

EPA Nonpoint Source (NPS) Baseline Analysis Workgroup Summary

Workgroup Members

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NPS Equity Initiative and Workgroup Background

The Baseline Analysis Workgroup was initiated as part of the EPA Nonpoint Source (NPS) program’s efforts to assess and expand equity and inclusion across the national program. This work was initiated by the *Near-term Actions to Support Environmental Justice in the Nonpoint Source Program* memo. In the memo EPA has committed to take actions to ensure equitable and fair access to the benefits from environmental programs including the Nonpoint Source Program.

A piece of this commitment is the “Baseline Analysis” which is a geospatial study that includes developing a methodology to assess how Section 319 state project funds have historically been distributed. Additionally, this effort should support state programs in assessing how future work may better target NPS water quality problems in disadvantaged communities (DACs)^{1,2}.

EPA NPS HQ program staff began developing this analysis in early 2022 as the program conducted a series of regional, state, and tribal listening sessions on equity and inclusion in the NPS program. During this time the team received some initial feedback on data and methods from agency experts in environmental justice and public health research. Following these listening sessions, a series of workgroups consisting of EPA, state, territory, and tribal program staff were initiated to further explore

¹ The Office of Management and Budget (OMB) Justice40 [interim guidance](#) includes a definition of disadvantaged communities; CWA §319 is considered a covered program under [Justice40](#).

² Executive Order 14008 uses the phrase “disadvantaged communities,” and this term has been used in existing Federal and state programs to prioritize funding for environmental justice. Some community members and advocates prefer alternative terminology, and specifically the use of “overburdened and underserved communities.” Until subsequent guidance can address the question of the most appropriate terminology, this memorandum relies on the language used in Executive Order 14008.

topics that emerged as common themes in the listening sessions.

Baseline Analysis Workgroup Goals and Topics

The overarching goal of this workgroup was to receive feedback and input on the draft Baseline Analysis data and methodology, and on how to begin in engaging with state programs in piloting the Analysis and ground truthing findings. This workgroup met between April 4 – June 7 and consisted of four 1.5-2 hour meetings (some split into multiple time blocks). Specific goals and topics explored by the Baseline Analysis workgroup include:

- Existing/ongoing state EJ analysis/mapping efforts
- Data sources and layers to be included
- Methods for conducting the Analysis (including use of EPA’s Recovery Potential Screening Tool)
- Engaging with state programs on the Baseline Analysis

This summary was drafted using notes taken during each of the workgroup meetings.

Workgroup Themes/Findings

Data and Methodology

1. In determining where NPS management efforts can be focused to improve equity and inclusion across the program, this analysis should consider both social and environmental data. Specifically, in conducting this analysis the program should endeavor to identify and consider where the NPS efforts will be useful/able to address water quality issues.
 - a. Inclusion of water quality data related to nonpoint source
 - b. Program dollars if available (by state)
 - c. Public water supply data
 - d. Parse out NPS specific TMDLs
2. Issues related to the scale of the analysis/available datasets
 - a. The workgroup noted several challenges that can arise when conducting this analysis using national-scale datasets (i.e., Watershed Index Online (WSIO) data library) and attempting to establish a uniform assessment approach across the national program. Points included:
 - i. The socioeconomic context will vary by state. Factors to consider that were discussed by the workgroup include, urban vs rural distribution within a state, average income variability within and across states, climate risk/vulnerability, and others. A particular concern raised was that states with majority rural/agricultural areas may not have EJ issues adequately captured if DACs are defined only at the national level. This was of interest to the group as many NPS programs focus significant effort on agricultural areas/NPS issues.
 - ii. CWA Section 319 funding, NPS issues, and priorities also vary greatly by state. Workgroup members highlighted differences in types of NPS their program

focuses on (i.e., groundwater/drinking water in KS, agriculture NPS issues in KY). Because a “one size fits all” approach does not fit the national NPS program, workgroup members expressed the desire for similar flexibility in identifying DACs in their states and where to focus future work.

- iii. To address these issues in state variability, one suggestion is to approach the Baseline Analysis in two separate actions. “Action One: EPA EJ and Equity Analysis of Historic State 319 Project Funds” includes a coarse national analysis to understand how state Section 319 project funds have historically been distributed (2011-2021). “Action Two: State-level Screening Pilot Project” will then allow for states to work one on one with HQ to conduct more in-depth analysis. A draft procedure is detailed in the “Future Analysis/Engagement Process” section.
- b. Varying geographic scales of available data (watershed vs census/block group level)
 - i. This analysis takes a suite of data sources into account, and the geographic scales of these datasets range from the HUC12 watershed scale to the block group scale. Both workgroup members and agency experts that have been consulted on this project have indicated that the watershed scale is too broad to understand if and how program funds have been spent in DACs. Because watersheds often cover multiple communities/census blocks/block groups, which are the units of measure most often used in EJ research, the team acknowledges that there may be a diverse makeup of communities within one watershed. The HUC12 watershed scale was chosen as the primary guiding unit of measure in this analysis because that is the level of granularity available for both Section 319 funding data and in the WSIO data library.
 - ii. The workgroup raised that the 319 Grants Reporting and Tracking System (GRTS) allows users to more specifically geolocate project BMPs. This could be highlighted as an option for states looking to better understand where work is occurring in relation to census/block group level demographic data.
 - iii. If there are state-level datasets that map 319 projects, these maps may also be included in a state-specific analysis conducted between the state and EPA HQ.
 - iv. Potential solution presented by the workgroup: Data layers from EJSCREEN are available in the Baseline Analysis map. The watershed scale may be used to home in on areas of interest, and EJSCREEN data can be used to understand block group makeup with the watershed.
3. Workgroup members expressed the desire to have the ability to consider additional state and local data sources in a state-specific analysis, as opposed to relying solely on the national-scale data that was utilized in Action One.
 - a. Example datasets that workgroup members expressed interest in including in an analysis of their state: Map of ongoing state efforts (e.g., KS groundwater well mapping with goal to conduct work in low-income areas), NPS program priority areas, funding/project areas from other programs (i.e., SRF funding (if available), other state agency priority areas).
4. Recovery Potential Screening (RPS) tool

- a. Some workgroup members have used the RPS tool in their states as a way to assess watershed recovery potential. Those with RPS experience had a generally positive opinion about the tool.
- b. Workgroup suggestion: Use RPS as a potential method of identifying target watersheds based on social and ecological factors, then bringing into GIS to compare against historical 319 funding. This method works toward the goal of identifying areas that are DACs and are experiencing water quality issues that may be NPS related and/or may be addressed by the NPS program.
- c. RPS allows the user to consider indicators from the Watershed Index Online (WSIO) data library. When using RPS we would primarily rely on WSIO data because it is available at a national scale. WSIO indicators that were discussed in the workgroup and may be considered include:

Ecological	Stressor	Social
% Natural Cover (N-Index)	% Agriculture	% Low- Income Population in WS
% Forest	Number of Septic Systems	% Minority Population in WS
% Wetlands	% Impervious Cover	%< HS Educated Population in WS
% Woody Vegetation	% Tile Drained Cropland	% Linguistically Isolated Population in WS
Soil Resilience	Linear % Channel Through Agriculture	% Vulnerable Age Group Population in WS
% Stream Length Unimpaired	% Urban	
Watershed Shape	Channelization	
Watershed Size	Hydrologic Alteration	
Bank Stability/Soils	Water Use Intensity	
Bank Stability/Woody Vegetation	Number of 303(d) Listed Causes	
Corridor Slope	CSS or MS4 Areas	
Natural Channel Form	Severity of Loading	
Channel Slope	SPARROW Nitrogen Loading Estimate	
Sinuosity	SPARROW Phosphorus Loading Estimate	
Natural Flow Regime	Stream Miles Impaired	
Median Flow Maintenance	Waterbody Acres Impaired	
Low Flow Maintenance	Number of Impaired Segments	
Strahler Stream Order	Specialized Agricultural Practices	
Biotic Community Integrity	Impaired Waters % of Watershed	
Trophic State	Nutrient Impaired Waters % of Watershed	
Stream Density	Sediment Impaired Waters % of Watershed	
Contiguity with Green Infrastructure Corridor		
Proximity to Green Infrastructure Hub		

- d. Workgroup members expressed the desire to maintain flexibility to include state-specific datasets in RPS analyses. So, in a more in-depth analysis, a state could also choose to import state/local datasets for consideration as well.
 - i. Examples of state-specific data to consider that were mentioned by the workgroup include: Mining areas, floodplains/flood risk maps, harmful algal bloom (HAB) data, Karst area, and groundwater watersheds.
- e. RPS allows the user to weight different factors 0-1 based on relative importance. Workgroup members have not used variable weighting in their RPS work. If weighting was explored, it should be done in partnership between EPA and the state with supporting data/reasoning.

Baseline Analysis Limitations

1. Action One overlays socioeconomic, environmental, and 319 funding data to directly compare these datasets within watersheds. This approach limits the ability to capture and understand upstream work that may be benefitting communities downstream. Workgroup members had a few suggestions for addressing this issue including:
 - a. Strahler stream order in a more in-depth analysis - look at order 3 or above as target perennial streams - recognizing 1-3 have sig impact but perhaps 3-5 order stream may have higher impact.
 - b. Floodplain targeting – Map floodplain areas to better understand the range of land targeted that likely expands based on size of order of stream.
 - c. Factor in any load reduction modeling conducted as part of state NPS projects
 - i. Workgroup members also expressed the desire to have access to NRCS EQIP data
2. Limitations in available data
 - a. 319 funding by HUC12: projects may span across multiple HUC12 watersheds. If this is the case, total funding for the project will be allocated equally across watersheds.
 - b. States that put 319 funds in PPGs may not have project dollars fully captured in GRTS, leading to an underrepresentation of 319 funds spent.
 - c. GRTS dollar amounts (appropriation dollars) are skewed by state allocation amounts.
 - d. GRTS project locational data has had increasing quality over time. For example, the accuracy and consistency of GRTS locational data, and their HUC12 co-location, is substantially better over the previous few years versus 2010.
3. Assumption that dollars in a HUC12 watershed provide benefit to a disadvantaged community has high likelihood of being overly optimistic in this level analysis (as noted in Data/Methodology section). Additionally, depending on the types of practices and the pollutant(s) being addressed the work may or may not have positive impact on the DACs within a watershed.
4. Inherent Bias of 319 funds going towards HUC12 where known water quality issues exist, specifically NPS related impairments. If there is a lack of assessment data in a DAC, it is less likely 319 funds would have been allocated there historically.

5. 319 funding levels in urban, MS4 areas may be low. Program guidance prohibits using 319 funds to meet/comply with NPDES permit requirements. 319 funds may be used in MS4 areas if the projects are unassociated with or going above and beyond permit requirements.
6. Scale of demographic data: As noted in the previous section, the initial screening analysis utilized WSIO social indicators, which are available at the HUC12 watershed scale. Examining socioeconomic data at this scale does not provide understanding of the community variability within a watershed. The watershed scale is also broad when screening program investments – practices implemented in one area of a watershed may not have impacts on the entire population of that watershed area.

Future Analysis/Engagement Process

Due to the complexity of this type of analysis, geographic variability in demographic and water quality issues, and the desire for state-specific input that was expressed by the group, we have developed a two-part analysis approach. This methodology includes conducting a broad, national screening analysis in Action One so we may achieve a course understanding of where the program has historically made investments, as well as a plan to conduct more in-depth, state-specific analyses. The goal of Action Two is to address issues of geographic scale (identified previously in the report), incorporate state/local/Tribal level data in identifying DACs, consider and understand ongoing work already occurring in this space at the state/local/Tribal level, and incorporate both water quality and social data in identifying areas of interest for potential future work.

Action One: EPA EJ and Equity Analysis of Historic State 319 Project Funds (completed August 2022)

Action One: EPA EJ and Equity Analysis of Historic State 319 Project Funds: Feb – August 2022. This initial action includes a coarse level, national-scale baseline analysis aimed at exploring the geospatial distribution of state CWA §319 watershed projects.

For this screening analysis, we used [Watershed Index Online](#) (WSIO), which aggregates census data from the block group scale (used in EJScreen) to a HUC12 watershed scale. This step allows for a comparison to NPS program investments which are tracked at the HUC12 scale. Action One is a preliminary analysis and was conducted using a subset of WSIO social indicators to establish a baseline of understanding where program efforts have historically been located.

HUC12 watersheds were selected if they met or exceeded the 80th percentile (assessing nationally) of at least two of the WSIO Social Indicators that are bolded below (those not in bold were not included in Action1).

WSIO Social Indicators:

- **Low income %**
- **Minority %**
- **Linguistically isolated %**
- Vulnerable population %
- Less than HS education %

- Count of mobile home parks per watershed

After identifying watersheds that met the Action One criteria, they were compared to Section 319 state project funding data to determine:

- Number and percent of HUC12 watersheds that met or exceeded the 80th percentile for selected WSIO Social Indicators and have received Section §319 funding.
- Sum of funds and historic percentage of §319 funds geospatially located in HUC12 watersheds that meet or exceed the 80th percentile for selected WSIO Social Indicators

Results from this analysis indicate that approximately 29 percent of state §319 watershed project funds (FY2011-2021) have supported NPS work in watersheds that met Action One criteria.

This analysis serves as both a preliminary screening and point of reference for discussion with state NPS programs. Discussions with the Baseline Analysis Workgroup indicate the need for a fuller assessment of state-specific NPS and public health issues, which will be conducted under Action Two.

Action Two: State-level Screening Pilot Project (FY23)

Action Two: State-level Screening Pilot Projects will include more complex state-specific water quality, public health, and demographic variables. Beginning in FY23, EPA will work with 5-10 interested states to use the Recovery Potential Screening (RPS) tool as well as state/local/Tribal water quality, public health, and demographic data. This methodology will sharpen the screening approach to capture watersheds that include DACs and identify nonpoint source and water quality-related public health concerns.

This information will be examined at a sub watershed scale to better understand where DACs are located within watersheds (potentially using the EJScreen Supplementary EJ Index and/or state/local/Tribal socioeconomic/demographic data). If a state has existing, or is developing, EJ criteria, that may also be included.

The results and lessons from the Action Two analysis will identify watersheds that include DACs while allowing for the consideration and exploration of both water quality and socioeconomic/demographic data.

Watersheds identified in ActionTwo can be used when tracking 319 efforts related to equity and inclusion. Action Two data can also be examined at the state level to understand potential barriers to Section 319 investment in DACs. EPA will work with state NPS programs to address barriers to program implementation.

States interested in participating in the Action Two analysis should contact Ellie Flaherty at Flaherty.Ellie@epa.gov