

Policy Recommendations for Improving Water Quality in the Highlands

Elliott Ruga, Policy & Communications Director
New Jersey Highlands Coalition



The Highlands

Although the New Jersey Highlands regions covers 17% of the State, it provides water to 70% of New Jersey's population, or 6.2 million people.¹ A number of factors contributed to the Highlands becoming the largest source of New Jersey's drinking water supply. Because the Highlands are characterized by a series of steep ridges and narrow valleys inclining from the northeast to the southwest, it was one of the last regions of the State to develop because east-west travel was slow and challenging. At the turn of the Nineteenth Century, when the growing northeastern cities had polluted their sources of water, notably the Passaic River, to the point that waterborne illnesses such as cholera and dysentery were at epidemic levels, they were forced to find remote water sources. Geologists deployed by NJ Governor Stokes for this purpose found that the Highlands and their forested hinterlands were perfectly suited as gathering grounds for water supplies. The City of Newark, and soon to follow, Jersey City, purchased large tracts in the Pequannock and Rockaway River watersheds to build surface reservoirs, to supply their own residents as well as neighboring cities. The State, anticipating the growing demand for water, appointed the North Jersey District Water Supply Commission, which constructed the Wanaque Reservoir in 1928 (the Monksville Reservoir was added in 1987). As the post-World War II baby boom significantly added development and population, a corresponding need for drinking water led to the construction of Spruce Run Reservoir in 1956 and Round Valley Reservoir in 1960, by the New Jersey Water Authority.

As the State increased its reliance on the Highlands for its water supply concern was also growing that development posed a threat to the quality of the region's ground and surface waters. In 1992 the US Forest Service published a study of the New York and New Jersey Highlands (updated in 2002). The study noted, "the Highlands area, because of its significant water supply and wildlife habitat, is critical to the long-term health of the region," and found that development pressure was causing unprecedented losses to the region's natural and

¹ New Jersey Geological and Water Survey, *Potable Water Supplied in 2011 by New Jersey's Highlands*, 2015

cultural resources, farms, recreational opportunities and biodiversity and that “these changes place the extraordinary and essential resources of the Highlands at risk”.² In response to the Study, Governor Jim McGreevey established the Highlands Task Force in 2003, to make recommendations to the Governor and Legislature regarding ways to protect and enhance the quality of life in the Highlands Region. As a result, the Highlands Water Protection and Planning Act (Highlands Act) was passed in 2004.

The Highlands Act divided the 859,358-acre region into two roughly equivalent in size zones, in which the goals and objectives of the Act—primarily water resource protection—are the same but implemented differently. The inner core of the Highlands, a nearly contiguous forest, with the greatest concentration of natural resources—the Preservation Area—would fall under the jurisdiction of Department of Environmental Protection, which was charged with promulgating highly constraining land use regulations in response to the Act and intended to maintain, restore or enhance water quality and other natural and cultural resource values. The State also prioritized the Preservation Area for open space acquisition and provided for a Highlands Transfer of Development Rights program.

Whereas the goals and objectives of the Act would be met in the Preservation Area by enforcing strict land use regulations, in the Planning Area—the outer portion of the region—the goals and objectives would be met through capacity-based planning under a voluntary scheme of municipal conformance to a Highlands Regional Master Plan, which would be drafted and adopted by a State regional planning authority that was mandated by the Act—the Highlands Council. It is important to note that the strict land use constraints of the Preservation Area are implemented by the State, under DEP’s Highlands Rules. In the Planning Area, the regulations that enforce the land use constraints, which are consistent with the Highlands Regional Master Plan (RMP), are adopted and enforced at the municipal level through local zoning ordinances.

The legislated Highlands region, as defined in the Highlands Act, covers 88 municipalities in parts of 7 counties. 5 of those municipalities are located entirely in the Preservation Area. 36 municipalities are entirely in the Planning Area and 47 are split between Preservation and Planning Areas.

For those municipalities located entirely, or partially, in the Planning Area that choose not to conform their local ordinances to the more environmentally protective provisions of the RMP, does the Highlands Act have any jurisdiction, or are they to be treated as if they are outside of the jurisdiction of the Highlands Act? This is a point of controversy, with significant policy implications that are discussed in this paper. Another issue that is unsettled is the shared

² *New York – New Jersey Highlands Regional Study*, U.S. Department of Agriculture, Forest Service, Northeastern Area, State and Private Forestry, 1992

jurisdiction between the DEP and the Highlands Council. There are distinctions in that the DEP implements the land use rules in the Preservation Area, and that the Highlands Council was responsible for drafting and adopting the RMP, which was adopted in 2008. The Highlands Council is responsible for revising and updating the RMP regularly. However, for major DEP land use permits in the Highlands, the Act requires DEP to consult with the Highlands Council. Certain permits may only be approved upon a finding of consistency with the RMP by the Highlands Council. How this consultation is done in the non-conforming Planning Area is also a matter of controversy and will be discussed more in depth.

Overview

The New Jersey Highlands Coalition, in partnership with the Musconetcong Watershed Association, the Watershed Institute and Environment New Jersey is having continuing discussions with Assistant and Deputy Commissioners responsible for water quality regulations at the NJ Department of Environmental Protection and with the Executive Director of the Highlands Council about strengthening the regulations and standards for meeting the criteria for certain permits in the New Jersey Highlands region. This paper establishes the legal and scientific bases for what we see are sound policies for an agency whose stated priorities include the statement: *Safe, clean water is vital to New Jersey's health, quality of life and economy. The DEP protects this precious resource by preventing pollution, cleaning up contamination, ensuring ample supply and investing in strong infrastructure.*³

For the purposes of this paper, we are concerned about two programs:

- **Highlands Council Consistency Determinations**, when an applicant is seeking to amend an areawide Water Quality Management Plan;
- The designation of a **Highlands Water (HL)** under DEP's Surface Water Quality Standards at N.J.A.C . 7:9B

These two programs, if implemented, would significantly protect the quality of the region's drinking water by reducing the level of contaminants discharged to surface waters in the Highlands and expanding the number of waters that are protected by 300' riparian buffers. Less intensive development projects would be approved in the Highlands Planning Area, better protecting groundwater recharge and groundwater quality, reducing nutrient-laden stormwater runoff, and better protecting upland forests, which naturally provide the most effective water filtration functions. Implementation would also result in more efficiency at the Department because of more across-the-board, less nuanced categorization of water use

³ <https://www.state.nj.us/dep/about.html> accessed 8/29/2021

designations and antidegradation standards, which as tied to the federal Clean Water Act, they are terribly complex. These programs as recommended will not be eagerly embraced by the regulated community because they will reduce the net acreage available for development. But they will make permitting decisions more predictable, and more quickly decided by the department—improvements to that which the regulated community most often complain about—unpredictability and the backlog of permit decisions—both of which affect the developer’s bottom line. Since these are based upon already existing programs by merely expanding their applicability, they are not new regulations subject to questions of constitutionality and legal authority. They have already withstood challenges in Administrative and Appellate Courts.

Highlands Council Applicability Determinations

Any proposed development that is outside of an approved sewer service area must apply to amend the areawide Water Quality Management Plan (WQMP). The Highlands Act provides the Highlands Council with broad opportunities to comment on proposed projects in Highlands municipalities and to make recommendations to the DEP Commissioner for water quality and water supply standards for surface and groundwater and other natural resources of the Highlands region.⁴ In promulgating its rules pertaining to the Highlands Region, as adopted in 2006, DEP responded to these provisions of the Act by requiring a consultation with Highlands Council for consistency with the RMP, for both the Planning and Preservation Area, when an applicant proposes to amend an areawide WQMP. In fact, the currently adopted rules state:

(h) For the planning area, when consistent with its statutory and regulatory authority, the Department shall not issue any approval, authorization or permit that the Department determines, in consultation with the Highlands Council, to be incompatible with the resource protection goals in the RMP to be incorporated by reference in (l) below, when adopted by the Highlands Council...and:

(k) For both the planning area and preservation areas, the Department shall review the Highlands Council regional master plan and consider amending the appropriate areawide Water Quality Management Plans to maintain consistency with the regional master plan. The Department shall approve a Water Quality Management Plan amendment only after receiving from the Highlands Council a determination of consistency with the Regional Master Plan to be incorporated by reference in (l) below, when adopted by the Highlands Council. Pending completion of the Regional Master Plan, the Department shall not approve a Water Quality Management Plan amendment for a project proposed in

⁴ N.J.S.A C.13:20-6 (m) and (r)

*the planning area or preservation area without first obtaining a recommendation from the Highlands Council.*⁵

Note that in both the Highlands Act and the above Highlands Rules there is no reference to limiting the applicability of these provisions by a Highlands municipality's conformance status, i.e., that would apply only to Planning Area municipalities that have voluntarily conformed to the Highlands Regional Master Plan.

Beginning in 2008 with the application by the Pilot Travel Center in Union Township to amend the Upper Raritan Water Quality Management (WQMP), the Highlands Council provided DEP with a Consistency Determination in September, reviewing the project relative to the standards and policies set forth on the RMP, which was adopted in June of that year. The Highlands Council found the project to be inconsistent with the forest, critical habitat, redevelopment/sensitive lands, carbonate rock policies and objectives of the RMP and the requirement for 125% mitigation of the depletive water use.⁶ Note that the Pilot Travel Center is located in the Planning Area and that Union Township was not a conformed municipality at the time of the Consistency Determination.

Highlands Council Consistency Determinations are part of the inter-agency review that DEP undertakes when the Department considers a WQMP amendment. All recognized planning agencies are invited to comment, including county and regional planning boards, the State Planning Commission, sewerage authorities, county utilities, etc. Although the Highlands Council has a commenting role specifically called out by statute, it still provides only a recommendation. The sole authority to approve or deny the amendment rests with the Department.

It is our belief and understanding that the reason that this particular analysis is provided by the Highlands Council for the Department is because it is understood that there are locations in the Highlands Planning Area that have significant and multiple natural resource values (productive limestone aquifers, natural heritage priority sites, critical wildlife habitat, high integrity upland forest, vernal habitat, etc.) but because the location fell outside of the contiguous core forest that defined the Highlands Preservation Area, it could still have high resource values but not receive the statutory protections of the Preservation Area. Through the Highlands Council Consistency Determination for an amendment to an areawide WQMP, high resource value locations could be identified by the Highlands Council, and if warranted, provide DEP with the ability to

⁵ N.J.A.C. 7:38 -1.1 (h) and (j)

⁶ https://www.nj.gov/njhighlands/projectreview/pilot_travel_letter_dep_091808.pdf

protect the resources by denying the amendment, or conditioning approval on redesigning the project to avoid, or reduce the impacts, or mitigate for the impacts.

At some point in 2011, after Governor Christie became Governor, the scope of the Highlands Council's Consistency Determination changed. After having issued 5 Consistency Determinations for projects in the Planning Area, the Highlands Council stopped referencing *any* RMP policies for projects in non-conformed municipalities of the Planning Area.

Governor Christies was not a fan of the Highlands Act. At a Town Hall meeting in November 2010 in Hackettstown he opined that the Highlands Act was based on a lie, because it promised, but did not provide, financial compensation to landowners whose property values would be diminished as a result of the legislation. He said as Governor, he did not have the power to reverse the legislation, but that he could appoint to the Highlands Council those who agree with him on the Highlands Act. The Governor nominated five Highlands opponents to the Highlands Council. Four made it through senatorial advise & consent and were appointed. Implementation of the Highlands Act was effectively stalled through the appointments, stacking the votes on the Council against any further implementation of the Highlands Act, including municipal conformance. Then Governor Christie, in his final year in office, attempted to weaken the Highlands Rules by amending the Preservation Area's septic density standard. Based on a hybrid of the widely accepted Trela-Douglas septic density model, it required a minimum of 88 acres on a forested parcel order to approve one unit of residential development dependent on a septic system. This very conservative lot size, in response to a provision of the Act that set forth a non-degradation requirement ⁷, was the amount of land determined by the model that would be required to dilute the septic effluent to a point it would have a *de minimis* impact on ground water quality. In an amendment to the Highlands Rules, this lot size was reduced to minimum of 25 acres. Although the change was adopted by DEP, the Legislature employed a rarely used balance of power provision of the New Jersey Constitution to invalidate the provision. Enacting concurrent resolutions of the Senate and the Assembly, finding that the adopted executive agency regulation was contrary to legislative intent, upon a second concurrent resolution, the regulation was invalidated.

Without an Administrative Order, or Memorandum of Understanding, or any process allowing any public scrutiny, the Highlands Council's Consistency Determinations suddenly changed in scope in 2011. No longer was a project requiring an amendment to the areawide WQMP subject

⁷ N.J.S.A. C.13:20-32-34 (e):

a septic system density standard established at a level to prevent the degradation of water quality, or to require the restoration of water quality, and to protect ecological uses from individual, secondary, and cumulative impacts, in consideration of deep aquifer recharge available for dilution;

to an analysis of consistency with applicable policies of the RMP if it was located in the non-conformed Planning Area. The only policy considerations remaining in a Consistency Determination were the provisions of Governor Corzine's Executive Order #114, which had not been rescinded and required that:

*...no approval is given to any portion of a Water Quality Management Plan amendment in the Protection Zone, the Conservation Zone, or the Environmentally-Constrained Sub-Zones, as delineated in the Highlands Plan, within a HUC14 subwatershed that is in, or anticipated to be in, a deficit of net water availability, as identified by the Highlands Plan, unless the approval is conditioned on a Municipal Water Use and Conservation Management Plan, consistent with the policies in the Highlands Plan, having been approved by the Highlands Council and having been fully implemented.*⁸

When Governor Murphy was elected in 2017 one of the priority recommendations of his Transition Team was to reverse the environmental rollbacks to DEP rules and to renew protections to the Highlands.⁹

When NJ Highlands Coalition discussed with high level DEP representatives and with the Highlands Council Executive Director—under the current Administration—the option of returning to the prior consistency determinations that considered the full scope of RMP policies, for projects in the Planning Area regardless of conformance status, we were told that DEP's legal counsel would not support the change. It was their understanding that due to the voluntary nature of Planning Area conformance, any application of the RMP in the non-conforming Planning Area could not be supported.

We do not agree. A consistency determination is a recommendation only. DEP's currently adopted rules even require a recommendation from the Highlands Council on consistency with the RMP. In addition, in 2016, the Eastern Environmental Law Center, representing NJ Highlands Coalition, Raritan Headwaters Association and the NJ Chapter of the Sierra Club, challenged in the Appellate Division of the Superior Court of NJ the issuance of a renewal NJPDES permit in the Planning Area for Bellemead Corp. in Tewksbury Township. The Court remanded a reconsideration of the permit decision back to DEP because there was no record in its approval that DEP had consulted with the Highlands Council. The Court ruled that:

To ensure the DEP does not grant a permit that is incompatible with the RMP's goals, the DEP must consult with the Highlands Council on permit applications for the planning area...and that:

⁸ Gov. Jon Corzine Executive Order #114, September 5, 2008

<https://www.state.nj.us/infobank/circular/eoisc114.htm>

⁹ <https://www.state.nj.us/governor/news/reports/docs/Environment%20and%20Energy%20Transition%20Report.pdf>

*The DEP cannot issue a permit for the planning area if the permit is incompatible with the goals of the RMP.*¹⁰

We will continue to press DEP on this. We also might find that in approving an egregiously bad project proposed in the Planning Area, which will have serious impacts to multiple resources, we may have little choice but to litigate.

Highlands Water (HL) Designation

The Highlands Act requires not only the protection of Highlands Waters, but also the restoration and enhancement of Highlands Waters in both the Preservation and Planning Areas¹¹. However, the *antidegradation* policies of a Category-1 designation fail to provide for a meaningful improvement of water quality beyond maintaining existing water quality. Because of this fundamental inconsistency with the water quality objectives of the Highlands Act, which are more appropriately *non-degradation*, rather than *antidegradation*, we strongly recommend that the Department adopt a special category for Highlands Waters, similar to the designation reserved for Pinelands Waters (PL Waters), which carries the same level of protection as Outstanding National Resource Waters (ONRW) and protects waters from any activity that could result in a measurable change in water quality. There are compelling reasons that justify such an increased level of protection for Highlands Waters:

- To rectify a fundamental inconsistency with the *non-degradation* policies of the Highlands Act;
- Highlands Waters provides source waters to all of northern New Jersey's major river systems: the Wallkill, Passaic, Raritan and Upper Delaware rivers;
- The waters of the Highlands region are a critical resource for the state of New Jersey, meeting some or all of the drinking water needs of 70% of New Jersey residents and supporting economically vital businesses. Highlands waters exhibit exceptional clarity, color, scenic settings, and other aesthetic characteristics, and have unique ecological significance, exceptional recreational significance, exceptional water supply significance, and exceptional fisheries resources (i.e., all of the streams in NJ with naturally occurring trout are in the Highlands).

¹⁰ Superior Court of NJ, Appellate Div. Docket #A-5803-13T1 in re: Final Surface Water Renewal Permit Action NJPDES Permit No. NJ0102563

¹¹ N.J.S.A. C.13:20-10- b. (1) and c. (1)

- Unlike the Pinelands, which under the Water Supply Management Act, is prohibited from exporting water beyond 10 miles of the Pinelands National Reserve boundary¹², the Highlands provides drinking water for 70% of the State’s population, in 332 municipalities in 16 counties (as far south as Gloucester County);
- NJDEP’s Highlands Rules at N.J.A.C. 7:38, and the Highlands Regional Master Plan already require 300’ open water buffers for all Highlands Open Waters, which is consistent with the Riparian Zones required under Flood Hazard Area Rules for Category One and ONRW waters.

Recognition of the Highlands as a special resource area for its water and other critically important natural resources are also specified in the New Jersey State Development & Redevelopment Plan, and on the federal level, as provided in the Highlands Conservation Act.

Furthermore, with respect to the first bullet above, when the Department is faced with an inconsistency between standards embodied in its rules and those in the Highlands Regional Master Plan, the Department is directed by the Department’s Highlands Rules at NJAC 7:38 to apply the standards of the Highlands Regional Master Plan in a manner...

*“...consistent with the purposes of the Highlands Act to sustain and maintain the overall ecological values of the ecosystem of the Highlands Region **with special reference to surface and ground water quality and supply; contiguous forests and woodlands; endangered and threatened animals, plants, and biotic communities; ecological factors relating to the protection and enhancement of agricultural or horticultural production or activity; air quality; and other appropriate considerations affecting the ecological integrity of the Highlands Region.**”*¹³

3,370 miles of surface waters flow through the Highlands. Currently the level of protection provided these streams (i.e., riparian buffer size and discharge limitations) are dependent on a stream’s current designation under Surface Water Quality Standards, location with respect to the Preservation or Planning Area, and if in the Planning Area, the municipality’s conformance status.

A single Highlands Water designation at the C1 or FW1 level would streamline the regulatory standards across the Highlands, equally protect hydrologically connected waters and those of similar ecological and water supply significance and standardize riparian buffers sizes. The Highlands Act applies the non-degradation standard and 300’ riparian buffer to all Highlands Open Waters—defined as all springs, streams including intermittent streams, wetlands, and bodies of surface water, whether natural or artificial, located wholly or partially within the

¹² N.J.S.A. 58:1A-7.1

¹³ N.J.A.C. 7:38-1.1(i)]

boundaries of the Highlands Region, but shall not mean swimming pools¹⁴— which is far less confusing and more embracing than how the Department defines a regulated water. Such as single, standardized approach to surface water protection would be consistent with Highlands Act objective to *protect, restore, and enhance the quality and quantity of surface and ground waters therein*,¹⁵ it would provide more predictability and streamline the permitting process.

It would be justified to apply these standards per the Act's definition of Highlands Open Waters, i.e., all of the waters of the region, in both the Planning and Preservation Area and regardless of a municipality's conformance status. Although the designation of Highlands Water would not meaningfully change the level of protection already provided in the Preservation Area and the conformed Planning Area, it would result in an upgraded classification to 735 miles of C2 streams in the non-conformed Planning Area. Last year the Department upgraded 600 miles of waters statewide to C1 after a robust series of stakeholder meetings and a public hearing. The Department received 1,753 comments from the public. Upon adoption, Hunterdon County and the Raritan Township MUA filed a challenge with the Appellate Court, claiming among other things, faulty and unsubstantiated data was used as a basis for the upgrades and that the Department lacked transparency.¹⁶

Until the appeal is decided and how well the Court supports the actions taken by the Department it would be smart to withhold any discussions with the Department calling for a Highlands Water designation *across the board* for the Highlands. We also note that with the Department's current unwillingness to return to the RMP consistency determinations for proposed amendments to areawide WQMPs in the non-conforming Planning Area— which is merely a recommendation—we expect the Department would be even less enthusiastic to enforce more stringent riparian buffer sizes and effluent limitations in non-conforming municipalities, no matter how legally sound and responsive to its mission to protect the State's supply of clean drinking water.

We all agree that it is less costly to protect water quality at its sources than it is to treat water that has been allowed to degrade. Both of the programs discussed in this paper would result in meaningful protections to the quality of New Jersey's drinking water while also providing additional quality of life benefits, such as increased outdoor recreation opportunities, less congestion and a better State to pass on to subsequent generations.

¹⁴ N.J.S.A. C.13:20-3

¹⁵ N.J.S.A. C.13:20-10- b. (1) and c. (1)

¹⁶ The NJ Highlands Coalition, Raritan Headwaters Association and the Watershed Institute, represented by the Eastern Environmental Law Center, have filed as joint amici a brief in support of the upgrades

Great Waters NJ

A William Penn Foundation-funded Initiative



Current and Proposed Highlands Waters Designations July 22nd, 2021

Prepared by:

Elliott Ruga, Policy and Communications Director, New Jersey Highlands Coalition
elliott@njhighlandscoalition.org

Keith Fritschie, Habitat Restoration Coordinator, Trout Unlimited
keith.fritschie@tu.org

Map Set:

Page 2, Map 1. New Jersey Highlands current and potential stream designations

Page 3, Methods. New Jersey Highlands current and potential stream designations

Page 4, Map 2. Potentially affected dischargers with proposed Highlands Waters designation

Page 5, Methods. Potentially affected dischargers with proposed Highlands Waters designation

Page 6, Map 3. Boundary waters in the Highlands region

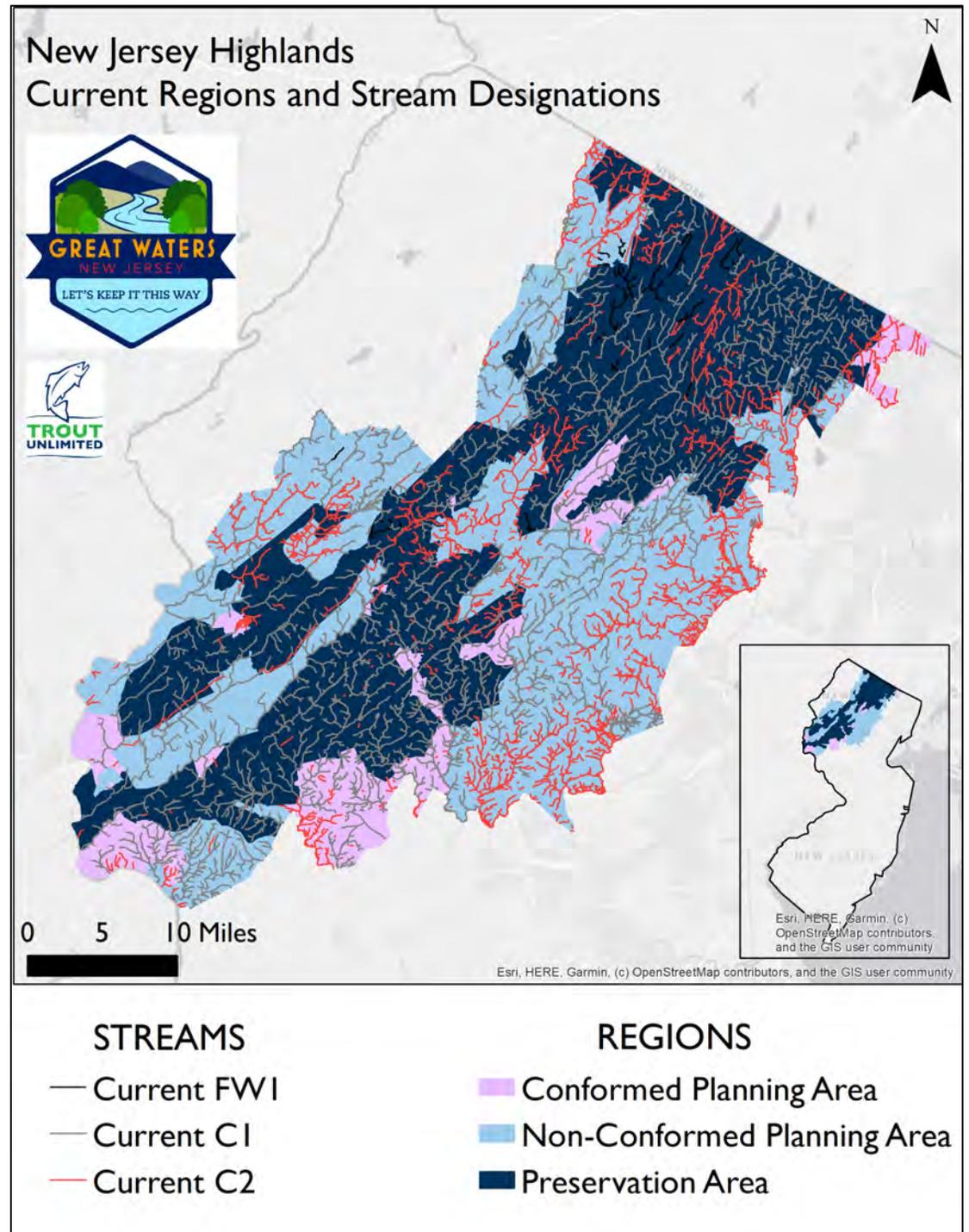
Page 7, Methods. Boundary waters in the Highlands region

All mapping and mileages are preliminary approximations and subject to change

Map 1. New Jersey Highlands current and potential stream designations.

Current stream protections (i.e., riparian buffers and discharge limitations) for the New Jersey Highlands' ~3,370 stream miles are dependent on a stream's current designation, its location with respect to the Preservation or Planning Area, and the municipality's conformance status. For example, C2 designated waters (**red lines**) within the Highlands Preservation Area (**dark blue polygons**) currently receive the same riparian buffer size and discharge restrictions as a C1 stream elsewhere in the state. The same is true for C2 streams (**red lines**) in the conformed Planning Area (**pink polygons**).

However, about 735 miles of C2 streams (**red lines**) in the non-conformed Planning area (**light blue polygons**) do not currently receive the C1-equivalent buffer size or antidegradation policies for discharges, despite their location within the Highlands region and their hydrologic connectivity to other Highlands waters. **A single Highlands Waters designation at the C1 or FWI level would streamline regulatory standards in the Highlands, equally protect hydrologically connected waters and those of similar ecological and water supply significance, and increase riparian buffer sizes and discharge protections on approximately 735 or 3,305 stream miles, respectively.**



METHODS: New Jersey Highlands current and potential stream designations. We clipped all streams of the [2020 Surface Water Quality Classification of New Jersey](#) to a polygon that buffered the boundary of the [New Jersey Highlands](#) by 25ft. This buffer ensured that streams that formed the boundary of the Highlands region were included. However, small portions of some tributaries not within the Highlands region are also included in this buffer. We anticipate this amounts to a small total mileage discrepancy across the entire study region.

We further clipped streams to their [Preservation or Planning Region boundaries](#). Any stream within 25ft of the Preservation area boundary was considered subject to Preservation area rules. The Planning region was further subdivided into conforming and non-conforming areas using the [Highlands Council's Municipal Plan Conformance Tracking Sheet](#) (as of 7/01/2021). From this sheet we retained municipalities that either adopted the Highlands Land Use Element or the Checklist Approach/Referral Ordinance, which means that any major development application proposed in their town cannot be considered by their Land Use Board as complete until it has been given a Determination of Consistency with the Highlands Regional Master Plan by the Highlands Council. We intersected these municipalities with the Planning region to generate a polygon representing the Highlands' current conformed Planning area.

We further clipped streams to these polygon boundaries, calculated stream segment geometries in the NAD 1983 NJ State Plane FIPS 2900 coordinate system, and selected and summarized stream segments by current surface water quality designation, Highlands region, and conformance status. Resultant mileages and their stream protection equivalence to C1 streams are given in the table below. All mileages should be considered approximate given slight differences in mapped vs. actual border and stream geometries and the buffering approach described above.

Current Designation	Location	Approximate Mileage	300ft Riparian Buffer?	C1 Equivalence for Discharges?
	TOTAL HIGHLANDS MILES	3367^A		
FW1	Preservation	55	Yes	More stringent
FW1	Planning	7	Yes	More stringent
C1	Preservation	1150	Yes	Equivalent
C1	Planning	965 ^B	Yes	Equivalent
C2	Preservation	368	Yes ¹	Equivalent ^{2,3}
C2	<i>Planning</i>	824 ^C	<i>Depends on conformance</i>	<i>Depends on conformance</i>
	Conformed Municipalities	89	Yes ⁴	Equivalent ⁴
	Non-conformed Municipalities	735	No ¹	Less stringent

^AAll streams within 25ft of the Highlands boundary are included in this value to capture boundary waters separating municipalities. Total Highlands stream miles will be slightly less than this sum.

^BSixteen miles removed from this sum because waters straddling the preservation-planning area boundary are considered wholly part of the preservation area

^CEight miles removed from this sum because waters straddling the preservation-planning area boundary are considered wholly part of the preservation area

¹N.J.S.A. 13:20- 30b(1)

²N.J.S.A. 13:20- 30b(2)

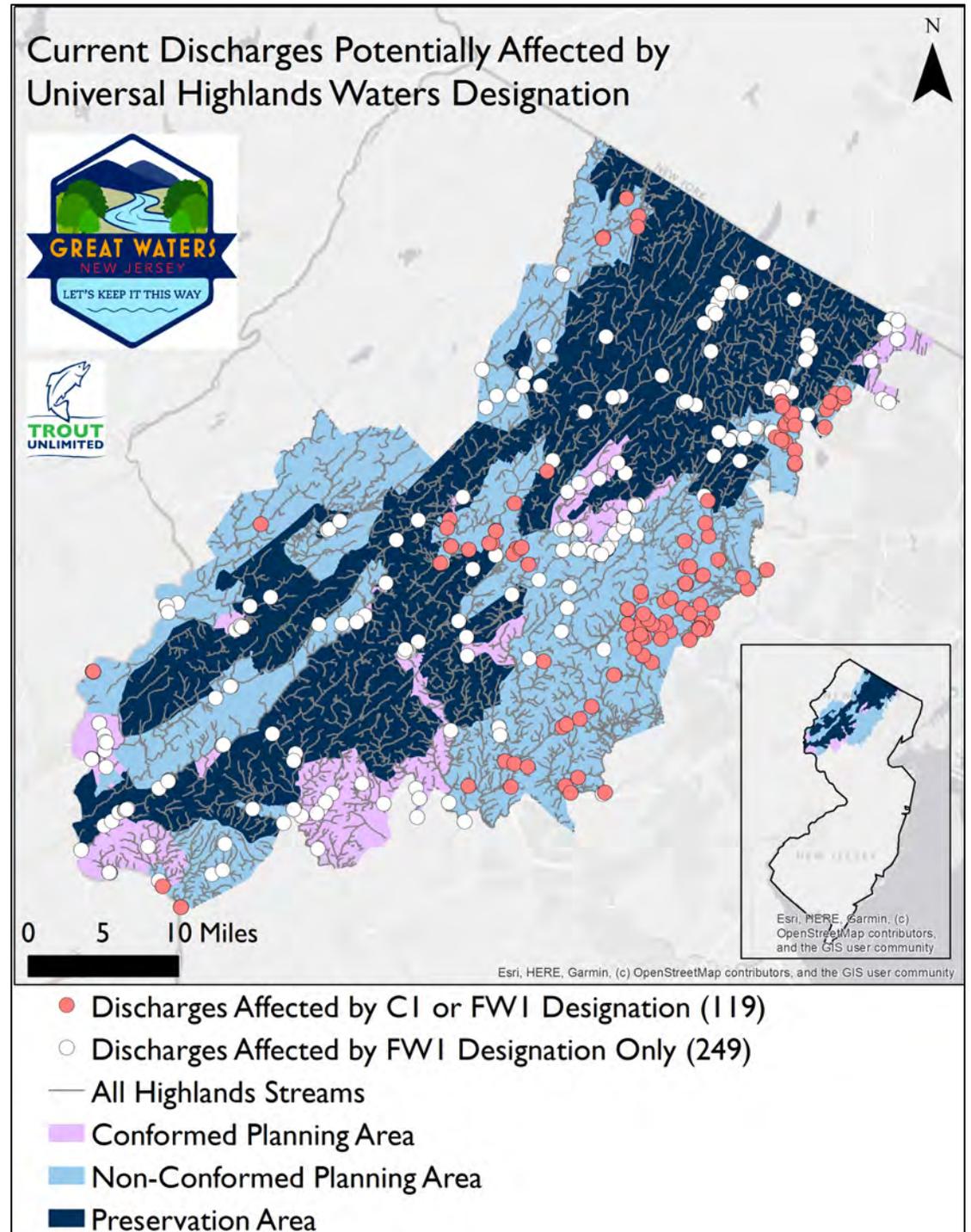
³N.J.S.A. 13:20- 30b(5)

⁴Interpretation of N.J.S.A. 13:20 by the New Jersey Highlands Coalition. Contact Elliott Ruga for additional information.

Map 2. Potentially affected discharges with proposed Highlands Waters designation. While current discharges are grandfathered into the previous surface water quality standards of when their permit was issued, new permits and amendments to existing permits would be required to meet the discharge limitations of any new Highlands Waters designation.

Approximately 119¹ current permits discharge to C2 waters (**peach points**) and would be affected by a C1 or FWI Highlands Waters designation. An additional 249¹ current permits discharge to C1 waters, or C1-equivalent waters in the conformed Planning Area (**white points**). Amendments to these permits would only be affected by a new Highlands Water Designation at the FWI level.

¹Current stream designations for each permitted discharge was estimated by snapping discharge points to the nearest stream via a straight-line distance. This process DOES NOT respect topography; the closest stream calculated may be at a higher elevation than the discharge and thus not truly the receiving waters of it. Therefore, these total affected discharge permits are approximations only!



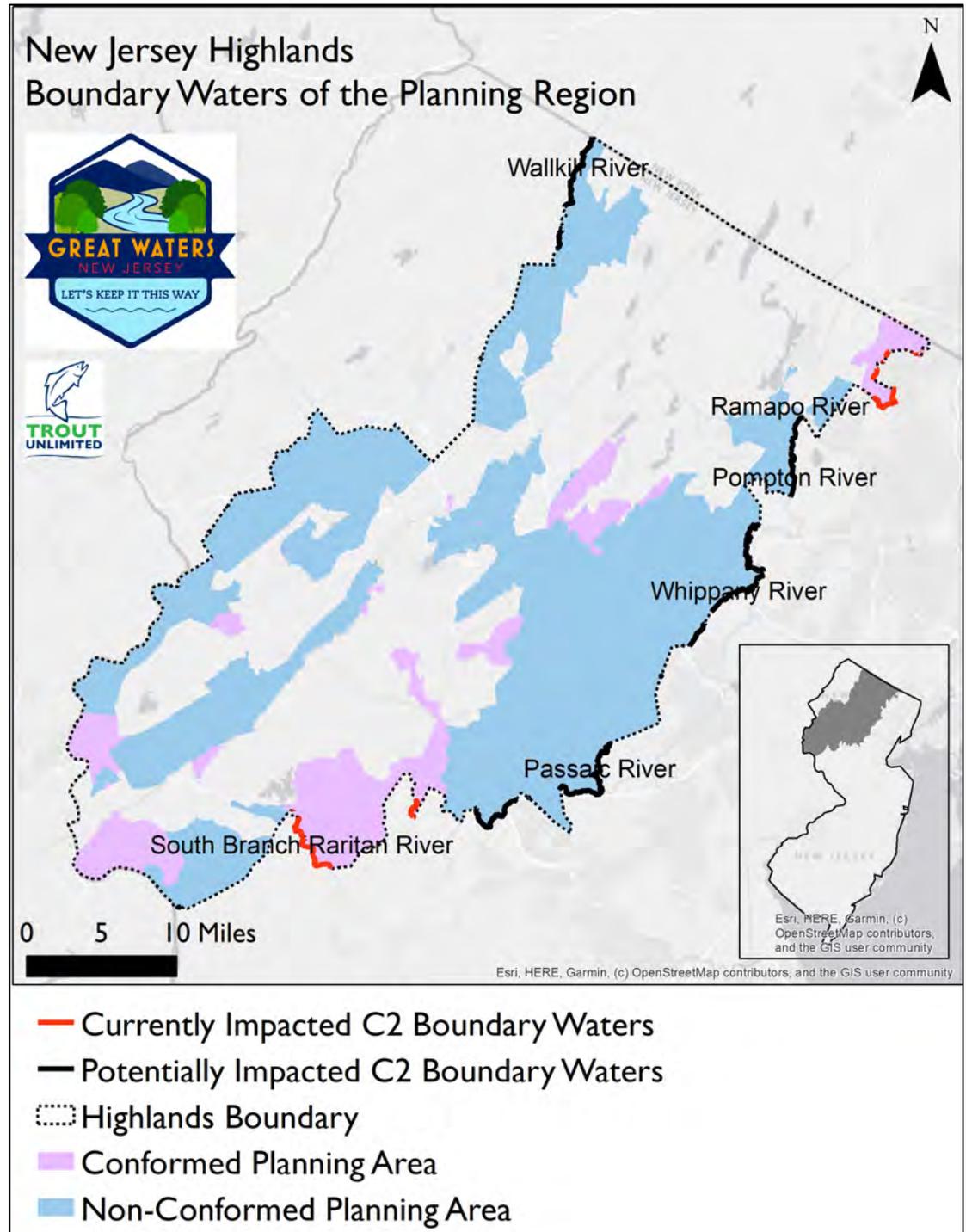
METHODS: Potentially affected discharges with proposed Highlands Waters designation.. We performed a proximity (near) analysis to calculate the nearest point on a stream line from the [2020 Surface Water Quality Classification of New Jersey](#) to every surface water discharge from [the NJPDES Surface Water Discharge layer](#). We then mapped these nearest-stream-line points for each discharge, selected those that intersected Highlands Waters of a given current classification (C2 vs C1 vs FW1) and location (conformed vs. non-conformed planning area), and summed the total affected discharges across these classification and planning area categories.

This approach use straight-line distance and therefore does not respect topography (i.e., in rare instances the calculated closest stream could be topographically higher than the discharge, an unlikely scenario in reality) or piped discharges to waters that are farther than the nearest stream. We believe this approach successfully differentiates among most discharges to C2 vs. C1 streams; however, it is certainly only an illustrative method that should be supplemented by reviewing each permit's description of the discharge's actual receiving waters.

Map 3. Boundary waters in the Highlands region.

Waters that form the boundary between the Highlands Preservation and Planning Areas are considered wholly in the Preservation Area and are provided the protection standards of the Preservation Area along both banks. However, this does not apply to boundary waters of the Highlands Region which follow municipal boundaries, which if defined by a stream or river, it is the centerline; therefore Highlands boundary streams may be subject to different riparian buffer and discharge allowances on each bank within vs. outside the Highlands border.

This particularly affects C2 waters in conformed municipalities where C2 banks within the Highlands are protected with C1-equivalent protections, but the opposite bank retains C2 statewide standards. This currently affects approximately 13 stream miles (**red lines**) and could affect up to 45 miles (**black lines**) when additional municipalities conform.¹ An equivalent C1 or FWI Highlands Water designation would remedy this imbalance in riparian area protections.



¹Impacted boundary waters were identified by retaining all stream segments within 25ft of the Highlands Planning boundary. These total mileages are approximations only!

METHODS: Boundary waters in the Highlands region. We buffered the New Jersey Highlands boundary layer by -25ft and +25ft, then differenced these two buffered polygons to generate a single polygon of 50ft width along the NJ Highlands boundary. We then clipped all conforming and non-conforming planning area streams (from Map 1) by this polygon boundary. Finally, we subset these clipped streams to only those with C2 designation. Under the current Highlands rules, C2 boundary streams in conformed planning areas that have taken on C1-equivalent buffer and discharge protections only enjoy these protections on the stream bank within the Highlands boundary. The other stream bank of these boundary waters are subject to the standard state protections for C2 streams. C1 and FWI boundary waters do not face the same bank-to-bank differences because protection for these stream types do not differ among Highlands vs. statewide standards.

Approximately 13 C2 miles in conformed municipalities currently face unequal bank-to-bank protections across the Highlands boundary, and an additional 45 miles could face this issue as more municipalities conform their Planning Areas. As in Map 1, the buffering approach taken here likely includes some short tributary segments that are not technically Highlands boundary waters. Stream mileages should be taken as approximations, but they provide an adequate representation of the issue at hand.