



Preemptive Response to West Nile Virus in New York City

Challenge

With the growing threat to the community from the spread of West Nile Virus, the City of New York was acutely aware of the need for preemptive action against the disease. West Nile Virus made its first appearance in the Americas in the summer of 1999 in New York City with 67 confirmed human infections, including 7 fatalities. As of 2001 it had claimed 21 more human cases and one fatality in New York City. By the end of the same year, the virus spread to 28 states with 55 additional confirmed human cases.



At the outset, West Nile Virus was responded to with wide area spraying of pesticides. Further research concluded that a more effective means of preventing the spread of the disease would be through the treatment of wastewater catch basins on a citywide scale. In a major initiative, the City of New York Department of Health sought to kill mosquito larvae and limit new breeding by applying pesticide treatments to the more than 135,000 catch basins across the city.

When deployed in the 2001 season, the catch basin application program was not completely effective, due in large part to an inability to guarantee where and when treatments were being conducted. Many basins were never treated, while some received multiple applications of pesticide. Additionally, the paper-based task of recording a treatment took as long as the treatment itself. To meet the challenges of ensuring effective tracking and verification of field treatments, the City of New York Department of Health and Kingsway Exterminating, the field contractor for the program, turned to LinksPoint for a mobile Location Information Systems solution.

Solution

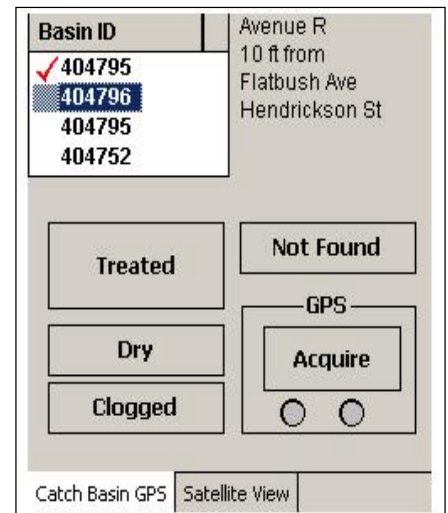
In response to the need for effective routing and treatment verification, LinksPoint developed an end-to-end solution offering treatment route creation, field application verification and automated capture and reporting of data. The solution integrates ESRI ArcView 8.0 with mobile data collection software created by LinksPoint. System hardware consists of Symbol PPT 2846 Pocket PC handheld data terminals with built in 802.11b networking.

The solution deployed allows the program administrator to use ArcView 8.0 on a desktop computer to view a Geographic Information System (GIS) map and highlight street segments to create routes for field technicians. As the administrator creates the route, he can see the number of catch basins to be treated and the length of the route in miles to productively manage the size of the assignment against pre-determined targets. The route is then wirelessly downloaded to the handheld for use by the field technician.

In the field, the technician uses the handheld to record treatments along the assigned route as they are being made. A simple "single-click" interface allows the technician to record what treatment option was taken with each catch basin. LinksPoint's solution provides a location identification and time stamp as treatments are applied.



Upon return to the central facility, the handheld unit is detected by the 802.11b network. Treatment status for each catch basin is automatically uploaded to the program database. The program administrator can easily generate a variety of reports, including billing reports, from the data at any time. Since the project is based on GIS, it also offers the ability to present information for city agencies and the public to view graphically.



Benefits

By using Location Information Systems to respond to the West Nile Virus threat to the public, the City of New York Department of Health and Kingsway Exterminating realized a number of significant benefits including:

- Simple and efficient route creation and assignment
- Digital record of what routes have been treated so no routes are missed or treated multiple times.
- Near-real time data population for effective route management and reporting.
- More efficient field recording process allows technicians to increase productivity by treating more catch basins on each shift.
- Accurate location and time stamps for treatment: verification of where, when and by whom a treatment was applied.
- Digitized route creation, data collection and entry significantly decrease administrative costs.
- Program management efficiency is greatly increased providing more effective prevention and mitigation of West Nile Virus threat to population.