

Watershed Stressors, Sources, and Indicators

- **Stressor (Cause):** Physical, chemical, or biological agent within watershed that has potential to change or degrade watershed functions either by acting alone or in conjunction with other stressors. Stressors can generate additional stressors. Watershed function changes can occur to such a degree so as to render the water incapable of supporting some of its functions or uses.
- **Source:** Origin of stressor that releases or imposes stressor into waterbody.
- **Indicator:** Used to measure the impacts associated with stressors. Indicators are quantifiable or subjectively rankable measures that provide a means of evaluating the health of watershed functions.

Table 1– Example sources, stressors, and indicators and associated impacted watershed functions

Source	Potential Stressor	Indicator	Watershed Benefits
Increased impervious surface	<ul style="list-style-type: none"> • Increased peak flow • Eroded stream-banks • Aggregated/degraded streambed • Increased deposition • Reduced deep-water habitat 	<ul style="list-style-type: none"> • Flow/cross-section measurements • Visual survey of stream-banks/channel 	<ul style="list-style-type: none"> • Fish/benthic habitat or community rating • Stream stability/floodplain connection
Contaminants on impervious surface	<ul style="list-style-type: none"> • Increased contaminants (metals, nutrients, fecal coliform) • Increased sediment • Increased algae and bacteria • Lowered dissolved oxygen (DO) 	<ul style="list-style-type: none"> • Metals, Chlorophyll-a, DO, bacteriological, TSS and turbidity measurements • Number of beach closings • Number of fish kills 	<ul style="list-style-type: none"> • Fish/benthic habitat or community rating • Water supply • Recreation
Riparian vegetation removal	<ul style="list-style-type: none"> • Increased temperature • Lowered DO • Increased nutrients and sediment • Weakened/eroded stream-banks 	<ul style="list-style-type: none"> • Temperature, DO, nutrient, TSS and turbidity measurements • Flow and cross section measurements • Visual survey of stream-banks/channel 	<ul style="list-style-type: none"> • Fish/benthic habitat or community rating
Land disturbing activity (construction, agriculture, forestry, mining, etc.)	<ul style="list-style-type: none"> • Increased sediment in water column 	<ul style="list-style-type: none"> • TSS, Turbidity • Number of violations • Number of cattle in stream 	<ul style="list-style-type: none"> • Fish/benthic habitat or community rating • Water supply • Recreation
Fertilized acreage or animal operation too close to water	<ul style="list-style-type: none"> • Excessive nutrients, algae, and bacteria • Lowered DO 	<ul style="list-style-type: none"> • Chlorophyll-a, DO, and Bacteriological Measurements • Number of cattle in stream 	<ul style="list-style-type: none"> • Fish/benthic habitat or community rating • Water supply • Recreation