

# Village of Suttons Bay - Stormwater Action Plan

## Runoff Basics

One of the major pathways by which many types of pollutants get to lakes and streams is through stormwater runoff. Stormwater runoff results when drops of rain fall to the ground, or snow melts, and the resulting water that does not infiltrate into the ground flows over the surface of the land. This runoff often dislodges and carries soil or sediment particles (causing streambank erosion in some places) to which many pollutants are attached. The runoff may also directly move the pollutant itself (i.e., garbage, oils, grease, gas, pesticides, etc.). The amount of stormwater runoff that occurs is dependent upon a variety of conditions including storm intensity and duration, topography, time of year, soil moisture levels, soil permeability, vegetative cover types, the extent of vegetated cover, and the amount of impervious surfaces.



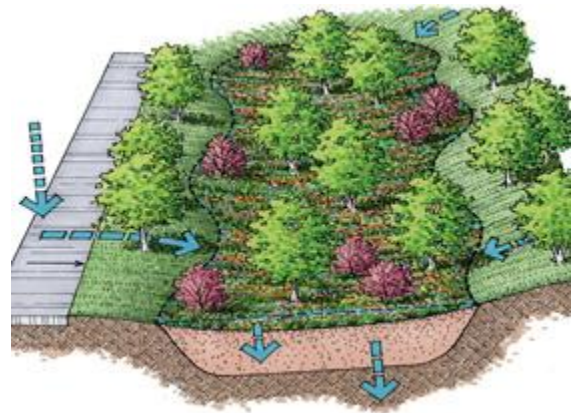
*Road and roof runoff are two sources of stormwater.*

Urban locations, like Traverse City, Elk Rapids, Suttons Bay, and Northport often produce greater amounts of runoff due to the

increased amount of impervious surfaces in these urban areas relative to more rural settings within the watershed. Impervious surfaces are those areas on land that cannot effectively absorb or infiltrate rainfall. Areas such as these may include: roads, streets, sidewalks, parking lots, and rooftops. Runoff entering the Bay and its tributaries from storm drain outlets contributes a significant amount of pollution (there are almost 20 storm drain outlets to Grand Traverse Bay in Traverse City alone). However runoff may also enter waterways through ditches and other overland sources, as well as at road stream crossings. When added up, inputs from all these small inputs of runoff can result in a massive amount of pollution entering Grand Traverse Bay. Most often the pollution is at its worst during heavy rain and snowmelt events.

## Dealing With Runoff

Low Impact Development is a set of small-scale runoff management practices implemented on a site that mimic and work with nature to reduce water runoff and pollutants. LID methods manage water and pollutants at the source, minimizing the impact to ground water, streams, rivers, lakes and coastal waters. The U.S. EPA has found that implementing LID practices saves substantial money for developers, property owners and entire communities, all while improving water quality.



Addressing pollutants with LID runoff practices is of utmost importance in the Grand Traverse region because nutrients and sediments in runoff are the biggest threats to water quality in Grand Traverse Bay and its watershed.

## Project Summary

In 2010 and 2011 staff from The Watershed Center Grand Traverse Bay (TWC) conducted initial stormwater runoff assessments for three communities in Leelanau County - Greilickville, Suttons Bay, and Northport. The purpose was to help local governments in Leelanau County begin to address pollution stemming from stormwater runoff in their communities to protect water quality and our Up North quality of life.

TWC staff participated in the year-long planning effort for the St. Joseph Avenue and Front Street Corridor Enhancement Projects. Among other things, Village officials were concerned with protecting water quality in Suttons Bay, and as such, TWC's Program Director was invited to sit on the Corridor Development Committee to give input on the plans from a water quality perspective, specifically looking at ways to reduce stormwater inputs. The plans for both the St. Joseph Avenue and Front Street Corridors include many concepts related to Green Infrastructure and Low Impact Development to reduce stormwater runoff by using bioswales, rain gardens, pervious pavement, and greenbelt buffers. Since TWC's stormwater assessment and the Village's planning efforts were going on at the same time, many ideas in St. Joseph and Front Street Plans are included in this action plan.

The following 'Action Plan' and accompanying pictures identify major points of runoff entry to the watershed as well priority sites for improvement. In this way we can best utilize limited funds to make improvements where they would have the most effect. Of specific concern are three major storm drain outlets on Suttons Bay in close proximity to public swimming beaches. These are discussed last.

By using this Action Plan, TWC has already worked with the Village of Suttons Bay to apply for funding from the MI Department of Environmental Quality and the EPA's Great Lakes Restoration Initiative to improve stormwater management in the village. We will be using the plan to continue exploring funding partnerships to address the concerns noted below.

## Findings/Recommendations

- General management -
  - Use Phosphorus-free fertilizers on village property (on areas currently being fertilized)
  - Install porous pavement where possible: paver stones, porous concrete
  - Consider, for large parking areas (i.e. marina and school lots), installing infiltration islands to direct runoff into
  
- Suttons Bay Yacht Club and Port Sutton -

No buffer between grass and beach; Drive down to marina has rock chute at bottom with erosion around it

  - Buffer along shoreline between grass lawn and beach/marina
  - Phosphorus free fertilizers
  - Rain garden at bottom of rock chute
  - Detention basins in upper development area could be converted to rain gardens (ex: Bay Cliff Dr)



- Stream Crossing, M-22 north of M-204
  - MDOT planning job from M-204 north for 3/4 mile in 2013 - look at culvert replacement at same time - recommend open bottom culvert to improve flow and ecosystem
  - Install buffer along creek
  - Small storm drain outlet to creek on east side of M-22, depending on property lines could be directed to small rain garden
- North Park Boat Launch -
  - Retrofit existing detention basins to bioretention basins or rain gardens, overflow directed to vegetated area before beach/water line
  - Boat ramp converted to pervious surface
  - Vegetative buffer could be improved along bay (functionally and aesthetically)
  - Detention basin along road connecting to Concord St could be converted to bioretention



- Front St/Adams Street: Boat trailer parking lot -
  - Buffer along grass area in front of parking lot, contour lot to direct runoff to buffer, lot could be paved with pervious pavement or paver stones
- Marina -
  - Vegetative buffer between drive and boat slips, vegetated parking island in middle w/ pavement slanted in to it







- Water Wheel Creek (Suttons Bay Creek?) -  
Receiving a lot of runoff from road/sidewalk, no buffer
  - Install vegetated buffer along creek at Water Wheel Park, cut off Jefferson Ave at alley before St. Joseph/M-22 and make 'pocket park' (stream buffer and habitat, i.e. lunkers, rocks)-extend across St. Joseph/M-22 and incorporate buffer and stream habitat)
- Fire Station/Tendercare -
  - Vegetate detention basins
- Hansen Grocery Complex -
  - Vegetate basins along 4th Street, rain garden by car wash



• Major Storm Drains -  
Grove Street, Madison Street, and Broadway Street - all empty to Bay, near public swimming beaches - excessive bacteria counts have been noted occasionally via weekly testing at South Shore Park - excessive algae and aquatic plant growth noted in Suttons Bay

- Option #1: Install storm water treatment devices at each outlet
- Option #2: Grove Street - bioretention basin; Broadway and Madison drains routed to wetland between marina and coal docks for treatment and filtration
- Option #3: Grove Street - bioretention basin; install stormwater filtration system at outlets of Broadway and Madison drains

