Colliers Engineering & Design

Watershed Inventory Report

April 27, 2026

Borough of Montvale

Montvale, Bergen County, New Jersey

Phase 1 – Watershed Inventory Report

Municipal Stormwater Regulation Program – Watershed Improvement Plan

Date Submitted: April 27, 2026

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Acknowledgements

The Borough of Montvale's Watershed Inventory Report has been prepared by: Colliers Engineering & Design.

Funding for this report was provided by the Borough of Montvale, Bergen County, New Jersey.

Acronyms & Definitions

Acronyms

i. *"BMP" – Best Management Practice*
ii. *"DO" – Dissolved Oxygen*
iii. *"EPA" – U.S. Environmental Protection Agency*
iv. *"GIS" – Geographic Information System*
v. *"HUC 14" – Hydrologic Unit Code 14*
vi. *"MS4" – Municipal Separate Storm Sewer System*
vii. *"MTD" – Manufactured Treatment Device*
viii. *"NJPDES" – New Jersey Pollutant Discharge Elimination System*
ix. *"NJ-WET" – New Jersey Watershed Evaluation Tool*
x. *"TDS" – Total Dissolved Solids*
xi. *"TMDL" – Total Maximum Daily Load*
xii. *"TSS" – Total Suspended Solids*
xiii. *"WIP" – Watershed Improvement Plan*

Definitions

i. *"HUC 14" or "hydrologic unit code 14" means an area within which water drains to a particular receiving surface water body, also known as a subwatershed, which is identified by a 14-digit hydrologic unit boundary designation, delineated within New Jersey by the United States Geological Survey. (N.J.A.C. 7:9B)*
ii. *"Municipal separate storm sewer" (or MS4 conveyance) means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) as defined in more detail at N.J.A.C. 7:14A-1.2.*
iii. *"Outfall" means any point source which discharges directly to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.*
iv. *"Storm drain inlet" means the point of entry into the storm sewer system.*
v. *"Stormwater" means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewerage or drainage facilities or is conveyed by snow removal equipment.*
vi. *"Stormwater facility" means stormwater infrastructure including, but not limited to, catch basins, infiltration basins, detention basins, green infrastructure (GI), filter strips, riparian buffers, infiltration trenches, sand filters, constructed wetlands, wet basins, bioretention systems, low flow bypasses, Manufactured Treatment Devices (MTDs), and stormwater*

conveyances.

vii. *"Stormwater management basin" means a stormwater management basin as defined in N.J.A.C. 7:8.*

viii. *"Stormwater management measure" means a stormwater management measure as defined in* N.J.A.C. 7:8.

ix. *"Stormwater runoff" means water flow on the surface of the ground or in storm sewers, resulting from* precipitation.

x. *"Total maximum daily load" or "TMDL" means a total maximum daily load formally established pursuant to Section 7 of the Water Quality Planning Act (N.J.S.A. 58:11A-7) and Section 303(d) of the Clean Water Act, 33 U.S.C. §§12512 et seq. A TMDL is the sum of individual waste load allocations for point sources, load allocations for nonpoint sources of pollution, other sources such as tributaries or adjacent segments, and allocations to a reserve or margin of safety for an individual pollutant.*

xi. *"Waters of the State" means the ocean and its estuaries, all springs, streams and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction" (see N.J.A.C. 7:9B-1.4).*

Introduction

Located in Bergen County in Northeast New Jersey, Montvale encompasses approximately 4 square miles. According to the 2020 United States Census, Montvale's population is 8,436. The predominant land use in Montvale is Urban at 81%, with 56% comprised of residential land.

Montvale includes parts of the following 3 14-digit hydrologic unit code (HUC) watersheds: Saddle River (above Ridgewood gage) (02030103140040), Hackensack River (above Old Tappan gage) (02030103170030), and Pascack Brook (above Westwood gage) (02030103170010). An estimated 7.6 miles of rivers and streams flow through the municipality's limits; including Arrowhead Creek, Pine Brook, Bear Brook, Cherry Brook, Echo Glenn Brook, Laurel Brook, Mill Brook, Muddy Creek, Pascack Brook, and Stateline Brook. General areas prone to flooding as identified by FEMA and NJDEP climate-related sources include primary and secondary flooding along Pascack Brook with additional flood risks exist along Cherry Brook, Laurel Brook, and Muddy Creek. A 100-year floodplain has been mapped. Additional localized areas of flooding around specific stormwater infrastructure are not known at this time to current township engineering staff. Montvale is situated in the NJDEP Watershed Management Area(s) designated as WMA 4 (Lower Passaic and Saddle) and WMA 5 (Hackensack, Hudson, and Pascack).

The purpose of this report is to provide NJDEP staff and local shareholders with a detailed inventory of significant ecological and infrastructural elements in the watersheds of Montvale. This includes the compiling, organizing and presentation of prevailing land use, hydrography, stormwater management infrastructure, and water quality indicators. Colliers Engineering & Design aims to provide staff with the resources they need to make informed decisions, adhere to regulatory requirements, and implement watershed rehabilitation and protection measures. This report relies on both public and private data as detailed in Appendix A. The data were examined and processed to facilitate the creation of the maps, tables, and analyses presented in this report.

Public Participation

Public involvement will be important to finalizing the Watershed Inventory Report. The stakeholders involved in this report's creation effort were public works personnel from Montvale township (via stormwater information compilation), Colliers Engineering & Design via field collection, and staff technicians and engineers. Additional stakeholders will participate in the finalization of this report in calendar year 2026 and include public leaders and township administrative staff. During calendar year 2026, a series of meetings (up to 3) will be held to circulate the report and receive feedback with the community. These opportunities for discussion may be special sessions or during previously scheduled public meetings (such as a routine council meeting). Dates are yet to be defined but all meetings take place during calendar year 2026. This section of the report provides a placeholder for feedback and responses to be added during and after these public participation opportunities.

Meeting Date	
Meeting Purpose	
Stakeholders Present	
Feedback Received	

**Duplicate the above table as needed to accommodate additional meetings*

All meeting notices, minutes, and documents (including this Watershed Improvement Plan) will be publicly available on the township's website: https://www.montvale.org/

Stormwater Outfalls

Stormwater Outfalls Owned/Operated by Permittee

In keeping with its responsibilities under the Municipal Separate Storm Sewer System (MS4) program, Montvale owns and operates 77 stormwater outfalls throughout its jurisdiction. In accordance with the NJDEP MS4 permit, all municipally owned outfalls are inspected on a rotating basis to guarantee that every outfall is assessed at a minimum of every five years. Outfalls were identified and mapped using through field survey using Eos Arrow Gold GPS receivers with the most recent data collection completed between March and June 2025.

Outfalls were categorized according to subwatershed classification for watershed-scale planning. Stormwater outfalls in Montvale drain to 3 separate subwatersheds. Municipally owned outfall assignment to these watersheds is as follows: 60 outfalls to Pascack Brook (above Westwood gage) (02030103170010), 10 outfalls to Saddle River (above Ridgewood gage) (02030103140040), and 7 to Hackensack River (above Old Tappan gage) (02030103170030) (Figure 1).

Receiving Surface Waters

Surface water data was obtained by integrating data from NJDEP Hydrography GIS layers and field-verified discharge mapping taking place in March-June 2025. Analysis identified the major receiving waterbodies for the stormwater discharges from municipally owned outfalls. Montvale's stormwater outfalls flow into 8 primary surface water bodies, including Arrowhead Creek, Pine Brook, Bear Brook, Cherry Brook, Echo Glenn Brook, Mill Brook, Muddy Creek, and Pascack Brook. Furthermore, 38% into Pascack Brook, 12% into Muddy Brook, 10% to Bear Brook, 9% to Cherry Brook, and 5-6% to each of Pine, Mill, Echo Glenn Brooks and Arrowhead Creek. Additional information can be found in Table 1 and Figure 1.

Table 1: Receiving Surface Water Bodies & Water Quality Classification

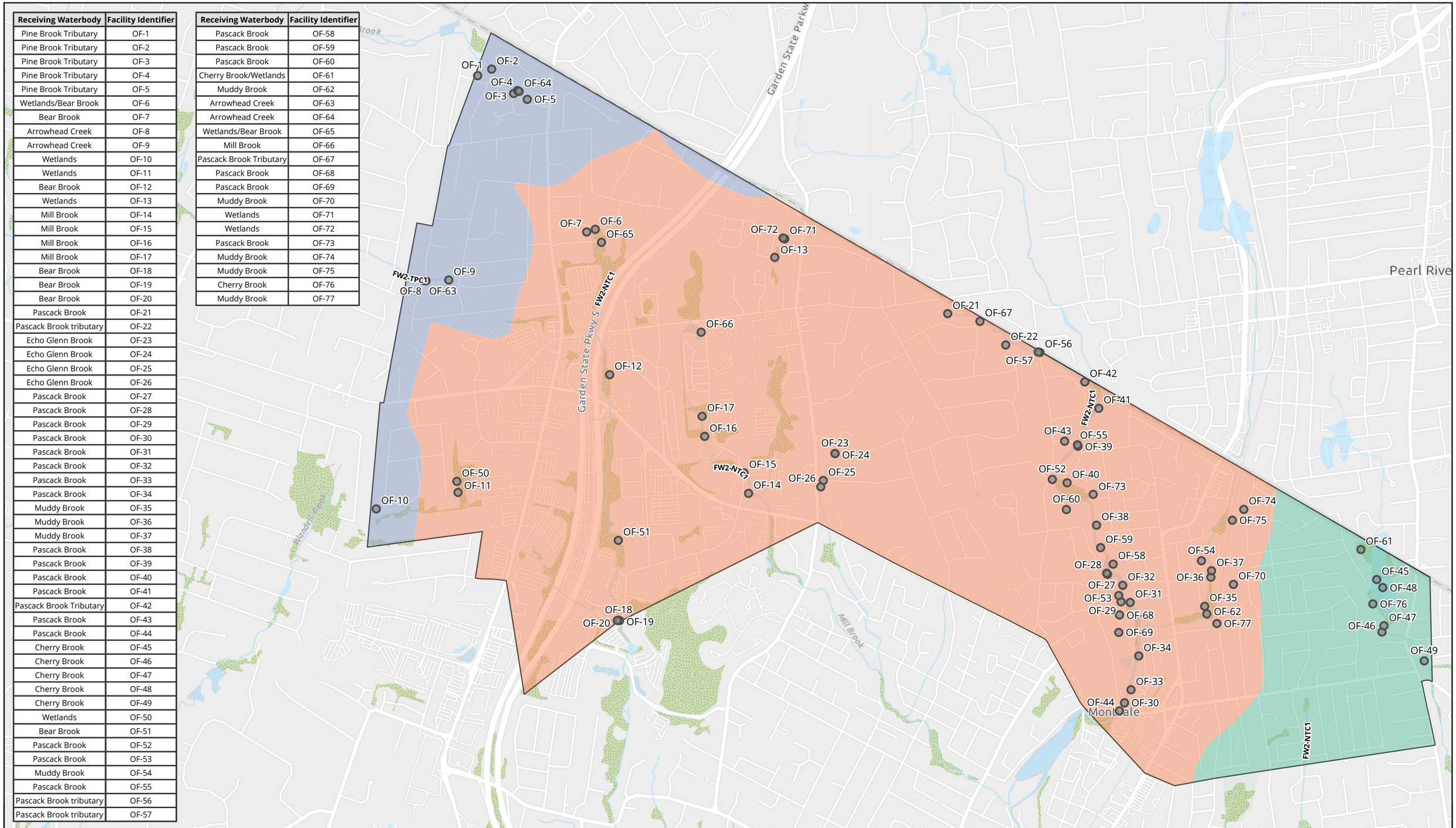
Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-1	*Pine Brook Tributary*	*FW2-NTC1*
OF-2	*Pine Brook Tributary*	*FW2-NTC1*
OF-3	*Pine Brook Tributary*	*FW2-NTC1*
OF-4	*Pine Brook Tributary*	*FW2-NTC1*
OF-5	*Pine Brook Tributary*	*FW2-NTC1*
OF-6	*Wetlands/Bear Brook*	*FW2-NTC1*
OF-7	*Bear Brook*	*FW2-NTC1*
OF-8	*Arrowhead Creek*	*FW2-TPC1*
OF-9	*Arrowhead Creek*	*FW2-TPC1*
OF-10	*Wetlands*	*FW2-NTC1*
OF-11	*Wetlands*	*FW2-NTC1*
OF-12	*Bear Brook*	*FW2-NTC1*
OF-13	*Wetlands*	*FW2-NTC1*
OF-14	*Mill Brook*	*FW2-NTC1*
OF-15	*Mill Brook*	*FW2-NTC1*
OF-16	*Mill Brook*	*FW2-NTC1*
OF-17	*Mill Brook*	*FW2-NTC1*
OF-18	*Bear Brook*	*FW2-NTC1*
OF-19	*Bear Brook*	*FW2-NTC1*
OF-20	*Bear Brook*	*FW2-NTC1*
OF-21	*Pascack Brook*	*FW2-NTC1*
OF-22	*Pascack Brook tributary*	*FW2-NTC1*
OF-23	*Echo Glenn Brook*	*FW2-NTC1*
OF-24	*Echo Glenn Brook*	*FW2-NTC1*
OF-25	*Echo Glenn Brook*	*FW2-NTC1*
OF-26	*Echo Glenn Brook*	*FW2-NTC1*
OF-27	*Pascack Brook*	*FW2-NTC1*
OF-28	*Pascack Brook*	*FW2-NTC1*
OF-29	*Pascack Brook*	*FW2-NTC1*
OF-30	*Pascack Brook*	*FW2-NTC1*
OF-31	*Pascack Brook*	*FW2-NTC1*
OF-32	*Pascack Brook*	*FW2-NTC1*
OF-33	*Pascack Brook*	*FW2-NTC1*
OF-34	*Pascack Brook*	*FW2-NTC1*

Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-35	*Muddy Brook*	*FW2-NTC1*
OF-36	*Muddy Brook*	*FW2-NTC1*
OF-37	*Muddy Brook*	*FW2-NTC1*
OF-38	*Pascack Brook*	*FW2-NTC1*
OF-39	*Pascack Brook*	*FW2-NTC1*
OF-40	*Pascack Brook*	*FW2-NTC1*
OF-41	*Pascack Brook*	*FW2-NTC1*
OF-42	*Pascack Brook Tributary*	*FW2-NTC1*
OF-43	*Pascack Brook*	*FW2-NTC1*
OF-44	*Pascack Brook*	*FW2-NTC1*
OF-45	*Cherry Brook*	*FW2-NTC1*
OF-46	*Cherry Brook*	*FW2-NTC1*
OF-47	*Cherry Brook*	*FW2-NTC1*
OF-48	*Cherry Brook*	*FW2-NTC1*
OF-49	*Cherry Brook*	*FW2-NTC1*
OF-50	*Wetlands*	*FW2-NTC1*
OF-51	*Bear Brook*	*FW2-NTC1*
OF-52	*Pascack Brook*	*FW2-NTC1*
OF-53	*Pascack Brook*	*FW2-NTC1*
OF-54	*Muddy Brook*	*FW2-NTC1*
OF-55	*Pascack Brook*	*FW2-NTC1*
OF-56	*Pascack Brook tributary*	*FW2-NTC1*
OF-57	*Pascack Brook tributary*	*FW2-NTC1*
OF-58	*Pascack Brook*	*FW2-NTC1*
OF-59	*Pascack Brook*	*FW2-NTC1*
OF-60	*Pascack Brook*	*FW2-NTC1*
OF-61	*Cherry Brook/Wetlands*	*FW2-NTC1*
OF-62	*Muddy Brook*	*FW2-NTC1*
OF-63	*Arrowhead Creek*	*FW2-NTC1*
OF-64	*Arrowhead Creek*	*FW2-NTC1*
OF-65	*Wetlands/Bear Brook*	*FW2-NTC1*
OF-66	*Mill Brook*	*FW2-NTC1*
OF-67	*Pascack Brook Tributary*	*FW2-NTC1*
OF-68	*Pascack Brook*	*FW2-NTC1*
OF-69	*Pascack Brook*	*FW2-NTC1*

Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-70	*Muddy Brook*	*FW2-NTC1*
OF-71	*Wetlands*	*FW2-NTC1*
OF-72	*Wetlands*	*FW2-NTC1*
OF-73	*Pascack Brook*	*FW2-NTC1*
OF-74	*Muddy Brook*	*FW2-NTC1*
OF-75	*Muddy Brook*	*FW2-NTC1*
OF-76	*Cherry Brook*	*FW2-NTC1*
OF-77	*Muddy Brook*	*FW2-NTC1*

Receiving Waterbody	Facility Identifier
Pine Brook Tributary	OF-1
Pine Brook Tributary	OF-2
Pine Brook Tributary	OF-3
Pine Brook Tributary	OF-4
Pine Brook Tributary	OF-5
Wetlands/Bear Brook	OF-6
Bear Brook	OF-7
Arrowhead Creek	OF-8
Arrowhead Creek	OF-9
Wetlands	OF-10
Wetlands	OF-11
Bear Brook	OF-12
Wetlands	OF-13
Mill Brook	OF-14
Mill Brook	OF-15
Mill Brook	OF-16
Mill Brook	OF-17
Bear Brook	OF-18
Bear Brook	OF-19
Bear Brook	OF-20
Pascack Brook	OF-21
Pascack Brook tributary	OF-22
Echo Glenn Brook	OF-23
Echo Glenn Brook	OF-24
Echo Glenn Brook	OF-25
Echo Glenn Brook	OF-26
Pascack Brook	OF-27
Pascack Brook	OF-28
Pascack Brook	OF-29
Pascack Brook	OF-30
Pascack Brook	OF-31
Pascack Brook	OF-32
Pascack Brook	OF-33
Pascack Brook	OF-34
Muddy Brook	OF-35
Muddy Brook	OF-36
Muddy Brook	OF-37
Pascack Brook	OF-38
Pascack Brook	OF-39
Pascack Brook	OF-40
Pascack Brook	OF-41
Pascack Brook Tributary	OF-42
Pascack Brook	OF-43
Pascack Brook	OF-44
Cherry Brook	OF-45
Cherry Brook	OF-46
Cherry Brook	OF-47
Cherry Brook	OF-48
Cherry Brook	OF-49
Wetlands	OF-50
Bear Brook	OF-51
Pascack Brook	OF-52
Pascack Brook	OF-53
Muddy Brook	OF-54
Pascack Brook	OF-55
Pascack Brook tributary	OF-56
Pascack Brook tributary	OF-57

Receiving Waterbody	Facility Identifier
Pascack Brook	OF-58
Pascack Brook	OF-59
Pascack Brook	OF-60
Cherry Brook/Wetlands	OF-61
Muddy Brook	OF-62
Arrowhead Creek	OF-63
Arrowhead Creek	OF-64
Wetlands/Bear Brook	OF-65
Mill Brook	OF-66
Pascack Brook Tributary	OF-67
Pascack Brook	OF-68
Pascack Brook	OF-69
Muddy Brook	OF-70
Wetlands	OF-71
Wetlands	OF-72
Pascack Brook	OF-73
Muddy Brook	OF-74
Muddy Brook	OF-75
Cherry Brook	OF-76
Muddy Brook	OF-77



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Colliers Engineering & Design

N

0 0.25 0.5 Miles

Figure 1: Permittee Owned and Operated Stormwater Outfalls

Montvale
Bergen County, New Jersey

Date: 4/8/2026 | Drawn By: RT

- Outfalls
- Sub-Watersheds
  - Hackensack River (above Old Tappan gage)
  - Pascack Brook (above Westwood gage)
  - Saddle River (above Ridgewood gage)
- Streams
- Waterbodies
- Wetlands

Stormwater Interconnections

Interconnections from the permittee's MS4 into another entity

Montvale contains sections of external private, municipal, county and state owned MS4 systems. These interconnections were identified through a combination of desktop GIS analysis and field collection. Site-specific inspections were conducted between March-June 2025. All potential interconnections were inspected to determine connection type, flow direction, and ownership at points of transition between systems.

There were 57 stormwater connections found where Montvale's MS4 discharges into another system. Receiving systems include 35 owned by Bergen County, 6 owned by River Vale Township, 4 To Upper Saddle River Borough, 2 to Park Ridge Borough, 4 to State systems, and 6 to private systems. The features of the interconnections are all via piped discharge.

Each point of interconnection was noted and illustrated to further the understanding of stormwater transfers between entities, thus providing accurate definition of ownership and maintenance responsibilities under the MS4 permit. Wherever ownership lines are unclear due to overlapping infrastructure or jointly managed maintenance zones, the interconnection was noted for future coordination with the relevant entities.

Interconnections into the permittee's MS4 from another entity

Interconnections with off-municipality stormwater systems to Montvale's MS4 were identified by the same methodology described above, including GIS review of available stormwater infrastructure data and field observations between March-June 2025. In most cases, the upstream segment of the system lies outside the municipal boundary but directly discharges into inlets or pipes belonging to Montvale.

There were 105 interconnections with other stormwater entering the permittee's MS4 system. These inflows include 84 from private systems, 13 from Bergen County, 3 from Upper Saddle River Borough, 2 from New Jersey State, 2 from River Vale Township and 1 from Park Ridge Borough into Montvale's publicly owned stormwater system. All inflows are through direct pipe discharge. Additional information can be found in Table 2 and Figure 2.

Table 2: Montvale MS4 Interconnections

Local ID	Type	Upstream Entity	Downstream Entity
INT-1	*Pipe*	*Upper Saddle River Borough*	*Montvale Borough*
INT-2	*Pipe*	*Montvale Borough*	*Upper Saddle River Borough*
INT-3	*Pipe*	*Montvale Borough*	*Upper Saddle River Borough*
INT-4	*Pipe*	*Montvale Borough*	*Upper Saddle River Borough*
INT-5	*Pipe*	*Montvale Borough*	*Upper Saddle River Borough*
INT-6	*Pipe*	*Upper Saddle River Borough*	*Montvale Borough*
INT-7	*Pipe*	*Montvale Borough*	*State*
INT-8	*Pipe*	*Montvale Borough*	*State*
INT-9	*Pipe*	*Bergen County*	*Montvale Borough*
INT-10	*Pipe*	*Montvale Borough*	*Bergen County*
INT-11	*Pipe*	*Montvale Borough*	*Bergen County*
INT-12	*Pipe*	*Montvale Borough*	*Bergen County*
INT-13	*Pipe*	*Montvale Borough*	*Bergen County*
INT-14	*Pipe*	*Bergen County*	*Montvale Borough*
INT-15	*Pipe*	*Montvale Borough*	*Bergen County*
INT-16	*Pipe*	*Montvale Borough*	*Bergen County*
INT-17	*Pipe*	*Bergen County*	*Montvale Borough*
INT-18	*Pipe*	*Montvale Borough*	*Bergen County*
INT-19	*Pipe*	*Montvale Borough*	*Bergen County*
INT-20	*Pipe*	*Montvale Borough*	*State*
INT-21	*Pipe*	*Montvale Borough*	*Bergen County*
INT-22	*Pipe*	*Bergen County*	*Montvale Borough*
INT-23	*Pipe*	*Montvale Borough*	*Bergen County*
INT-24	*Pipe*	*Montvale Borough*	*Bergen County*
INT-25	*Pipe*	*Montvale Borough*	*Bergen County*
INT-26	*Pipe*	*Bergen County*	*Montvale Borough*
INT-27	*Pipe*	*Montvale Borough*	*Park Ridge Borough*
INT-28	*Pipe*	*Private*	*Montvale Borough*
INT-29	*Pipe*	*Private*	*Montvale Borough*
INT-30	*Pipe*	*Private*	*Montvale Borough*
INT-31	*Pipe*	*Private*	*Montvale Borough*

Local ID	Type	Upstream Entity	Downstream Entity
INT-32	*Pipe*	*Private*	*Montvale Borough*
INT-33	*Pipe*	*Private*	*Montvale Borough*
INT-34	*Pipe*	*Private*	*Montvale Borough*
INT-35	*Pipe*	*Private*	*Montvale Borough*
INT-36	*Pipe*	*Private*	*Montvale Borough*
INT-37	*Pipe*	*Private*	*Montvale Borough*
INT-38	*Pipe*	*Private*	*Montvale Borough*
INT-39	*Pipe*	*Private*	*Montvale Borough*
INT-40	*Pipe*	*Private*	*Montvale Borough*
INT-41	*Pipe*	*Private*	*Montvale Borough*
INT-42	*Pipe*	*Private*	*Montvale Borough*
INT-43	*Pipe*	*Private*	*Montvale Borough*
INT-44	*Pipe*	*Private*	*Montvale Borough*
INT-45	*Pipe*	*Private*	*Montvale Borough*
INT-46	*Pipe*	*Private*	*Montvale Borough*
INT-47	*Pipe*	*Bergen County*	*Montvale Borough*
INT-48	*Pipe*	*Bergen County*	*Montvale Borough*
INT-49	*Pipe*	*Bergen County*	*Montvale Borough*
INT-50	*Pipe*	*Private*	*Montvale Borough*
INT-51	*Pipe*	*Bergen County*	*Montvale Borough*
INT-52	*Pipe*	*Private*	*Montvale Borough*
INT-53	*Pipe*	*Private*	*Montvale Borough*
INT-54	*Pipe*	*Private*	*Montvale Borough*
INT-55	*Pipe*	*Private*	*Montvale Borough*
INT-56	*Pipe*	*Private*	*Montvale Borough*
INT-57	*Pipe*	*Private*	*Montvale Borough*
INT-58	*Pipe*	*Private*	*Montvale Borough*
INT-59	*Pipe*	*Private*	*Montvale Borough*
INT-60	*Pipe*	*Private*	*Montvale Borough*
INT-61	*Pipe*	*Private*	*Montvale Borough*
INT-62	*Pipe*	*Private*	*Montvale Borough*
INT-63	*Pipe*	*Private*	*Montvale Borough*
INT-64	*Pipe*	*Montvale Borough*	*Bergen County*
INT-65	*Pipe*	*Montvale Borough*	*Bergen County*
INT-66	*Pipe*	*Bergen County*	*Montvale Borough*

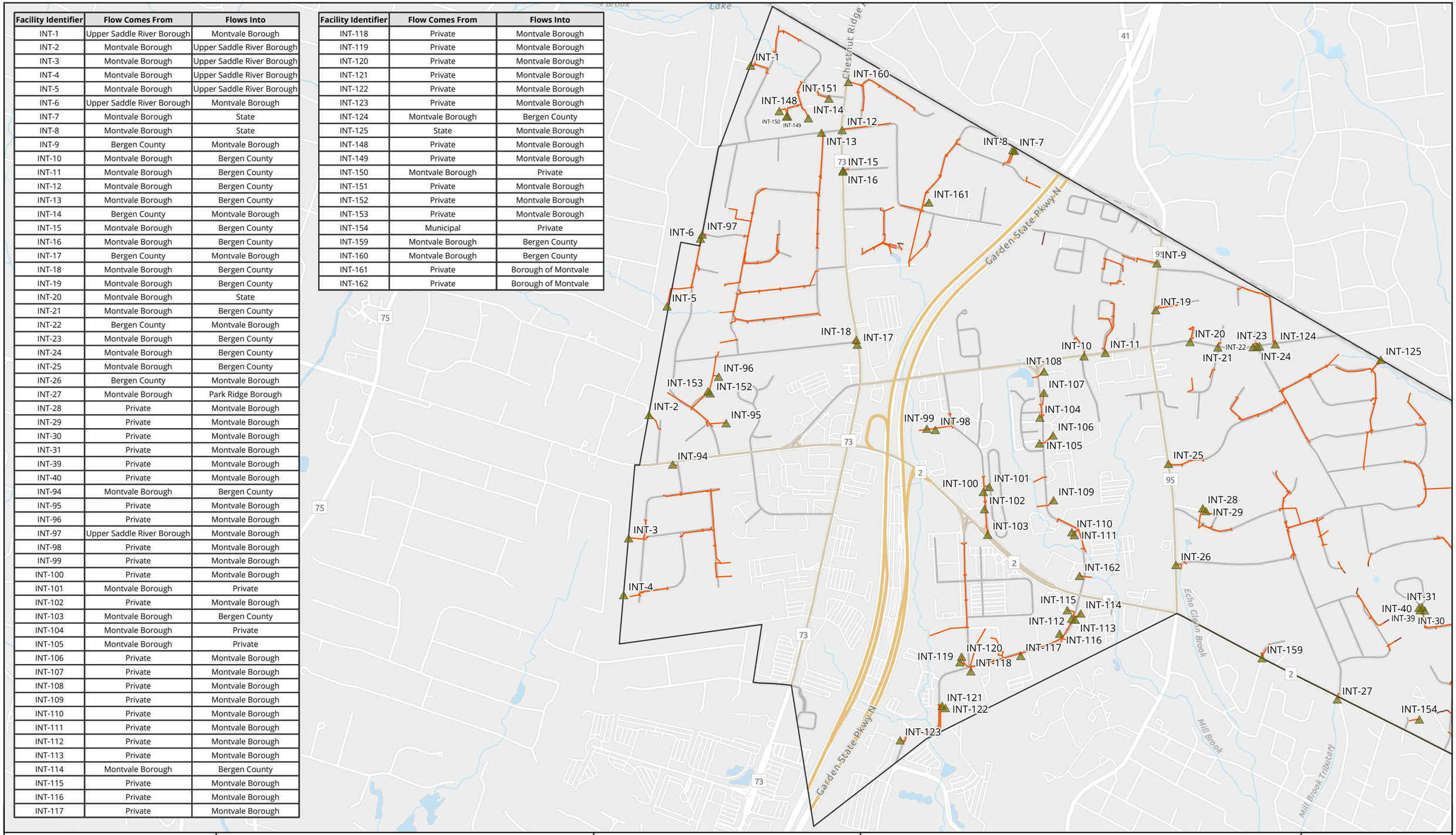
Local ID	Type	Upstream Entity	Downstream Entity
INT-67	*Pipe*	*Montvale Borough*	*Bergen County*
INT-68	*Pipe*	*Bergen County*	*Montvale Borough*
INT-69	*Pipe*	*Montvale Borough*	*Bergen County*
INT-70	*Pipe*	*Montvale Borough*	*Bergen County*
INT-71	*Pipe*	*River Vale Township*	*Montvale Borough*
INT-72	*Pipe*	*Montvale Borough*	*Bergen County*
INT-73	*Pipe*	*Bergen County*	*Montvale Borough*
INT-74	*Pipe*	*Montvale Borough*	*Bergen County*
INT-75	*Pipe*	*Private*	*Montvale Borough*
INT-76	*Pipe*	*Montvale Borough*	*River Vale Township*
INT-77	*Pipe*	*Montvale Borough*	*River Vale Township*
INT-78	*Pipe*	*Private*	*Montvale Borough*
INT-79	*Pipe*	*Private*	*Montvale Borough*
INT-80	*Pipe*	*Montvale Borough*	*Park Ridge Borough*
INT-81	*Pipe*	*Montvale Borough*	*Bergen County*
INT-82	*Pipe*	*Private*	*Montvale Borough*
INT-83	*Pipe*	*Park Ridge Borough*	*Montvale Borough*
INT-84	*Pipe*	*Montvale Borough*	*Bergen County*
INT-85	*Pipe*	*Montvale Borough*	*Bergen County*
INT-86	*Pipe*	*Private*	*Montvale Borough*
INT-87	*Pipe*	*Private*	*Montvale Borough*
INT-88	*Pipe*	*Montvale Borough*	*Bergen County*
INT-89	*Pipe*	*Montvale Borough*	*Bergen County*
INT-90	*Pipe*	*Private*	*Montvale Borough*
INT-91	*Pipe*	*Private*	*Montvale Borough*
INT-92	*Pipe*	*Private*	*Montvale Borough*
INT-93	*Pipe*	*Montvale Borough*	*River Vale Township*
INT-94	*Pipe*	*Montvale Borough*	*Bergen County*
INT-95	*Pipe*	*Private*	*Montvale Borough*
INT-96	*Pipe*	*Private*	*Montvale Borough*
INT-97	*Pipe*	*Upper Saddle River Borough*	*Montvale Borough*
INT-98	*Pipe*	*Private*	*Montvale Borough*
INT-99	*Pipe*	*Private*	*Montvale Borough*
INT-100	*Pipe*	*Private*	*Montvale Borough*
INT-101	*Pipe*	*Montvale Borough*	*Private*

Local ID	Type	Upstream Entity	Downstream Entity
INT-102	Pipe	Private	Montvale Borough
INT-103	Pipe	Montvale Borough	Bergen County
INT-104	Pipe	Montvale Borough	Private
INT-105	Pipe	Montvale Borough	Private
INT-106	Pipe	Private	Montvale Borough
INT-107	Pipe	Private	Montvale Borough
INT-108	Pipe	Private	Montvale Borough
INT-109	Pipe	Private	Montvale Borough
INT-110	Pipe	Private	Montvale Borough
INT-111	Pipe	Private	Montvale Borough
INT-112	Pipe	Private	Montvale Borough
INT-113	Pipe	Private	Montvale Borough
INT-114	Pipe	Montvale Borough	Bergen County
INT-115	Pipe	Private	Montvale Borough
INT-116	Pipe	Private	Montvale Borough
INT-117	Pipe	Private	Montvale Borough
INT-118	Pipe	Private	Montvale Borough
INT-119	Pipe	Private	Montvale Borough
INT-120	Pipe	Private	Montvale Borough
INT-121	Pipe	Private	Montvale Borough
INT-122	Pipe	Private	Montvale Borough
INT-123	Pipe	Private	Montvale Borough
INT-124	Pipe	Montvale Borough	Bergen County
INT-125	Pipe	State	Montvale Borough
INT-126	Pipe	Private	Montvale Borough
INT-127	Pipe	Private	Montvale Borough
INT-128	Pipe	Private	Montvale Borough
INT-129	Pipe	Private	Montvale Borough
INT-130	Pipe	Montvale Borough	State
INT-131	Pipe	Private	Montvale Borough
INT-132	Pipe	Private	Montvale Borough
INT-133	Pipe	Montvale Borough	Bergen County
INT-134	Pipe	Montvale Borough	Bergen County
INT-135	Pipe	Montvale Borough	Bergen County
INT-136	Pipe	Montvale Borough	Bergen County

Local ID	Type	Upstream Entity	Downstream Entity
INT-137	*Pipe*	*Montvale Borough*	*River Vale Township*
INT-138	*Pipe*	*Montvale Borough*	*River Vale Township*
INT-139	*Pipe*	*Montvale Borough*	*River Vale Township*
INT-140	*Pipe*	*River Vale Township*	*Montvale Borough*
INT-141	*Pipe*	*Private*	*Montvale Borough*
INT-142	*Pipe*	*Private*	*Montvale Borough*
INT-143	*Pipe*	*Private*	*Montvale Borough*
INT-144	*Pipe*	*Private*	*Montvale Borough*
INT-145	*Pipe*	*Private*	*Montvale Borough*
INT-146	*Pipe*	*State*	*Montvale Borough*
INT-147	*Pipe*	*Bergen County*	*Montvale Borough*
INT-148	*Pipe*	*Private*	*Montvale Borough*
INT-149	*Pipe*	*Private*	*Montvale Borough*
INT-150	*Pipe*	*Montvale Borough*	*Private*
INT-151	*Pipe*	*Private*	*Montvale Borough*
INT-152	*Pipe*	*Private*	*Montvale Borough*
INT-153	*Pipe*	*Private*	*Montvale Borough*
INT-154	*Pipe*	*Municipal*	*Private*
INT-155	*Pipe*	*Montvale Borough*	*Bergen County*
INT-156	*Pipe*	*Private*	*Montvale Borough*
INT-157	*Pipe*	*Montvale Borough*	*Private*
INT-158	*Pipe*	*Private*	*Montvale Borough*
INT-159	*Pipe*	*Montvale Borough*	*Bergen County*
INT-160	*Pipe*	*Montvale Borough*	*Bergen County*
INT-161	*Pipe*	*Private*	*Montvale Borough*
INT-162	*Pipe*	*Private*	*Montvale Borough*

Facility Identifier	Flow Comes From	Flows Into
INT-1	Upper Saddle River Borough	Montvale Borough
INT-2	Montvale Borough	Upper Saddle River Borough
INT-3	Montvale Borough	Upper Saddle River Borough
INT-4	Montvale Borough	Upper Saddle River Borough
INT-5	Montvale Borough	Upper Saddle River Borough
INT-6	Upper Saddle River Borough	Montvale Borough
INT-7	Montvale Borough	State
INT-8	Montvale Borough	State
INT-9	Bergen County	Montvale Borough
INT-10	Montvale Borough	Bergen County
INT-11	Montvale Borough	Bergen County
INT-12	Montvale Borough	Bergen County
INT-13	Montvale Borough	Bergen County
INT-14	Bergen County	Montvale Borough
INT-15	Montvale Borough	Bergen County
INT-16	Montvale Borough	Bergen County
INT-17	Bergen County	Montvale Borough
INT-18	Montvale Borough	Bergen County
INT-19	Montvale Borough	Bergen County
INT-20	Montvale Borough	State
INT-21	Montvale Borough	Bergen County
INT-22	Bergen County	Montvale Borough
INT-23	Montvale Borough	Bergen County
INT-24	Montvale Borough	Bergen County
INT-25	Montvale Borough	Bergen County
INT-26	Bergen County	Montvale Borough
INT-27	Montvale Borough	Park Ridge Borough
INT-28	Private	Montvale Borough
INT-29	Private	Montvale Borough
INT-30	Private	Montvale Borough
INT-31	Private	Montvale Borough
INT-39	Private	Montvale Borough
INT-40	Private	Montvale Borough
INT-94	Montvale Borough	Bergen County
INT-95	Private	Montvale Borough
INT-96	Private	Montvale Borough
INT-97	Upper Saddle River Borough	Montvale Borough
INT-98	Private	Montvale Borough
INT-99	Private	Montvale Borough
INT-100	Private	Montvale Borough
INT-101	Montvale Borough	Private
INT-102	Private	Montvale Borough
INT-103	Montvale Borough	Bergen County
INT-104	Montvale Borough	Private
INT-105	Montvale Borough	Private
INT-106	Private	Montvale Borough
INT-107	Private	Montvale Borough
INT-108	Private	Montvale Borough
INT-109	Private	Montvale Borough
INT-110	Private	Montvale Borough
INT-111	Private	Montvale Borough
INT-112	Private	Montvale Borough
INT-113	Private	Montvale Borough
INT-114	Montvale Borough	Bergen County
INT-115	Private	Montvale Borough
INT-116	Private	Montvale Borough
INT-117	Private	Montvale Borough

Facility Identifier	Flow Comes From	Flows Into
INT-118	Private	Montvale Borough
INT-119	Private	Montvale Borough
INT-120	Private	Montvale Borough
INT-121	Private	Montvale Borough
INT-122	Private	Montvale Borough
INT-123	Private	Montvale Borough
INT-124	Montvale Borough	Bergen County
INT-125	State	Montvale Borough
INT-148	Private	Montvale Borough
INT-149	Private	Montvale Borough
INT-150	Montvale Borough	Private
INT-151	Private	Montvale Borough
INT-152	Private	Montvale Borough
INT-153	Private	Montvale Borough
INT-154	Municipal	Private
INT-159	Montvale Borough	Bergen County
INT-160	Montvale Borough	Bergen County
INT-161	Private	Borough of Montvale
INT-162	Private	Borough of Montvale



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Figure 2: Interconnections Into and From Township

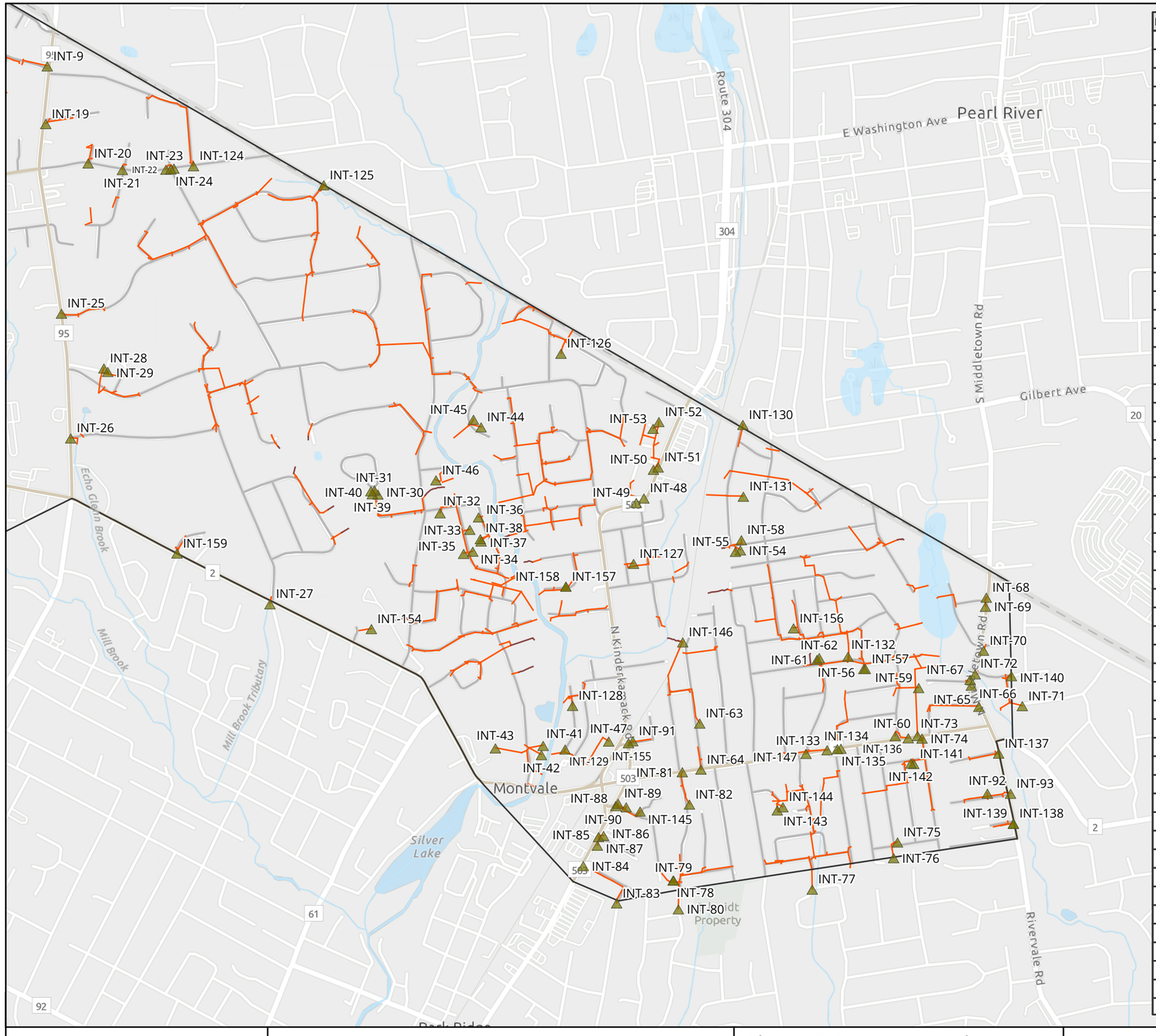
Montvale
Bergen County, New Jersey

Date: 4/8/2026 | Drawn By: RT

Interconnections

Conveyance
- Gravity Main
- Swale

Roadways
- Municipal
- County
- Highway Authority



Facility Identifier	Flow Comes From	Flows Into
INT-9	Bergen County	Montvale Borough
INT-19	Montvale Borough	Bergen County
INT-20	Montvale Borough	State
INT-21	Montvale Borough	Bergen County
INT-22	Bergen County	Montvale Borough
INT-23	Montvale Borough	Bergen County
INT-24	Montvale Borough	Bergen County
INT-25	Montvale Borough	Bergen County
INT-26	Bergen County	Montvale Borough
INT-27	Montvale Borough	Park Ridge Borough
INT-28	Private	Montvale Borough
INT-29	Private	Montvale Borough
INT-30	Private	Montvale Borough
INT-31	Private	Montvale Borough
INT-32	Private	Montvale Borough
INT-33	Private	Montvale Borough
INT-34	Private	Montvale Borough
INT-35	Private	Montvale Borough
INT-36	Private	Montvale Borough
INT-37	Private	Montvale Borough
INT-38	Private	Montvale Borough
INT-39	Private	Montvale Borough
INT-40	Private	Montvale Borough
INT-41	Private	Montvale Borough
INT-42	Private	Montvale Borough
INT-43	Private	Montvale Borough
INT-44	Private	Montvale Borough
INT-45	Private	Montvale Borough
INT-46	Private	Montvale Borough
INT-47	Bergen County	Montvale Borough
INT-48	Bergen County	Montvale Borough
INT-49	Bergen County	Montvale Borough
INT-50	Private	Montvale Borough
INT-51	Bergen County	Montvale Borough
INT-52	Private	Montvale Borough
INT-53	Private	Montvale Borough
INT-54	Private	Montvale Borough
INT-55	Private	Montvale Borough
INT-56	Private	Montvale Borough
INT-57	Private	Montvale Borough
INT-58	Private	Montvale Borough
INT-59	Private	Montvale Borough
INT-60	Private	Montvale Borough
INT-61	Private	Montvale Borough
INT-62	Private	Montvale Borough
INT-63	Private	Montvale Borough
INT-64	Montvale Borough	Bergen County
INT-65	Montvale Borough	Bergen County
INT-66	Bergen County	Montvale Borough
INT-67	Montvale Borough	Bergen County
INT-68	Bergen County	Montvale Borough
INT-69	Montvale Borough	Bergen County
INT-70	Montvale Borough	Bergen County

Facility Identifier	Flow Comes From	Flows Into
INT-71	River Vale Township	Montvale Borough
INT-72	Montvale Borough	Bergen County
INT-73	Bergen County	Montvale Borough
INT-74	Montvale Borough	Bergen County
INT-75	Private	Montvale Borough
INT-76	Montvale Borough	River Vale Township
INT-77	Montvale Borough	River Vale Township
INT-78	Private	Montvale Borough
INT-79	Private	Montvale Borough
INT-80	Montvale Borough	Park Ridge Borough
INT-81	Montvale Borough	Bergen County
INT-82	Private	Montvale Borough
INT-83	Park Ridge Borough	Montvale Borough
INT-84	Montvale Borough	Bergen County
INT-85	Montvale Borough	Bergen County
INT-86	Private	Montvale Borough
INT-87	Private	Montvale Borough
INT-88	Montvale Borough	Bergen County
INT-89	Montvale Borough	Bergen County
INT-90	Private	Montvale Borough
INT-91	Private	Montvale Borough
INT-92	Private	Montvale Borough
INT-93	Montvale Borough	River Vale Township
INT-124	Montvale Borough	Bergen County
INT-125	State	Montvale Borough
INT-126	Private	Montvale Borough
INT-127	Private	Montvale Borough
INT-128	Private	Montvale Borough
INT-129	Private	Montvale Borough
INT-130	Montvale Borough	State
INT-131	Private	Montvale Borough
INT-132	Private	Montvale Borough
INT-133	Montvale Borough	Bergen County
INT-134	Montvale Borough	Bergen County
INT-135	Montvale Borough	Bergen County
INT-136	Montvale Borough	Bergen County
INT-137	Montvale Borough	River Vale Township
INT-138	Montvale Borough	River Vale Township
INT-139	Montvale Borough	River Vale Township
INT-140	River Vale Township	Montvale Borough
INT-141	Private	Montvale Borough
INT-142	Private	Montvale Borough
INT-143	Private	Montvale Borough
INT-144	Private	Montvale Borough
INT-145	Private	Montvale Borough
INT-146	State	Montvale Borough
INT-147	Bergen County	Montvale Borough
INT-154	Municipal	Private
INT-155	Montvale Borough	Bergen County
INT-156	Private	Montvale Borough
INT-157	Montvale Borough	Private
INT-158	Private	Montvale Borough
INT-159	Montvale Borough	Bergen County

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0 0.25 0.5 Miles

Figure 2: Interconnections Into and From Township

Montvale

Bergen County, New Jersey

Date: 4/8/2026 | Drawn By: RT

Interconnections

Conveyance
- Gravity Main
- Swale

Roadways
- Municipal
- County
- Highway Authority



Drainage Areas for Stormwater Outfalls and Stormwater Interconnections

Stormwater Inlets

An inventory of stormwater inlets was compiled using a combination of existing municipal stormwater infrastructure datasets and extensive field collection and verification efforts. Field verification conducted between March-June 2025 confirmed inlet location, status, and connectivity to guarantee precision in the spatial representation of the stormwater collection system. In total, 1,116 inlets were identified within the municipal boundary. These inlets represent primary points of entry for surface runoff into the MS4 system and were used as reference points for subsequent hydrologic and drainage analysis (Figures 3-4).

Methodology

Digital Elevation Model (DEM) data were obtained for Montvale from publicly available state sources. To more realistically simulate the stormwater system, the municipal stormwater system was incorporated into the DEM by "burning in" the pipe centerlines and outfall locations using raster processing tools with ArcHydro in ArcGIS Pro. The updated topography more accurately reflects the natural and engineered flow of stormwater in the township.

The ArcHydro tool set was used to establish flow accumulation and flow direction which supported delineation of drainage areas contributing to each mapped outfall and interconnection. Outfall and interconnection positions acted as pour points to delineate approximate drainage areas for each outfall and interconnection within the town's limits. The resulting drainage areas provide a spatial base for evaluating contributing land cover conditions, identifying pollutant sources, and supporting subsequent phases of the Watershed Improvement Plan.

These delineations are derived from the best-available elevation data and the existing mapped stormwater network. Like any GIS-based hydrologic modeling, qualifications are necessary, and interpretations will be constrained by the quality of the source DEM and the comprehensiveness of the stormwater dataset. To mitigate these constraints, manual review was conducted to verify the reasonableness of delineations; however, complete field verification was not performed. While the delineations provide a reasonable approximation of drainage boundaries, refinement and continued updates to the stormwater network dataset is recommended to improve accuracy. Acreages and primary contributing drainage area type for all drainage areas can be found in Table 3.

Drainage Area of MS4 Outfalls From the Permittee to Another Entity

The drainage areas associated with Montvale municipal stormwater outfalls will be referred to as "outfallsheds." Using the methodology detailed above, a total of 77 outfallsheds were generated for Montvale, however, after manual review 3 were removed for logical reasons. The remaining 74 outfallsheds can be found in Figure 3.

Drainage Area of Interconnections From the Permittee to Another Entity

Similarly, drainage areas were delineated for each mapped MS4 interconnection from the municipality. Using the methodology detailed above, a total of 57 interconnection drainage areas were generated for Montvale, however, after manual review 2 were removed for logical reasons. The remaining 55 drainage areas can be found in Figure 4.

Table 3: Outfall/Interconnection Drainage Areas

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
OFD-1	*12.83*	*OF-1*	*Urban*
OFD-2	*89.85*	*OF-2*	*Urban*
OFD-3	*40.53*	*OF-3*	*Urban*
OFD-4	*0.04*	*OF-4*	*Urban*
OFD-5	*23.41*	*OF-5*	*Urban*
OFD-6	*0.14*	*OF-6*	*Urban*
OFD-7	*25.07*	*OF-7*	*Urban*
OFD-8	*2.23*	*OF-8*	*Urban*
OFD-9	*21.37*	*OF-9*	*Urban*
OFD-10	*8.88*	*OF-10*	*Urban*
OFD-11	*4.06*	*OF-11*	*Urban*
OFD-12	*5.08*	*OF-12*	*Agriculture*
OFD-13	*6.54*	*OF-13*	*Urban*
OFD-14	*36.44*	*OF-14*	*Urban*
OFD-15	*154.81*	*OF-15*	*Urban*
OFD-16	*1.59*	*OF-16*	*Forest*
OFD-17	*0.87*	*OF-17*	*Forest*
OFD-18	*4.2*	*OF-18*	*Urban*
OFD-19	*5.13*	*OF-19*	*Urban*
OFD-20	*2.2*	*OF-20*	*Urban*
OFD-21	*33.19*	*OF-21*	*Urban*
OFD-22	*6.77*	*OF-22*	*Urban*
OFD-23	*16.02*	*OF-23*	*Urban*
OFD-24	*5.22*	*OF-24*	*Urban*
OFD-25	*2.13*	*OF-25*	*Urban*
OFD-26	*0.42*	*OF-26*	*Urban*
OFD-27	*0.15*	*OF-27*	*Urban*
OFD-28	*0.31*	*OF-28*	*Urban*

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
OFD-29	*16.15*	*OF-29*	*Urban*
OFD-30	*12.14*	*OF-30*	*Urban*
OFD-31	*8.64*	*OF-31*	*Urban*
OFD-32	*0.01*	*OF-32*	*Urban*
OFD-33	*5.58*	*OF-33*	*Urban*
OFD-34	*286.57*	*OF-34*	*Urban*
OFD-35	*2.35*	*OF-35*	*Urban*
OFD-36	*0.54*	*OF-36*	*Urban*
OFD-37	*0.88*	*OF-37*	*Forest*
OFD-38	*37*	*OF-38*	*Urban*
OFD-39	*3.73*	*OF-39*	*Urban*
OFD-40	*4.2*	*OF-40*	*Urban*
OFD-41	*22.16*	*OF-41*	*Urban*
OFD-42	*1.47*	*OF-42*	*Urban*
OFD-43	*37.91*	*OF-43*	*Urban*
OFD-44	*0.98*	*OF-44*	*Urban*
OFD-45	*3.25*	*OF-45*	*Urban*
OFD-46	*58.26*	*OF-46*	*Urban*
OFD-47	*42.24*	*OF-47*	*Urban*
OFD-48	*4.71*	*OF-48*	*Urban*
OFD-49	*5.57*	*OF-49*	*Urban*
OFD-50	*19.9*	*OF-50*	*Urban*
OFD-51	*9.69*	*OF-51*	*Urban*
OFD-52	*12.98*	*OF-52*	*Urban*
OFD-53	*1.34*	*OF-53*	*Urban*
OFD-54	*8.3*	*OF-54*	*Urban*
OFD-55	*1.09*	*OF-55*	*Urban*
OFD-56	*20.35*	*OF-57*	*Urban*
OFD-57	*3.83*	*OF-58*	*Urban*
OFD-58	*11.27*	*OF-59*	*Urban*
OFD-59	*0.51*	*OF-60*	*Urban*
OFD-60	*3.65*	*OF-61*	*Urban*
OFD-61	*5.56*	*OF-62*	*Urban*
OFD-62	*32.92*	*OF-65*	*Urban*

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
OFD-63	3.43	OF-66	Urban
OFD-64	0.15	OF-67	Urban
OFD-65	10.64	OF-68	Urban
OFD-66	5.3	OF-69	Urban
OFD-67	1.16	OF-70	Urban
OFD-68	0.26	OF-71	Urban
OFD-69	2.19	OF-72	Urban
OFD-70	1.15	OF-73	Urban
OFD-71	7.62	OF-74	Urban
OFD-72	2.8	OF-75	Urban
OFD-73	5.87	OF-76	Urban
OFD-74	1.61	OF-77	Urban
SWID-1	1.17	INT-2	Urban
SWID-2	8.13	INT-3	Urban
SWID-3	10.13	INT-4	Urban
SWID-4	14.47	INT-5	Urban
SWID-5	5.03	INT-7	Urban
SWID-6	4.16	INT-8	Urban
SWID-7	1.88	INT-10	Urban
SWID-8	11.53	INT-11	Urban
SWID-9	20.02	INT-12	Urban
SWID-10	4.95	INT-13	Urban
SWID-11	0.68	INT-15	Urban
SWID-12	0.87	INT-16	Urban
SWID-13	10	INT-18	Urban
SWID-14	7.44	INT-19	Urban
SWID-15	3.13	INT-20	Urban
SWID-16	1.22	INT-21	Urban
SWID-17	4.05	INT-23	Urban
SWID-18	0.13	INT-24	Urban
SWID-19	4.47	INT-25	Urban
SWID-20	17.92	INT-27	Urban
SWID-21	3.99	INT-64	Urban
SWID-22	1.4	INT-65	Urban

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
SWID-23	*1.95*	*INT-67*	*Urban*
SWID-24	*2.44*	*INT-69*	*Urban*
SWID-25	*5.47*	*INT-70*	*Urban*
SWID-26	*7.59*	*INT-72*	*Urban*
SWID-27	*24.37*	*INT-74*	*Urban*
SWID-28	*4.05*	*INT-76*	*Urban*
SWID-29	*40.88*	*INT-77*	*Urban*
SWID-30	*8.73*	*INT-81*	*Urban*
SWID-31	*5.64*	*INT-84*	*Urban*
SWID-32	*7.54*	*INT-85*	*Urban*
SWID-33	*1.03*	*INT-88*	*Urban*
SWID-34	*20.61*	*INT-89*	*Urban*
SWID-35	*2.61*	*INT-93*	*Urban*
SWID-36	*1.09*	*INT-94*	*Urban*
SWID-37	*0.47*	*INT-101*	*Urban*
SWID-38	*5.66*	*INT-103*	*Urban*
SWID-39	*3.12*	*INT-104*	*Urban*
SWID-40	*3.5*	*INT-105*	*Urban*
SWID-41	*30.61*	*INT-114*	*Urban*
SWID-42	*10.06*	*INT-124*	*Urban*
SWID-43	*2.15*	*INT-130*	*Urban*
SWID-44	*11.65*	*INT-133*	*Urban*
SWID-45	*1.65*	*INT-134*	*Urban*
SWID-46	*6.16*	*INT-135*	*Urban*
SWID-47	*3.02*	*INT-136*	*Urban*
SWID-48	*4.68*	*INT-137*	*Urban*
SWID-49	*5.35*	*INT-138*	*Urban*
SWID-50	*5.35*	*INT-139*	*Urban*
SWID-51	*0.18*	*INT-150*	*Forest*
SWID-52	*6.73*	*INT-155*	*Urban*
SWID-53	*0.6*	*INT-157*	*Urban*
SWID-54	*2.87*	*INT-159*	*Urban*
SWID-55	*4.87*	*INT-160*	*Urban*

Facility Identifier	Drainage Area
OF-1	12.83
OF-2	89.85
OF-3	40.53
OF-4	0.04
OF-5	23.41
OF-6	0.14
OF-7	25.07
OF-8	2.23
OF-9	21.37
OF-10	8.88
OF-11	4.06
OF-12	5.08
OF-13	6.54
OF-14	36.44
OF-15	154.81
OF-16	1.59
OF-17	0.87
OF-18	4.2
OF-19	5.13
OF-20	2.2
OF-21	33.19
OF-22	6.77
OF-23	16.02
OF-24	5.22
OF-25	2.13
OF-26	0.42
OF-27	0.15
OF-28	0.31
OF-29	16.15
OF-30	12.14
OF-31	8.64
OF-32	0.01
OF-33	5.58
OF-34	286.57
OF-35	2.35
OF-36	0.54
OF-37	0.88
OF-38	37
OF-39	3.73
OF-40	4.2
OF-41	22.16
OF-42	1.47
OF-43	37.91
OF-44	0.98
OF-45	3.25
OF-46	58.26
OF-47	42.24

Facility Identifier	Drainage Area
OF-48	4.71
OF-49	5.57
OF-50	19.9
OF-51	9.69
OF-52	12.98
OF-53	1.34
OF-54	8.3
OF-55	1.09
OF-57	20.35
OF-58	3.83
OF-59	11.27
OF-60	0.51
OF-61	3.65
OF-62	5.56
OF-65	32.92
OF-66	3.43
OF-67	0.15
OF-68	10.64
OF-69	5.3
OF-70	1.16
OF-71	0.26
OF-72	2.19
OF-73	1.15
OF-74	7.62
OF-75	2.8
OF-76	5.87
OF-77	1.61

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Figure 3: Outfall Drainage Areas
Montvale
Bergen County, New Jersey

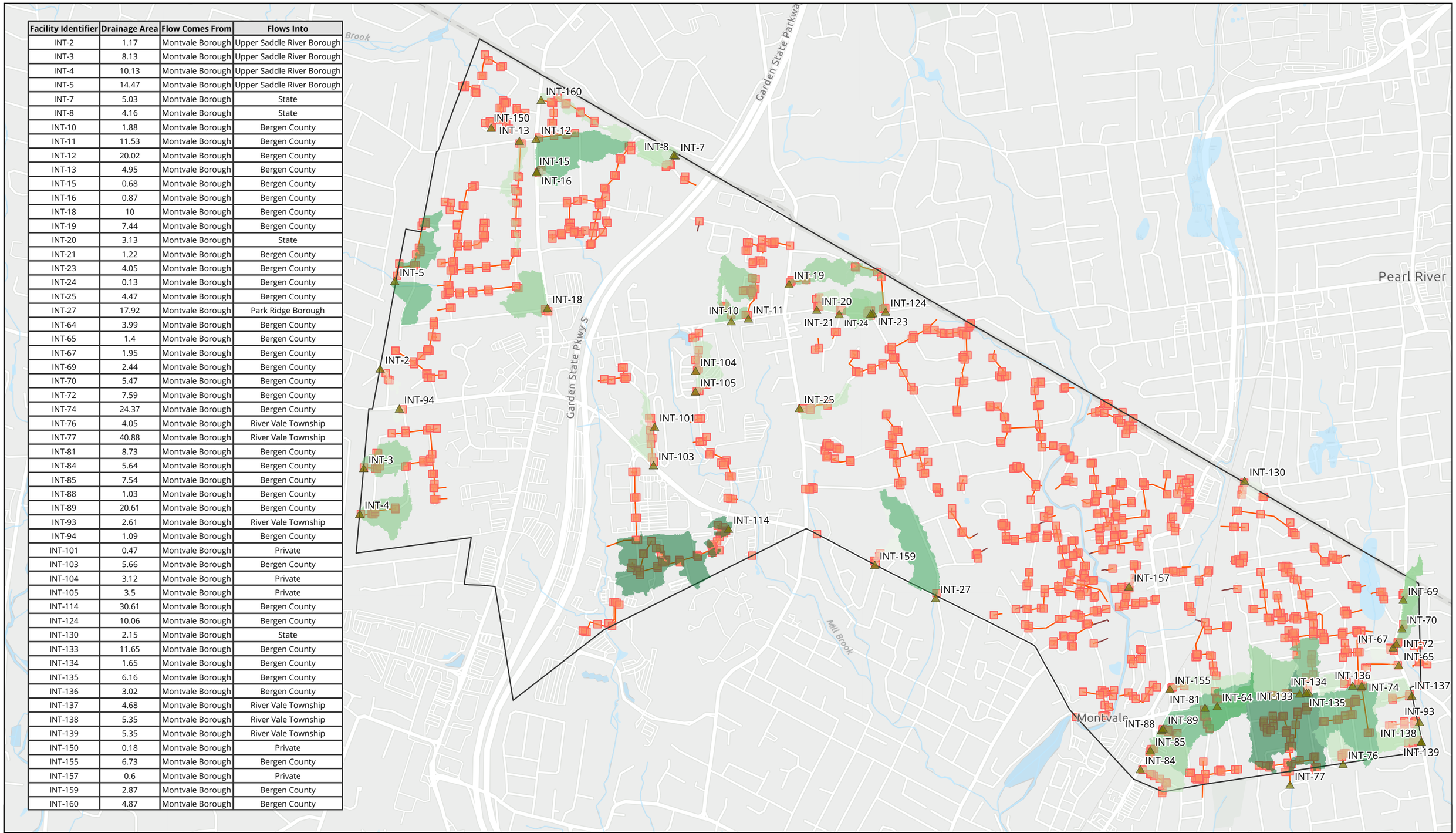
Date: 4/8/2026 | Drawn By: RT

Drainage Area (Acres)
- 0.01 - 9.69
- 9.7 - 25.07
- 25.08 - 58.26
- 58.27 - 154.81
- 154.82 - 286.57

Outfalls
StormwaterInlets

Conveyance
- Gravity Main
- Swale

Facility Identifier	Drainage Area	Flow Comes From	Flows Into
INT-2	1.17	Montvale Borough	Upper Saddle River Borough
INT-3	8.13	Montvale Borough	Upper Saddle River Borough
INT-4	10.13	Montvale Borough	Upper Saddle River Borough
INT-5	14.47	Montvale Borough	Upper Saddle River Borough
INT-7	5.03	Montvale Borough	State
INT-8	4.16	Montvale Borough	State
INT-10	1.88	Montvale Borough	Bergen County
INT-11	11.53	Montvale Borough	Bergen County
INT-12	20.02	Montvale Borough	Bergen County
INT-13	4.95	Montvale Borough	Bergen County
INT-15	0.68	Montvale Borough	Bergen County
INT-16	0.87	Montvale Borough	Bergen County
INT-18	10	Montvale Borough	Bergen County
INT-19	7.44	Montvale Borough	Bergen County
INT-20	3.13	Montvale Borough	State
INT-21	1.22	Montvale Borough	Bergen County
INT-23	4.05	Montvale Borough	Bergen County
INT-24	0.13	Montvale Borough	Bergen County
INT-25	4.47	Montvale Borough	Bergen County
INT-27	17.92	Montvale Borough	Park Ridge Borough
INT-64	3.99	Montvale Borough	Bergen County
INT-65	1.4	Montvale Borough	Bergen County
INT-67	1.95	Montvale Borough	Bergen County
INT-69	2.44	Montvale Borough	Bergen County
INT-70	5.47	Montvale Borough	Bergen County
INT-72	7.59	Montvale Borough	Bergen County
INT-74	24.37	Montvale Borough	Bergen County
INT-76	4.05	Montvale Borough	River Vale Township
INT-77	40.88	Montvale Borough	River Vale Township
INT-81	8.73	Montvale Borough	Bergen County
INT-84	5.64	Montvale Borough	Bergen County
INT-85	7.54	Montvale Borough	Bergen County
INT-88	1.03	Montvale Borough	Bergen County
INT-89	20.61	Montvale Borough	Bergen County
INT-93	2.61	Montvale Borough	River Vale Township
INT-94	1.09	Montvale Borough	Bergen County
INT-101	0.47	Montvale Borough	Private
INT-103	5.66	Montvale Borough	Bergen County
INT-104	3.12	Montvale Borough	Private
INT-105	3.5	Montvale Borough	Private
INT-114	30.61	Montvale Borough	Bergen County
INT-124	10.06	Montvale Borough	Bergen County
INT-130	2.15	Montvale Borough	State
INT-133	11.65	Montvale Borough	Bergen County
INT-134	1.65	Montvale Borough	Bergen County
INT-135	6.16	Montvale Borough	Bergen County
INT-136	3.02	Montvale Borough	Bergen County
INT-137	4.68	Montvale Borough	River Vale Township
INT-138	5.35	Montvale Borough	River Vale Township
INT-139	5.35	Montvale Borough	River Vale Township
INT-150	0.18	Montvale Borough	Private
INT-155	6.73	Montvale Borough	Bergen County
INT-157	0.6	Montvale Borough	Private
INT-159	2.87	Montvale Borough	Bergen County
INT-160	4.87	Montvale Borough	Bergen County



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Figure 4: Interconnection Drainage Areas
Montvale
Bergen County, New Jersey

Date: 4/8/2026 | Drawn By: RT

Drainage Area
- 0.13 - 2.87
- 2.88 - 6.73
- 6.74 - 11.65
- 11.66 - 24.37
- 24.38 - 40.88

Interconnections
StormwaterInlets

Conveyance
- Gravity Main
- Swale

Non-Municipally Owned or Operated Stormwater Facilities

Non-municipally owned or operated stormwater facility data collection was intended to be accomplished through a combination of GIS analysis, inspection of publicly accessible datasets, review of municipal stormwater records, and field verification. However, at the time of this inventory, no records or spatial data identifying non-municipally owned stormwater management facilities were available for Montvale.

As a result, this section serves as a placeholder for future data collection efforts. It is recommended that the municipality work with local planning and engineering departments, as well as county and state agencies, to obtain records of privately owned stormwater facilities such as extended detention basins, infiltration basins, dry wells, bioretention systems, pervious paving systems, and manufactured treatment devices (MTDs). These features are often required through site plan approvals but may not yet be centrally compiled.

No non-municipally owned or operated stormwater facilities were identified in any of the subwatersheds within the municipality at the time of this report. Future updates to this inventory should incorporate newly available data or verification from field surveys to ensure that privately owned stormwater infrastructure is accurately represented in subsequent Watershed Improvement Plan (WIP) phases.

TMDLs and Water Quality

TMDL and Water Quality Impairments

As a part of the Federal Clean Water Act obligation of New Jersey, the NJDEP identifies waterbodies not meeting surface water quality standards and develops Total Maximum Daily Loads (TMDLs) for cause pollutants. A TMDL is a "budget" for the pollutant, defining the maximum load a waterbody can receive and assimilate and still provide sufficient support to carry out its designated uses. This section presents a summary of the TMDLs and water quality impairments for the Montvale jurisdiction based on the most recent available data using the NJDEP TMDL Look-Up Tool (https://www.nj.gov/dep/dwq/msrp-tmdl-rh.htm) and the NJDEP Integrated Water Quality Monitoring and Assessment Report. Spatial data layers from NJDEP Open Data and US EPA were used to identify affected streams and watersheds. The data were acquired on April 8, 2026. A summary of TMDLs by watershed can be found in the table and figure below (Table 4 and Figure 5).

Table 4: TMDLs and Impairments for Subwatersheds Within or Bordering Montvale

HUC 14	Subwatershed Name	TMDL(s)	Impairment(s)	303d Classification	Total
02030103140040	*Saddle River (above Ridgewood gage)*	***Streamsheds*** *(Pre-2008) Fecal Coliform*	*Biological-Cause Unknown, Temperature, Mercury in Fish Tissue*	*Low, Medium, Low*	*3*
02030103170030	*Hackensack River (above Old Tappan gage)*	***Streamsheds*** *(Pre-2008) Fecal Coliform*	*Arsenic, Biological-Cause Unknown, Mercury in Fish Tissue*	*Low, Low, Low*	*3*
02030103170010	*Pascack Brook (above Westwood gage)*	***Streamsheds*** *(Pre-2008) Fecal Coliform (Pre-2008) Total Phosphorus*	*Arsenic, Biological-Cause Unknown, Total Dissolved Solids (TDS)*	*Low, Low, Medium*	*3*

The presence of TMDLs and impairments in Montvale signifies the necessity for implementing effective stormwater best management practices (BMPs). Practices involve street sweeping, catch basin cleaning, pet waste enforcement, and, in agricultural areas, providing farmers with access to funding for runoff controls. The findings of this report will guide Phase 2 of the Watershed Improvement Plan, where some project opportunities can be quantified to abate pollutant loads and help comply with state water quality standards.

Arsenic

Arsenic is a naturally occurring element that is present in some bedrock and soils across New Jersey, especially where the Highlands and Piedmont physiographic provinces exist. Yet, elevated arsenic concentrations in surface water are more commonly the result of legacy contamination from industrial processes, pesticide uses or leaching associated with old fill areas and landfills.

In surface and drinking water, arsenic is both environmentally and health-toxic. It's a Group A carcinogen as classified by the U.S. EPA, and chronic exposure through ingestion or bioaccumulation in aquatic organisms will affect neurological, reproductive, and developmental systems. Arsenic is environmentally persistent and will build up in sediment, only to be resuspended following a storm event.

Optimal management practices to reduce arsenic mobilization from urban areas include erosion reduction, stabilizing the contaminated soil, and not placing stormwater controls on known

contaminated sites without mitigation. Source identification and monitoring may be required in areas with known or suspected arsenic impairments.

Fecal Coliform

Fecal coliform bacteria are used as an indicator of pathogen contamination in freshwater. A high concentration suggests the potential presence of microorganisms that pose a risk to public health, particularly in water intended for primary or secondary contact recreation. Fecal coliform can come from a variety of sources, including but not limited to pet waste, wildlife, animal production facilities, failed septic systems, illegal discharges, and sanitary sewer.

Management Strategies include enforcement of pet waste ordinances, expansion of public education programs, septic system care, and frequent street sweeping and catch basin cleaning. In agricultural watersheds, BMPs such as manure management, livestock stream exclusion, and vegetative riparian buffers decrease bacterial loads.

Mercury

Mercury is a toxic heavy metal that enters surface water through atmospheric deposition, soil leaching from contaminated soil, or historical and industrial site runoff. Mercury occurs in several forms, but most problematic is methylmercury due to its bioaccumulation and biomagnification in aquatic food webs. This results in accumulated mercury levels in fish tissue, which is harmful to wildlife and human health. Mercury impairments in New Jersey are often linked with fish consumption advisories.

Mercury load contributions from stormwater are minimized by reducing erosion and sediment transport, controlling contaminated site runoff, and through the installation of BMPs that capture fine particulates. Identification of the source is critical in watersheds with known mercury impairments so that stormwater controls can be effectively placed. Long-term management is based on continued monitoring and coordination with NJDEP fish tissue advisory programs.

Phosphorus (Total)

Phosphorus is a naturally occurring element in aquatic and soil environments but is also frequently added through stormwater runoff containing fertilizers, detergents, failed septic systems, and eroded soils. In New Jersey, elevated phosphorus concentrations are a frequent cause of water quality impairments for freshwater lakes and backwaters. Excess phosphorus leads to eutrophication, supports algal blooms that reduce dissolved oxygen, degrade aquatic habitat, and can form toxic cyanobacteria blooms. In agricultural watersheds, overuse of manure and fertilizers can disproportionately elevate phosphorus loads.

Management practices to reduce phosphorus inputs include enforcing fertilizer application ordinances, waste disposal ordinances, discharge elimination, and designing stormwater BMPs with enhanced nutrient removal (e.g., bioretention systems, constructed wetlands).

Temperature

Water temperature directly influences dissolved oxygen levels and therefore plays an important role in supporting aquatic life. Cold water retains more dissolved oxygen than warm water, so surface

waters in New Jersey typically exhibit higher concentrations during winter and early spring and lower concentrations during summer and fall. Reduced dissolved oxygen during warmer months can stress aquatic species and limit their ability to thrive. Temperature also varies with depth, as deeper water tends to be cooler, while shallow or turbid waters absorb more heat. Elevated temperatures are particularly harmful to cold water species such as trout.

Temperature impairments in surface waters often result from stormwater runoff that has been heated as it moves across sun-exposed paved surfaces, such as roads, parking lots, and driveways. Additional contributors include warm ponded stormwater discharge from basins, stream widening from erosion that increases shallow areas, and the loss of riparian vegetation that reduces stream shading. Managing these impacts requires minimizing the heating of stormwater runoff, restoring riparian buffers, and employing green infrastructure to reduce direct runoff to receiving waters. MS4 permit conditions, including waste management ordinances, street sweeping, roadside erosion control, facility maintenance, and illicit discharge elimination, support long-term efforts to reduce temperature-related stress on aquatic ecosystems.

Total Dissolved Solids (TDS)

Total dissolved solids (TDS) represent the combined concentration of inorganic salts, metals, and dissolved minerals present in water. In New Jersey surface waters, elevated TDS levels are commonly associated with urban stormwater runoff, roadway deicing materials, wastewater inputs, and industrial or commercial land uses. Impervious surfaces accelerate the delivery of dissolved constituents to receiving waters, particularly during winter and high-runoff events.

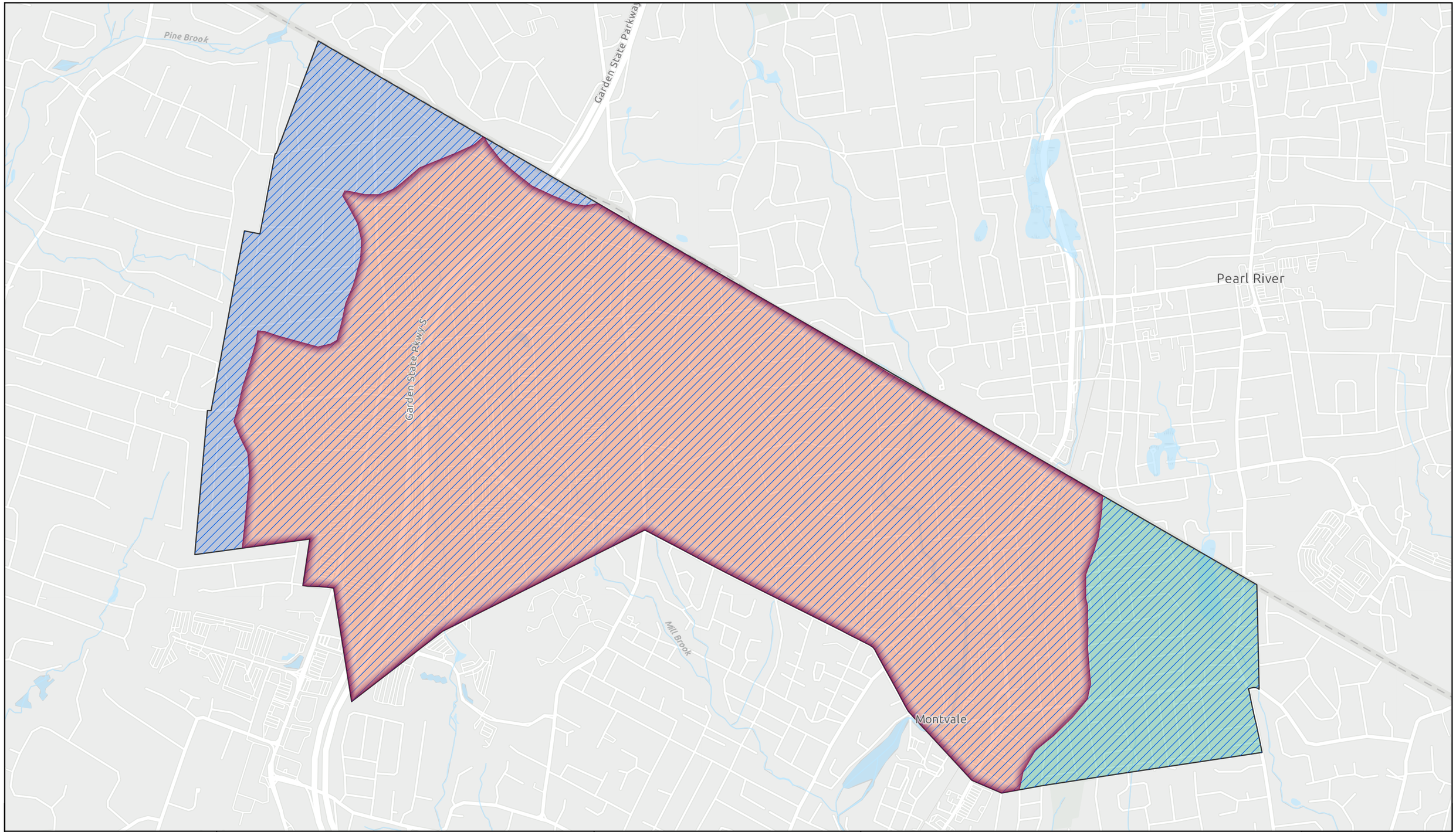
Elevated TDS can alter water chemistry and stress aquatic organisms by disrupting physiological processes and reducing species diversity. Increased TDS may also impair drinking water supplies and designated uses under New Jersey water quality standards. Long-term increases often reflect cumulative watershed impacts from urbanization.

Management strategies focus on source control and runoff reduction, including optimized winter maintenance practices, reduced salt application, infiltration-based stormwater controls, street sweeping, and illicit discharge detection. Public education and operational best practices further support TDS reduction within MS4-regulated areas.

Water Quality Classifications

Surface water quality classifications within Montvale were derived from the NJDEP Open Data Portal on April 8, 2026. Stream classes were overlaid to mapped outfall locations to determine the number and percentage of outfalls discharging to each class of surface water. Classification categories follow NJDEP's naming convention, e.g., FW2-NT (non-trout freshwaters) and FW2-TP (trout production waters), and Category One (C1) designations for outstanding ecological, recreational, or water supply significance waters. Water quality classifications for all surface waters within the municipality are shown in Figure 1.

Within Montvale jurisdiction, the majority of surface waters receiving MS4 discharges have classification FW2-NTC1. As per mapped outfalls, approximately 97% of outfalls discharge into FW2-NTC1 waters with the remaining 3% discharging to FW2-TPC1 waters.



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Figure 5: TMDLs by Parameter (Pre-2008)

Montvale

Bergen County, New Jersey

Date: 4/8/2026

Drawn By: RT

Sub-Watersheds

- Hackensack River (above Old Tappan gage)
- Pascack Brook (above Westwood gage)
- Saddle River (above Ridgewood gage)

TMDL - Streamshed

- Fecal Coliform
- Total Phosphorus

Impervious Area

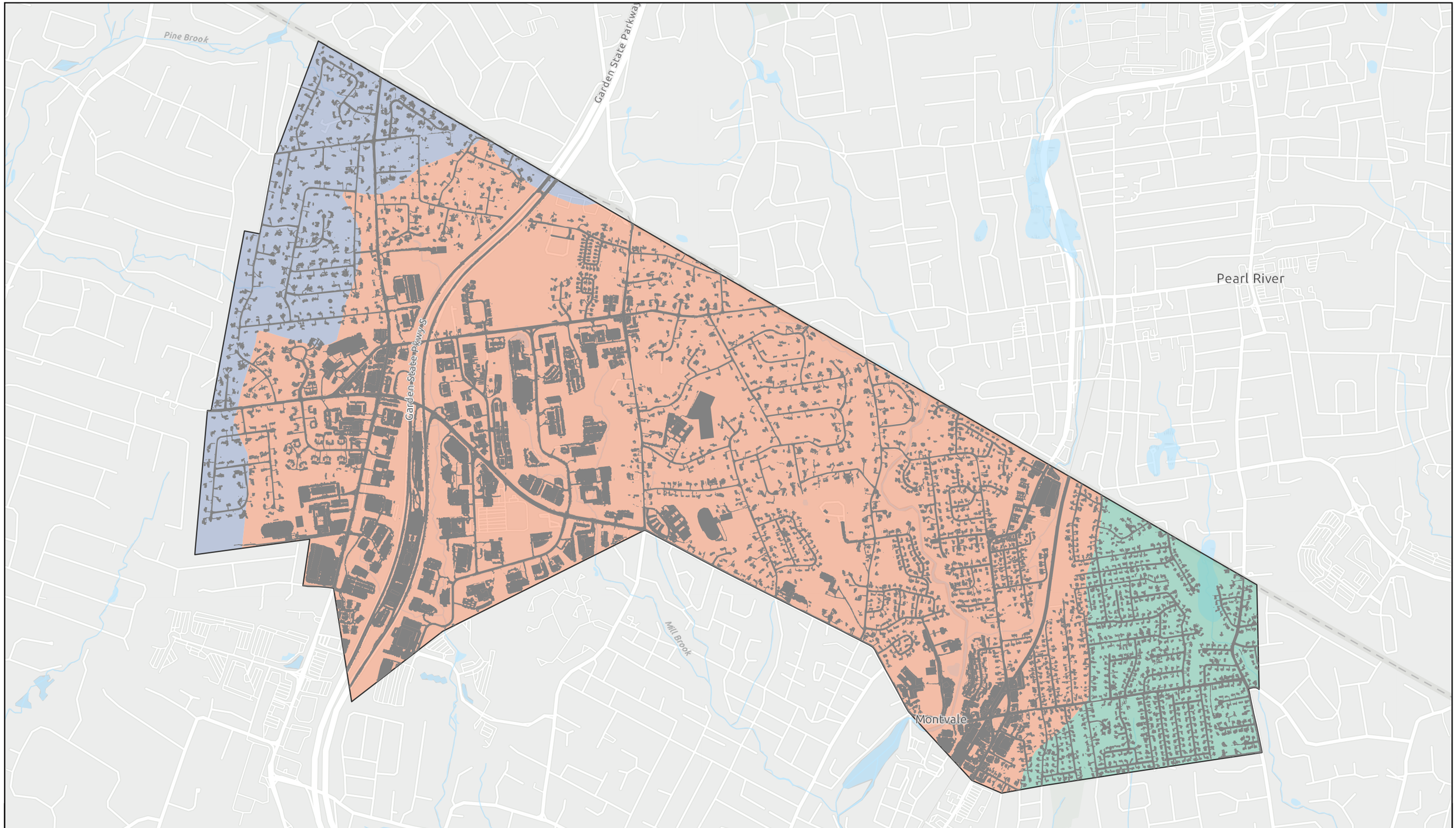
Numerous studies have shown that increases in impervious cover like parking lots, rooftops, and roads directly affect stream and watershed health. Impervious surfaces limit the infiltration of stormwater, thereby enhancing the volume and velocity of runoff, resulting in streambank erosion, sedimentation, contaminant transport, and modification of hydrologic regimes. When impervious cover within a watershed reaches 10–25%, degradation of streams becomes more pronounced with less biological diversity and poorer water quality (Hasse, Dornisch 2009; Schueler et al., 2009). Research demonstrates that watersheds with larger proportions of impervious surfaces have larger hydrologic and ecological effects, such as increased flooding, streambank erosion, chemical contamination, higher nutrient loading, lower dissolved oxygen levels, and habitat loss (Hasse, Dornisch 2009).

Impervious surface data for Montvale was obtained from NJ-WET and NJDEP Open Data Portal. GIS analysis was conducted in April 2026 using ArcGIS Pro. Impervious cover for the municipality was overlaid with the sub watersheds boundaries to allow for comparison within the municipality. The calculated percent impervious surface for each subwatershed is summarized below (Table 5):

Table 5: Impervious Cover by HUC14 within Montvale

Subwatershed Name	HUC14 ID	Percent Impervious Cover
Saddle River (above Ridgewood gage)	*02030103140040*	*21%*
Hackensack River (above Old Tappan gage)	*02030103170030*	*35%*
Pascack Brook (above Westwood gage)	*02030103170010*	*33%*

In Montvale, subwatersheds with impervious cover exceeding 20% are likely to negatively impact water quality. Figure 6 illustrates the distribution of impervious surfaces across the township.



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Figure 6: Impervious Area Within Montvale

Montvale

Bergen County, New Jersey

Date: 4/8/2026 | Drawn By: RT

Impervious Surface

Sub-Watersheds

- Hackensack River (above Old Tappan gage)
- Pascack Brook (above Westwood gage)
- Saddle River (above Ridgewood gage)

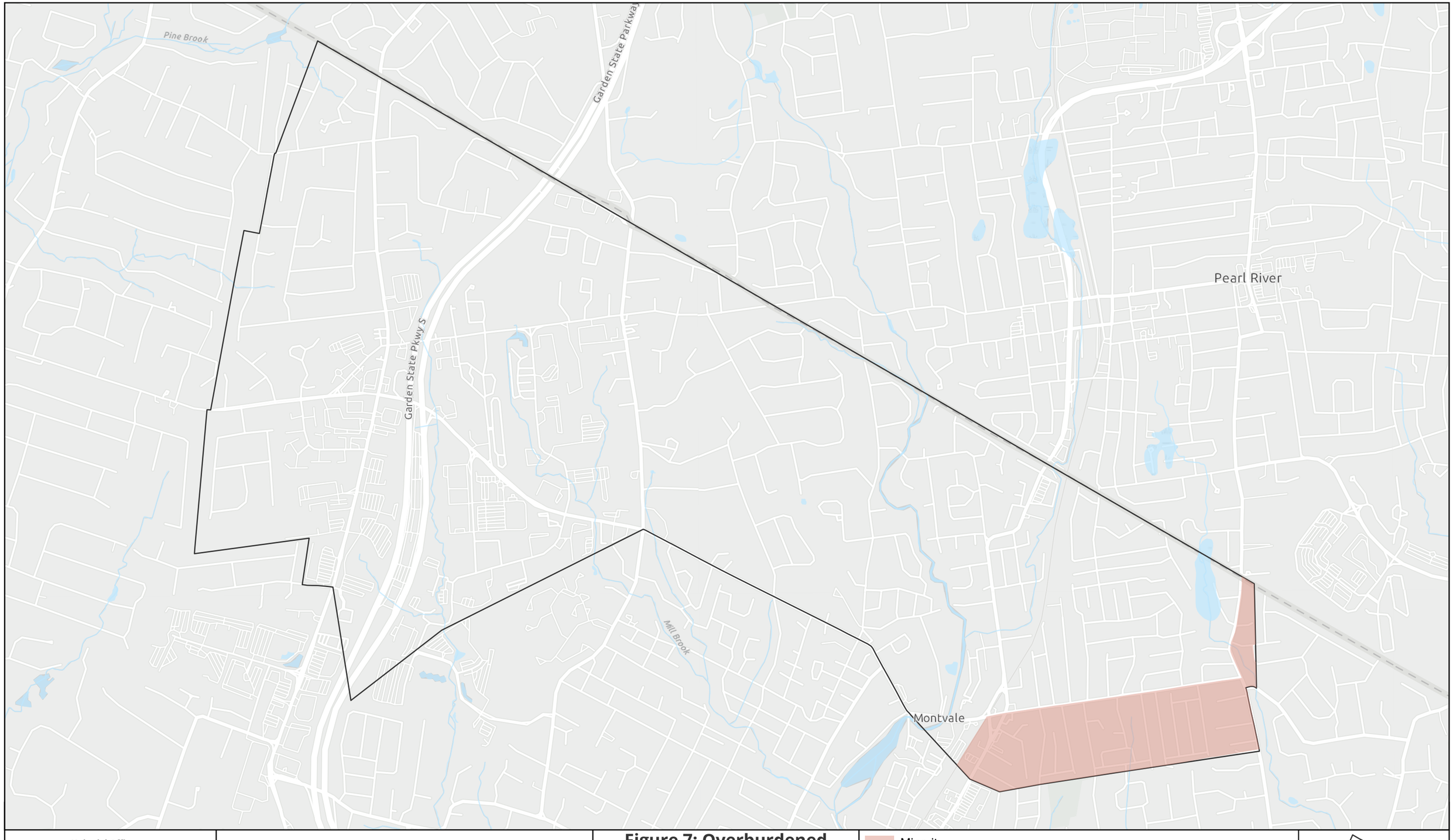
Overburdened Communities

Overburdened Community classifications were established under New Jersey's 2020 Environmental Justice Law, which aimed to identify communities disproportionately impacted by environmental and public health stressors. These communities generally experience systemic issues, including aging infrastructure, lack of investment in stormwater management systems, and heightened susceptibility to environmental threats. Preserving clean surface water is essential to safeguarding public health, mitigating flood risk, and advancing environmental justice in these communities. Poor stormwater management can enhance vulnerability in overburdened communities, causing heightened flood risks, exposure to pollution, and resulting health implications. Recognizing these communities within Montvale supports targeted infrastructure investment and equitable watershed planning. According to N.J.S.A. 13:1D-157, an overburdened community is defined as any census block group that meets at least one of the following criteria:

1) A minimum of 35% of households are categorized as low-income households;
2) At least 40% of the residents are minority or members of a State-recognized tribal group; or
3) At least 40% of the households have limited English proficiency.

Additionally, census block groups that have no residential population but are immediately adjoining overburdened communities are considered Adjacent Block Groups (ABGs). ABGs with existing or proposed facilities may be required to conduct further analysis (N.J.S.A. 13:1D-157).

Information characterizing overburdened communities within the municipality was retrieved from NJDEP's EJMAP/NJ-WET on April 8, 2026. These characterizations are determined using the most recent available data from the U.S. Census. The Montvale sub watersheds listed below contain block groups that are characterized as overburdened communities: Hackensack River (above Old Tappan gage) (02030103170030), and Pascack Brook (above Westwood gage) (02030103170010). These locations are indicated in Figure 7.



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Figure 7: Overburdened Communities

Montvale

Bergen County, New Jersey

Date: 4/8/2026

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Minority

Conclusion

This Watershed Inventory Report completes Phase 1 of the Watershed Improvement Plan (WIP) for Montvale. It identifies existing stormwater infrastructure, according to MS4 permit requirements, and summarizes water quality classifications, TMDLs and impairments. All data collected for this report have been compiled in a geographic information system (GIS) and are also reported electronically through NJDEP Online. The information in this report provides a foundation for Watershed Assessment Report (WAR) to be developed as part of Phase 2 of the Watershed Improvement Plan. The WAR will isolate areas where potential improvements can be made to protect and restore water quality issues identified in this report. Together, the Phase 1 and Phase 2 reports will guide long-term stormwater management planning and help meet both regulatory requirements and local environmental goals.

Appendix

Appendix A | Data Requirements & Resources

Required Data	Data Source
1. All stormwater outfalls owned/operated by the permittee	*MS4 Infrastructure Map*
2. Drainage area for each permittee owned/operated outfall	*Topography* *ArcGIS Solutions/ArcHydro*
3. Receiving waterbodies of those outfalls	*NJ-WET* *NJDEP Open Data*
4. Water quality classification of all receiving waterbody segments	*NJ-WET* *NJDEP Open Data*
5. All stormwater interconnections from the permittee's MS4 system into another entities' storm or sanitary sewer system	*MS4 to MS4 interconnections acquired in MS4 Infrastructure Map* *private interconnection(s) needed*
6. The drainage area for each interconnection into another entity's storm or sanitary sewer system	*Topography* *ArcGIS Solutions/ArcHydro*
7. All stormwater interconnections into the permittee's system from another entity's storm sewer system	*MS4 to MS4 interconnections acquired in MS4 Infrastructure Map* *private interconnection(s) needed*
8. All storm drain inlets owned/operated by the permittee	*MS4 Infrastructure Map*
9. Area associated with each TMDL for waters that lie within or bordering the permittee's property(s)/jurisdiction	*NJ-WET* *NJDEP Open Data*
10. Area associated with each water quality impairment for waters that lie within or bordering the permittee's property(s)/jurisdiction	*NJ-WET* *NJDEP Open Data*
11. Overburdened communities	*NJ-WET* *NJDEP Open Data* *EJMAP*
12. Impervious areas	*NJ-WET* *NJDEP Open Data*
13. Location and ownership of all stormwater infrastructure not owned or operated by the permittee	*H&H Database*

Appendix B | References

Schueler, T., L. Fraley-McNeal, and K. Cappiella. 2009. *Is Impervious Cover Still Important? Review of Recent Research.* Journal of Hydrologic Engineering 14(4): 309–315.

Hasse, J., and V. Dornisch. 2009. *Integrating Impervious Surface Management and Smart Growth Development in New Jersey.* The Middle States Geographer 42: 9–17.

New Jersey Department of Environmental Protection (NJDEP). 2020. *New Jersey Environmental Justice Law,* N.J.S.A. 13:1D-157 et seq. Trenton, New Jersey.

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