

Lake Montclair Environmental Quality Report for 2021

In alignment with community interests reflected in the Lake Management Program Plan (LMPP), the MPOA Lake Management Committee (LMC) prepares an annual Lake Montclair Environmental Quality Report (LMEQR) and submits it to MPOA Board of Directors (BoD):

- The intent of this LMEQR is to provide a periodic update to the MPOA BoD and residents on activities of LMC and others relevant to Lake Montclair's environmental quality.

The LMPP is used in support of MPOA efforts focused on ensuring environmental quality of the lake and its 'ribbon of life' assets. It serves as a resource linking stewardship objectives with community interests. Aligned with regional, state, and county programs, the LMPP addresses strategies and activities that reflect both a resilience-centric approach focused on safeguarding the continuity of lake-ecosystem functions and a human-centric approach focused on enabling harmonious use of the lake and its "ribbon of life" assets. Addressing lake management focus areas (hydrology, soils, vegetation, fish & wildlife, materials, and human well-being), the LMPP is periodically updated and submitted by the LMC to the MPOA BoD for approval. The LMPP specifies 25 objectives with strategies that support seven community interests relevant to environmental quality:

- Lake Recreational Activities and Water Use;
- Water Quality Management and Water Level Management and Control;
- Lake 'Ribbon of Life' Sustainment, Access and Use;
- Watershed Property Use and Monitoring Relevant to Lake Ecosystem Management;
- Storm Water Management, Dredging, and Management of Soil, Sand and Sediment;
- Biological Communities (vegetation, insects, wildlife, fish, & aquatic life) in/around the lake;
- Systems and Procedures for Community Interaction, Training, and Information Resources.

These are also the seven categories used in organizing this LMEQR, and they are the categories the LMC uses in making recommendations associated with strategic goals and objectives.

1. Lake Recreational Activities and Water Use.

Swimming, sporting and social activities in and around Lake Montclair are the primary recreational uses of the lake and its 'ribbon of life' assets; they continue to be key reasons residents' value the lake for its contributions to their quality of life in Montclair. Montclairions took advantage of recreational opportunities.

- Dolphin Beach hosts many community events and activities such as "Triathlon" "Octoberfest", and "Independence Day",
- MPOA Maintenance staff rebuilt the swim platform located at Dolphin Beach..
- Safety & security remained priorities for use of the lake. MPOA continued to address residents' safety needs in using the lake and properties abutting the lake by providing lifeguards, recreational guards and security personnel for activities making use of the lake and beaches. LMC provided information on safety considerations in using the lake.

2. Water Quality Management and Water Level Management and Control.

MPOA continued to monitor and assess environmental water quality, risk mitigation and prevention, water level management, as well as community alert and notification efforts associated with changes in water quality and water level.

- Surface Water Testing for E-Coli at beaches is an on-going program conducted weekly at all three beaches during the summer swimming months. Readings continue to indicate overall good conditions, especially considering reduced geese on the lake and the high volume of rain. MPOA contracts for water testing at beaches to examine the level of fecal coliform and to assess possible impact on the health of swimmers; long term trends of fecal coliform counts at each beach and causes and potential actions to correct issues stemming from fecal coliform. E-Coli test results

reflect the Most Probable Number (MPN) 3-dilutions. Acceptable readings are: 235/100ml for a single sample maximum. Anything above those readings warrants taking precautionary measures. The Table below shows results of those tests conducted during the 2021 swimming season. Results were recorded using one 100 ml sample from each beach tested for counts of fecal coliform with indication of the day, time and weather condition.

Surface Water Testing for E-Coli Testing Conducted by Joiner Lab during 2021 Swimming Season			
MPN 3-dilutions - Acceptable readings 235/10 ml for single sample maximum and 126/100 ml monthly average limit			
Date	Beaver Landing	Dolphin	West
5/26/2021	11 MPN/100mL	1410 MPN/100mL	3 MPN/100mL
6/2/2021	5 MPN/100mL	24 MPN/100mL	11 MPN/100mL
6/9/2021	60 MPN/100mL	17 MPN/100mL	12 MPN/100mL
6/16/2021	14 MPN/100mL	6 MPN/100mL	17 MPN/100mL
6/23/2021	107 MPN/100mL	12 MPN/100mL	7 MPN/100mL
6/30/2021	8 MPN/100mL	10 MPN/100mL	3 MPN/100mL
7/7/2021	24 MPN/100mL	8 MPN/100mL	10 MPN/100mL
7/14/2021	4 MPN/100mL	29 MPN/100mL	4 MPN/100mL
7/21/2021	3 MPN/100mL	46 MPN/100mL	16 MPN/100mL
7/28/2021	8 MPN/100mL	37 MPN/100mL	261 MPN/100mL
8/4/2021	2 MPN/100mL	11 MPN/100mL	49 MPN/100mL
8/11/2021	5 MPN/100mL	17 MPN/100mL	5 MPN/100mL
8/18/2021	120 MPN/100mL	270 MPN/100mL	770 MPN/100mL
8/25/2021	2 MPN/100mL	26 MPN/100mL	5 MPN/100mL
9/1/2021	20 MPN/100mL	123 MPN/100mL	980 MPN/100mL

Trends from the past several years indicate higher-than-acceptable E-Coli readings immediately after rainstorms (most likely attributable to storm water run-off transporting fecal waste over beaches and upstream watershed properties). Trends also indicate West Beach often has higher than acceptable E-Coli readings from mid-July to mid-August, and Dolphin Beach and Beaver Landing also have occasional higher-than-acceptable E-Coli readings after rainstorms. Residents should consider this data such that they could make risk-informed decisions to take precautionary measures in swimming off West Beach during that period or off any beach after a rainstorm.

- MPOA maintenance routinely removed/disposed of goose droppings and pet waste from beaches to reduce the E-coli counts. Pet waste and goose droppings have contributed to higher levels of E-Coli in the lake, creating human health hazards, aesthetic losses, & property damage.
- Lake Montclair experienced its first Harmful Algae Bloom in August 2021. Algae blooms occur when weather conditions are favorable for algae growth and there are excess nutrients in the water. Some algae can produce toxins and can make people and pets sick. Lab testing results confirmed excessive cyanobacteria on 8/31/2021. As a result of the test results MPOA management posted signs at all three beaches. An additional test was taken on 9/17/2021 and again excessive cyanobacteria was discovered. Once a potentially toxic algae bloom is confirmed then the lake will be closed to swimming.
- Montclair residents should continue to be made aware of the Virginia law banning use of lawn fertilizer containing phosphorus, and prohibition on sale and use of de-icers containing urea (or carbamide), nitrogen or phosphorus.
- Lake water level is managed and controlled based on current conditions. As a part of dam operations, MPOA property management staff monitor the weather to determine when to lower the lake in advance of hazardous conditions. The staff will lower the lake as needed.
- Upgraded Sutron equipment was approved. The newer system allows for more multiple people to be alerted at the same time. This would help in making decisions more quickly in any emergency events.

3. Lake ‘Ribbon of Life’ Sustainment, Access, and Use.

The earthen impounding structure (dam and spillways) continued to serve as the most important asset for sustaining Lake Montclair. The boat ramp, beaches, and common areas offered access for use of the lake.

- MPOA was issued a Regular Operations and Maintenance Certificate entitling MPOA to operate and maintain the Dam. The certificate was effective May 31, 2019 and expires May 31, 2025.
- Final inspection of the Auxiliary Spillway by Prince William County was conducted and approximately \$120,000 of MPOA funding was released. The Prince William County inspector (Mr. Lee) approved the grass coverage in the Auxiliary Spillway.
- A new Operations and Maintenance Plan was approved in August 2021. The new plan is a living comprehensive document that identifies key operations procedures, required maintenance, required inspections, monitoring and surveillance procedures, defines responsibilities and provides project history and other general information.
- MPOA consulting dam engineer, David A. Krisnitski P.E.,CFM Water Resources Engineer, contract was renewed
- The annual inspection of the Lake Montclair Dam and spillway tunnel on 20 July 2021. The overall condition of the Dam and Primary Spillway is assessed to be satisfactory.
- The Emergency Action Plan (EAP) for the Lake Montclair Dam was reviewed and updated in and exercises in October 2021 in compliance with Virginia Impounding Structure Regulations 4VAC50-20. The LMC worked with property management staff to update the EAP that defines three stages of emergency actions and their initiation under prescribed conditions, and it identifies officials and organizations with associated responsibilities. Conditions requiring actions under the EAP are brought about by actual precipitation or “sunny day” emergency conditions which could occur at or near the dam. The EAP includes a chart summarizing how MPOA detects hazardous conditions, assesses emergency conditions and determines Emergency Level Stages that will be used to direct subsequent notification and response actions.
- Alert systems with established notification procedures offered by MPOA and PWC provided timely information to residents to act, as needed, in terms of addressing changes in water level and weather conditions. FSR Connect notifications included means for alerting residents of potentially detrimental changes in water quality and changes in water level (either raising or lowering), as well as weather-related hazardous conditions. Weather alert warnings from PWC helped residents better understand how to proceed with caution in hazardous conditions.
- Dam Maintenance is an ongoing function, especially sustaining turf, mowing, and weeding in riprap, along with other maintenance as required. Dam Mowing and Maintenance LLC is now on contract to provide for mowing. They have the required equipment for the steep slopes of the dam. The requirement for nutrient management services was separated and BrightView provides those capabilities. FSR Maintenance team spread four applications of lime in accordance with the Nutrient Management Plan recommendations.
- Virginia Department of Conservation and Recreation, Dam Safety Office directs that trees should never be allowed to grow on the embankment fill, at the outlet, plunge pool or spillway area, or within 25 feet beyond the abutment contacts and toe of fill. In July 2021 trees were removed from Montclair Dam right abutment contact. The prohibition of trees beyond the groin is to ensure root systems do not penetrate the embankment. The area where trees were removed was graded to blend with the surrounding contour, and appropriate grasses established on all disturbed areas. Turf development within this area will require several seasons to get fully established due to adjacent tree cover.

- As a result of high readings from the piezometers MPOA maintenance staff completed a drainage swale along the left abutment in May 2021. The swale directs storm water flow away from the dam. An assessment of the piezometer soon after swale installation was conducted, and readings returned to normal.
- In Nov 2021 a diver conducted an inspection of the upstream gate and control mechanism. The inspection started at the top of the stem/stem guides and continued down to the gate. The diver checked stem condition, alignment, and each stem guide. Conclusion: The low-level drain appeared to be working well. No significant issues were noted. The overall stem appears to be set lower than recommended. Ideally, the stem would be raised 1 to 2 inches higher, which would provide several inches of thread to stick up above the stop nut. The current configuration is not negatively affecting operation.

4. Watershed Property Use and Monitoring Relevant to Lake Ecosystem Management.

Because properties in Montclair and upstream in the watershed are ‘connected’ to the lake through flow of water, MPOA (primarily through LMC and property management) continued to coordinate and work with others in accomplishing objectives for land use that are relevant to lake management.

- In response to a BoD tasking on water quality, the LMC recommended informing Montclair residents of the threat to water quality caused by allowing excessive nutrients to accumulate in the lake. Information could be relayed by an article in the Montclairion that includes actions to help prevent nutrients from entering the lake. Actions to include in the article: Proper handling of chemicals (lawn and garden, de-icers); Planting vegetative buffers that hold soil in place, prevent erosion, filter pollutants, and provide habitat; Fertilizing in the fall not the spring; Not applying fertilizers or pesticides near bodies of water, or before a rain; Sweep up any residue from hard surfaces and dispose of properly; Proper disposal of pet waste; Using native, hardy plants suited for our climate; Use a mulching mower and return your grass clippings to the lawn; Sweep up and collect all yard waste off the street and sidewalks.
- Surface Water, Ground Water and Sediment Tests (as Specified by VDEQ) were conducted since Prince William County contracted to conduct sediment testing in Powells Creek. The County now tests the waters annually rather than on a 6-month cycle.
- Goose fecal droppings and improperly disposed pet waste continued to contribute to degradation of the lake’s water quality. Resident Canada Geese on Lake Montclair left excessive amounts of fecal droppings on turf and beach areas, and some residents are ignoring PWC statute and MPOA guidelines by not cleaning up after their pets.
- The Nutrient Management Plan for the Dam, created by the Virginia Cooperative Extension, remains in effect until 30 Jul 2023.

5. Storm Water Management, Dredging, and Management of Soil, Sand and Sediment.

Erosion and sediment control were a primary consideration for storm water management. The progressive build-up of sediment required periodic dredging to properly sustain or restore lake-ecosystem functions.

The Timber Ridge Forebay is one of several forebay’s in Montclair designed to reduce the amount of sediment that enters the lake. In 2012 the Timber Ridge Forebay was dredged and approximately 600 cubic yards of sediment was removed. It was dredged again 2015 and large rock was added to help control sediment. In 2018 the forebay needed dredging again and the rock from 2015 needed to be repositioned. Lake Services Inc removed approximately 590 cubic yards of wet material making 59 recorded trips to the Prince William County Landfill. In Jan 2021, Ridge Limited repaired the check dam by adding two loads of Type III rip-rap. As of Dec 2021, the forebay has filled back in, and needs to be dredged in 2022 or it will lose its ability to harbor sediment before washing into the lake.

6. Biological Communities (vegetation, insects, wildlife, fish, & aquatic life) in/around the lake.

Use of the lake continued to be interdependent upon the resilience and vitality of biological resources in and around the lake, such as fish and vegetation. MPOA collaborated with county and state organizations to accomplish objectives relevant to stewardship of the lake.

- The LMC annual lake inspection was cancelled due to the COVID 19 pandemic. The purpose of the inspection tour was to look at overall condition of the lake and lake front properties, including shoreline vegetation. The lake inspections offer opportunities to see the different areas where work is needed, on-going or planned.
- In April 2021, volunteers from Montclair Girl Scout troop 2815, and members of the LMC built and installed 22 fish habitats. After construction the “Spider Blocks” were delivered to various spots around the lake.
- Fish stocking. 450 pounds of forage fish (fathead & golden shiner minnows) were placed in the lake in Apr 2021. The LMC continues to follow advice and recommendations from fisheries biologist John Odenkirk from the VA Department of Wildlife Resources (formally Department Game and Inland Fisheries). The recommendation is to continue to stock a mix of Fathead & Golden Shiner Minnows as supplemental forage for the Lake’s food chain. A fish Survey is planned in Spring of 2022.
- The Canada Goose population on Lake Montclair is continually monitored and action will be taken to ensure the goose population remains at an environmentally safe size (approx. 25 geese).

7. Systems and Procedures for Community Interaction, Training, and Information Resources.

MPOA provided information resources and opportunities for community engagement. Residents have needed to understand how their actions can have an impact on lake stewardship efforts, and their participation has been required for 2/3 of the 25 objectives for lake-ecosystem use and stewardship to be realized. Recreational activities on the lake and beaches contribute to the quality of life in Montclair.

Given the nature of the dam, its aging and the changing of the Association Management, Engineers and Managers, it is vitally important that all the material records of the Dam be kept in one place. The historical information is very important to the Association and its consultants to make informed decisions on the dam in future years. In Aug 2021, a small team began collecting and filing Dam, Lake and LMC related documents.

- Montclair Lake Management Program Plan (LMPP) v2,13 March 2019, was approved by the MPOA Board of Directors. First approved by MPOA BoD on 11 Sept 2013 (commemorating the 25th Anniversary of MPOA ownership of Lake Montclair), the LMPP continues to evolve; covering strategies and programs that reflect a resilience-centric approach focused on safeguarding the continuity of lake-ecosystem functions along with a human-centric approach focused on enabling harmonious use of the lake & its “ribbon of life” assets.

Submitted by the MPOA Lake Management Committee members with MPOA BoD Liaison and MPOA Staff liaisons:

- Buck Arvin - LMC Chairman
- Jesse Burgess - Member
- Austin Carroll - Member
- Mike Czapiewski - Member
- Walt Giraldi – Member
- Jim Greenwood, Member
- Chris Pettyjohn – Member

Submitted to MPOA Board of Directors in March 2022

Desiree Morehead - Member
Bill Warner – Member
Bill Bridges – Member
Mike Brooks - Member
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MPOA Director of Operations