

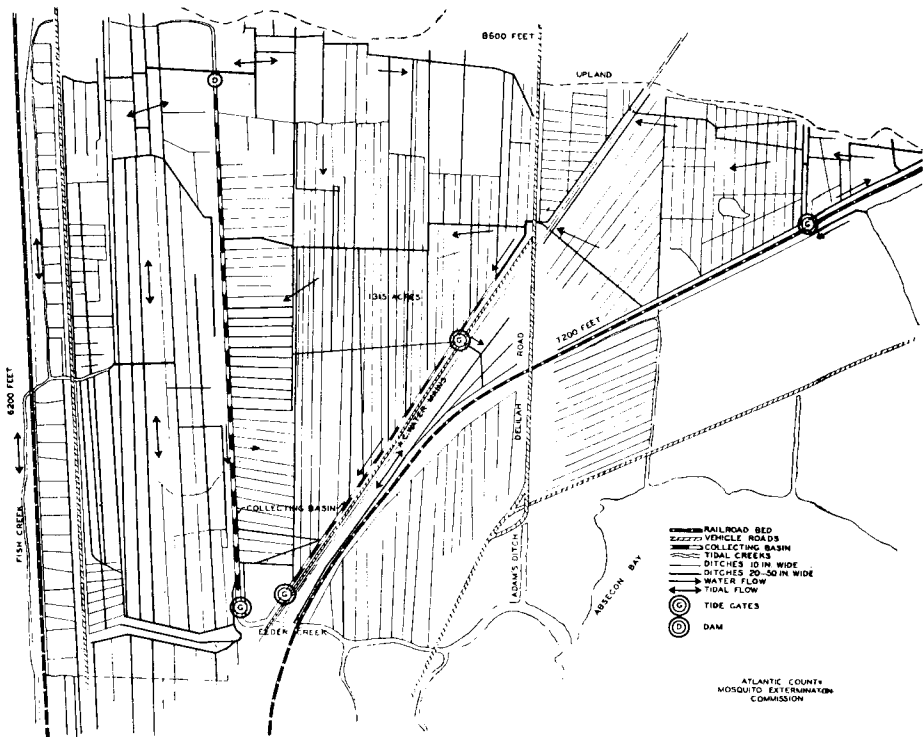
CIRCULATION OF TIDE WATER SAVES SALT MARSH AND STOPS MOSQUITO BREEDING

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On a field trip some time ago much interest was expressed by members of the American Mosquito Control Association in the special problem and its solution which are described below.

1. Fish Creek (left side of map) emptied into the nearby bay at about "6200."
2. Collins Ditch (on the map as "Collecting Basin") emptied through a small tide gate into Elder Creek.



In the area as shown on the map, landmarks will be referred to as follows:

1. On the left, Reading Railroad Embankment.
2. Top, Upland.
3. Right, Pennsylvania Railroad Embankment.
4. Bottom, Elder Creek and Absecon Bay.

As we found it in 1914, there was heavy breeding of *Aedes sollicitans* over the entire area of 1315 acres. Available outlets were:

3. Adams Ditch then extended to the upland, and on the extreme right to two 36 inch pipes under the Pennsylvania Railroad embankment.

With the exception of the two 36 inch pipes, there appeared to be adequate outlets for open salt marsh drainage.

There were no fresh water streams emptying into this marsh area; but the normal rainfall plus run-off from the adjoining upland were to be reckoned with.

Many old "Line Ditches" were found filled with mud, and we installed new

ditches. Later the old ditches had to be cleaned and footage added to the new work. This gave the very high average per acre of 1,218 unit feet.

In spite of this work we still had mosquito breeding in spots near the upland. Also after storm tides, water sometimes remained over the area for as much as three weeks. Yearly ditch cleaning was necessary.

Changes began to take place. Fish Creek was cut off at its outlet and a ten-foot ditch installed connecting this creek to tide water. Several thousand feet were added to reach the new outlet.

Then Delilah Road was constructed on the site of Adams Ditch. This was the real blow, as this ditch carried all of the water from the middle and to the right of this area.

Then the construction of a new roadbed by the Pennsylvania Railroad cut off the two 36 inch pipes for a while.

The area to the right of Delilah Road then received practically no tide water and salt grasses began to die.

C. C. C. then came along and we prevailed upon them to construct and install some tide gates. First under Delilah Road and then in both large and small "Collecting Basins."

We tried bringing tide water through tide gate on one side of the area to the right of Delilah Road and removing it from the opposite side. The trip, about 7,500 feet in and a like distance out, was much too long and we continued to find breeding. This time *Aedes vexans*.

By this time the railroad bed was completed and the 36 inch pipes opened. Salt water came in and the next step was to get rid of it.

The tide gates were removed from under Delilah Road and one gate was installed at the 36 inch pipes. This gate opened in and forced the salt water to the ditch next

to the upland and through this and connection ditches to outlet. Circulation was the result; and to date we have not found mosquito breeding.

During the time this area received no salt water about 30 per cent of salt water grasses died. These grasses are now coming back.

Circulation seemed to be the answer to our problem and plans were made for the area between Delilah Road and the Reading Railroad bed.

Fish Creek continued to be a good source for tide water, but most of the water went out through the large "Collection Basin."

This collection basin has about 30 square feet of tide-gated outlets. Not enough to carry off the water brought in by Fish Creek.

We cut off all connections between Fish Creek and the "Collection Basin" and carried the tide water to a large ditch next to the upland and most of the water returned through the regular ditching system to the "Collection Basin" and out through the gates into Elder Creek.

Some of this water returned through Fish Creek as normal ebb tide.

The small "Collection Basin," parallel to the "Pipe Lines," has one gate of 3.66 square feet opening from side and three gates of 10.98 square feet at its outlet into Elder Creek.

You will note that about 75 per cent of the outgoing water flows into Elder Creek and then to Absecon Bay.

There has been no change in salt grasses to the left of Delilah Road. The area to the right has gone through two seasons of low rainfall and the salt grasses appear to be holding their own. A wet season may change this condition and force us to lead more salt water into the ditches through 36 inch pipes.