New Jersey Recovery Potential Screening Tool

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Concept of Recovery Potential

1

Relative restorability of a waterbody and its watershed

2

RPS tool provides an approach for comparing watersheds

Restoration Prioritization

- Initiate actions that identify and prioritize future nonpoint restoration efforts at a regional level

- Goal: maximize the utilization of restoration funding by identifying AUs that show the best potential for improving water quality and prioritizing these efforts

Rotating Basin Approach

- 958 assessment units
- Five water regions
- In depth and detailed analysis of water quality
- Supports the unique circumstances of each water region
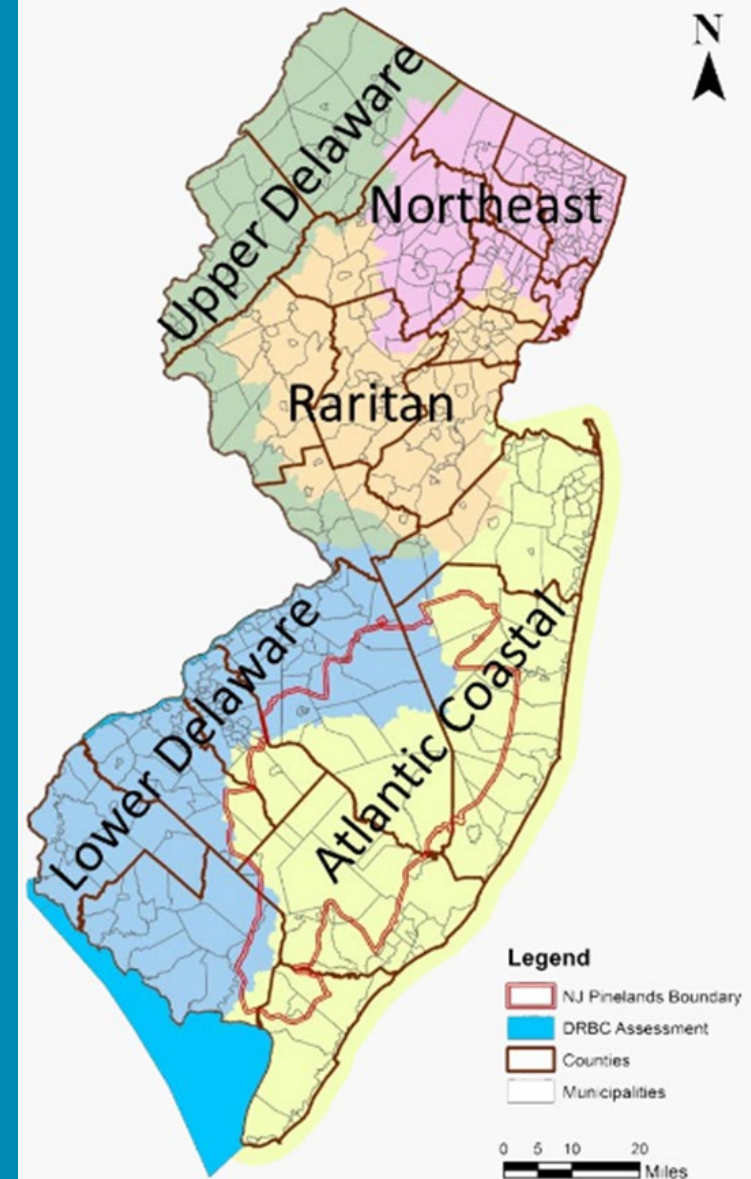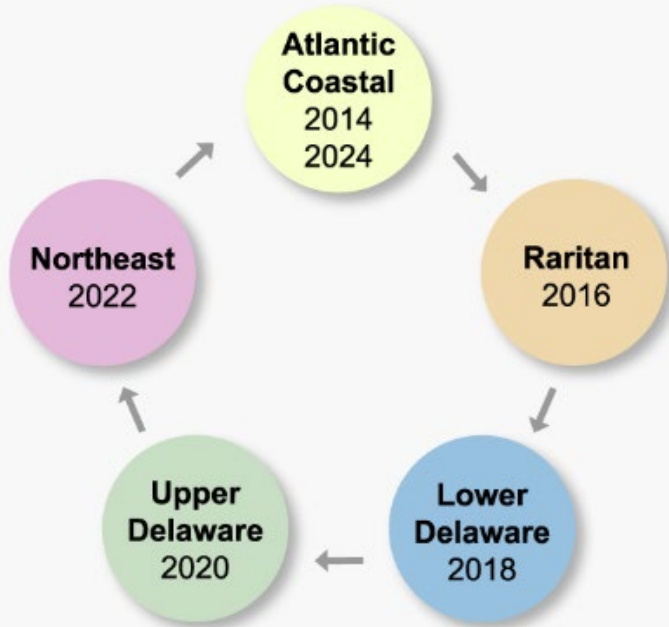
Comprehensive Assessment

- In-depth analysis integrating biological and chemical data over a 10-year period

- Team consists of scientists and field samplers

- Objectives:

    1. Identify potential pollutant sources and monitoring gaps to improve follow up sampling

    2. Identify areas for restoration efforts

    3. Identify potential watershed/protection plans

    4. Identify success stories

    5. Identify candidates for priority watersheds

- Multi week intensive analysis

- Incorporate all available lines of evidence using GIS as well as weather data

- The result:

    1. High confidence with our assessment determinations

    2. Prioritized watersheds for restoration

    3. Identified waterbodies that were "on the bubble"

# Summary of the New Jersey Recovery Potential Screening Tool

- Customized in 2018/ HUC12 and HUC14

- Updated in 2021 (OBC and Climate Change indicators)

NJ has used our RPS tool to:

1. Identify, among watersheds with heavy pollutant loads, the healthier watersheds where substantial load reduction could still be accomplished.

2. Identify relative differences in restorability among all watersheds and related factors to better anticipate restoration workloads.

3. Identify where impaired watershed restoration and healthy watershed protection efforts can have great synergy.

4. Evaluate where best to make nonpoint source or other restoration investments. For example, results of RPS Tool screenings were factored into NJDEP's identification of priority HUC14s for 2020-2022 Water Quality Restoration Grants to mitigate nonpoint source pollution.

The Updated NJ RPS Tool

- Third IR cycle of use

- Thirty-three HUC14 indicators

- Update existing land use indicators

- Overburdened Communities

- Climate Change

☐ Overburdened Community
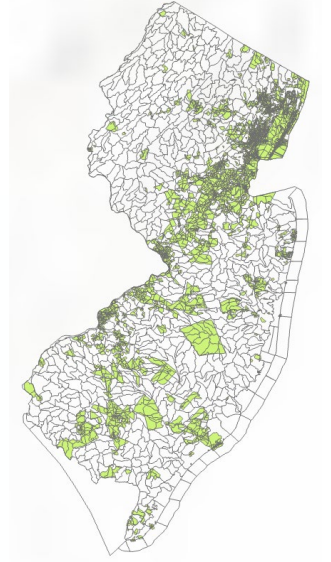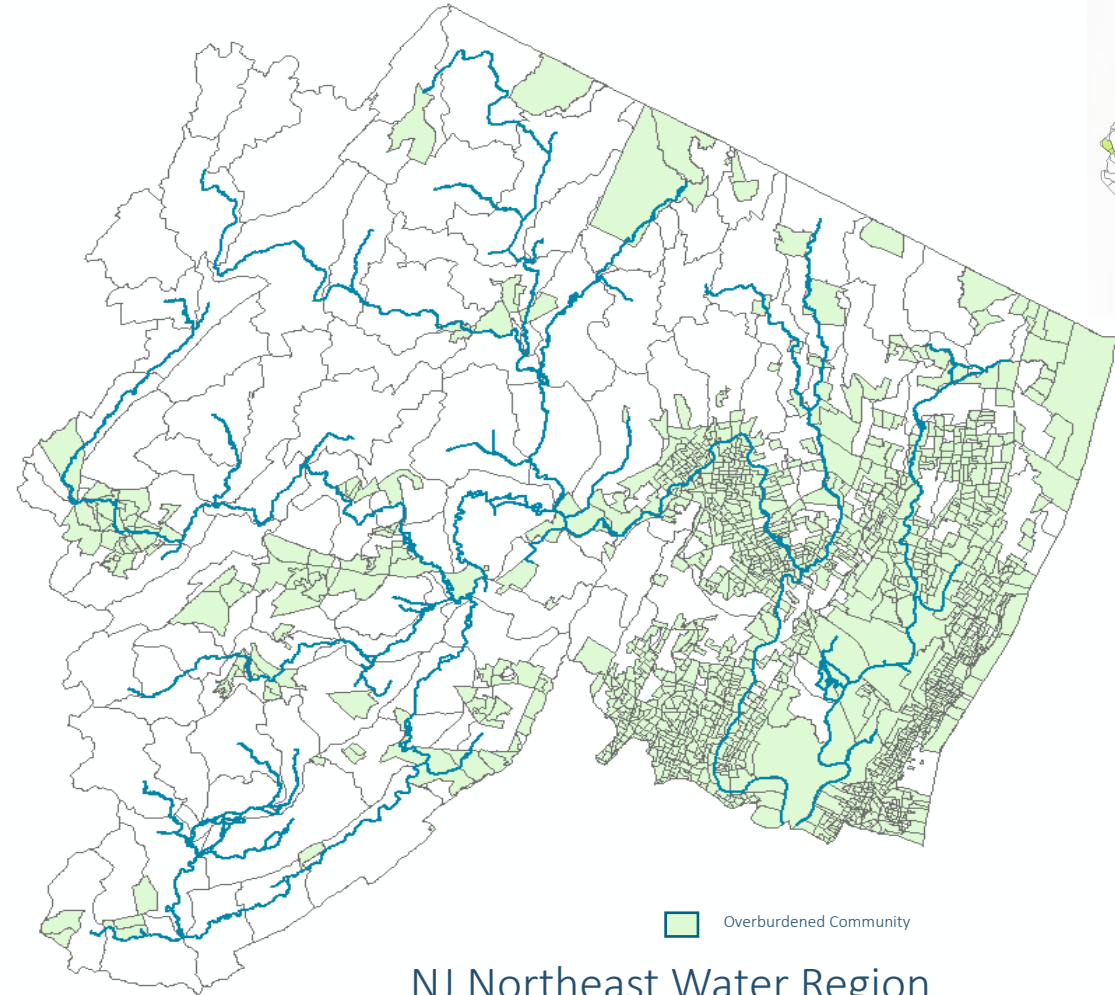
NJ Northeast Water Region

Indicators

Ecological: overall condition, resilience to regain and maintain functionality

Stressor: sources of pollutants and magnitude of their effects

Social: factors favoring efforts to restore and maintain waters

List of HUC14 indicators in the New Jersey RPS Tool

Category	Subcategory	Indicator Name
Ecological	Human Use Land Cover (All Types)	% N-Index2 in Watershed (2019)
Ecological	Human Use Land Cover (All Types)	% N-Index2 in Riparian Zone (2019)
Ecological	Aquatic Life and Habitat	General Aquatic Life Use Support Flag
Ecological	Aquatic Life and Habitat	Average Fish IBI Rating
Ecological	Aquatic Life and Habitat	Average Macroinvertebrate Condition Rating
Ecological	Aquatic Life and Habitat	Average Aquatic Habitat Rating
Ecological	Aquatic Life and Habitat	% Category 1 Waters
Ecological	Aquatic Life and Habitat	Rare Plant Species Count
Ecological	Aquatic Life and Habitat	Rare Plant Species Flag

List of HUC14 indicators in the New Jersey RPS Tool

Category	Subcategory	Indicator Name
Stressor	Impervious Cover	% Imperviousness, Mean in Watershed (2019)
Stressor	Impervious Cover	% Imperviousness, Mean in Riparian Zone (2019)
Stressor	Human Use Land Cover (All Types)	% Human Use Change, U-Index2 Change in Watershed (2001-19)
Stressor	Urban/Developed Cover	% Developed Cover Projected Change (2010-2050)
Stressor	Hazardous Waste & Wastewater	CSO Outfall Count
Stressor	Hydrologic Alteration	Dam Count
Stressor	Hazardous Waste & Wastewater	Remediation/Contamination Site Count
Stressor	Urban/Developed Cover	% Golf Course
Stressor	Hazardous Waste & Wastewater	Landfill Count
Stressor	Hazardous Waste & Wastewater	NJPDES Discharger Count
Stressor	Soil Attributes	Soil Erodibility, Mean in Watershed
Stressor	Impaired Waters	Impaired Designated Uses Count
Stressor	Impaired Waters	Impaired Waters Pollutant Count

# List of HUC14 indicators in the New Jersey RPS Tool

Category	Subcategory	Indicator Name
Social	Drinking Water Protection	% Wellhead Protection Area in Watershed
Social	Drinking Water Protection	Source Area Flag for Surface Drinking Water Supply
Social	Drinking Water Protection	% Source Area for Surface Drinking Water Supply
Social	Community Context	% Overburdened Communities
Social	Water Quality Assessments & TMDLs	TMDL Count
Social	Water Quality Assessments & TMDLs	Shellfish Harvesting Area Flag
Social	Water Quality Assessments & TMDLs	Shellfish Harvesting Area Flag (Non-Prohibited)
Social	Water Quality Assessments & TMDLs	Recreation Use Support Flag
Social	Protected Lands & Waters	% Open Space in Watershed
Social	Participation in Conservation Programs	% Farmland Preservation Areas in Watershed
Social	Participation in Conservation Programs	Restoration Project Count in Watershed

RPS Tool Factors Used
Northeast Most Weighted Factors

Ecological Indicators

% N-Index2 in WS (2019)
% N-Index2 in RZ (2019)
% Category 1 Waters
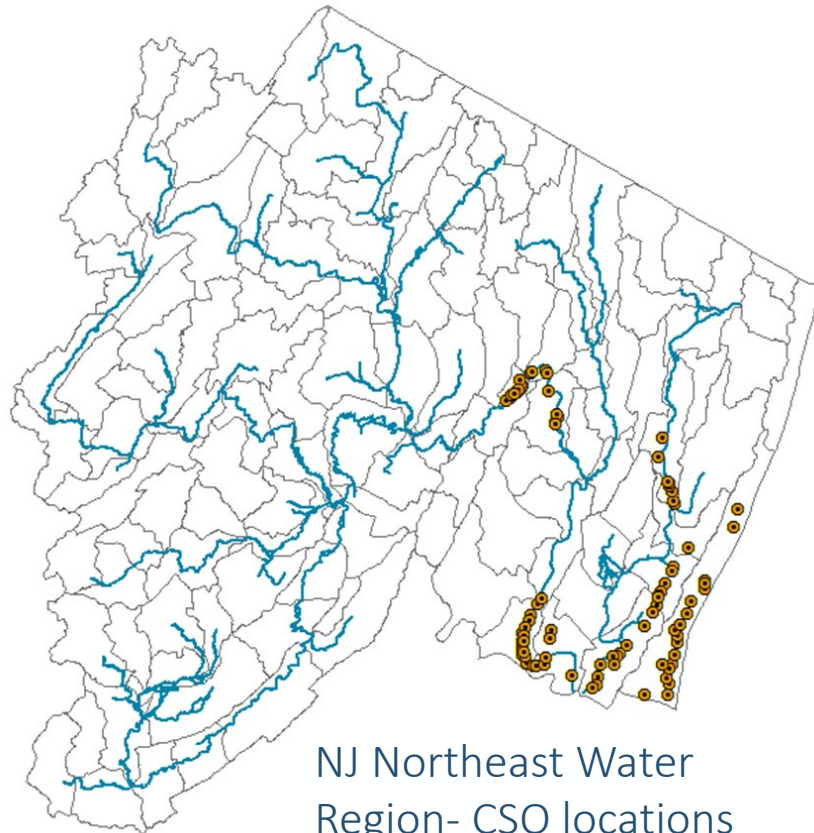
NJ Northeast Water Region- CSO locations

Stressor Indicators

% Imperviousness, Mean in WS (2019)
% Imperviousness, Mean in RZ (2019)
% Developed Cover Projected Change (2010-2050)
% Human Use Change, U-Index2 Change in WS (2001-19)
Dam Count
Impaired Designated Uses Count
Impaired Waters Pollutant Count
Remediation/Contamination Site Count
CSO Outfall Count
NJPDES Discharger Count

Social Indicators

| |
|---|
| TMDL Count |
| % Overburdened Communities |
| % Farmland Preservation Areas in WS |
| % Open Space in WS |
| Source Area Flag for Surface Drinking Water Supply |

% Developed Cover Projected Change (2010-2050)

Indicator description (from previous tool):

The projected change in the percentage of developed land cover in the HUC14 from 2010 to 2050. Calculated from the Integrated Climate and Land-Use Scenarios (ICLUS) Land Use Projection geospatial dataset (V2) for the SSP2 Pathway. The ICLUS Land Use Projection dataset is comprised of national grids of land cover types at 90 meter resolution for each decade from 2010 to 2100.

Percent developed cover in 2010 and 2050 calculated from the following land cover types in ICLUS grids: Parks and Golf Courses, Exurban (Low and High Density), Suburban, Urban (Low and High Density), Commercial, Industrial, Institutional, and Transportation (grid values 9-18). The projected change in developed cover was then calculated by subtracting the 2010 percentage from the 2050 percentage.
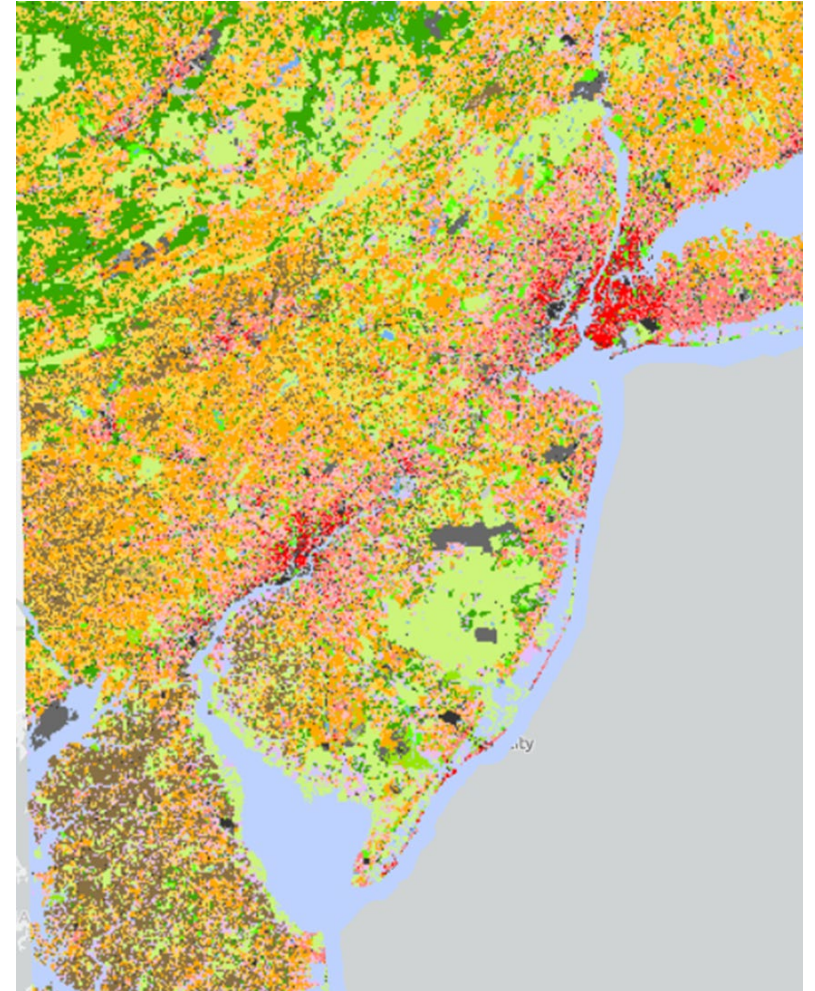
Data Source: ICLUS landcover https://www.epa.gov/gcx/iclus-downloads

RPS Tool Result – Initial Map

- Dark Blue is highest priority

- White is lowest priority
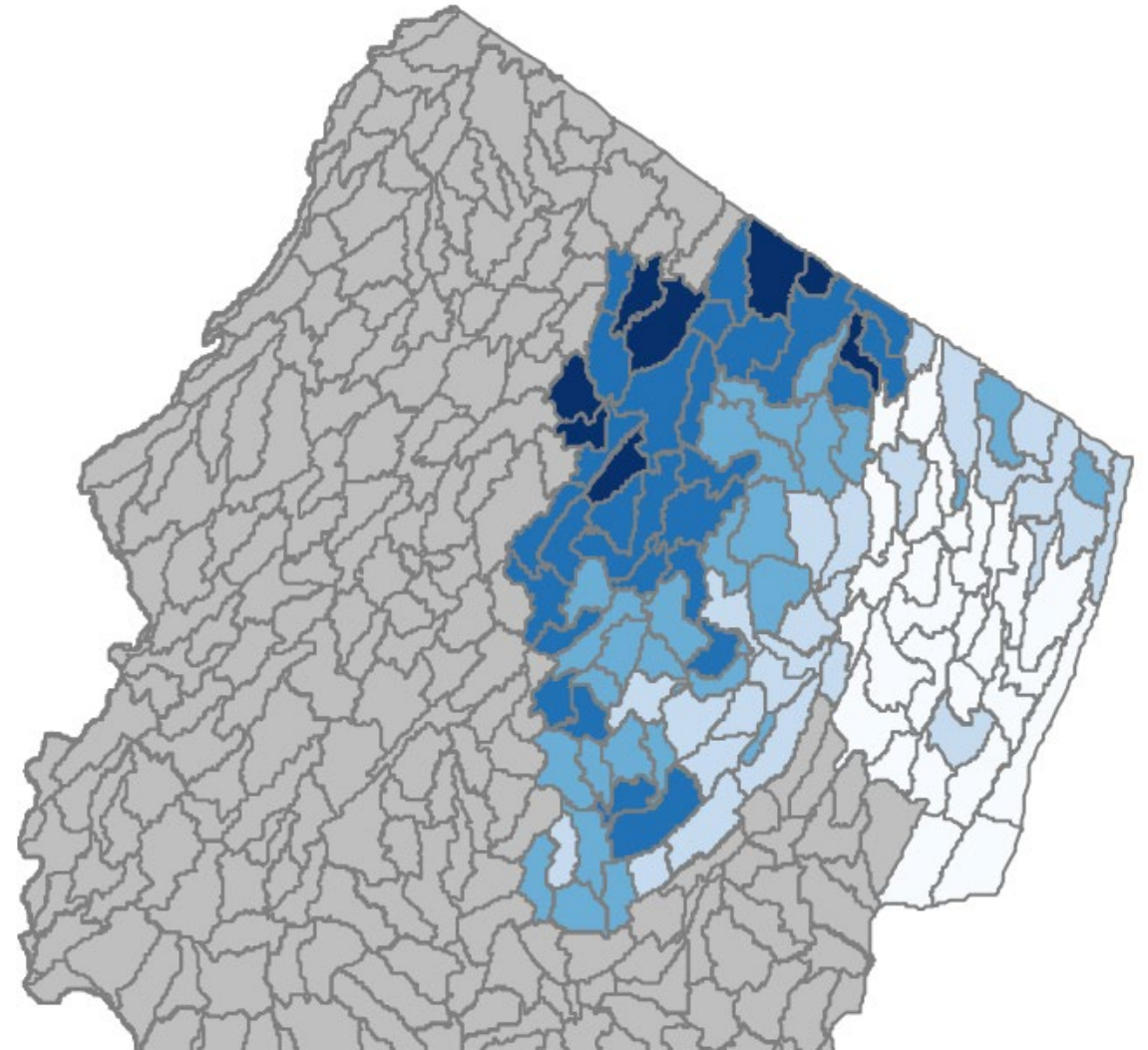
NJ Northeast Water Region

Watershed ID	Watershed Name	RPI Rank	Notes
HUC02030103030080	Rockaway R (Stephens Bk to Longwood Lk)	12	Bio non attain, largely rural HUC, riparian/streambank degradation just upstream of the Bio station, not extenively sampled, C1, basin retrofit(Rockaway River Watershed Cabinet), some OBC(minority)
HUC02030103070010	Pequannock R (Charlotteburg to OakRidge)	13	C1 streams consistently non attain for temp, hazardous dam far upstream (Clinton Brook), channel renaturalization and buffer restoration
HUC02030103020090	Great Brook (below Green Village Rd)	17	Mostly forest/wetland, phoshorus, bio, and DO impaired, ag near stations, C1
HUC02030103030130	Pequannock R (above OakRidge Res outlet)	18	mostly forested, C1, temp impaired, good riparian
HUC02030103100040	Black Brook (Great Swamp NWR)	19	DO, Phosphorus, TDS, ecoli(sampled near golf course) non attain, nearby farm, good riparian, C1, biofiltration wetland and rain garden GI(Ten Towns Great Swamp WMC), a little OBC(minority), golf courses in upper HUC
HUC02030103070050	Rockaway R (74d 33m 30s to Stephens Bk)	26	Developed, but workable riparian, one significant dam, goose management project-streambank restoration(Rockaway River Watershed Cabinet), a little C1, a lot of OBC
HUC02030103030060	Pequannock R (below Macopin gage)	39	C1, riparian buffer project-pequannock river coalition, temp non attain, there are a lot of dams but not related to temp non attain, mixed urban and rural, some OBC(low income and minority)
HUC02030103050030	Passaic R Upr (above Osborn Mills)	40	C1, temp, pH, bio non attain, some dams, possibly leading to bio non attain, mostly good riparian, mixed forest and developed
HUC02030103030140	Troy Brook (above Reynolds Ave)	49	A lot of basin retrofit and green infra w rutgers, a lot of OBC(minority), also several high hazard dams, one of which leading to bio non support
HUC02030103010050	Pascack Brook (below Westwood gage)	65	Some OBC(minority), C1, riparian and lake restoration projects, mostly developed, bio, pH, DO, e coli non attain
HUC02030103100010	Passaic R Upr (Rockaway to Hanover RR)	69	Bio and TDS, DO and Phosphorus non attain, some OBC(minority), a lot of wetland/forest mixed in with developed area
HUC02030103100030	Tenakill Brook	73	streambank stabilization(Demarest Borough), lake/pond restoration projects(Rutgers), a lot of OBC(low income and minority), bio and e coli non attain, good riparian, C1
HUC02030103020020	Saddle River (above Ridgewood gage)	74	Some OBC(minority), C1, mostly urbanized, bio and temp non attain, pretty good riparian, tho certainly some degradation
HUC02030103140050	Saddle River (Rt 4 to Hohokus)	94	Bio non attain, a lot of good riparian, some OBC(minority), golf courses
HUC02030103120110	Passaic R Lwr (Goeffle Bk to Pump stn)	95	CSOs-PVSC(Paterson), many GI projects (Rutgers Cooperative), also capital improvement (PVSC), tds and bio non attain, a lot of OBC(minority and low income)
HUC02030103180010	Coles Brook / Van Saun Mill Brook	103	streambank stabilization/naturalization(Bergen County Department of Parks) and channel renaturalization(Hackensack Riverkeeper) projects, phosphorus, tds, bio non attain, largely OBC(minority), golf course in upper HUC
HUC02030103120080	Passaic R Lwr (Dundee Dam to F.L. Ave)	104	capital improvement project-PVSC, CSOs-PVSC(paterson), almost all OBC(low income and minority)
HUC02030103180030	Hackensack R (Ft Lee Rd to Oradell gage)	106	Several CSOs-Bergen County Utilities Authority(Hackensack/Ridgefield Park), widespread OBC(Minority/Low Income and Minority/Minority and Limited English/Low Income), turbidity non attain
HUC02030103150010	Third River	113	Lake/pond restoration(Bloomfield Twp), bio, phos, ecoli non attain, low hazard dams, some OBC, non attain downstream of golf course
HUC02030103140070	Saddle River (below Lodi gage)	115	A lot of OBC(low income and minority), bio and ecoli non attain, some workable riparian
HUC02030101170030	Hudson River (lower)	116	bio and phos non attain, several CSO-PVSC, Bergen(Fort Lee), North Bergen(Guttenberg) North Hudson, fcol attain, several major discharge

Final Analysis

- About the same ratio of HUCs as selected in Lower and Upper Delaware regions
- 117 HUCs at start of process
- 21 HUCs selected in final list

Future Goals:

- Continue to refine customized indicators by region

- Coordinate with major groups or agencies who carry out restoration

Thank you to EPA and Cadmus

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Bureau of Environmental Restoration, Analysis and Standards

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