



Theme 3: Characterize land use and change to assess the vulnerability and resiliency of vital lands and healthy watersheds.

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Healthy Watershed Goal Implementation Meeting

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Vulnerability and Resilience of Streams, Watersheds, and Vital Lands

Fish Health, Habitat, and Aquatic Conditions

Water Chemistry

Physical Structure of Aquatic Habitats

Flow Regime

Toxics and Emerging Contaminants

Sediment Fluxes

Aquatic Communities

Water Temperature

Fish Health and Disease

Coastal Habitats and Waterfowl

Shoreline Erosion and Accretion

Wildlife Habitat and SAV

Avian Disease and Pathogens

Food Resources and Energetics

Watershed and Vital Lands Characteristics

Past, Present, and Future

Landscape Change and Climate Variability

Climate Variability
Precipitation and Temperature

Hydrography
Stream Corridor and Waterbody Characteristics

Land Sub-surface Characteristics
Geology and Soils

Land Surface Characteristics
Land Use, Land Cover, and Landforms

Resource Management
Agricultural, Silvicultural, and Stormwater Management Practices, and Water Use

Human Decisions and Actions

Conservation, Restoration, and Land Use Planning

Adaptive Management

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Adaptive Management

Theme 3: Part A

Improve understanding of land characteristics influencing the vulnerability and resilience of streams, watersheds, habitats, and vital lands.

- **Develop hydrographic and landform datasets relevant to the vulnerability and resilience of streams, watersheds, and vital lands.**
- **Monitor changes in land cover and land use to assess factors affecting the health of streams, watersheds, and vital lands.**
- **Provide land management and BMP data and interpretive/technical support to better understand the effects of land management practices on the health of streams, watersheds, and vital lands.**
- **Forecast changes in land use to assess threats to streams, watersheds, habitats, and vital lands to inform related planning, restoration, and land protection decisions.**



Channel Reach Measures (averages)

- Bank height (m)
- Bank angle, avg (deg)
- Bank angle, max (deg)
- Channel width (m)
- Channel length (m)
- Bankfull area (m²)
- Sinuosisty
- Drainage area (km²)
- Slope (%)
- Floodplain width (m)
- Floodplain elevation, range (m)
- Floodplain elevation, sd (m)



Theme 3: Part B

Characterize current and changing landscape conditions to support analyses of streams, watersheds, habitats, and vital lands.

- **Assess risk factors affecting the health of aquatic communities, watersheds, waterfowl, habitats and vital lands.**
- **Analyze relationships between current and changing watershed characteristics and diagnostic measures of stream health.**
- **Support strategic planning and land protection decisions to protect vital lands.**

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- % Forest Cover
 - % Impervious Cover
 - Landscape Condition Index
 - Hydrology Index
 - Geomorphology Index
 - Habitat Index
 - Biological Condition Index
 - Water Quality Index
 - Vulnerability Indices
 - Land Use Change
 - Water Use
 - Wildfire
 - Climate Change

**Watershed Characteristics
(metrics and indices)**

**Indicators
of
Watershed Health**

- Stream flow alteration
- Stream temperature alteration
- Stream / floodplain connectivity
- Aquatic community composition
- Toxics
- Emerging contaminants
- Fish Diseases
- Bacteria
- Nutrients
- Sediment

**Diagnostic Measures
of Stream Health**



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