

The 1927 Flood



LS01451

**Repeat Photography Documents
Landscape Change 75 Years After An
Horrendous Flood**

History of the 1927 Flood

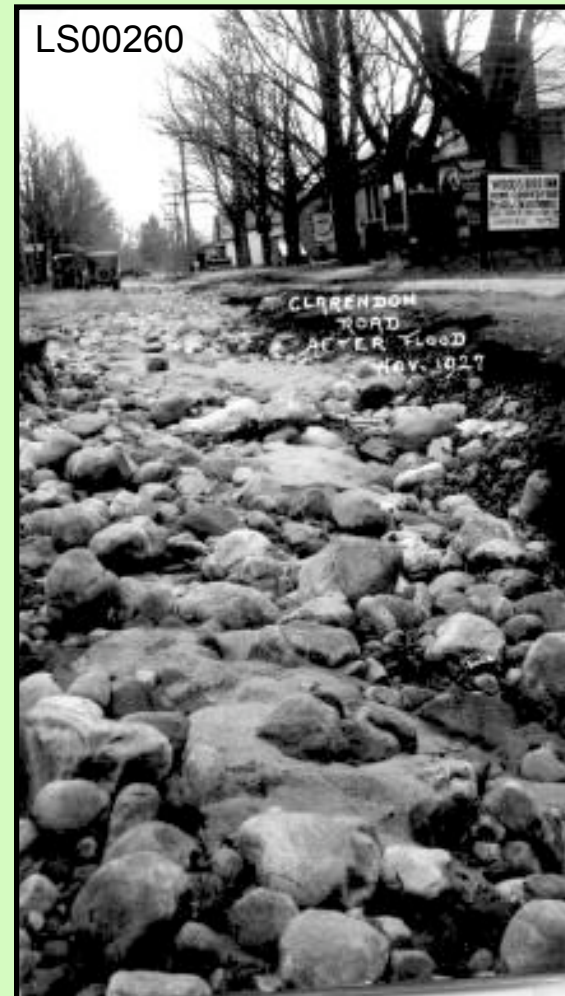
- Known as one of Vermont's most devastating events, the 1927 flood took out 1285 bridges, miles and miles of roads and railroads, and countless homes and buildings. Eighty-four people died in the flood, including Lt. Governor S. Hollister Jackson.
- The flood occurred on November 2, 3, and 4 of 1927. Rainfall averages over this period of time range from four to nine inches total.
- The month of October, 1927 saw one hundred-fifty percent more rain than normal. In Northern and Central Vermont there was nearly three hundred percent more.
- The water ran into the already high rivers, causing mass flooding all over the state. The flood greatly changed the landscape, causing failing on slopes, destruction of homes and bridges, and forcing a mass rebuilding effort in all counties.

Post Flood Photography

Following the 1927 flood, the destruction was extensively documented through ground photography.



Montpelier, 1927. Photo shows flood damage at state capitol. Note variation in color on tree trunks indicating height of flood waters



Clarendon, 1927

Photo shows flooded Main Street shortly after the flood.

Aerial Photography

In the days after the flood, the federal government commissioned a flyover of the Winooski, White, Black, and Lamoille Rivers. They documented the flood damage with ninety aerial photographs, sixty-eight of which are displayed on the Landscape Change Website. (<http://www.uvm.edu/landscape>)



These photos accurately document the destructive forces of the flood. They also show land use and development in 1927 Vermont.

About the Project: Methods

These photos have been evaluated in terms of eight criteria: change in forestation, urban and suburban development, riparian vegetation, road building and channel change (including width, route, mid-channel island, and abandoned oxbows). Change in forestation, urban and suburban development, riparian vegetation and road building were evaluated on the scale of less change, no change, or more change. Channel changes were evaluated differently, with width being either narrower or wider today, or no change. Change in channel route was based on the scale of no change, some change, or a lot of change. Mid-channel islands were scaled as loss of island, no change or no island, and new island. The criteria for abandoned oxbow was similar, with abandoned pre-1927, no change or no oxbow, and abandoned post-1927.

Channel Change: Width



This image pair shows the narrowing over time of the river channel since the 1927 flood. On the whole the river channels represented in the photographs have not changed appreciably, but approximately 12% have narrowed and 5% have widened.

Channel Change: Route



This set of images represents the changes in the route of the Stevens Branch over the last 77 years. In general most photographs showed little change in channel route, 25% showed some change, and 2% showed a lot of change.

Channel Change: Mid-Channel Island



While many photos did not have mid-channel islands in them, those that did show that many were created after the flood. Perhaps high flows eroded the many islands that slowly came back over time.

Channel Change: Abandoned Oxbows



This photo pair shows an oxbow abandoned before the flood. This photo also shows the magnitude of flood waters as the fields throughout the photo were washed over. Very few photos had abandoned oxbows, those that did showed approximately 5% abandoned pre-1927, and 7% abandoned post-1927.

Reforestation



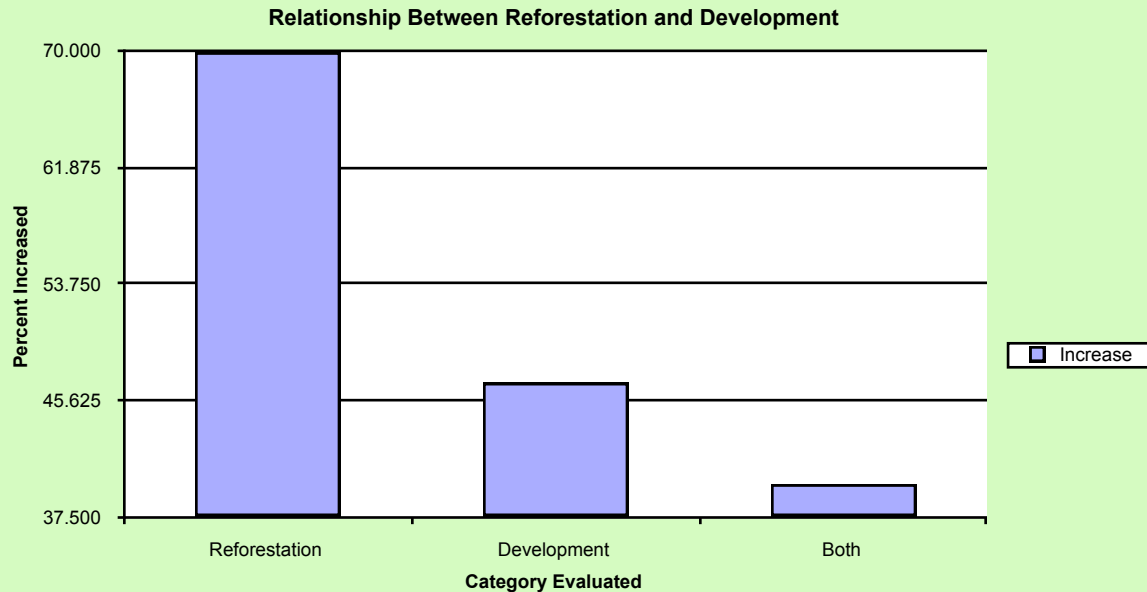
Photo pair shows reforestation in the greater Burlington area. Lake Champlain is in the background, and an abandoned oxbow is in the foreground of the current photo. Winooski River.

Development



This set of photos shows the development that has taken place over the last 77 years. Note bare, eroding ground in upper right of historic photo. Winooski River.

Reforestation & Development



This graph shows the relationship between reforestation and development seen through the 1927 flood aerials. Over the last 77 years both forest cover and development have increased.

Road Building



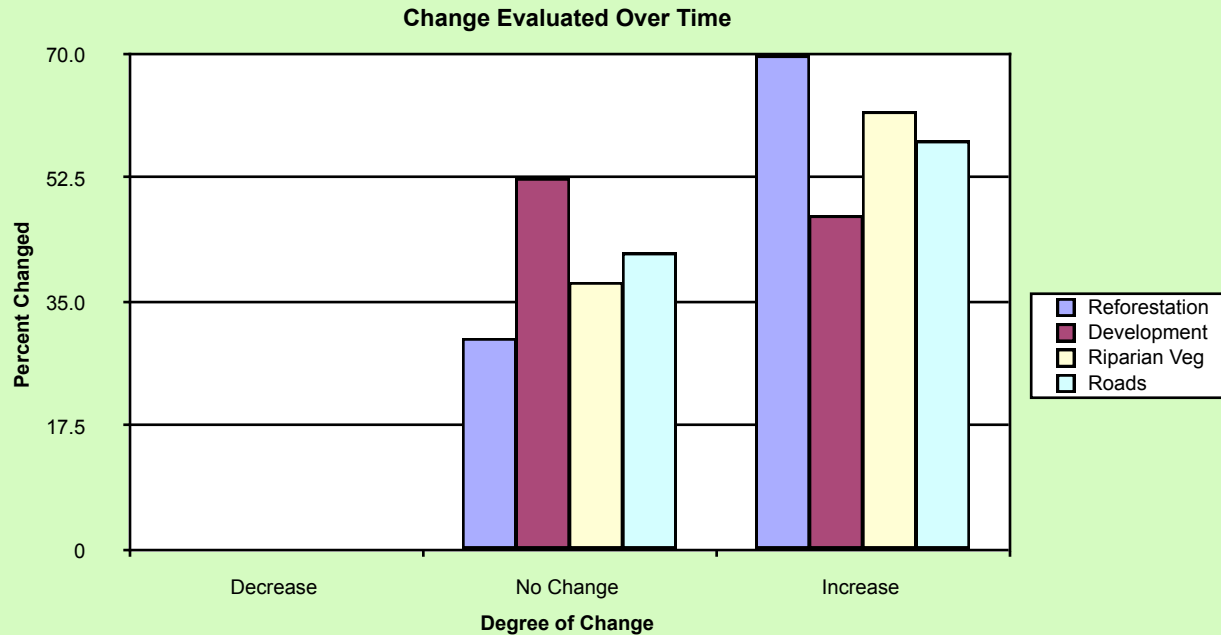
Considerable road building has taken place in the last century in Vermont. This includes the widening of current roads, the creation of new state routes and the building of Interstate 89 (at right). Winooski River.

Riparian Vegetation



Almost all rivers in Vermont have shown an increase in riparian vegetation over the past 20 years. This photo pair shows the riparian corridor along the Connecticut River (White river at left).

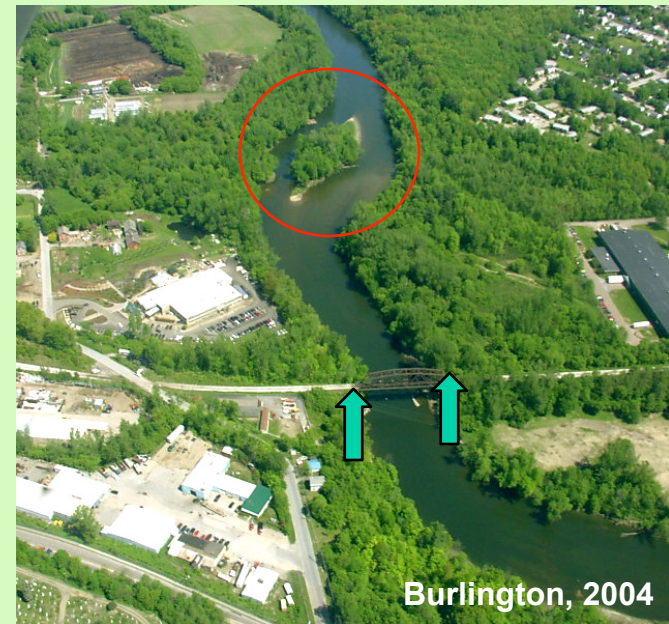
Evaluation of Change



The graph above shows the general trends of forestation, development, riparian vegetation, and road building over the last 77 years in Vermont. None of the photos showed a decrease in any of the categories. The greatest increase is seen in forestation and the least increase in development.

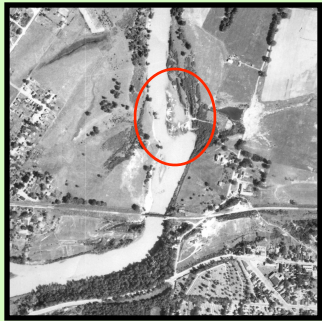
Channel Change: Migrating Rivers

After comparing the historic aerial photographs to their current counterparts, we noticed a marked change in channel width between a few image pairs. It seemed that by using sequential historic aerial photographs we would be able to gain a better understanding of the change the channel has undergone in the past 100+ years.



The pair that started it all. Note the dramatic narrowing in channel width and the appearance of a mid-channel island along the Winooski River.

Historical Aerial Photos



1937



1942



1962



1974



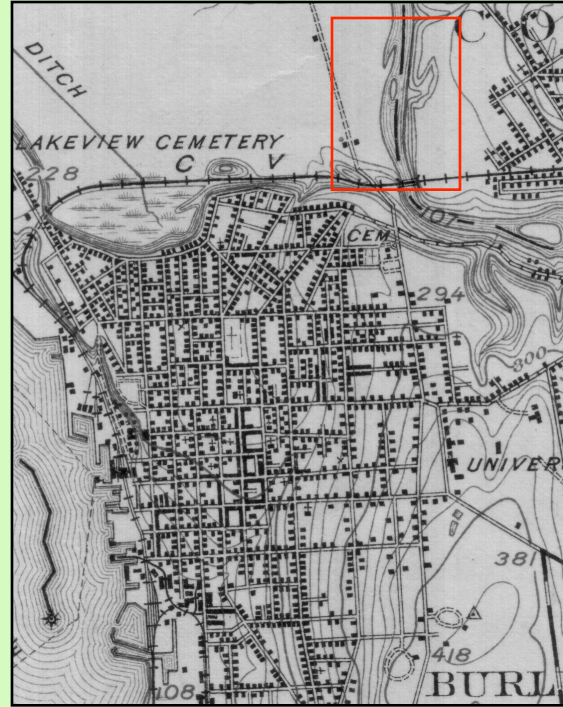
1980

Aerial photos of Winooski River showing change in channel width and development of mid-channel island. These photos were used to calculate channel change and island development over time. (See graphs later in show) Photos from Natural Resource Conservation Service.

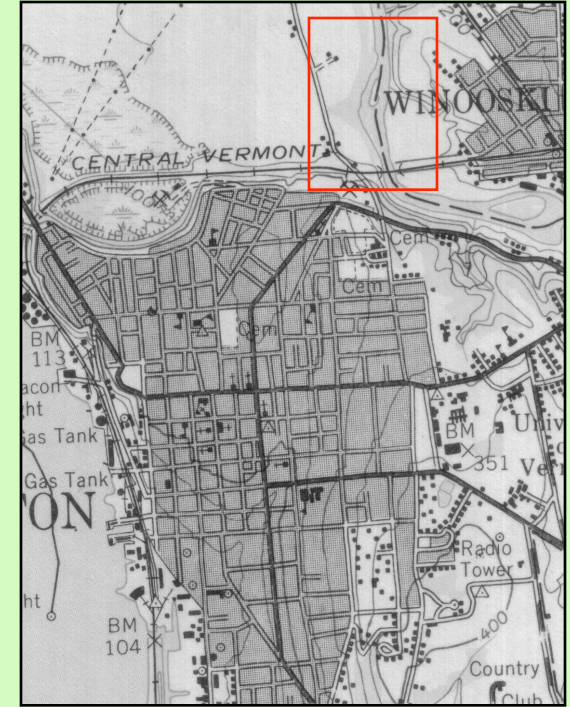
Historical Maps



1872



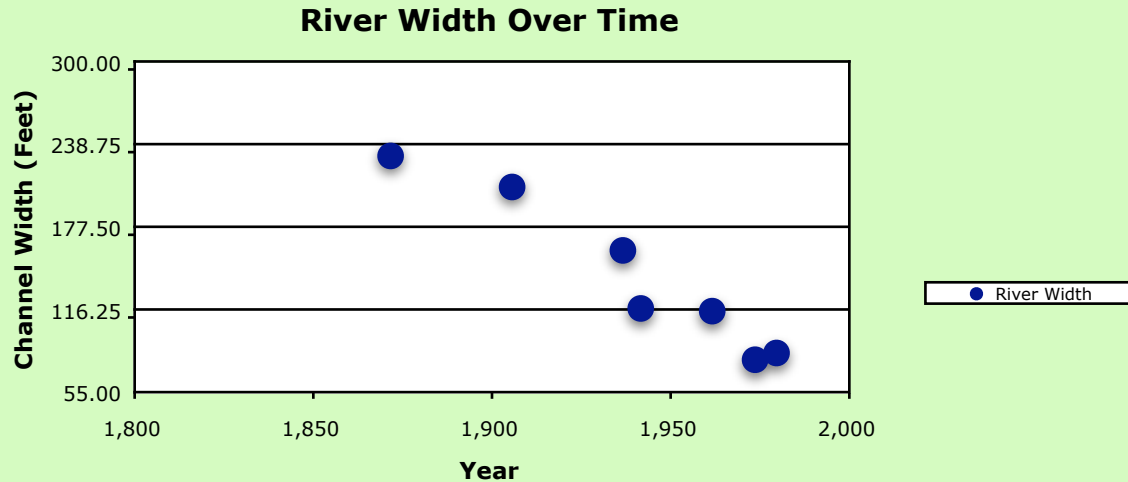
1906



1948

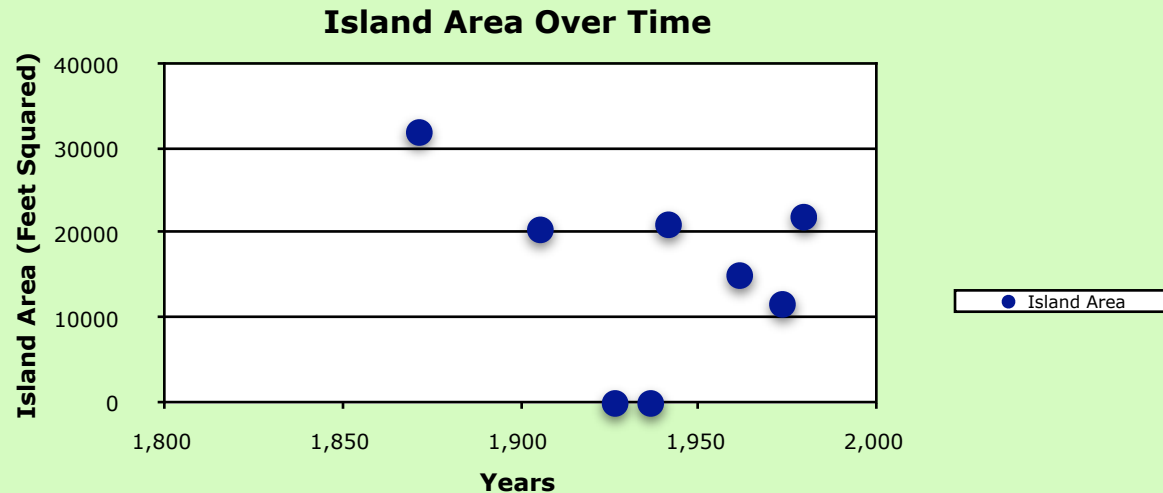
Three maps showing the field area described above. All three maps show a mid-channel island, indicating that the flood of 1927 completely removed the island. 1906 and 1948 maps 1:62,000.

Results: Channel Change



- Using historic maps and aerial photographs we were able to calculate river width for seven different times.
- Channel width steadily decreased over time.
- Change in channel width is possibly due to deforestation throughout the state in the 1800s that supplied large amounts of sediment to the rivers.
- The rise in sediment yield forced the rivers to aggrade, thus creating a wider river. The increase in forestation over the past 100 years has allowed the river to narrow and incise into the sediment.

Results: Island Area



- Island area has fluctuated over time.
- The 1927 flood appears to have obliterated the island, so much that by 1937, 10 years later, the island is still not exposed.
- The general trend shows a rapid decrease in island area due to the 1927 flood. The island then gains size over time, degrading once again between 1942 and 1974, possibly due to greater river incision rates.

The End!

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