734 |
| **dieldrin** | 0.000907 | 0.000811 | 0.000807 | 0.000624 | 0.00074 |
| **Digoxigenin** | <0.0295 | <0.0234 | <0.026 | <0.0215 | <0.0405 |
| **Digoxin** | <0.00819999999999 | <0.00787 | <0.00794 | <0.00775 | <0.00813 |
| **Diltiazem** | <0.000123 | <0.000118 | <0.00011899999999 | <0.000116 | <0.000122 |

**Table 54.** (*continued*)

| Analyte | WOL-1 | WOL-2 | WOL-4 | WOL-5 | WOL-6 |
|---|---|---|---|---|---|
| **Dimethoate** | <0.00326 | <0.00695 | <0.00473 | <0.00409 | <0.00555 |
| **Diphenhydramine** | <0.000246 | <0.000236 | <0.00023799999999 | <0.000233 | <0.000244 |
| **disulfoton** | <0.000676 | <0.000981 | <0.0011 | <0.000408 | <0.000881 |
| **disulfoton sulfone** | <0.000109 | <0.000171 | <0.000155 | <0.000138 | <0.000179 |
| **Doxorubicin** | <0.00984 | <0.00945 | <0.00951999999999 | <0.0093 | <0.00976 |
| **Doxycycline** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **Drospirenone** | <0.00581 | <0.0072 | <0.00825 | <0.00505 | <0.00632 |
| **Enalapril** | <0.000306 | <0.000278 | <0.000313 | <0.000294 | <0.000263 |
| **endosulfan I** | <0.000336 | <0.000417 | <0.000331 | <0.000328 | <0.000146 |
| **endosulfan II** | <0.00023 | <0.000175 | <0.000281 | <0.000162 | <0.000171 |
| **Endosulphan Sulphate** | <0.000108 | <0.000103 | <0.000112 | <0.0000792 | <0.000146 |
| **endrin** | <0.0000456 | <0.0000561 | <0.0000631 | <0.0000521 | <0.0000823 |
| **Endrin Ketone** | <0.000233 | <0.00028 | <0.000212 | <0.000152 | <0.000364 |
| **Enrofloxacin** | <0.00126 | <0.00118 | <0.00118999999999 | <0.00118 | <0.00122 |
| **Erythromycin H2O** | <0.00094299999999 | <0.000906 | <0.000913 | <0.000891 | <0.000935 |
| **Ethion** | <0.000425 | <0.00048 | <0.000374 | <0.000362 | <0.000542 |
| **Etoposide** | <0.0213 | <0.0017 | <0.00212 | <0.0556 | <0.00977 |
| **Fenitrothion** | <0.00024 | <0.00056399999999 | <0.000357 | <0.000275 | <0.000379 |
| **Flumequine** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Fluocinonide** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **Fluoxetine** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Fluticasone propionate** | <0.00082 | <0.000787 | <0.000794 | <0.000775 | <0.00081299999999 |
| **fonofos** | <0.000081 | <0.0000809 | <0.0000795 | <0.000081 | <0.0000784 |
| **Furosemide** | <0.01639999999999 | <0.0157 | <0.0159 | <0.0155 | <0.0163 |
| **gamma BHC** | <0.0000706 | <0.0000682 | <0.0000382 | <0.0000457 | <0.0000294 |
| **gamma chlordane** | <0.000388 | 0.00023 | 0.000361 | 0.000206 | 0.000397 |
| **Gemfibrozil** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Glipizide** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **Glyburide** | <0.00123 | <0.00118 | <0.00118999999999 | <0.00116 | <0.00122 |
| **HCB** | 0.000706 | 0.000524 | 0.000663 | 0.000511 | 0.000527 |
| **Heptachlor** | <0.000013 | <0.00001969999999 | <0.0000231 | <0.0000163 | <0.000025 |
| **Heptachlor Epoxide** | 0.00024 | <0.000197 | 0.00022 | <0.000198 | <0.000155 |
| **Hexazinone** | <0.000614 | <0.000541 | <0.000497 | <0.0007 | <0.000663 |
| **Hydrochlorothiazide** | <0.00819999999999 | <0.00787 | <0.00794 | <0.00775 | <0.00813 |
| **Hydrocodone** | <0.00153 | <0.00139 | <0.00156 | <0.00147 | <0.00132 |
| **Hydrocortisone** | <0.0235 | <0.0226 | <0.0227 | <0.0222 | <0.0233 |
| **Ibuprofen** | <0.00615 | <0.00591 | <0.00595 | <0.00581 | <0.00609999999999 |
| **Iopamidol** | <0.0617 | <0.0856 | <0.125 | <0.031 | <0.0325 |
| **Isochlortetracycline (ICTC)** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |

**Table 54.** (*continued*)

| Analyte | WOL-1 | WOL-2 | WOL-4 | WOL-5 | WOL-6 |
|---|---|---|---|---|---|
| **Lincomycin** | <0.00123 | <0.00118 | <0.00118999999999 | <0.00116 | <0.00122 |
| **Lomefloxacin** | <0.00279 | <0.00237999999999 | <0.00401 | <0.00632 | <0.0017 |
| **malathion** | <0.000771 | <0.0021 | <0.00137 | <0.00109 | <0.00107 |
| **Medroxyprogesterone Acetate** | <0.00164 | <0.00157 | <0.00159 | <0.00155 | <0.00163 |
| **Melphalan** | <0.00984 | <0.00945 | <0.00951999999999 | <0.0093 | <0.00976 |
| **Meprobamate** | <0.00166 | <0.00159 | <0.0016 | <0.00157 | <0.00164 |
| **Metformin** | <0.00306 | <0.00278 | <0.00313 | <0.00294 | <0.00263 |
| **methoxychlor** | <0.000557 | <0.000424 | <0.000382 | <0.00047799999999 | <0.000648 |
| **Methylprednisolone** | <0.00166 | <0.00159 | <0.0016 | <0.00157 | <0.00164 |
| **Metoprolol** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Metribuzin** | <0.000324 | <0.00058099999999 | <0.000549 | <0.000361 | <0.000519 |
| **Metronidazole** | <0.00164 | <0.0029 | <0.00164 | <0.00222 | <0.00163 |
| **Miconazole** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Minocycline** | <0.0246 | <0.0236 | <0.0238 | <0.0233 | <0.02439999999999 |
| **mirex** | <0.0000264 | <0.000033 | <0.000031 | <0.000038 | <0.0000359 |
| **Moxifloxacin** | <0.00164 | <0.00157 | <0.00159 | <0.00155 | <0.00163 |
| **Naproxen** | <0.00123 | <0.00118 | <0.00118999999999 | <0.00116 | <0.00117 |
| **Norfloxacin** | <0.00615 | <0.00591 | <0.00595 | <0.00581 | <0.00609999999999 |
| **Norfluoxetine** | <0.00106 | 0.000655 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Norgestimate** | <0.00526 | <0.00414 | <0.00491 | <0.00477 | <0.00433 |
| **Norverapamil** | <0.0000615 | <0.0000591 | <0.00005949999999 | <0.0000581 | <0.000061 |
| **o,p DDD** | 0.000285 | 0.000222 | 0.000255 | 0.000545 | 0.000193 |
| **o,p DDE** | <0.000138 | 0.000256 | 0.000243 | 0.000122 | <0.00011 |
| **o,p DDT** | <0.000161 | <0.000197 | <0.000161 | <0.00014 | <0.000199 |
| **octachlorostyrene** | <0.000054 | <0.0000326 | <0.0000467 | <0.0000301 | <0.0000357 |
| **Ofloxacin** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Ormetoprim** | <0.000246 | <0.000236 | <0.00023799999999 | <0.000233 | <0.000244 |
| **Oxacillin** | <0.00123 | <0.00118 | <0.00118999999999 | <0.00116 | <0.00122 |
| **Oxazepam** | <0.00164 | <0.00157 | <0.00159 | <0.00155 | <0.00163 |
| **Oxolinic Acid** | <0.00032 | <0.000283 | <0.000335 | <0.00028599999999 | <0.000341 |
| **oxychlordane** | 0.000176 | 0.000144 | <0.000203 | 0.000087 | <0.000116 |
| **Oxycodone** | <0.000612 | <0.000556 | <0.000625 | <0.000588 | <0.000526 |
| **Oxytetracycline (OTC)** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **p,p DDD** | 0.00161 | 0.0012 | 0.00151 | 0.00322 | 0.00106 |
| **p,p DDE** | 0.0145 | 0.0188 | 0.0163 | 0.0211 | 0.00778 |
| **p,p DDT** | 0.000267 | <0.000208 | 0.000261 | 0.000227 | <0.00023 |
| **Parathion-Ethyl** | <0.000506 | <0.000844 | <0.000592 | <0.000558 | <0.000742 |
| **Parathion-Methyl** | <0.00783 | <0.00788 | <0.00709999999999 | <0.00509 | <0.00708 |
| **Paroxetine** | <0.00166 | <0.00159 | <0.0016 | <0.00157 | <0.00164 |

**Table 54.** (*continued*)

| Analyte | WOL-1 | WOL-2 | WOL-4 | WOL-5 | WOL-6 |
|---|---|---|---|---|---|
| **Penicillin G** | <0.00123 | <0.00118 | <0.00118999999999 | <0.00116 | <0.00122 |
| **Penicillin V** | <0.00409999999999 | <0.00394 | <0.00397 | <0.00387999999999 | <0.00407 |
| **Permethrin** | <0.000742 | <0.000417 | <0.000506 | <0.000539 | <0.000684 |
| **Perthane** | <0.0259 | <0.00118 | <0.0381 | <0.0336 | <0.0211 |
| **Phosmet** | <0.000684 | <0.000855 | <0.000713 | <0.00062 | <0.000686 |
| **Pirimiphos Methyl** | <0.000081 | <0.0000809 | <0.000127 | <0.0000886 | <0.00011 |
| **Prednisolone** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **Prednisone** | <0.00819999999999 | <0.00787 | <0.00794 | <0.00775 | <0.00813 |
| **Promethazine** | <0.000164 | <0.000157 | <0.000159 | <0.000155 | <0.000163 |
| **Propoxyphene** | <0.000123 | <0.000118 | <0.00011899999999 | <0.000116 | <0.000122 |
| **Propranolol** | <0.00082 | <0.000787 | <0.000794 | <0.000775 | <0.00081299999999 |
| **Quintozene** | <0.000081 | <0.0000809 | <0.0000795 | <0.000081 | <0.0000784 |
| **Ranitidine** | <0.000612 | <0.000556 | <0.000625 | <0.000588 | <0.000526 |
| **Rosuvastatin** | <0.00151 | <0.00145 | <0.00146 | <0.00143 | <0.0015 |
| **Roxithromycin** | <0.000123 | <0.000118 | <0.000135 | <0.000116 | <0.000122 |
| **Sarafloxacin** | <0.00936 | <0.00683 | <0.00608 | <0.00581 | <0.00609999999999 |
| **Sertraline** | 0.000601 | 0.000429 | 0.000568 | 0.000192 | 0.000472 |
| **Simazine** | <0.000621 | <0.000528 | <0.00058599999999 | <0.000619 | <0.000771 |
| **Simvastatin** | <0.00819999999999 | <0.00787 | <0.00794 | <0.00775 | <0.00813 |
| **Sulfachloropyridazine** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Sulfadiazine** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Sulfadimethoxine** | <0.000123 | <0.000118 | <0.00011899999999 | <0.000116 | <0.000122 |
| **Sulfamerazine** | <0.000246 | <0.000236 | <0.00023799999999 | <0.000233 | <0.000244 |
| **Sulfamethazine** | <0.000246 | <0.000236 | <0.00023799999999 | <0.000233 | <0.000244 |
| **Sulfamethizole** | <0.000246 | <0.000236 | <0.00023799999999 | <0.000233 | <0.000244 |
| **Sulfamethoxazole** | <0.000246 | <0.000236 | <0.00023799999999 | <0.00023899999999 | <0.000244 |
| **Sulfanilamide** | | | | | |
| **Sulfathiazole** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Tamoxifen** | <0.000164 | <0.000157 | <0.000159 | <0.000155 | <0.000163 |
| **Tecnazene** | <0.000081 | <0.0000809 | <0.0000795 | <0.000081 | <0.0000784 |
| **Teniposide** | | <0.00157 | | | |
| **Tetracycline (TC)** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **Theophylline** | <0.0246 | <0.0236 | <0.0305 | <0.0233 | <0.02439999999999 |
| **Thiabendazole** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **trans nonachlor** | 0.000817 | 0.00114 | 0.00104 | 0.00064 | 0.000574 |
| **Trenbolone** | <0.00166 | <0.00159 | <0.0016 | <0.00157 | <0.00164 |
| **Trenbolone acetate** | <0.000123 | <0.000118 | <0.00011899999999 | <0.000117 | <0.000122 |
| **Triamterene** | <0.000306 | <0.000278 | <0.000313 | <0.000294 | <0.000263 |
| **Triclocarban** | <0.00123 | <0.00118 | <0.00118999999999 | <0.00116 | <0.00122 |

**Table 54.** (*continued*)

| Analyte | WOL-1 | WOL-2 | WOL-4 | WOL-5 | WOL-6 |
|---|---|---|---|---|---|
| **Triclosan** | <0.0246 | <0.0236 | <0.0238 | <0.0233 | <0.02439999999999 |
| **Trimethoprim** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Tylosin** | <0.00246 | <0.00236 | <0.00237999999999 | <0.00233 | <0.00244 |
| **Valsartan** | <0.00166 | <0.00159 | <0.0016 | <0.00157 | <0.00164 |
| **Venlafaxine** | <0.000328 | <0.000315 | <0.000317 | <0.00031 | <0.000325 |
| **Verapamil** | <0.0000615 | <0.0000591 | <0.00005949999999 | <0.0000581 | <0.000061 |
| **Virginiamycin M1** | <0.00123 | <0.00118 | <0.00127 | <0.00127 | <0.0013 |
| **Warfarin** | <0.000615 | <0.00059099999999 | <0.00059499999999 | <0.00058099999999 | <0.00061 |
| **Zidovudine** | <0.0461 | <0.0271 | <0.04729999999999 | <0.033 | <0.049 |

**Table 54.** (*continued*)

| Analyte | WOL-7 | WOL-8 | WOL-C[1] | STC E1 | STC E2 | STC E3 |
|---|---|---|---|---|---|---|
| % Lipid | 5.37 | 4.82 | 7.55 | 12.6 | 12 | 11.4 |
| % Moisture | 76.2 | 76.2 | 76.2 | 59.9 | 59.9 | 59.9 |
| 1,7-Dimethylxanthine | <0.0234 | <0.02439999999999 | <0.02439999999999 | <0.0309 | <0.0257 | <0.02439999999999 |
| 10-hydroxyamitriptyline | 0.000176 | 0.000136 | 0.000157 | 0.000133 | 0.000103 | 0.000113 |
| 2 Hydroxyibuprofen | <0.0313 | <0.0325 | <0.0325 | <0.04129999999999 | <0.0343 | <0.0325 |
| 4 Epianhydrochlortetracycline | <0.0234 | <0.02439999999999 | <0.02439999999999 | <0.0236 | <0.0238 | <0.02439999999999 |
| 4 Epianhydrotetracycline (EATC) | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00591 | <0.00595 | <0.00609999999999 |
| 4 Epichlortetracycline (ECTC) | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00591 | <0.00595 | <0.00609999999999 |
| 4 Epioxytetracycline (EOTC) | <0.00234 | <0.00244 | <0.00244 | <0.00236 | <0.00237999999999 | <0.00244 |
| 4 Epitetracycline (ETC) | <0.00234 | <0.00244 | <0.00244 | <0.00236 | <0.00237999999999 | <0.00244 |
| Acetaminophen | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00847 | <0.00964 | <0.00653 |
| Albuterol | <0.000313 | <0.000273 | <0.000288 | <0.000306 | <0.0003 | <0.000306 |
| Aldrin | <0.00000813 | <0.000027 | <0.000021 | <0.0000124 | <0.000022 | <0.000032 |
| alpha BHC | <0.0000403 | 0.000057 | <0.0000288 | 0.00013 | 0.000127 | 0.000161 |
| alpha chlordane | <0.000672 | 0.000299 | <0.000788 | 0.00201 | 0.0021 | 0.00229 |
| Alprazolam | <0.000117 | <0.000122 | <0.000122 | <0.000155 | <0.000129 | <0.000122 |
| Amitriptyline | <0.000117 | <0.000146 | <0.000122 | <0.000155 | <0.000171 | <0.000122 |
| Amlodipine | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| Amphetamine | <0.00156 | <0.00136 | <0.00143999999999 | <0.00153 | <0.0015 | <0.00153 |
| Amsacrine | <0.0000313 | <0.0000325 | <0.0000325 | <0.0000431 | <0.0000343 | <0.0000325 |
| Anhydrochlortetracycline (ACTC) | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00591 | <0.00595 | <0.00609999999999 |
| Anhydrotetracycline (ATC) | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00591 | <0.00595 | <0.00609999999999 |
| Atenolol | <0.000625 | <0.000545 | <0.00057699999999 | <0.000612 | <0.0006 | <0.000612 |
| Atorvastatin | <0.00156 | <0.00136 | <0.00143999999999 | <0.00153 | <0.0015 | <0.00153 |
| Atrazine | <0.00111 | <0.00250999999999 | <0.0012 | <0.00132 | <0.00137 | <0.00206 |
| Azathioprine | <0.000781 | <0.00081299999999 | <0.00081299999999 | <0.00103 | <0.000857 | <0.00081299999999 |
| azinphos methyl | <0.00124 | <0.0027 | <0.00166 | <0.00484 | <0.00211 | <0.00212 |
| Azithromycin | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000653 | <0.00061 |
| BDE# 10 | <0.000000217 | <0.00000021399999 | <0.00000021499999 | <0.000000224 | <0.000000227 | <0.000000229 |
| BDE# 100 | 0.000162 | 0.000121 | 0.00028 | 0.00143 | 0.00138 | 0.0013 |
| BDE# 105 | <0.000000511 | <0.000000666 | <0.00000059799999 | <0.00000164999999 | <0.00000177 | <0.0000021 |
| BDE# 116 | <0.000000649 | <0.00000084699999 | <0.000000761 | <0.00000198 | <0.00000210999999 | <0.0000026 |
| BDE# 119/120 | 0.00000494 | 0.0000141 | 0.000012 | 0.0000654 | 0.0000665 | 0.0000602 |
| BDE# 12/13 | 0.000000774 | 0.00000093 | 0.00000124 | 0.00000116 | 0.00000117 | 0.00000108 |
| BDE# 126 | 0.00000237 | 0.000012 | 0.00000749 | 0.0000178 | 0.0000228 | 0.0000182 |
| BDE# 128 | <0.000000217 | 0.00000162 | 0.00000134 | 0.00000352 | 0.00000483 | 0.0000026 |
| BDE# 138/166 | <0.000000217 | <0.00000021399999 | <0.00000021499999 | <0.000000224 | <0.000000227 | <0.000000229 |
| BDE# 140 | <0.000000217 | <0.00000021399999 | <0.00000021499999 | <0.000000224 | 0.000000589 | 0.00000048 |
| BDE# 15 | 0.00000333 | 0.00000287 | 0.00000486 | 0.0000223 | 0.0000218 | 0.0000209 |
| BDE# 153 | 0.0000276 | 0.0000264 | 0.0000403 | 0.000123 | 0.000122 | 0.000106 |
| BDE# 154 | 0.0000415 | 0.000121 | 0.0000878 | 0.000757 | 0.000778 | 0.000702 |
| BDE# 155 | 0.00002 | 0.000105 | 0.0000564 | 0.000193 | 0.000207 | 0.000197 |
| BDE# 17/25 | 0.0000163 | 0.00000703 | 0.0000159 | 0.0000329 | 0.0000349 | 0.0000286 |

[1] Sample is a composite of eggs collected from all seven of the WOL females

**Table 54.** (*continued*)

| Analyte | WOL-7 | WOL-8 | WOL-C[1] | STC E1 | STC E2 | STC E3 |
|---|---|---|---|---|---|---|
| **BDE# 181** | <0.000000217 | <0.00000021399999 | <0.00000021499999 | <0.000000224 | <0.000000227 | <0.000000229 |
| **BDE# 183** | 0.000000472 | 0.000000464 | 0.000000753 | 0.00000165 | 0.00000153 | 0.00000196 |
| **BDE# 190** | <0.000000217 | <0.00000021399999 | <0.00000021499999 | <0.000000224 | <0.000000227 | <0.000000229 |
| **BDE# 203** | <0.000000217 | 0.000000475 | 0.000000591 | 0.000000921 | 0.00000186 | 0.00000113 |
| **BDE# 206** | 0.00000405 | 0.0000024 | 0.00000563 | 0.0000035 | 0.00000947 | 0.0000104 |
| **BDE# 207** | 0.00000403 | 0.00000529 | 0.0000126 | 0.00000471 | 0.0000162 | 0.0000131 |
| **BDE# 208** | 0.00000111 | 0.00000164 | 0.00000555 | 0.00000317 | 0.0000111 | 0.00000831 |
| **BDE# 209** | 0.0000337 | 0.0000476 | 0.0000684 | 0.0000735 | 0.000186 | 0.000157 |
| **BDE# 28/33** | 0.00014 | 0.000116 | 0.000242 | 0.00121 | 0.0012 | 0.00104 |
| **BDE# 30** | <0.000000603 | <0.00000036599999 | <0.000000394 | <0.00000155 | <0.00000112999999 | <0.00000146 |
| **BDE# 32** | 0.000000935 | 0.00000212 | 0.00000214 | 0.0000012 | 0.00000106 | 0.00000116 |
| **BDE# 35** | 0.00000181 | 0.00000084 | 0.00000237 | 0.0000126 | 0.0000138 | 0.0000103 |
| **BDE# 37** | 0.000000846 | 0.000000601 | 0.00000139 | 0.00000201 | 0.00000195 | 0.00000172 |
| **BDE# 47** | 0.00104 | 0.0005 | 0.00147 | 0.00277 | 0.00272 | 0.00252 |
| **BDE# 49** | 0.000321 | 0.000184 | 0.000564 | 0.000354 | 0.000364 | 0.000342 |
| **BDE# 51** | 0.0000342 | 0.000037 | 0.0000583 | 0.000025 | 0.0000253 | 0.0000254 |
| **BDE# 66** | 0.0000243 | 0.0000184 | 0.0000288 | 0.0000709 | 0.0000739 | 0.0000704 |
| **BDE# 7** | 0.000000538 | 0.000000991 | 0.000000808 | 0.000000942 | 0.000000799 | 0.000000783 |
| **BDE# 71** | 0.00000257 | 0.00000226 | 0.00000346 | 0.00000638 | 0.0000073 | 0.00000651 |
| **BDE# 75** | 0.00000204 | 0.00000121 | 0.00000305 | 0.0000125 | 0.0000132 | 0.0000144 |
| **BDE# 77** | 0.000000227 | 0.000000445 | 0.000000481 | 0.000000866 | 0.00000118 | 0.000000798 |
| **BDE# 79** | 0.00000219 | 0.00000144 | 0.00000336 | 0.0000143 | 0.0000136 | 0.0000103 |
| **BDE# 8/11** | 0.00000158 | 0.00000236 | 0.00000269 | 0.0000016 | 0.00000178 | 0.00000167 |
| **BDE# 85** | <0.00000037999999 | <0.000000495 | <0.000000445 | <0.0000012 | <0.00000128 | <0.00000149 |
| **BDE# 99** | 0.0000448 | 0.00000554 | 0.0000325 | 0.00003 | 0.0000305 | 0.0000285 |
| **Benzoylecgonine** | <0.000117 | <0.000122 | <0.000122 | <0.000155 | <0.000129 | <0.000122 |
| **Benztropine** | <0.000195 | <0.000203 | <0.000203 | <0.000258 | <0.000214 | <0.000203 |
| **beta BHC** | <0.0000597 | <0.0000826 | <0.0000489 | <0.0000613 | <0.000075 | 0.000399 |
| **Betamethasone** | <0.00058599999999 | <0.00061 | <0.00061 | <0.00146 | <0.000643 | <0.00061 |
| **Bisphenol A** | <0.195 | <0.203 | <0.203 | <0.258 | <0.214 | <0.203 |
| **Busulfan** | <0.00156 | <0.00163 | <0.00163 | <0.00206 | <0.00171 | <0.00163 |
| **Caffeine** | <0.00586 | 0.0091 | <0.00609999999999 | <0.00774 | <0.00643 | 0.00667 |
| **Captan** | <0.00529 | <0.00764 | <0.00529 | <0.00765 | <0.00352 | <0.00386 |
| **Carbadox** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Carbamazepine** | <0.00058599999999 | 0.00135 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Cefotaxime** | | | | <0.01019999999999 | <0.0144 | <0.00483 |
| **Chlorothalonil** | <0.0000813 | <0.0000814 | <0.0000865 | <0.0000774 | <0.0000813 | <0.0000801 |
| **Chlorpyriphos** | <0.00034399999999 | <0.000377 | <0.000292 | <0.000477 | <0.000203 | <0.000214 |
| **Chlorpyriphos Methyl** | <0.0000813 | <0.0000814 | <0.0000865 | <0.0000774 | <0.0000813 | <0.0000801 |
| **Chlorpyriphos Oxon** | <0.000216 | <0.000294 | <0.000223 | <0.000339 | <0.000152 | <0.0000801 |
| **Chlortetracycline (CTC)** | <0.00234 | <0.00244 | <0.00244 | <0.00236 | <0.00237999999999 | <0.00244 |
| **Cimetidine** | <0.000625 | <0.000545 | <0.00057699999999 | <0.000612 | <0.0006 | <0.000612 |
| **Ciprofloxacin** | <0.00234 | <0.00244 | <0.00244 | <0.00309 | <0.0035 | <0.00244 |

[1] Sample is a composite of eggs collected from all seven of the WOL females

**Table 54.** (*continued*)

| Analyte | WOL-7 | WOL-8 | WOL-C[1] | STC E1 | STC E2 | STC E3 |
|---|---|---|---|---|---|---|
| **cis nonachlor** | <0.00029299999999 | 0.000597 | 0.000628 | 0.00153 | 0.00191 | 0.00164 |
| **Citalopram** | <0.000156 | <0.000163 | <0.000163 | <0.000206 | <0.000171 | <0.000163 |
| **Clarithromycin** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Clinafloxacin** | <0.00328 | <0.00322 | <0.0037 | <0.00361 | <0.00356 | <0.00361 |
| **Clonidine** | <0.00156 | <0.00136 | <0.00143999999999 | <0.00153 | <0.0015 | <0.00153 |
| **Clotrimazole** | <0.000156 | <0.000163 | <0.000163 | <0.000206 | <0.000171 | <0.000163 |
| **Cloxacillin** | <0.00117 | <0.00122 | <0.00122 | <0.00155 | <0.00129 | <0.00122 |
| **Cocaine** | <0.0000586 | 0.0000794 | <0.000061 | <0.0000774 | <0.00006429999999 | <0.000061 |
| **Codeine** | <0.00313 | <0.00273 | <0.00287999999999 | <0.00306 | <0.003 | <0.00306 |
| **Colchicine** | <0.000313 | <0.000325 | <0.000578 | <0.000413 | <0.000343 | <0.000325 |
| **Cotinine** | <0.00156 | <0.00136 | <0.00143999999999 | <0.00153 | <0.0015 | <0.00153 |
| **Cyanazine** | <0.00285 | <0.00349 | <0.00365 | <0.00511 | <0.0026 | <0.00296 |
| **Cyclophosphamide** | <0.000313 | <0.000325 | <0.000325 | <0.000413 | <0.000343 | <0.000325 |
| **Cypermethrin** | <0.000422 | <0.00111 | <0.000542 | <0.000998 | <0.000523 | <0.000403 |
| **Dacthal** | <0.0000813 | <0.0000814 | <0.0000865 | 0.000154 | 0.000176 | 0.000201 |
| **Daunorubicin** | <0.00313 | <0.00325 | <0.00325 | <0.00413 | <0.00343 | <0.00325 |
| **DEET** | 0.000578 | 0.000602 | 0.000555 | 0.00148 | 0.00131 | 0.00102 |
| **Dehydronifedipine** | <0.000264 | <0.000244 | <0.000244 | <0.000309 | <0.000257 | <0.000244 |
| **delta BHC** | <0.00006759999999 | <0.0000875 | <0.0000525 | <0.000107 | <0.0000444 | 0.00129 |
| **Demeclocycline** | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00591 | <0.00595 | <0.00609999999999 |
| **Desethylatrazine** | <0.0000813 | <0.0000814 | <0.0000865 | <0.0000774 | <0.0000813 | <0.0000801 |
| **Desmethyldiltiazem** | <0.0000586 | | 0.000234 | <0.0000774 | <0.00006429999999 | <0.000061 |
| **Diatrizoic Acid** | <0.00938 | <0.00976 | <0.00976 | <0.0154 | <0.0103 | <0.0219 |
| **Diazepam** | <0.000117 | <0.000122 | <0.000122 | <0.000155 | <0.000129 | <0.000122 |
| **diazinon** | <0.00057299999999 | <0.00104 | <0.000583 | <0.00103 | <0.000524 | <0.000815 |
| **Diazinon Oxon** | <0.000452 | <0.000639 | <0.00071999999999 | <0.000998 | <0.000684 | <0.000618 |
| **dieldrin** | 0.000584 | 0.000424 | 0.000733 | 0.0038 | 0.00358 | 0.00361 |
| **Digoxigenin** | <0.0141 | <0.0187 | <0.0171 | <0.0242 | <0.0723 | <0.0243 |
| **Digoxin** | <0.00781 | <0.00813 | <0.00813 | <0.00309 | <0.00257 | <0.00244 |
| **Diltiazem** | <0.000117 | <0.000122 | <0.000122 | <0.000155 | <0.000129 | <0.000122 |
| **Dimethoate** | <0.0035 | <0.00377 | <0.00413 | <0.00687 | <0.00274 | <0.00243 |
| **Diphenhydramine** | <0.000234 | <0.000244 | <0.000244 | <0.000309 | <0.000257 | <0.000244 |
| **disulfoton** | <0.000561 | <0.000773 | <0.00142 | <0.000497 | <0.000531 | <0.000542 |
| **disulfoton sulfone** | <0.000134 | <0.000157 | <0.000171 | <0.000194 | <0.000133 | <0.0000963 |
| **Doxorubicin** | <0.00938 | <0.00976 | <0.00976 | <0.0124 | <0.0103 | <0.00976 |
| **Doxycycline** | <0.00234 | <0.00244 | <0.00244 | <0.00236 | <0.00237999999999 | <0.00244 |
| **Drospirenone** | <0.00514 | <0.00685 | <0.00582 | <0.0221 | <0.0152 | <0.00756 |
| **Enalapril** | <0.000313 | <0.000273 | <0.000288 | <0.000306 | <0.0003 | <0.000306 |
| **endosulfan I** | <0.000229 | <0.000515 | <0.000429 | <0.000219 | <0.000255 | <0.000276 |
| **endosulfan II** | <0.000262 | <0.000538 | <0.000149 | <0.000608 | <0.000633 | <0.000216 |
| **Endosulphan Sulphate** | <0.0000751 | <0.000106 | <0.000127 | <0.000494 | <0.000305 | <0.000461 |
| **endrin** | <0.000042 | <0.0000467 | <0.0000505 | <0.000102 | <0.000121 | <0.000103 |
| **Endrin Ketone** | <0.000179 | <0.000232 | <0.000302 | <0.000326 | <0.000166 | <0.000222 |

[1] Sample is a composite of eggs collected from all seven of the WOL females

**Table 54.** (*continued*)

| Analyte | WOL-7 | WOL-8 | WOL-C[1] | STC E1 | STC E2 | STC E3 |
|---|---|---|---|---|---|---|
| **Enrofloxacin** | <0.00117 | <0.00122 | <0.00122 | <0.00155 | <0.00129 | <0.00122 |
| **Erythromycin H2O** | <0.000898 | <0.000935 | <0.000935 | <0.00118999999999 | <0.000986 | <0.000935 |
| **Ethion** | <0.000387 | <0.000512 | <0.000439 | <0.000639 | <0.000346 | <0.000362 |
| **Etoposide** | <0.000781 | | <0.00468 | <0.00103 | <0.000857 | <0.00081299999999 |
| **Fenitrothion** | <0.000355 | <0.000399 | <0.000384 | <0.00046 | <0.000233 | <0.000304 |
| **Flumequine** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Fluocinonide** | <0.00234 | <0.00244 | <0.00244 | <0.00309 | <0.00257 | <0.00244 |
| **Fluoxetine** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Fluticasone propionate** | <0.000781 | <0.00081299999999 | <0.00081299999999 | <0.00125 | <0.000878 | <0.000835 |
| **fonofos** | <0.0000813 | <0.0000814 | <0.0000865 | <0.0000774 | <0.0000813 | <0.0000801 |
| **Furosemide** | <0.0156 | <0.0163 | <0.0163 | <0.0206 | <0.0171 | <0.0163 |
| **gamma BHC** | <0.0000348 | <0.0000456 | <0.0000356 | 0.000064 | <0.000044 | 0.000059 |
| **gamma chlordane** | 0.000246 | <0.000246 | 0.000263 | 0.00103 | 0.000863 | 0.0011 |
| **Gemfibrozil** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Glipizide** | <0.00234 | <0.00244 | <0.00244 | <0.00309 | <0.00257 | <0.00244 |
| **Glyburide** | <0.00117 | <0.00122 | <0.00122 | <0.00155 | <0.00129 | <0.00122 |
| **HCB** | 0.00043 | 0.000265 | 0.000553 | 0.00146 | 0.00137 | 0.00143 |
| **Heptachlor** | <0.00001 | <0.0000276 | <0.0000252 | <0.0000163 | <0.0000124 | <0.0000136 |
| **Heptachlor Epoxide** | <0.000187 | <0.000087 | 0.000199 | 0.000651 | 0.000439 | 0.000661 |
| **Hexazinone** | <0.000752 | <0.000555 | <0.000806 | <0.00148 | <0.000682 | <0.000837 |
| **Hydrochlorothiazide** | <0.00781 | <0.00813 | <0.00813 | <0.0103 | <0.00857 | <0.00813 |
| **Hydrocodone** | <0.00156 | <0.00136 | <0.00143999999999 | <0.00153 | <0.0015 | <0.00153 |
| **Hydrocortisone** | <0.0224 | <0.0233 | <0.0233 | <0.0296 | <0.0246 | <0.0233 |
| **Ibuprofen** | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00774 | <0.00643 | <0.00609999999999 |
| **Iopamidol** | <0.0313 | <0.0325 | <0.0325 | <0.107 | <0.11 | <0.0755 |
| **Isochlortetracycline (ICTC)** | <0.00234 | <0.00244 | <0.00244 | <0.00236 | <0.00237999999999 | <0.00244 |
| **Lincomycin** | <0.00117 | <0.00122 | <0.00122 | <0.00155 | <0.00129 | <0.00122 |
| **Lomefloxacin** | <0.00226 | <0.00648 | <0.00231 | <0.00259 | <0.00339 | <0.00122 |
| **malathion** | <0.00114 | <0.00157 | <0.0013 | <0.0024 | <0.00058599999999 | <0.000825 |
| **Medroxyprogesterone Acetate** | <0.00156 | <0.00163 | <0.00163 | <0.003 | <0.00207 | <0.00163 |
| **Melphalan** | <0.00938 | <0.00976 | <0.00976 | <0.0124 | <0.0103 | <0.00976 |
| **Meprobamate** | <0.00158 | <0.00164 | <0.00164 | <0.00208 | <0.00173 | <0.00164 |
| **Metformin** | <0.00313 | <0.00273 | <0.00287999999999 | <0.00306 | <0.003 | <0.00306 |
| **methoxychlor** | <0.000301 | <0.000699 | <0.000534 | <0.000703 | <0.000345 | <0.000516 |
| **Methylprednisolone** | <0.00158 | <0.00401 | <0.00164 | <0.00268 | <0.00329 | <0.00164 |
| **Metoprolol** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000879 | <0.00061 |
| **Metribuzin** | <0.000447 | <0.000466 | <0.000438 | <0.000651 | <0.000357 | <0.000404 |
| **Metronidazole** | <0.00156 | <0.00163 | <0.00163 | <0.00250999999999 | <0.00250999999999 | <0.00316 |
| **Miconazole** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Minocycline** | <0.0234 | <0.02439999999999 | <0.02439999999999 | <0.0236 | <0.0238 | <0.02439999999999 |
| **mirex** | <0.0000137 | <0.0000249 | <0.0000262 | <0.000169 | <0.00015 | 0.000183 |
| **Moxifloxacin** | <0.00156 | <0.00163 | <0.00163 | <0.00206 | <0.00171 | <0.00163 |
| **Naproxen** | <0.00122 | <0.00122 | <0.00155 | <0.00129 | <0.00122 | |

[1] Sample is a composite of eggs collected from all seven of the WOL females

**Table 54.** (*continued*)

| Analyte | WOL-7 | WOL-8 | WOL-C[1] | STC E1 | STC E2 | STC E3 |
|---|---|---|---|---|---|---|
| **Norfloxacin** | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00774 | <0.00643 | <0.00609999999999 |
| **Norfluoxetine** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Norgestimate** | <0.00421 | <0.00447 | <0.00431 | <0.00382 | <0.00356 | <0.00175 |
| **Norverapamil** | <0.0000586 | <0.000061 | <0.000061 | <0.0000774 | <0.00006429999999 | <0.000061 |
| **o,p DDD** | <0.000121 | 0.000171 | <0.000254 | 0.000481 | 0.000472 | 0.000439 |
| **o,p DDE** | <0.000111 | 0.000338 | 0.000196 | 0.000277 | 0.000262 | 0.000253 |
| **o,p DDT** | <0.000106 | <0.000248 | <0.000147 | 0.00109 | 0.00106 | 0.00106 |
| **octachlorostyrene** | <0.0000182 | <0.00004299999999 | <0.0000382 | 0.00402 | 0.00453 | 0.00503 |
| **Ofloxacin** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000867 | <0.000718 |
| **Ormetoprim** | <0.000234 | <0.000244 | <0.000244 | <0.000359 | <0.000257 | <0.000244 |
| **Oxacillin** | <0.00117 | <0.00122 | <0.00122 | <0.00155 | <0.00129 | <0.00122 |
| **Oxazepam** | <0.00156 | <0.00163 | <0.00163 | <0.00206 | <0.00171 | <0.00163 |
| **Oxolinic Acid** | <0.0003 | <0.000314 | <0.000267 | <0.000309 | <0.000343 | <0.000271 |
| **oxychlordane** | 0.000089 | <0.000131 | 0.000159 | <0.000398 | 0.000401 | <0.00056299999999 |
| **Oxycodone** | <0.000625 | <0.000545 | <0.00057699999999 | <0.000612 | <0.0006 | <0.000612 |
| **Oxytetracycline (OTC)** | <0.00234 | <0.00244 | <0.00244 | <0.00236 | <0.00237999999999 | <0.00244 |
| **p,p DDD** | 0.000781 | 0.00078 | 0.00151 | 0.00274 | 0.0024 | 0.00247 |
| **p,p DDE** | 0.00654 | 0.0108 | 0.0149 | 0.0161 | 0.0154 | 0.0154 |
| **p,p DDT** | <0.00014 | <0.000275 | <0.000155 | 0.00275 | 0.00257 | 0.00273 |
| **Parathion-Ethyl** | <0.00088 | <0.000556 | <0.000722 | <0.000559 | <0.000542 | <0.000176 |
| **Parathion-Methyl** | <0.00733 | <0.0103 | <0.0069 | <0.0124 | <0.00407 | <0.00412 |
| **Paroxetine** | <0.00158 | <0.00164 | <0.00164 | <0.00208 | <0.00173 | <0.00164 |
| **Penicillin G** | <0.00117 | <0.00122 | <0.00122 | <0.00155 | <0.00129 | <0.00122 |
| **Penicillin V** | <0.00391 | <0.00407 | <0.00407 | <0.00155 | <0.00129 | <0.00122 |
| **Permethrin** | <0.00035299999999 | <0.000752 | <0.000453 | <0.00102 | <0.000517 | <0.000744 |
| **Perthane** | <0.0135 | <0.0274 | <0.0185 | <0.0175 | <0.018 | <0.0274 |
| **Phosmet** | <0.000656 | <0.000713 | <0.00087 | <0.00159 | <0.000941 | <0.00083599999999 |
| **Pirimiphos Methyl** | <0.0000813 | <0.000124 | <0.0000865 | <0.000106 | <0.0000893 | <0.000111 |
| **Prednisolone** | <0.00234 | <0.00244 | <0.00244 | <0.00575 | <0.00257 | <0.00244 |
| **Prednisone** | <0.00781 | <0.00813 | <0.00813 | <0.0103 | <0.00857 | <0.00813 |
| **Promethazine** | <0.000156 | <0.000163 | <0.000194 | <0.000206 | <0.000171 | <0.000163 |
| **Propoxyphene** | <0.000117 | <0.000122 | <0.000122 | <0.000155 | <0.000129 | <0.000122 |
| **Propranolol** | <0.000781 | <0.00081299999999 | <0.00081299999999 | <0.00103 | <0.000857 | <0.00081299999999 |
| **Quintozene** | <0.0000813 | <0.0000814 | <0.0000865 | <0.0000774 | <0.0000813 | <0.0000801 |
| **Ranitidine** | <0.000625 | <0.000545 | <0.00057699999999 | <0.000612 | <0.0006 | <0.000612 |
| **Rosuvastatin** | <0.00143999999999 | <0.0015 | <0.0015 | <0.00206 | <0.00171 | <0.00163 |
| **Roxithromycin** | <0.000117 | <0.000122 | <0.000122 | <0.000155 | <0.000129 | <0.000122 |
| **Sarafloxacin** | <0.00586 | <0.00609999999999 | <0.00609999999999 | <0.00774 | <0.00775999999999 | <0.00623 |
| **Sertraline** | 0.000366 | 0.000383 | 0.000379 | <0.000206 | <0.000171 | 0.000337 |
| **Simazine** | <0.000458 | <0.00106 | <0.000647 | <0.000635 | <0.000506 | <0.000546 |
| **Simvastatin** | <0.00781 | <0.00813 | <0.00813 | <0.0103 | <0.00857 | <0.00813 |
| **Sulfachloropyridazine** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Sulfadiazine** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |

[1] Sample is a composite of eggs collected from all seven of the WOL females

**Table 54.** (*continued*)

| Analyte | WOL-7 | WOL-8 | WOL-C[1] | STC E1 | STC E2 | STC E3 |
|---|---|---|---|---|---|---|
| **Sulfadimethoxine** | <0.000117 | <0.000122 | <0.000122 | <0.000155 | <0.000129 | <0.000122 |
| **Sulfamerazine** | <0.000234 | <0.000244 | <0.000244 | <0.000309 | <0.000257 | <0.000244 |
| **Sulfamethazine** | <0.000234 | <0.000244 | <0.000244 | <0.000352 | <0.000257 | <0.000244 |
| **Sulfamethizole** | <0.000234 | <0.000244 | <0.000244 | <0.000309 | <0.000257 | <0.000244 |
| **Sulfamethoxazole** | <0.000234 | <0.000244 | <0.000244 | <0.000309 | <0.000257 | <0.000244 |
| **Sulfanilamide** | | | | <0.01419999999999 | <0.00885 | <0.00609999999999 |
| **Sulfathiazole** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Tamoxifen** | <0.000156 | <0.000163 | <0.000163 | <0.000206 | <0.000171 | <0.000163 |
| **Tecnazene** | <0.0000813 | <0.0000814 | <0.0000865 | <0.0000774 | <0.0000813 | <0.0000801 |
| **Teniposide** | <0.00403 | | | <0.00206 | <0.00171 | <0.00163 |
| **Tetracycline (TC)** | <0.00234 | <0.00244 | <0.00244 | <0.00236 | <0.00237999999999 | <0.00244 |
| **Theophylline** | <0.0234 | <0.02439999999999 | <0.02439999999999 | <0.0309 | <0.0257 | <0.0575 |
| **Thiabendazole** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **trans nonachlor** | 0.000453 | 0.000649 | 0.000755 | 0.00474 | 0.00449 | 0.00379 |
| **Trenbolone** | <0.00158 | <0.00164 | <0.00164 | <0.00208 | <0.00173 | <0.00164 |
| **Trenbolone acetate** | <0.000117 | <0.000122 | <0.000122 | <0.000155 | <0.000202 | <0.000122 |
| **Triamterene** | <0.000313 | <0.000273 | <0.000288 | <0.000306 | <0.0003 | <0.000306 |
| **Triclocarban** | <0.00117 | <0.00122 | <0.00122 | | | <0.00122 |
| **Triclosan** | <0.0234 | <0.02439999999999 | <0.02439999999999 | <0.0309 | <0.0257 | <0.02439999999999 |
| **Trimethoprim** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Tylosin** | <0.00234 | <0.00244 | <0.00244 | <0.00309 | <0.00257 | <0.00244 |
| **Valsartan** | <0.00158 | <0.00164 | <0.00164 | <0.00208 | <0.00173 | <0.00164 |
| **Venlafaxine** | <0.000313 | <0.000325 | <0.000325 | | | |
| **Verapamil** | <0.0000586 | <0.000061 | <0.000061 | <0.0000774 | <0.00006429999999 | <0.000061 |
| **Virginiamycin M1** | <0.00117 | <0.00122 | <0.00122 | <0.00155 | <0.00129 | <0.00122 |
| **Warfarin** | <0.00058599999999 | <0.00061 | <0.00061 | <0.000774 | <0.000643 | <0.00061 |
| **Zidovudine** | <0.0357 | <0.0264 | <0.0195 | <0.0124 | <0.0103 | <0.00976 |

[1] Sample is a composite of eggs collected from all seven of the WOL females

## Carcass concentrations at the time of transition to exogenous feeding

**Table 55.** Carcass tissue chemistry analytical results for 2017 samples. Concentrations are reported in parts per million wet weight except for lipid and moisture, which are reported as percentages.

| Analyte | CED-1 | CED-2 | CED-3 | WHI 1 | WHI 2 | WHI 3 |
|---|---|---|---|---|---|---|
| % Lipid | 6.15 | 6.57 | 6.45 | 8.79 | 8.32 | 9.52 |
| % Moisture | 73.4 | 73.4 | 73.4 | 71.4 | 71.4 | 71.4 |
| 1,7 Dimethylxanthine | <0.0244 | <0.0240 | <0.0235 | <0.0305 | <0.0302 | <0.0299 |
| 10-hydroxyamitriptyline | <0.0000610 | <0.0000600 | <0.0000588 | <0.0000761 | <0.0000754 | <0.0000746 |
| 2-Hydroxyibuprofen | <0.0325 | <0.0320 | <0.0314 | <0.0406 | <0.0402 | <0.0398 |
| 4 Epianhydrochlortetracycline | <0.0244 | <0.0240 | <0.0235 | <0.0305 | <0.0302 | <0.0299 |
| 4 Epianhydrotetracycline (EATC) | <0.00610 | <0.00600 | <0.00588 | <0.00761 | <0.00754 | <0.00746 |
| 4 Epichlortetracycline (ECTC) | <0.00610 | <0.00600 | <0.00588 | <0.00761 | <0.00754 | <0.00746 |
| 4 Epioxytetracycline (EOTC) | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| 4 Epitetracycline (ETC) | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| Acetaminophen | <0.00610 | <0.00605 | <0.0233 | <0.00761 | <0.00754 | <0.00746 |
| Albuterol | <0.000303 | <0.000297 | <0.000291 | <0.000297 | <0.000300 | <0.000294 |
| Alprazolam | <0.000122 | <0.000120 | <0.000118 | <0.000152 | <0.000151 | <0.000149 |
| Amitriptyline | <0.000145 | <0.000120 | <0.000118 | <0.000152 | <0.000151 | <0.000149 |
| Amlodipine | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| Amphetamine | <0.00152 | <0.00149 | <0.00146 | <0.00149 | <0.00150 | <0.00147 |
| Amsacrine | <0.0000537 | <0.0000320 | <0.0000354 | <0.0000406 | <0.0000402 | <0.0000398 |
| Anhydrochlortetracycline (ACTC) | <0.00610 | <0.00600 | <0.00588 | <0.00761 | <0.00754 | <0.00746 |
| Anhydrotetracycline (ATC) | <0.00610 | <0.00600 | <0.00588 | <0.00761 | <0.00754 | <0.00746 |
| Atenolol | <0.000606 | <0.000594 | <0.000583 | <0.000594 | <0.000600 | <0.000588 |
| Atorvastatin | <0.00152 | <0.00149 | <0.00146 | <0.00149 | <0.00150 | <0.00147 |
| Azathioprine | <0.000813 | <0.000800 | <0.000784 | <0.00102 | <0.00101 | <0.000995 |
| Azithromycin | 0.00157 | 0.00102 | 0.00121 | 0.00125 | <0.00102 | <0.000993 |
| BDE# 10 | <0.000000231 | <0.000000227 | <0.000000299 | 0.000000514 | 0.00000165 | <0.000000420 |
| BDE# 100 | 0.00073 | 0.000726 | 0.000684 | 0.000858 | 0.000885 | 0.00094 |
| BDE# 105 | <0.00000102 | <0.000000754 | <0.000000847 | <0.00000110 | <0.00000109 | <0.00000152 |
| BDE# 116 | <0.00000145 | <0.00000107 | <0.00000120 | <0.00000156 | <0.00000154 | <0.00000216 |
| BDE# 119/120 | 0.0000151 | 0.000011 | 0.0000102 | 0.0000282 | 0.0000249 | 0.0000249 |
| BDE# 12/13 | 0.00000292 | 0.00000278 | 0.00000232 | 0.00000317 | 0.00000337 | 0.00000323 |
| BDE# 126 | 0.000000476 | 0.000000473 | <0.000000328 | 0.000000972 | 0.00000103 | 0.000000839 |
| BDE# 128 | 0.00000412 | 0.00000624 | 0.00000851 | 0.00000299 | 0.00000454 | 0.0000104 |
| BDE# 138/166 | 0.00000538 | 0.00000817 | 0.00000974 | 0.00000188 | 0.00000649 | 0.0000075 |
| BDE# 140 | 0.0000023 | 0.00000288 | 0.00000369 | 0.00000133 | 0.00000208 | 0.00000287 |
| BDE# 15 | 0.00000656 | 0.00000636 | 0.000006 | 0.00000619 | 0.00000641 | 0.00000685 |
| BDE# 153 | 0.000109 | 0.000102 | 0.0000986 | 0.000121 | 0.000131 | 0.000137 |
| BDE# 154 | 0.00029 | 0.00027 | 0.000275 | 0.000343 | 0.000359 | 0.000365 |
| BDE# 155 | 0.000038 | 0.0000313 | 0.0000408 | 0.0000532 | 0.0000478 | 0.0000548 |
| BDE# 17/25 | 0.000023 | 0.0000213 | 0.0000174 | 0.0000274 | 0.0000267 | 0.0000268 |
| BDE# 181 | 0.00000131 | 0.00000166 | 0.0000021 | 0.000000665 | 0.0000014 | 0.00000339 |
| BDE# 183 | 0.0000112 | 0.0000108 | 0.0000129 | 0.00000511 | 0.00000992 | 0.0000185 |
| BDE# 190 | 0.00000186 | 0.00000304 | 0.0000031 | 0.000000603 | 0.00000232 | 0.00000587 |
| BDE# 203 | 0.0000267 | 0.0000272 | 0.0000293 | 0.00000552 | 0.0000185 | 0.0000533 |
| BDE# 206 | 0.000193 | 0.000192 | 0.000237 | 0.0000454 | 0.000203 | 0.000419 |
| BDE# 207 | 0.000368 | 0.00035 | 0.000466 | 0.000074 | 0.000357 | 0.000842 |
| BDE# 208 | 0.000229 | 0.000221 | 0.000263 | 0.0000477 | 0.000194 | 0.000503 |
| BDE# 209 | 0.00296 | 0.00266 | 0.0034 | 0.000583 | 0.00296 | 0.00717 |
| BDE# 28/33 | 0.000443 | 0.000448 | 0.000426 | 0.000542 | 0.00054 | 0.000606 |
| BDE# 32 | 0.00000122 | 0.00000101 | <0.00000108 | <0.00000123 | 0.00000108 | <0.00000108 |
| BDE# 35 | 0.0000033 | 0.00000288 | 0.00000254 | 0.00000324 | 0.00000374 | 0.00000378 |
| BDE# 37 | 0.00000172 | 0.0000012 | 0.0000011 | 0.00000128 | 0.00000162 | 0.00000173 |
| BDE# 47 | 0.00217 | 0.00217 | 0.0021 | 0.00259 | 0.00268 | 0.00283 |
| BDE# 49 | 0.000544 | 0.000486 | 0.000378 | 0.000661 | 0.000654 | 0.000635 |
| BDE# 51 | 0.0000386 | 0.0000367 | 0.0000343 | 0.0000446 | 0.0000453 | 0.0000501 |
| BDE# 66 | 0.0000287 | 0.0000298 | 0.0000295 | 0.0000341 | 0.0000372 | 0.0000382 |
| BDE# 7 | 0.00000379 | 0.00000335 | 0.00000225 | 0.00000314 | 0.00000323 | 0.00000379 |
| BDE# 71 | 0.0000159 | 0.0000132 | 0.0000111 | 0.0000199 | 0.0000184 | 0.0000225 |
| BDE# 75 | 0.00000437 | 0.00000311 | 0.00000231 | 0.00000578 | 0.00000556 | 0.00000478 |
| BDE# 77 | 0.00000113 | 0.000000804 | 0.000000847 | 0.00000126 | 0.00000112 | 0.000000786 |
| BDE# 79 | 0.0000066 | 0.00000672 | 0.00000567 | 0.00000821 | 0.00000825 | 0.00000814 |
| BDE# 8/11 | 0.00000427 | 0.00000348 | 0.00000308 | 0.00000458 | 0.00000418 | 0.00000514 |
| BDE# 85 | 0.00000269 | 0.00000293 | 0.0000025 | 0.00000266 | 0.00000654 | 0.00000337 |
| BDE# 99 | 0.00012 | 0.000118 | 0.000112 | 0.000138 | 0.000235 | 0.000158 |
| Benzoylecgonine | <0.000122 | <0.000120 | <0.000118 | <0.000152 | <0.000151 | <0.000149 |
| Benztropine | <0.000203 | <0.000200 | <0.000196 | <0.000254 | <0.000251 | <0.000249 |
| Betamethasone | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| Bisphenol A | <0.203 | <0.200 | <0.196 | <0.254 | <0.251 | <0.249 |
| Busulfan | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |

**Table 55.** *(Continued)*

| Analyte | CED-1 | CED-2 | CED-3 | WHI 1 | WHI 2 | WHI 3 |
|---|---|---|---|---|---|---|
| **Caffeine** | <0.00610 | <0.00600 | <0.00693 | <0.00761 | <0.00754 | <0.00746 |
| **Carbadox** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Carbamazepine** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Cefotaxime** | <0.00520 | <0.00351 | <0.00564 | <0.00551 | <0.00305 | 0.0048 |
| **Chlortetracycline (CTC)** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Cimetidine** | <0.0000640 | <0.000154 | <0.000171 | <0.0000690 | <0.000114 | <0.000109 |
| **Ciprofloxacin** | <0.00244 | <0.00240 | <0.00259 | <0.00305 | <0.00302 | <0.00299 |
| **Citalopram** | 0.000166 | <0.000355 | 0.000161 | <0.000203 | <0.000201 | <0.000199 |
| **Clarithromycin** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Clinafloxacin** | <0.00424 | <0.00358 | <0.00557 | <0.00305 | <0.00477 | <0.00362 |
| **Clonidine** | <0.00152 | <0.00149 | <0.00146 | <0.00149 | <0.00150 | <0.00147 |
| **Clotrimazole** | <0.000163 | <0.000160 | <0.000157 | <0.000203 | <0.000201 | <0.000199 |
| **Cloxacillin** | <0.00122 | <0.00120 | <0.00118 | <0.00152 | <0.00151 | <0.00149 |
| **Cocaine** | <0.0000610 | <0.0000600 | <0.0000588 | <0.0000761 | <0.0000754 | <0.0000746 |
| **Codeine** | <0.00303 | <0.00297 | <0.00291 | <0.00297 | <0.00300 | <0.00294 |
| **Colchicine** | <0.000325 | <0.000320 | <0.000314 | <0.000406 | <0.000402 | <0.000398 |
| **Cotinine** | <0.00152 | <0.00149 | <0.00146 | <0.00149 | <0.00150 | <0.00147 |
| **Cyclophosphamide** | <0.000325 | <0.000320 | <0.000314 | <0.000445 | <0.000402 | <0.000398 |
| **Daunorubicin** | <0.00325 | <0.00320 | <0.00314 | <0.00406 | <0.00402 | <0.00398 |
| **DEET** | 0.00717 | 0.00643 | 0.00674 | 0.00563 | 0.0035 | 0.00369 |
| **Dehydronifedipine** | <0.000244 | <0.000240 | <0.000235 | <0.000305 | <0.000302 | <0.000299 |
| **Demeclocycline** | <0.00610 | <0.00600 | <0.00588 | <0.00761 | <0.00754 | <0.00746 |
| **Desmethyldiltiazem** | <0.0000610 | <0.0000600 | <0.0000588 | <0.0000761 | <0.0000754 | <0.0000746 |
| **Diatrizoic Acid** | <0.0107 | 0.0139 | 0.0101 | <0.0122 | <0.0121 | <0.0119 |
| **Diazepam** | <0.000122 | <0.000120 | <0.000118 | <0.000152 | <0.000151 | <0.000149 |
| **Digoxigenin** | <0.0350 | <0.0435 | <0.0275 | <0.0237 | <0.0376 | <0.0256 |
| **Digoxin** | <0.00416 | <0.00549 | <0.00376 | <0.00547 | <0.00400 | <0.00537 |
| **Diltiazem** | <0.000133 | <0.000120 | <0.000118 | <0.000152 | <0.000155 | <0.000149 |
| **Diphenhydramine** | 0.000593 | 0.000443 | 0.000501 | <0.000305 | <0.000302 | <0.000299 |
| **Doxorubicin** | <0.00976 | <0.00960 | <0.00941 | <0.0122 | <0.0121 | <0.0119 |
| **Doxycycline** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Enalapril** | <0.000303 | <0.000297 | <0.000291 | <0.000297 | <0.000300 | <0.000294 |
| **Enrofloxacin** | <0.00122 | <0.00120 | <0.00126 | <0.00152 | <0.00151 | <0.00149 |
| **Erythromycin H2O** | <0.000935 | <0.000920 | <0.000902 | <0.00117 | <0.00116 | <0.00114 |
| **Etoposide** | <0.000813 | <0.000800 | <0.00148 | <0.00102 | <0.00101 | <0.000995 |
| **Flumequine** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Fluocinonide** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Fluoxetine** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Fluticasone propionate** | <0.000813 | <0.000800 | <0.000784 | <0.00102 | <0.00101 | <0.000995 |
| **Furosemide** | <0.0163 | <0.0160 | <0.0157 | <0.0203 | <0.0201 | <0.0199 |
| **Gemfibrozil** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Glipizide** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Glyburide** | <0.00122 | <0.00120 | <0.00118 | <0.00152 | <0.00151 | <0.00149 |
| **Hydrochlorothiazide** | <0.00813 | <0.00800 | <0.00784 | <0.0102 | <0.0101 | <0.00995 |
| **Hydrocodone** | <0.00152 | <0.00149 | <0.00146 | <0.00149 | <0.00150 | <0.00147 |
| **Hydrocortisone** | <0.0244 | <0.0240 | <0.0235 | <0.0305 | <0.0302 | <0.0299 |

**Table 55.** *(Continued)*

| Analyte | CED-1 | CED-2 | CED-3 | WHI 1 | WHI 2 | WHI 3 |
|---|---|---|---|---|---|---|
| **Ibuprofen** | <0.00610 | <0.00600 | <0.00588 | <0.00761 | <0.00754 | <0.00746 |
| **Iopamidol** | <0.0325 | <0.0520 | <0.0342 | <0.0534 | <0.0523 | <0.0618 |
| **Isochlortetracycline (ICTC)** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Lincomycin** | <0.00122 | <0.00120 | <0.00118 | <0.00152 | <0.00151 | <0.00149 |
| **Lomefloxacin** | <0.00158 | <0.00227 | <0.00487 | <0.00182 | <0.00151 | <0.00149 |
| **Medroxyprogesterone Acetate** | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Melphalan** | <0.00976 | <0.0208 | <0.0187 | <0.0122 | <0.0121 | <0.0119 |
| **Meprobamate** | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Metformin** | 0.00769 | 0.00865 | 0.00857 | <0.00297 | <0.00300 | <0.00294 |
| **Methylprednisolone** | <0.00163 | <0.00466 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Metoprolol** | <0.000924 | <0.000800 | <0.00121 | <0.00102 | <0.00133 | <0.00120 |
| **Metronidazole** | <0.00173 | <0.00208 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Miconazole** | 0.00368 | 0.00251 | 0.00233 | 0.00117 | 0.00175 | 0.00117 |
| **Minocycline** | <0.0244 | <0.0240 | <0.0235 | <0.0305 | <0.0302 | <0.0299 |
| **Moxifloxacin** | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Naproxen** | <0.00122 | <0.00120 | <0.00118 | <0.00152 | <0.00151 | <0.00149 |
| **Norfloxacin** | <0.00694 | <0.00927 | <0.00664 | <0.00761 | <0.00754 | <0.00746 |
| **Norfluoxetine** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Norgestimate** | <0.00431 | <0.00376 | <0.00307 | <0.00400 | <0.00319 | <0.00290 |
| **Norverapamil** | <0.0000610 | <0.0000600 | <0.0000601 | <0.0000761 | <0.0000754 | <0.0000746 |
| **Ofloxacin** | <0.000610 | <0.000740 | <0.000611 | <0.000761 | <0.000754 | <0.000746 |
| **Ormetoprim** | <0.000244 | <0.000240 | <0.000235 | <0.000305 | <0.000302 | <0.000299 |
| **Oxacillin** | <0.00122 | <0.00120 | <0.00118 | <0.00152 | <0.00151 | <0.00149 |
| **Oxazepam** | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Oxolinic Acid** | <0.000244 | <0.000240 | <0.000235 | <0.000305 | <0.000302 | <0.000299 |
| **Oxycodone** | <0.000606 | <0.000594 | <0.000583 | <0.000594 | <0.000600 | <0.000588 |
| **Oxytetracycline (OTC)** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Paroxetine** | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Penicillin G** | <0.00122 | <0.00120 | <0.00118 | <0.00152 | <0.00151 | <0.00149 |
| **Penicillin V** | <0.00122 | <0.00120 | <0.00118 | <0.00152 | <0.00151 | <0.00149 |
| **Prednisolone** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Prednisone** | <0.0141 | 0.00946 | <0.0136 | <0.0102 | <0.0198 | <0.0279 |
| **Promethazine** | <0.000163 | <0.000160 | <0.000157 | <0.000203 | <0.000201 | <0.000199 |
| **Propoxyphene** | <0.000122 | <0.000120 | <0.000118 | <0.000152 | <0.000151 | <0.000149 |
| **Propranolol** | <0.000813 | <0.000800 | <0.000784 | <0.00102 | <0.00101 | <0.000995 |
| **Ranitidine** | <0.00202 | <0.00198 | <0.00194 | <0.00198 | <0.00200 | <0.00196 |
| **Rosuvastatin** | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Roxithromycin** | <0.000146 | <0.000145 | <0.000203 | <0.000169 | <0.000171 | <0.000149 |
| **Sarafloxacin** | <0.00610 | <0.00600 | <0.00588 | <0.00761 | <0.00754 | <0.00746 |
| **Sertraline** | <0.000198 | <0.000160 | <0.000161 | <0.000203 | <0.000201 | <0.000199 |
| **Simvastatin** | <0.00813 | <0.00800 | <0.00784 | <0.0102 | <0.0101 | <0.00995 |
| **Sulfachloropyridazine** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Sulfadiazine** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Sulfadimethoxine** | <0.000122 | <0.000139 | <0.000118 | <0.000152 | <0.000151 | <0.000149 |
| **Sulfamerazine** | 0.0132 | 0.0109 | 0.0143 | 0.0105 | 0.0147 | 0.0117 |
| **Sulfamethazine** | <0.000996 | 0.00168 | <0.00122 | <0.000692 | <0.000954 | <0.000731 |
| **Sulfamethizole** | <0.000244 | <0.000240 | <0.000235 | <0.000305 | <0.000302 | 0.000639 |
| **Sulfamethoxazole** | <0.000244 | <0.000240 | <0.000235 | <0.000305 | <0.000302 | <0.000299 |
| **Sulfanilamide** | <0.0239 | <0.0148 | <0.0172 | <0.0170 | <0.0135 | <0.0109 |
| **Sulfathiazole** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Tamoxifen** | <0.000163 | <0.000160 | <0.000157 | <0.000203 | <0.000201 | <0.000199 |
| **Teniposide** | <0.00188 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Tetracycline (TC)** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Theophylline** | <0.0244 | <0.0240 | <0.0235 | <0.0305 | <0.0302 | <0.0299 |
| **Thiabendazole** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000989 | <0.000746 |
| **Trenbolone** | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Trenbolone acetate** | <0.000122 | <0.000122 | <0.000118 | <0.000152 | <0.000154 | <0.000153 |
| **Triamterene** | <0.000303 | <0.000297 | <0.000291 | <0.000297 | <0.000300 | <0.000294 |
| **Triclocarban** | <0.00122 | <0.00120 | <0.00118 | <0.00152 | <0.00151 | <0.00149 |
| **Triclosan** | <0.0244 | <0.0240 | <0.0235 | <0.0305 | <0.0302 | <0.0299 |
| **Trimethoprim** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Tylosin** | <0.00244 | <0.00240 | <0.00235 | <0.00305 | <0.00302 | <0.00299 |
| **Valsartan** | <0.00163 | <0.00160 | <0.00157 | <0.00203 | <0.00201 | <0.00199 |
| **Venlafaxine** | <0.000163 | <0.000160 | <0.000157 | <0.000203 | <0.000201 | <0.000199 |
| **Verapamil** | <0.0000610 | <0.0000600 | <0.0000588 | <0.0000761 | <0.0000754 | <0.0000746 |
| **Virginiamycin M1** | 0.00377 | 0.00271 | 0.00303 | <0.00152 | <0.00151 | <0.00149 |
| **Warfarin** | <0.000610 | <0.000600 | <0.000588 | <0.000761 | <0.000754 | <0.000746 |
| **Zidovudine** | <0.00976 | <0.0132 | <0.00941 | <0.0122 | <0.0121 | <0.0119 |

**Table 56.** Relative percent difference between CEC concentrations in unfertilized eggs and the same strain at different locations during the transition to exogenous feeding. Table only displays comparisons with significant differences ($p < 0.05$) as determined by Student's t-tests. Comparisons only include analytes that had detected concentrations in both tissue types.

| Analyte | PES-CED | PES-WHI | WOL-GEN | WOL-KEW | WOL-MIL | STC-BLA | STC-GEN |
|---|---|---|---|---|---|---|---|
| **10-hydroxyamitriptyline** | | | 43.2% | | 47.6% | | |
| **BDE# 100** | | 29.4% | 70.7% | 55.1% | 106.7% | | 85.1% |
| **BDE# 119/120** | 68.8% | 32.9% | 87.2% | 71.6% | 53.3% | | 83.0% |
| **BDE# 12/13** | 216.0% | 284.9% | | 45.5% | 54.7% | 41.6% | 49.4% |
| **BDE# 126** | | | 62.3% | 58.7% | 51.0% | | 94.1% |
| **BDE# 128** | | | | | | | 75.2% |
| **BDE# 15** | | | | 32.3% | 97.7% | 54.0% | 81.0% |
| **BDE# 153** | | 19.3% | 44.9% | | 64.9% | | 80.5% |
| **BDE# 154** | 7.9% | 17.6% | 78.9% | 61.6% | 56.7% | 13.4% | 87.9% |
| **BDE# 155** | | | 76.6% | 67.2% | | | 92.8% |
| **BDE# 17/25** | | | 308.4% | 137.8% | 162.5% | 30.6% | 21.4% |
| **BDE# 183** | 809.3% | | 1085.6% | 191.3% | 199.3% | 27.4% | 54.1% |
| **BDE# 203** | | | 343.8% | 995.6% | 400.2% | | |
| **BDE# 206** | 13305.2% | | | | | | |
| **BDE# 207** | | | 86.3% | | | | |
| **BDE# 208** | | | | | | | |
| **BDE# 209** | | | | | | | |
| **BDE# 28/33** | 17.4% | | | | | 27.1% | 93.3% |
| **BDE# 32** | | | 23.6% | | 51.4% | | |
| **BDE# 35** | 39.7% | 25.6% | | | | 34.7% | 94.6% |
| **BDE# 37** | | | 75.4% | | | 29.2% | 18.1% |
| **BDE# 47** | 16.3% | | 39.1% | | 102.2% | | 79.9% |
| **BDE# 49** | | | 40.1% | | 91.6% | | 60.9% |
| **BDE# 51** | 24.9% | | 41.8% | | 72.4% | | 57.9% |
| **BDE# 66** | | | 24.3% | | 82.0% | 26.6% | 68.2% |
| **BDE# 7** | | | 183.3% | | 294.5% | | 76.4% |
| **BDE# 71** | | | 640.0% | 523.7% | 554.2% | | 30.0% |
| **BDE# 75** | 58.6% | 31.8% | 108.9% | 57.7% | 123.5% | | 71.2% |
| **BDE# 77** | | | | | | | 54.2% |
| **BDE# 79** | | | 57.0% | | | | 92.8% |
| **BDE# 8/11** | 245.9% | 343.9% | | 53.2% | 191.1% | 16.4% | |
| **BDE# 99** | 137.3% | 260.0% | 174.5% | 92.5% | 176.8% | 29.6% | 329.4% |
| **DEET** | 702.7% | 405.9% | 162.6% | 317.0% | 649.2% | | 185.7% |
| **Sertraline** | | | 49.4% | 64.6% | 1272.0% | | |

**Table 57.** Carcass tissue chemistry analytical results at the transition to exogenous feeding for BLA_STC, GEN_STC, and GEN_WOL samples from 2018. Concentrations are reported in parts per million wet weight except for lipid and moisture, which are reported as percentages. Blank values indicate insufficient sample mass for analysis.

| Analyte | BLA STC 1 | BLA STC 2 | BLA STC 3 | GEN STC 1 | GEN STC 2 | GEN STC 3 | GEN STC 4 | GEN STC 5 |
|---|---|---|---|---|---|---|---|---|
| % Lipid | 6.23 | 6.45 | 6.06 | 2.85 | 3.07 | 2.94 | 2.89 | 3.24 |
| % Moisture | | | | 85.2 | 85.2 | 85.2 | 85.2 | 85.2 |
| 10-hydroxy-amitriptyline | | | | <0.00006 | <0.00005949999999 | <0.00005949999999 | <0.00005949999999 | <0.00005949999999 |
| 1,7 Dimethyl xanthine | | | | <0.024 | <0.0238 | <0.0238 | <0.0238 | <0.0238 |
| 2-Hydroxy-ibuprofen | | | | <0.032 | <0.0317 | <0.0317 | <0.0317 | <0.0317 |
| 4 Epianhydrochlortetracycline | | | | <0.024 | <0.0238 | <0.0238 | <0.0238 | <0.0238 |
| 4 Epianhydrotetracycline (EATC) | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| 4 Epichlortetracycline (ECTC) | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| 4 Epioxytetracycline (EOTC) | | | | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 |
| 4 Epitetracycline (ETC) | | | | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 |
| Acetaminophen | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| Albuterol | | | | <0.000294 | <0.000294 | <0.000288 | <0.000294 | <0.0003 |
| Alprazolam | | | | <0.00012 | <0.00011899999999 | <0.000132 | <0.00011899999999 | <0.00011899999999 |
| Amitriptyline | | | | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.00011899999999 | <0.00011899999999 |
| Amlodipine | | | | <0.0006 | <0.00059499999999 | <0.000958 | <0.00059499999999 | <0.00059499999999 |
| Amphetamine | | | | <0.00147 | <0.00147 | <0.00143999999999 | <0.00179 | <0.0015 |
| Amsacrine | | | | <0.000032 | <0.0000452 | <0.0000596 | <0.0000318 | <0.0000412 |
| Anhydrochlortetracycline (ACTC) | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| Anhydrotetracycline (ATC) | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| Atenolol | | | | <0.000588 | <0.000588 | <0.00057699999999 | <0.000588 | <0.0006 |
| Atorvastatin | | | | <0.00147 | <0.00147 | <0.00143999999999 | <0.00147 | <0.0015 |
| Azathioprine | | | | <0.0008 | <0.00159 | <0.00115 | <0.000794 | <0.00116 |
| Azithromycin | | | | 0.000729 | 0.00109 | 0.0024 | 0.00116 | 0.000695 |
| BDE# 10 | <0.00000034 | <0.000000328 | <0.000000309 | <0.000000159 | <0.000000159 | <0.00000018 | <0.00000018299999 | <0.000000137 |
| BDE# 100 | 0.00123 | 0.00125 | 0.00129 | 0.000206 | 0.000208 | 0.000214 | 0.000202 | 0.000194 |
| BDE# 105 | <0.00000165999999 | <0.00000206999999 | <0.00000179 | <0.00000122999999 | <0.0000012 | <0.0000011 | <0.00000128 | <0.00000138999999 |
| BDE# 116 | <0.00000205999999 | <0.00000256999999 | <0.00000221 | 0.00000241999999 | <0.00000155999999 | 0.00000169 | <0.00000165999999 | <0.0000018 |
| BDE# 119/120 | 0.00005559999999 | 0.00005559999999 | 0.0000602 | 0.00000901999999 | 0.00001169999999 | 0.000012 | 0.0000121 | 0.0000096 |
| BDE# 12/13 | 0.00000059 | 0.000000682 | 0.00000071799999 | 0.000000562 | 0.000000538 | 0.000000586 | 0.000000521 | 0.000000668 |
| BDE# 126 | 0.00001929999999 | 0.00002039999999 | 0.0000213 | 0.00000104 | 0.00000155999999 | 0.00000116 | 0.00000122 | 0.00000079 |
| BDE# 128 | 0.00000237999999 | 0.00000233999999 | 0.00000356 | 0.00000128 | 0.00000104 | 0.000000912 | 0.000000711 | 0.000000579 |
| BDE# 138/166 | <0.00000034 | <0.000000328 | <0.000000309 | <0.000000159 | <0.000000159 | 0.00000023499999 | 0.00000029099999 | <0.000000137 |
| BDE# 140 | <0.00000034 | <0.000000328 | 0.000000546 | 0.00000094699999 | 0.000000776 | 0.00000083699999 | 0.00000082599999 | 0.000000848 |
| BDE# 15 | 0.00000991 | 0.00000978 | 0.00001019999999 | 0.00000395 | 0.00000448 | 0.00000416 | 0.00000379999999 | 0.00000416 |
| BDE# 153 | 0.000101 | 0.0000992 | 0.000106 | 0.0000231 | 0.000023 | 0.000023 | 0.00002319999999 | 0.000022 |
| BDE# 154 | 0.000625 | 0.000638 | 0.000675 | 0.0000895 | 0.00009099999999 | 0.0000954 | 0.0000918 | 0.0000845 |
| BDE# 155 | 0.000179 | 0.000188 | 0.000196 | 0.0000135 | 0.0000185 | 0.0000151 | 0.0000137 | 0.0000108 |
| BDE# 17/25 | 0.000021 | 0.0000228 | 0.0000231 | 0.0000236 | 0.0000271 | 0.00002369999999 | 0.0000241 | 0.00002779999999 |

**Table 57.** *(Continued)*

| Analyte | BLA STC 1 | BLA STC 2 | BLA STC 3 | GEN STC 1 | GEN STC 2 | GEN STC 3 | GEN STC 4 | GEN STC 5 |
|---|---|---|---|---|---|---|---|---|
| **BDE# 181** | <0.00000034 | <0.000000328 | <0.000000309 | <0.000000159 | <0.000000159 | <0.00000018 | <0.00000018299999 | <0.000000137 |
| **BDE# 183** | 0.00000127 | 0.00000133 | 0.00000112999999 | 0.00000247 | 0.00000272999999 | 0.00000311999999 | 0.00000298 | 0.00000189999999 |
| **BDE# 190** | <0.00000034 | <0.000000328 | <0.000000309 | <0.000000159 | 0.00000017399999 | <0.00000018 | 0.00000047199999 | <0.000000137 |
| **BDE# 203** | 0.000000541 | 0.00000224 | 0.00000151999999 | 0.0000022 | 0.000002 | 0.00000272999999 | 0.00000204 | 0.00000133 |
| **BDE# 206** | 0.00000678999999 | 0.00001109999999 | 0.00000592999999 | 0.00000742999999 | 0.0000093 | 0.00000650999999 | 0.0000118 | 0.0000024 |
| **BDE# 207** | 0.00001459999999 | 0.0000188 | 0.00000513999999 | 0.0000119 | 0.0000114 | 0.00000693 | 0.0000149 | 0.00000561 |
| **BDE# 208** | 0.00000488 | 0.00000964 | 0.00000698 | 0.00000446999999 | 0.00000632 | 0.00000786 | 0.00000834 | 0.00000262 |
| **BDE# 209** | 0.000143 | 0.00012 | 0.00007599999999 | 0.000058 | 0.0000732 | 0.0000701 | 0.0000835 | 0.00003549999999 |
| **BDE# 28/33** | 0.000828 | 0.000827 | 0.000861 | 0.000075 | 0.000082 | 0.0000789 | 0.00007529999999 | 0.0000763 |
| **BDE# 30** | <0.0000012 | <0.00000100999999 | <0.00000148 | <0.00000089 | <0.000000593 | <0.00000109 | <0.00000042699999 | <0.000000613 |
| **BDE# 32** | <0.000000934 | <0.000000788 | <0.00000114999999 | <0.000000741 | 0.000000665 | <0.000000909 | 0.000000543 | 0.000000964 |
| **BDE# 35** | 0.00000717999999 | 0.00000831 | 0.00000846 | <0.000000651 | <0.000000434 | <0.000000798 | 0.00000085399999 | 0.00000047699999 |
| **BDE# 37** | 0.00000140999999 | 0.00000127 | <0.00000097599999 | 0.00000209 | 0.00000248 | 0.00000212 | 0.000002 | 0.00000249 |
| **BDE# 47** | 0.00245 | 0.00247 | 0.00248 | 0.000536 | 0.00054 | 0.000549 | 0.00053 | 0.000533 |
| **BDE# 49** | 0.000316 | 0.000342 | 0.000334 | 0.000142 | 0.000142 | 0.000134 | 0.000132 | 0.000141 |
| **BDE# 51** | 2.44E 05 | 0.0000266 | 0.0000241 | 0.0000105 | 0.0000109 | 0.00001109999999 | 0.0000105 | 0.0000101 |
| **BDE# 66** | 0.00005139999999 | 0.0000521 | 0.00005439999999 | 0.0000206 | 0.00002539999999 | 0.00002469999999 | 0.00002119999999 | 0.000022 |
| **BDE# 7** | 0.00000076299999 | 0.00000095599999 | 0.00000118999999 | 0.00000129 | 0.00000144999999 | 0.00000147 | 0.00000151 | 0.00000169999999 |
| **BDE# 71** | 0.00000552 | 0.00000646 | 0.00000676 | 0.00000827999999 | 0.00000883 | 0.00000836 | 0.00000966999999 | 0.00000860999999 |
| **BDE# 75** | 0.0000126 | 0.0000134 | 0.00001319999999 | 0.00000347 | 0.00000421999999 | 0.0000042 | 0.0000039 | 0.00000345 |
| **BDE# 77** | 5.71E 07 | 0.000000851 | 0.000000586 | 0.000000317 | 0.00000049799999 | 0.000000493 | 0.000000352 | 0.000000512 |
| **BDE# 79** | 0.00000815 | 0.00001059999999 | 0.00000861999999 | 0.00000073199999 | 0.00000122999999 | 0.00000094399999 | 0.00000104 | 0.000000666 |
| **BDE# 8/11** | 0.00000140999999 | 0.00000135 | 0.00000146 | 0.00000169999999 | 0.00000184 | 0.00000182 | 0.00000169 | 0.00000189999999 |
| **BDE# 85** | <0.00000118 | <0.00000147 | <0.00000127 | <0.000000926 | <0.000000906 | <0.00000083299999 | <0.000000966 | <0.00000105 |
| **BDE# 99** | 0.0000367 | 0.0000384 | 0.0000402 | 0.000127 | 0.000129 | 0.00013 | 0.000124 | 0.000127 |
| **Benzoylecgonine** | | | | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.00011899999999 | <0.00011899999999 |
| **Benztropine** | | | | <0.0002 | <0.000198 | <0.000198 | <0.000198 | <0.000198 |
| **Betamethasone** | | | | <0.00162 | <0.000928 | <0.00523 | <0.00137 | <0.00116 |
| **Bisphenol A** | | | | <0.2 | <0.198 | <0.198 | <0.198 | <0.198 |
| **Busulfan** | | | | <0.00562 | <0.00826 | <0.00904 | <0.0108 | <0.00322 |
| **Caffeine** | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| **Carbadox** | | | | 0.000975 | <0.00059499999999 | <0.00059499999999 | 0.00167 | 0.000695 |
| **Carbamazepine** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Cefotaxime** | | | | | | | | |
| **Chlortetracycline (CTC)** | | | | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 |
| **Cimetidine** | | | | <0.000588 | <0.000588 | <0.00057699999999 | <0.000588 | <0.0006 |
| **Ciprofloxacin** | | | | <0.00257 | <0.00273 | <0.00282 | <0.00274 | <0.00237999999999 |
| **Citalopram** | | | | <0.00199 | <0.000159 | <0.00046899999999 | <0.00117 | <0.000159 |

**Table 57.** *(Continued)*

| Analyte | BLA STC 1 | BLA STC 2 | BLA STC 3 | GEN STC 1 | GEN STC 2 | GEN STC 3 | GEN STC 4 | GEN STC 5 |
|---|---|---|---|---|---|---|---|---|
| **Clarithromycin** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Clinafloxacin** | | | | <0.0052 | <0.00405 | 0.00712 | <0.00492 | <0.00322 |
| **Clonidine** | | | | <0.00147 | <0.00147 | <0.00143999999999 | <0.00147 | <0.0015 |
| **Clotrimazole** | | | | <0.00016 | <0.000159 | <0.000159 | <0.000159 | <0.000159 |
| **Cloxacillin** | | | | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 |
| **Cocaine** | | | | <0.0000696 | <0.00005949999999 | <0.0000791 | <0.00014 | <0.0000764 |
| **Codeine** | | | | <0.00294 | <0.00294 | <0.00287999999999 | <0.00294 | <0.003 |
| **Colchicine** | | | | <0.000583 | <0.000317 | <0.000598 | <0.000865 | <0.000978 |
| **Cotinine** | | | | <0.00147 | <0.00147 | <0.00143999999999 | <0.00147 | <0.0015 |
| **Cyclophosphamide** | | | | <0.00032 | <0.000317 | <0.000317 | <0.000317 | <0.000317 |
| **Daunorubicin** | | | | <0.0032 | <0.00317 | <0.00317 | <0.00317 | <0.00317 |
| **DEET** | | | | 0.0034 | 0.00401 | 0.00489 | 0.00341 | 0.00243 |
| **Dehydronifedipine** | | | | <0.000297 | <0.00023799999999 | <0.00023799999999 | <0.00023799999999 | <0.000258 |
| **Demeclocycline** | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| **Desmethyldiltiazem** | | | | <0.00006 | <0.00005949999999 | <0.00005949999999 | <0.00005949999999 | <0.00005949999999 |
| **Diatrizoic Acid** | | | | <0.0147 | <0.00956 | 0.0138 | <0.0266 | <0.0127 |
| **Diazepam** | | | | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.00011899999999 | <0.00011899999999 |
| **Digoxigenin** | | | | <0.0341 | <0.0146 | <0.0381 | <0.0148 | <0.0203 |
| **Digoxin** | | | | <0.0024 | <0.00237999999999 | <0.00367 | <0.00237999999999 | <0.00312 |
| **Diltiazem** | | | | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.00011899999999 | <0.00011899999999 |
| **Diphenhydramine** | | | | <0.00024 | <0.00023799999999 | <0.00023799999999 | <0.00023799999999 | <0.00023799999999 |
| **Doxorubicin** | | | | <0.0096 | <0.00951999999999 | <0.00951999999999 | <0.00951999999999 | <0.00951999999999 |
| **Doxycycline** | | | | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 |
| **Drospirenone** | | | | | | | | |
| **Enalapril** | | | | <0.000294 | <0.000294 | <0.000288 | <0.000294 | <0.0003 |
| **Enrofloxacin** | | | | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 |
| **Erythromycin H2O** | | | | 0.000945 | <0.000913 | 0.000955 | 0.000925 | 0.000921 |
| **Etoposide** | | | | <0.0008 | <0.000794 | <0.000981 | <0.000794 | <0.000794 |
| **Flumequine** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Fluocinonide** | | | | <0.00256 | <0.00386 | <0.00513 | <0.00344 | <0.00306 |
| **Fluoxetine** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Fluticasone propionate** | | | | <0.00177 | <0.0013 | <0.00196 | <0.00187 | <0.00193999999999 |
| **Furosemide** | | | | <0.016 | <0.0159 | <0.0159 | <0.0159 | <0.0159 |
| **Gemfibrozil** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Glipizide** | | | | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 |
| **Glyburide** | | | | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 |
| **Hydrochlorothiazide** | | | | <0.008 | <0.00794 | <0.00794 | <0.00794 | <0.00794 |
| **Hydrocodone** | | | | <0.00147 | <0.00147 | <0.00143999999999 | <0.00147 | <0.0015 |

**Table 57.** *(Continued)*

| Analyte | BLA STC 1 | BLA STC 2 | BLA STC 3 | GEN STC 1 | GEN STC 2 | GEN STC 3 | GEN STC 4 | GEN STC 5 |
|---|---|---|---|---|---|---|---|---|
| **Hydrocortisone** | | | | <0.0229 | <0.0845 | <0.0395 | <0.0227 | <0.0542 |
| **Ibuprofen** | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| **Iopamidol** | | | | <0.032 | <0.0317 | <0.0317 | <0.0317 | <0.0331 |
| **Isochlortetracycline (ICTC)** | | | | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 |
| **Lincomycin** | | | | <0.00137 | <0.00118999999999 | <0.00121 | <0.00135 | <0.00118999999999 |
| **Lomefloxacin** | | | | <0.00132 | <0.0018 | <0.00188 | <0.00128 | <0.00135 |
| **Medroxyprogesterone Acetate** | | | | <0.00287999999999 | <0.0032 | <0.00401999999999 | <0.003 | <0.00295 |
| **Melphalan** | | | | <0.0151 | <0.0288 | <0.0253 | <0.0135 | <0.015 |
| **Meprobamate** | | | | <0.00162 | <0.0016 | <0.0016 | <0.0016 | <0.0016 |
| **Metformin** | | | | <0.00294 | <0.00294 | <0.00287999999999 | <0.00294 | <0.003 |
| **Methylprednisolone** | | | | <0.00162 | <0.00294 | <0.0016 | <0.0016 | <0.0016 |
| **Metoprolol** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Metronidazole** | | | | <0.0016 | <0.00159 | <0.00159 | <0.00159 | <0.00193 |
| **Miconazole** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Minocycline** | | | | <0.024 | <0.0238 | <0.0238 | <0.0238 | <0.0238 |
| **Moxifloxacin** | | | | <0.0016 | <0.00159 | <0.00233 | <0.00159 | <0.00163 |
| **Naproxen** | | | | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 |
| **Norfloxacin** | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| **Norfluoxetine** | | | | <0.0006 | <0.00059499999999 | <0.00165 | <0.00059499999999 | <0.00059499999999 |
| **Norgestimate** | | | | <0.00246 | <0.00231 | <0.00307 | <0.00287999999999 | <0.0021 |
| **Norverapamil** | | | | <0.00006 | <0.00005949999999 | <0.0000766 | <0.00005949999999 | <0.00005949999999 |
| **Ofloxacin** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Ormetoprim** | | | | <0.00024 | <0.00023799999999 | <0.00023799999999 | <0.00023799999999 | <0.00023799999999 |
| **Oxacillin** | | | | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 |
| **Oxazepam** | | | | <0.0016 | <0.00159 | <0.00159 | <0.00159 | <0.00159 |
| **Oxolinic Acid** | | | | <0.00038 | <0.000256 | <0.000327 | <0.00031 | <0.00023799999999 |
| **Oxycodone** | | | | <0.000588 | <0.000588 | <0.000882 | <0.000926 | <0.000766 |
| **Oxytetracycline (OTC)** | | | | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 |
| **Paroxetine** | | | | <0.00162 | <0.0016 | <0.0016 | <0.0016 | <0.0016 |
| **Penicillin G** | | | | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 |
| **Penicillin V** | | | | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 |
| **Prednisolone** | | | | <0.0186 | <0.0269 | <0.132 | <0.0351 | <0.0178 |
| **Prednisone** | | | | <0.008 | <0.0527 | <0.00794 | <0.0672 | <0.0572 |
| **Promethazine** | | | | <0.00016 | <0.000159 | <0.000159 | <0.000159 | <0.000159 |
| **Propoxyphene** | | | | <0.00012 | <0.00011899999999 | <0.000783 | <0.00011899999999 | <0.00011899999999 |
| **Propranolol** | | | | <0.0008 | <0.000794 | <0.000794 | <0.000794 | <0.000794 |
| **Ranitidine** | | | | <0.000588 | <0.000588 | <0.00057699999999 | <0.000588 | <0.000614 |
| **Rosuvastatin** | | | | <0.0016 | <0.00159 | <0.00159 | <0.00159 | <0.00159 |

**Table 57.** *(Continued)*

| Analyte | BLA STC 1 | BLA STC 2 | BLA STC 3 | GEN STC 1 | GEN STC 2 | GEN STC 3 | GEN STC 4 | GEN STC 5 |
|---|---|---|---|---|---|---|---|---|
| **Roxithromycin** | | | | <0.00012 | <0.00014099999999 | <0.00017199999999 | <0.00011899999999 | <0.00011899999999 |
| **Sarafloxacin** | | | | <0.006 | <0.00595 | <0.00595 | <0.00595 | <0.00595 |
| **Sertraline** | | | | <0.00028599999999 | <0.000388 | <0.00057 | <0.00043 | <0.00037 |
| **Simvastatin** | | | | <0.008 | <0.00794 | <0.00794 | <0.00794 | <0.00794 |
| **Sulfachloropyridazine** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Sulfadiazine** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Sulfadimethoxine** | | | | <0.00012 | <0.00017 | <0.000144 | <0.000261 | <0.000165 |
| **Sulfamerazine** | | | | <0.000389 | <0.00023799999999 | <0.000671 | <0.000244 | <0.000404 |
| **Sulfamethazine** | | | | <0.000533 | <0.00023799999999 | <0.000904 | <0.000406 | <0.000383 |
| **Sulfamethizole** | | | | <0.000447 | <0.000328 | <0.000517 | <0.00037 | 0.000438 |
| **Sulfamethoxazole** | | | | <0.00024 | <0.00023799999999 | <0.00023799999999 | <0.00023799999999 | <0.00023799999999 |
| **Sulfanilamide** | | | | <0.02 | <0.0198 | <0.0198 | <0.0198 | <0.0198 |
| **Sulfathiazole** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Tamoxifen** | | | | <0.00016 | <0.000159 | <0.000159 | <0.000159 | <0.000159 |
| **Teniposide** | | | | <0.0016 | <0.00159 | <0.00159 | <0.00175 | <0.00257 |
| **Tetracycline (TC)** | | | | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 | <0.00237999999999 |
| **Theophylline** | | | | <0.024 | <0.0238 | <0.0238 | <0.0238 | <0.0238 |
| **Thiabendazole** | | | | <0.000619 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Trenbolone** | | | | <0.00162 | <0.0016 | <0.0017 | <0.0016 | <0.0016 |
| **Trenbolone acetate** | | | | <0.000136 | <0.000221 | <0.000326 | <0.0002 | <0.000158 |
| **Triamterene** | | | | <0.000294 | <0.000294 | <0.000288 | <0.000294 | <0.0003 |
| **Triclocarban** | | | | 0.00125 | 0.00176 | 0.00206 | 0.00212 | <0.00118999999999 |
| **Triclosan** | | | | <0.024 | <0.0238 | <0.0321 | <0.0238 | <0.0238 |
| **Trimethoprim** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Tylosin** | | | | <0.0024 | <0.00237999999999 | <0.00302999999999 | <0.00237999999999 | <0.00237999999999 |
| **Valsartan** | | | | <0.00162 | <0.0016 | <0.0016 | <0.0016 | <0.0016 |
| **Venlafaxine** | | | | | | | | |
| **Verapamil** | | | | <0.00006 | <0.00005949999999 | <0.00005949999999 | <0.00005949999999 | <0.00005949999999 |
| **Virginiamycin M1** | | | | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118999999999 | <0.0012 |
| **Warfarin** | | | | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 | <0.00059499999999 |
| **Zidovudine** | | | | <0.0192 | <0.019 | <0.019 | <0.019 | <0.019 |

**Table 57.** *(Continued)*

| Analyte | GEN WOL-1 | GEN WOL-2 | GEN WOL-3 | GEN WOL-4 | GEN WOL-5 | GEN WOL-6 | GEN WOL-7 | GEN WOL-8 |
|---|---|---|---|---|---|---|---|---|
| % Lipid | 5.11 | 4.27 | 4.98 | 4.64 | 5.47 | 4.58 | 5.27 | 5.32 |
| % Moisture | | | | | | | | |
| 10-hydroxy-amitriptyline | 0.0000728 | 0.0000996 | 0.000108 | 0.0000965 | 0.0000814 | 0.0000982 | 0.0000944 | 0.0000912 |
| 1,7 Dimethyl xanthine | <0.024 | <0.0238 | <0.0238 | <0.0236 | <0.024 | <0.0238 | <0.024 | <0.024 |
| 2-Hydroxy-ibuprofen | <0.032 | <0.0317 | <0.0317 | <0.0315 | <0.032 | <0.0317 | <0.032 | <0.032 |
| 4 Epianhydrochlortetracycline | <0.024 | <0.0238 | <0.0238 | <0.0236 | <0.024 | <0.0238 | <0.024 | <0.024 |
| 4 Epianhydrotetracycline (EATC) | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| 4 Epichlortetracycline (ECTC) | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| 4 Epioxytetracycline (EOTC) | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| 4 Epitetracycline (ETC) | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| Acetaminophen | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| Albuterol | <0.0003 | <0.000294 | <0.0003 | <0.000283 | <0.000268 | <0.000259 | <0.000294 | <0.000273 |
| Alprazolam | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.000118 | <0.00012 | <0.00011899999999 | <0.00012 | <0.00012 |
| Amitriptyline | <0.00012 | <0.00011899999999 | <0.00016 | <0.000118 | <0.00012 | <0.00011899999999 | <0.00012 | <0.00012 |
| Amlodipine | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| Amphetamine | 0.00227 | 0.0203 | 0.0259 | 0.022 | 0.0147 | 0.00651 | 0.0471 | 0.0115 |
| Amsacrine | <0.000033 | <0.0000318 | <0.0000318 | <0.0000371 | <0.000032 | <0.0000399 | <0.000032 | <0.000032 |
| Anhydrochlortetracycline (ACTC) | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| Anhydrotetracycline (ATC) | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| Atenolol | <0.0006 | <0.000809 | <0.000635 | <0.000687 | <0.00103 | <0.00069799999999 | <0.00104 | <0.000779 |
| Atorvastatin | <0.0015 | <0.00147 | <0.0015 | <0.00142 | <0.00134 | <0.00129 | <0.00147 | <0.00136 |
| Azathioprine | <0.0008 | <0.000794 | <0.000794 | <0.000787 | <0.0008 | <0.000794 | <0.0008 | <0.0008 |
| Azithromycin | <0.00234 | <0.00213 | <0.00200999999999 | <0.00211 | <0.0006 | <0.00059499999999 | <0.000625 | <0.0006 |
| BDE# 10 | <0.000000391 | <0.000000367 | <0.000000466 | <0.000000315 | <0.00000037799999 | <0.000000303 | <0.00000034399999 | <0.000000357 |
| BDE# 100 | 0.000465 | 0.000412 | 0.000479 | 0.00048 | 0.000504 | 0.000426 | 0.000442 | 0.000446 |
| BDE# 105 | <0.00000146 | <0.00000128 | <0.00000208 | <0.0000013 | <0.00000178 | <0.0000011 | <0.00000124 | <0.00000184 |
| BDE# 116 | <0.00000181 | <0.00000158 | <0.00000254 | <0.00000158 | <0.00000217 | <0.00000134 | <0.0000015 | <0.00000224 |
| BDE# 119/120 | 0.0000218 | 0.0000203 | 0.0000243 | 0.000021 | 0.0000199 | 0.00001899999999 | 0.000021 | 0.00002119999999 |
| BDE# 12/13 | 0.00000144 | 0.00000137 | 0.00000138999999 | 0.00000122 | 0.0000013 | 0.00000108 | 0.00000133 | 0.00000107 |
| BDE# 126 | 0.00000210999999 | 0.00000260999999 | 0.00000241 | 0.00000225 | 0.00000216 | 0.00000183 | 0.00000236 | 0.00000272 |
| BDE# 128 | <0.000000391 | 0.000000791 | 0.00000153 | <0.000000315 | <0.00000037799999 | 0.000000765 | 0.000000547 | 0.0000011 |
| BDE# 138/166 | <0.000000391 | 0.000000569 | 0.000000681 | 0.00000094099999 | 0.00000068 | 0.00000031 | 0.00000038499999 | <0.000000357 |
| BDE# 140 | 0.000000561 | 0.000000778 | 0.000000536 | 0.000000396 | 0.000000676 | 0.00000062499999 | 0.000000583 | 0.000000788 |
| BDE# 15 | 0.00000501999999 | 0.00000417 | 0.00000484999999 | 0.00000466 | 0.00000469 | 0.00000420999999 | 0.00000408 | 0.00000454 |
| BDE# 153 | 0.0000572 | 0.00005429999999 | 0.0000572 | 0.000059 | 0.00006059999999 | 0.00005139999999 | 0.0000512 | 0.0000523 |
| BDE# 154 | 0.000164 | 0.000148 | 0.000158 | 0.000153 | 0.000162 | 0.000128 | 0.000145 | 0.00016 |
| BDE# 155 | 0.000105 | 0.00009479999999 | 0.0000977 | 0.000101 | 0.000104 | 0.0000852 | 0.0000939 | 0.000108 |
| BDE# 17/25 | 0.00007809999999 | 0.0000592 | 0.0000752 | 0.0000657 | 0.0000711 | 0.00005839999999 | 0.00006089999999 | 0.00006159999999 |

**Table 57.** *(Continued)*

| Analyte | GEN_WOL-1 | GEN_WOL-2 | GEN_WOL-3 | GEN_WOL-4 | GEN_WOL-5 | GEN_WOL-6 | GEN_WOL-7 | GEN_WOL-8 |
|---|---|---|---|---|---|---|---|---|
| **BDE# 181** | <0.000000391 | <0.000000367 | 0.00000047699999 | 0.000000493 | <0.00000037799999 | <0.000000303 | <0.00000034399999 | <0.000000357 |
| **BDE# 183** | 0.00000905 | 0.0000101 | 0.00000554999999 | 0.0000322 | 0.00000641999999 | 0.00000818 | 0.00000403999999 | 0.00000455999999 |
| **BDE# 190** | 0.00000047699999 | 0.000000859 | <0.000000466 | 0.000000852 | <0.00000037799999 | 0.00000040899999 | 0.000000811 | <0.000000357 |
| **BDE# 203** | 0.00000221 | 0.00000684 | 0.00000318 | 0.00000712999999 | 0.00000318 | 0.00000356 | 0.00000293 | 0.00000339 |
| **BDE# 206** | 0.00000528 | 0.0000182 | 0.00000855 | 0.0000129 | 0.00000871 | 0.00000893999999 | 0.0000105 | 0.0000159 |
| **BDE# 207** | 0.00001419999999 | 0.0000316 | 0.0000342 | 0.000026 | 0.00002219999999 | 0.0000191 | 0.0000124 | 0.0000211 |
| **BDE# 208** | 0.00000429 | 0.0000158 | 0.0000218 | 0.0000126 | 0.000014 | 0.0000105 | 0.00000746 | 0.00000977 |
| **BDE# 209** | 0.00014 | 0.000249 | 0.00012 | 0.000143 | 0.000168 | 0.0000432 | 0.000118 | 0.000105 |
| **BDE# 28/33** | 0.000282 | 0.000238 | 0.00029 | 0.000286 | 0.000305 | 0.00026 | 0.000276 | 0.000269 |
| **BDE# 30** | <0.00000116999999 | <0.000000455 | <0.00000134 | <0.00000111 | <0.00000104 | <0.000000855 | <0.000000967 | <0.00000126 |
| **BDE# 32** | 0.00000218999999 | 0.00000227 | 0.00000272 | 0.000002 | 0.0000022 | 0.00000260999999 | 0.00000177 | 0.00000249 |
| **BDE# 35** | 0.0000032 | 0.0000018 | 0.00000159 | 0.00000171999999 | 0.00000276 | 0.00000165999999 | 0.00000227999999 | 0.00000249 |
| **BDE# 37** | 0.00000194 | 0.00000249 | 0.00000191 | 0.00000194 | 0.00000333999999 | 0.00000214 | 0.00000191 | 0.00000148 |
| **BDE# 47** | 0.002 | 0.0018 | 0.0021 | 0.00207 | 0.00222 | 0.00186 | 0.00193 | 0.00185 |
| **BDE# 49** | 0.000788 | 0.000686 | 0.000833 | 0.000813 | 0.000837 | 0.000701 | 0.000755 | 0.000763 |
| **BDE# 51** | 0.00007909999999 | 0.00007 | 0.0000845 | 0.0000814 | 0.0000809 | 0.0000697 | 0.0000787 | 0.0000812 |
| **BDE# 66** | 0.0000372 | 0.00003079999999 | 0.00003189999999 | 0.0000356 | 0.00003799999999 | 0.0000298 | 0.0000371 | 0.0000317 |
| **BDE# 7** | 0.00000272999999 | 0.00000229 | 0.00000249 | 0.00000214999999 | 0.00000256999999 | 0.00000201999999 | 0.00000205999999 | 0.00000227999999 |
| **BDE# 71** | 0.00002219999999 | 0.00002189999999 | 0.000029 | 0.0000251 | 0.00002499999999 | 0.0000224 | 0.00002499999999 | 0.0000252 |
| **BDE# 75** | 0.00000570999999 | 0.00000567 | 0.00000716 | 0.00000596 | 0.00000682 | 0.0000055 | 0.00000523 | 0.00000658 |
| **BDE# 77** | 0.00000051499999 | 0.000000607 | 0.000000502 | 0.000000483 | <0.00000037799999 | 0.00000043199999 | <0.00000034399999 | 0.00000041499999 |
| **BDE# 79** | 0.00000333 | 0.00000312999999 | 0.00000339 | 0.00000487 | 0.00000645 | 0.00000500999999 | 0.00000276 | 0.00000559 |
| **BDE# 8/11** | 0.00000320999999 | 0.00000275 | 0.00000338 | 0.00000268 | 0.00000285 | 0.00000262 | 0.00000245 | 0.00000237 |
| **BDE# 85** | <0.00000111 | <0.000000974 | <0.00000158 | <0.000000986 | <0.00000135 | <0.000000834 | <0.000000936 | <0.00000138999999 |
| **BDE# 99** | 0.0000889 | 0.00007909999999 | 0.0000884 | 0.0000856 | 0.0000879 | 0.00007609999999 | 0.0000801 | 0.0000795 |
| **Benzoylecgonine** | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.000118 | <0.00012 | <0.00011899999999 | <0.00012 | <0.00012 |
| **Benztropine** | <0.0002 | <0.000198 | <0.000198 | <0.000197 | <0.0002 | <0.000198 | <0.0002 | <0.0002 |
| **Betamethasone** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Bisphenol A** | <0.2 | <0.198 | <0.198 | <0.197 | <0.2 | <0.198 | <0.2 | <0.2 |
| **Busulfan** | <0.00247 | <0.00159 | <0.00159 | <0.00289 | <0.00437 | <0.00159 | <0.0022 | <0.00295 |
| **Caffeine** | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| **Carbadox** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Carbamazepine** | <0.0006 | <0.00059499999999 | 0.00163 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Cefotaxime** | <0.00701 | <0.00300999999999 | <0.00237999999999 | <0.00634 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Chlortetracycline (CTC)** | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Cimetidine** | <0.0006 | <0.000588 | <0.0006 | <0.000566 | <0.000536 | <0.000517 | <0.000588 | <0.000545 |
| **Ciprofloxacin** | <0.0024 | <0.00237999999999 | <0.00247 | <0.00236 | <0.00256 | <0.00237999999999 | <0.00248 | <0.00373 |
| **Citalopram** | <0.000229 | <0.000159 | <0.000159 | <0.000234 | <0.000334 | <0.000189 | <0.00016 | <0.00016 |

**Table 57.** *(Continued)*

| Analyte | GEN_WOL-1 | GEN_WOL-2 | GEN_WOL-3 | GEN_WOL-4 | GEN_WOL-5 | GEN_WOL-6 | GEN_WOL-7 | GEN_WOL-8 |
|---|---|---|---|---|---|---|---|---|
| **Clarithromycin** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Clinafloxacin** | <0.00544 | <0.00383 | <0.00254 | <0.00389 | <0.00346 | <0.00354 | <0.00257 | <0.00311 |
| **Clonidine** | <0.0015 | <0.00147 | <0.0015 | <0.00142 | <0.00134 | <0.00129 | <0.00147 | <0.00136 |
| **Clotrimazole** | <0.00016 | <0.000159 | <0.000159 | <0.000157 | <0.00016 | <0.000159 | <0.00016 | <0.00016 |
| **Cloxacillin** | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Cocaine** | <0.00006 | <0.00005949999999 | <0.00005949999999 | <0.0000591 | <0.00006 | <0.00005949999999 | <0.00006 | <0.00006 |
| **Codeine** | <0.003 | <0.00294 | <0.003 | <0.00283 | <0.00268 | <0.00458 | <0.0261 | <0.00819999999999 |
| **Colchicine** | <0.00032 | <0.000481 | <0.00034399999999 | <0.000315 | <0.00032 | <0.000317 | <0.00032 | <0.000445 |
| **Cotinine** | <0.0015 | <0.00147 | <0.0015 | <0.00142 | <0.00134 | <0.00129 | <0.00147 | <0.00136 |
| **Cyclophosphamide** | <0.00032 | <0.000317 | <0.000317 | <0.000315 | <0.00032 | <0.000317 | <0.00032 | <0.00032 |
| **Daunorubicin** | <0.0032 | <0.00317 | <0.00317 | <0.00315 | <0.0032 | <0.00317 | <0.0032 | <0.0032 |
| **DEET** | 0.00181 | 0.00179 | 0.00128 | 0.00169 | 0.00185 | 0.00177 | 0.00185 | 0.00175 |
| **Dehydronifedipine** | <0.00024 | <0.00023799999999 | <0.00023799999999 | <0.000236 | <0.00024 | <0.00023799999999 | <0.00024 | <0.00024 |
| **Demeclocycline** | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| **Desmethyldiltiazem** | <0.00006 | <0.00005949999999 | <0.00005949999999 | <0.0000591 | <0.00006 | <0.00005949999999 | <0.00006 | <0.00006 |
| **Diatrizoic Acid** | <0.0096 | <0.00951999999999 | <0.013 | <0.00968 | <0.0096 | <0.0131 | <0.0096 | <0.0154 |
| **Diazepam** | <0.000211 | <0.00011899999999 | <0.00011899999999 | <0.000118 | <0.00012 | <0.00011899999999 | <0.00012 | <0.00012 |
| **Digoxigenin** | <0.0242 | <0.00861 | <0.0171 | <0.0103 | <0.0118 | <0.021 | <0.0109 | <0.0159 |
| **Digoxin** | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Diltiazem** | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.000118 | <0.00012 | <0.00011899999999 | <0.00012 | <0.00012 |
| **Diphenhydramine** | <0.00024 | <0.00023799999999 | <0.00023799999999 | <0.000236 | <0.00024 | <0.00023799999999 | <0.00024 | <0.00024 |
| **Doxorubicin** | <0.0096 | <0.00951999999999 | <0.00951999999999 | <0.00945 | <0.0096 | <0.00951999999999 | <0.0096 | <0.0096 |
| **Doxycycline** | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Drospirenone** | | | | | | | | |
| **Enalapril** | <0.0003 | <0.000294 | <0.0003 | <0.000283 | <0.000268 | <0.000259 | <0.000294 | <0.000273 |
| **Enrofloxacin** | <0.00132 | <0.00118999999999 | <0.00121 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Erythromycin H2O** | 0.000955 | 0.00105 | 0.00101 | 0.000997 | 0.000996 | <0.000913 | 0.00108 | 0.001 |
| **Etoposide** | <0.00143999999999 | <0.000794 | <0.000794 | <0.000787 | <0.0008 | <0.000794 | <0.000999 | <0.0008 |
| **Flumequine** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Fluocinonide** | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Fluoxetine** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.002 | <0.00198 | <0.002 | <0.002 |
| **Fluticasone propionate** | <0.0008 | <0.000794 | <0.000794 | <0.000787 | <0.0008 | <0.000794 | <0.0008 | <0.0008 |
| **Furosemide** | <0.016 | <0.0159 | <0.0159 | <0.0157 | <0.016 | <0.0159 | <0.016 | <0.016 |
| **Gemfibrozil** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Glipizide** | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Glyburide** | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Hydrochlorothiazide** | <0.008 | <0.00794 | <0.00794 | <0.00787 | <0.008 | <0.00794 | <0.008 | <0.008 |
| **Hydrocodone** | <0.0015 | <0.00147 | <0.0015 | <0.00142 | <0.00134 | <0.00129 | <0.00147 | <0.00136 |

**Table 57.** *(Continued)*

| Analyte | GEN_WOL-1 | GEN_WOL-2 | GEN_WOL-3 | GEN_WOL-4 | GEN_WOL-5 | GEN_WOL-6 | GEN_WOL-7 | GEN_WOL-8 |
|---|---|---|---|---|---|---|---|---|
| **Hydrocortisone** | <0.0229 | <0.0227 | <0.0227 | <0.0226 | <0.0229 | <0.0227 | <0.0229 | <0.0229 |
| **Ibuprofen** | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| **Iopamidol** | <0.0494 | <0.07959999999999 | <0.0779 | <0.0354 | <0.085 | <0.056 | <0.046 | <0.0674 |
| **Isochlortetracycline (ICTC)** | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Lincomycin** | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Lomefloxacin** | <0.00172 | <0.00153 | <0.00118999999999 | <0.00118 | <0.0012 | <0.0026 | <0.0012 | <0.00143 |
| **Medroxyprogesterone Acetate** | <0.0016 | <0.00159 | <0.00159 | <0.00157 | <0.0016 | <0.00159 | <0.0016 | <0.0016 |
| **Melphalan** | <0.0096 | <0.0103 | <0.0344 | <0.0296 | <0.0182 | <0.00951999999999 | <0.0301 | <0.0096 |
| **Meprobamate** | <0.00162 | <0.0016 | <0.0016 | <0.00159 | <0.00162 | <0.0016 | <0.00162 | <0.00162 |
| **Metformin** | <0.003 | <0.00294 | <0.003 | <0.00283 | <0.00268 | <0.00259 | <0.00294 | <0.00287 |
| **Methylprednisolone** | <0.00162 | <0.00609999999999 | <0.00252999999999 | <0.00159 | <0.00162 | <0.0016 | <0.00162 | <0.00162 |
| **Metoprolol** | <0.000606 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Metronidazole** | <0.0016 | <0.00159 | <0.00159 | <0.00157 | <0.0016 | <0.00159 | <0.00164 | <0.0016 |
| **Miconazole** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Minocycline** | <0.024 | <0.0238 | <0.0238 | <0.0236 | <0.024 | <0.0238 | <0.024 | <0.024 |
| **Moxifloxacin** | <0.0016 | <0.00159 | <0.00159 | <0.00157 | <0.0016 | <0.00159 | <0.0016 | <0.0016 |
| **Naproxen** | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Norfloxacin** | <0.00625 | <0.00645 | <0.00595 | <0.00729 | <0.006 | <0.00595 | <0.006 | <0.006 |
| **Norfluoxetine** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Norgestimate** | <0.00239 | <0.00214 | <0.0021 | <0.00228 | <0.00228 | <0.00165 | <0.00234 | <0.00193999999999 |
| **Norverapamil** | <0.00006 | <0.00005949999999 | <0.00005949999999 | <0.0000591 | <0.00006 | <0.00005949999999 | <0.00006 | <0.00006 |
| **Ofloxacin** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Ormetoprim** | <0.00024 | <0.00023799999999 | <0.00023799999999 | <0.000236 | <0.00024 | <0.00023799999999 | <0.00024 | <0.00024 |
| **Oxacillin** | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Oxazepam** | <0.0016 | <0.00159 | <0.00159 | <0.00157 | <0.0016 | <0.00159 | <0.0016 | <0.0016 |
| **Oxolinic Acid** | <0.000253 | <0.00023799999999 | <0.00023799999999 | <0.000236 | <0.00024 | <0.00023799999999 | <0.00024 | <0.00024 |
| **Oxycodone** | <0.0006 | <0.000588 | <0.0006 | <0.000566 | <0.000587 | <0.000517 | <0.000614 | <0.000656 |
| **Oxytetracycline (OTC)** | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Paroxetine** | <0.00162 | <0.0016 | <0.0016 | <0.00159 | <0.00162 | <0.0016 | <0.00162 | <0.00162 |
| **Penicillin G** | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Penicillin V** | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Prednisolone** | <0.0024 | <0.00409 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00276 | <0.0024 | <0.0024 |
| **Prednisone** | <0.008 | <0.0104 | <0.00927 | <0.00787 | <0.00884 | <0.00794 | <0.0109 | <0.0126 |
| **Promethazine** | <0.00016 | <0.000159 | <0.000159 | <0.000157 | <0.00016 | <0.000159 | <0.00016 | <0.00016 |
| **Propoxyphene** | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.000118 | <0.00012 | <0.00011899999999 | <0.00012 | <0.00012 |
| **Propranolol** | <0.0008 | <0.000794 | <0.000794 | <0.000787 | <0.0008 | <0.000794 | <0.0008 | <0.0008 |
| **Ranitidine** | <0.0006 | <0.000588 | <0.0006 | <0.000566 | <0.000536 | <0.000517 | <0.000588 | <0.000545 |
| **Rosuvastatin** | <0.0016 | <0.00159 | <0.00159 | <0.00157 | <0.0016 | <0.00159 | <0.0016 | <0.0016 |

**Table 57.** *(Continued)*

| Analyte | GEN WOL-1 | GEN WOL-2 | GEN WOL-3 | GEN WOL-4 | GEN WOL-5 | GEN WOL-6 | GEN WOL-7 | GEN WOL-8 |
|---|---|---|---|---|---|---|---|---|
| **Roxithromycin** | <0.000155 | <0.00011899999999 | <0.000148 | <0.000118 | <0.00012 | <0.00011899999999 | <0.00012 | <0.00012 |
| **Sarafloxacin** | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| **Sertraline** | 0.000703 | 0.000556 | 0.000582 | 0.000732 | 0.000566 | 0.000571 | 0.000647 | 0.000706 |
| **Simvastatin** | <0.008 | <0.00794 | <0.00794 | <0.00787 | <0.008 | <0.00794 | <0.008 | <0.008 |
| **Sulfachloropyridazine** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Sulfadiazine** | <0.0006 | 0.000631 | 0.000683 | 0.000649 | 0.000606 | 0.000643 | 0.000662 | 0.00066 |
| **Sulfadimethoxine** | <0.00012 | <0.00011899999999 | <0.00011899999999 | <0.000118 | <0.000137 | <0.00011899999999 | <0.000153 | <0.00025 |
| **Sulfamerazine** | <0.00024 | <0.00023799999999 | <0.00023799999999 | <0.000236 | <0.00024 | <0.000258 | <0.000243 | <0.000258 |
| **Sulfamethazine** | <0.00024 | <0.00023799999999 | <0.000275 | <0.000236 | <0.00024 | <0.00023799999999 | <0.00024 | <0.00024 |
| **Sulfamethizole** | <0.00039 | <0.00023799999999 | <0.000415 | <0.000348 | <0.00024 | <0.00023799999999 | <0.00024 | <0.00024 |
| **Sulfamethoxazole** | <0.00024 | <0.00023799999999 | <0.00023799999999 | <0.000236 | <0.000254 | <0.00023799999999 | <0.00024 | <0.00024 |
| **Sulfanilamide** | <0.006 | <0.00595 | <0.00595 | <0.00591 | <0.006 | <0.00595 | <0.006 | <0.006 |
| **Sulfathiazole** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Tamoxifen** | <0.00016 | <0.000159 | <0.000159 | <0.000157 | <0.00016 | <0.000159 | <0.00016 | <0.00016 |
| **Teniposide** | <0.0016 | <0.00159 | <0.00211 | <0.00223 | <0.00426999999999 | <0.00159 | <0.00202 | 0.00225 |
| **Tetracycline (TC)** | <0.0024 | <0.00237999999999 | <0.00237999999999 | <0.00236 | <0.0024 | <0.00237999999999 | <0.0024 | <0.0024 |
| **Theophylline** | <0.024 | <0.0238 | <0.0238 | <0.0236 | <0.024 | <0.0238 | <0.024 | <0.024 |
| **Thiabendazole** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Trenbolone** | <0.00162 | <0.0016 | <0.0016 | <0.00159 | <0.00162 | <0.0016 | <0.00162 | <0.00162 |
| **Trenbolone acetate** | <0.00017 | <0.00014 | <0.000125 | <0.000122 | <0.000135 | <0.000135 | <0.000128 | <0.000147 |
| **Triamterene** | <0.0003 | <0.000294 | <0.0003 | <0.000283 | <0.000268 | <0.000259 | <0.000294 | <0.000273 |
| **Triclocarban** | <0.0012 | <0.00118999999999 | <0.00118999999999 | <0.00118 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Triclosan** | <0.024 | <0.0238 | <0.0238 | <0.0236 | <0.024 | <0.0238 | <0.024 | <0.024 |
| **Trimethoprim** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Tylosin** | <0.00359 | <0.00274 | <0.00285 | <0.00268 | <0.00271 | <0.00237999999999 | <0.0024 | <0.00273 |
| **Valsartan** | <0.00162 | <0.0016 | <0.0016 | <0.00159 | <0.00162 | <0.0016 | <0.00162 | <0.00162 |
| **Venlafaxine** | <0.00032 | <0.000317 | <0.000317 | <0.000315 | <0.00032 | <0.000317 | <0.00032 | <0.00032 |
| **Verapamil** | <0.00006 | <0.00005949999999 | <0.00005949999999 | <0.0000591 | <0.00006 | <0.00005949999999 | <0.00006 | <0.00006 |
| **Virginiamycin M1** | <0.00149 | <0.00118999999999 | <0.00118999999999 | <0.00133 | <0.0012 | <0.00118999999999 | <0.0012 | <0.0012 |
| **Warfarin** | <0.0006 | <0.00059499999999 | <0.00059499999999 | <0.00059099999999 | <0.0006 | <0.00059499999999 | <0.0006 | <0.0006 |
| **Zidovudine** | <0.0168 | <0.0321 | <0.0387 | <0.025 | <0.0259 | <0.0293 | <0.0374 | <0.0253 |

**Table 58.** Carcass tissue chemistry analytical results at the transition to exogenous feeding for KEW and MIL samples from 2018. Concentrations are reported in parts per million wet weight except for lipid and moisture, which are reported as percentages. Blank values indicate insufficient sample mass for analysis.

| Analyte | KEW 1 | KEW 2 | KEW 3 | KEW 4 | KEW 5 | KEW 6 | KEW 7 | KEW 8 |
|---|---|---|---|---|---|---|---|---|
| **% Lipid** | 4.57 | 4.20 | 2.59 | 3.62 | 2.71 | 3.31 | 2.23 | 3.33 |
| **10-hydroxy-amitriptyline** | 0.000146 | 0.000122 | 0.00022 | 0.000129 | 0.000116 | 0.000117 | 0.000104 | 0.000125 |
| **1,7 Dimethylxanthine** | <0.0233 | <0.0236 | <0.0234 | <0.0234 | <0.024 | 0.0428 | 0.0268 | <0.024 |
| **2-Hydroxy-ibuprofen** | <0.031 | <0.0315 | <0.0313 | <0.0313 | <0.032 | <0.0325 | <0.0325 | <0.032 |
| **4-Epianhydrochlortetracycline** | <0.0233 | <0.0236 | <0.0234 | <0.0234 | <0.024 | <0.02439999999999 | <0.02439999999999 | <0.024 |
| **4-Epianhydrotetracycline (EATC)** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **4 Epichlortetracycline (ECTC)** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **4-Epioxytetracycline (EOTC)** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **4 Epitetracycline (ETC)** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Acetaminophen** | <0.00581 | <0.00598 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00713 | <0.006 |
| **Albuterol** | <0.000294 | <0.0003 | <0.000263 | <0.000288 | <0.000263 | <0.000306 | <0.000254 | <0.000306 |
| **Alprazolam** | <0.000116 | <0.000118 | <0.000117 | <0.000117 | <0.00012 | <0.000122 | <0.000122 | <0.00012 |
| **Amitriptyline** | 0.000201 | 0.000239 | 0.000183 | 0.000175 | 0.000157 | 0.00022 | 0.000133 | 0.000189 |
| **Amlodipine** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Amphetamine** | 0.00355 | 0.00481 | 0.0015 | 0.00176 | <0.00132 | <0.00153 | <0.00127 | <0.00153 |
| **Amsacrine** | <0.000031 | <0.0000315 | <0.0000313 | <0.0000325 | <0.000032 | <0.0000325 | <0.0000325 | <0.000032 |
| **Anhydrochlortetracycline (ACTC)** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **Anhydrotetracycline (ATC)** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **Atenolol** | <0.000588 | <0.0006 | <0.000526 | <0.00057699999999 | <0.00103 | <0.000717 | <0.000538 | <0.000667 |
| **Atorvastatin** | <0.00147 | <0.0015 | <0.00132 | <0.00143999999999 | <0.00132 | <0.00153 | <0.00127 | <0.00153 |
| **Azathioprine** | <0.000775 | <0.000787 | <0.000781 | <0.000781 | <0.0008 | <0.00081299999999 | <0.00081299999999 | <0.0008 |
| **Azithromycin** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **BDE# 10** | <0.000000336 | <0.00000037799999 | <0.000000352 | <0.000000246 | <0.00000018899999 | <0.000000192 | <0.000000207 | <0.00000018 |
| **BDE# 100** | 0.000494 | 0.000446 | 0.000576 | 0.000446 | 0.000393 | 0.000469 | 0.000294 | 0.000201 |
| **BDE# 105** | <0.00000178 | <0.00000167999999 | <0.00000138 | <0.00000138 | <0.000000785 | <0.00000104 | <0.00000106 | <0.00000129 |
| **BDE# 116** | <0.00000222 | <0.0000021 | <0.00000171999999 | <0.00000171999999 | <0.000000936 | <0.00000129 | <0.00000146 | <0.0000016 |
| **BDE# 119/120** | 0.00002539999999 | 0.00002249999999 | 0.0000163 | 0.0000163 | 0.0000138 | 0.00001649999999 | 0.0000178 | 0.00002589999999 |
| **BDE# 12/13** | 0.000000895 | 0.00000142 | 0.000000805 | 0.000000653 | 0.000000553 | 0.000000614 | 0.000000355 | 0.00000051499999 |
| **BDE# 126** | 0.0000024 | 0.00000267 | 0.00000155999999 | 0.00000122999999 | 0.00000141 | 0.00000173 | 0.00000562999999 | 0.00000354999999 |
| **BDE# 128** | 0.00000138 | 0.00000132 | 0.00000087699999 | 0.000000642 | <0.00000018899999 | 0.00000019499999 | 0.00000120999999 | 0.000000906 |
| **BDE# 138/166** | 0.000000338 | 0.000000606 | 0.000000277 | 0.000000276 | <0.00000018899999 | 0.000000324 | <0.000000197 | <0.00000018 |
| **BDE# 140** | 0.00000107 | 0.000000989 | 0.00000116 | 0.00000036 | 0.000000216 | 0.000000397 | 0.000000407 | 0.00000040799999 |
| **BDE# 15** | 0.00000411 | 0.0000047 | 0.00000375999999 | 0.0000039 | 0.00000213 | 0.00000276999999 | 0.00000161 | 0.00000252 |
| **BDE# 153** | 0.0000914 | 0.0000773 | 0.0000837 | 0.0000465 | 0.0000336 | 0.0000378 | 0.0000431 | 0.00004129999999 |
| **BDE# 154** | 0.000177 | 0.000153 | 0.000131 | 0.000135 | 0.000094 | 0.000108 | 0.00009929999999 | 0.000203 |
| **BDE# 155** | 0.000119 | 0.000114 | 0.000059 | 0.0000645 | 0.0000699 | 0.0000808 | 0.0000682 | 0.000172 |
| **BDE# 17/25** | 0.00005379999999 | 0.00005239999999 | 0.0000456 | 0.0000417 | 0.0000303 | 0.0000325 | 0.0000271 | 0.00002539999999 |
| **BDE# 181** | 0.00000058399999 | 0.000000782 | <0.00000175999999 | <0.000000246 | <0.00000018899999 | <0.000000192 | 0.00000036099999 | 0.000000642 |
| **BDE# 183** | 0.00000201999999 | 0.00000311999999 | 0.00000529999999 | 0.00000252999999 | 0.000000888 | 0.000000934 | 0.00000350999999 | 0.00000138 |
| **BDE# 190** | <0.000000336 | 0.00000083199999 | 0.00000260999999 | <0.000000246 | <0.00000018899999 | 0.00000042099999 | <0.000000229 | 0.00000048799999 |
| **BDE# 203** | 0.000006 | 0.00001269999999 | 0.0000318 | 0.00000210999999 | 0.00000206 | 0.0000103 | 0.0000107 | 0.00000437 |
| **BDE# 206** | 0.0000185 | 0.0000625 | 0.000199 | 0.0000113 | 0.0000177 | 0.0000774 | 0.00007809999999 | 0.0000114 |
| **BDE# 207** | 0.0000305 | 0.00009809999999 | 0.000378 | 0.0000221 | 0.0000176 | 0.0000719 | 0.000133 | 0.0000196 |
| **BDE# 208** | 0.0000199 | 0.0000542 | 0.000273 | 0.0000206 | 0.0000119 | 0.0000548 | 0.0000934 | 0.00000100999999 |
| **BDE# 209** | 0.000336 | 0.000927 | 0.00323 | 0.000182 | 0.000146 | 0.000655 | 0.00106 | 0.00034 |
| **BDE# 28/33** | 0.000185 | 0.000174 | 0.000281 | 0.000403 | 0.000191 | 0.0002 | 0.000116 | 0.000128 |
| **BDE# 30** | <0.00000138999999 | <0.00000173 | <0.0000016 | <0.00000086399999 | <0.000000807 | <0.000000661 | <0.000000848 | <0.000000611 |
| **BDE# 32** | 0.00000216 | 0.00000175 | <0.00000124 | 0.00000122999999 | 0.00000121 | 0.00000142 | 0.00000079 | 0.00000173 |
| **BDE# 35** | 0.00000198 | 0.00000293 | 0.00000289999999 | 0.00000316999999 | 0.00000154 | 0.00000201 | 0.00000104 | 0.00000120999999 |

**Table 58.** *(Continued)*

| Analyte | KEW 1 | KEW 2 | KEW 3 | KEW 4 | KEW 5 | KEW 6 | KEW 7 | KEW 8 |
|---|---|---|---|---|---|---|---|---|
| **BDE# 37** | 0.000000933 | <0.00000112 | <0.00000102999999 | 0.00000111 | <0.000000534 | <0.00000042799999 | <0.000000549 | 0.00000068799999 |
| **BDE# 47** | 0.00218 | 0.00203 | 0.00361 | 0.00199 | 0.0015 | 0.00179 | 0.00139 | 0.0008 |
| **BDE# 49** | 0.000891 | 0.000815 | 0.000764 | 0.00066 | 0.000601 | 0.000726 | 0.00051 | 0.000261 |
| **BDE# 51** | 0.0000968 | 0.00008809999999 | 0.0000637 | 0.0000605 | 0.0000542 | 0.00005879999999 | 0.00005079999999 | 0.00004639999999 |
| **BDE# 66** | 0.0000255 | 0.0000281 | 0.0000467 | 0.0000208 | 0.0000155 | 0.000016 | 0.0000171 | 0.0000148 |
| **BDE# 7** | 0.0000011 | 0.00000162 | 0.00000118 | 0.00000124 | 0.000000514 | 0.000000802 | 0.00000068799999 | 0.00000073599999 |
| **BDE# 71** | 0.0000241 | 0.00002749999999 | 0.0000241 | 0.00002319999999 | 0.0000171 | 0.00002369999999 | 0.0000164 | 0.00000893999999 |
| **BDE# 75** | 0.00000583 | 0.00000500999999 | 0.00000538999999 | 0.00000576999999 | 0.00000398 | 0.00000411 | 0.00000354999999 | 0.00000307999999 |
| **BDE# 77** | 0.000000566 | 0.000000455 | <0.000000201 | <0.000000246 | <0.00000018899999 | <0.000000192 | <0.000000197 | <0.00000018 |
| **BDE# 79** | 0.00000389 | 0.00000597 | <0.000000201 | 0.00000746 | 0.00000462 | 0.00000366 | 0.00000339999999 | 0.00000202999999 |
| **BDE# 8/11** | 0.00000179 | 0.00000189 | 0.00000156 | 0.00000149 | 0.000000852 | 0.00000091 | 0.000000769 | 0.00000114999999 |
| **BDE# 85** | <0.00000137 | <0.00000129 | <0.00000106 | <0.00000106 | <0.000000576 | <0.000000796 | <0.00000083699999 | <0.000000986 |
| **BDE# 99** | 0.0000735 | 0.00008209999999 | 0.000111 | 0.00005329999999 | 0.0000307 | 0.00003329999999 | 0.0000577 | 0.0000253 |
| **Benzoylecgonine** | <0.000116 | <0.000118 | <0.000117 | <0.000117 | <0.00012 | <0.000122 | <0.000122 | <0.00012 |
| **Benztropine** | <0.000194 | <0.000197 | <0.000195 | <0.000195 | <0.0002 | <0.000203 | <0.000203 | <0.0002 |
| **Betamethasone** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Bisphenol A** | <0.194 | <0.197 | <0.195 | <0.195 | <0.2 | <0.203 | <0.203 | <0.2 |
| **Busulfan** | <0.00482 | <0.0027 | <0.00156 | <0.00334 | <0.0016 | <0.00163 | <0.00163 | <0.00181 |
| **Caffeine** | 0.0166 | 0.0122 | <0.00586 | <0.00586 | <0.006 | 0.00854 | 0.00949 | 0.00653 |
| **Carbadox** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Carbamazepine** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Cefotaxime** | <0.00434 | <0.0026 | <0.00577 | <0.00424 | <0.00311 | <0.00883 | <0.00378 | <0.0024 |
| **Chlortetracycline (CTC)** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Cimetidine** | <0.000588 | <0.0006 | <0.000526 | <0.00057699999999 | <0.000526 | <0.000612 | <0.000508 | <0.000612 |
| **Ciprofloxacin** | <0.00267 | <0.00321 | <0.00339 | <0.00234 | <0.0024 | <0.00244 | <0.00269 | <0.0024 |
| **Citalopram** | 0.000236 | <0.000192 | 0.000173 | <0.000156 | <0.00016 | <0.000163 | <0.000163 | <0.000332 |
| **Clarithromycin** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Clinafloxacin** | <0.00549 | <0.00505 | <0.00633 | <0.00336 | <0.00359 | <0.00443 | <0.00307 | <0.00308 |
| **Clonidine** | <0.00147 | <0.0015 | <0.00132 | <0.00143999999999 | <0.00132 | <0.00153 | <0.00127 | <0.00153 |
| **Clotrimazole** | <0.000155 | <0.000157 | <0.000156 | <0.000156 | <0.00016 | <0.000163 | <0.000163 | <0.00016 |
| **Cloxacillin** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Cocaine** | 0.0000907 | <0.0000591 | <0.0000586 | <0.0000586 | <0.00006 | <0.000061 | <0.000061 | <0.00006 |
| **Codeine** | <0.00294 | <0.003 | <0.00263 | <0.00479 | <0.00263 | <0.00306 | <0.00254 | <0.00306 |
| **Colchicine** | <0.00031 | <0.000315 | <0.000313 | <0.000313 | <0.00032 | <0.000325 | <0.000325 | <0.00032 |
| **Cotinine** | <0.00147 | <0.0015 | <0.00132 | <0.00143999999999 | <0.00132 | <0.00153 | <0.00127 | <0.00153 |
| **Cyclophosphamide** | <0.00031 | <0.000315 | <0.000313 | <0.000313 | <0.00032 | <0.000325 | <0.000325 | <0.00032 |
| **Daunorubicin** | <0.0031 | <0.00315 | <0.00313 | <0.00313 | <0.0032 | <0.00325 | <0.00325 | <0.0032 |
| **DEET** | 0.00418 | 0.00318 | 0.00206 | 0.00318 | 0.00152 | 0.00177 | 0.00352 | 0.00249 |
| **Dehydronifedipine** | <0.000233 | <0.000236 | <0.000234 | <0.000234 | <0.00024 | <0.000244 | <0.000244 | <0.00024 |
| **Demeclocycline** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **Desmethyldiltiazem** | <0.0000581 | <0.0000591 | <0.0000586 | <0.0000586 | <0.00006 | <0.000061 | <0.000061 | <0.00006 |
| **Diatrizoic Acid** | <0.0124 | <0.0131 | <0.0113 | <0.00938 | <0.0146 | <0.00976 | <0.00976 | <0.0096 |
| **Diazepam** | <0.000116 | <0.000118 | <0.000117 | <0.000117 | <0.00012 | <0.000122 | <0.000122 | <0.00012 |
| **Digoxigenin** | <0.0274 | <0.102 | <0.0442 | <0.0355 | <0.0162 | <0.0286 | <0.0795 | <0.0144 |
| **Digoxin** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Diltiazem** | <0.000121 | <0.000118 | <0.000117 | <0.000117 | <0.00012 | <0.000122 | <0.000122 | <0.00012 |
| **Diphenhydramine** | <0.000233 | <0.000236 | <0.000234 | <0.000234 | <0.00024 | <0.000244 | <0.000244 | <0.00024 |
| **Doxorubicin** | <0.0093 | <0.00945 | <0.00938 | <0.00938 | <0.0096 | <0.00976 | <0.00976 | <0.0096 |
| **Doxycycline** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Drospirenone** | | | | | | | | |

**Table 58.** *(Continued)*

| Analyte | KEW 1 | KEW 2 | KEW 3 | KEW 4 | KEW 5 | KEW 6 | KEW 7 | KEW 8 |
|---|---|---|---|---|---|---|---|---|
| **Enalapril** | <0.000294 | <0.0003 | <0.000263 | <0.000288 | <0.000263 | <0.000306 | <0.000254 | <0.000306 |
| **Enrofloxacin** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Erythromycin H2O** | <0.000891 | <0.000906 | <0.000898 | <0.000898 | <0.00092 | <0.000935 | <0.000935 | <0.00092 |
| **Etoposide** | <0.000775 | <0.00104 | <0.000781 | <0.000781 | <0.000857 | <0.00081299999999 | <0.000861 | <0.0008 |
| **Flumequine** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Fluocinonide** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Fluoxetine** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Fluticasone propionate** | <0.000775 | <0.000787 | <0.000781 | <0.000781 | <0.0008 | <0.00081299999999 | <0.00081299999999 | <0.0008 |
| **Furosemide** | <0.0155 | <0.0157 | <0.0156 | <0.0156 | <0.016 | <0.0163 | <0.0163 | <0.016 |
| **Gemfibrozil** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Glipizide** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Glyburide** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Hydrochlorothiazide** | <0.00775 | <0.00787 | <0.00781 | <0.00781 | <0.008 | <0.00813 | <0.00813 | <0.008 |
| **Hydrocodone** | <0.00147 | <0.0015 | <0.00132 | <0.00143999999999 | <0.00132 | <0.00153 | <0.00127 | <0.00153 |
| **Hydrocortisone** | <0.0222 | <0.0226 | <0.0224 | <0.0224 | <0.0229 | <0.0233 | <0.0233 | <0.0229 |
| **Ibuprofen** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **Iopamidol** | <0.0847 | <0.0737 | <0.127 | <0.07529999999999 | <0.233 | <0.0634 | <0.074 | <0.0363 |
| **Isochlortetracycline (ICTC)** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Lincomycin** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Lomefloxacin** | <0.00188 | <0.0017 | <0.00147 | <0.00146 | <0.00136 | <0.00175 | <0.00127 | <0.00146 |
| **Medroxyprogesterone Acetate** | <0.00155 | <0.00157 | <0.00156 | <0.00156 | <0.0016 | <0.00163 | <0.00163 | <0.0016 |
| **Melphalan** | <0.0093 | <0.013 | <0.00938 | <0.0129 | <0.0149 | <0.00976 | <0.00976 | <0.0096 |
| **Meprobamate** | <0.00157 | <0.00159 | <0.00158 | <0.00158 | <0.00162 | <0.00164 | <0.00164 | <0.00162 |
| **Metformin** | <0.00294 | <0.003 | <0.00263 | <0.00287999999999 | <0.00263 | <0.00306 | <0.00254 | <0.00306 |
| **Methylprednisolone** | <0.00157 | <0.00159 | <0.00158 | <0.00158 | <0.0027 | <0.00164 | <0.00164 | <0.00162 |
| **Metoprolol** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Metronidazole** | <0.00155 | <0.00157 | <0.00156 | <0.00156 | <0.0016 | <0.00163 | <0.00163 | <0.0016 |
| **Miconazole** | <0.000647 | <0.000621 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Minocycline** | <0.0233 | <0.0236 | <0.0234 | <0.0234 | <0.024 | <0.02439999999999 | <0.02439999999999 | <0.024 |
| **Moxifloxacin** | <0.00155 | <0.00157 | <0.00156 | <0.00156 | <0.0016 | <0.00163 | <0.00163 | <0.0016 |
| **Naproxen** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Norfloxacin** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **Norfluoxetine** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Norgestimate** | <0.00423 | <0.00411 | <0.00317 | <0.00246 | <0.00183 | <0.00189 | <0.00168999999999 | <0.00185 |
| **Norverapamil** | <0.0000581 | <0.0000591 | <0.0000586 | <0.0000586 | <0.00006 | <0.000061 | <0.000061 | <0.00006 |
| **Ofloxacin** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Ormetoprim** | <0.000233 | <0.000236 | <0.000234 | <0.000234 | <0.00024 | <0.000244 | <0.000244 | <0.00024 |
| **Oxacillin** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Oxazepam** | <0.00155 | <0.00157 | <0.00156 | <0.00156 | <0.0016 | <0.00163 | <0.00163 | <0.0016 |
| **Oxolinic Acid** | <0.000331 | <0.000332 | <0.000254 | <0.00028 | <0.000311 | <0.000244 | <0.000244 | <0.00024 |
| **Oxycodone** | <0.000588 | <0.0006 | <0.000526 | <0.00057699999999 | <0.000526 | <0.000612 | <0.000508 | <0.000612 |
| **Oxytetracycline (OTC)** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Paroxetine** | <0.00157 | <0.00159 | <0.00158 | <0.00158 | <0.00162 | <0.00164 | <0.00164 | <0.00162 |
| **Penicillin G** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Penicillin V** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Prednisolone** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Prednisone** | 0.0566 | <0.00787 | <0.0105 | <0.0089 | <0.0123 | 0.0185 | <0.00968999999999 | <0.0116 |
| **Promethazine** | <0.000155 | <0.000157 | <0.000156 | <0.000156 | <0.00016 | <0.000163 | <0.000163 | <0.00016 |
| **Propoxyphene** | <0.000116 | <0.000118 | <0.000117 | <0.000117 | <0.00012 | <0.000122 | <0.000122 | <0.00012 |

**Table 58.** (*continued*)

| Analyte | KEW 1 | KEW 2 | KEW 3 | KEW 4 | KEW 5 | KEW 6 | KEW 7 | KEW 8 |
|---|---|---|---|---|---|---|---|---|
| **Propranolol** | <0.000775 | <0.000787 | <0.000781 | <0.000781 | <0.0008 | <0.00081299999999 | <0.00081299999999 | <0.0008 |
| **Ranitidine** | <0.000588 | <0.0006 | <0.000526 | <0.00057699999999 | <0.000526 | <0.000612 | <0.000508 | <0.000612 |
| **Rosuvastatin** | <0.00155 | <0.00157 | <0.00156 | <0.00156 | <0.0016 | <0.00163 | <0.00163 | <0.0016 |
| **Roxithromycin** | <0.000116 | <0.000118 | <0.000117 | <0.000117 | <0.00012 | <0.000122 | <0.000122 | <0.00012 |
| **Sarafloxacin** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **Sertraline** | 0.000756 | 0.000757 | 0.000944 | 0.000888 | 0.000511 | 0.000638 | 0.000543 | 0.000543 |
| **Simvastatin** | <0.00775 | <0.00787 | <0.00781 | <0.00781 | <0.008 | <0.00813 | <0.00813 | <0.008 |
| **Sulfachloropyridazine** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Sulfadiazine** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Sulfadimethoxine** | <0.000116 | <0.000144 | <0.00012 | <0.000117 | <0.00012 | <0.000122 | <0.000122 | <0.00012 |
| **Sulfamerazine** | <0.000266 | <0.000375 | <0.000289 | <0.000274 | <0.00024 | <0.000244 | <0.000303 | <0.000267 |
| **Sulfamethazine** | <0.000233 | <0.000236 | <0.000234 | <0.000234 | <0.00024 | <0.000244 | <0.000244 | <0.00024 |
| **Sulfamethizole** | <0.000233 | <0.000236 | <0.000234 | <0.000234 | <0.00024 | <0.000244 | <0.000244 | <0.00024 |
| **Sulfamethoxazole** | <0.000233 | <0.000236 | <0.000234 | <0.000234 | <0.00024 | <0.000244 | <0.000244 | <0.00024 |
| **Sulfanilamide** | <0.00581 | <0.00591 | <0.00586 | <0.00586 | <0.006 | <0.00609999999999 | <0.00609999999999 | <0.006 |
| **Sulfathiazole** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Tamoxifen** | <0.000155 | <0.000157 | <0.000156 | <0.000156 | <0.00016 | <0.000163 | <0.000163 | <0.00016 |
| **Teniposide** | <0.00155 | <0.00157 | <0.00313 | <0.00156 | <0.0016 | <0.00163 | <0.00163 | <0.0016 |
| **Tetracycline (TC)** | <0.00233 | <0.00236 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Theophylline** | <0.0233 | <0.0236 | <0.0234 | <0.0234 | <0.024 | <0.02439999999999 | <0.02439999999999 | <0.024 |
| **Thiabendazole** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Trenbolone** | <0.00157 | <0.00159 | <0.00158 | <0.00158 | <0.00162 | <0.00164 | <0.00164 | <0.00162 |
| **Trenbolone acetate** | <0.000155 | <0.000127 | <0.000191 | <0.000117 | <0.00012 | <0.000139 | <0.000135 | <0.000126 |
| **Triamterene** | <0.000294 | <0.0003 | <0.000263 | <0.000288 | <0.000263 | <0.000306 | <0.000254 | <0.000306 |
| **Triclocarban** | <0.00116 | <0.00118 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Triclosan** | <0.0233 | <0.0236 | <0.0234 | <0.0234 | <0.024 | <0.02439999999999 | <0.02439999999999 | <0.024 |
| **Trimethoprim** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Tylosin** | <0.00233 | <0.00296 | <0.00234 | <0.00234 | <0.0024 | <0.00244 | <0.00244 | <0.0024 |
| **Valsartan** | <0.00157 | <0.00159 | <0.00158 | <0.00158 | <0.00162 | <0.00164 | <0.00164 | <0.00162 |
| **Venlafaxine** | <0.00031 | <0.000315 | <0.000313 | <0.000313 | <0.00032 | <0.000325 | <0.000325 | <0.00032 |
| **Verapamil** | <0.0000581 | <0.0000591 | <0.0000586 | <0.0000586 | <0.00006 | <0.000061 | <0.000061 | <0.00006 |
| **Virginiamycin M1** | <0.00116 | <0.00139 | <0.00117 | <0.00117 | <0.0012 | <0.00122 | <0.00122 | <0.0012 |
| **Warfarin** | <0.00058099999999 | <0.00059099999999 | <0.00058599999999 | <0.00058599999999 | <0.0006 | <0.00061 | <0.00061 | <0.0006 |
| **Zidovudine** | <0.0269 | <0.03 | <0.019 | <0.0167 | <0.013 | <0.0227 | <0.0105 | <0.038 |

**Table 58.** (*continued*)

| Analyte | KEW 1 | KEW 2 | KEW 3 | KEW 4 | KEW 5 | KEW 6 | KEW 7 | KEW 8 |
|---|---|---|---|---|---|---|---|---|
| **% Lipid** | 8.05 | 7.51 | 7.92 | 7.99 | 6.91 | 7.62 | 6.15 | 7.95 |
| **10-hydroxy-amitriptyline** | 0.000311 | 0.000246 | <0.000185 | 0.000219 | 0.000177 | 0.000274 | 0.000254 | 0.000206 |
| **1,7 Dimethylxanthine** | <0.0242 | <0.02439999999999 | <0.0242 | <0.0238 | <0.0238 | <0.0233 | <0.0238 | <0.0233 |
| **2-Hydroxy-ibuprofen** | <0.03229999999999 | <0.0325 | <0.03229999999999 | <0.0317 | <0.0317 | <0.031 | <0.0317 | <0.031 |
| **4-Epianhydrochlortetracycline** | <0.0242 | <0.02439999999999 | <0.0242 | <0.0238 | <0.0238 | <0.0233 | <0.0238 | <0.0233 |
| **4-Epianhydrotetracycline (EATC)** | <0.00605 | <0.00609999999999 | <0.00605 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **4 Epichlortetracycline (ECTC)** | <0.00605 | <0.00609999999999 | <0.00605 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **4-Epioxytetracycline (EOTC)** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **4 Epitetracycline (ETC)** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Acetaminophen** | <0.00605 | <0.00609999999999 | <0.00605 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00667 |
| **Albuterol** | <0.000283 | <0.000278 | <0.000294 | <0.0003 | <0.0003 | <0.000288 | <0.000273 | <0.000306 |
| **Alprazolam** | <0.000121 | <0.000122 | <0.000121 | <0.00011899999999 | <0.00011899999999 | <0.000116 | <0.00011899999999 | <0.000116 |
| **Amitriptyline** | 0.000998 | 0.001 | 0.00123 | 0.000913 | 0.00117 | 0.000966 | 0.000866 | 0.00105 |
| **Amlodipine** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Amphetamine** | 0.00243 | 0.0062 | 0.00219 | 0.0018 | <0.0015 | <0.00143999999999 | 0.00232 | <0.00153 |
| **Amsacrine** | <0.000103 | <0.0000518 | <0.0000427 | <0.0000368 | <0.0000534 | <0.0000443 | <0.0000369 | <0.000036 |
| **Anhydrochlortetracycline (ACTC)** | <0.00605 | <0.00609999999999 | <0.00605 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **Anhydrotetracycline (ATC)** | <0.00605 | <0.00609999999999 | <0.00605 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **Atenolol** | <0.000566 | <0.000556 | <0.000588 | <0.0006 | <0.0006 | <0.00057699999999 | <0.000545 | <0.000612 |
| **Atorvastatin** | <0.00142 | <0.00139 | <0.00147 | <0.0015 | <0.0015 | <0.00143999999999 | <0.00136 | <0.00153 |
| **Azathioprine** | <0.000806 | <0.000842 | <0.000806 | <0.000794 | <0.000794 | <0.000775 | <0.000794 | <0.000775 |
| **Azithromycin** | 0.00147 | <0.000668 | <0.00126 | 0.000603 | <0.00059499999999 | 0.00158 | <0.00059499999999 | 0.00158 |
| **BDE# 10** | <0.000000295 | <0.000000228 | <0.000000243 | <0.00000023 | <0.00000023 | <0.000000232 | <0.000000229 | <0.000000229 |
| **BDE# 100** | 0.00086 | 0.000535 | 0.000588 | 0.000534 | 0.00045 | 0.000535 | 0.000398 | 0.000524 |
| **BDE# 105** | <0.00000126 | <0.00000128 | <0.0000012 | <0.00000155999999 | <0.00000124 | <0.00000092 | <0.00000163999999 | <0.000000885 |
| **BDE# 116** | <0.00000163999999 | <0.0000015 | <0.00000140999999 | <0.00000182 | <0.00000144999999 | <0.00000108 | <0.00000192 | <0.00000102999999 |
| **BDE# 119/120** | 0.00002039999999 | 0.00001899999999 | 0.0000191 | 0.0000186 | 0.0000128 | 0.000018 | 0.0000135 | 0.0000166 |
| **BDE# 12/13** | 0.00000249999999 | 0.00000213 | 0.00000223 | 0.00000248 | 0.00000177 | 0.00000194 | 0.00000142 | 0.00000204 |
| **BDE# 126** | 0.00000303999999 | 0.00000343999999 | 0.00000425 | 0.00000398 | 0.00000132 | 0.00000260999999 | 0.00000223 | 0.00000308999999 |
| **BDE# 128** | 0.00000331 | 0.0000015 | 0.000000918 | 0.00000116 | 0.00000129 | 0.00000144 | 0.00000100999999 | 0.0000012 |
| **BDE# 138/166** | 0.00000029699999 | <0.000000228 | <0.000000243 | <0.00000023 | 0.000000727 | 0.00000035399999 | <0.000000229 | <0.000000229 |
| **BDE# 140** | 0.000000957 | 0.00000023599999 | <0.000000243 | <0.00000023 | 0.000000651 | 0.000000419 | 0.000000401 | 0.000000342 |
| **BDE# 15** | 0.00001319999999 | 0.00000883 | 0.0000103 | 0.00000953999999 | 0.00000762 | 0.00000908 | 0.00000691 | 0.00000901 |
| **BDE# 153** | 0.000123 | 0.0000521 | 0.0000602 | 0.000058 | 0.0000454 | 0.0000618 | 0.0000412 | 0.0000626 |
| **BDE# 154** | 0.000194 | 0.000121 | 0.000134 | 0.000131 | 0.000112 | 0.00014 | 0.0000992 | 0.000136 |
| **BDE# 155** | 0.0000378 | 0.00004889999999 | 0.0000477 | 0.00005249999999 | 0.000023 | 0.0000327 | 0.000037 | 0.0000422 |
| **BDE# 17/25** | 0.00006409999999 | 0.00004299999999 | 0.00004679999999 | 0.00004249999999 | 0.00003379999999 | 0.00004049999999 | 0.000031 | 0.0000391 |
| **BDE# 181** | <0.000000295 | <0.000000228 | <0.000000243 | <0.00000023 | 0.00000050499999 | <0.000000232 | <0.000000229 | <0.000000229 |
| **BDE# 183** | 0.00000327 | 0.00000122999999 | 0.0000016 | 0.00000196 | 0.00000335 | 0.00000327999999 | 0.00000239 | 0.00000314 |
| **BDE# 190** | <0.000000295 | <0.000000228 | <0.000000243 | <0.00000023 | 0.00000122 | <0.000000232 | <0.000000229 | <0.00000031599999 |
| **BDE# 203** | 0.00000426 | 0.00000227 | 0.00000318 | 0.00000223 | 0.000013 | 0.00000349 | 0.00000436 | 0.00000374999999 |
| **BDE# 206** | 0.00001469999999 | 0.00000356999999 | 0.00000921 | 0.00000491999999 | 0.00004689999999 | 0.00002089999999 | 0.0000205 | 0.0000151 |
| **BDE# 207** | 0.0000273 | 0.00000778 | 0.00001619999999 | 0.00001169999999 | 0.000083 | 0.00002439999999 | 0.0000315 | 0.0000188 |
| **BDE# 208** | 0.0000155 | 0.00000596 | 0.00000888 | 0.00000606 | 0.0000632 | 0.00001459999999 | 0.0000176 | 0.0000119 |
| **BDE# 209** | 0.000148 | 0.0000662 | 0.000118 | 0.00008609999999 | 0.000692 | 0.000205 | 0.000265 | 0.00018 |
| **BDE# 28/33** | 0.000574 | 0.000337 | 0.000374 | 0.00035 | 0.000293 | 0.000334 | 0.000256 | 0.000334 |
| **BDE# 30** | <0.00000116999999 | <0.00000061 | <0.00000108 | <0.00000067 | <0.00000084699999 | <0.000000533 | <0.00000108 | <0.00000059399999 |
| **BDE# 32** | 0.00000399 | 0.00000298 | 0.00000314 | 0.00000285 | 0.00000236 | 0.00000248 | 0.00000198 | 0.00000258 |
| **BDE# 35** | 0.00000605 | 0.00000222 | 0.00000337 | 0.00000372 | 0.00000292 | 0.00000224 | 0.00000237999999 | 0.00000209 |

**Table 58.** (*continued*)

| Analyte | KEW 1 | KEW 2 | KEW 3 | KEW 4 | KEW 5 | KEW 6 | KEW 7 | KEW 8 |
|---|---|---|---|---|---|---|---|---|
| **BDE# 37** | 0.00000196 | 0.00000100999999 | 0.00000116 | 0.00000149 | 0.00000094399999 | 0.00000114999999 | 0.000000745 | 0.000001 |
| **BDE# 47** | 0.00574 | 0.00244 | 0.00296 | 0.0027 | 0.00198 | 0.00274 | 0.00175 | 0.0027 |
| **BDE# 49** | 0.00125 | 0.00102 | 0.00115 | 0.00113 | 0.000976 | 0.00105 | 0.000832 | 0.00104 |
| **BDE# 51** | 0.000105 | 0.0000927 | 0.000109 | 0.000105 | 0.00008669999999 | 0.00009279999999 | 0.00007429999999 | 0.0000951 |
| **BDE# 66** | 0.00011 | 0.0000347 | 0.00005309999999 | 0.00004689999999 | 0.0000318 | 0.00004579999999 | 0.00002789999999 | 0.0000481 |
| **BDE# 7** | 0.00000421999999 | 0.00000343 | 0.00000385999999 | 0.00000347 | 0.0000027 | 0.0000027 | 0.00000249999999 | 0.00000300999999 |
| **BDE# 71** | 0.0000302 | 0.00001999999999 | 0.0000218 | 0.000022 | 0.00002219999999 | 0.0000224 | 0.00001899999999 | 0.0000155 |
| **BDE# 75** | 0.00000853 | 0.00000667999999 | 0.00000755 | 0.00000662999999 | 0.00000521 | 0.0000062 | 0.00000478 | 0.00000644 |
| **BDE# 77** | <0.000000295 | <0.000000228 | <0.000000243 | <0.00000023 | <0.00000023 | <0.000000232 | 0.000000324 | 0.000000264 |
| **BDE# 79** | 0.00000579999999 | <0.000000228 | <0.000000243 | 0.00000194 | 0.00000166999999 | 0.0000021 | 0.00000262 | 0.00000162 |
| **BDE# 8/11** | 0.0000118 | 0.00000811999999 | 0.00000911999999 | 0.00000846 | 0.00000678 | 0.00000726999999 | 0.00000571999999 | 0.00000745 |
| **BDE# 85** | <0.000000952 | <0.000000969 | <0.000000909 | <0.00000118 | <0.000000937 | 0.000000922 | <0.00000124 | <0.000000669 |
| **BDE# 99** | 0.000196 | 0.0000599 | 0.00007979999999 | 0.00007209999999 | 0.0000497 | 0.000087 | 0.00004639999999 | 0.0000803 |
| **Benzoylecgonine** | <0.000159 | <0.000194 | <0.00017 | <0.00014299999999 | <0.00015 | <0.000128 | <0.000202 | <0.000156 |
| **Benztropine** | <0.000202 | <0.000203 | <0.000202 | <0.000198 | <0.000198 | <0.000194 | <0.000198 | <0.000194 |
| **Betamethasone** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Bisphenol A** | <0.202 | <0.203 | <0.202 | <0.198 | <0.198 | <0.194 | <0.198 | <0.194 |
| **Busulfan** | <0.00372 | <0.00341 | <0.00491 | <0.00269 | <0.00442 | <0.00392 | <0.00433 | <0.00361 |
| **Caffeine** | <0.00605 | <0.006099999999999 | <0.00605 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **Carbadox** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Carbamazepine** | <0.000605 | 0.000617 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | 0.00117 | <0.00058099999999 |
| **Cefotaxime** | | | | | | | | |
| **Chlortetracycline (CTC)** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Cimetidine** | <0.000566 | <0.00125 | <0.000588 | <0.0006 | <0.0006 | <0.00057699999999 | <0.000545 | <0.000612 |
| **Ciprofloxacin** | <0.00282 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Citalopram** | 0.000738 | 0.000475 | 0.000627 | 0.000603 | 0.000467 | 0.000749 | 0.000533 | 0.000776 |
| **Clarithromycin** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Clinafloxacin** | <0.00808 | <0.00394 | <0.00423 | <0.00438 | <0.00412 | <0.0043 | <0.00424 | <0.00286 |
| **Clonidine** | <0.00142 | <0.00139 | <0.00147 | <0.0015 | <0.0015 | <0.00143999999999 | <0.00136 | <0.00153 |
| **Clotrimazole** | <0.000161 | <0.000163 | <0.000161 | <0.000159 | <0.000159 | <0.000155 | <0.000159 | <0.000155 |
| **Cloxacillin** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Cocaine** | <0.0000956 | <0.000061 | <0.0000605 | <0.00005949999999 | <0.00005949999999 | <0.0000747 | 0.0000819 | <0.00006379999999 |
| **Codeine** | <0.00283 | <0.00278 | <0.00294 | <0.003 | <0.003 | <0.00287999999999 | <0.00273 | <0.00344 |
| **Colchicine** | <0.000623 | <0.00101 | <0.000323 | <0.000621 | <0.000345 | <0.00031 | <0.000317 | <0.00031 |
| **Cotinine** | <0.00142 | <0.00139 | <0.00147 | <0.0015 | <0.0015 | <0.00143999999999 | <0.00136 | <0.00153 |
| **Cyclophosphamide** | <0.000323 | <0.000325 | <0.000323 | <0.000317 | <0.000317 | <0.00031 | <0.000317 | <0.00031 |
| **Daunorubicin** | <0.00387999999999 | <0.00325 | <0.00323 | <0.0032 | <0.00317 | <0.00405 | <0.00317 | <0.0031 |
| **DEET** | 0.01 | 0.00615 | 0.00524 | 0.00299 | 0.00324 | 0.0047 | 0.00481 | 0.00222 |
| **Dehydronifedipine** | <0.000298 | <0.000244 | <0.000242 | <0.00023799999999 | <0.00023799999999 | <0.000233 | <0.00023799999999 | <0.000233 |
| **Demeclocycline** | <0.00605 | <0.00609999999999 | <0.00605 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **Desmethyldiltiazem** | <0.0000605 | <0.000061 | <0.0000605 | 0.00007439999999 | <0.00005949999999 | <0.0000581 | <0.00005949999999 | <0.0000581 |
| **Diatrizoic Acid** | <0.0107 | <0.01219999999999 | <0.00968 | <0.0124 | <0.025 | <0.0132 | <0.00951999999999 | <0.0231 |
| **Diazepam** | <0.000585 | <0.000122 | <0.000416 | <0.00011899999999 | <0.00011899999999 | <0.000116 | <0.00011899999999 | <0.000332 |
| **Digoxigenin** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.0637 |
| **Digoxin** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Diltiazem** | 0.000172 | <0.000122 | 0.000158 | 0.000155 | 0.000155 | 0.000149 | <0.00011899999999 | 0.000175 |
| **Diphenhydramine** | 0.000828 | 0.00061 | 0.000787 | 0.000666 | 0.0005 | 0.000661 | 0.000592 | 0.000672 |
| **Doxorubicin** | <0.00968 | <0.00976 | <0.00968 | <0.00951999999999 | <0.00951999999999 | <0.0093 | <0.00951999999999 | <0.0093 |
| **Doxycycline** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Drospirenone** | | <0.00985999999999 | <0.0113 | <0.00851 | <0.012 | <0.0171 | <0.0111 | <0.0109 |

**Table 58.** (*continued*)

| Analyte | KEW 1 | KEW 2 | KEW 3 | KEW 4 | KEW 5 | KEW 6 | KEW 7 | KEW 8 |
|---|---|---|---|---|---|---|---|---|
| **Enalapril** | <0.000283 | <0.000278 | <0.000294 | <0.0003 | <0.0003 | <0.000288 | <0.000273 | <0.000306 |
| **Enrofloxacin** | <0.00131 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Erythromycin H2O** | <0.000927 | <0.000935 | <0.000927 | <0.000913 | <0.000913 | <0.000891 | <0.000913 | <0.000891 |
| **Etoposide** | <0.000806 | <0.00081299999999 | <0.000992 | <0.000794 | <0.00143999999999 | <0.000775 | <0.000797 | <0.000775 |
| **Flumequine** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Fluocinonide** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Fluoxetine** | 0.00116 | 0.000702 | 0.00102 | 0.000774 | 0.000749 | 0.000969 | <0.00059499999999 | 0.000729 |
| **Fluticasone propionate** | <0.000806 | <0.00081299999999 | <0.000806 | <0.000794 | <0.000794 | <0.000787 | <0.000914 | <0.000775 |
| **Furosemide** | <0.0161 | <0.0163 | <0.0161 | <0.0159 | <0.0159 | <0.0155 | <0.0159 | <0.0155 |
| **Gemfibrozil** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Glipizide** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Glyburide** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Hydrochlorothiazide** | <0.00806 | <0.00813 | <0.00806 | <0.00794 | <0.00794 | <0.00775 | <0.00794 | <0.00775 |
| **Hydrocodone** | <0.00142 | <0.00139 | <0.00147 | <0.0015 | <0.0015 | <0.00143999999999 | <0.00136 | <0.00153 |
| **Hydrocortisone** | <0.0231 | <0.0233 | <0.0231 | <0.0227 | <0.0303 | <0.0222 | <0.0227 | <0.0222 |
| **Ibuprofen** | <0.00605 | <0.00609999999999 | <0.00605 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **Iopamidol** | <0.0729 | <0.0591 | <0.0593 | <0.139 | <0.237 | <0.14 | <0.164 | <0.104 |
| **Isochlortetracycline (ICTC)** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Lincomycin** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Lomefloxacin** | <0.00184 | <0.00302999999999 | <0.00278 | <0.00152 | <0.00141 | <0.00248 | <0.00254 | <0.00463 |
| **Medroxyprogesterone Acetate** | <0.00161 | <0.00163 | <0.00161 | <0.00159 | <0.00159 | <0.00155 | <0.00159 | <0.00155 |
| **Melphalan** | <0.0118 | <0.0156 | <0.01019999999999 | 0.00998 | <0.0108 | <0.0151 | <0.00951999999999 | 0.01 |
| **Meprobamate** | <0.00163 | <0.00332 | <0.00163 | <0.0016 | <0.0016 | <0.00157 | <0.0016 | <0.00157 |
| **Metformin** | 0.00385 | <0.00278 | <0.00294 | <0.003 | <0.003 | <0.00287999999999 | <0.00273 | <0.00306 |
| **Methylprednisolone** | <0.0162 | <0.00164 | <0.00163 | <0.0016 | <0.00946 | <0.00561 | <0.00507 | <0.00157 |
| **Metoprolol** | <0.00267 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00239 | <0.00059499999999 | <0.00058099999999 |
| **Metronidazole** | <0.0017 | <0.00219 | <0.00221 | <0.00164 | <0.00356 | <0.00186 | <0.00254999999999 | <0.00175 |
| **Miconazole** | <0.000764 | <0.000679 | <0.00064 | <0.000643 | <0.00059499999999 | <0.00058099999999 | <0.000812 | <0.000621 |
| **Minocycline** | <0.0242 | <0.02439999999999 | <0.0242 | <0.0238 | <0.0238 | <0.0233 | <0.0238 | <0.0233 |
| **Moxifloxacin** | <0.00161 | <0.00163 | <0.00161 | <0.00159 | <0.00159 | <0.00155 | <0.00159 | <0.00155 |
| **Naproxen** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Norfloxacin** | <0.00605 | <0.00609999999999 | 0.00793 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **Norfluoxetine** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.000752 | <0.00058099999999 |
| **Norgestimate** | <0.00516 | <0.00299 | <0.00309 | <0.00214 | <0.00324 | <0.0039 | <0.00264 | <0.00384 |
| **Norverapamil** | <0.0000605 | <0.000061 | 0.0000778 | <0.00005949999999 | <0.00005949999999 | <0.0000708 | <0.00005949999999 | <0.0000581 |
| **Ofloxacin** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Ormetoprim** | <0.000278 | <0.000244 | <0.000242 | <0.00023799999999 | <0.00023799999999 | <0.000233 | <0.00023799999999 | <0.000233 |
| **Oxacillin** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Oxazepam** | <0.00161 | <0.00163 | <0.00161 | <0.00159 | <0.00159 | <0.00155 | <0.00159 | <0.00155 |
| **Oxolinic Acid** | <0.000364 | <0.000361 | <0.000535 | <0.000393 | <0.000375 | <0.000275 | <0.000254 | <0.000271 |
| **Oxycodone** | <0.000719 | <0.000774 | <0.000588 | 0.000675 | <0.0006 | <0.00057699999999 | <0.000545 | <0.000612 |
| **Oxytetracycline (OTC)** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Paroxetine** | <0.00163 | <0.00164 | <0.00163 | <0.0016 | <0.0016 | <0.00157 | <0.0016 | <0.00157 |
| **Penicillin G** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Penicillin V** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Prednisolone** | <0.00242 | <0.0166 | <0.00573 | <0.00237999999999 | <0.00462 | <0.00233 | <0.0056 | <0.00277 |
| **Prednisone** | <0.02839999999999 | <0.00813 | <0.0196 | <0.021 | <0.00794 | <0.0228 | <0.00794 | <0.0119 |
| **Promethazine** | <0.000161 | <0.000163 | <0.000161 | <0.000159 | <0.000159 | <0.000155 | <0.000159 | <0.000155 |
| **Propoxyphene** | <0.000212 | <0.000122 | <0.000162 | <0.00012 | <0.00011899999999 | <0.00016 | <0.00011899999999 | <0.000116 |

**Table 58.** (*continued*)

| Analyte | KEW 1 | KEW 2 | KEW 3 | KEW 4 | KEW 5 | KEW 6 | KEW 7 | KEW 8 |
|---|---|---|---|---|---|---|---|---|
| **Propranolol** | <0.000806 | <0.00081299999999 | <0.000806 | <0.000794 | <0.000794 | <0.000775 | <0.000794 | <0.000775 |
| **Ranitidine** | <0.000566 | <0.000556 | <0.000588 | <0.0006 | <0.0006 | <0.00057699999999 | <0.000545 | <0.000612 |
| **Rosuvastatin** | <0.00148 | <0.0015 | <0.00148 | <0.00146 | <0.00146 | <0.00143 | <0.00146 | <0.00143 |
| **Roxithromycin** | <0.000121 | <0.000122 | <0.000121 | <0.00011899999999 | <0.00011899999999 | <0.000116 | <0.00011899999999 | <0.000134 |
| **Sarafloxacin** | <0.00605 | <0.00609999999999 | <0.00793 | <0.00595 | <0.00595 | <0.00581 | <0.00595 | <0.00581 |
| **Sertraline** | 0.00603 | 0.00583 | 0.00707 | 0.00578 | 0.00554 | 0.005 | 0.00571 | 0.00555 |
| **Simvastatin** | <0.00806 | <0.00813 | <0.00806 | <0.00794 | <0.00794 | <0.00775 | <0.00794 | <0.00775 |
| **Sulfachloropyridazine** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Sulfadiazine** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Sulfadimethoxine** | <0.000183 | <0.00019 | <0.00014199999999 | <0.00011899999999 | <0.000144 | <0.000171 | <0.00011899999999 | <0.000116 |
| **Sulfamerazine** | <0.000242 | <0.000412 | <0.000242 | <0.00023799999999 | <0.00023799999999 | <0.000233 | <0.00023799999999 | <0.000297 |
| **Sulfamethazine** | <0.000242 | <0.000244 | <0.000242 | <0.00023799999999 | <0.00023799999999 | <0.000233 | <0.00023799999999 | <0.000233 |
| **Sulfamethizole** | <0.000242 | <0.00031 | <0.000242 | <0.00023799999999 | <0.00028199999999 | <0.000276 | <0.000335 | <0.000264 |
| **Sulfamethoxazole** | <0.000242 | <0.000244 | <0.000242 | <0.00023799999999 | <0.00023799999999 | <0.000233 | <0.00023799999999 | <0.000233 |
| **Sulfanilamide** | | | | | | | | |
| **Sulfathiazole** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Tamoxifen** | <0.000161 | <0.000163 | <0.000161 | <0.000159 | <0.000159 | <0.000155 | <0.000159 | <0.000155 |
| **Teniposide** | <0.0025 | <0.0021 | <0.00215 | <0.00233 | <0.002 | <0.00200999999999 | <0.0018 | <0.00172 |
| **Tetracycline (TC)** | <0.00242 | <0.00244 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Theophylline** | <0.0546 | <0.02439999999999 | <0.0789 | <0.0238 | <0.0238 | <0.0233 | <0.08159999999999 | <0.0233 |
| **Thiabendazole** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Trenbolone** | <0.00163 | <0.00164 | <0.00163 | <0.0016 | <0.0016 | <0.00157 | <0.0016 | <0.00157 |
| **Trenbolone acetate** | <0.00035 | <0.000199 | <0.00014199999999 | <0.000188 | <0.000169 | <0.000133 | <0.000138 | <0.000146 |
| **Triamterene** | <0.000283 | <0.000278 | <0.000294 | <0.0003 | <0.0003 | <0.000288 | <0.000273 | <0.000306 |
| **Triclocarban** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Triclosan** | <0.0242 | <0.02439999999999 | <0.0242 | <0.0238 | <0.0238 | <0.0233 | <0.0238 | <0.0233 |
| **Trimethoprim** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Tylosin** | <0.00372 | <0.00293 | <0.00242 | <0.00237999999999 | <0.00237999999999 | <0.00233 | <0.00237999999999 | <0.00233 |
| **Valsartan** | <0.00163 | <0.00164 | <0.00163 | <0.0016 | <0.0016 | <0.00157 | <0.0016 | <0.00163 |
| **Venlafaxine** | 0.000715 | 0.000671 | 0.000594 | 0.000646 | 0.000695 | 0.000728 | 0.000557 | 0.000739 |
| **Verapamil** | <0.0000605 | <0.000061 | <0.0000605 | <0.00005949999999 | <0.00005949999999 | 0.0000952 | <0.00005949999999 | <0.0000581 |
| **Virginiamycin M1** | <0.00121 | <0.00122 | <0.00121 | <0.00118999999999 | <0.00118999999999 | <0.00116 | <0.00118999999999 | <0.00116 |
| **Warfarin** | <0.000605 | <0.00061 | <0.000605 | <0.00059499999999 | <0.00059499999999 | <0.00058099999999 | <0.00059499999999 | <0.00058099999999 |
| **Zidovudine** | <0.0759 | <0.0738 | <0.16 | <0.0926 | <0.082 | <0.0723 | <0.04 | <0.0465 |

# Carcass concentrations at the end of the rearing season

**Table 59.** Carcass tissue chemistry analytical results at the end of the rearing season for BLA and CED samples from 2017. Concentrations are reported in parts per million wet weight except for lipid and moisture, which are reported as percentages.

| Analyte | BLA_PES-1 | BLA_PES-2 | BLA_PES-3 | BLA_PES-4 | BLA_PES-5 | CED-1 | CED-2 | CED-3 | CED-4 |
|---|---|---|---|---|---|---|---|---|---|
| % Lipid | 3.04 | 2.71 | 3.19 | 3.17 | 3.36 | 2.53 | 2.13 | 3.06 | 2.14 |
| % Moisture | 81.4 | 80.6 | 79.4 | 80.2 | 80.2 | 83.9 | 78.0 | 82.3 | 81.1 |
| 1,7 Dimethylxanthine | <0.0238 | <0.0244 | <0.0233 | <0.0237 | <0.0234 | <0.024 | <0.0245 | <0.024 | <0.0233 |
| 10 hydroxy amitriptyline | <0.00012 | <0.0000646 | <0.000107 | <0.0000916 | <0.0000586 | <0.0000652 | <0.0000598 | <0.000075 | <0.0000687 |
| 2 Hydroxy ibuprofen | <0.0317 | <0.0325 | <0.031 | <0.0316 | <0.0313 | <0.032 | <0.0319 | <0.032 | <0.0311 |
| 4 Epianhydrochlortetracycline | <0.0238 | <0.0244 | <0.0233 | <0.0237 | <0.0234 | <0.024 | <0.0239 | <0.024 | <0.0233 |
| 4 Epianhydrotetracycline (EATC) | <0.00595 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| 4 Epichlortetracycline (ECTC) | <0.00595 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| 4 Epioxytetracycline (EOTC) | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| 4 Epitetracycline (ETC) | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| Acetaminophen | <0.011 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| Albuterol | <0.000286 | <0.0003 | <0.000294 | <0.000303 | <0.000291 | <0.000286 | <0.0003 | <0.000288 | <0.000286 |
| Aldrin | <0.0000057 | 0.000019 | 0.000017 | <0.0000100 | <0.0000270 | 0.000027 | <0.000007 | <0.000008 | <0.0000110 |
| alpha BHC | 0.000065 | 0.000079 | 0.000104 | 0.000085 | 0.000088 | 0.00001 | 0.000014 | 0.000012 | <0.00000900 |
| alpha chlordane | <0.00003 | <0.0000225 | <0.000019 | <0.0000183 | <0.0000463 | <0.00002 | <0.0000208 | <0.0000139 | <0.0000195 |
| Alprazolam | <0.000119 | <0.000171 | <0.000116 | <0.000143 | <0.000125 | <0.00012 | <0.00012 | <0.00012 | <0.000117 |
| Ametryn | <0.000225 | <0.0000999 | <0.000104 | <0.000143 | <0.000197 | <0.00011 | <0.00019 | <0.0001 | <0.000108 |
| Amitriptyline | <0.000133 | <0.000122 | <0.000143 | <0.000127 | 0.000177 | 0.000604 | 0.000332 | 0.000452 | 0.000562 |
| Amlodipine | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Amphetamine | 0.00173 | <0.0015 | <0.0022 | 0.00251 | 0.00796 | <0.00143 | <0.0015 | <0.00144 | <0.00143 |
| Amsacrine | <0.0000651 | <0.0000454 | <0.0000974 | <0.0000561 | <0.0000472 | <0.0000453 | <0.0000416 | <0.0000357 | <0.0000478 |
| Anhydrochlortetracycline (ACTC) | <0.00638 | <0.00633 | <0.00587 | <0.00608 | <0.00604 | <0.0061 | <0.00598 | <0.00613 | <0.00614 |
| Anhydrotetracycline (ATC) | <0.00595 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| Atenolol | <0.000571 | <0.0006 | <0.000588 | <0.000606 | <0.000923 | <0.000571 | <0.0006 | <0.000577 | <0.000571 |
| Atorvastatin | <0.00143 | <0.0015 | <0.00147 | <0.00152 | <0.00146 | <0.00143 | <0.0015 | <0.00144 | <0.00143 |
| Atrazine | <0.000721 | <0.000465 | <0.000704 | <0.00159 | <0.00221 | <0.00123 | <0.00144 | 0.00267 | 0.0027 |
| Azathioprine | <0.00108 | <0.000813 | <0.000852 | <0.000852 | <0.00114 | <0.000964 | <0.000797 | <0.00206 | <0.00139 |
| azinphos methyl | <0.00193 | <0.00089 | <0.00246 | <0.000921 | <0.00169 | <0.000782 | <0.00113 | <0.00132 | <0.000855 |
| Azithromycin | 0.354 | 0.431 | 0.358 | 0.138 | 0.158 | <0.00155 | <0.00174 | <0.00205 | <0.00105 |
| BDE# 10 | <0.000000119 | 0.000000144 | 0.00000121 | <0.000000336 | <0.000000322 | <0.000000257 | <0.00000022 | <0.000000192 | 0.000000406 |
| BDE# 100 | 0.0000569 | 0.000052 | 0.0000594 | 0.0000517 | 0.000052 | 0.0000147 | 0.000012 | 0.0000142 | 0.0000124 |
| BDE# 105 | <0.000000481 | <0.00000063 | <0.000000734 | <0.000000641 | <0.000000824 | <0.000000627 | <0.000000535 | <0.000000526 | <0.000000580 |
| BDE# 116 | <0.000000672 | <0.000000879 | <0.00000102 | <0.000000903 | 0.00000331 | <0.000000874 | <0.000000783 | 0.00000103 | <0.000000816 |
| BDE# 119/120 | 0.0000222 | 0.0000158 | 0.0000261 | 0.0000236 | 0.0000235 | 0.00000608 | 0.00000642 | 0.00000526 | 0.00000544 |
| BDE# 12/13 | 0.00000505 | 0.00000523 | 0.00000692 | 0.00000514 | 0.00000551 | 0.000000605 | 0.000000514 | 0.000000591 | 0.00000049 |
| BDE# 126 | 0.00000104 | 0.000000624 | 0.00000122 | 0.00000186 | 0.000000975 | 0.000000548 | 0.00000072 | 0.000000369 | 0.000000467 |
| BDE# 128 | 0.00000818 | 0.00000952 | 0.00000934 | 0.00000887 | 0.00000984 | 0.00000844 | 0.00000565 | 0.000014 | 0.00000579 |
| BDE# 138/166 | 0.00000167 | 0.00000322 | 0.00000208 | 0.00000266 | 0.00000243 | 0.000000753 | 0.000000857 | 0.00000169 | 0.000000768 |
| BDE# 140 | 0.00000985 | 0.0000154 | 0.0000108 | 0.00000958 | 0.00000959 | 0.00000311 | 0.00000216 | 0.00000499 | 0.00000266 |
| BDE# 15 | 0.0000513 | 0.0000478 | 0.0000608 | 0.0000462 | 0.0000519 | 0.00000156 | 0.00000129 | 0.00000172 | 0.00000111 |
| BDE# 153 | 0.000118 | 0.000115 | 0.000132 | 0.000113 | 0.000112 | 0.0000191 | 0.0000163 | 0.0000203 | 0.0000162 |
| BDE# 154 | 0.000105 | 0.0000959 | 0.000106 | 0.0000914 | 0.000114 | 0.0000699 | 0.0000647 | 0.0000764 | 0.0000615 |
| BDE# 155 | 0.0000794 | 0.0000638 | 0.0000763 | 0.0000852 | 0.0000517 | 0.0000278 | 0.0000257 | 0.0000294 | 0.0000302 |
| BDE# 17/25 | 0.0000177 | 0.0000149 | 0.0000174 | 0.0000183 | 0.0000173 | 0.00000108 | 0.00000172 | 0.00000149 | 0.00000129 |
| BDE# 181 | <0.000000706 | <0.000000739 | 0.000000825 | 0.00000117 | <0.000000863 | <0.00000063 | <0.00000128 | <0.000000831 | 0.00000064 |
| BDE# 183 | 0.0000328 | 0.0000379 | 0.0000434 | 0.0000415 | 0.0000365 | 0.0000199 | 0.000018 | 0.0000236 | 0.0000209 |
| BDE# 190 | <0.00000111 | 0.00000141 | 0.00000105 | 0.00000256 | 0.00000166 | <0.000000993 | <0.00000204 | <0.00000133 | 0.00000104 |
| BDE# 203 | 0.0000139 | 0.0000145 | 0.000018 | 0.0000195 | 0.0000159 | 0.0000124 | 0.0000133 | 0.000015 | 0.0000141 |
| BDE# 206 | 0.0000154 | 0.0000155 | 0.0000192 | 0.0000247 | 0.0000204 | 0.0000136 | 0.0000131 | 0.0000147 | 0.0000217 |
| BDE# 207 | 0.0000201 | 0.0000205 | 0.0000286 | 0.0000306 | 0.0000267 | 0.0000233 | 0.0000259 | 0.0000217 | 0.0000509 |
| BDE# 208 | 0.0000157 | 0.0000169 | 0.0000205 | 0.0000239 | 0.000025 | 0.0000163 | 0.0000183 | 0.0000147 | 0.0000255 |
| BDE# 209 | 0.0000805 | 0.0000882 | 0.000124 | 0.000146 | 0.000152 | 0.0000797 | 0.000108 | 0.000103 | 0.000259 |
| BDE# 28/33 | 0.000269 | 0.000238 | 0.000295 | 0.000225 | 0.000252 | 0.00000408 | 0.00000362 | 0.00000495 | 0.00000335 |
| BDE# 32 | 0.000000181 | <0.000000373 | 0.000000304 | <0.000000255 | <0.000000714 | 0.00000101 | 0.000000986 | 0.00000137 | 0.000000833 |
| BDE# 35 | 0.00000575 | 0.00000536 | 0.0000076 | 0.00000516 | 0.00000569 | <0.000000216 | <0.000000204 | 0.000000205 | <0.000000192 |
| BDE# 37 | 0.0000243 | 0.0000225 | 0.0000296 | 0.0000201 | 0.0000223 | 0.000000376 | 0.000000298 | 0.000000291 | 0.00000023 |
| BDE# 47 | 0.000935 | 0.000822 | 0.000996 | 0.000786 | 0.000884 | 0.0000462 | 0.0000394 | 0.0000445 | 0.0000388 |
| BDE# 49 | 0.000105 | 0.0000824 | 0.00012 | 0.0000959 | 0.000108 | 0.000014 | 0.0000101 | 0.000013 | 0.0000101 |
| BDE# 51 | 0.00000198 | 0.00000146 | 0.00000214 | 0.00000164 | 0.00000171 | 0.00000158 | 0.00000117 | 0.0000018 | 0.00000129 |
| BDE# 66 | 0.000104 | 0.0000951 | 0.000119 | 0.0000848 | 0.0000954 | 0.00000302 | 0.00000245 | 0.00000259 | 0.00000233 |
| BDE# 7 | 0.000000148 | 0.000000186 | 0.000000248 | <0.000000301 | <0.000000288 | 0.000000311 | 0.00000023 | 0.00000031 | 0.000000309 |
| BDE# 71 | 0.0000101 | 0.0000063 | 0.000011 | 0.00000752 | 0.00000711 | <0.00000183 | 0.00000135 | 0.0000013 | 0.00000113 |
| BDE# 75 | 0.00000213 | 0.00000109 | 0.0000024 | 0.0000018 | 0.00000228 | <0.00000132 | <0.000000723 | 0.000000461 | 0.000000318 |
| BDE# 77 | 0.0000132 | 0.0000126 | 0.0000161 | 0.0000124 | 0.0000127 | <0.000000999 | <0.000000537 | 0.000000461 | 0.000000328 |
| BDE# 79 | 0.00000686 | 0.0000064 | 0.00000824 | 0.00000663 | 0.00000772 | <0.00000125 | <0.000000672 | <0.0000006 | <0.000000600 |
| BDE# 8/11 | 0.00000253 | 0.00000204 | 0.00000332 | 0.00000272 | 0.00000297 | 0.000000809 | 0.000000726 | 0.000000825 | 0.000000687 |
| BDE# 85 | 0.000000816 | 0.00000122 | 0.00000128 | 0.00000174 | 0.0000013 | <0.00000049 | <0.000000422 | <0.000000415 | <0.000000452 |
| BDE# 99 | 0.000276 | 0.000279 | 0.000325 | 0.000273 | 0.000253 | 0.0000205 | 0.0000186 | 0.0000206 | 0.0000207 |
| Benzoylecgonine | <0.000119 | <0.000122 | <0.000116 | <0.000119 | <0.000117 | <0.00012 | <0.00012 | <0.00012 | <0.000117 |
| Benztropine | <0.000198 | <0.000203 | <0.000194 | <0.000198 | <0.000195 | <0.0002 | <0.000199 | <0.0002 | <0.000195 |
| beta BHC | 0.00047 | 0.000503 | 0.000659 | 0.000435 | 0.000557 | <0.000034 | 0.000038 | 0.000045 | 0.00004 |
| Betamethasone | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Bisphenol A | <0.198 | <0.203 | <0.194 | <0.198 | <0.195 | <0.2 | <0.199 | <0.2 | <0.195 |
| Busulfan | <0.00159 | <0.00163 | <0.00155 | <0.00158 | <0.00156 | <0.0016 | <0.00159 | <0.0016 | <0.00156 |
| Caffeine | <0.00595 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| Captan | <0.00107 | <0.000481 | <0.000463 | <0.000526 | <0.00121 | <0.00166 | <0.00154 | <0.000897 | <0.000510 |
| Carbadox | <0.000595 | <0.00061 | <0.000655 | <0.000593 | <0.000586 | <0.000844 | <0.00146 | <0.00109 | <0.000584 |
| Carbamazepine | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Cefotaxime | <0.00238 | <0.00244 | <0.00845 | <0.00427 | <0.00313 | <0.0024 | <0.00239 | <0.00824 | <0.00893 |
| Chlorothalonil | <0.000055 | <0.0000397 | <0.0000384 | <0.0000480 | <0.000111 | <0.000078 | <0.000063 | <0.000046 | <0.0000514 |
| Chlorpyriphos | <0.000198 | 0.0000847 | 0.0000859 | <0.0000604 | <0.000133 | <0.000078 | <0.0000666 | <0.0000494 | <0.0000529 |
| Chlorpyriphos Methyl | <0.000055 | <0.0000397 | <0.0000384 | <0.0000480 | <0.000111 | <0.000078 | <0.000063 | <0.000046 | <0.0000514 |
| Chlorpyriphos Oxon | <0.000229 | <0.0000631 | <0.0000472 | <0.0000599 | <0.000111 | <0.0000838 | <0.0000736 | <0.000046 | <0.0000524 |
| Chlortetracycline (CTC) | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |

**Table 59.** (Continued)

| Analyte | BLA_PES-1 | BLA_PES-2 | BLA_PES-3 | BLA_PES-4 | BLA_PES-5 | CED-1 | CED-2 | CED-3 | CED-4 |
|---|---|---|---|---|---|---|---|---|---|
| Cimetidine | <0.000141 | <0.000112 | <0.000137 | <0.000111 | <0.000200 | <0.000158 | <0.0000736 | <0.0000892 | <0.000137 |
| Ciprofloxacin | <0.00317 | <0.00386 | <0.0032 | <0.00237 | <0.00234 | <0.00306 | <0.00278 | <0.00545 | <0.00354 |
| cis nonachlor | <0.0000135 | <0.0000345 | <0.00007 | <0.0000369 | <0.0000594 | <0.000038 | <0.0000201 | 0.000032 | <0.0000223 |
| Citalopram | <0.000159 | <0.000221 | <0.000293 | <0.000372 | <0.000686 | <0.00016 | <0.000931 | <0.000356 | <0.000156 |
| Clarithromycin | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Clinafloxacin | <0.00505 | <0.00865 | <0.00435 | <0.00249 | <0.00460 | <0.00943 | <0.00824 | <0.00787 | <0.00408 |
| Clonidine | <0.00143 | <0.0015 | <0.00147 | <0.00152 | <0.00146 | <0.00143 | <0.0015 | <0.00144 | <0.00143 |
| Clotrimazole | <0.000159 | 0.000186 | 0.000219 | <0.000158 | 0.000191 | <0.00016 | <0.000159 | <0.000171 | <0.000156 |
| Cloxacillin | <0.00119 | <0.00122 | <0.00116 | <0.00119 | <0.00117 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| Cocaine | <0.0000595 | <0.000061 | <0.0000581 | <0.0000593 | <0.0000586 | <0.00006 | <0.0000598 | <0.00006 | <0.0000584 |
| Codeine | <0.00286 | <0.003 | <0.00294 | <0.00303 | <0.00291 | <0.00286 | <0.003 | <0.00288 | <0.00286 |
| Colchicine | <0.000317 | <0.000325 | <0.00031 | <0.000316 | <0.000313 | <0.00032 | <0.000319 | <0.00032 | <0.000311 |
| Cotinine | <0.00143 | <0.0015 | <0.00147 | <0.00152 | <0.00146 | <0.00143 | <0.0015 | <0.00144 | <0.00143 |
| Cyanazine | <0.00197 | <0.000859 | <0.00123 | <0.00122 | <0.00236 | <0.00125 | <0.00143 | <0.00101 | <0.00141 |
| Cyclophosphamide | <0.000449 | <0.000552 | <0.00031 | <0.000985 | <0.000913 | <0.00032 | <0.000319 | <0.000406 | <0.000311 |
| Cypermethrin | <0.000577 | <0.000307 | <0.0011 | <0.000289 | <0.000426 | <0.000221 | <0.000278 | <0.00019 | <0.000210 |
| Dacthal | <0.000055 | <0.0000397 | <0.0000384 | <0.0000480 | <0.000111 | <0.000078 | <0.000063 | <0.000046 | <0.0000514 |
| Daunorubicin | <0.00317 | <0.00325 | <0.0031 | <0.00316 | <0.00313 | <0.0032 | <0.00319 | <0.0032 | <0.00311 |
| DEET | 0.00175 | 0.00155 | 0.00151 | 0.00172 | 0.0014 | 0.0173 | 0.0215 | 0.00921 | 0.0128 |
| Dehydronifedipine | <0.000289 | <0.000323 | <0.000359 | <0.000237 | <0.000234 | <0.000443 | <0.000511 | <0.000582 | <0.000233 |
| delta BHC | <0.000044 | <0.000047 | 0.000061 | <0.0000460 | <0.0000630 | <0.0000141 | <0.0000141 | <0.0000076 | <0.0000106 |
| Demeclocycline | <0.00595 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| Desethylatrazine | <0.000055 | <0.0000397 | <0.0000384 | <0.0000480 | <0.000111 | <0.000078 | <0.000063 | <0.0000465 | <0.0000514 |
| Desmethyldiltiazem | <0.0000595 | <0.000061 | <0.0000581 | <0.0000593 | <0.0000586 | <0.0000739 | <0.0000742 | <0.00006 | <0.0000620 |
| Diatrizoic Acid | <0.0105 | <0.0151 | 0.0195 | <0.00949 | <0.0129 | <0.0183 | <0.00985 | <0.0096 | <0.00973 |
| Diazepam | <0.000119 | <0.000122 | <0.000116 | <0.000119 | <0.000117 | <0.00012 | <0.00012 | <0.00012 | <0.000117 |
| diazinon | <0.000546 | <0.000167 | <0.000263 | <0.000597 | <0.000989 | <0.000313 | <0.000345 | <0.000225 | <0.000414 |
| Diazinon Oxon | <0.000372 | <0.00014 | <0.0000965 | <0.000170 | <0.000324 | <0.000149 | <0.000192 | <0.000135 | <0.000136 |
| dieldrin | 0.000059 | 0.000063 | 0.000072 | 0.000056 | 0.000081 | 0.000053 | 0.00004 | <0.000062 | 0.000036 |
| Digoxigenin | <0.0409 | <0.0526 | <0.0595 | <0.0237 | <0.0259 | <0.0516 | <0.0301 | <0.0864 | <0.0325 |
| Digoxin | <0.00298 | <0.00588 | <0.00988 | <0.00237 | <0.00474 | <0.00951 | <0.0124 | <0.0121 | <0.00490 |
| Diltiazem | <0.000199 | <0.000191 | <0.000116 | <0.000119 | <0.000168 | <0.000233 | <0.000201 | <0.000277 | <0.000162 |
| Dimethoate | <0.00261 | <0.000964 | <0.00064 | <0.000961 | <0.00179 | <0.00152 | <0.00149 | <0.000976 | <0.000851 |
| Diphenhydramine | <0.000238 | <0.000244 | <0.000233 | <0.000237 | <0.000234 | 0.00026 | 0.000246 | 0.000348 | 0.000331 |
| disulfoton | <0.000964 | <0.000264 | <0.000369 | <0.000389 | <0.000935 | <0.000359 | <0.000372 | <0.000298 | <0.000304 |
| disulfoton sulfone | <0.000188 | <0.000219 | <0.000109 | <0.0000998 | <0.000111 | <0.000078 | <0.000063 | <0.000046 | <0.0000514 |
| Doxorubicin | <0.00952 | <0.00976 | <0.0093 | <0.00949 | <0.00938 | <0.0096 | <0.00956 | <0.0096 | <0.00934 |
| Doxycycline | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| Enalapril | <0.000286 | <0.0003 | <0.000294 | <0.000303 | <0.000291 | <0.000286 | <0.0003 | <0.000288 | <0.000286 |
| endosulfan I | <0.000239 | <0.000241 | <0.00022 | <0.000279 | <0.000567 | <0.000366 | <0.000403 | <0.000247 | <0.000247 |
| endosulfan II | <0.000132 | <0.00013 | <0.000255 | <0.000150 | <0.000314 | <0.00018 | <0.000183 | <0.000129 | <0.000100 |
| Endosulphan Sulphate | <0.0000935 | <0.0000831 | <0.000224 | <0.000136 | <0.000286 | <0.0000734 | <0.000102 | <0.0000694 | <0.0000762 |
| endrin | <0.0000078 | <0.0000174 | <0.0000312 | <0.0000178 | <0.0000347 | <0.000021 | <0.000017 | <0.0000117 | <0.0000240 |
| Endrin Ketone | <0.0000404 | <0.0000311 | <0.0000723 | <0.0000480 | <0.000102 | <0.0000528 | <0.0000365 | <0.0000419 | <0.0000334 |
| Enrofloxacin | <0.00119 | <0.00122 | <0.00116 | <0.00119 | <0.00117 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| Erythromycin H2O | 0.000953 | 0.00105 | 0.00102 | 0.00104 | 0.000899 | <0.00092 | <0.000916 | <0.00092 | <0.000895 |
| Ethion | <0.000514 | <0.000187 | <0.000137 | <0.000165 | <0.000225 | <0.000157 | <0.000129 | <0.0000973 | <0.000104 |
| Etoposide | <0.000794 | <0.0012 | <0.00089 | <0.00115 | <0.000781 | <0.00137 | <0.00159 | <0.00241 | <0.00162 |
| Fenitrothion | <0.000246 | <0.000108 | <0.0000878 | <0.0000869 | <0.000198 | <0.000101 | <0.000107 | <0.0000885 | <0.0000786 |
| Flumequine | 0.00303 | 0.00235 | 0.00269 | 0.00141 | <0.000586 | 0.00234 | 0.00192 | 0.00413 | 0.00171 |
| Fluocinonide | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| Fluoxetine | <0.000595 | <0.00061 | <0.00059 | <0.000593 | <0.000589 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Fluticasone propionate | <0.000794 | <0.000813 | <0.000775 | <0.000791 | <0.000781 | <0.0008 | <0.000797 | <0.0008 | 0.001 |
| fonofos | <0.000055 | <0.0000397 | <0.0000384 | <0.0000480 | <0.000111 | <0.000078 | <0.000063 | <0.000046 | <0.0000514 |
| Furosemide | <0.0159 | <0.0163 | <0.0155 | <0.0158 | <0.0156 | <0.016 | <0.0159 | <0.016 | <0.0156 |
| gamma BHC | <0.000037 | <0.000037 | <0.000052 | 0.000042 | <0.0000360 | <0.0000148 | <0.0000135 | <0.0000106 | <0.0000110 |
| gamma chlordane | <0.000037 | <0.0000228 | 0.000018 | <0.0000194 | <0.0000491 | <0.000039 | <0.0000217 | <0.000017 | <0.0000207 |
| Gemfibrozil | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Glipizide | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| Glyburide | <0.00119 | <0.00122 | <0.00116 | <0.00119 | <0.00117 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| HCB | 0.0027 | 0.00238 | 0.00277 | 0.00218 | 0.00258 | 0.000298 | 0.00027 | 0.00032 | 0.00029 |
| Heptachlor | <0.0000055 | <0.000008 | <0.000006 | <0.00000480 | <0.0000111 | <0.000013 | <0.0000063 | <0.0000046 | <0.00000514 |
| Heptachlor Epoxide | 0.000034 | 0.000029 | <0.000034 | <0.0000300 | <0.0000450 | <0.000037 | <0.000036 | <0.000025 | <0.0000270 |
| Hexazinone | <0.00187 | <0.00174 | <0.00217 | <0.00180 | <0.00356 | <0.000658 | <0.00177 | <0.00151 | <0.00103 |
| Hydrochlorothiazide | <0.00794 | <0.00813 | <0.00775 | <0.00791 | <0.00781 | <0.008 | <0.00797 | <0.008 | <0.00778 |
| Hydrocodone | <0.00143 | <0.0015 | <0.00147 | <0.00152 | <0.00146 | <0.00143 | <0.0015 | <0.00144 | <0.00143 |
| Hydrocortisone | <0.0453 | <0.034 | <0.0265 | <0.0237 | <0.0234 | <0.024 | <0.0239 | <0.024 | <0.0278 |
| Ibuprofen | <0.00595 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| Iopamidol | <0.0337 | <0.0929 | <0.0428 | <0.0889 | <0.0452 | <0.0528 | <0.117 | <0.1 | <0.0783 |
| Isochlortetracycline (ICTC) | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| Lincomycin | <0.00119 | <0.00122 | <0.00116 | <0.00119 | <0.00117 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| Lomefloxacin | <0.00195 | <0.00202 | <0.00255 | <0.00235 | <0.00216 | <0.00223 | <0.00186 | <0.00207 | <0.00158 |
| malathion | <0.000765 | <0.000479 | <0.000349 | <0.000393 | <0.000655 | <0.000396 | <0.000483 | <0.000311 | <0.000341 |
| Medroxyprogesterone Acetate | <0.00215 | <0.00163 | <0.00183 | <0.00171 | <0.00176 | <0.00236 | <0.00211 | <0.00292 | <0.00258 |
| Melphalan | 0.101 | 0.0463 | 0.0588 | 0.0719 | 0.177 | 0.0446 | 0.0446 | <0.064 | 0.0367 |
| Meprobamate | <0.00159 | <0.00163 | <0.00155 | <0.00158 | <0.00156 | <0.0016 | <0.00159 | <0.0016 | <0.00156 |
| Metformin | <0.00286 | <0.003 | <0.00294 | <0.00303 | <0.00291 | <0.00286 | <0.003 | <0.00288 | <0.00286 |
| Methoxychlor | <0.0008 | | | | | | | | |
| Methylprednisolone | <0.00845 | <0.00922 | <0.00155 | <0.00998 | <0.0177 | <0.00967 | <0.00159 | <0.00829 | <0.00967 |
| Metoprolol | <0.0015 | <0.0011 | <0.00167 | <0.00127 | <0.00159 | <0.000856 | <0.00163 | <0.00166 | <0.00192 |
| Metronidazole | <0.00271 | <0.00207 | <0.00219 | <0.00208 | <0.00305 | <0.00232 | <0.00187 | <0.00177 | <0.00164 |
| Miconazole | 0.00104 | 0.00104 | <0.000964 | 0.000789 | 0.000639 | <0.000976 | <0.000967 | <0.00103 | <0.000664 |
| Minocycline | <0.0238 | <0.0244 | <0.0233 | <0.0237 | <0.0234 | <0.024 | <0.0239 | <0.024 | <0.0233 |
| mirex | 0.000277 | 0.000237 | 0.000259 | <0.000203 | <0.000217 | <0.000027 | <0.000018 | <0.000027 | <0.0000240 |

**Table 59.** (Continued)

| Analyte | BLA_PES-1 | BLA_PES-2 | BLA_PES-3 | BLA_PES-4 | BLA_PES-5 | CED-1 | CED-2 | CED-3 | CED-4 |
|---|---|---|---|---|---|---|---|---|---|
| Moxifloxacin | <0.00159 | <0.00163 | <0.00211 | <0.00158 | <0.00156 | <0.0016 | <0.00159 | <0.0016 | <0.00156 |
| Naproxen | <0.00119 | <0.00122 | <0.00116 | <0.00119 | <0.00117 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| Norfloxacin | <0.0137 | <0.0133 | <0.00912 | <0.00593 | <0.00586 | <0.008 | <0.0146 | <0.006 | <0.00584 |
| Norfluoxetine | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Norgestimate | <0.00119 | <0.00122 | <0.00628 | <0.00291 | <0.00336 | <0.0012 | <0.0012 | <0.0012 | <0.00542 |
| Norverapamil | <0.0000797 | <0.000102 | <0.000105 | <0.0000795 | <0.0000871 | <0.0000774 | <0.0000828 | <0.000116 | <0.0000678 |
| o,p DDD | <0.0001 | 0.00008 | <0.000118 | 0.000081 | 0.00012 | 0.000052 | 0.000199 | 0.000145 | <0.0000660 |
| o,p DDE | 0.000193 | 0.000275 | 0.000235 | 0.000235 | 0.000558 | 0.00016 | 0.000137 | 0.000174 | 0.000517 |
| o,p DDT | <0.000246 | <0.000134 | <0.000175 | <0.000137 | <0.000181 | <0.000154 | <0.000911 | <0.000324 | <0.000105 |
| Octachlorostyrene | <0.000112 | 0.000103 | 0.000114 | 0.000077 | 0.000116 | <0.000008 | 0.000011 | 0.000019 | 0.000014 |
| Ofloxacin | <0.00071 | <0.00061 | 0.000991 | 0.00103 | 0.000889 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Ormetoprim | <0.000238 | <0.000244 | <0.000233 | <0.000237 | <0.000234 | <0.00024 | <0.000239 | <0.00024 | <0.000233 |
| Oxacillin | <0.00119 | <0.00122 | <0.00116 | <0.00119 | <0.00117 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| Oxazepam | <0.00159 | <0.00163 | <0.00155 | <0.00158 | <0.00156 | <0.0016 | <0.00159 | <0.0016 | <0.00156 |
| Oxolinic Acid | <0.000435 | <0.000387 | <0.000263 | <0.000299 | <0.000482 | <0.00024 | <0.000568 | <0.000712 | <0.000317 |
| Oxychlordane | 0.000053 | <0.000055 | <0.000065 | <0.0000318 | 0.000088 | <0.000045 | <0.000025 | 0.000029 | <0.0000277 |
| Oxycodone | <0.000571 | <0.0006 | <0.000588 | <0.000606 | <0.000583 | <0.000571 | <0.0006 | <0.000577 | <0.000571 |
| Oxytetracycline (OTC) | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| p,p DDD | 0.000578 | 0.000417 | 0.000473 | 0.000378 | 0.000523 | 0.000169 | 0.000598 | 0.000434 | 0.000214 |
| p,p DDE | 0.00348 | 0.00318 | 0.00363 | 0.00296 | 0.00409 | 0.00328 | 0.00314 | 0.00372 | 0.00354 |
| p,p DDT | <0.000211 | <0.00012 | <0.0000961 | <0.000121 | <0.000145 | <0.000139 | <0.000829 | <0.00028 | <0.0000915 |
| Parathion Ethyl | <0.000321 | <0.000196 | <0.000133 | <0.000122 | <0.000456 | <0.000166 | <0.00018 | <0.000179 | <0.000175 |
| Parathion Methyl | <0.00298 | <0.00139 | <0.00117 | <0.00136 | <0.00373 | <0.00112 | <0.00175 | <0.00101 | <0.00131 |
| Paroxetine | <0.00159 | <0.00163 | <0.00155 | <0.00158 | <0.00156 | <0.0016 | <0.00159 | <0.0016 | <0.00156 |
| Penicillin G | <0.00119 | <0.00122 | <0.00116 | <0.00119 | <0.00117 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| Penicillin V | <0.00119 | <0.00122 | <0.00116 | <0.00119 | <0.00117 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| Permethrin | <0.000527 | <0.000484 | <0.000985 | <0.000386 | <0.000686 | <0.00045 | <0.000615 | <0.000641 | <0.000366 |
| Perthane | <0.00186 | <0.00171 | <0.00544 | <0.00151 | <0.0102 | <0.00102 | <0.00591 | <0.00487 | <0.00371 |
| phorate | | <0.0002 | <0.000209 | <0.000254 | <0.000597 | <0.000277 | <0.000269 | <0.000193 | <0.000262 |
| Phosmet | <0.000493 | <0.000257 | <0.00105 | <0.000279 | <0.000809 | <0.0004 | <0.000442 | <0.000615 | <0.000553 |
| Pirimiphos Methyl | <0.000156 | <0.0000783 | <0.0000737 | <0.0000669 | <0.000111 | <0.000078 | <0.000063 | <0.000046 | <0.0000514 |
| Prednisolone | <0.0128 | <0.00554 | <0.0156 | <0.0112 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| Prednisone | <0.00794 | <0.00813 | <0.00775 | <0.0611 | <0.0440 | <0.008 | <0.0185 | <0.008 | <0.00778 |
| Promethazine | <0.000159 | <0.000163 | <0.000155 | <0.000158 | <0.000156 | <0.000191 | <0.000255 | <0.00016 | <0.000156 |
| Propoxyphene | <0.000119 | <0.000122 | <0.000116 | <0.000119 | <0.000117 | <0.00012 | <0.00012 | <0.00012 | <0.000118 |
| Propranolol | <0.000794 | <0.000813 | <0.000775 | <0.000791 | <0.000781 | <0.0008 | <0.000797 | <0.0008 | <0.000778 |
| Quintozene | <0.000055 | <0.0000397 | <0.0000384 | <0.0000480 | <0.000111 | <0.000078 | <0.000063 | <0.000046 | <0.0000514 |
| Ranitidine | <0.00198 | <0.00204 | <0.00204 | <0.00203 | <0.00197 | <0.00204 | <0.00219 | <0.00203 | <0.00197 |
| Rosuvastatin | <0.00159 | <0.00163 | <0.00155 | <0.00158 | <0.00156 | <0.0016 | <0.00159 | <0.0016 | <0.00156 |
| Roxithromycin | <0.000225 | <0.00031 | <0.000282 | <0.000135 | <0.000279 | <0.000279 | <0.000381 | <0.000596 | <0.000144 |
| Sarafloxacin | <0.00624 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| Sertraline | <0.000394 | <0.000396 | <0.000795 | <0.000344 | <0.000426 | <0.000828 | <0.000379 | <0.000672 | <0.00141 |
| Simvastatin | <0.00794 | <0.00813 | <0.00775 | <0.00791 | <0.00781 | <0.008 | <0.00797 | <0.008 | <0.00778 |
| Sulfachloropyridazine | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Sulfadiazine | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Sulfadimethoxine | <0.000193 | <0.000303 | <0.000441 | <0.000153 | <0.000224 | <0.000277 | <0.000293 | <0.000327 | <0.000182 |
| Sulfamerazine | 0.000775 | 0.00164 | <0.000373 | <0.000446 | <0.000490 | 0.00168 | <0.000729 | <0.000933 | <0.000615 |
| Sulfamethazine | <0.000507 | <0.000302 | <0.000343 | <0.000432 | <0.000460 | <0.00102 | <0.00113 | <0.00148 | <0.000601 |
| Sulfamethizole | <0.000864 | <0.000734 | <0.000711 | <0.000237 | <0.000234 | <0.000602 | <0.000522 | <0.000478 | <0.000233 |
| Sulfamethoxazole | <0.000537 | <0.000244 | <0.000233 | <0.000237 | <0.000234 | <0.00024 | <0.000239 | <0.000904 | <0.000233 |
| Sulfanilamide | <0.00595 | <0.0061 | <0.00581 | <0.00593 | <0.00586 | <0.006 | <0.00598 | <0.006 | <0.00584 |
| Sulfathiazole | <0.000595 | <0.00061 | <0.000625 | <0.000593 | <0.000586 | <0.000602 | <0.000598 | <0.000871 | <0.000667 |
| Tamoxifen | <0.000159 | <0.000163 | <0.000155 | <0.000158 | <0.000156 | <0.00016 | <0.000159 | <0.00016 | <0.000156 |
| Tecnazene | <0.000055 | <0.0000397 | <0.0000384 | <0.0000480 | <0.000111 | <0.000078 | <0.000063 | <0.000046 | <0.0000514 |
| Teniposide | <0.00453 | <0.00366 | <0.00209 | <0.00223 | <0.00228 | 0.0058 | <0.00282 | <0.00264 | <0.00470 |
| Terbufos | | <0.000187 | <0.000115 | <0.000117 | <0.000233 | <0.000214 | <0.00015 | <0.000128 | <0.000114 |
| Tetracycline (TC) | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| Theophylline | <0.0238 | <0.0244 | <0.0233 | <0.0237 | <0.0234 | <0.024 | <0.0239 | <0.024 | <0.0233 |
| Thiabendazole | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000613 |
| trans nonachlor | <0.000018 | <0.000056 | 0.000055 | <0.0000215 | <0.0000500 | <0.000047 | 0.00003 | 0.000028 | <0.0000216 |
| Trenbolone | <0.00159 | <0.00163 | <0.00155 | <0.00158 | <0.00156 | <0.0016 | <0.00159 | <0.0016 | <0.00156 |
| Trenbolone acetate | <0.000163 | <0.000122 | <0.000116 | <0.000189 | <0.000162 | <0.00012 | <0.00012 | <0.00012 | <0.000122 |
| Triamterene | 0.000524 | 0.000569 | 0.000606 | 0.00051 | 0.000625 | 0.000332 | 0.000344 | 0.000372 | 0.000291 |
| Triclocarban | 0.0399 | 0.0514 | 0.0823 | 0.0634 | 0.0686 | <0.0012 | <0.0012 | <0.0012 | <0.00117 |
| Triclosan | <0.0238 | <0.0244 | <0.0233 | <0.0237 | <0.0234 | <0.024 | <0.0239 | <0.024 | <0.0233 |
| Trimethoprim | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Tylosin | <0.00238 | <0.00244 | <0.00233 | <0.00237 | <0.00234 | <0.0024 | <0.00239 | <0.0024 | <0.00233 |
| Valsartan | <0.00159 | <0.00163 | <0.00155 | <0.00158 | <0.00156 | <0.0016 | <0.00159 | <0.0016 | <0.00156 |
| Venlafaxine | <0.000159 | <0.000163 | <0.000155 | <0.000158 | <0.000156 | <0.00016 | <0.000159 | <0.00016 | <0.000156 |
| Verapamil | <0.0000595 | <0.000061 | <0.0000581 | <0.0000593 | <0.0000586 | <0.00006 | <0.0000598 | <0.00006 | <0.0000584 |
| Virginiamycin M1 | 0.00509 | 0.00361 | <0.00263 | 0.00391 | 0.00457 | <0.0012 | <0.00182 | <0.00243 | 0.00156 |
| Warfarin | <0.000595 | <0.00061 | <0.000581 | <0.000593 | <0.000586 | <0.0006 | <0.000598 | <0.0006 | <0.000584 |
| Zidovudine | <0.00952 | <0.00976 | <0.0093 | <0.00949 | <0.00938 | <0.0096 | <0.0136 | <0.0096 | <0.00934 |

**Table 60.** Carcass tissue chemistry analytical results at the end of the rearing season for GEN and WHI samples from 2017. Concentrations are reported in parts per million wet weight except for lipid and moisture, which are reported as percentages.

| Analyte | GEN_PES 1 | GEN_PES 2 | GEN_PES 3 | GEN_PES 4 | WHI-1 | WHI-2 | WHI-3 |
|---|---|---|---|---|---|---|---|
| % Lipid | 4.5 | 3.79 | 3.14 | 3.05 | 2.38 | 2.35 | 2.58 |
| % Moisture | 80.3 | 77.9 | 78.3 | 81.3 | 82.9 | 84.9 | 84.4 |
| 1,7 Dimethylxanthine | <0.0236 | <0.0235 | <0.0237 | <0.0237 | <0.0238 | <0.0233 | <0.0238 |
| 10 hydroxy amitriptyline | <0.0000886 | <0.0000791 | <0.000092 | <0.0000905 | <0.0000916 | <0.0000662 | <0.0000812 |
| 2-Hydroxy ibuprofen | <0.0315 | <0.0314 | <0.0316 | <0.0316 | <0.0317 | <0.031 | <0.0317 |
| 4 Epianhydrochlortetracycline | <0.0236 | <0.0235 | <0.0237 | <0.0237 | <0.0238 | <0.0233 | <0.0238 |
| 4 Epianhydrotetracycline (EATC) | <0.00591 | <0.00588 | <0.00593 | <0.00593 | <0.00595 | <0.00581 | <0.00595 |
| 4 Epichlortetracycline (ECTC) | <0.00591 | <0.00588 | <0.00593 | <0.00593 | <0.00595 | <0.00581 | <0.00595 |
| 4 Epioxytetracycline (EOTC) | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| 4 Epitetracycline (ETC) | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| Acetaminophen | <0.00591 | <0.014 | <0.00593 | <0.00593 | <0.00595 | <0.00752 | <0.00795 |
| Albuterol | <0.000278 | <0.000286 | <0.000291 | <0.000291 | <0.000278 | <0.000288 | <0.000288 |
| Aldrin | <0.00001 | <0.000014 | <0.000027 | <0.0000130 | 0.000016 | <0.000016 | 0.000015 |
| alpha BHC | 0.000013 | <0.000016 | 0.000014 | <0.0000133 | <0.00001 | <0.000009 | 0.000008 |
| alpha chlordane | <0.0000222 | <0.0000165 | <0.000016 | <0.0000156 | <0.000034 | <0.000031 | 0.000024 |
| Alprazolam | <0.000118 | <0.000118 | <0.000145 | <0.000126 | <0.000121 | <0.00016 | <0.000119 |
| Ametryn | <0.0000666 | <0.000062 | <0.000053 | <0.0000796 | <0.000126 | <0.000102 | <0.000124 |
| Amitriptyline | 0.000263 | 0.000223 | <0.000149 | <0.000241 | 0.000591 | 0.000747 | 0.00068 |
| Amlodipine | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000893 | <0.000663 |
| Amphetamine | 0.0121 | <0.00143 | <0.00146 | <0.00146 | <0.00139 | 0.0175 | <0.00947 |
| Amsacrine | <0.0000539 | <0.0000608 | <0.0000316 | <0.0000449 | <0.000108 | <0.0000544 | <0.0000707 |
| Anhydrochlortetracycline (ACTC) | <0.00593 | <0.00588 | <0.00593 | <0.00593 | <0.00618 | <0.00601 | <0.00621 |
| Anhydrotetracycline (ATC) | <0.00591 | <0.00588 | <0.00593 | <0.00593 | <0.00595 | <0.00581 | <0.00595 |
| Atenolol | <0.000556 | <0.000571 | <0.000583 | <0.000583 | <0.000556 | <0.000577 | <0.000577 |
| Atorvastatin | <0.00139 | <0.00143 | <0.00146 | <0.00146 | <0.00139 | <0.00144 | <0.00144 |
| Atrazine | <0.000964 | <0.000588 | <0.000555 | <0.000997 | <0.00113 | <0.000554 | <0.00073 |
| Azathioprine | <0.00139 | <0.00101 | <0.000791 | <0.00104 | <0.00136 | <0.00123 | <0.00195 |
| azinphos methyl | <0.00105 | <0.00123 | <0.00101 | <0.00101 | <0.00149 | <0.00124 | <0.00109 |
| Azithromycin | 0.0244 | 0.0232 | 0.0124 | 0.00866 | <0.00143 | <0.00191 | <0.00187 |
| BDE# 10 | 0.000000401 | <0.000000212 | 0.000000698 | <0.000000212 | 0.000000319 | <0.000000896 | 0.000000347 |
| BDE# 100 | 0.0000446 | | 0.0000433 | 0.0000364 | 0.000055 | 0.0000484 | 0.0000329 |
| BDE# 105 | <0.000000635 | | <0.000000666 | <0.000000680 | <0.000000556 | <0.00000111 | <0.000000469 |
| BDE# 116 | 0.00000309 | | <0.000000975 | <0.000000949 | <0.000000781 | 0.00000338 | <0.0000011 |
| BDE# 119/120 | 0.0000117 | | 0.0000143 | 0.00000965 | 0.00000611 | 0.00000554 | 0.00000675 |
| BDE# 12/13 | 0.00000262 | 0.0000021 | 0.00000186 | 0.0000018 | 0.000000596 | 0.000000575 | 0.000000664 |
| BDE# 126 | 0.000000796 | <0.000000225 | 0.00000159 | 0.00000039 | 0.000000259 | <0.000000424 | 0.000000569 |
| BDE# 128 | 0.0000135 | | 0.00000907 | 0.0000106 | 0.00000561 | 0.00000546 | 0.00000687 |
| BDE# 138/166 | 0.00000181 | | 0.0000012 | 0.00000124 | 0.000000929 | 0.00000238 | 0.000000594 |
| BDE# 140 | 0.0000118 | | 0.0000068 | 0.00000935 | 0.00000348 | 0.00000258 | 0.00000281 |
| BDE# 15 | 0.0000192 | 0.0000175 | 0.0000147 | 0.0000136 | 0.0000017 | 0.00000151 | 0.0000016 |
| BDE# 153 | 0.0000659 | 0.0000497 | 0.0000565 | 0.0000507 | 0.0000206 | 0.0000157 | 0.0000184 |
| BDE# 154 | 0.000117 | | 0.000104 | 0.0000939 | 0.0000591 | 0.0000527 | 0.0000628 |
| BDE# 155 | 0.0000565 | | 0.0000683 | 0.0000493 | 0.0000192 | 0.0000156 | 0.0000283 |
| BDE# 17/25 | 0.00000437 | 0.00000355 | 0.00000448 | 0.00000352 | 0.0000037 | 0.00000315 | 0.00000171 |
| BDE# 181 | <0.000001 | <0.000000984 | <0.000000746 | <0.000000586 | <0.000000598 | <0.000000873 | <0.000000735 |
| BDE# 183 | 0.0000399 | 0.0000324 | 0.0000315 | 0.0000267 | 0.0000207 | 0.0000229 | 0.0000224 |
| BDE# 190 | <0.00000161 | <0.00000158 | <0.0000012 | <0.000000923 | <0.000000914 | <0.00000137 | <0.00000116 |
| BDE# 203 | 0.0000194 | 0.0000147 | 0.0000148 | 0.0000119 | 0.0000125 | 0.0000117 | 0.0000123 |
| BDE# 206 | 0.0000215 | 0.0000143 | 0.0000128 | 0.0000105 | 0.0000136 | 0.0000115 | 0.0000152 |
| BDE# 207 | 0.0000344 | 0.0000215 | 0.0000218 | 0.0000206 | 0.0000256 | 0.0000263 | 0.0000262 |
| BDE# 208 | 0.0000232 | 0.0000152 | 0.0000141 | 0.0000146 | 0.0000183 | 0.0000191 | 0.0000161 |
| BDE# 209 | 0.000194 | 0.000123 | 0.000111 | 0.0000938 | 0.000083 | 0.000135 | 0.0000865 |
| BDE# 28/33 | 0.0000538 | 0.0000438 | 0.0000443 | 0.0000417 | 0.0000163 | 0.0000147 | 0.00000954 |
| BDE# 32 | 0.000000783 | 0.000000676 | 0.000000767 | 0.000000702 | 0.00000112 | 0.00000155 | 0.00000119 |
| BDE# 35 | 0.0000013 | 0.000000778 | 0.000000739 | 0.000000897 | <0.000000205 | <0.000000311 | <0.000000207 |
| BDE# 37 | 0.00000302 | 0.0000028 | 0.00000221 | 0.00000241 | 0.000000409 | 0.000000476 | 0.000000308 |
| BDE# 47 | 0.000315 | 0.00027 | 0.000278 | 0.000251 | 0.000201 | 0.000184 | 0.000125 |
| BDE# 49 | 0.0000343 | 0.0000185 | 0.0000332 | 0.0000263 | 0.0000608 | 0.0000561 | 0.0000348 |
| BDE# 51 | 0.00000213 | 0.00000159 | 0.0000018 | 0.00000195 | 0.0000043 | 0.00000394 | 0.00000339 |
| BDE# 66 | 0.0000215 | 0.0000199 | 0.0000188 | 0.0000198 | 0.0000106 | 0.00000854 | 0.00000552 |
| BDE# 7 | 0.000000222 | <0.000000212 | <0.000000205 | <0.000000196 | 0.000000232 | <0.000000789 | 0.000000212 |
| BDE# 71 | 0.00000299 | 0.00000164 | 0.0000037 | 0.00000301 | 0.00000469 | 0.00000434 | 0.0000031 |
| BDE# 75 | 0.000000575 | 0.000000288 | 0.000000774 | 0.000000465 | 0.000000895 | 0.000000969 | 0.000000939 |
| BDE# 77 | 0.0000026 | 0.00000226 | 0.00000193 | 0.00000198 | 0.0000006 | 0.000000576 | 0.000000662 |
| BDE# 79 | 0.00000266 | 0.0000019 | 0.0000027 | 0.00000302 | 0.00000169 | 0.00000529 | 0.000000924 |
| BDE# 8/11 | 0.00000163 | 0.000000817 | 0.00000148 | 0.00000099 | 0.000000957 | 0.000000925 | 0.000000915 |
| BDE# 85 | <0.000000501 | | <0.000000526 | <0.000000532 | <0.000000433 | <0.000000871 | <0.000000367 |
| BDE# 99 | 0.000108 | 0.0000944 | 0.0000998 | 0.0000804 | 0.0000919 | 0.0000857 | 0.0000519 |
| Benzoylecgonine | <0.000118 | <0.000118 | <0.000119 | <0.000119 | <0.000119 | <0.000116 | <0.000119 |
| Benztropine | <0.000197 | <0.000196 | <0.000198 | <0.000198 | <0.000198 | <0.000194 | <0.000198 |

**Table 60.** *(Continued)*

| Analyte | GEN PES 1 | GEN PES 2 | GEN PES 3 | GEN PES 4 | WHI-1 | WHI-2 | WHI-3 |
|---|---|---|---|---|---|---|---|
| beta BHC | 0.000118 | 0.000122 | 0.000098 | 0.000106 | <0.000035 | 0.000035 | <0.000041 |
| Betamethasone | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000581 | <0.000595 |
| Bisphenol A | <0.197 | <0.196 | <0.198 | <0.198 | <0.198 | <0.194 | <0.198 |
| Busulfan | <0.00157 | <0.00157 | <0.00158 | <0.00158 | <0.00159 | <0.00155 | <0.00159 |
| Caffeine | <0.00591 | <0.00588 | <0.00593 | <0.00593 | <0.00595 | <0.00581 | <0.00595 |
| Captan | <0.00113 | <0.00124 | <0.00114 | <0.000502 | <0.000384 | <0.000434 | <0.000493 |
| Carbadox | <0.00136 | <0.000788 | <0.000593 | <0.000593 | <0.000595 | <0.00106 | <0.00109 |
| Carbamazepine | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000581 | <0.000595 |
| Cefotaxime | <0.0111 | <0.00655 | <0.00348 | <0.00346 | <0.00559 | <0.00233 | <0.00238 |
| Chlorothalonil | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000499 | <0.0000516 | <0.0000487 | <0.0000537 |
| Chlorpyriphos | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000499 | <0.0000799 | <0.0000726 | <0.0000806 |
| Chlorpyriphos Methyl | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000499 | <0.0000516 | <0.0000487 | <0.0000537 |
| Chlorpyriphos Oxon | <0.0000496 | <0.0000587 | <0.0000491 | <0.0000536 | <0.0000516 | <0.0000645 | <0.0000608 |
| Chlortetracycline (CTC) | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| Cimetidine | <0.000095 | <0.00014 | <0.0000985 | <0.000114 | <0.000102 | <0.000201 | <0.000113 |
| Ciprofloxacin | <0.00382 | <0.00311 | <0.00237 | <0.00237 | <0.00368 | <0.00366 | <0.00381 |
| cis nonachlor | <0.0000293 | <0.000047 | <0.000056 | <0.0000328 | 0.000076 | 0.000078 | <0.000052 |
| Citalopram | <0.000157 | <0.000343 | <0.000314 | <0.000158 | 0.000173 | <0.000155 | <0.000159 |
| Clarithromycin | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000581 | <0.000595 |
| Clinafloxacin | <0.00539 | <0.00563 | <0.00373 | <0.00264 | <0.0071 | <0.0105 | <0.0108 |
| Clonidine | <0.00139 | <0.00143 | <0.00146 | <0.00146 | <0.00139 | <0.00144 | <0.00144 |
| Clotrimazole | <0.000157 | <0.000157 | <0.000185 | <0.000158 | <0.000159 | <0.000155 | <0.000159 |
| Cloxacillin | <0.00118 | <0.00118 | <0.00119 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| Cocaine | <0.0000591 | <0.0000588 | <0.0000593 | <0.0000593 | <0.0000625 | <0.0000581 | <0.0000595 |
| Codeine | <0.00278 | <0.00286 | <0.00291 | <0.00291 | <0.00278 | <0.00288 | <0.00288 |
| Colchicine | <0.000315 | <0.000314 | <0.000316 | <0.000316 | <0.000317 | <0.00031 | <0.000317 |
| Cotinine | <0.00139 | <0.00143 | <0.00146 | <0.00146 | <0.00139 | <0.00144 | <0.00144 |
| Cyanazine | <0.000918 | <0.00121 | <0.000782 | <0.00109 | <0.00121 | <0.00142 | <0.00153 |
| Cyclophosphamide | <0.000327 | <0.00046 | <0.000362 | <0.000316 | <0.000674 | <0.00031 | <0.000798 |
| Cypermethrin | <0.00022 | <0.000258 | <0.000208 | <0.000329 | <0.000293 | <0.000309 | <0.000311 |
| Dacthal | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000499 | <0.0000516 | <0.0000487 | <0.0000537 |
| Daunorubicin | <0.00315 | <0.00314 | <0.00316 | <0.00316 | <0.00317 | 0.00313 | <0.00317 |
| DEET | <0.000315 | 0.000369 | <0.000316 | 0.000373 | 0.0141 | 0.0172 | 0.0156 |
| Dehydronifedipine | <0.000254 | <0.000372 | <0.000237 | <0.000237 | <0.000238 | <0.000324 | <0.000664 |
| delta BHC | <0.000012 | <0.000016 | <0.0000112 | <0.0000153 | <0.000012 | <0.000013 | <0.000008 |
| Demeclocycline | <0.00591 | <0.00588 | <0.00593 | <0.00593 | <0.00595 | <0.00581 | <0.00595 |
| Desethylatrazine | <0.000073 | <0.0000528 | <0.0000803 | <0.0000627 | <0.0000516 | <0.0000487 | <0.0000537 |
| Desmethyldiltiazem | <0.0000591 | <0.0000588 | <0.0000593 | <0.0000593 | <0.0000786 | <0.000239 | <0.000142 |
| Diatrizoic Acid | <0.0117 | <0.0798 | <0.049 | <0.0284 | <0.00972 | 0.0167 | <0.0783 |
| Diazepam | <0.000118 | <0.000118 | <0.000119 | <0.000119 | <0.000119 | <0.000116 | <0.000119 |
| diazinon | <0.000305 | <0.000302 | <0.000359 | <0.000474 | <0.000391 | <0.000388 | <0.000315 |
| Diazinon-Oxon | <0.000155 | <0.000117 | <0.00017 | <0.000283 | <0.000149 | <0.000202 | <0.000167 |
| dieldrin | 0.000062 | 0.000059 | 0.000058 | 0.000063 | <0.000077 | 0.00007 | 0.000068 |
| Digoxigenin | <0.0308 | <0.0328 | <0.0141 | <0.00966 | <0.0376 | <0.0362 | <0.0331 |
| Digoxin | <0.00236 | <0.00235 | <0.00457 | <0.00237 | <0.00238 | <0.00958 | <0.00238 |
| Diltiazem | <0.000133 | <0.000276 | <0.000214 | <0.000119 | <0.000302 | <0.00034 | <0.000195 |
| Dimethoate | <0.001 | <0.00133 | <0.000921 | <0.000998 | <0.00106 | <0.000849 | <0.00133 |
| Diphenhydramine | <0.000236 | <0.000235 | <0.000237 | <0.000237 | 0.00026 | 0.000275 | 0.000253 |
| disulfoton | <0.000311 | <0.000342 | <0.000289 | <0.000343 | <0.000366 | <0.000307 | <0.0003 |
| disulfoton sulfone | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000590 | <0.0000516 | <0.0000514 | <0.0000594 |
| Doxorubicin | <0.00945 | <0.00941 | <0.00949 | <0.00949 | <0.00952 | <0.0093 | <0.00952 |
| Doxycycline | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| Drospirenone | | <0.00314 | | <0.00350 | | | |
| Enalapril | <0.000278 | <0.000286 | <0.000291 | <0.000291 | <0.000278 | <0.000288 | <0.000288 |
| endosulfan I | <0.000248 | <0.000321 | <0.00025 | <0.000295 | <0.000301 | <0.000304 | <0.000293 |
| endosulfan II | <0.0000986 | <0.000174 | <0.000128 | <0.000137 | <0.0000896 | <0.00014 | <0.000139 |
| Endosulphan Sulphate | <0.0000895 | <0.000097 | <0.0000853 | <0.000125 | <0.0000786 | <0.0000669 | <0.0000756 |
| endrin | <0.0000171 | <0.0000173 | <0.000013 | <0.0000204 | <0.000013 | <0.0000168 | <0.000023 |
| Endrin Ketone | <0.000049 | <0.0000483 | <0.0000404 | <0.0000512 | <0.0000422 | <0.0000546 | <0.0000549 |
| Enrofloxacin | <0.00118 | <0.00118 | <0.00119 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| Erythromycin H2O | <0.000906 | <0.000902 | <0.000909 | <0.000909 | <0.000913 | <0.000891 | <0.000913 |
| Ethion | <0.0000959 | <0.000142 | <0.0000799 | <0.0000917 | <0.000096 | <0.000137 | <0.000119 |
| Etoposide | <0.00119 | <0.000784 | <0.000791 | <0.000791 | <0.00177 | <0.00276 | <0.00466 |
| Fenitrothion | <0.0000695 | <0.0000767 | <0.0000543 | <0.000103 | <0.0000825 | <0.0000724 | <0.0000973 |
| Flumequine | 0.0122 | 0.00415 | 0.00395 | 0.00297 | 0.00173 | 0.00116 | <0.00132 |
| Fluocinonide | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| Fluoxetine | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000697 | <0.000759 | <0.000755 |
| Fluticasone propionate | <0.000787 | <0.000784 | <0.000791 | <0.000791 | <0.0011 | <0.000775 | <0.000794 |
| fonofos | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000499 | <0.0000516 | <0.0000487 | <0.0000537 |
| Furosemide | <0.0157 | <0.0157 | <0.0158 | <0.0158 | <0.0159 | <0.0155 | <0.0159 |

**Table 60.** *(Continued)*

| Analyte | GEN_PES 1 | GEN_PES 2 | GEN_PES 3 | GEN_PES 4 | WHI-1 | WHI-2 | WHI-3 |
|---|---|---|---|---|---|---|---|
| gamma BHC | <0.000012 | <0.0000116 | <0.0000114 | <0.0000132 | <0.0000126 | <0.0000106 | <0.0000155 |
| gamma chlordane | <0.0000232 | <0.00002 | <0.000014 | <0.0000165 | <0.000037 | 0.000028 | <0.0000202 |
| Gemfibrozil | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000581 | <0.000595 |
| Glipizide | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| Glyburide | <0.00118 | <0.00118 | <0.00119 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| HCB | 0.00183 | 0.00198 | 0.00149 | 0.00184 | 0.000424 | 0.000386 | 0.000364 |
| Heptachlor | <0.00000496 | <0.00000528 | <0.00001 | <0.00000499 | <0.000008 | <0.00000487 | <0.000008 |
| Heptachlor Epoxide | 0.000027 | <0.000039 | <0.000037 | <0.0000410 | <0.000032 | <0.00002 | <0.000033 |
| Hexazinone | <0.0016 | <0.00179 | <0.00112 | <0.00130 | <0.00136 | <0.00231 | <0.0023 |
| Hydrochlorothiazide | <0.00787 | <0.00784 | <0.00791 | <0.00791 | <0.00794 | <0.00775 | <0.00794 |
| Hydrocodone | <0.00139 | <0.00143 | <0.00146 | <0.00146 | <0.00139 | <0.00144 | <0.00144 |
| Hydrocortisone | <0.0424 | <0.0235 | <0.0237 | <0.0237 | <0.0297 | <0.0533 | <0.0369 |
| Ibuprofen | <0.00591 | <0.00588 | <0.00593 | <0.00593 | <0.00595 | <0.00581 | <0.00595 |
| Iopamidol | <0.0879 | <0.0582 | <0.0409 | <0.101 | <0.0563 | <0.081 | <0.0462 |
| Isochlortetracycline (ICTC) | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| Lincomycin | <0.00118 | <0.00118 | <0.00119 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| Lomefloxacin | <0.00209 | <0.002 | <0.00141 | <0.00119 | <0.00215 | <0.00407 | <0.00304 |
| malathion | <0.000439 | <0.000379 | <0.000282 | <0.000234 | <0.00027 | <0.000339 | <0.000353 |
| Medroxyprogesterone Acetate | <0.0021 | <0.00157 | <0.00162 | <0.00158 | <0.00191 | <0.00225 | <0.00297 |
| Melphalan | <0.0268 | 0.0859 | 0.0547 | <0.0201 | 0.0706 | <0.036 | 0.0248 |
| Meprobamate | <0.00157 | <0.00157 | <0.00158 | <0.00158 | <0.00159 | <0.00155 | <0.00159 |
| Metformin | <0.00278 | <0.00286 | <0.00291 | <0.00291 | <0.00278 | <0.00288 | <0.00288 |
| Methylprednisolone | <0.00157 | <0.00615 | <0.00179 | <0.00203 | <0.0171 | <0.00702 | <0.00295 |
| Metoprolol | <0.00112 | <0.00115 | <0.00142 | <0.000999 | <0.00237 | <0.00218 | <0.00156 |
| Metronidazole | <0.00196 | <0.00221 | <0.00161 | <0.00158 | <0.00295 | <0.00428 | <0.00179 |
| Miconazole | <0.00112 | <0.000848 | <0.000593 | <0.000593 | <0.000987 | <0.000984 | <0.00101 |
| Minocycline | <0.0236 | <0.0235 | <0.0237 | <0.0237 | <0.0238 | <0.0233 | <0.0238 |
| mirex | <0.000081 | <0.000048 | 0.000079 | <0.0000540 | <0.000029 | <0.000029 | <0.000027 |
| Moxifloxacin | <0.00157 | <0.00251 | <0.00158 | <0.00158 | <0.00159 | <0.00179 | <0.00159 |
| Naproxen | <0.00118 | <0.00118 | <0.00119 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| Norfloxacin | <0.00696 | <0.00588 | <0.00593 | <0.00593 | <0.0141 | <0.0132 | <0.00644 |
| Norfluoxetine | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000581 | <0.000595 |
| Norgestimate | <0.00118 | <0.00118 | <0.00351 | <0.00236 | <0.00682 | <0.00997 | <0.00119 |
| Norverapamil | <0.0000889 | <0.0000635 | <0.000089 | <0.0000679 | <0.0000734 | <0.0000756 | <0.0000861 |
| o,p DDD | 0.000838 | 0.00107 | 0.000839 | 0.000913 | 0.000118 | 0.000098 | 0.000088 |
| o,p DDE | 0.0182 | 0.0203 | 0.0165 | 0.0186 | 0.000156 | 0.00015 | 0.000146 |
| o,p DDT | <0.0000861 | <0.00014 | <0.0000808 | <0.000180 | <0.000132 | <0.000119 | <0.000111 |
| Octachlorostyrene | 0.000101 | 0.00008 | 0.000093 | 0.000097 | 0.000086 | 0.000092 | 0.000057 |
| Ofloxacin | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000828 | <0.000635 | <0.000595 |
| Ormetoprim | <0.000236 | <0.000235 | <0.000237 | <0.000237 | <0.000238 | <0.000233 | <0.000238 |
| Oxacillin | <0.00118 | <0.00118 | <0.00119 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| Oxazepam | <0.00157 | <0.002 | <0.00158 | <0.00158 | <0.00159 | <0.00155 | <0.00159 |
| Oxolinic Acid | <0.000376 | <0.000427 | <0.000284 | <0.000242 | <0.000417 | <0.000391 | <0.000411 |
| oxychlordane | <0.0000351 | <0.000039 | 0.000037 | <0.0000460 | <0.000042 | <0.000024 | <0.0000292 |
| Oxycodone | <0.000556 | <0.000571 | <0.000583 | <0.000583 | <0.000556 | <0.000577 | <0.000577 |
| Oxytetracycline (OTC) | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| p,p DDD | 0.00137 | 0.00187 | 0.00135 | 0.00182 | 0.00104 | 0.000793 | 0.000582 |
| p,p DDE | 0.04 | 0.0428 | 0.0358 | 0.0413 | 0.00268 | 0.00274 | 0.00322 |
| p,p DDT | <0.0000698 | <0.000126 | <0.0000677 | <0.000143 | <0.000111 | <0.0000996 | <0.0000879 |
| Parathion-Ethyl | <0.000201 | <0.000179 | <0.000117 | <0.000137 | <0.000164 | <0.000193 | <0.000196 |
| Parathion-Methyl | <0.00295 | <0.00193 | <0.00114 | <0.00204 | <0.00101 | <0.0012 | <0.00144 |
| Paroxetine | <0.00157 | <0.00157 | <0.00158 | <0.00158 | <0.00159 | <0.00155 | <0.00159 |
| Penicillin G | <0.00118 | <0.00118 | <0.00119 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| Penicillin V | <0.00118 | <0.00118 | <0.00119 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| Permethrin | <0.000517 | <0.000567 | <0.000312 | <0.000404 | <0.000713 | <0.000606 | <0.000646 |
| Perthane | <0.00782 | <0.00901 | <0.00677 | <0.00611 | <0.00321 | <0.00759 | <0.00939 |
| phorate | <0.00027 | <0.000244 | <0.000225 | <0.000386 | <0.000515 | <0.000229 | <0.000256 |
| Phosmet | <0.000625 | <0.000668 | <0.00106 | <0.000620 | <0.000919 | <0.00322 | <0.000695 |
| Pirimiphos Methyl | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000499 | <0.0000516 | <0.0000487 | <0.0000537 |
| Prednisolone | 0.0137 | <0.00235 | <0.00918 | <0.00237 | 0.0429 | 0.0597 | 0.0353 |
| Prednisone | <0.00787 | <0.00784 | <0.0154 | <0.00791 | <0.00794 | <0.0284 | <0.0268 |
| Promethazine | <0.000157 | <0.000157 | <0.000158 | <0.000158 | <0.000242 | <0.000859 | <0.000234 |
| Propoxyphene | <0.000118 | <0.000118 | <0.000119 | <0.000119 | <0.00014 | <0.00013 | <0.000124 |
| Propranolol | <0.000787 | <0.000784 | <0.000791 | <0.000791 | <0.000794 | <0.000775 | <0.000794 |
| Quintozene | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000499 | <0.0000516 | <0.0000487 | <0.0000537 |
| Ranitidine | <0.00198 | <0.00192 | <0.00195 | <0.00195 | <0.00191 | <0.00212 | <0.00209 |
| Rosuvastatin | <0.00157 | <0.00157 | <0.00158 | <0.00158 | <0.00159 | <0.00155 | <0.00159 |
| Roxithromycin | <0.000287 | <0.000253 | <0.000119 | <0.000119 | <0.000366 | <0.000568 | <0.000338 |
| Sarafloxacin | <0.00591 | <0.00588 | <0.00593 | <0.00593 | <0.00595 | <0.00581 | <0.00617 |
| Sertraline | <0.000508 | <0.000524 | <0.000866 | <0.000691 | <0.00256 | <0.000592 | <0.000549 |

**Table 60.** *(Continued)*

| Analyte | GEN_PES 1 | GEN_PES 2 | GEN_PES 3 | GEN_PES 4 | WHI-1 | WHI-2 | WHI-3 |
|---|---|---|---|---|---|---|---|
| Simvastatin | <0.00787 | <0.00784 | <0.00791 | <0.00791 | <0.00794 | <0.00775 | <0.00794 |
| Sulfachloropyridazine | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000581 | <0.000595 |
| Sulfadiazine | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000607 | <0.000581 | <0.000595 |
| Sulfadimethoxine | <0.000401 | <0.000272 | <0.000119 | <0.000136 | <0.0003 | <0.000406 | <0.000403 |
| Sulfamerazine | <0.000463 | <0.000504 | <0.000318 | <0.000316 | <0.000876 | <0.000656 | 0.00313 |
| Sulfamethazine | <0.000544 | <0.00115 | <0.000482 | <0.000306 | <0.00238 | <0.00115 | <0.00206 |
| Sulfamethizole | <0.000637 | <0.000931 | <0.000237 | <0.000237 | <0.000238 | <0.00138 | <0.000731 |
| Sulfamethoxazole | <0.000236 | <0.000235 | <0.000237 | <0.000237 | <0.000238 | <0.000233 | <0.000238 |
| Sulfanilamide | <0.00591 | <0.00588 | <0.00593 | <0.00593 | <0.00595 | <0.00581 | <0.00595 |
| Sulfathiazole | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000738 | <0.000782 | <0.000597 |
| Tamoxifen | <0.000157 | <0.000157 | <0.000158 | <0.000158 | <0.000159 | <0.000155 | <0.000159 |
| Tecnazene | <0.0000496 | <0.0000528 | <0.0000491 | <0.0000499 | <0.0000851 | <0.0000487 | <0.0000537 |
| Teniposide | <0.00191 | 0.00376 | <0.00332 | <0.00261 | <0.00631 | <0.0188 | <0.00669 |
| Terbufos | <0.000155 | <0.000145 | <0.000141 | <0.0000873 | <0.000156 | <0.00014 | <0.000138 |
| Tetracycline (TC) | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00238 | <0.00233 | <0.00238 |
| Theophylline | <0.0236 | <0.0235 | <0.0237 | <0.0237 | <0.0238 | <0.0233 | <0.0238 |
| Thiabendazole | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000879 | <0.000581 | <0.000595 |
| trans nonachlor | <0.000047 | <0.000061 | 0.000067 | 0.000053 | 0.000139 | 0.000144 | 0.000089 |
| Trenbolone | <0.00157 | <0.00157 | <0.00158 | <0.00158 | <0.00159 | <0.00155 | <0.00159 |
| Trenbolone acetate | <0.000118 | <0.000118 | <0.000119 | <0.000119 | <0.000205 | <0.000241 | <0.000151 |
| Triamterene | <0.000278 | <0.000286 | <0.000291 | <0.000291 | 0.000352 | 0.000346 | 0.000364 |
| Triclocarban | 0.00217 | 0.00145 | 0.00194 | <0.00119 | <0.00119 | <0.00116 | <0.00119 |
| Triclosan | <0.0236 | <0.0235 | <0.0237 | <0.0237 | <0.0238 | <0.0233 | <0.0238 |
| Trimethoprim | <0.000628 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000611 | <0.000595 |
| Tylosin | <0.00236 | <0.00235 | <0.00237 | <0.00237 | <0.00423 | <0.00353 | <0.00364 |
| Valsartan | <0.00157 | <0.00157 | <0.00158 | <0.00158 | <0.0016 | <0.00155 | <0.00159 |
| Venlafaxine | <0.000157 | <0.000157 | <0.000158 | <0.000158 | <0.000159 | <0.000155 | <0.000159 |
| Verapamil | <0.0000591 | <0.0000588 | <0.0000593 | <0.0000593 | <0.0000595 | <0.0000581 | <0.0000595 |
| Virginiamycin M1 | <0.00282 | <0.00155 | <0.00119 | <0.00121 | <0.00158 | <0.00153 | <0.00306 |
| Warfarin | <0.000591 | <0.000588 | <0.000593 | <0.000593 | <0.000595 | <0.000581 | <0.000595 |
| Zidovudine | <0.00945 | <0.00941 | <0.00949 | <0.00949 | <0.0199 | <0.0216 | <0.00952 |