

# Talking about the Effects of Climate Change in the Water Quality Context

Based on responses in the 2022 training workshop jurisdictional registration forms

## Insufficient Water

- Drier climates (SUIT)
- Drought (BPT, CPN, FdL, Guam, HI, ME, MBMI, NV, NJ, UT)
  - o Drought resiliency and mitigation (MT)
- Low flow / reduced streamflow (CPN, CO, EVR, HI, NV, NM, SSN, SUIT, SIR)
  - o Reduced late season stream flow (MT)
  - o Decreased summer flows (WA)
  - o Reduced critical flow (SC)
- “Formerly perennial stream” (AZ)
  - o Perennial versus intermittent designation (NM)
- Wetlands
  - o Dry wetland (EVR)
  - o Low water levels at wetlands (SSN)
- Springs drying up (SSN)
- Snowpack declines (WA)
- Water withdrawal impacts (ME)
- Floodplain/natural water storage (MT)

## Storms and Flooding

- The frequency of heavy rainfall
  - o Heavy stream flow (AS)
  - o High flow events and effects on nutrient loading (MO)
- Increased runoff / erosion (CNMI, ME, OH, PA)
  - o Turbidity (AS)
  - o Scouring (KS)
- Increased precipitation (OH)
- Flooding (CNMI, FdL, MD)
  - o “Nuisance flooding” (FL)
  - o “Sunny day flooding” (NC)
  - o More contamination associated with flooding (PA)
- More intense / extreme storms (GTB, Guam, ME, MO, NJ)
  - o “Rain bombs” (NC)
  - o More intense summer storms (OH)

## Air and Water Temperature

- Stream temperature (ID, ME, MBMI, NV, NJ, PA, SUIT, WA)
  - o Documenting the changes (AK)
  - o Next steps (AK)
  - o Impacts to wildlife (CO)
  - o Trout stream temperature assessments (NC)
- Warming (VT)
- Sea surface temperature (Guam)
- Changes in ice-in and ice-out dates (ME)

## **Habitat and Species**

- Habitat deficiency (KS)
- Coral reef and marine life
  - o Affected by turbidity (AS)
  - o Bleaching due to water temperatures (CNMI, Guam)
- Water quality impacts associated with increased wildlife activity (CO)
- Invasive / nuisance species
  - o Crown of thorns starfish outbreaks (CNMI)
- Effects on sensitive systems or species like wild rice, boreal wetlands and brook trout (FdL)
- Losing cool and cold-water streams species (PBP)
- Degrade or eliminate habitat for salmonids (WA)
- Cold water refugia (AK)
- Loss of oxythermal habitat (RLB)
- Increased chlorophyll / algal blooms (GA, ID, PA, WA)
- Higher frequencies of bacterial contamination (PA)
- Reductions in stream flow resulting in anoxic conditions (RLB)

## **Sea Level Rise (AS, CNMI, DE, FL, Guam, WA)**

- “King tides” (FL)
- Increased high wave action along coastal areas (HI)
- Increased coastal erosion (WA)
- Changes in specific conductance and salinity (FL)
- Changes to marine/freshwater boundaries (FL)
- Saltwater encroachment / contamination (FL, Guam, NJ)

## **Cultural, Societal, and Economic**

- Losing culturally significant resources (FdL)
- Migration (FdL)
- Longer growing seasons (MI)
- Impacting the recreational economy

## **Infrastructure**

- Increased precipitation events causing culvert failure and road washouts (GTB)
- Water supply infrastructure will be impacted, putting stress on their operation and resulting increased impacts and costs to communities and the economy (NJ)
- Flash flooding resulting in runoff issues and infrastructure failures (PBP)
- Increased fire risk (MBMI)

## **General**

- Extreme events (CO)
- Impacts to hydrology (FdL)
- Trends in / impacts to streamflow (KS, LA)
- Climate adaptation (FdL, MD, MN)
- Adaptive management (MA, WA)
- Climate resiliency (MD, MN, TN)
- “Climate change is water change” (MD)
- Climate variability (ND, UT)