



**Chesapeake Bay Program**  
*Science. Restoration. Partnership.*

April 8, 2024

# **Healthy Watersheds GIT**

## **B25 Healthy Watersheds Recommendations**

# Credits

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A special thanks to:

- Katie Brownson, USFS
- Sherri Degraphenreed, NRCS
- Kevin DuBois, DOD
- KC Filipino, HRPDC
- Ken Hyer, USGS
- Bill Jenkins, EPA
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- Jill Whitcomb, PA DEP
- Jason Dubow, MDP
- Kristin Saunders, UMCES
- Peter Claggett, USGS
- Sophie Waterman, CRC

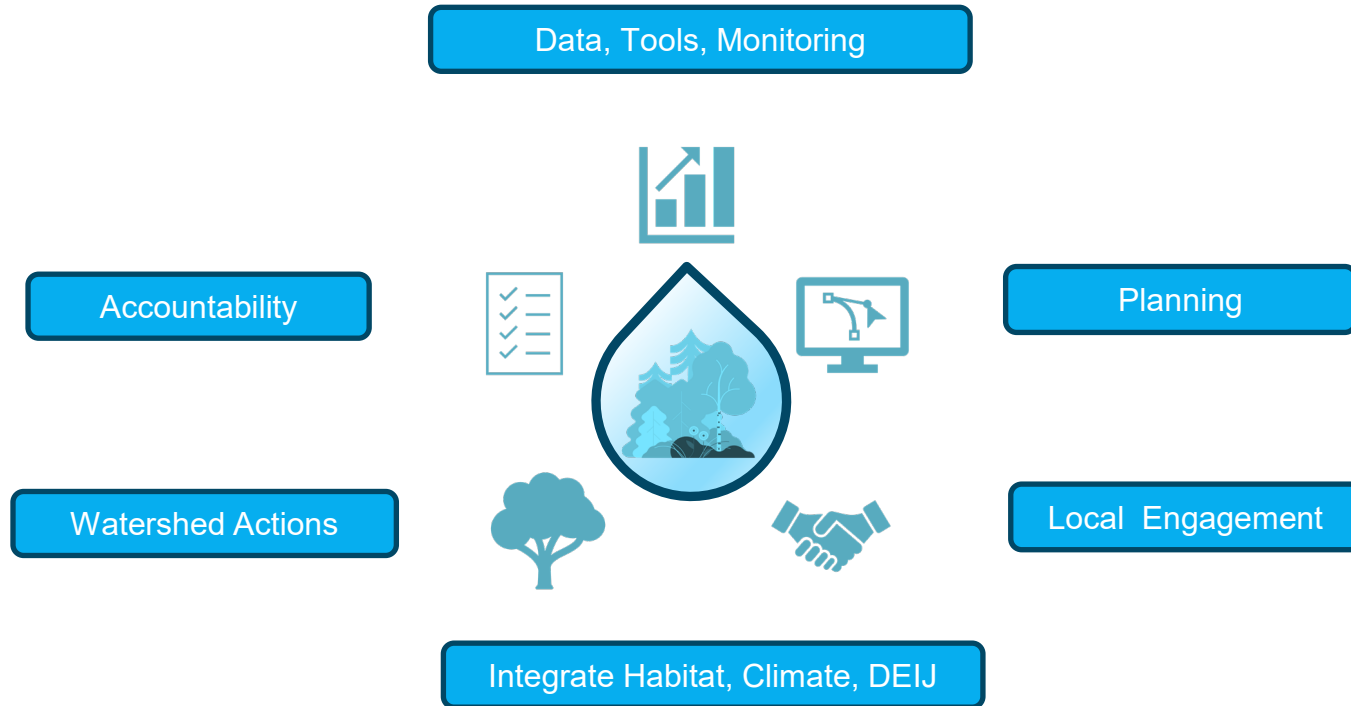




# Vanguard Idea

Integrate a more holistic and people-centric approach to improving and maintaining watershed health as a foundational goal of the partnership

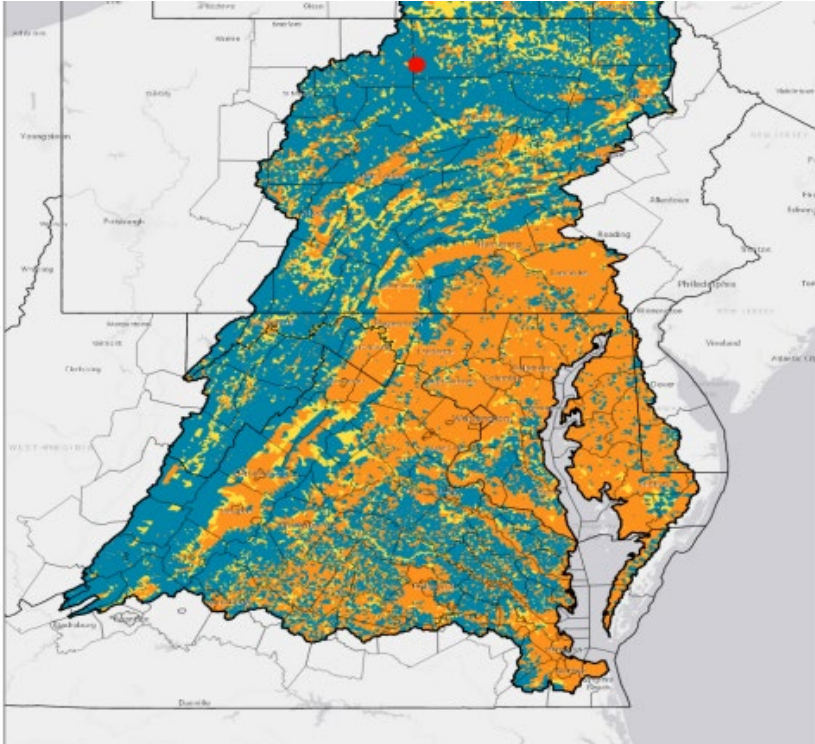
# Moving towards healthy watersheds



# Data, Tools and Monitoring

## CHWA

- Stream Health
- Landscape Integrity



### Watershed Health Metrics

#### Landscape Condition

|  |         |
|--|---------|
| % Tree Cover in Riparian 2017/18 Catchment                       | 99.96%  |
| % Tree Cover in Riparian 2017/18 Watershed                       | 99.96%  |
| Housing Unit Density 2020 Catchment (units/mi <sup>2</sup> , km) | 0       |
| Housing Unit Density 2020 Watershed (units/mi <sup>2</sup> , km) | 0       |
| Population Density 2020 Catchment (people/mi <sup>2</sup> , km)  | <0.01   |
| Population Density 2020 Watershed (people/mi <sup>2</sup> , km)  | 0       |
| % Extractive 2017/18 Catchment                                   | 0.00%   |
| % Extractive 2017/18 Watershed                                   | 0.00%   |
| % Forested Extent Loss to Development 2001-2013 Catchment        | 0.00%   |
| % Forested Extent Loss to Development 2001-2013 Watershed        | 0.00%   |
| % Impervious Cover 2017/18 Catchment                             | 0.10%   |
| % Impervious Cover 2017/18 Watershed                             | 0.10%   |
| % Natural Land in Riparian 2017/18 Catchment                     | 100.00% |
| % Natural Land in Riparian 2017/18 Watershed                     | 100.00% |
| % Protected Lands Catchment                                      | 100.00% |
| % Protected Lands Watershed                                      | 100.00% |
| % Agriculture 2017/18 Catchment                                  | 0.00%   |
| % Agriculture 2017/18 Watershed                                  | 0.00%   |

#### Geomorphology

|  |       |
|--|-------|
| Streambed Fine Sediment and Sand Cover Catchment                                 | 3.19  |
| Streambed Particle Size D50 Catchment  | 85    |
| Streambank Sediment Flux Catchment (kg/acre m <sup>1</sup> y <sup>1</sup> )      | <0.01 |
| Streambank Lateral Erosion Catchment (kg/acre m <sup>1</sup> y <sup>1</sup> )    | <0.01 |
| Streambank Fine Sediment Flux Catchment (kg/acre m <sup>1</sup> y <sup>1</sup> ) | <0.01 |
| Streambank Erosion Change Catchment  | <0.01 |
| Road Density Riparian Catchment (miles, km)                                      | <0.01 |
| Road Density Riparian Watershed (miles, km)                                      | <0.01 |
| Road Density Watershed (miles, km)   | <0.01 |
| Road Density Riparian Watershed (miles, km)                                      | <0.01 |

#### Habitat

|  |        |
|--|--------|
| Nature's Network Connectivity Catchment                  | 99.00% |
| Fish Habitat Condition Index (Catchment)                 | 5      |
| Fish Habitat Condition Index Cumulative                  | 4      |
| Fish Habitat Condition Index Network (Watershed)         | 4      |
| % Tree Cover with Unmanaged Understory 2017/18 Catchment | 92.00% |
| % Tree Cover with Unmanaged Understory 2017/18 Watershed | 92.00% |

#### Hydrology

|   |       |
|---|-------|
| % Tree Canopy with Managed Understory 2017/18 Catchment | 0.00% |
| % Tree Canopy with Managed Understory 2017/18 Watershed | 0.00% |
| % Non-forested Wetlands 2017/18 Catchment (miles, km)   | 0     |
| % Non-forested Wetlands 2017/18 Watershed (miles, km)   | 0     |
| Road Stream Crossing Density Watershed (miles, km)      | 0     |
| FlowAlteration  | 0     |

#### Water Quality

|   |       |
|---|-------|
| % Impaired Stream Catchment   | 0.00% |
| Incremental suspended-sediment load from streambank erosion (kilograms/y)               | 28.88 |
| Incremental total nitrogen load from manure applications (kg/y)                         | 0     |
| Incremental total nitrogen load from fertilizer applications (kg/y)                     | 0.54  |
| Incremental total nitrogen load from septic system effluent (kg/y)                      | 8.81  |
| Incremental total nitrogen load from wastewater treatment facility point sources (kg/y) | 0     |
| Incremental total phosphorus load from manure applications (kg/y)                       | 0     |

### Watershed Vulnerability Metrics

#### Land Use Change

|  |       |
|--|-------|
| Housing Unit Density Change Catchment                              | 0     |
| Housing Unit Density Change Watershed                              | 0     |
| % Non-forested Wetland Conversion to Development 2013-18 Catchment | 0.00% |
| % Non-forested Wetland Conversion to Development 2013-18 Watershed | 0.00% |
| % Forest Harvesting 2013-18 Catchment                              | 0.00% |
| % Forest Harvesting 2013-18 Watershed                              | 0.00% |
| % Change in Impervious Cover 2013-18 Catchment                     | 0.00% |
| % Change in Impervious Cover 2013-18 Watershed                     | 0.00% |
| % Change in Forested Extent 2013-18 Catchment                      | 0.03% |
| % Change in Forested Extent 2013-18 Watershed                      | 0.03% |
| % Impervious Projected to 2055 Catchment                           | 0.00% |

#### Wildfire

|                                     |       |
|-------------------------------------|-------|
| % Wetland Urban Interface Catchment | 0.00% |
| % Wetland Urban Interface Watershed | 0.00% |

#### Climate Change

|  |        |
|--|--------|
| Probability of Brook Trout (current)                   | 100    |
| Probability of Brook Trout (2-degree Celsius increase) | 100    |
| Probability of Brook Trout (4-degree Celsius increase) | 99     |
| Probability of Brook Trout (6-degree Celsius increase) | 97     |
| Climate Stress Catchment                               | 95     |
| % Resilient Lands Catchment                            | 91.00% |

#### Water Use

|                       |      |
|-----------------------|------|
| Domestic Water Use    | 2.42 |
| Industrial Water Use  | 1.68 |
| Agriculture Water Use | 0.05 |

<https://gis.chesapeakebay.net/chwa/?page=Overall>

# Planning

Many scales: Local, Regional, State, Basin-wide

Green Infrastructure Concepts

Integrate into existing plans

State Plans

- Wildlife (SWAPs)
- Forests (SFAPs)
- Recreation (SCORPs)
- Water (Nonpoint Source Plans)



# Community and Partner Engagement

**DE Grant Assistance Program**

**D.C. City Council, COG, DOEE**

**MD Sea Grant watershed restoration specialists**

**NY Regional Economic Development Organizations**

**PA Community Clean Water Action Plan Coordinators**

**VA Assoc. of Planning District Commissions**

**WV Regional Planning Councils**

## Circuit Riders/Coordinators

- **Facilitation**
- **Communication**
- **Planning**
- **Funding/Finance**
- **Project Management**
- **Watershed Action**
- **Tracking**

### Progress Through Partnerships

On October 11, 2023, DEP's Bureau of Watershed Restoration and Nonpoint Source Management (BWRNSM) hosted the first Clean Water Gathering of State Program Action Leaders and Countywide Action Planning (CAP) leaders. Over 80 partners, representing county, state and federal organizations, came together to celebrate successes and discuss high level needs, issues and challenges to continued progress. BWRNSM's Chesapeake Bay Watershed Restoration Division is using the recommendations from this meeting to build collaborative county/state partner Progress Teams that focus on "Strategies for Success" that address challenges and build on successes from Phase 3 WIP and CAP efforts.





# Watershed Actions

- Land Protection
- Stewardship
- Restoration





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# Measuring Watershed Outcomes

- Prevention of pollution
- Habitat for Living Resources
- Condition of Living Resources
- Thresholds for impervious surface or forest cover
- Stewardship of our investments



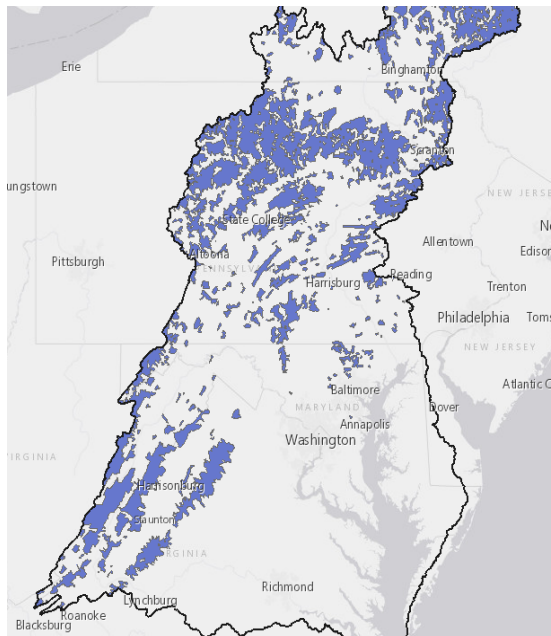
- Pollution reduction (N, P, S)
- Count Practices
- WIPs designed for TMDL

Shift toward counting outcomes rather than practices

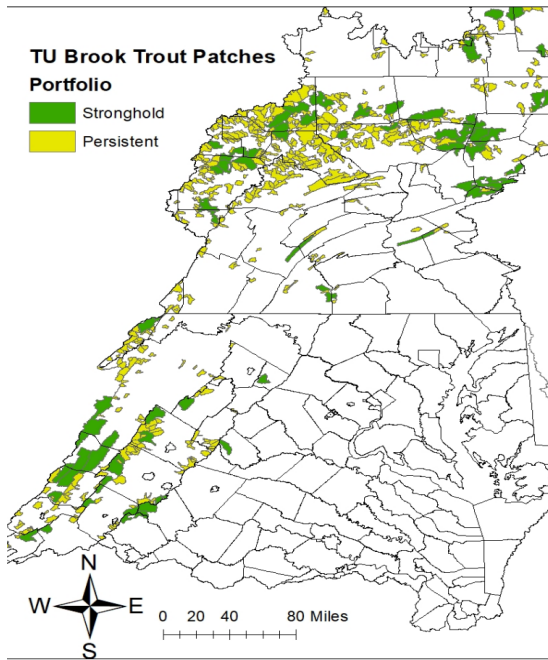
# Integration



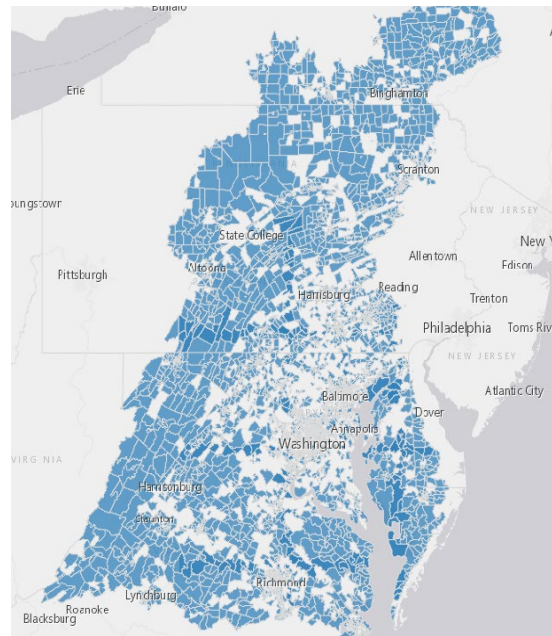
Brook Trout



Habitat



Climate



EJ

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# Recommendations

- 1. Data, Tools and Monitoring – Characterize Watershed Health**
- 2. Planning – Green Infrastructure at multiple scales**
- 3. Community Engagement – Capacity for coordinators**
- 4. Watershed Actions – Accelerate and elevate**
  - Land Conservation
  - Stewardship
  - Restoration
- 5. Measuring Outcomes – Outcomes vs. Outputs**

Integrate Habitat, Climate and DEIJ into above recommendations.

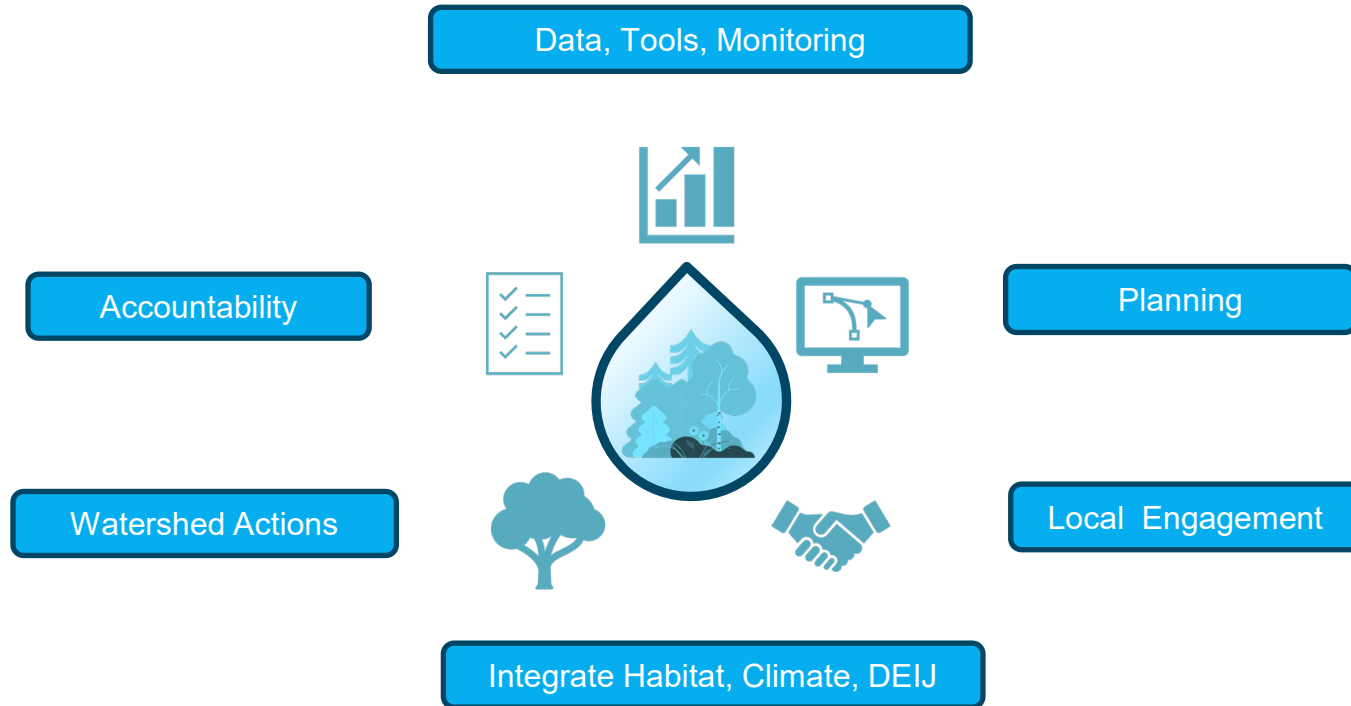
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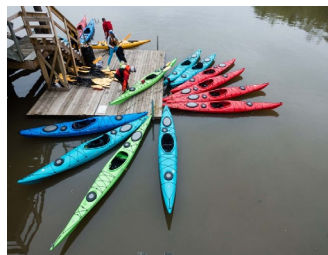
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“

*“Chesapeake Bay Program partners envision an environmentally and economically sustainable Chesapeake Bay watershed with clean water, abundant life, conserved lands and access to the water, a vibrant cultural heritage, and a diversity of engaged stakeholders.”*

# Moving towards healthy watersheds





# Thank you!

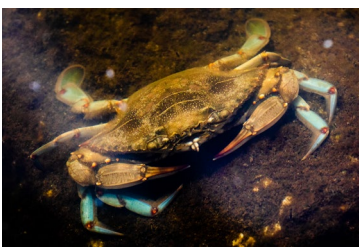
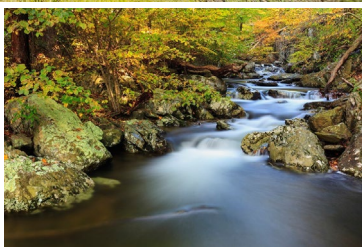
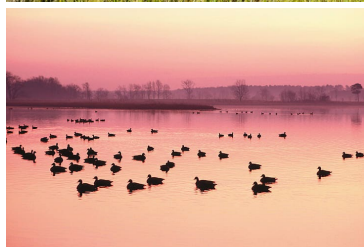
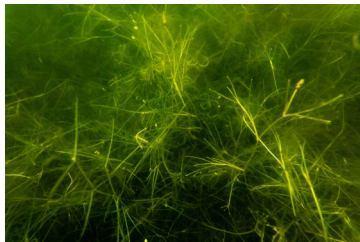
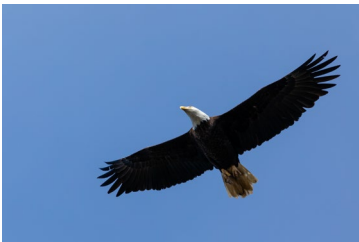
Any questions? Jeff Lerner, HWGIT chair  
You can contact me at [lerner.jeffrey@epa.gov](mailto:lerner.jeffrey@epa.gov)



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# **Extra Slides**



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# Other Comprehensive Plans

**Great Lakes** has a 5 year action plan and are in the process of developing their next one to start in 2025. In the current 30 page plan there are 5 focus areas:

1. Toxic Substances
2. Invasive Species
3. Nonpoint Source Pollution Impacts on Nearshore Health
4. Habitat and Species
5. Foundations for Future Restoration Actions

<https://glri.us/documents>

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# Other Comprehensive Plans

**Puget Sound** completed a 5 year action plan in 2022. The 15 page plan includes 5 priority actions and a larger appendix.

1. Cross Cutting Actions
2. Habitat
3. Stormwater
4. Shellfish
5. Science and Monitoring

<https://www.psp.wa.gov/2022AAupdate.php>

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# Other Comprehensive Plans

**Long Island Sound** made a 5 year update to their Comprehensive Conservation and Management Plan (CCMP) in 2020. The 17 page document includes 4 key themes:

1. Clean Waters and Healthy Watersheds
  2. Thriving and Abundant Wildlife
  3. Sustainable and Resilient Economies
  4. Sound Science and Inclusive Management
5. The more complete Long Island CCMP was created in 2015 and is about 50 pages plus appendices.

[https://longislandsoundstudy.net/wp-content/uploads/2015/09/CCMP\\_LowRes\\_Hyperlink\\_singles.pdf](https://longislandsoundstudy.net/wp-content/uploads/2015/09/CCMP_LowRes_Hyperlink_singles.pdf)

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