Appendix C: State Profile Sheets

This appendix provides an overview of the results of a review of U.S states' post-construction stormwater standards. Each one-page profile sheet provides an overview of the standards, how each state ranked in terms of vulnerability to stormwater-related climate impacts and readiness to adapt stormwater standards, and a list of the top five recommendations for improvement. Click on your state to see the results.

Alabama	Kentucky	North Dakota
Alaska	Louisiana	Ohio
Arizona	Maine	Oklahoma
Arkansas	Maryland	Oregon
California	Massachusetts	Pennsylvania
Colorado	Michigan	Rhode Island
Connecticut	Minnesota	South Carolina
Delaware	Mississippi	South Dakota
District of Columbia	Missouri	Tennessee
Florida	Montana	Texas
Georgia	Nebraska	Utah
Hawaii	Nevada	Vermont
Idaho	New Hampshire	Virginia
Illinois	New Jersey	Washington
Indiana	New Mexico	West Virginia
Iowa	New York	Wisconsin
Kansas	North Carolina	Wyoming

STATE STORMWATER STANDARDS

ALABAMA

STATE STORMWATER MANUAL? Yes
Updated 2018

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS
Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS
None

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY High

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Ensure that practices are resistant to erosion. Methods include prescribing non-erosive storm events, providing detention at the inlet, or designing practices off-line.

STATE STORMWATER STANDARDS

ALASKA

STATE STORMWATER MANUAL? Yes
Updated 2011

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
TP-47 with the note that it this storm data resource needs a critical update

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

ARIZONA

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

ARKANSAS

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- [x] Statewide
- [ ] MS4
- [x] New Development
- [x] Redevelopment

STORMWATER GOALS

- [x] Flood Control
- [ ] Channel Protection
- [x] Water Quality
- [ ] Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

Traditional target pollutant (e.g., 80% TP Removal presumed)

GREEN STORMWATER PRACTICES

- [ ] Green Infrastructure Practices
- [ ] Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

CALIFORNIA

STATE STORMWATER MANUAL? Yes
Updated 2021

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
No Specific Storm

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

Provide guidance on how to modify plant selections based on changing climate conditions, including fire-resistant and drought-tolerant species.

Set specific goals for rainwater harvesting and incorporate design details for sizing of the systems.

Bioretention designs should incorporate methods to retain soil moisture such as internal water storage, or incorporating adding polymers or biochar to the media to retain soil moisture.

Review BMP materials and plantings to reduce carbon footprint and accommodate future climate change.

STATE STORMWATER STANDARDS

COLORADO

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

CONNECTICUT

STATE STORMWATER MANUAL? Yes
Updated 2023

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

When siting stormwater BMPs, consider changes in floodplain and groundwater rise due to climate change.

STATE STORMWATER STANDARDS

DELAWARE

STATE STORMWATER MANUAL? Yes
Updated 2019

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- [x] Statewide
- [ ] MS4
- [x] New Development
- [x] Redevelopment

STORMWATER GOALS
- [x] Flood Control
- [x] Channel Protection
- [x] Water Quality
- [x] Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Unknown or not identified

QUALITY STORMS
1-year

GREEN STORMWATER PRACTICES
- [x] Green Infrastructure Practices
- [ ] Low Impact Development

VULNERABILITY — High

Land Development	●●●
High Precipitation	●●●
Drought	●●●
Sea Level Rise	●●●
Temperature	●●●

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS — Medium

Modern Manual	●●●●
High Precipitation	●●●●
Drought	●●●●
Sea Level Rise	●●●●
Temperature	●●●●

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

DISTRICT OF COLUMBIA

STATE STORMWATER MANUAL? Yes

Updated 2020

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS

Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS

90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES

- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

FLORIDA

STATE STORMWATER MANUAL? Yes
Updated 2016

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- [x] Statewide
- [ ] MS4
- [x] New Development
- [x] Redevelopment

STORMWATER GOALS
- [x] Flood Control
- [x] Channel Protection
- [x] Water Quality
- [ ] Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
TP 40 or TP 49

QUALITY STORMS
Varies by District. Often First Flush or 90th Percentile.

GREEN STORMWATER PRACTICES
- [ ] Green Infrastructure Practices
- [ ] Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Include a plant list that identifies plant tolerances to drought, differing soil conditions, salt tolerance and inundation.

STATE STORMWATER STANDARDS

GEORGIA

STATE STORMWATER MANUAL? Yes
Updated 2016

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

Add a section in the standards to include approaches and techniques that reduce the impact of sea level rise on stormwater practices, such as increasing conveyance capacity and elevating outfall inverts.

STATE STORMWATER STANDARDS

HAWAII

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☑ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — Medium

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS — Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

IDAHO

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Low

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

ILLINOIS

STATE STORMWATER MANUAL? Yes
Updated 2020

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS
Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS
None

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — High

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS — Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Ensure that practices are resistant to erosion. Methods include prescribing non-erosive storm events, providing detention at the inlet, or designing practices off-line.

Expand permit coverage by applying standards to redevelopment, smaller sites, or outside of MS4 areas.

STATE STORMWATER STANDARDS

INDIANA

STATE STORMWATER MANUAL? Yes

Updated 2007

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Ensure that practices are resistant to erosion. Methods include prescribing non-erosive storm events, providing detention at the inlet, or designing practices off-line.

STATE STORMWATER STANDARDS

IOWA

STATE STORMWATER MANUAL? Yes
Updated 2023

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
Achieve Woods in Good Condition or Equivalent

GREEN STORMWATER PRACTICES
- ☐ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

KANSAS

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

KENTUCKY

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☑ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

LOUISIANA

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☐ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

MAINE

STATE STORMWATER MANUAL? Yes

Updated 2016

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS

90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES

- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Include a plant list that identifies plant tolerances to drought, differing soil conditions, salt tolerance and inundation.

Incorporate pretreatment, maintenance requirements, evaluation methods and schedule into the design standards.

STATE STORMWATER STANDARDS

MARYLAND

STATE STORMWATER MANUAL? Yes
Updated 2009

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
TP-40 (pre-Atlas 14)

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

MASSACHUSETTS

STATE STORMWATER MANUAL? Yes
Updated 2008

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- [x] Statewide
- [ ] MS4
- [x] New Development
- [x] Redevelopment

STORMWATER GOALS
- [x] Flood Control
- [ ] Channel Protection
- [x] Water Quality
- [x] Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Unknown or not identified

QUALITY STORMS
A short duration storm event (e.g., 5-yr,1-hr)

GREEN STORMWATER PRACTICES
- [x] Green Infrastructure Practices
- [x] Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

MICHIGAN

STATE STORMWATER MANUAL? Yes
Updated 2023

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
TP-40 (pre-Atlas 14)

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Ensure that practices are resistant to erosion. Methods include prescribing non-erosive storm events, providing detention at the inlet, or designing practices off-line.

Expand permit coverage by applying standards to redevelopment, smaller sites, or outside of MS4 areas.

STATE STORMWATER STANDARDS

MINNESOTA

STATE STORMWATER MANUAL? Yes
Updated 2023

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

When siting stormwater BMPs, consider changes in floodplain and groundwater rise due to climate change.

STATE STORMWATER STANDARDS

MISSISSIPPI

STATE STORMWATER MANUAL? Yes
Updated 2011

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — High

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS — Medium

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Include a plant list that identifies plant tolerances to drought, differing soil conditions, salt tolerance and inundation.

Add a section in the standards to include approaches and techniques that reduce the impact of sea level rise on stormwater practices, such as increasing conveyance capacity and elevating outfall inverts.

STATE STORMWATER STANDARDS

MISSOURI

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

Traditional target pollutant (e.g., 80% TP Removal presumed)

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — High

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS — Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

MONTANA

STATE STORMWATER MANUAL? Yes
Updated 2017

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS
None

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY Low

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Include a plant list that identifies plant tolerances to drought, differing soil conditions, salt tolerance and inundation.

Expand permit coverage by applying standards to redevelopment, smaller sites, or outside of MS4 areas.

STATE STORMWATER STANDARDS

NEBRASKA

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Low

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

NEVADA

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

Depth to achieve 80% Capture

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

NEW HAMPSHIRE

STATE STORMWATER MANUAL? Yes
Updated 2008

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
TP-40 (pre-Atlas 14)

QUALITY STORMS
Traditional target pollutant (e.g., 80% TP Removal presumed)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

NEW JERSEY

STATE STORMWATER MANUAL? Yes
Updated 2023

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed with Future storm to Pre-Developed with Current Storm

Storm Source:
Downscaled or Projected Data

QUALITY STORMS
A short duration storm event (e.g., 5-yr,1-hr)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

When siting stormwater BMPs, consider changes in floodplain and groundwater rise due to climate change.

Incorporate advanced techniques such as Smart BMPs to provide long-term adaptability.

Review BMP materials and plantings to reduce carbon footprint and accommodate future climate change.

Add a section in the standards to include approaches and techniques that reduce the impact of sea level rise on stormwater practices, such as increasing conveyance capacity and elevating outfall inverts.

STATE STORMWATER STANDARDS

NEW MEXICO

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

NEW YORK

STATE STORMWATER MANUAL? Yes
Updated 2022

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

NORTH CAROLINA

STATE STORMWATER MANUAL? Yes
Updated 2023

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS
Goal:
No goal identified

Storm Source:
Atlas 14

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Ensure that practices are resistant to erosion. Methods include prescribing non-erosive storm events, providing detention at the inlet, or designing practices off-line.

Add a section in the standards to include approaches and techniques that reduce the impact of sea level rise on stormwater practices, such as increasing conveyance capacity and elevating outfall inverts.

STATE STORMWATER STANDARDS

NORTH DAKOTA

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☐ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — Low

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

OHIO

STATE STORMWATER MANUAL? Yes

Updated 2023

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- [x] Statewide
- [ ] MS4
- [x] New Development
- [x] Redevelopment

STORMWATER GOALS

- [x] Flood Control
- [ ] Channel Protection
- [ ] Water Quality
- [ ] Runoff Reduction

QUANTITY STORMS

Goal:
Other. Critical Storm Identification

Storm Source:
Atlas 14

QUALITY STORMS

90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES

- [x] Green Infrastructure Practices
- [x] Low Impact Development

VULNERABILITY Medium

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

When siting stormwater BMPs, consider changes in floodplain and groundwater rise due to climate change.

STATE STORMWATER STANDARDS

OKLAHOMA

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☑ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — High

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS — Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

OREGON

STATE STORMWATER MANUAL? Yes
Updated 2016

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 2, but with more recent analyses in some cities.

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Low

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Expand permit coverage by applying standards to redevelopment, smaller sites, or outside of MS4 areas.

STATE STORMWATER STANDARDS

PENNSYLVANIA

STATE STORMWATER MANUAL? Yes
Updated 2023

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14+ (add depth as a factor of safety)

QUALITY STORMS
Water Quality Target based on long-term modeling or curves.

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

When siting stormwater BMPs, consider changes in floodplain and groundwater rise due to climate change.

Incorporate advanced techniques such as Smart BMPs to provide long-term adaptability.

STATE STORMWATER STANDARDS

RHODE ISLAND

STATE STORMWATER MANUAL? Yes
Updated 2015

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Lists values from precip.net (Northeast Regional Climate Center)

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

SOUTH CAROLINA

STATE STORMWATER MANUAL? Yes
Updated 2005

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
Traditional target pollutant (e.g., 80% TP Removal presumed)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY High

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Include a plant list that identifies plant tolerances to drought, differing soil conditions, salt tolerance and inundation.

Incorporate pretreatment, maintenance requirements, evaluation methods and schedule into the design standards.

Expand permit coverage by applying standards to redevelopment, smaller sites, or outside of MS4 areas.

STATE STORMWATER STANDARDS

SOUTH DAKOTA

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — Low

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

TENNESSEE

STATE STORMWATER MANUAL? Yes
Updated 2015

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
1-year

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Expand permit coverage by applying standards to redevelopment, smaller sites, or outside of MS4 areas.

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

STATE STORMWATER STANDARDS

TEXAS

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — High

Land Development	●●●
High Precipitation	●●●
Drought	●●●
Sea Level Rise	●●●
Temperature	●●●

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS — Low

Modern Manual	●●●
High Precipitation	●●●
Drought	●●●
Sea Level Rise	●●●
Temperature	●●●

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

STATE STORMWATER STANDARDS

UTAH

STATE STORMWATER MANUAL? Yes

Updated 2020

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☑ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

80th Percentile Storm

GREEN STORMWATER PRACTICES

- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY Medium

Land Development	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.

READINESS Low

Modern Manual	
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

The extent to which state stormwater standards include modern elements and address climate change impacts.

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Ensure that practices are resistant to erosion. Methods include prescribing non-erosive storm events, providing detention at the inlet, or designing practices off-line.

Expand permit coverage by applying standards to redevelopment, smaller sites, or outside of MS4 areas.

STATE STORMWATER STANDARDS

VERMONT

STATE STORMWATER MANUAL? Yes
Updated 2017

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

STATE STORMWATER STANDARDS

VIRGINIA

STATE STORMWATER MANUAL? Yes
Updated 2013

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☑ Statewide
- ☐ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
Atlas 14

QUALITY STORMS
90th Percentile (often about 1 inch)

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — High

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Revise stormwater quantity sizing to either over-control the storm event or match a historic peak discharge.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Add a section in the standards to include approaches and techniques that reduce the impact of sea level rise on stormwater practices, such as increasing conveyance capacity and elevating outfall inverts.

STATE STORMWATER STANDARDS

WASHINGTON

STATE STORMWATER MANUAL? Yes
Updated 2019

REFERENCES CLIMATE CHANGE? Yes

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
No goal identified

Storm Source:
Downscaled or Projected Data

QUALITY STORMS
Water Quality Target based on long-term modeling or curves.

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Low

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

When siting stormwater BMPs, consider changes in floodplain and groundwater rise due to climate change.

Incorporate advanced techniques such as Smart BMPs to provide long-term adaptability.

Review BMP materials and plantings to reduce carbon footprint and accommodate future climate change.

STATE STORMWATER STANDARDS

WEST VIRGINIA

STATE STORMWATER MANUAL? Yes
Updated 2012

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☑ Redevelopment

STORMWATER GOALS
- ☑ Flood Control
- ☑ Channel Protection
- ☑ Water Quality
- ☑ Runoff Reduction

QUANTITY STORMS
Goal:
No goal identified

Storm Source:
Atlas 14

QUALITY STORMS
1-year

GREEN STORMWATER PRACTICES
- ☑ Green Infrastructure Practices
- ☑ Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Medium

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Add a section that discusses climate change and recommends specific adaptation measures.

For water quantity sizing, incorporate projected storm data or other options that account for increased storm depths. Ensure the precipitation data are referenced to their source.

Provide a factor of safety for conveying the water quality storm, by assuming a greater peak discharge, or providing additional freeboard.

Enhance ponding depth, storage design and filter media specifications in filtering/ bioretention systems to accommodate increasing storm intensities.

When siting stormwater BMPs, consider changes in floodplain and groundwater rise due to climate change.

STATE STORMWATER STANDARDS

WISCONSIN

STATE STORMWATER MANUAL? Yes
Updated 2022

REFERENCES CLIMATE CHANGE? No

APPLICABILITY
- [x] Statewide
- [ ] MS4
- [x] New Development
- [x] Redevelopment

STORMWATER GOALS
- [x] Flood Control
- [ ] Channel Protection
- [x] Water Quality
- [ ] Runoff Reduction

QUANTITY STORMS
Goal:
Match Post-Developed to Pre-Developed conditions

Storm Source:
TP-40 permitted/Atlas 14 recommended

QUALITY STORMS
Size to achieve 90% of pre-developed annual infiltration.

GREEN STORMWATER PRACTICES
- [x] Green Infrastructure Practices
- [x] Low Impact Development

VULNERABILITY — Medium

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.

Include a plant list that identifies plant tolerances to drought, differing soil conditions, salt tolerance and inundation.

STATE STORMWATER STANDARDS

WYOMING

STATE STORMWATER MANUAL? No

REFERENCES CLIMATE CHANGE? No

APPLICABILITY

- ☐ Statewide
- ☑ MS4
- ☑ New Development
- ☐ Redevelopment

STORMWATER GOALS

- ☑ Flood Control
- ☐ Channel Protection
- ☐ Water Quality
- ☐ Runoff Reduction

QUANTITY STORMS

Goal:
No goal identified

Storm Source:
Unknown or not identified

QUALITY STORMS

None

GREEN STORMWATER PRACTICES

- ☐ Green Infrastructure Practices
- ☐ Low Impact Development

VULNERABILITY — Low

Land Development	The extent to which expected climate changes and future land development leaves the state vulnerable to impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

READINESS — Low

Modern Manual	The extent to which state stormwater standards include modern elements and address climate change impacts.
High Precipitation	
Drought	
Sea Level Rise	
Temperature	

PRIORITY RECOMMENDATIONS

Revise or update stormwater standards to include specific design criteria and a list of acceptable practices.

Incorporate unified sizing criteria to address water quality, water quantity, channel protection and runoff reduction.

Update design storms to reference the most recent available storm data.

Provide treatment credits or requirements to implement green infrastructure.

Encourage redevelopment, impervious cover reduction, natural area conservation and tree protection and planting.