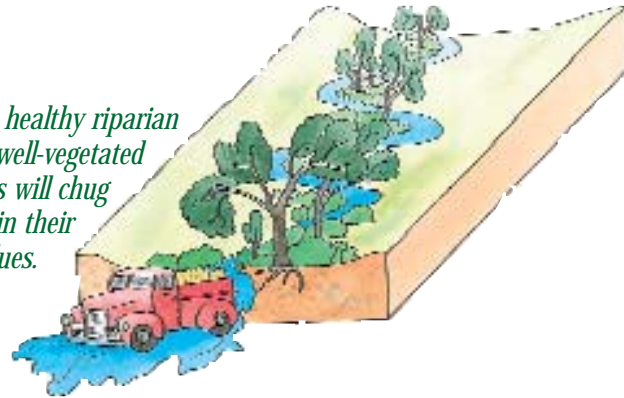


*Stream horsepower:  
don't let it get away  
on you!*



*Streams will respond to straightening and vegetation removal by racing. The chain reaction can reduce the productive nature of riparian areas.*

*Streams with healthy riparian areas that are well-vegetated with meanders will chug along and maintain their function and values.*

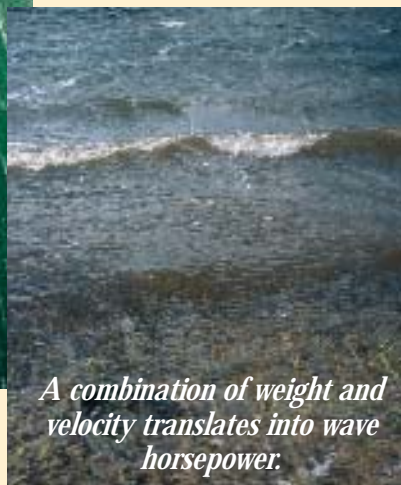


## *Shorelines - Water in Motion*



Water in motion, in the form of waves on lakes and wetlands, has power. The amount of power relates to the weight of water, a relatively heavy substance ( $1000 \text{ kg/m}^3$ ), and how fast that water is moving (velocity). Waves are wind powered and the greater the expanse of water over which winds blow the greater the potential wave height, length and velocity. Water thrown up on shore by waves loosens unconsolidated materials, which are then transported by the undertow, the returning volume of water. Spring melt, accompanied by winds, drives ice onto shorelines. This is an annual occurrence and an additional source of water power.

Unlike streams, where the volume of flow is constantly replaced, lakes and wetlands are sinks, where the volume of stored water is exchanged very slowly. The exchange rate in wetlands and lakes can be years, to fully replace the stored volume with new water. That is why nutrient and sediment additions can be an issue, since once added they may linger for long periods of time.



*A combination of weight and velocity translates into wave horsepower.*



*A shoreline composed of deep-rooted plants, especially trees and shrubs, resists the action of ice during spring breakup.*

*Understand the force!*