NUTTER+ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Georgia (Corporate)
360 Hawthorne Lane
Athens, GA 30606
PHONE 706.354.7925
EMAIL info@nutterinc.com

North Carolina
304 New Leicester Hwy., Ste. B
Asheville, NC 28806
PHONE 828.539.3008
WEB nutterinc.com

June 30, 2026

Tyler Parsons
Watershed Planning and Monitoring Program
Georgia Environmental Protection Division
2 Martin Luther King, Jr. Drive, Suite 1470A East
Atlanta, Georgia 30334

Subject: City of Dublin Watershed Protection Plan, 2025 Annual Progress Report for the Dublin Water Pollution Control Plant, NPDES Permit No. GA0025569, Project No. 08-027.05.

Dear Tyler,

Nutter & Associates are pleased to submit the 2025 Dublin Watershed Protection Plan (WPP) annual progress report on behalf of the city of Dublin. Pursuant to the approved Dublin WPP, this annual progress report provides a summary of implemented best management practices, water quality monitoring results, long-term monitoring trends, and a schedule for the proposed 2026 monitoring. An electronic version of the 2025 report, the Excel Data Submittal Form, field sheets, laboratory reports, photographs of the 2025 monitoring events and stations, and Scientific Collecting Permit are included on a USB drive submitted with this report. If you have any questions or need any additional information, please feel free to contact us.

Sincerely,

NUTTER & ASSOCIATES, INC.

Erin M. Harris

Erin M. Harris, CPESC, CESSWI, CPSS, PWS
Senior Scientist

cc: Matthew Bradshaw, Director of Engineering, City of Dublin
Tony Braziel, Utilities Director, City of Dublin

June 30, 2026

Tyler Parsons
Watershed Planning and Monitoring Program
Georgia Environmental Protection Division
2 Martin Luther King, Jr. Drive, Suite 1470A East
Atlanta, Georgia 30334

Subject: Annual Certification, 2025 Watershed Protection Plan implementation for the Dublin Water Pollution Control Plant, NPDES Permit No. GA0025569.

Dear Mr. Parsons,

I certify, under penalty of law, that the approved Watershed Protection Plan for the city of Dublin is being implemented. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. This certification is made for the period of January 1 through December 31, 2025.

Sincerely,

NUTTER+ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Georgia (Corporate)
360 Hawthorne Lane
Athens, GA 30606
PHONE 706.354.7925
EMAIL info@nutterinc.com

North Carolina
304 New Leicester Hwy., Ste. B
Asheville, NC 28806
PHONE 828.539.3008
WEB nutterinc.com

TECHNICAL MEMORANDUM NO. 08-027.05

PREPARED FOR:	City of Dublin, Laurens County, Georgia; Matthew Bradshaw, Director of Engineering
PREPARED BY:	Shelley R. Dodd, Project Scientist II Erin M. Harris, CPESC, CPSS, CESSWI, PWS
DATE:	June 30, 2026
SUBJECT:	Dublin Watershed Protection Plan, 2025 Annual Progress Report for the Dublin Water Pollution Control Plant, NPDES Permit No. GA0025569

CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

The city of Dublin is located in Laurens County within the Coastal Plain physiographic region of central Georgia, within the Altamaha River Basin (HUC 030701; Figure 1). The jurisdictional city limits of Dublin encompass an area of approximately 16.1 square miles. The Dublin Water Pollution Control Plant (WPCP) service area covers approximately 44.6 square miles and includes the entirety of the city as well as surrounding areas located outside the city limits. The Dublin WPCP is currently permitted to discharge up to 6.0 million gallons per day (MGD) into the Oconee River in the Lower Oconee sub-basin (HUC 03070102) under National Pollution Discharge Elimination System (NPDES) permit GA0025569.

Pursuant to NPDES permit requirements, a Watershed Assessment (WA) for the Dublin WPCP was completed in 2011 and 2012, revised in 2013. A Watershed Protection Plan (WPP) based on the results of the WA was subsequently developed in 2013. Updates to the 2013 WPP were completed in 2016 and 2019. The most recent Dublin WPP was approved by the Georgia Environmental Protection Division (GAEPD) in February 2020. WPP implementation began in January 2021. This annual status report presents the results of WPP implementation completed between January 1 and December 31, 2025, including best management practices (BMPs), water quality monitoring results, and any emerging long-term water quality monitoring trends.

2.0 WATERSHED PROTECTION PLAN IMPLEMENTATION

2.1 Water Resource Management and Best Management Practices

The city of Dublin, in conjunction with Nutter & Associates, Inc. (NAI) and Thomas & Hutton, coordinated implementation of the WPP. Meetings between city representatives and NAI were conducted in 2019 to begin planning the WPP implementation. Implementation of structural and non-structural best management practices (BMPs) identified in the January 2020 WPP began in January 2021, along with routine water quality monitoring, which will continue to be conducted annually.

Through existing and revised programs and new initiatives, the city of Dublin has implemented structural and non-structural BMPs to help maintain the quality of water resources within the city's jurisdiction. Many of the measures are ongoing activities that will continue to be implemented on an as-needed basis. Specific updates on the initiation, progress, and completion of relevant management measures will continue to be reported with each annual status report submittal. As specified in Sections 5.0 and 7.0 of the WPP, city personnel and resources are being allocated to manage several BMP measures outlined in the WPP. The details of the ongoing implementation measures are summarized below.

2.1.1 Structural BMPs

The following structural rehabilitation projects and BMPs are currently implemented or planned within the Dublin WPCP service area:

- The city has contracted with engineering firm Thomas & Hutton to develop a stormwater ordinance. The ordinance draft has been completed and it is currently under consideration by city staff for a recommendation to the City Council.
- The city is currently evaluating the feasibility of implementing a city-wide stormwater utility but has not yet made a decision to move forward.
- The city continues to monitor and assess the need for sanitary and stormwater infrastructure maintenance, inspection, and rehabilitation. Specifically:
    - The city hired a full-time staff grant coordinator to assist with management of its sewer and stormwater infrastructure improvement funding and projects.
    - Several reaches of existing sanitary sewer line are being replaced and rehabilitated on an "as needed" basis.
    - A $7.5 million sewer replacement and extension project funded through an Economic Development Administration (EDA) grant and a loan from the Georgia Environmental Finance Authority (GEFA) is approximately 75% complete. The project will provide additional sewer services and eliminate known inflow and infiltration issues that have historically overloaded the WPCP. The project involves:
        i. The replacement of 1970s-era 12-inch terracotta sewer line and brick manholes with new 18-inch PVC sewer pipe and precast concrete manholes; and
        ii. The extension of the city's sewer line for future development within the Dublin – Laurens County South Industrial Park.
    - The city is actively conducting an inventory of the existing stormwater and wastewater infrastructure and, as time permits, is geolocating existing sewer and

storm infrastructure and incorporating those assets into a new mapping platform.

  - Thomas & Hutton are currently evaluating the existing WPCP. Following the evaluation, Thomas & Hutton will present their findings to city staff and the City Council, including recommendations and estimated costs of updating the WPCP with more modern equipment and processes.
  - Any new sewer and storm infrastructure installed is surveyed and placed on the geothinQ GIS mapping system.
  - Existing sewer and storm infrastructure is mapped on an as-needed basis as staff availability and resources allow.
- Several sewer line projects to eliminate inflow and infiltration have been added to the proposed SPLOST project list.
- The city successfully obtained an approximate $1 million Community Development Block Grant (CDBG) from the Georgia Department of Community Affairs to fund street, flood, drainage, and sidewalk improvements along W. Mary Street. The project is currently in the planning stages.
- As part of its litter reduction initiative, the city currently offers:
  - Sanitary waste service, recycling, and bulk item disposal for all commercial and residential areas within the city; and
  - The Dublin Sanitation Department offers curbside recycling.
- Keep Dublin-Laurens Beautiful (KDLB) is an affiliate group of Keep America Beautiful, which focuses on litter reduction, beautification, and recycling. KDLB exists to educate the community about the importance of recycling and the benefits of living in a litter-free area. The KDLB committee is no longer funded by the city but continues to coordinate annual neighborhood, Oconee River, and the Great American Cleanup events.

2.1.2 Non-structural BMPs

The following non-structural BMPs are planned or are being implemented within the service area:

- Dublin currently operates as a Local Issuing Authority (LIA), which includes:

    - Maintaining at least one person certified as either a Level IA "Certified Personnel," Level IB "Certified Inspector," Level II "Certified Plan Reviewer," or Level II "Certified Design Professional;"
    - Ensuring that land disturbing activities do not result in excessive soil erosion and sedimentation and that the general provisions, minimum requirements, and BMPs required by the NPDES General Permit(s) for construction activities are met;
    - Making sure developments undergoing land-disturbing activities have acquired the proper permits and have met the minimum erosion, sediment, and pollution control plan requirements;
    - Reviewing erosion control plans to ensure they are properly designed in accordance with the provisions and requirements of the General Permit(s) and the Georgia Manual for Erosion and Sediment Control; and
    - Conducting regular site inspections and permit enforcement in accordance with the local municipal code and the NPDES General Permit(s).
- The city approved an amendment to its municipal code that reconstituted its Tree Board, and Dublin was recognized as a "Tree City USA" by the Arbor Day Foundation. The code modifications were intended to promote community health and welfare by managing and planting trees in public spaces and adding protections to the city's trees and woodlands.
- As part of its green space enhancement and improvement measures:
    - The city launched its community tree initiative in spring of 2022, with a goal of planting 1,000 trees over the next two years;
    - The city successfully received a Releaf grant from the Georgia Forestry Commission, which provided 300 trees to distribute to city and county residents to be planted on private property;
    - The city contracted with a landscape architect firm in September 2022 to design landscaping within the Hillcrest Parkway medians, and the landscaping improvements were completed in 2023;
    - In 2022 the city hired Thomas & Hutton to develop a Stubbs Park Master Plan and the city plans to implement improvements from the Plan utilizing TSPLOST funding; and

    - In 2023 the city partnered with an urban design and planning firm to develop a Parks Master Plan aimed at improving the city's green space and recreational facilities. The Mayor and City Council formally adopted the plan in March 2024 with a goal of fully implementing the Plan by 2040, subject to funding.

- The city appointed a new Community Development and Grants Coordinator in December 2022. The coordinator will be responsible for securing funding to support construction, maintenance, and renovation of public facilities and infrastructure.

- The city updated its Joint Comprehensive Plan in August 2024, titled *Vision 2050: Laurens County's Blueprint for a Vibrant Community*. Concepts to achieve the Comprehensive Plan's vision of growth and development that are protective of the county's and Dublin's green environment include:
    - Concentrating future development to create walkable and bikeable communities with a "Complete Streets" policy;
    - Locating growth into corridors primed for redevelopment and encouraging in-fill development;
    - Promoting and protecting the area's natural resources such as the Oconee River and its corridor, the city's significant groundwater recharge areas, and wetlands;
    - Encouraging growth that preserves the area's open spaces and is compatible with the city's existing character;
    - Improving community aesthetics through landscaping and beautification;
    - Continuing to upgrade its water and sewer infrastructure; and
    - Maintaining and improving the city's parks and green space facilities.

- The city has taken over management of the city's parks from the Recreation Authority and hired a parks manager to help oversee the maintenance and programming of city parks.

- The city continues to implement community work program projects detailed in its updated Joint Comprehensive Plan. Accomplishments, ongoing projects, and upcoming projects included:
    - Replacement of sewer infrastructure near Long Branch and the YKK area and extension of sewer infrastructure to the Georgia Hwy 257/U.S. 441 Industrial Site in 2024;
    - Construction of drainage improvements at the intersection of Industrial Blvd and U.S. Hwy 80 that are expected to be completed sometime in 2029;

    - Completion of a walking trail to connect hotels at the U.S. Hwy 441 and I-16 Interchange to the Oconee Fall Line Technical College campus;
    - Construction of the Oconee Riverwalk and Bike Trail (Phase I) to be completed by 2029;
    - Implementation of walkability and biking improvements throughout the city by 2028;
    - Completion of multiple proposed drainage improvement projects throughout the city by 2029 and beyond;
    - Replacement or relocation of the sewer main under Dublin Mall and replacement of sewer mains at River Avenue and along Ferry Branch. The city also plans replacement of the sewer mains at Cypress Drive in 2028 and 2029 and at multiple other locations beyond 2029;
    - Upgrade the city's WPCP beyond 2029;
    - Complete improvements throughout the city's parks on an annual basis according to the 2024 City Parks Master Plan;
    - Continue working annually with the city's Tree Board to implement the city's tree planting initiative and strengthen the city's urban tree canopy; and
    - Rewrite the city's zoning ordinance by 2029 to align with the Joint Comprehensive Plan's goals.
- In summer 2024, Dublin – Laurens County became the newest Archway Partnership community. The Archway Partnership is a Public Service and Outreach unit of the University of Georgia (UGA) that connects Georgia communities to the full range of resources available through the university to address community-identified needs. The city hired its first UGA Archway Professional in 2025 to help support local priorities related to infrastructure, planning, and community development. These priorities will help guide future projects and determine where UGA support and technical assistance are focused, while also providing an opportunity for citizens involvement in the planning process.

2.1.3 Community Outreach

The city has also completed and continues to implement several education and outreach BMPs intended to improve public awareness of water quality issues in the Dublin service area, including:

- The reconstituted Tree Board is responsible for providing tree-related education and information to the public by making presentations, coordinating tree planting efforts and providing related resources, and participating in public events related to trees and outdoor beautification such as Arbor Day.
- The city advertises its tree initiative on its website, and citizens are encouraged to recommend areas and city-owned spaces to plant trees and shrubbery.
- The city of Dublin currently has an established public outreach and education program that publishes fliers, educational materials, and information on environmental topics. Publicly distributed materials include information on:
    - Septic system maintenance, the importance of stream buffers, litter reduction, recycling, water conservation methods and tips, natural resource protection, and water resources education;
    - Free materials that promote water use efficiency are available to residents; and
    - As part of the WPP, the city of Dublin will continue to provide environmental education and public outreach to residents.
- Finally, the city advertises its recycling program as part of its public outreach and education program and publishes a “Smart Water” brochure on its website that contains over 23 pages of information and tips related to water conservation measures, planting native and drought resistant landscaping, maintaining ground cover, rainwater harvesting, reducing impervious surfaces, and preventing nonpoint source runoff.

2.2 Long-term Water Quality Monitoring

Six monitoring stations are located on primary stream drainages within the Dublin WPCP service area as part of the long-term monitoring requirements outlined in the 2020 WPP (Table 1; Figure 2). However, following the 2021 monitoring period, station UTS01 was removed from the WPP long-term monitoring program because it is located within a swampy, multi-threaded portion of the stream that may be affected by beaver activity. Additionally, the stream is located in close proximity to the Oconee River floodplain and is surrounded by private property, and an alternative sampling location on this tributary is not available. Based on this change, long-term water quality monitoring has been conducted at five stations within the Dublin WPCP service area since 2022. The long-term monitoring stations are located in the Atlantic Southern Loam Plains (65l) Level IV ecoregion and the Altamaha River drainage basin (HUC 030701; see Table 1 and Figures 1 and 2).

The WPP requires annual water quality and bacteriological monitoring at these five stations. Specifically, three dry weather and one wet weather water quality monitoring events are to be conducted annually. Two bacteriological sampling series are conducted between May and October to calculate two annual geometric mean (geomean) determinations for *Escherichia coli (E. coli)*. Biological monitoring (bioassessments) of the benthic macroinvertebrate and fish communities is conducted at least twice during each five-year monitoring cycle and shall not be performed in consecutive years. The next biological monitoring events are scheduled for the 2026 WPP monitoring period.

2.2.1 2025 Water Quality Monitoring

During the 2025 monitoring period, three dry weather events, one wet weather event, and two bacteriological sampling series were completed by NAI personnel (Table 2). All laboratory sample analyses were conducted in accordance with GAEPD guidance and U.S. Environmental Protection Agency (USEPA) approved analytical methods (Table 3). Dry weather events for 2025 were conducted on March 4, July 29, and December 10. The wet weather event was conducted on October 27, when 0.54 inches of rainfall were recorded at the UGA Weather Network Laurens County Emergency Management Service station on the day of sampling. This station represents the closest location with reliable daily precipitation data (Table 4). The two bacteriological geomean determinations were completed between June 23 and July 14 and between July 22 and August 11. Photographs documenting sampling conditions during each sampling event are included on the USB drive submitted with this report. The following sections detail the results of 2025 water quality monitoring.

2.2.1.1 *In situ* Water Quality

During 2025 monitoring, water and air temperature, dissolved oxygen (DO), specific conductivity, salinity, pH, and turbidity were measured *in situ* at all stations during the dry weather, wet weather, and bacteriological sampling events (Table 5). Eight sampling events occurred between May and October, when critical conditions such as high water temperature and low DO typically happen more frequently.

Water temperature, DO, and pH measurements at stations DC01, FC01, and HHC02 were within the ranges specified in Georgia Code 391-3-6-.03: Designated Uses and Water Quality Standards (Tables 3 and 5). One DO measurement at LC01 in July and four DO measurements at UTN01 in June and July were below the DO standard of 4.0 mg/L. Stations DC01 and UTN01 had higher average specific conductivities for 2025 compared to the other stations. The conductivity values at DC01 and UTN01 decreased during the wet weather event, while the opposite occurred at most other stations, suggesting the source of higher conductivity is associated with baseflow rather than stormflow for DC01 and UTN01. Currently, there is no established water quality standard for specific conductivity; however, the dilution of conductivity during stormflow suggests that groundwater inputs, sanitary sewer leakage, or other dry weather pollutant sources may be contributing dissolved ions to surface waters in the watersheds for DC01 and UTN01. Salinity measurements showed a similar pattern and were relatively higher at stations DC01 and UTN01 than the other stations.

There is currently no numeric standard established for turbidity. Average turbidity values for 2025 ranged from 7.5 NTU at station DC01 to 19 NTU at UTN01. Higher turbidity values were often correlated with precipitation occurring on the day of the event or within the preceding three days, including during the wet weather event (Tables 4 and 5). Antecedent precipitation and wet weather have the potential to lower specific conductivity and increase turbidity, but this will not always be the case. Other potential causes of increased turbidity include high flows that cause streambank erosion, the resuspension of stream bottom sediments, and nonpoint source sediment runoff from disturbed areas in the watershed.

2.2.1.2 Analytical Water Quality

During 2025 monitoring, water samples collected during dry and wet weather events were analyzed for 5-day biochemical oxygen demand (BOD_5), chemical oxygen demand (COD), total Kjeldahl nitrogen (TKN), ammonia-nitrogen (NH_3), nitrate-nitrogen (NO_3), nitrite-nitrogen (NO_2), total phosphorus, orthophosphate, total suspended solids (TSS), total hardness, and total alkalinity (Table 6). Throughout this report, when any sample result was below the laboratory method detection limits (MDL), the MDL is reported with an appropriate qualifier.

COD concentrations above laboratory MDLs, ranging between 20 and 66 mg/L, were reported at several stations during the wet weather event and dry 3 event. Higher COD values in surface waters during dry weather may indicate the presence of organic pollutants, such as wastewater, industrial effluents, or groundwater with high levels of organic materials. Ammonia concentrations measured at station DC01 during the wet weather event and at stations LC01 and UTN01 during the dry 2 event were relatively high compared to other results, and contributed to the higher TKN concentrations measured in the same samples. Nitrate concentrations from stations DC01 and UTN01 decreased during the wet weather event compared to dry weather, while the opposite occurred for nitrate concentrations from stations FC01, HHC02, and LC01. The nitrate results suggest a groundwater or baseflow source of nitrate in Dublin Creek and the UTN01 stream that becomes diluted from stormwater, while there may be a stormwater source of nitrate in the watersheds for the other stations. Total phosphorus concentrations increased during the wet weather event for stations DC01, FC01, and UTN01. TSS concentrations were slightly higher during the wet weather and dry 2 events at some stations. Soil erosion is a major contributor of phosphorus in streams, while other sources could include fertilizers, animal wastes, and wastewater from sewage or industrial facilities.

2.2.1.3 Total Recoverable and Calculated Dissolved Metals

Total recoverable cadmium, copper, lead, and zinc were measured in samples collected during the three dry weather events and the wet weather event (Table 7). Dissolved metals concentrations were calculated from total recoverable concentrations using formulas developed by the USEPA. Calculated dissolved metals concentrations were then compared to the hardness-based acute and chronic criteria specified in GA Code 391-3-6-.03: Designated Uses and Water Quality Standards (Table 8).

Total recoverable cadmium, copper, lead, and zinc concentrations were near or below the laboratory MDLs for most events (Table 7). Copper, lead, and zinc were detected at higher concentrations in samples collected from stations DC01, FC01, and UTN01 during the wet weather event, indicating a potential contribution from metals transported in stormwater runoff within those watersheds.

Calculated dissolved lead exceeded the GAEPD chronic criterion at stations DC01 and UTN01 during the wet weather event (Table 8). The remaining calculated dissolved metals concentrations for the 2025 wet and dry weather events were below the GAEPD acute and chronic criteria across all stations. Detectable lead concentrations observed during the wet weather event at stations DC01 and UTN01 were likely the result of lead being transported with sediment particles, as evidenced by the relatively high TSS concentration and turbidity measured during the same sampling event. Potential nonpoint sources of heavy metals in urban watersheds include sediment, roof shingles, motor vehicles, and improperly disposed appliances and other waste.

2.2.1.4 Bacteriological Sampling

Two bacteriological geomean sampling events consisting of four individual samples each were conducted in 2025, and each sample was analyzed for *E. coli* bacteria concentrations. The first 2025 geomean was calculated from four individual samples collected by NAI between June 23 and July 14, and the second geomean was calculated from four samples collected between July 22 and August 11 (Table 9). The Georgia State Water Quality Standards (approved August 2022) specify that *E. coli* concentrations, calculated as a geometric mean (geomean) of four independent samples, shall not exceed 126 counts per 100 mL between May and October or 265 counts per 100 mL between November and April. The Standards also include a statistical threshold value (STV) of 410 counts per 100 mL for the summer season and 861 counts per 100 mL for the winter season. The Standards require that no more than 10% of the individual samples exceed the applicable STV within a 30-day period. (GAEPD standards and laboratory reporting inconsistently use units of MPN or CFU. For the purpose of this report, these units are treated as interchangeable and are collectively referred to as 'counts').

The Georgia Water Quality Standard geomean of 126 counts per 100 mL was exceeded during both geomean sample sets for all stations (Table 9). Out of eight individual samples from each station, the summer STV standard of 410 counts per 100 mL was exceeded for three samples from stations LC01 and HHC02, five samples from stations DC01 and FC01, and seven samples from station UTN01. These results indicate that both chronic and episodic bacteria contamination continues to occur throughout the Dublin service area, particularly within the UTN01 watershed. The maximum counts per 100 mL of 24,196 was reported for all four samples for the first geomean for station UTN01. The stream exhibited a milky appearance during these sampling events, and higher conductivities and lower DO concentrations were measured (Table 5). Sewer odors were also reported during some events. The observed conditions are consistent with a potential sewage leak or other source of sanitary wastewater entering the stream during portions of July 2025. Observations were reported to Dublin WPCP personnel in July 2025. Precipitation preceded many of the *E. coli* sampling events and correlated with higher counts in some samples (see Table 4).

The most common potential sources of excess *E. coli* in urban areas include stormwater runoff, leaking sewer infrastructure, pet waste, urban wildlife feces, or the resuspension of *E. coli* bacteria into the water column that is attached to sediments. Overall, bacteria geomeans and STV exceedances indicate that bacteria associated with nonpoint source runoff is a significant water quality concern for the Dublin WPCP service area streams.

3.0 LONG-TERM MONITORING TRENDS

Water quality data have been collected during six monitoring periods within the Dublin service area, including the 2011 WA and five years of WPP long-term monitoring conducted between 2021 and 2025. These data include the original 2011 WA monitoring and the five years of long-term monitoring completed between 2021 and 2025. The following sections provide information on climate, land use, and water quality conditions in the service area based on the available monitoring data and the 2025 monitoring data. Data evaluations are provided to identify any persistent and emerging water quality trends.

3.1 Precipitation Trends

The closest climate station with sufficient data to calculate a recent 30-year average annual precipitation total is located approximately one mile north of the city center of Dublin. Climate and NRCS WETS data were acquired from the Agricultural Applied Climate Information System (AgACIS) for the Dublin 1 monitoring station (GHCN #USC00092839). Average annual precipitation at this station between 1991 and 2020 was 47.27 inches. WETS information for the same time period indicates there is a 30 percent probability that annual precipitation will be less than 30.38 inches or more than 59.94 inches (Table 10).

Annual rainfall data for the 2011 WA and the long-term monitoring period for the Dublin WPP (2021 through 2025) were obtained from the AgACIS Dublin 2 monitoring station (GHCN #USC00092844) since the Dublin 1 station was missing precipitation data for the long-term monitoring period. The Dublin 2 station is located approximately one mile north to northeast of the city center. Total precipitation during the 2025 monitoring period was 36.81 inches, which was approximately 10.5 inches below the 30-year average. Dublin received above-normal or near-normal precipitation totals in 2021 through 2024, while precipitation during 2025 was substantially below the 30-year average.

3.2 Land Use Data

The 2024 National Land Cover Database (NLCD), produced by the Multi-Resolution Land Characteristics Consortium, represents the most recently published land use classification for the U.S. The 2024 NLCD was used to characterize land use and impervious surface coverage in the Dublin WPCP service area, as well as within the watersheds of the long-term water quality monitoring stations (which include some areas outside of the Dublin WPCP service area; see Figure 3). Land use within the watershed of each water quality station was evaluated to better understand all areas that may affect water quality at each station. For this characterization, NLCD land use classes were grouped into six categories: medium to high intensity developed, low intensity to open space developed, forest, pasture/hayland, cultivated cropland, and wetland/water.

Current land use/land cover within the Dublin WPCP service area is predominantly low intensity/open space developed and forest, covering approximately 35% and 22% of the service area, respectively (Table 11; Figure 3). Medium to high intensity developed space (9.2%), pasture/hayland (9.2%), cultivated cropland (13%), and wetland/water (12%) compose a relatively equal proportion of the rest of the land coverage in the Dublin service area. The 2024 NLCD impervious cover estimate for the service area is 14%, which is a minor increase from 2011, when impervious surfaces covered approximately 13% of the service area. Therefore, changes in development since the completion of the WA are not expected to have substantially altered overall water quality conditions in the service area.

The watersheds for stations UTN01 and DC01 contain the highest percentages of developed land (97% and 52%, respectively) among the individual station watersheds, with estimated 36% and 39% impervious surface cover. The watershed for FC01 is the least developed, containing 25% developed land and 5.7% impervious surfaces, followed by the HHC02 watershed with 46% development and 13% impervious surfaces. In addition to being the least developed, the watersheds for HHC02 and FC01 also contain the highest proportion of forested land use of the five stations, with 24% forest for HHC02 and 30% for FC01. The watershed for LC01 contains 52% developed land, with 20% impervious surfaces. The remainder of the LC01 watershed is comprised of 18% forested land, 7.8% pasture/hayland, 13% cultivated crops, and 11% open waters and wetlands.

Based on land use, stations UTN01 and DC01 may be at highest risk for nonpoint source runoff of nutrients, metals, and bacteria from urban land use, and stations FC01 and LC01 could be at a relatively higher risk for nonpoint source runoff of nutrients from agricultural land use. The watershed of HHC02 may be at relatively high risk for nonpoint source runoff of nutrients since it contains a substantial proportion of developed land (46%) with nearly equal amounts of forest and agricultural land uses. Water quality often begins to decline or exhibit signs of impairment when watershed impervious cover exceeds approximately 10% or more, and all the monitored watersheds in Dublin exceed this threshold except for station FC01.

3.3 Water Quality Trends

Evaluation of water quality trends between years can be challenging due to natural variability and the limited annual data set required by the WPP. Year-to-year variability in water quality parameters may be influenced by several natural and anthropogenic factors, including seasonal climatic variability (temperature, precipitation, groundwater discharge rates, and groundwater quality), antecedent climatic variables and hydrologic dynamics (precipitation and associated stormwater flow to receiving waters), and watershed characteristics (tidal influence, geology, soils, and land use). Additionally, the number and timing of samples collected, consistency in annual and diurnal sample collection timing, and laboratory method detection limits can also affect sample results. Due to the multitude of factors that influence water quality, conclusive identification of water quality trends and their causes is inherently problematic unless obvious drivers (e.g., changes in predominant land uses or point source pollution) can be identified. The following sections present observed water quality trends and possible drivers only when sufficient data are available and/or when identifiable watershed changes have occurred.

3.3.1 *In situ* Water Quality Trends

Average physiochemical parameter values from the Watershed Assessment (2011) and the previous long-term monitoring period (2021 through 2024) were calculated for each station and compared to the 2025 monitoring results (Tables 12 and 13). It is important to note that parameter averages are calculated from a limited set of observations, which likely do not fully represent actual intra-annual variability. During the 2025 monitoring period, a total of 11 dry weather, wet weather, or bacteriological water quality sampling events at all five stations included collection of *in situ* parameters. *In situ* data are available from between 45 and 49 events (depending on the station) from 2011 and over the long-term monitoring period (2021 through 2024) for each station, as a basis for comparison.

The 2025 annual average specific conductivity, pH, and turbidity for each station was within the range of previous years' annual average, with the exception of conductivity for station UTN01 in 2025, which was higher than previous years (Table 12). Notable changes between the 2011 WA data and the recent monitoring results include lower conductivity at stations DC01 and LC01 during the current WPP monitoring period.

DO concentrations are typically negatively correlated with water temperatures. Therefore, average water temperature and DO were calculated for samples collected during the summer months (May to October) and winter months (November to April) for each monitoring period (Table 13). Average summer temperatures in 2025 were higher than 2024 but within the range of the previous years' averages. Summer DO concentrations in 2025 were lower than 2024, with the 2025 average for stations FC01, LC01, and UTN01 the lowest since the WA in 2011. Higher summer temperatures and lower DO concentrations observed during 2025 may be partially related to below-average precipitation and reduced streamflow conditions that occurred during portions of the monitoring period. Winter water temperatures for 2025 were lower than previous years, and DO concentrations were therefore higher. Winter temperatures and DO concentrations are strongly influenced by daily climatic conditions because only one or two samples are typically collected during the winter period each year.

3.3.2 Analytical Water Quality Trends

Analytical water quality monitoring results from dry and wet weather events in 2025 were compared to results from the 2011 WA and the 2021 through 2024 long-term monitoring periods to identify any persistent and/or emerging water quality trends. Analytical results for all years are shown in Figures 4 through 29 (note that when a parameter was not detected in a sample, the laboratory MDL is shown in the figures). Only parameters that exhibited notable differences or anomalies are discussed below.

Nutrient concentrations measured during dry weather events in 2025 were similar to many results from previous years. Ammonia, nitrate, and total phosphorus from station UTN01 have frequently been measured in higher concentrations compared to most other stations. Wet weather ammonia from UTN01 was lower in 2025 compared to previous wet weather events. Nitrate concentrations continued to be relatively high at stations DC01 and LC01 in 2025, although nitrate for LC01 was lower than in 2022 and 2023. Total phosphorus was slightly lower at UTN01 and LC01 in 2025 than previous years. TSS concentrations at station LC01 have historically been higher than those observed at the other stations during dry weather events, and the dry 2 TSS concentration in 2025 was the highest observed during the monitoring period. COD concentrations from stations UTN01, LC01, HHC02, and FC01 have historically been higher than those observed at the remaining stations, but decreased in 2025 compared to past data.

Although analytical parameters are consistently higher at some stations compared to others, obvious increasing or decreasing trends are not apparent from the available water quality monitoring data. However, several stations exhibited lower phosphorus, COD, and wet weather sediment concentrations during 2025 compared to the previous years of the WPP monitoring. As discussed in sections 2.2.1 and 3.2 above, the monitored watersheds in Dublin are urbanized with high potential for nonpoint source nutrient runoff. Additionally, during dry weather conditions, potential sources of nutrients and sediment include groundwater discharge, decaying organic matter, soil erosion, and runoff from surrounding urban and agricultural areas.

Total recoverable cadmium, copper, lead, and zinc concentrations were either not detected or were within the range of previous values for all dry and wet weather sampling events (Figures 22 through 29). Among all the stations, wet weather concentrations of total recoverable copper, lead, and zinc have been generally higher at stations DC01 and UTN01 since the 2011 wet weather sampling event. This trend potentially indicates a persistent problem with nonpoint source runoff from urban land uses in those watersheds. The most likely source of detectable metals concentrations is urban stormwater runoff, since the watersheds of DC01 and UTN01 have the highest percentage of developed land of the five stations. Stormwater control and continued monitoring efforts should be focused in the DC01 and UTN01 watersheds.

3.3.3 Bacteriological Trends

E. coli geomeans calculated during the 2011 WA and the 2021 through 2024 monitoring periods were plotted for comparison to the 2025 geomeans (Figures 30 through 34). *E. coli* geomeans during 2025 were within the ranges of historical geomeans for stations HHC02 and LC01. The second geomean at station DC01 was higher than any previously observed geomean. Similarly, the second geomean at FC01 and the first geomean at UTN01 exceeded all previously observed geomeans at those stations. There appears to be a persistent source of *E. coli* contributing to surface waters upstream of station UTN01. Field observations during 2025, including sewer odors, a milky appearance of the stream, low DO concentrations, and extremely high *E. coli* counts, were reported to the city and suggest that occasional sanitary wastewater inputs may be contributing to bacteria concentrations in this watershed. Bacteria are commonly transported in stormwater runoff from a variety of sources, and the higher geomeans observed at these three stations may be related to the relatively high percentages of developed land and impervious surface cover within their contributing watersheds. Urban runoff, septic/sewage leaks, and stormwater overflows are common contributing factors to bacteria loading in freshwater systems. The widespread exceedance of both the geomean criterion and the summer STV indicates that bacterial contamination remains one of the most significant water quality concerns within the Dublin WPCP service area.

3.4 Summary of Long-term Water Quality Trends

Long-term monitoring data indicate that persistent pollutant sources exist within the watersheds upstream of stations UTN01 and DC01 during both baseflow and stormflow conditions. The watersheds upstream of both stations contain high percentages of developed land use. Nutrient runoff appears to be a persistent issue for Long Branch at station LC01. Additionally, bacteria monitoring results indicate that bacteria associated with nonpoint source runoff remains a significant water quality concern in streams throughout the Dublin WPCP service area.

BMPs that reduce runoff to streams from urban and agricultural areas, along with continued inspection and maintenance of sewer infrastructure, should help improve water quality conditions within the Dublin WPCP service area. The UTN01 watershed should remain the highest priority for sanitary sewer infrastructure inspections to determine if maintenance or rehabilitation is needed. The DC01 and UTN01 watersheds should be considered high priority watersheds for implementation of BMPs that address urban runoff, while the LC01 and HHC02 watersheds should be considered moderate priority watersheds for the same measures. The FC01 and HHC02 watersheds should be considered moderate priority watersheds for implementation of BMPs that address runoff associated with agricultural land use. Continued monitoring will assist the city in determining whether future changes in instream sediment, nutrient, metal, and bacteria concentrations are associated with watershed conditions and land use changes and whether additional BMP measures are warranted.

4.0 FUTURE SAMPLING AND PROPOSED WPP CHANGES

The Dublin WPP was approved in 2020 and is next scheduled to be updated in 2029 in accordance with the GAEPD WPP guidance. The 2026 monitoring period for the Dublin WPP long-term monitoring began in January 2026. Three dry weather events, one wet weather event, and two bacteria geometric mean determinations (consisting of eight individual bacteriological sampling events) are scheduled for completion prior to December 31, 2026. Biological sampling is next scheduled for 2026 (Table 14).

In accordance with the WPP guidance, dry weather monitoring events should occur at least 60 days apart. When possible, wet weather events should be conducted during summer months (May to October) in order to assess water quality during critical conditions (low flow and high water temperatures). However, due to the unpredictable timing, duration, and intensity of convective storms that are common during the summer months in Georgia, sampling during critical conditions may not be possible. Biological assessments shall be conducted at least twice during every five-year period and shall not be performed in consecutive years. Future macroinvertebrate and fish assessments will be conducted at FC01 and LC01 utilizing the most recent Georgia Department of Natural Resources (DNR) biological monitoring Standard Operating Procedures (SOPs). As required by the WPP guidance, dry weather monitoring events conducted during biological sampling years will occur concurrently with macroinvertebrate and fish community assessments.

TABLES

Table 1. Location information and monitoring requirements for each long-term monitoring station for the Dublin Watershed Protection Plan.

Station ID	**Site description**	**Latitude**	**Longitude**	**Watershed area**	**Monitoring parameters**
		DD		sq. mi.	
DC01	Dublin Creek at South Decatur Street	32.537804	-82.898086	1.58	Water Quality only
FC01	Fords Creek at US 80	32.544569	-82.963925	9.47	Water Quality and Biology
HHC02	Hunger and Hardship Creek at East Mary Street	32.554264	-82.901653	17.0	Water Quality only
LC01	Long Branch at Riverview Park Drive	32.517863	-82.891951	5.48	Water Quality and Biology
UTN01	Unnamed Tributary at Bainbridge Street	32.544555	-82.900095	0.77	Water Quality only

Table 2. Sampling events for the Dublin 2025 Watershed Protection Plan long-term monitoring.

Sampling task	**2025**											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Water Quality												
In situ			D				D			W		D
Analytical			D				D			W		D
Bacteria (*E. coli*)						B	B					

D = dry weather sampling event.
W = wet weather event sampling.
B = bacteriological sampling event.

Table 3. Required water quality parameters, test methods, and applicable Water Quality Standards for the Dublin Watershed Protection Plan long-term monitoring.

Parameter	**Units**	**Method[1-3]**	**Water Quality Standard**
Temperature (water and air)	°C		32.2°C (equivalent to 90°F)
pH	SU		Within the range 6.0 - 8.5
Dissolved oxygen	mg/L & % saturation		A daily average of 5.0 mg/L; no less than 4.0 mg/l at all times
Specific conductivity	µS/cm		
Turbidity	NTU		Refer to 391-3-6-.03(5)(d)
Biochemical oxygen demand, 5-day	mg/L	SM 5210B	
Chemical oxygen demand	mg/L	EPA 410.4	
Total suspended solids	mg/L	SM 2540D	
Total phosphorus	mg/L	EPA 365.3	
Orthophosphate	mg/L	EPA 300.0	
Total Kjeldahl nitrogen	mg/L	EPA 351.2	
Ammonia nitrogen	mg/L	EPA 350.1	
Nitrate, as nitrogen	mg/L	EPA 300.0	
Nitrite, as nitrogen	mg/L	EPA 300.0	1.0 (MCL)
Cd - Total and dissolved[4,5]	µg/L	EPA 200.8	Chronic criteria 0.43
			Acute criteria 0.94
Cu - Total and dissolved[4,5]	µg/L	EPA 200.8	Chronic criteria 5.0
			Acute criteria 7.0
Pb - Total and dissolved[4,5]	µg/L	EPA 200.8	Chronic criteria 1.2
			Acute criteria 30
Zn - Total and dissolved[4,5]	µg/L	EPA 200.8	Chronic criteria 65
			Acute criteria 65
Total hardness, as $CaCO_3$	mg/L	EPA 200.7	
Calcium	mg/L	EPA 200.7	
Magnesium	mg/L	EPA 200.7	
Alkalinity, total	mg/L	SM 2320B	
Escherichia coli (*E. coli*)[6]	counts/ 100 mL	SM 9223B	May-Oct: 126 (geomean); 410 (STV)
			Nov-Apr: 265 (geomean); 861 (STV)

[1] Laboratory analyses will be in accordance with the approved test procedures set forth in 40 CFR 136.

[2] The method detection limit (MDL) and/or reporting limit (RL) listed for each standard method was provided by the analytical laboratory listed on the laboratory reports provided on the attached report USB drive.

[3] The MDL and RL for each standard method will vary based on the sample matrix, environmental conditions at the time of sampling, and laboratory sample preparation steps, instrumentation, and technology.

[4] Total recoverable metal concentrations are converted to dissolved using TSS concentrations and translator equations developed by the USEPA (USEPA 823-B-96-007), and then compared to hardness-based acute and chronic criteria specified in O.C.G.A 391-3-6-03.

[5] The in-stream criterion for metals are expressed as chronic and acute criteria in terms of the dissolved fraction in the water column for freshwater streams.

[6] The Georgia Water Quality Standards require *E. coli* geometric means of ≤126 counts/100 mL (May to October) and ≤265 counts/100 mL (November to April), with statistical threshold values (STVs) of 410 and 861 counts/100 mL, respectively; no more than 10% of the individual samples may exceed the STV within a 30-day period.

Table 4. Observed precipitation at the Dublin Water Pollution Control Plant during and prior to each 2025 sampling event.

Sampling event type	Date	Day of event	3 days preceding	7 days preceding
		inches		
Dry weather 1	3/04/2025	0.00	0.00	0.00
Bacteriological 1-1	6/23/2025	0.00	0.00	0.00
Bacteriological 2-1	6/30/2025	0.00	0.00	1.70
Bacteriological 3-1	7/07/2025	0.00	0.00	0.00
Bacteriological 4-1	7/14/2025	0.00	2.00	0.00
Bacteriological 1-2	7/22/2025	0.00	0.00	0.00
Dry weather 2 + bacteriological 2-2	7/29/2025	0.00	0.00	0.00
Bacteriological 3-2	8/04/2025	0.25	1.65	1.65
Bacteriological 4-2	8/11/2025	2.90	0.00	1.70
Wet Weather[1]	10/27/2025	0.54	0.00	0.00
Dry weather 3	12/10/2025	0.00	0.07	1.08

[1] Observed precipitation for the wet weather event was obtained from the UGA Weather Network Laurens County Emergency Management Service station.

Table 5. Results of physicochemical water quality monitoring for the Dublin 2025 Watershed Protection Plan long-term monitoring.

Station	Sampling event type	Date	Temperature Water	Temperature Air	Dissolved oxygen	Dissolved oxygen	Specific conductivity	Salinity	pH	Turbidity
			°C	°C	mg/L	%	µS/cm	PPT	SU	NTU
DC01	Dry weather 1	3/04/2025	14.1	22.5	11.9	115.3	NR	0.06	7.2	7.0
	Bacteriological 1-1	6/23/2025	24.6	29.5	8.1	97.5	142	0.07	7.4	3.5
	Bacteriological 2-1	6/30/2025	25.3	29.3	7.9	95.3	147	0.07	7.3	4.2
	Bacteriological 3-1	7/07/2025	24.5	29.5	8.1	96.8	144	0.07	7.7	2.9
	Bacteriological 4-1	7/14/2025	25.1	29.4	7.4	89.8	142	0.07	7.4	3.1
	Bacteriological 1-2	7/22/2025	25.6	28.4	6.8	83.2	136	0.06	7.2	8.1
	Dry weather 2 + bacteriological 2-2	7/29/2025	26.0	30.0	7.4	91.7	135	0.06	7.4	4.0
	Bacteriological 3-2	8/04/2025	21.2	22.0	8.4	94.6	96	0.05	7.2	27
	Bacteriological 4-2	8/11/2025	25.1	28.3	7.7	93.3	112	0.05	6.9	25
	Wet Weather	10/27/2025	16.0	17.7	8.8	88.5	55	0.03	7.1	51
	Dry weather 3	12/10/2025	8.82	12.3	10.7	92.0	175	0.09	7.1	7.4
	AVERAGE		23.3	27.6	8.3	95.5	134	0.06	6.8	7.5
FC01	Dry weather 1	3/04/2025	11.7	20.4	9.8	90.1	63	0.03	7.1	5.8
	Bacteriological 1-1	6/23/2025	23.9	28.9	6.3	74.9	93	0.03	6.7	7.0
	Bacteriological 2-1	6/30/2025	23.9	27.5	6.9	81.4	70	0.04	7.0	16
	Bacteriological 3-1	7/07/2025	23.6	25.4	6.2	81.1	74	0.03	6.6	15
	Bacteriological 4-1	7/14/2025	25.9	27.6	4.5	54.8	91	0.04	6.8	15
	Bacteriological 1-2	7/22/2025	25.8	26.6	4.3	53.6	100	0.05	6.7	16
	Dry weather 2 + bacteriological 2-2	7/29/2025	25.9	27.8	4.6	57.2	108	0.05	6.8	21
	Bacteriological 3-2	8/04/2025	22.6	23.2	4.9	56.8	103	0.05	6.8	30
	Bacteriological 4-2	8/11/2025	24.5	26.5	5.0	59.8	64	0.03	6.4	11
	Wet Weather	10/27/2025	15.5	18.8	8.2	82.8	61	0.03	7.0	14
	Dry weather 3	12/10/2025	6.60	12.3	8.6	70.0	125	0.07	6.6	3.8
	AVERAGE		20.9	24.1	6.3	69.3	86	0.04	6.4	14

Table 5. Results of physicochemical water quality monitoring for the Dublin 2025 Watershed Protection Plan long-term monitoring. (Continued)

Station	Sampling event type	Date	Temperature		Dissolved oxygen		Specific conductivity	Salinity	pH	Turbidity
			Water	Air						
			°C		mg/L	%	µS/cm	PPT	SU	NTU
HHC02	Dry weather 1	3/04/2025	13.2	29.1	10.4	99.2	77	0.04	7.7	5.9
	Bacteriological 1-1	6/23/2025	24.6	28.7	8.3	99.5	106	0.05	7.2	18
	Bacteriological 2-1	6/30/2025	25.9	29.6	6.3	78.1	96	0.05	7.0	7.9
	Bacteriological 3-1	7/07/2025	26.2	31.0	6.8	84.7	109	0.05	7.2	11
	Bacteriological 4-1	7/14/2025	26.9	31.6	6.6	82.2	104	0.05	7.2	13
	Bacteriological 1-2	7/22/2025	26.6	31.4	6.1	76.3	105	0.05	7.0	27
	Dry weather 2 + bacteriological 2-2	7/29/2025	27.0	30.7	6.1	76.2	118	0.06	7.1	13
	Bacteriological 3-2	8/04/2025	22.1	23.0	7.5	86.1	90	0.04	7.1	17
	Bacteriological 4-2	8/11/2025	26.3	30.5	5.8	71.6	55	0.03	6.5	16
	Wet Weather	10/27/2025	14.9	14.7	7.6	75.8	109	0.05	6.8	13
	Dry weather 3	12/10/2025	9.21	11.6	9.5	82.7	131	0.07	7.3	6.2
	AVERAGE		22.1	26.5	7.4	83.0	100	0.05	6.8	13
LC01	Dry weather 1	3/04/2025	14.0	25.7	10.3	100.0	70	0.03	7.5	12
	Bacteriological 1-1	6/23/2025	25.4	30.1	6.4	76.9	85	0.04	7.0	9.2
	Bacteriological 2-1	6/30/2025	25.1	29.4	6.3	75.7	72	0.03	7.0	8.4
	Bacteriological 3-1	7/07/2025	23.9	26.8	5.9	69.7	112	0.05	6.9	6.4
	Bacteriological 4-1	7/14/2025	25.4	28.3	6.3	76.2	82	0.04	7.1	8.0
	Bacteriological 1-2	7/22/2025	25.2	28.1	5.5	66.5	86	0.04	6.9	14
	Dry weather 2 + bacteriological 2-2	7/29/2025	25.6	28.9	3.4	42.2	128	0.06	6.9	9.4
	Bacteriological 3-2	8/04/2025	21.7	24.5	7.8	89.8	98	0.05	7.3	7.9
	Bacteriological 4-2	8/11/2025	25.1	28.1	6.8	82.2	43	0.02	6.5	55
	Wet Weather	10/27/2025	15.1	17.4	7.2	72.0	114	0.05	7.1	5.0
	Dry weather 3	12/10/2025	7.09	11.9	10.1	83.0	129	0.07	6.8	8.6
	AVERAGE		21.2	25.4	6.9	75.8	93	0.04	6.6	13

Table 5. Results of physicochemical water quality monitoring for the Dublin 2025 Watershed Protection Plan long-term monitoring. (Continued)

Station	Sampling event type	Date	Temperature		Dissolved oxygen		Specific conductivity	Salinity	pH	Turbidity
			Water	Air						
			°C		mg/L	%	µS/cm	PPT	SU	NTU
UTN01	Dry weather 1	3/04/2025	15.1	25.2	15.9	158.4	82	0.04	8.7	4.6
	Bacteriological 1-1	6/23/2025	25.3	29.5	3.2	38.2	200	0.10	7.1	17
	Bacteriological 2-1	6/30/2025	25.2	29.8	3.5	42.4	206	0.10	7.0	12
	Bacteriological 3-1	7/07/2025	25.0	29.9	3.0	35.6	269	0.13	7.2	61
	Bacteriological 4-1	7/14/2025	25.9	30.4	1.4	17.7	239	0.12	7.2	14
	Bacteriological 1-2	7/22/2025	26.2	30.3	6.0	75.0	129	0.06	7.2	11
	Dry weather 2 + bacteriological 2-2	7/29/2025	26.1	30.9	7.2	89.0	171	0.08	7.5	4.6
	Bacteriological 3-2	8/04/2025	22.1	22.1	5.0	57.2	117	0.07	6.9	21
	Bacteriological 4-2	8/11/2025	25.4	28.8	4.7	53.2	138	0.07	6.9	29
	Wet Weather	10/27/2025	15.7	17.6	9.3	93.9	48	0.02	6.7	23
	Dry weather 3	12/10/2025	9.09	12.3	11.1	96.6	189	0.10	7.3	6.2
	AVERAGE		21.9	26.1	6.4	68.8	163	0.08	6.9	19

NR Parameter results not reported due to field recording error.

Table 6. Results of analytical water quality monitoring for the Dublin 2025 Watershed Protection Plan long-term monitoring.

Station	Sampling event type	Date	BOD_5	COD	TKN	NH_3	Nitrate	Nitrite	Total P	ortho-P	TSS	Hardness	Alkalinity
			mg/L									mg/L $CaCO_3$	
DC01	Dry 1	3/4/2025	<2.0	17 I	<0.20	0.023 I	0.84	0.20 I	<0.0063	<0.20	2.5	48	40
	Dry 2	7/29/2025	<2.0	<10.0	0.222 I	0.041	0.72 I	<0.20	0.033	<0.20 J	<2.0	48	43
	Wet	10/27/2025	3.9	27	0.588	0.130	0.40 I	<0.20	0.145	<0.20	24	21	6.5 I
	Dry 3	12/10/2025	<2.0	14 I	<0.050	0.056	0.89	<0.20	0.025	<0.20	<2.0	54	48
FC01	Dry 1	3/4/2025	<2.0	17 I	<0.20	<0.017	0.25 I	0.20 I	<0.0063	<0.20	2.5	20	15 I
	Dry 2	7/29/2025	<2.0	<10.0	0.431 I	0.074	0.30 I	<0.20	0.038	<0.20	4.6	40	33
	Wet	10/27/2025	2.8	22	0.447	<0.010	0.34 I	<0.20	0.106	<0.20	9.3	18	<5.0
	Dry 3	12/10/2025	<2.0	18 I	0.444 J	0.013 I	<0.20	<0.20	0.038	<0.20	<2.0	25	14 I
HHC02	Dry 1	3/4/2025	<2.0	26	<0.20	0.040	0.26 I	0.20 I	0.014 I	<0.20	2.3	26	18 I
	Dry 2	7/29/2025	<2.0	<10.0	0.364 I	0.052	0.28 I	<0.20	0.033	<0.20	3.8	43	37
	Wet	10/27/2025	<2.0	20	0.144 I	<0.010	0.20 I	<0.20	0.048	<0.20	5.1	37	29
	Dry 3	12/10/2025	<2.0	35	<0.050	0.017 I	<0.20	<0.20	0.038	<0.20	2.0	31	25
LC01	Dry 1	3/4/2025	<2.0	20 I	<0.20	0.027 I	0.32 I	0.20 I	<0.0063	<0.20	3.5	25	20
	Dry 2	7/29/2025	<2.0	18 I	0.620	0.170	0.42 I	<0.20	0.095	<0.20	13	50	44
	Wet	10/27/2025	<2.0	14 I	0.603	0.012 I	0.73 I	<0.20	0.072	<0.20	2.0	44	30
	Dry 3	12/10/2025	<2.0	37	0.099 I	0.019 I	0.27 I	<0.20	0.038	<0.20	<2.0	35	22
UTN01	Dry 1	3/4/2025	<2.0	13 I	<0.20	0.022 I,J	0.70 I	0.21 I	<0.0063	<0.20	2.5	42	25
	Dry 2	7/29/2025	3.0	12 I	0.486 I	0.180	0.49 I	<0.20	0.087	<0.20	2.1	62	52
	Wet	10/27/2025	4.0	27	0.521	0.019 I	0.37 I	<0.20	0.106	<0.20	13	15	<5.0
	Dry 3	12/10/2025	<2.0	66	0.077 I	0.054	0.65 I	<0.20	0.051	0.28 I	<2.0	60	53

< Compound was analyzed for but was not detected. MDLs shown.

I Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

J Estimated result.

Table 7. Results of total recoverable and calculated dissolved metals analyses for the Dublin 2025 Watershed Protection Plan long-term monitoring.[1-2]

Station	Sampling event type	Date	Cadmium		Copper		Lead		Zinc	
			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
			µg/L							
DC01	Dry 1	3/4/2025	<0.25	0.05	<1.0	0.45	<0.50	0.12	19 I	7.5
	Dry 2	7/29/2025	<0.25	0.05	<1.0	0.45	<0.50	0.12	16 I	6.3
	Wet	10/27/2025	<0.25	0.07	3.2 I	1.0	3.5	0.56	45	11
	Dry 3	12/10/2025	<0.25	0.05	<1.0	0.45	<0.50	0.12	29	11
FC01	Dry 1	3/4/2025	<0.25	0.05	<1.0	0.43	<0.50	0.11	13 I	4.9
	Dry 2	7/29/2025	<0.25	0.06	<1.0	0.39	<0.50	0.10	14 I	4.7
	Wet	10/27/2025	<0.25	0.06	2.7 I	0.95	0.55 I	0.10	49 J	14
	Dry 3	12/10/2025	<0.25	0.05	<1.0	0.45	<0.50	0.12	19 I	7.5
HHC02	Dry 1	3/4/2025	<0.25	0.05	<1.0	0.44	<0.50	0.12	12 I	4.6
	Dry 2	7/29/2025	<0.25	0.06	1.1 I	0.45	<0.50	0.11	16 I	5.6
	Wet	10/27/2025	<0.25	0.06	<1.0	0.39	<0.50	0.10	18 I	5.9
	Dry 3	12/10/2025	<0.25	0.05	<1.0	0.45	<0.50	0.12	21 I	8.3
LC01	Dry 1	3/4/2025	<0.25	0.06	<1.0	0.41	<0.50	0.11	14 I	5.0
	Dry 2	7/29/2025	<0.25	0.06	<1.0	0.33	<0.50	0.09	20 I	5.4
	Wet	10/27/2025	<0.25	0.05	<1.0	0.45	<0.50	0.12	29	11
	Dry 3	12/10/2025	<0.25	0.05	1.9 I	0.85	<0.50	0.12	27	11
UTN01	Dry 1	3/4/2025	<0.25	0.05	<1.0	0.43	<0.50	0.11	14 I	5.3
	Dry 2	7/29/2025	<0.25	0.05	<1.0	0.44	<0.50	0.12	17 I	6.6
	Wet	10/27/2025	<0.25	0.06	3.2 I	1.1	2.2	0.39	37	10
	Dry 3	12/10/2025	<0.25	0.05	1.3 I	0.58	0.54 I	0.13	33	13

[1] When total metal or TSS concentrations were not detected, laboratory detection limit values were used to calculate dissolved metal concentrations.

[2] Dissolved metal concentrations were calculated using total recoverable metal and TSS concentrations using translator equations in the USEPA guidance document USEPA 823-B-96-007.

I Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

< Compound was analyzed for but was not detected (ND). MDLs shown.

Table 8. Calculated dissolved metals concentrations for the Dublin 2025 Watershed Protection Plan long-term monitoring compared to Georgia EPD chronic and acute life use criteria for cadmium, copper, lead, and zinc.

	DC01		FC01		HHC02		LC01		UTN01	
	µg/L									
Dry Weather #1										
Cadmium Concentration[1]	<	0.05	<	0.05	<	0.05	<	0.06	<	0.05
Acute Criterion		0.90		0.40		0.51		0.49		0.80
Chronic Criterion		0.41		0.21		0.26		0.25		0.37
Copper Concentration[2]	<	0.45	<	0.43	<	0.44	<	0.41	<	0.43
Acute Criterion		6.7		2.9		3.8		3.6		5.9
Chronic Criterion		1.1		2.3		2.8		2.7		4.3
Lead Concentration[3]	<	0.12	<	0.11	<	0.12	<	0.11	<	0.11
Acute Criterion		29		11		15		14		25
Chronic Criterion		1.1		0.42		0.57		0.54		0.97
Zinc Concentration[4]	I	7	I	5	I	4.6	I	5.0	I	5.3
Acute Criterion		63		30		37		36		56
Chronic Criterion		63		30		38		36		57
Dry Weather #2										
Cadmium Concentration[1]	<	0.05	<	0.06	<	0.06	<	0.06	<	0.05
Acute Criterion		0.90		0.76		0.81		0.94		1.1
Chronic Criterion		0.41		0.36		0.38		0.43		385
Copper Concentration[2]	<	0.45	<	0.39	I	0.45	<	0.33	<	0.44
Acute Criterion		6.7		5.7		6.1		7.0		8.6
Chronic Criterion		4.8		4.1		4.4		5.0		6.0
Lead Concentration[3]	<	0.12	<	0.10	<	0.11	<	0.09	<	0.12
Acute Criterion		29		24		25		30		38
Chronic Criterion		1.1		0.92		0.99		1.2		1.5
Zinc Concentration[4]	I	6.3	I	4.7	I	5.6	I	5.4	I	6.6
Acute Criterion		63		54		57		65		78
Chronic Criterion		63		54		58		66		79

Table 8. Calculated dissolved metals concentrations for the Dublin 2025 Watershed Protection Plan long-term monitoring compared to Georgia EPD chronic and acute life use criteria for cadmium, copper, lead, and zinc. (Continued)

	DC01	FC01	HHC02	LC01	UTN01
	µg/L				
Dry Weather #3					
Cadmium Concentration[1]	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acute Criterion	1.0	0.49	0.60	0.67	1.1
Chronic Criterion	0.45	0.25	0.30	0.33	0.49
Copper Concentration[2]	< 0.45	< 0.45	< 0.45	I 0.85	I 0.58
Acute Criterion	7.5	3.6	4.5	5.0	8.3
Chronic Criterion	5.3	2.7	3.3	3.7	5.8
Lead Concentration[3]	< 0.12	< 0.12	< 0.12	< 0.12	I 0.13
Acute Criterion	33	14	18	20	37
Chronic Criterion	1.3	0.54	0.69	0.79	1.4
Zinc Concentration[4]	11	I 7.5	I 8.3	11	13
Acute Criterion	70	36	43	48	76
Chronic Criterion	70	36	44	49	77
Wet Weather					
Cadmium Concentration[1]	< 0.07	< 0.06	< 0.06	< 0.05	< 0.06
Acute Criterion	0.42	0.36	0.71	0.83	0.30
Chronic Criterion	0.22	0.20	0.34	0.39	0.17
Copper Concentration[2]	I 1.0	I 0.95	< 0.39	< 0.45	I 1.1
Acute Criterion	3.1	2.7	5.3	6.2	2.2
Chronic Criterion	2.4	2.1	3.8	4.4	1.8
Lead Concentration[3]	0.56[5]	I 0.10	< 0.10	< 0.12	0.39[5]
Acute Criterion	11	9.6	22	26	7.8
Chronic Criterion	0.44	0.37	0.84	1.0	0.30
Zinc Concentration[4]	11	J 14	I 5.9	11	10
Acute Criterion	31	27	50	58	23
Chronic Criterion	31	28	51	59	24

[1] Cadmium aquatic life criteria standard correction to measured hardness:
Acute criteria = (e0.9789[ln(hardness)]-3.866))*CF; CF: (1.136672-[(ln(hardness)(0.041838)] µg/L.
Chronic criteria = (e(0.7977[ln(hardness)]-3.909))*CF; CF: (1.101672-[(ln(hardness)(0.041838)] µg/L.
[2] Copper aquatic life criteria standard correction to measured hardness:
Acute criteria = (e(0.9422[ln(hardness)]-1.700))*CF; CF: 0.960 µg/L.
Chronic criteria = (e(0.8545[ln(hardness)]-1.702))*CF; CF: 0.960 µg/L.
[3] Lead aquatic life criteria standard correction to measured hardness:
Acute criteria = (e(1.273[ln(hardness)]-1.460))*CF; CF: (1.46203-[(ln (hardness)(0.145712)]) µg/L.
Chronic criteria = (e(1.273[ln(hardness)]-4.705))*CF; CF: (1.46203-[(ln (hardness)(0.145712)]) µg/L.
[4] Zinc aquatic life criteria standard correction to measured hardness:
Acute criteria = (e(0.8473[(ln(hardness)]+0.884))*CF; CF: 0.978 µg/L.
Chronic criteria = (e(0.8473[(ln(hardness)]+0.884))*CF; CF: 0.986 µg/L.
[5] The calculated dissolved metal concentration exceeded the chronic life use criteria.
J Estimated result.
I Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
< Compound was analyzed for but was not detected (ND). MDLs shown.

Table 9. Results of individual bacteriological samples and geometric mean determinations of *E. coli* for the Dublin 2025 Watershed Protection Plan long-term monitoring.

Site	Sample date	*E. coli* counts/100 mL	Site	Sample date	*E. coli* counts/100 mL	Site	Sample date	*E. coli* counts/100 mL
DC01	6/23/2025	332	FC01	6/23/2025	857	HHC02	6/23/2025	5,794
	6/30/2025	1,160		6/30/2025	249		6/30/2025	387
	7/7/2025	404		7/7/2025	216		7/7/2025	52
	7/14/2025	295		7/14/2025	216		7/14/2025	187
	Geomean 1	**463**		**Geomean 1**	**316**		**Geomean 1**	**384**
	7/22/2025	959		7/22/2025	464		7/22/2025	1,153
	7/29/2025	697		7/29/2025	2,282		7/29/2025	85
	8/4/2025	836		8/4/2025	2,359		8/4/2025	226
	8/11/2025	3,076		8/11/2025	780		8/11/2025	1,439
	Geomean 2	**1,145**		**Geomean 2**	**1,181**		**Geomean 2**	**423**
LC01	6/23/2025	120	UTN01	6/23/2025	24,196			
	6/30/2025	299		6/30/2025	24,196			
	7/7/2025	275		7/7/2025	24,196			
	7/14/2025	256		7/14/2025	24,196			
	Geomean 1	**224**		**Geomean 1**	**24,196**			
	7/22/2025	717		7/22/2025	1,725			
	7/29/2025	241		7/29/2025	644			
	8/4/2025	1,046		8/4/2025	269			
	8/11/2025	9,208		8/11/2025	1,850			
	Geomean 2	**1,136**		**Geomean 2**	**862**			

Table 10. Thirty-year average annual precipitation observed at Dublin 1 station (GHCN # USC00092839) and annual precipitation totals observed at Dublin 2 station (GHCN # USC00092844) during the Dublin Watershed Assessment and Watershed Protection Plan long-term monitoring.

Monitoring year	**Observed precipitation**	**Departure from normal**
	inches	
1991 – 2020 average (± 30% exceedance chance)	47.27 (30.38 – 59.94)	n/a
2021	53.86	+ 6.59
2022	47.05	- 0.22
2023	56.54	+ 9.27
2024	62.70	+ 15.4
2025	36.81	- 10.6

Table 11. National Land Cover Database (NLCD) land cover classifications and percent imperviousness within the Dublin Water Pollution Control Plant service area and long-term water quality monitoring station watersheds.

Land cover[1]	Service area						DC01		FC01		HHC02		LC01		UTN01	
	2011		2019		2024		2024									
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Developed - med to high intensity	2,409	8.4	2,539	8.9	2,633	9.2	585	17	163	2.7	737	6.7	585	17	123	25
Developed low intensity/open space	9,062	32	9,492	33	10,012	35	1,227	35	1,345	22	4,216	39	1,227	35	352	72
Forest	6,394	22	6,264	22	6,271	22	598	17	1,800	30	2,668	24	598	17	10	2.0
Pasture/hayland	1,724	6.0	2,471	8.7	2,641	9.2	308	8.8	417	6.8	1,136	10	308	8.8	1	0.23
Cultivated cropland	5,347	19	4,255	15	3,630	13	397	11	1,434	24	892	8.1	397	11	0	0.00
Wetland/water	3,628	13	3,545	12	3,514	12	390	11	936	15	1,300	12	390	11	6	1.2
Imperviousness[2-3]																
Impervious surfaces	3,692	13	3,860	14	3,983	14	393	39	348	5.7	1,420	13	690	20	176	36

[1] Forest includes 41,42,43,52; pasture/hayland includes 71, 81; and developed low intensity/open space includes 21, 22, 31.

[2] Impervious surfaces are estimated separately from land cover, and may overlap with land cover classifications.

[3] Monitoring station watersheds encompass drainage areas that may extend beyond the service area boundaries.

Table 12. Comparison of average physicochemical water quality results for the Dublin 2011 Watershed Assessment and 2021 through 2025 Watershed Protection Plan long-term monitoring.

Station	Sample period	No. samples	Specific conductivity	pH	Turbidity
		count	µS/cm	SU	NTU
DC01	2011	3	258	7.9	1.5
	2021	11	132	6.7	18
	2022	11	131	6.9	15
	2023	11	115	7.0	15
	2024	9	126	6.8	12
	2025	10-11	128	7.2	13
FC01	2011	5-6	84	6.6	2.8
	2021	11	65	6.3	9.8
	2022	11	93	6.5	13
	2023	11	85	6.8	11
	2024	11	74	6.4	11
	2025	11	86	6.7	14
HHC02	2011	5-6	110	6.9	15
	2021	10-11	73	6.8	13
	2022	11	97	6.9	18
	2023	11	85	6.8	13
	2024	11	85	6.8	10
	2025	11	100	7.0	14
LC01	2011	5-6	114	6.9	9.5
	2021	11	89	6.5	11
	2022	11	95	6.7	17
	2023	11	82	6.9	19
	2024	11	72	6.6	17
	2025	11	93	6.9	13
UTN01	2011	5-6	119	6.5	11
	2021	11	77	6.1	40
	2022	11	150	7.0	68
	2023	11	121	7.1	19
	2024	11	141	6.9	12
	2025	11	163	7.1	19

Table 13. Comparison of average summer and winter water temperatures and dissolved oxygen concentrations for the Dublin 2011 Watershed Assessment and 2021 through 2025 Watershed Protection Plan long-term monitoring.

Station	Season	Sample period	No. samples	Water temperature	Dissolved oxygen
			count	°C	mg/L
DC01	Summer	2011	3	26.1	6.2
		2021	10	23.7	7.3
		2022	10	23.1	7.4
		2023	10	23.9	7.5
		2024	7	21.7	8.2
		2025	9	23.7	7.8
	Winter	2011	0	NM	NM
		2021	1	10.6	10.9
		2022	1	27.3	10.5
		2023	1	17.2	9.9
		2024	2	17.0	9.4
		2025	2	11.5	11.3
FC01	Summer	2011	5	26.8	4.2
		2021	10	23.0	6.3
		2022	10	23.2	6.0
		2023	10	23.2	6.3
		2024	9	22.6	6.6
		2025	9	23.5	5.7
	Winter	2011	1	17.7	10.5
		2021	1	11.2	8.8
		2022	1	14.9	8.0
		2023	1	16.3	9.5
		2024	2	15.8	7.4
		2025	2	9.20	9.2
HHC02	Summer	2011	5	26.6	3.4
		2021	10	23.7	6.7
		2022	10	23.9	6.6
		2023	10	23.9	6.7
		2024	9	23.5	6.9
		2025	9	24.5	6.8
	Winter	2011	1	17.2	3.3
		2021	1	10.2	9.8
		2022	1	17.3	8.7
		2023	1	15.8	8.7
		2024	2	19.1	7.7
		2025	2	11.2	9.9

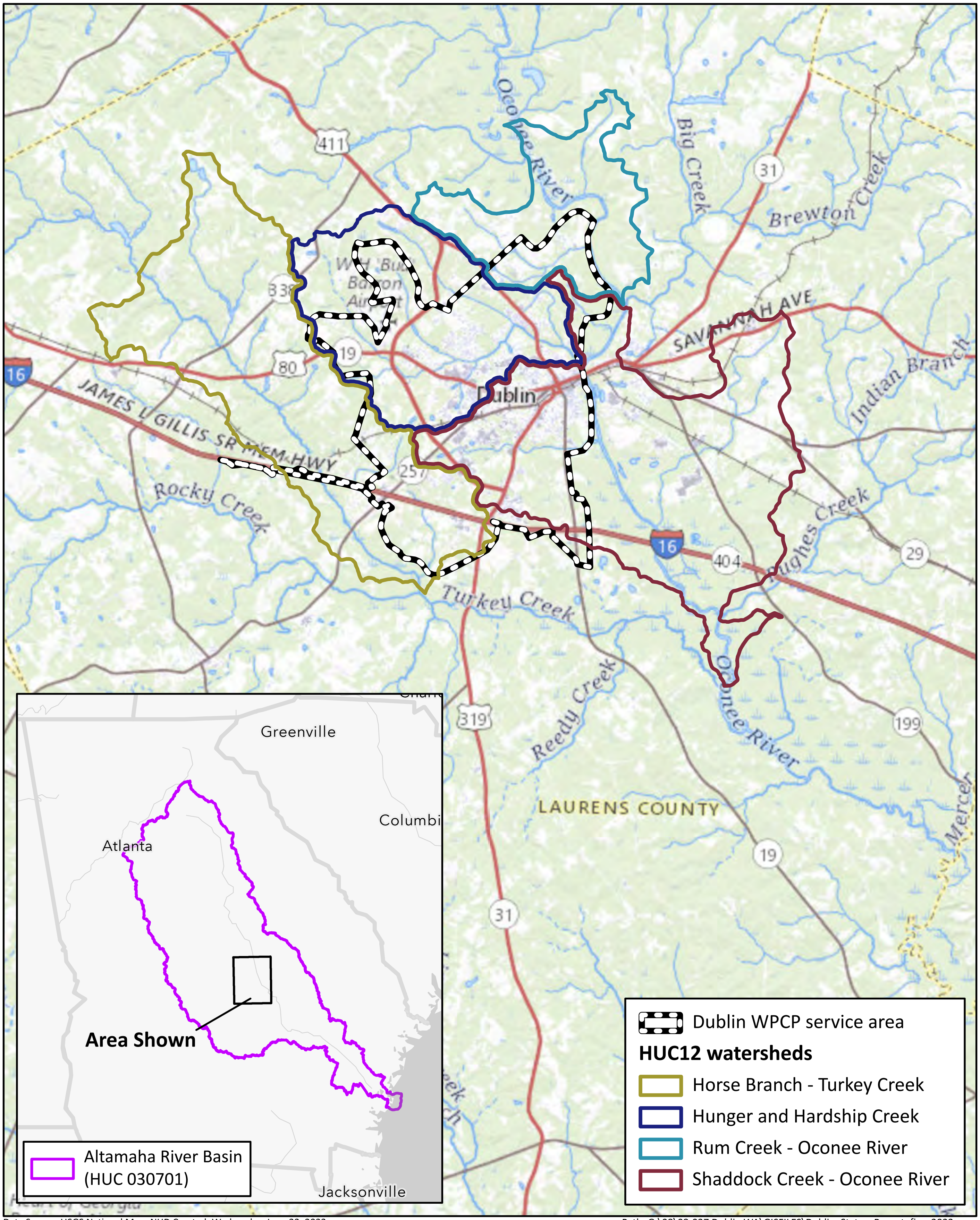
Table 13. Comparison of average summer and winter water temperatures and dissolved oxygen concentrations for the Dublin 2011 Watershed Assessment and 2021 through 2025 Watershed Protection Plan long-term monitoring. (Continued)

Station	**Season**	**Sample period**	**No. samples**	**Water temperature**	**Dissolved oxygen**
			count	°C	mg/L
LC01	Summer	2011	5	25.6	3.4
		2021	10	22.8	7.0
		2022	10	23.0	6.1
		2023	10	22.8	6.0
		2024	9	22.1	7.2
		2025	9	23.6	6.2
	Winter	2011	1	15.5	7.3
		2021	1	12.0	9.2
		2022	1	15.3	9.5
		2023	1	14.4	9.3
		2024	2	16.1	8.4
		2025	2	10.5	10.2
UTN01	Summer	2011	5	27.7	6.0
		2021	10	23.5	7.8
		2022	10	23.2	7.9
		2023	10	24.0	8.0
		2024	9	22.6	7.7
		2025	9	24.1	4.8
	Winter	2011	1	17.5	12.1
		2021	1	9.80	11.2
		2022	1	16.0	12.0
		2023	1	17.5	9.2
		2024	2	18.3	7.2
		2025	2	12.1	13.5

Table 14. Future long-term monitoring schedule for the Dublin Watershed Protection Plan.

Watershed Protection Plan monitoring requirement	Monitoring period		
	2026	2027	2028
Water quality monitoring (5 stations)			
3 dry weather events & 1 wet weather event	✓	✓	✓
2 bacteriological geometric mean determinations (8 individual sample events)	✓	✓	✓
Biological monitoring (2 stations)			
Benthic macroinvertebrate communities	✓		✓
Fish community assessment	✓		✓
Annual report (due June 30)	✓	✓	✓

FIGURES



Data Source: USGS National Map, NHD Created: Wednesday, June 22, 2022

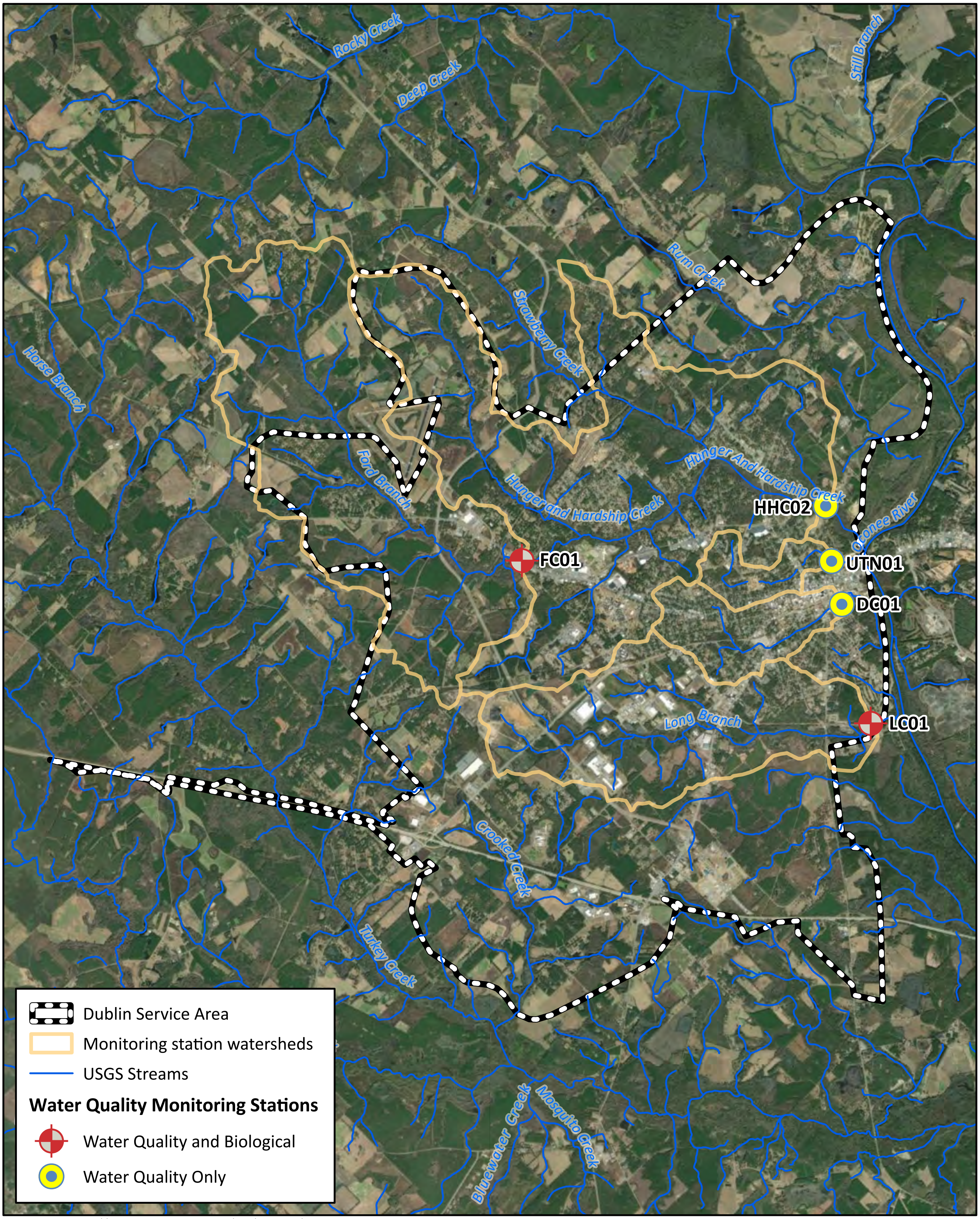
Path: G:\08\08-027 Dublin WA\GISFILES\Dublin_Status_Report_figs_2022.aprx

Figure 1. Dublin Water Pollution Control Plant service area and vicinity, Dublin, Laurens County, Georgia.

0 1 2 4 Miles

N

NUTTER+ASSOCIATES
ENVIRONMENTAL CONSULTANTS



Data Source: ESRI World Imagery, USGS NHD, Created: Friday, December 6, 2024

Path: G:\08\08-027 Dublin WA\GISFILES\Dublin_Status_Report_figs_2022.aprx

Figure 2. Long-term water quality monitoring stations and drainage basins for the Dublin Watershed Protection Plan.

NUTTER+ASSOCIATES
ENVIRONMENTAL CONSULTANTS

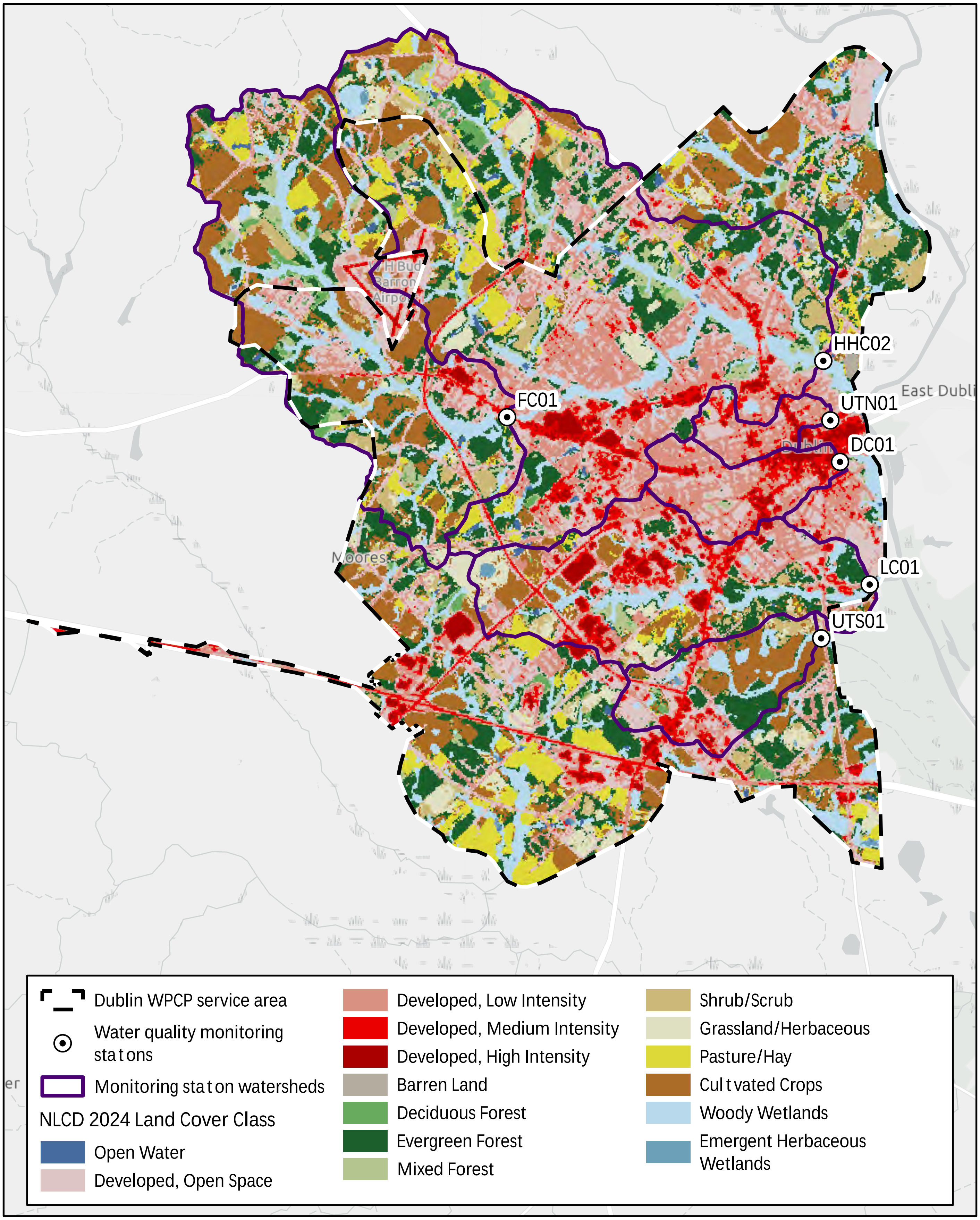


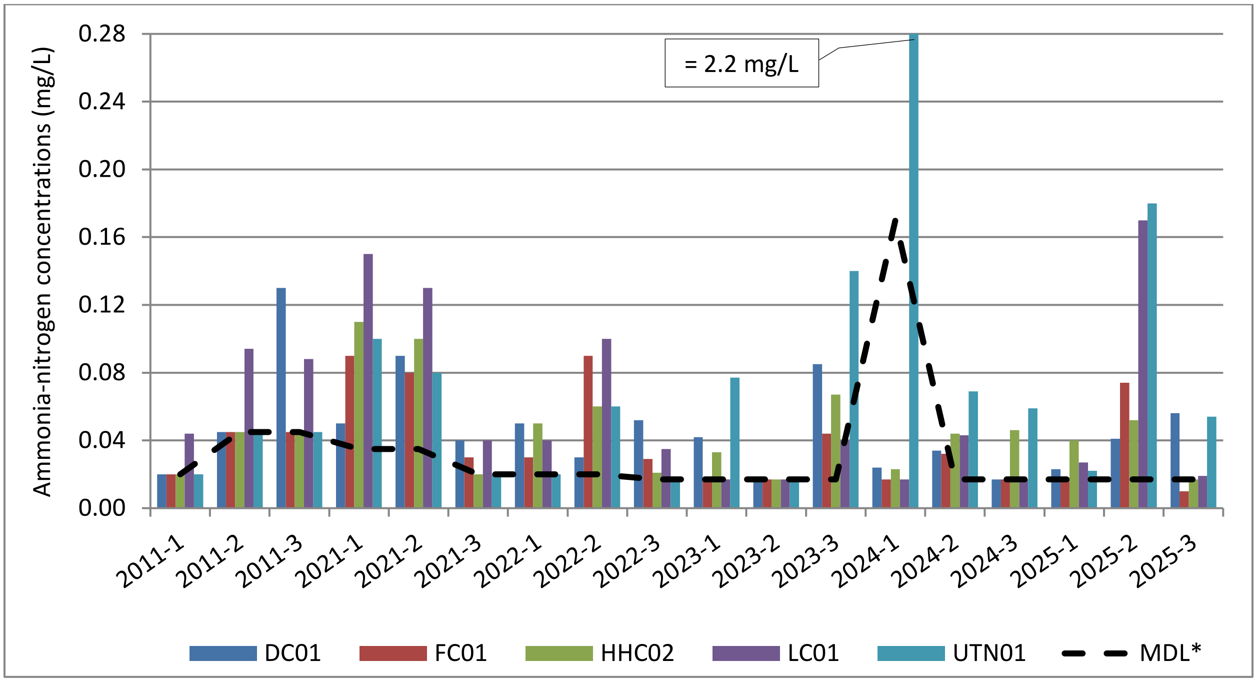
Figure 3. 2024 Nat onal Land Cover and Land Use data for the Dublin WPCP service area and long-term monitoring stat on watersheds.

0 0.5 1 2 Miles

N

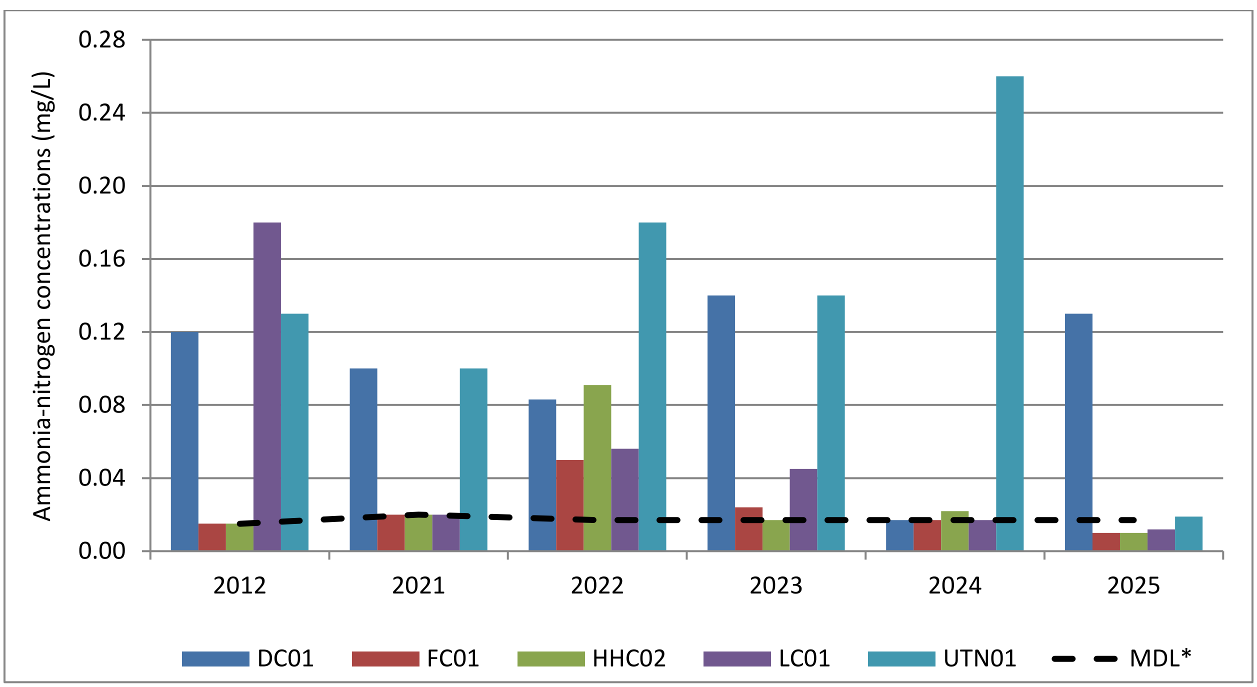
NUTTER+ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Figure 4. Ammonia-nitrogen concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



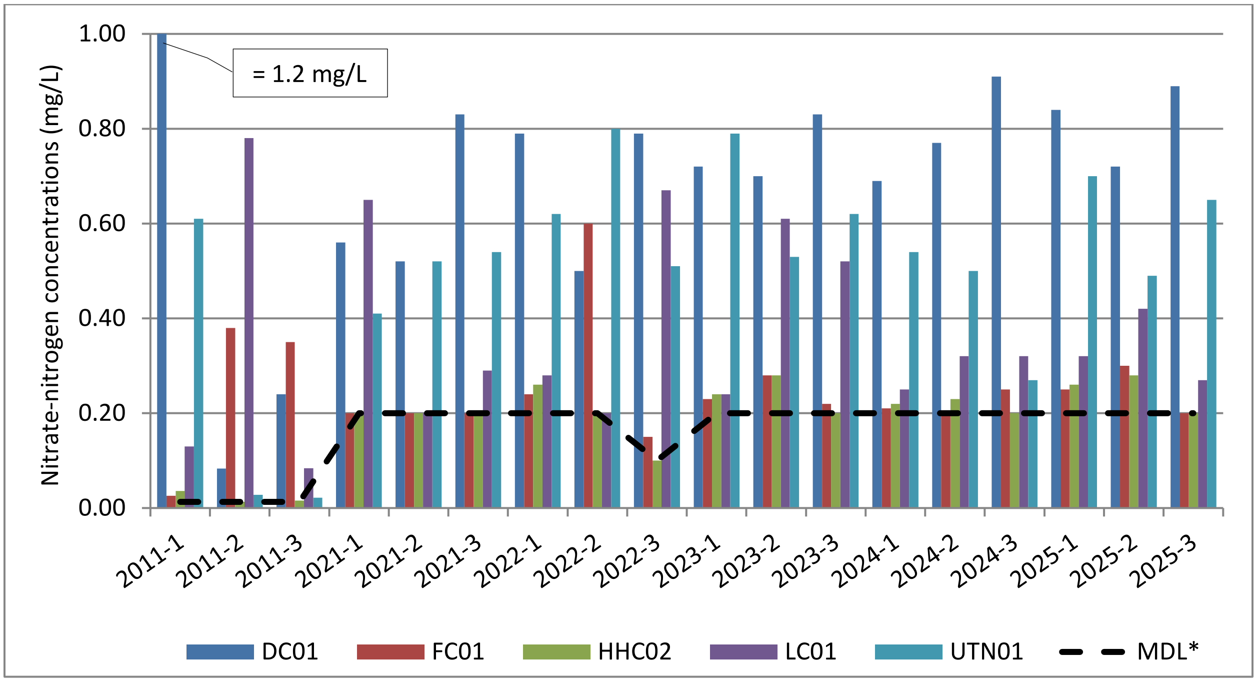
*Variable MDLs were used by the analysis laboratory during the 2024 dry 1 and 2025 dry 3 events. The highest MDL used for each event is shown on the graph.

Figure 5. Ammonia-nitrogen concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2025 event. The highest MDL used is shown on the graph.

Figure 6. Nitrate-nitrogen concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2022 dry 3 event. The highest MDL used is shown on the graph.

Figure 7. Nitrate-nitrogen concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.

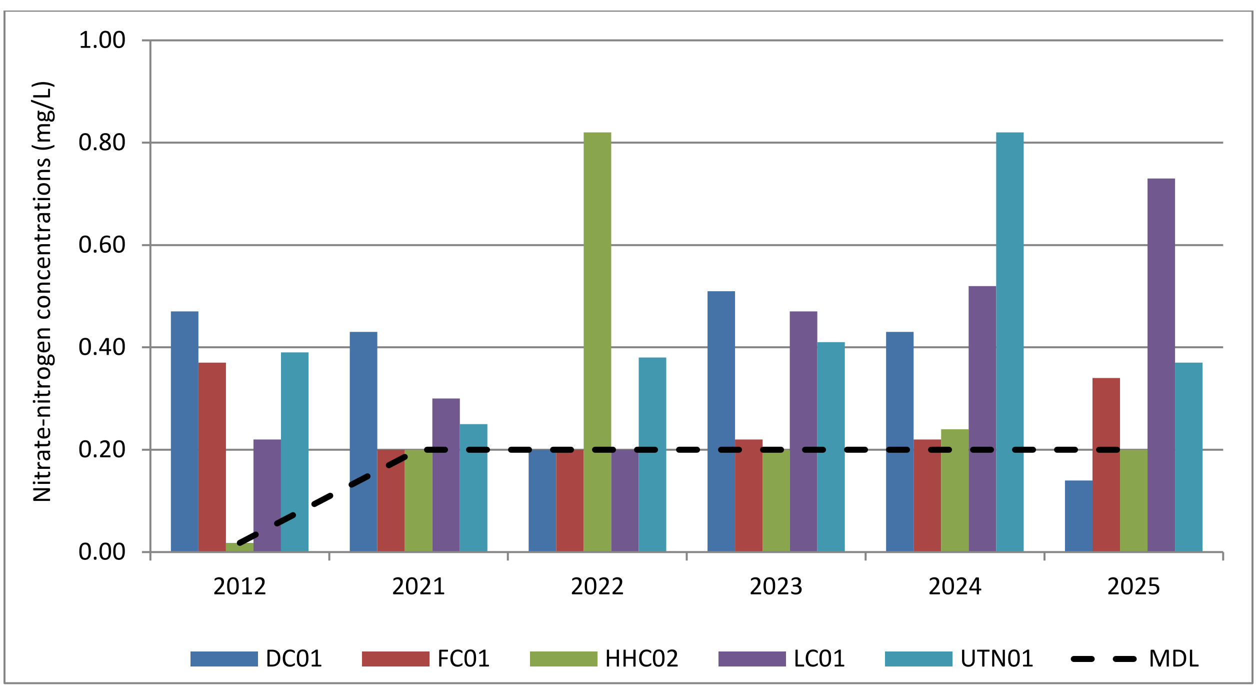
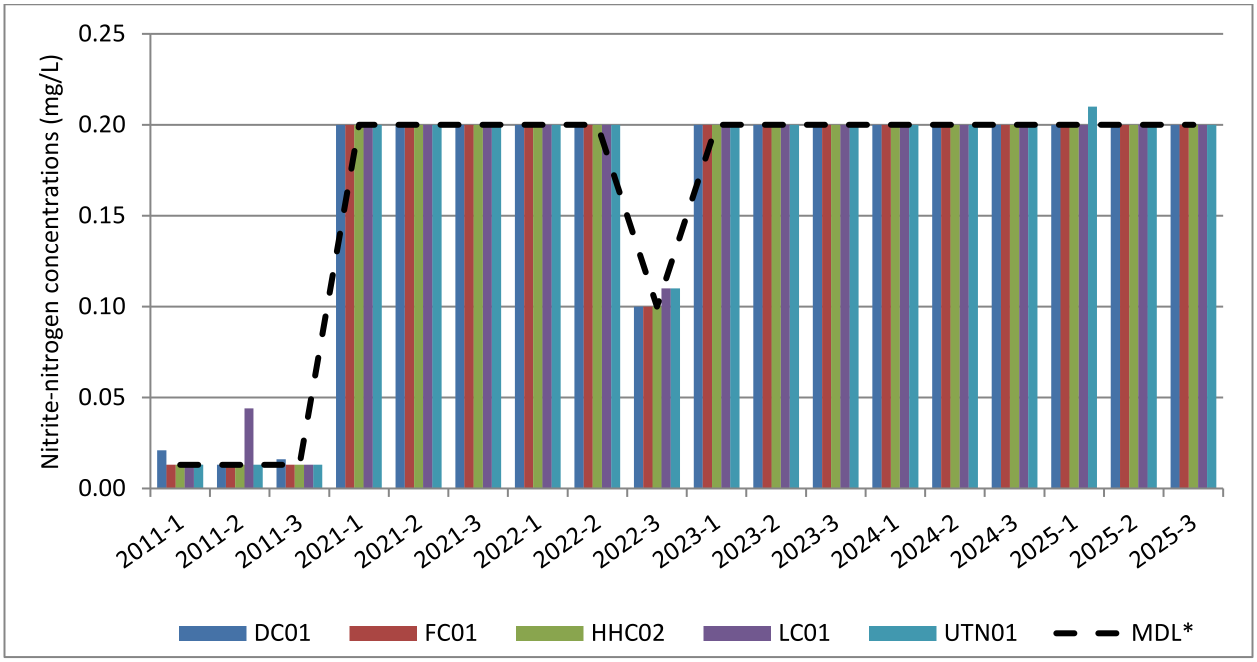


Figure 8. Nitrite-nitrogen concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2022 dry 3 event. The highest MDL used is shown on the graph.

Figure 9. Nitrite-nitrogen concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.

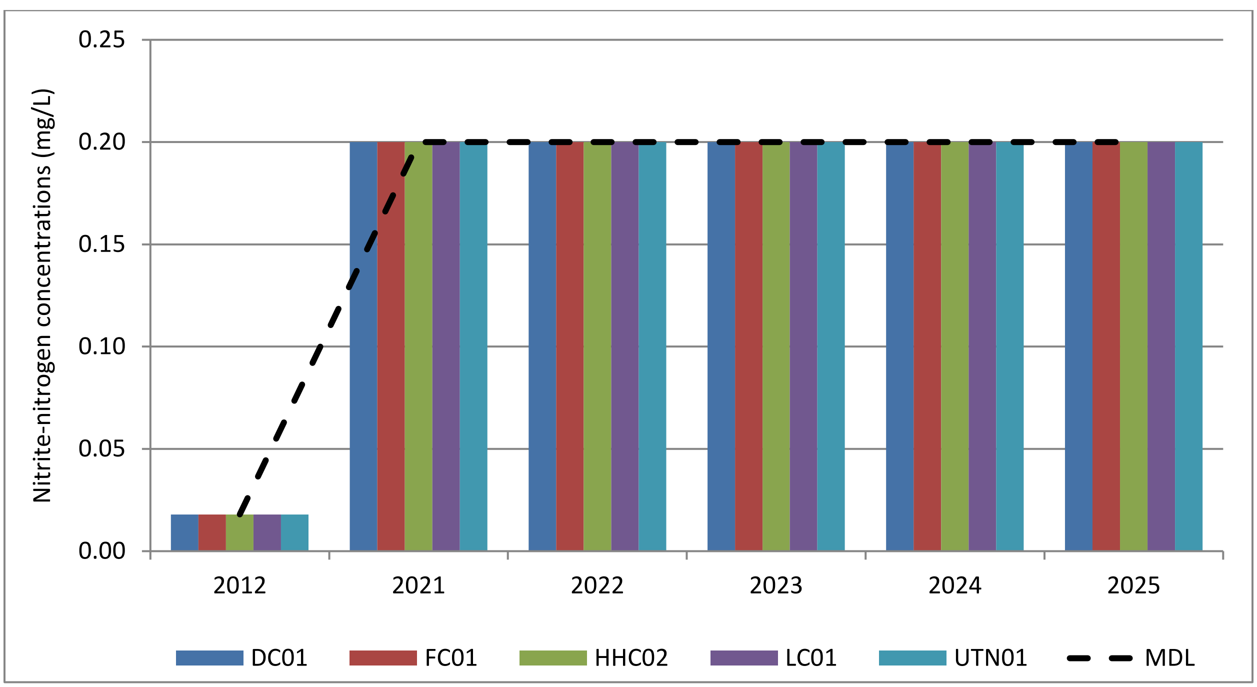


Figure 10. Total Kjeldahl nitrogen concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.

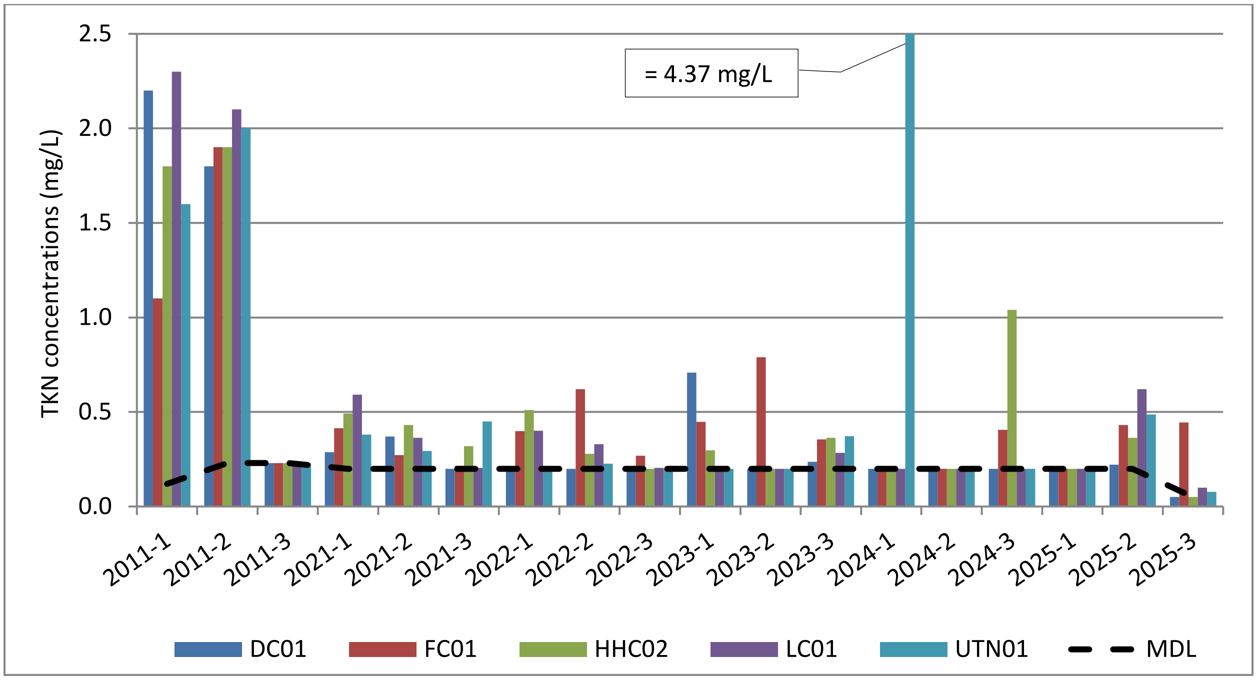


Figure 11. Total Kjeldahl nitrogen concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.

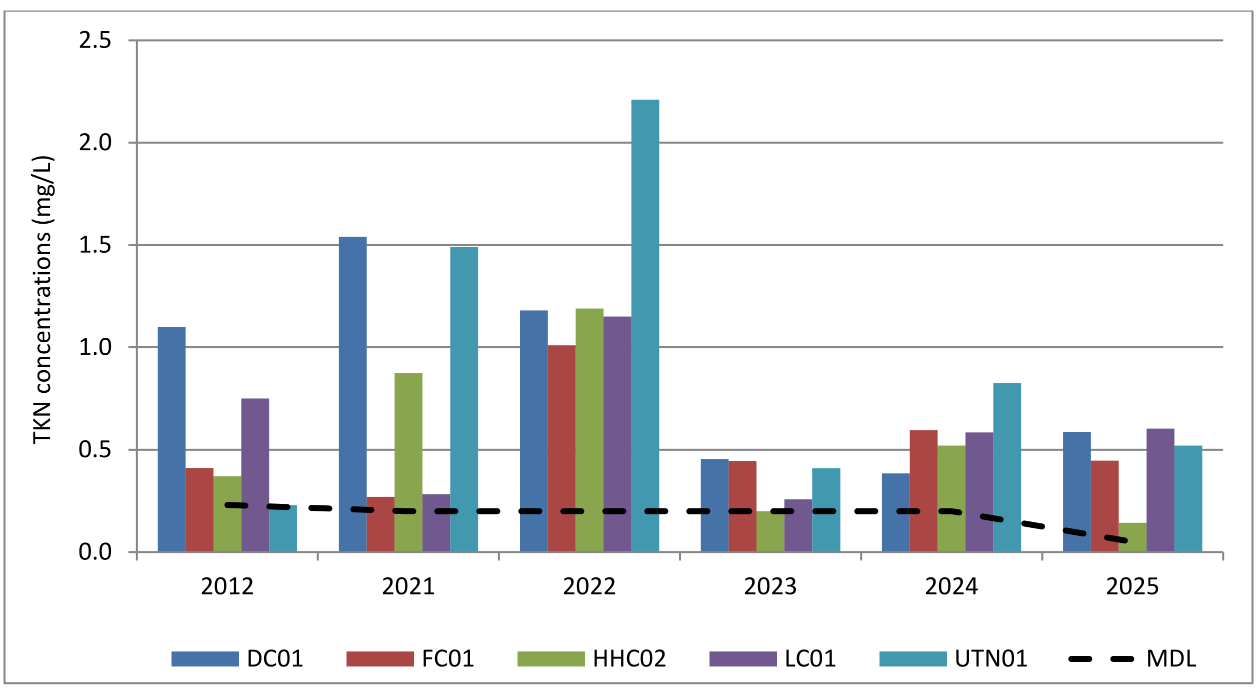
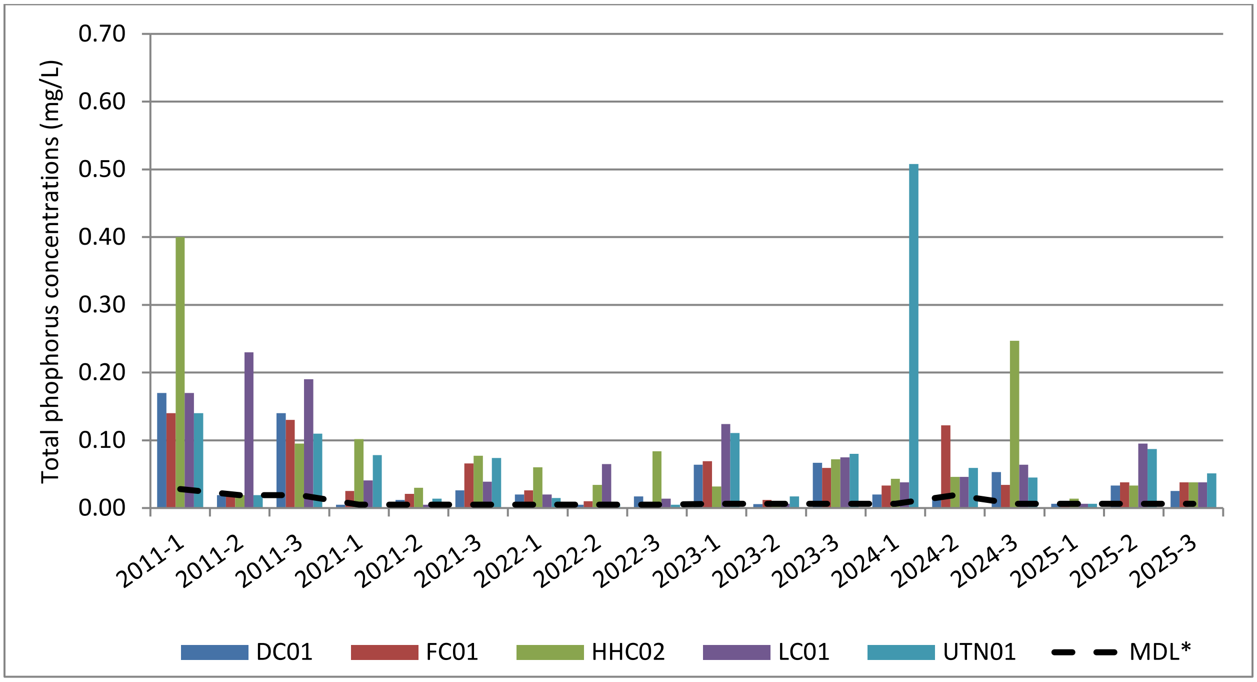
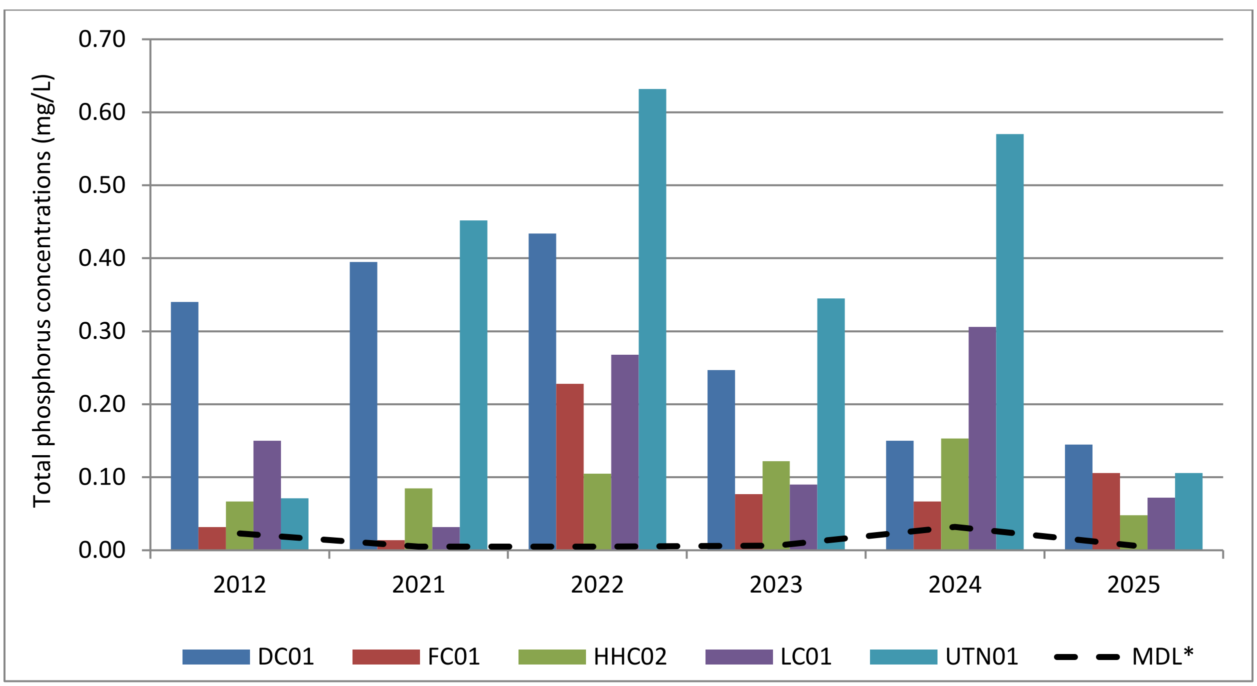


Figure 12. Total phosphorus concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



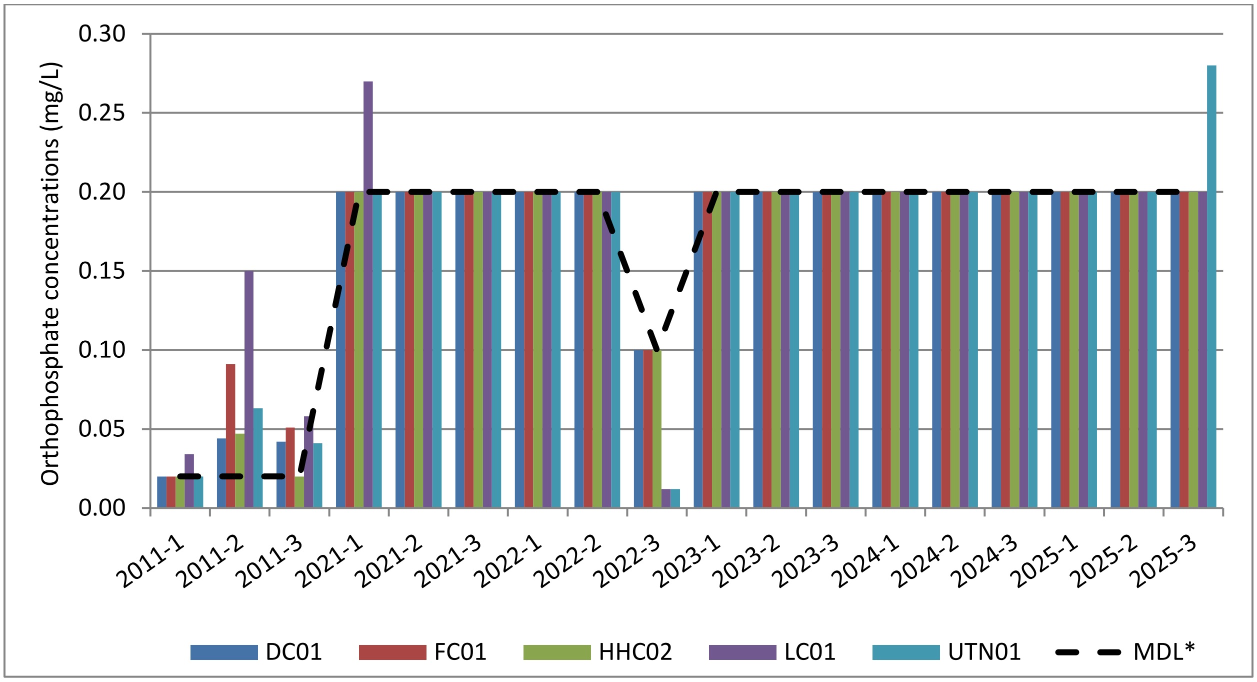
*Variable MDLs were used by the analysis laboratory during the 2024 dry 2 event. The highest MDL used is shown on the graph.

Figure 13. Total phosphorus concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2024 event. The highest MDL used is shown on the graph.

Figure 14. Orthophosphate concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2022 dry 3 event. The highest MDL used is shown on the graph.

Figure 15. Orthophosphate concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.

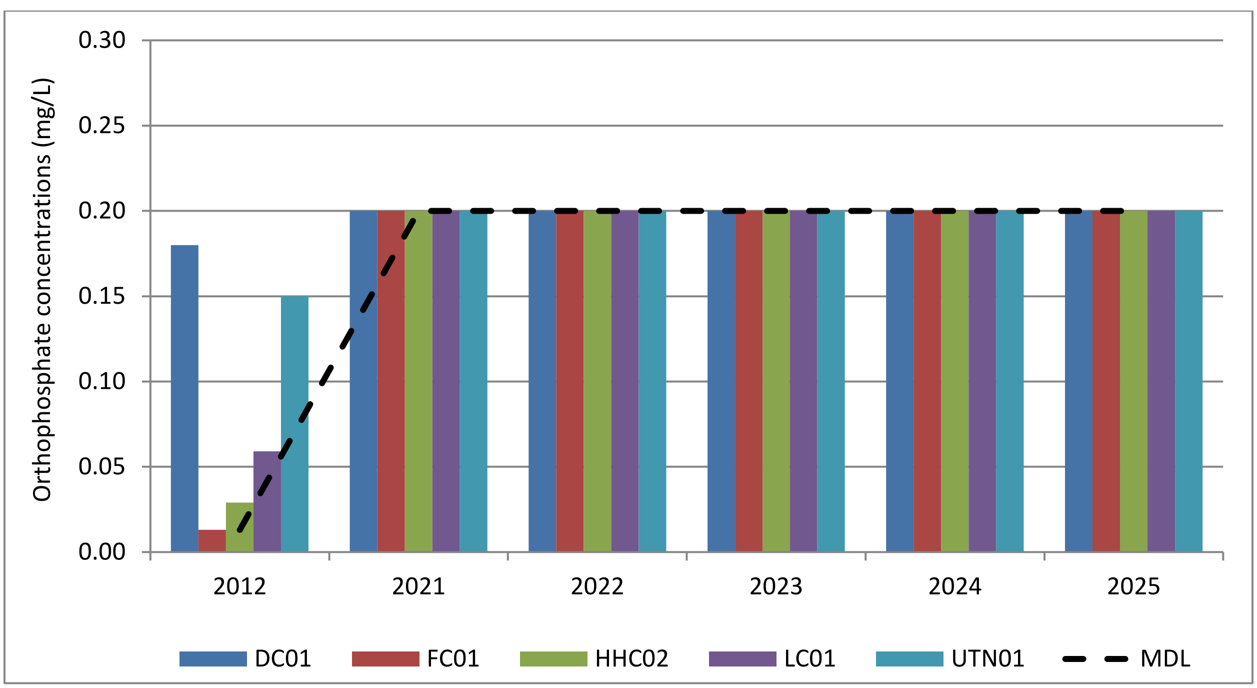
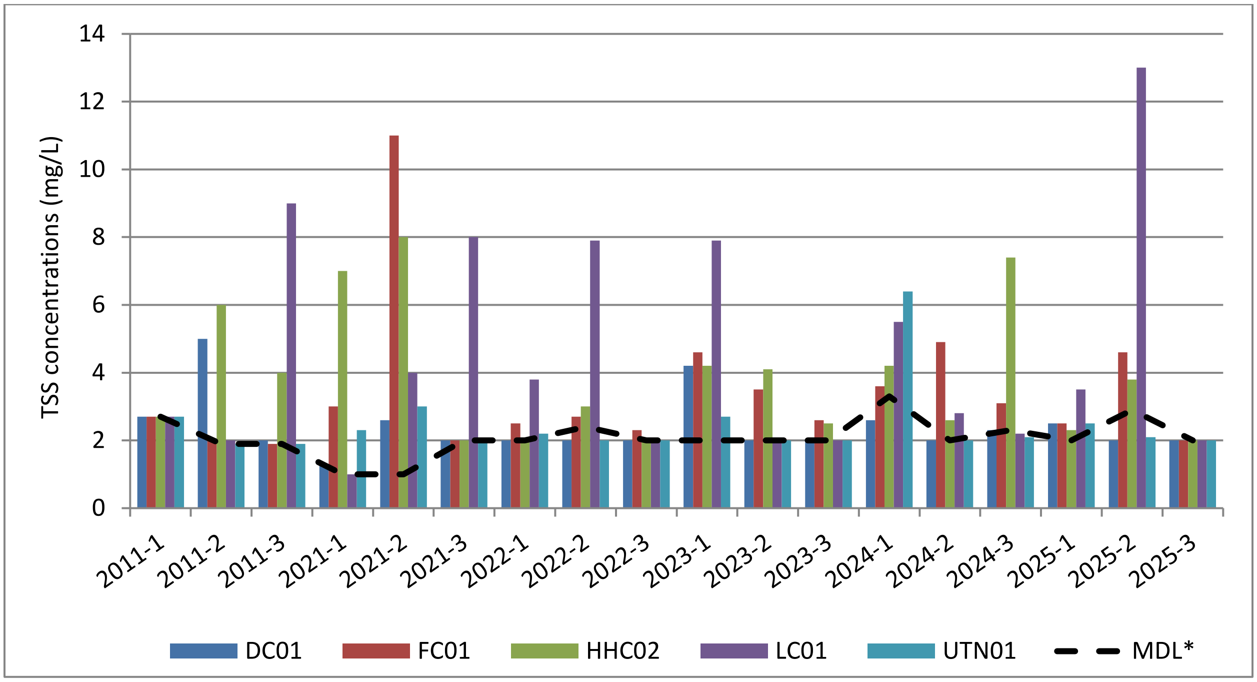
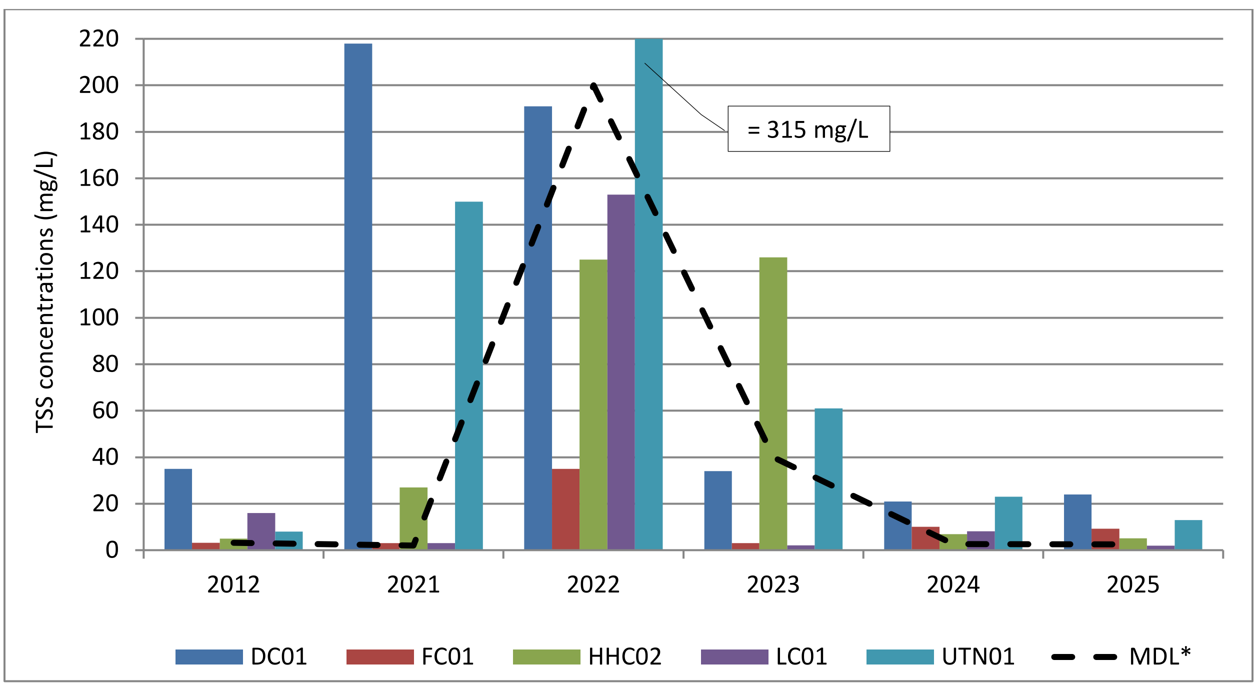


Figure 16. Total suspended solids concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2022 dry 1 and dry 2, 2024 dry 1 and dry 3, and 2025 dry 2 events. The highest MDL used for each event is shown on the graph.

Figure 17. Total suspended solids concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2022, 2023, 2024, and 2025 events. The highest MDL used for each event is shown on the graph.

Figure 18. Five-day biochemical oxygen demand concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.

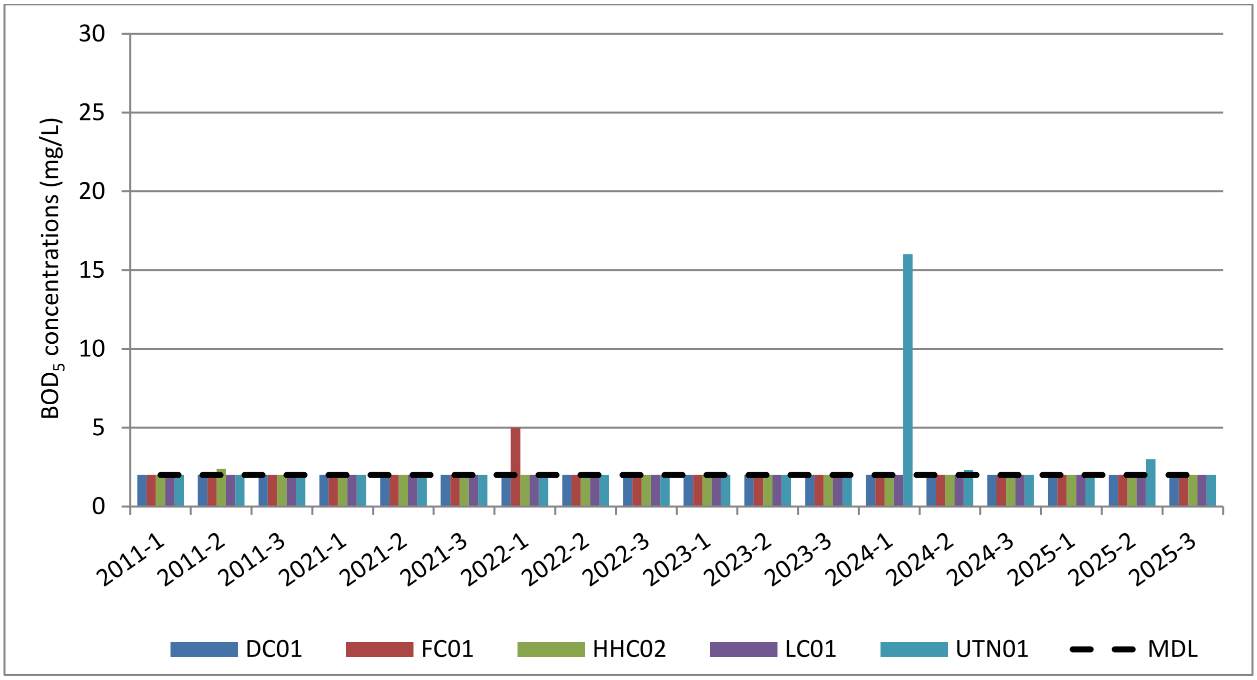


Figure 19. Five-day biochemical oxygen demand concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.

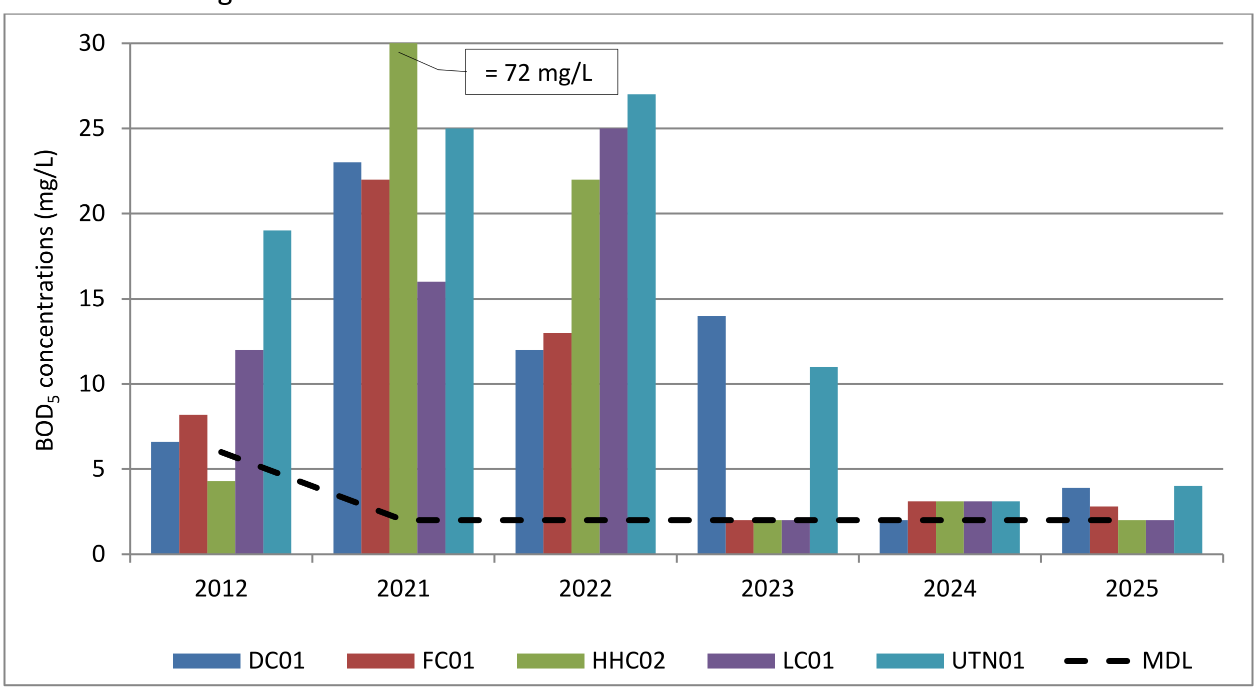


Figure 20. Chemical oxygen demand concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.

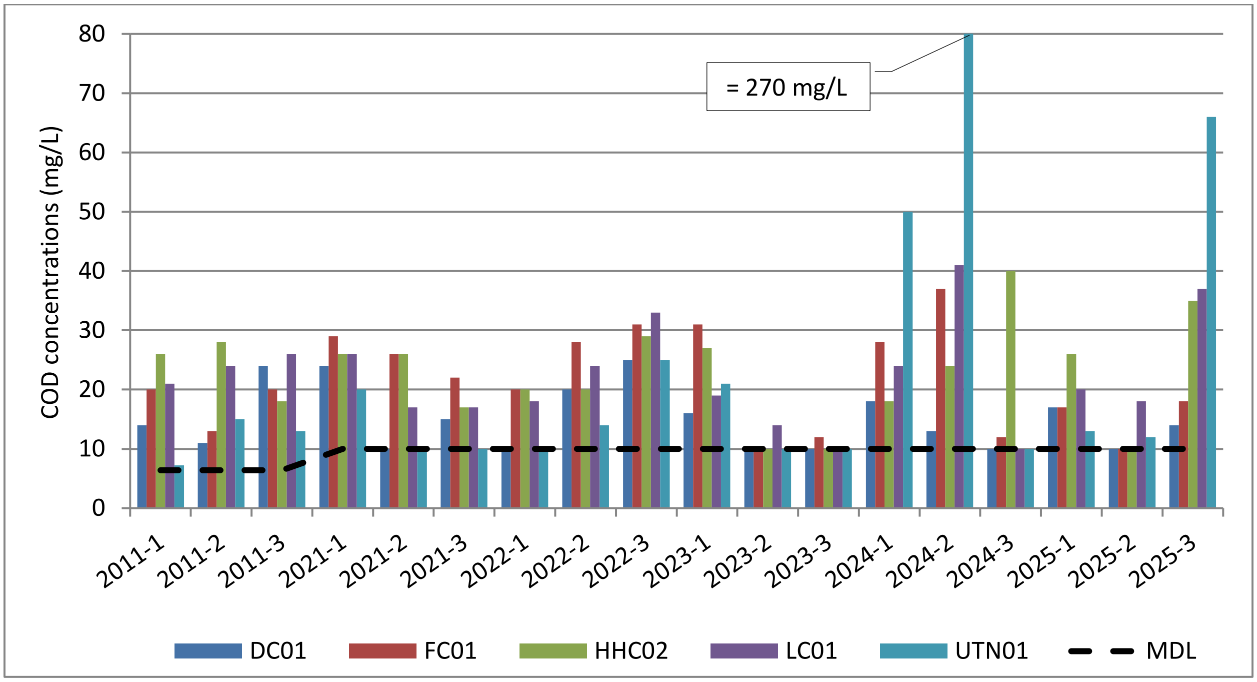
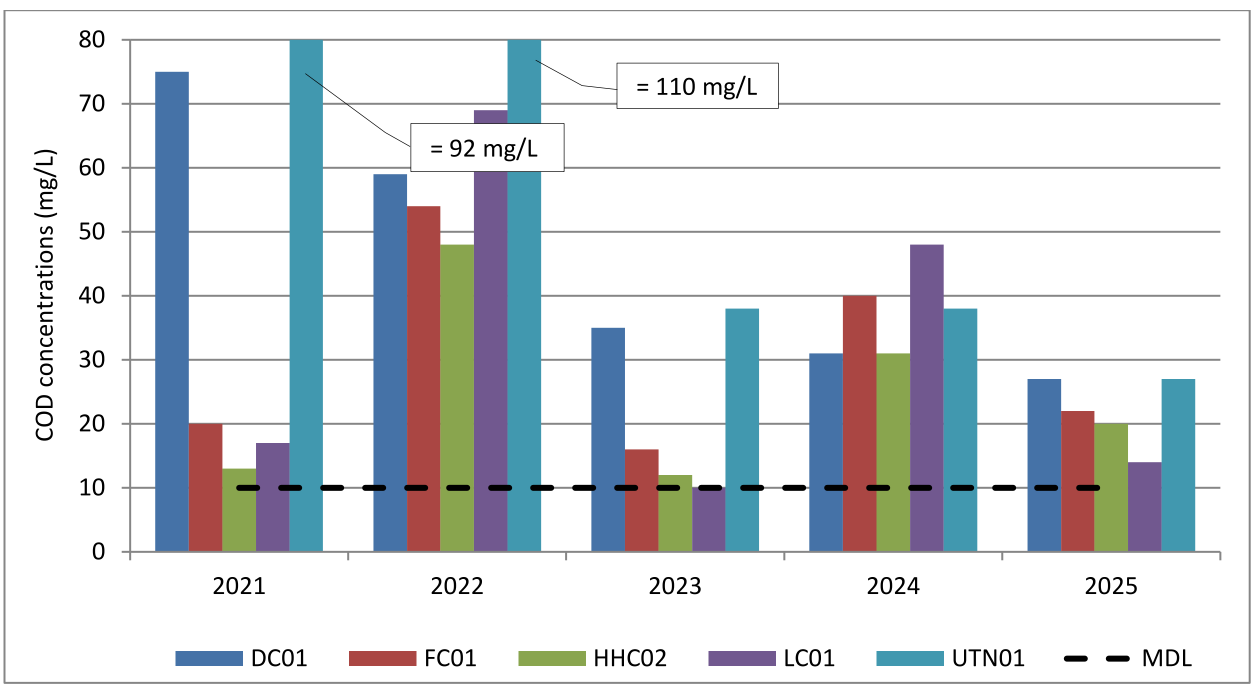
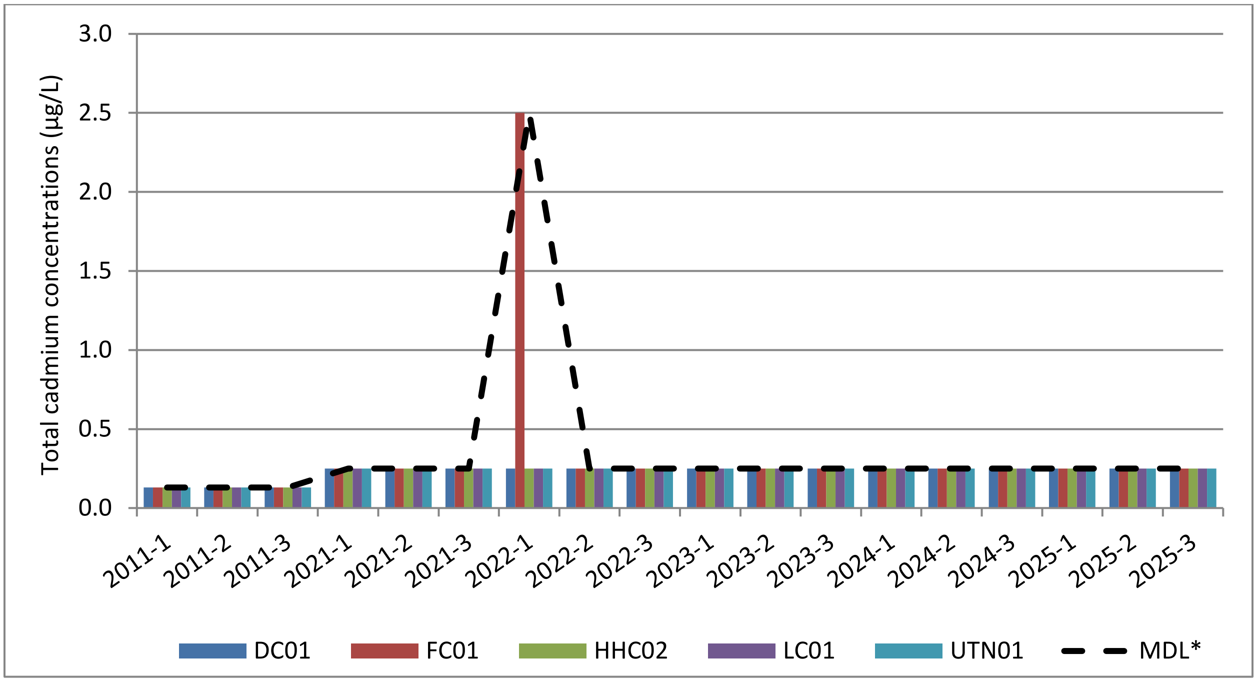


Figure 21. Chemical oxygen demand concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.[1]



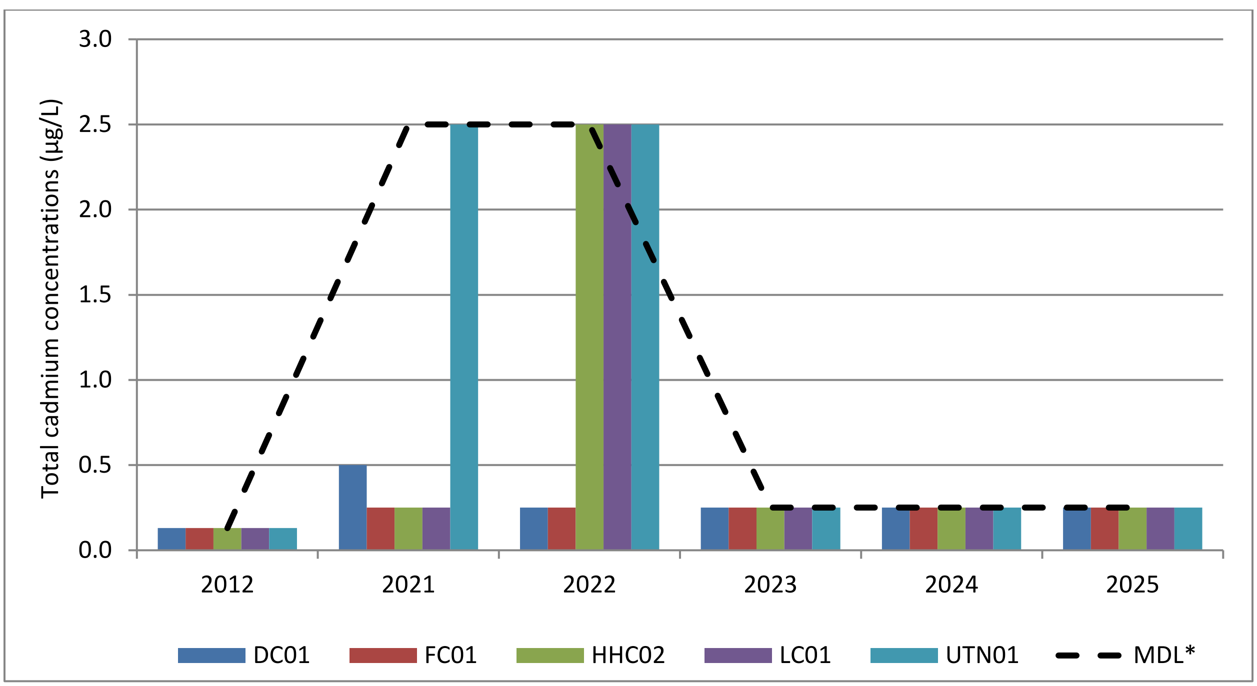
[1] COD analysis was not completed during the 2012 Watershed Assessment wet weather event.

Figure 22. Total recoverable cadmium concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



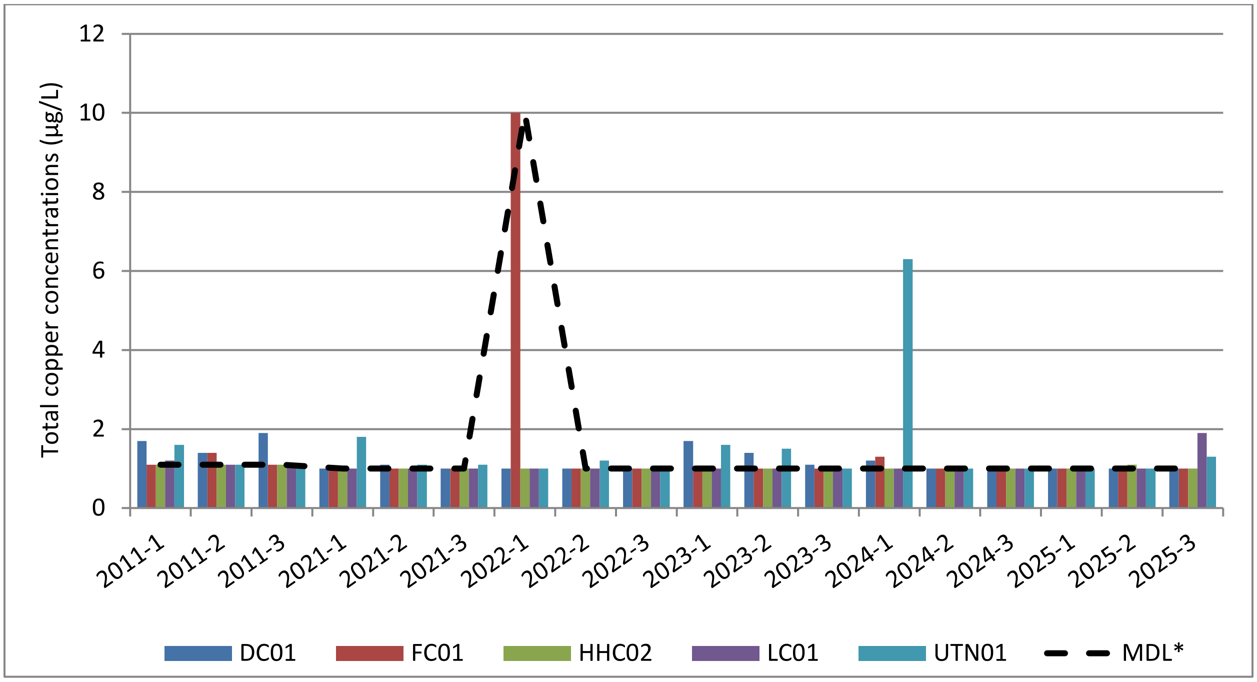
*Variable MDLs were used by the analysis laboratory during the 2022 dry 1 event. The highest MDL used is shown on the graph.

Figure 23. Total recoverable cadmium concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.



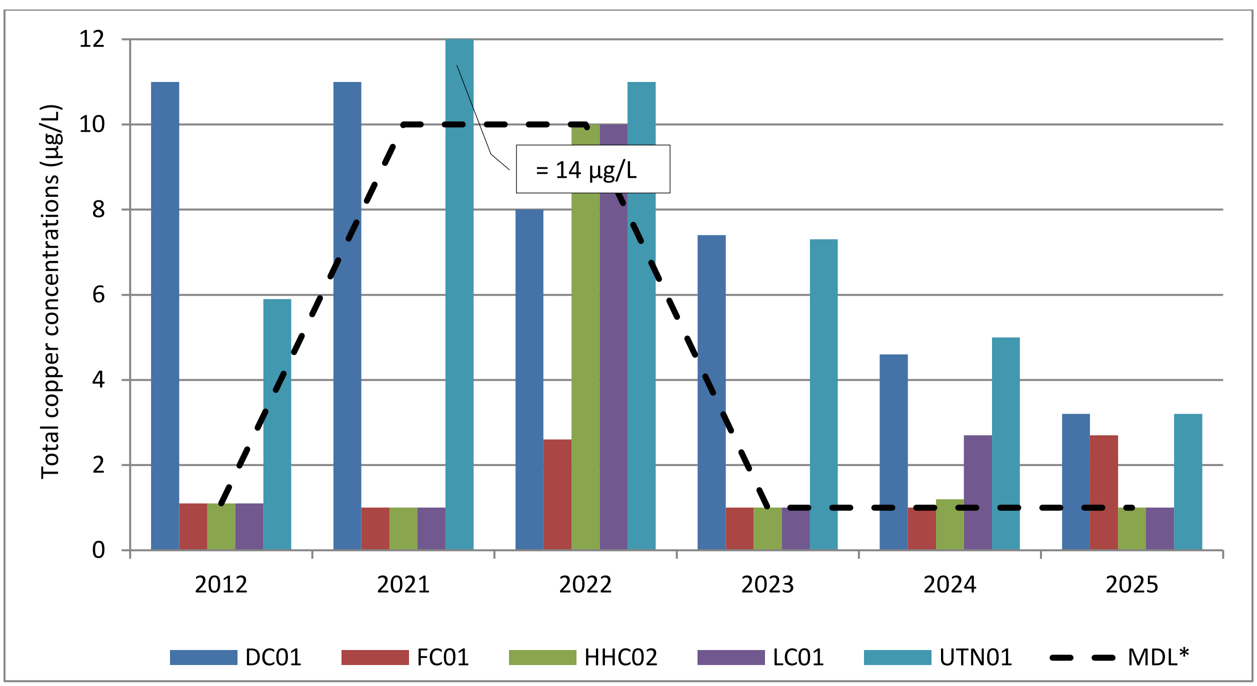
*Variable MDLs were used by the analysis laboratory during the 2022 event. The highest MDL used is shown on the graph.

Figure 24. Total recoverable copper concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2022 dry 1 event. The highest MDL used is shown on the graph.

Figure 25. Total recoverable copper concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.



* Variable MDLs were used by the analysis laboratory during the 2022 event. The highest MDL is shown.

Figure 26. Total recoverable lead concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.

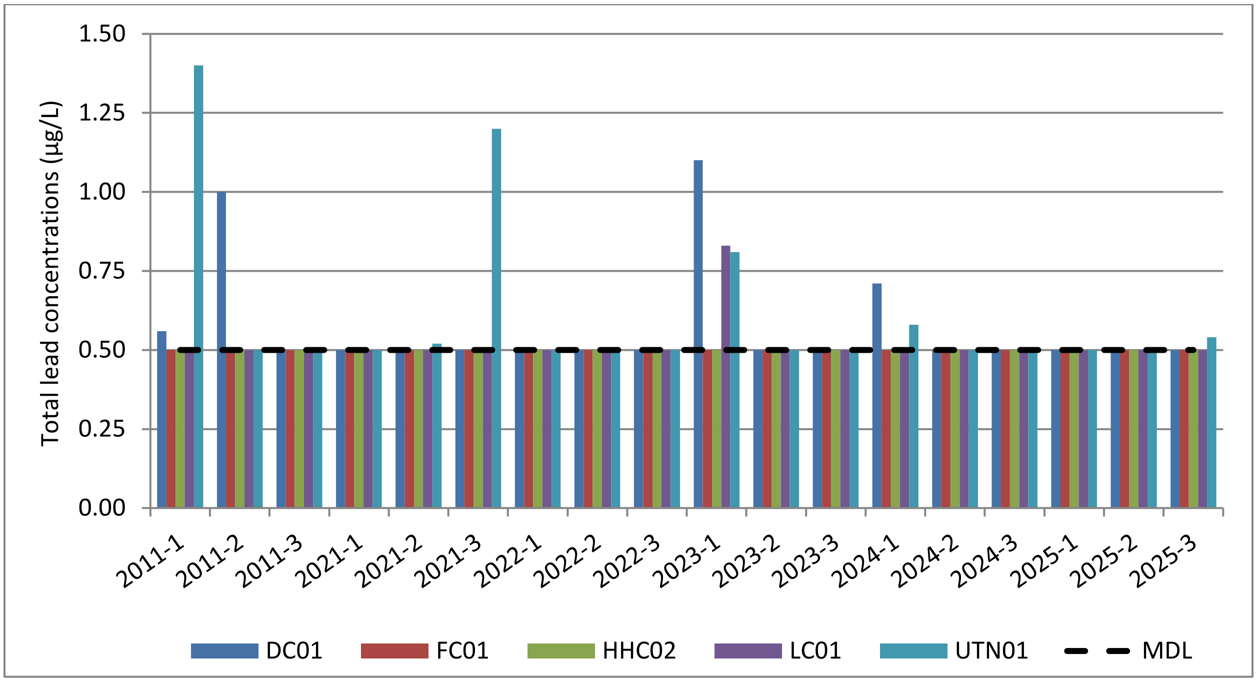
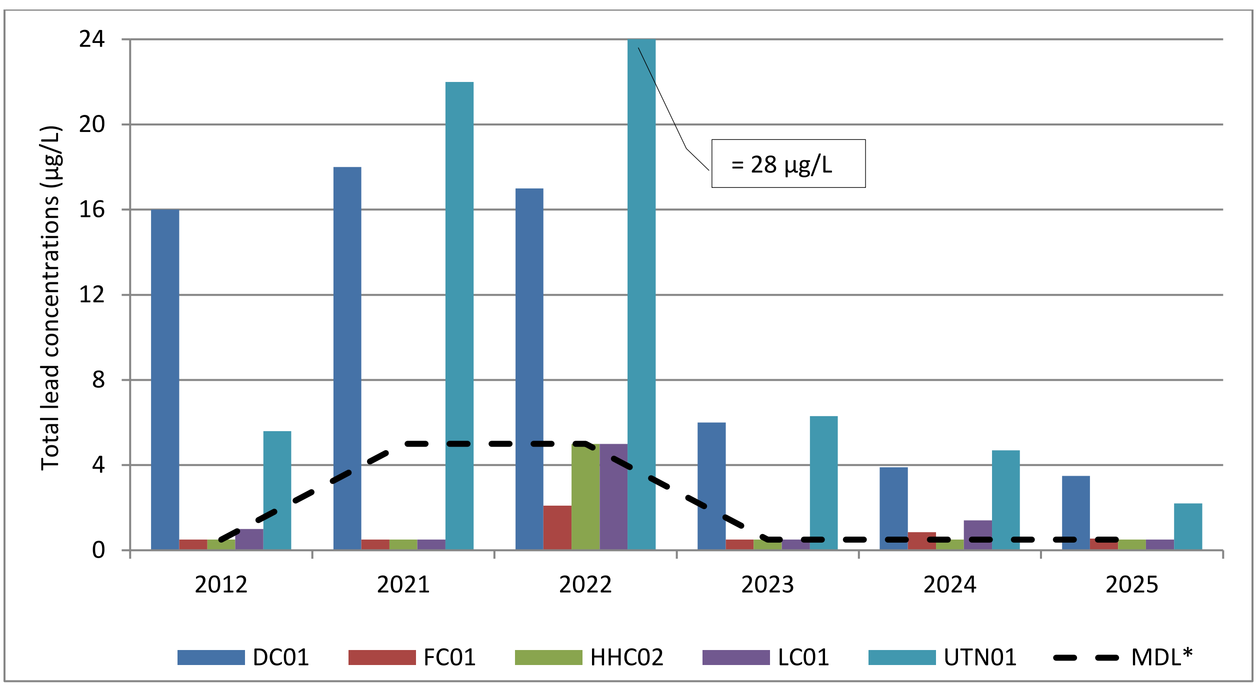
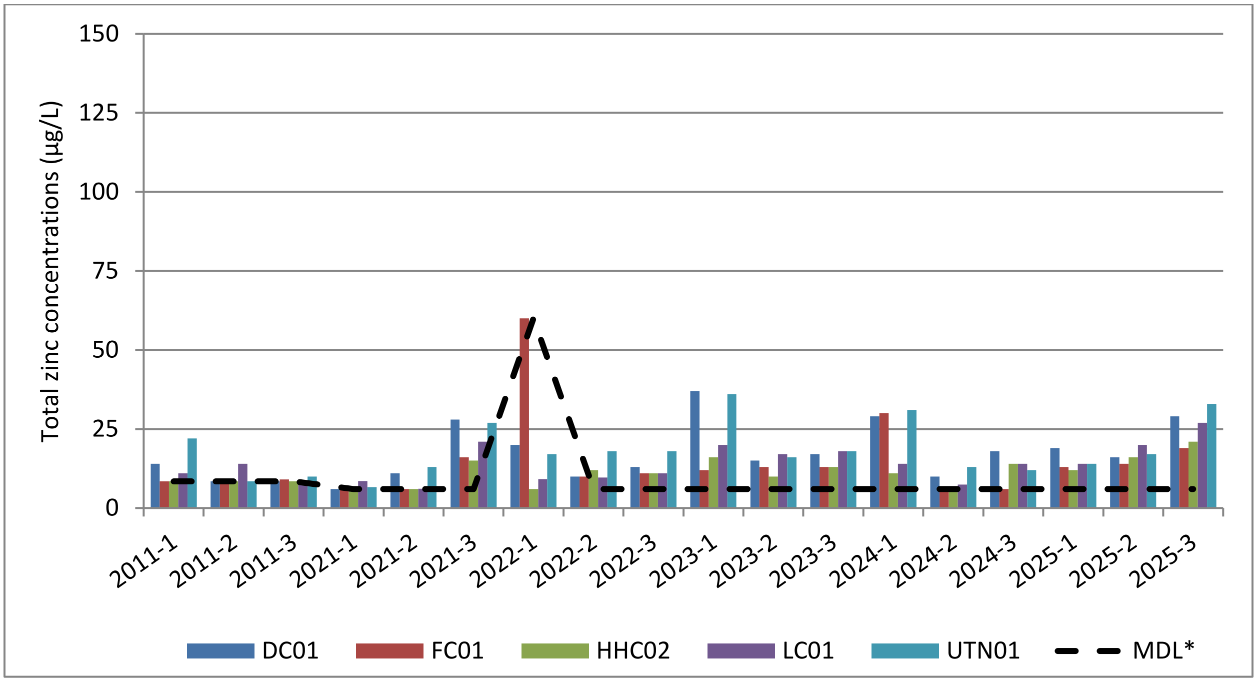


Figure 27. Total recoverable lead concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.



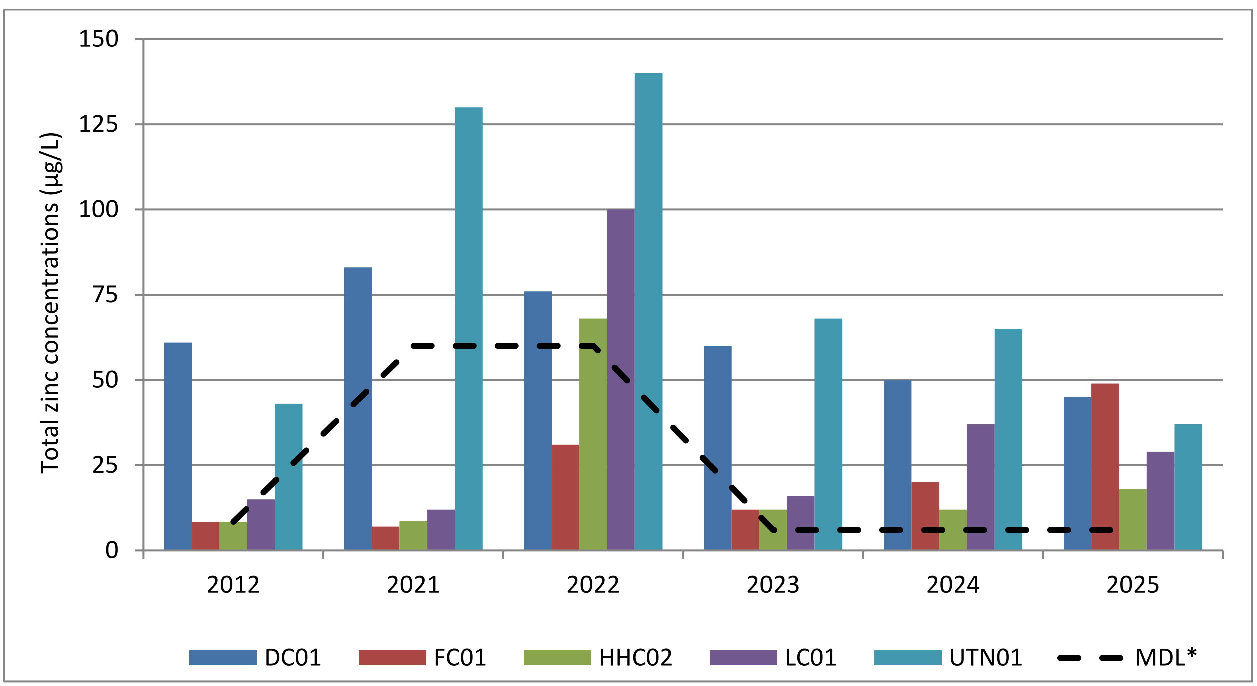
*Variable MDLs were used by the analysis laboratory during the 2021 and 2022 events. The highest MDL used for each event is shown on the graph.

Figure 28. Total recoverable zinc concentrations measured during long-term monitoring dry weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2022 dry 1 event. The highest MDL used is shown on the graph.

Figure 29. Total recoverable zinc concentrations measured during long-term monitoring wet weather events and laboratory method detection limits (MDL) used during each event.



*Variable MDLs were used by the analysis laboratory during the 2022 event. The highest MDL used is shown on the graph.

Figure 30. Geometric means of *E. coli* calculated for station DC01 during the Watershed Assessment and Watershed Protection Plan long-term monitoring.

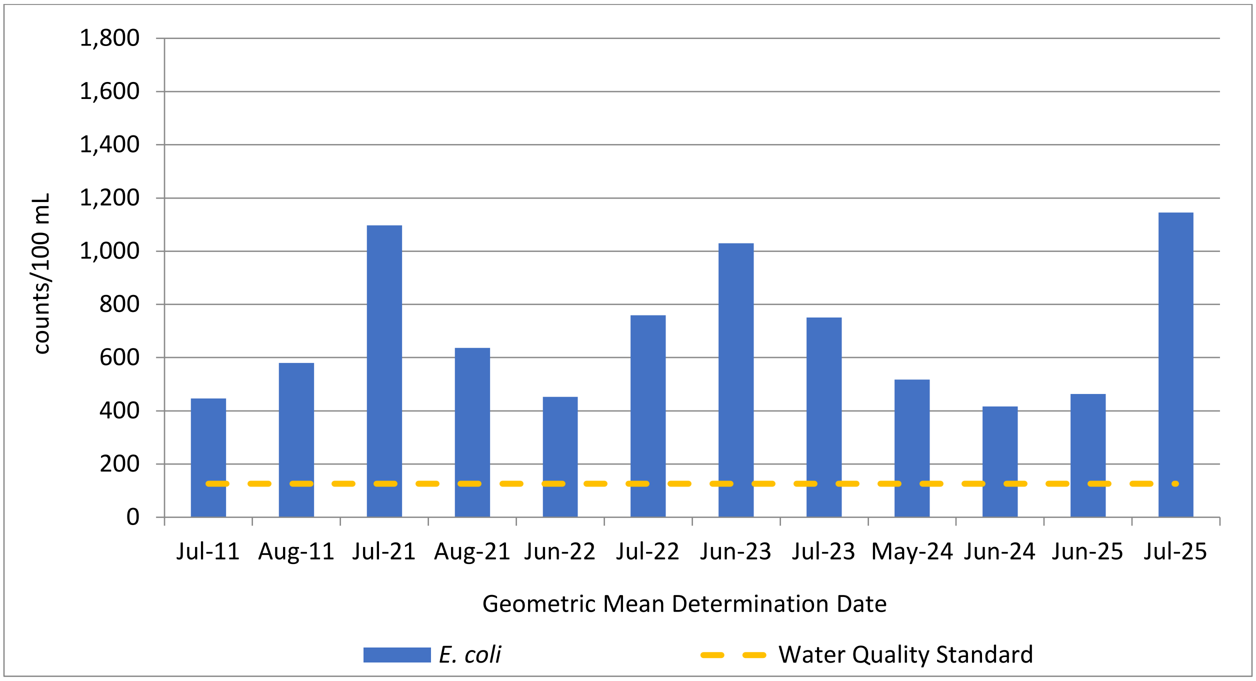


Figure 31. Geometric means of *E. coli* calculated for station FC01 during the Watershed Assessment and Watershed Protection Plan long-term monitoring.

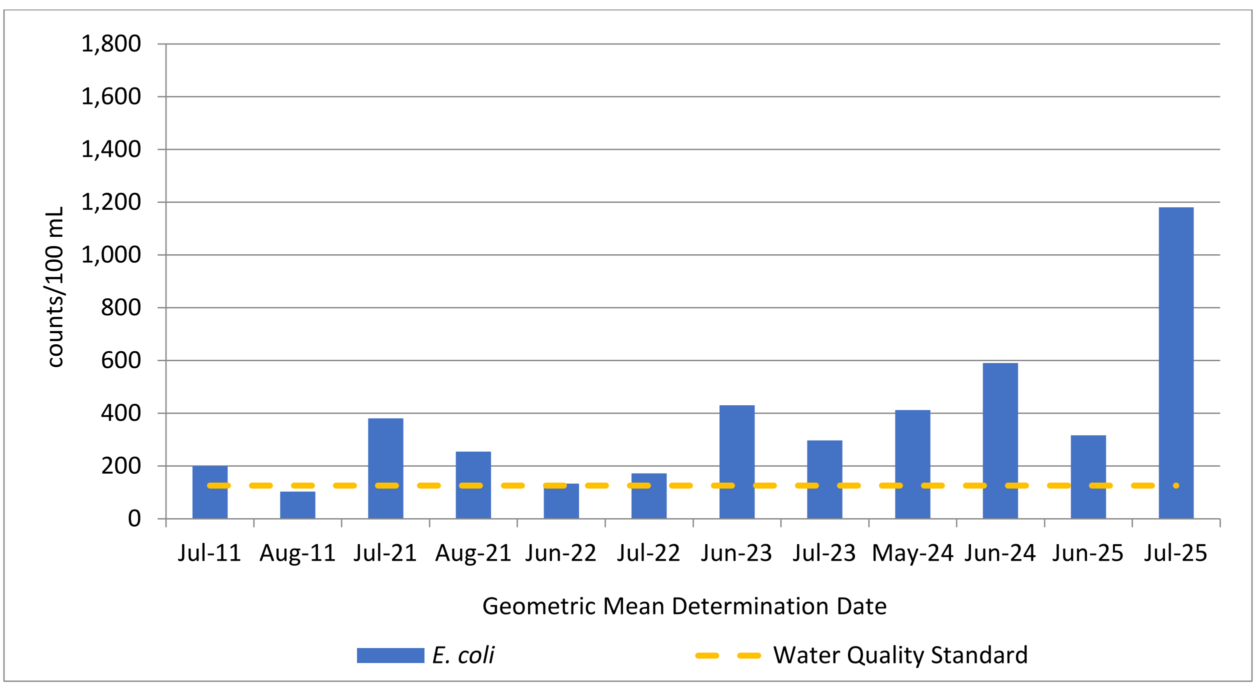


Figure 32. Geometric means of *E. coli* calculated for station HHC02 during the Watershed Assessment and Watershed Protection Plan long-term monitoring.

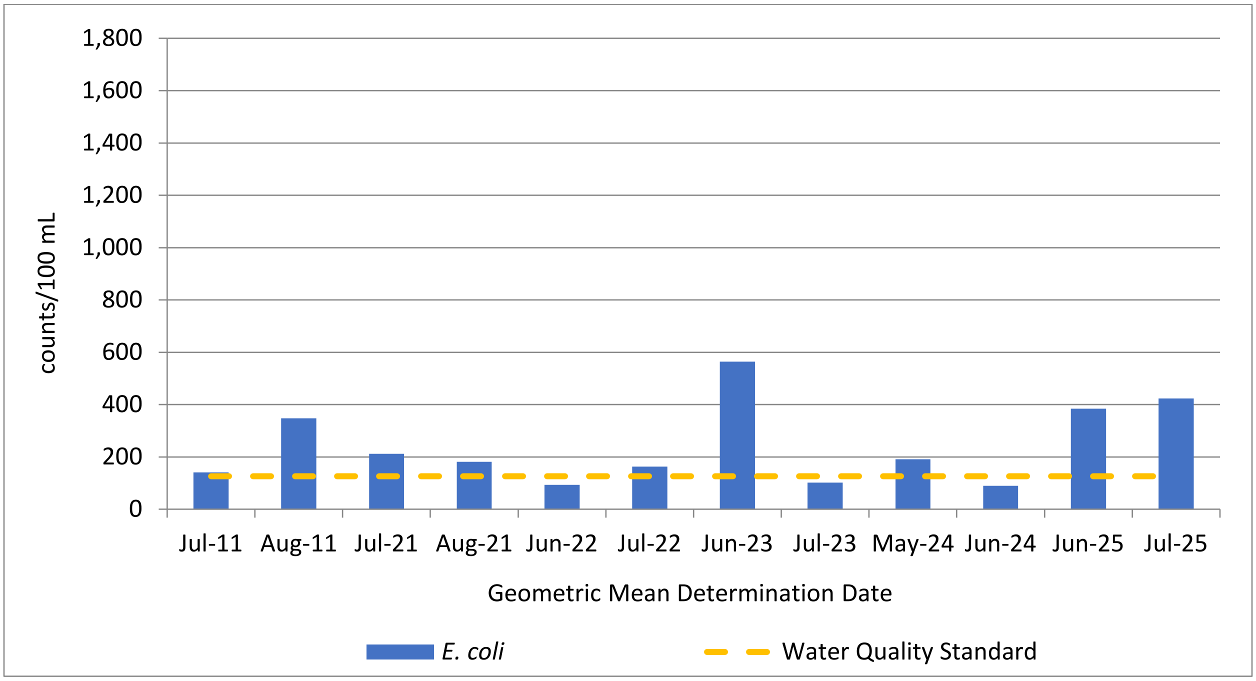


Figure 33. Geometric means of *E. coli* calculated for station LC01 during the Watershed Assessment and Watershed Protection Plan long-term monitoring.

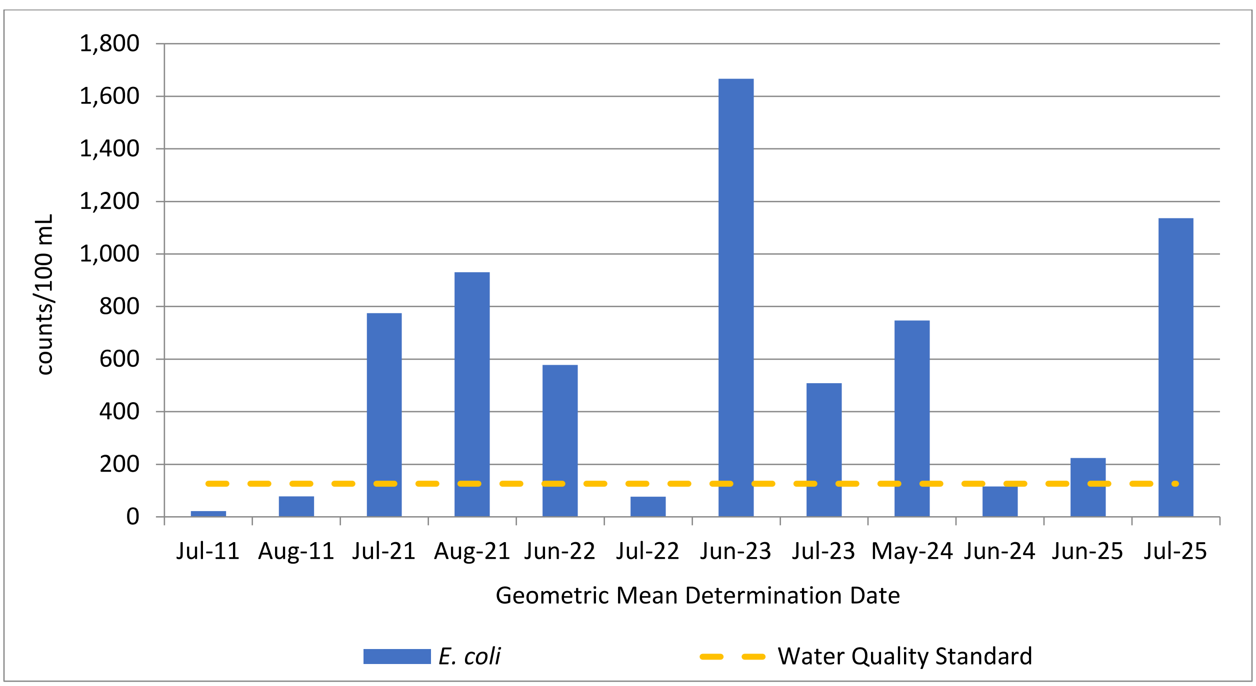


Figure 34. Geometric means of *E. coli* calculated for station UTN01 during the Watershed Assessment and Watershed Protection Plan long-term monitoring.