

THE HUDSON RIVER MAMMAL CONTAMINANT ASSESSMENT PROJECT

PROCEDURES AND METADATA FOR THE MAMMAL VISITATION DATABASE

DATABASE: Mammal\_visitation.xls

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### INTRODUCTION

The loading of polychlorinated biphenyls (PCBs) in the Hudson River was the highest of any major river system in the United States (Horn et al. 1979). An electrical capacitor manufacturing plant located at Hudson Falls, New York, and its sister plant, located approximately 2 km downstream at Fort Edward, New York, discharged PCBs into the Hudson River starting in 1947. Between 1966 and 1974, these plants purchased 35,000 metric tons of PCBs, representing approximately 15% of domestic sales (Horn et al. 1979). From the 1940's to 1977, up to 1.33 million pounds of PCBs were discharged into the upper Hudson River. Historic discharges, continuing releases from fractured bedrock and erosion of contaminated soils and sediments have contaminated river water, sediments, floodplains, fish, wildlife and other biota with PCBs.

Analysis of a small number of mink (*Mustela vison*) and river otter (*Lontra canadensis*, formerly *Lutra canadensis* [Wilson and Reeder, 1993]) collected from the Hudson River region of New York State between 1982 and 1984 suggests that high levels of PCB contamination were present in populations of these mustelids in the Hudson River drainage (Foley et al. 1988). The maximum level in mink was greater than levels known to cause reproductive failure in ranched mink (Foley et al. 1988). This degree of contamination suggests that reproductive impairment and a consequent decrease in abundance may be present in wild populations of mink and river otter occupying riparian habitats of the Hudson River drainage. Although PCB levels in mustelids collected from the Hudson River region between 1982 and 1984 were the highest of any collected from eight regions (ecozones) of New York State, the number of animals collected in this region was too small to quantify the extent of contamination in these populations. The goal of the contaminant assessment project is to provide additional information on the extent of contamination and its effect on mink, river otter and muskrats (*Ondatra zibethicus*) within the Hudson River ecosystem. One objective towards this goal is to determine if variation in mink abundance within the upper Hudson River drainage is related to contaminant discharge to the main-stem river.

We conducted a study to evaluate whether visitation by mink and other species to scent stations can serve as an index to their relative abundance. Scent stations were generally located at stream-road intersections on tributary streams in the upper Hudson River and the Mohawk River drainages. The Mohawk River drainage was included as a potential reference area. Scent stations were located at two nominal distances from the main stem of each river: less than 6 km (near stations) and equal to or greater than 6 km (far stations). Mink visiting stations less than 6 km from the main-stem river were considered to have home ranges adjacent to the main-stem river. In contrast, mink visiting stations equal to or greater than 6 km from the main-stem river were considered to have home ranges disjunct from the main-stem river. Typically, scent stations were monitored weekly from October 3, 2000 until April 5, 2001. Track imprints on track plates provided evidence of visitation by mink and other species. Mammal tracks were identified and measured. We compiled a database for visitation frequencies of animals to scent stations and related monitoring data. Data were entered into a Microsoft Excel spreadsheet: Mammal\_visitation.xls.

## PROCEDURE FOR MONITORING SCENT STATIONS

We monitored 82 scent stations: 32 and 50 within the upper Hudson River and Mohawk River drainages, respectively (Appendix I). Typically, track plates and scent attractant were placed in open-ended enclosures between September 26, 2000 and October 11, 2000 and checked and replaced weekly, from October 3, 2000 until April 5, 2001. Severe flooding during December 17, 2000 to December 31, 2000 resulted in the loss of many enclosures or track plates. Enclosures and/or track plates were replaced as soon as possible and monitoring continued.

Evidence of visitation to scent stations by mink and as well as other small to medium-sized vertebrates (primarily mammals) was recorded as imprints of tracks on track plates placed in protective enclosures. A board with both ends sooted with an acetylene torch and a piece of self-adhesive shelving paper placed in the center comprised a track plate (Loukmas et al. 2003). Tracks were imprinted on either the shelving paper or the sooted areas of the track plate. All papers with tracks and boards with tracks of weasel species (ermine [*Mustela erminea*], long-tailed weasel [*Mustela frenata*], mink, and fisher [*Martes pennanti*]) appearing only in the sooted area were collected and archived.

### *Scent Stations*

The selection of station locations was based on riparian habitat and food requirements for mink described by Eagle and Whitman (1987), Linscombe et al. (1982) and Burgess (1978). Stations were typically within 200 m of a stream-road intersection and 3 m from the water-land interface. Track-plate enclosures were carefully camouflaged with surrounding materials such as branches, stones, grass, and leaf litter to mimic a tunnel. Two track-plate enclosures, each containing scent attractant, were placed on opposite sides of the stream at each scent station with the exception of five stations with only one enclosure. For the Hudson and Mohawk rivers, 15 and 23 stations, respectively, were located within 6 km of the main stem, and 17 and 27 stations, respectively, were located at distances equal to or greater than 6 km from the main stem. Road conditions and safety concerns, especially during snowfall, were also taken into consideration in station selection. Some stations were relocated because of safety concerns and limited access. Station locations and enclosures were uniquely identified by number. A numerically stamped aluminum tag (1-152; Forestry Suppliers Inc.) was attached to each enclosure.

### *Track-Plate Enclosures and Plates*

Track-plate enclosures were based upon a box design by Zielinski and Kucera (1995). Enclosures were constructed of 0.95-cm sheets of CDX plywood and pine furring strips (5 x 5 cm). Each enclosure (23 x 23 x 81 cm, inside dimensions) was constructed from four furring strips (5 x 5 x 81 cm) and four sheets of plywood (two 23 X 81-cm sheets and two 30 x81-cm sheets) assembled with 3-cm drywall screws (Fig. 1). An open microcentrifuge tube (1.5 ml) containing Winkler's Brown Beauty mink gland lure (Sterling Fur Company) was placed in a hardware cloth pocket (6 x 6 cm) attached to the mid inside wall, near the roof of the enclosure. Track plates were constructed of 0.32-cm sheets (23 X 81 cm) of oil-tempered or pressed hardboard. A board with a 25-cm segment on each end sooted with an acetylene torch and a 31-cm wide piece of almond-colored, self-adhesive shelving (contact) paper taped (duct tape) adhesive side up in the center comprised a track plate (Fig 2., Loukmas et al. 2003). After soot and paper had been applied, track plates were transported on edge inside a carrying box (25 x 48 x 86 cm) designed to hold 21 plates.

### *Monitoring*

The study area was divided into six routes: two in the upper Hudson River drainage and four in the Mohawk River drainage. Each route was assigned to a specific staff member for monitoring. Each route included approximately 14 stations (approximately 28 enclosures) checked weekly. During each visit after initial placement of the enclosure, the track plate was checked for track imprints on either the contact paper or the sooted portion of the plate and the tube containing lure was replaced. If track plates and/or enclosures were found missing due to flooding, vandalism etc., they were replaced during the visit if replacements were available. During the period of extensive flooding (December 17, 2000 to December 31, 2000), enclosures were not replaced for one to two weeks (nominal weeks 13 and 14) after initial loss.

Initially, all track plates, regardless of whether tracks were evident, were exchanged for new track plates; however, as the field season progressed, the protocol was altered so that only track plates with tracks were exchanged. Track plates with no evidence of tracks were not removed and entry made on the data sheet (blank, "--" or "0") that no tracks were evident during the visit. In the early stages of the field season, all track plates were brought back to Hale Creek Field Station for inspection and archiving, but as the field season continued and personnel became more efficient in identification of tracks, only contact papers with tracks and those track plates with tracks of weasel species on the sooted area were retrieved from the field, examined further at the Hale Creek Field Station and archived. Contact papers with tracks and track plates with weasel tracks were labeled with the enclosure number, date, and stream-road

intersection. Preliminary track identifications were made in the field and entered on the field data sheets (Appendix 2). Observations of mink and other animals, mink sign including tracks in snow or mud near the track-plate enclosures and watercourse conditions were also recorded on the field data sheets. Upon review at the Hale Creek Field Station, final track identifications were added to the field data sheets. Contact papers were removed from the plates and inserted into quick-load sheet protectors (Avery Inc.) for archiving. Sheet protectors and archived in a two inch, three-ringed binder (Avery Inc.). Sooted boards with tracks from weasel species (as well as one board with gray squirrel [*Sciurus carolinensis*] tracks) were stored vertically, separated by dividers in a box. Papers and boards were archived at the NYS DEC Hale Creek Field Station. Selected tracks from mammals on archived papers and boards were subsequently measured.

The initial set-up of scent stations could not be accomplished on schedule at all sites and track plates could not be examined or recovered during all scheduled monitoring visits due to flooding, snow cover, lack of access, vandalism etc. This resulted in no record for a number of stations and dates scheduled for monitoring (Fig. 3). Loss of record during the initial weeks of the study was associated with a delay in the initial set-up of scent stations. Approximately half the stations in the near-Hudson and far-Mohawk categories were not deployed until a week later than scheduled (nominal week one). Likewise, the deployment of stations was delayed in the far-Hudson category. Approximately half the stations were set out two weeks later than scheduled (nominal week two) and the remainder were set out three weeks later than scheduled (nominal week three). Limited record was obtained on December 19, and 26, 2000 and January 3, 2001 (nominal weeks 12, 13, and 14) from the Mohawk and Hudson drainages due to severe flooding. Loss of record was greater in the Hudson drainage, both in the number and percentage of stations affected. Similarly, loss of record was evident due to weather conditions in the Hudson but not in the Mohawk drainage on February 6, 2001 (nominal week 19). Minor loss of record due to vandalism or lack of access also occurred on other monitoring dates.

A number of stations were relocated or added during the study period which resulted in no record for monitoring dates when these stations were not in place. Four stations were relocated approximately mid way through the study: two far-Mohawk stations (2 relocated at 80 and 56 relocated at 77) and two near-Mohawk stations (14.0 relocated at 79 and 9 relocated 78). A number of stations were added to the far-Hudson (71 and 74), near-Hudson (69, 70, 75, and 76) and far-Mohawk (72 and 73) categories from October 30, 2000 to January 1, 2001 (nominal weeks 5 to 15).

### *Visitation to Scent Stations by Animals*

Staff experienced in the identification of mammal tracks used Rezendes (1999) and Taylor and Raphael (1988) as reference guides for identification of tracks for species or species groups anticipated visiting scent stations (Table 1). Archived papers and sooted boards were reviewed in the laboratory for additional tracks not observed at the time of collection and to verify initial identifications. Long-tailed weasel tracks (first ID code 2) were additionally identified as either mink (second ID code 2a) or ermine (second ID code 2b) tracks because they overlap in size and are similar in shape to those from mink and ermine.

We measured tracks of mink, long-tailed weasel, ermine, fishers, red squirrels (*Tamiasciurus hudsonicus*), Eastern gray squirrels, Eastern chipmunks (*Tamias striatus*), raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), Virginia opossums (*Didelphis virginiana*), feral cats (*Felis catus*), and cottontail rabbits (*Sylvilagus spp.*) (Procedures and Metadata for the Track Measurement Database, August 2005). Tracks of mice, voles, shrews, frogs, salamanders, and birds were not measured.

Scent stations were visited by expected species and taxonomic groups with the exception of fox (*Vulpes vulpes*) and muskrat (*Ondatra zibethicus*; Table 2). As a group, mice, shrews and voles were the most frequent visitors to scent stations. Visits from squirrels as a group (three species) were also high in frequency. Found at moderate frequencies, were visits from raccoons, opossums, feral cats, frogs, rabbits, salamanders, and weasel species as a group. Visits from striped skunk and birds were at relatively low frequencies. The frequency of mink visits was greater than those from ermine, fishers or possibly from long-tailed weasels. For all species and taxonomic groups visiting track-plate enclosures, 73 to 100% of tack imprints were on shelving paper (Table 3).

In addition to visitation documented as track records on track plates, visitation data also included observations of mink at stations and mink tracks in snow or mud observed near stations. Two observations of mink in the vicinity of scent stations during monitoring visits were included in the summary: 1) station 15 (near Mohawk) on October 24, 2000 (nominal week 4) and 2) station 50 (far Hudson) on March 1, 2001 (nominal week 22). No record of mink tracks were observed at the stations on the dates when mink were observed. Tracks were observed near scent stations on a number of monitoring visits when mink tracks were not evident on track plates. Tracks in snow or mud near scent stations were observed during two monitoring visits during the fall period: 1) station 51 (far Mohawk) on December 11, 2001 (nominal week 11) and 2) station 68 (far Mohawk) on December 7, 2000 (nominal week 10).

During the spring period, tracks were observed in snow near scent stations during 30 monitoring visits when mink tracks were not present on track plates. Most of these observations were made on dates in March, 2001.

## TABLES

Table 1. Species codes for species and taxonomic groups expected to visit scent stations located within the Hudson River and Mohawk River drainages from September 2000 to April 2001.

Species or Species Group	Species Code
American mink ( <i>Mustela vison</i> )	1
*Long-tailed weasel ( <i>Mustela frenata</i> )	2
*American mink ( <i>Mustela vison</i> )	2a
*Ermine ( <i>Mustela erminea</i> )	2b
Ermine ( <i>Mustela erminea</i> )	3
Fisher ( <i>Martes pennanti</i> )	4
Raccoon ( <i>Procyon lotor</i> )	5
Red fox ( <i>Vulpes vulpes</i> ), Gray fox ( <i>Urocyon cinereoargenteus</i> )	6
Striped skunk ( <i>Mephitis mephitis</i> )	7
Virginia opossum ( <i>Didelphis virginiana</i> )	8
Muskrat ( <i>Ondatra zibethicus</i> )	9
Squirrels (Family Sciuridae)	10
Feral cat ( <i>Felis catus</i> )	11
Mice, Voles, Shrews (Families Dipodidae Muridae Soricidae)	12
Frogs (Order Anura)	13
Salamanders (Order Caudata)	14
Birds (Order Passeriformes)	15
Unidentifiable tracks	16
Cottontail rabbits ( <i>Sylvilagus spp.</i> )	17
Red squirrel ( <i>Tamiasciurus hudsonicus</i> )	18
Eastern chipmunk ( <i>Tamias striatus</i> )	19
Eastern gray squirrel ( <i>Sciurus carolinensis</i> )	20
Others	21

\* Indicates long-tailed weasel (first ID code 2) additionally identified as either mink or ermine (second ID codes 2a and 2b, respectively).

Table 2. Total visits by species and taxonomic groups to track-plate enclosures for location categories within the Hudson and Mohawk River drainages from September 2000 to April 2001.

Species or Group	Far Hudson	Far Mohawk	Near Hudson	Near Mohawk	Total Visits
American mink	30	49	16	28	123
*Long-tailed weasel	5	6	1	13	25
*American mink	2	3	0	8	13
*Ermine	3	3	1	5	12
Ermine	22	14	8	17	61
Fisher	8	10	18	1	37
Raccoon	42	76	35	64	217
Red fox, Gray fox	0	0	0	0	0
Striped skunk	2	9	10	7	28
Virginia opossum	21	43	22	64	150
Muskrat	0	0	0	0	0
Squirrels	181	367	150	150	848
Feral cat	28	75	27	60	190
Mice, Voles, Shrews	418	819	348	672	2257
Frogs	18	34	28	37	117
Salamanders	21	49	19	29	118
Birds	2	12	4	5	23
Unidentifiable	1	0	0	0	1
Cottontail rabbits	11	34	20	49	114
Red squirrel	63	85	36	19	203
Eastern chipmunk	77	158	51	84	370
Eastern gray squirrel	35	116	30	45	226
Others	0	4	2	1	7

\* Indicates long-tailed weasel visits (first ID code 2) additionally identified as either mink or ermine visits (second ID codes 2a and 2b, respectively).

Table 3. Number of visits recorded on paper or only on soot by species and taxonomic groups for track-plate enclosures within the Hudson and Mohawk River drainages from September 2000 to April 2001.

Species or Group	On paper	Only on soot	Total Visits
American mink	90	33	123
*Long-tailed weasel	21	4	25
*American mink	9	4	13
*Ermine	12	0	12
Ermine	58	3	61
Fisher	32	5	37
Raccoon	158	59	217
Red fox, Gray fox	0	0	0
Striped skunk	24	4	28
Virginia opossum	121	29	150
Muskrat	0	0	0
Squirrels	732	116	848
Feral cat	172	18	190
Mice, Voles, Shrews	2130	127	2257
Frogs	115	2	117
Salamanders	118	0	118
Birds	23	0	23
Unidentifiable	1	0	1
Cottontail rabbits	105	9	114
Red squirrel	203	0	203
Eastern chipmunk	370	0	370
Eastern gray squirrel	226	0	226
Others	3	4	7

\* Indicates long-tailed weasel visits (first ID code 2) additionally identified as either mink or ermine visits (second ID codes 2a and 2b, respectively).

## FIGURES

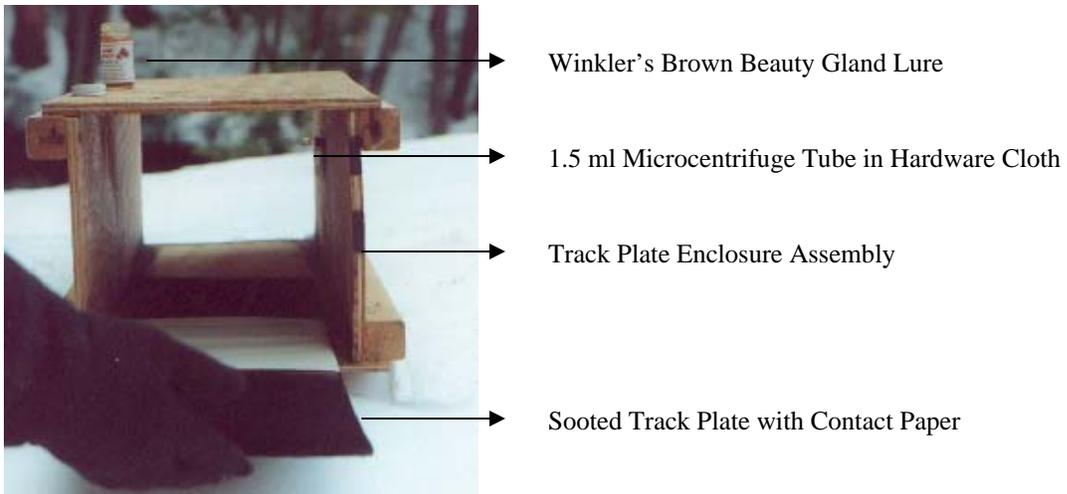


Figure 1. Track -plate enclosure with sooted track plate and lure vial in holder.

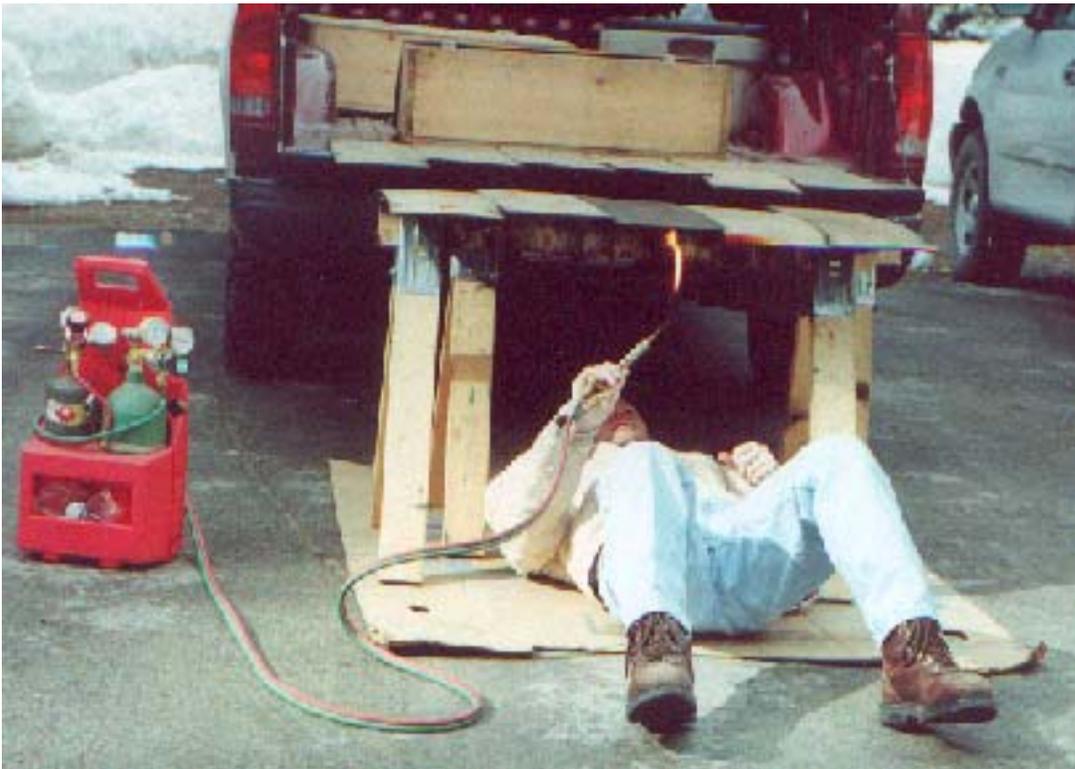
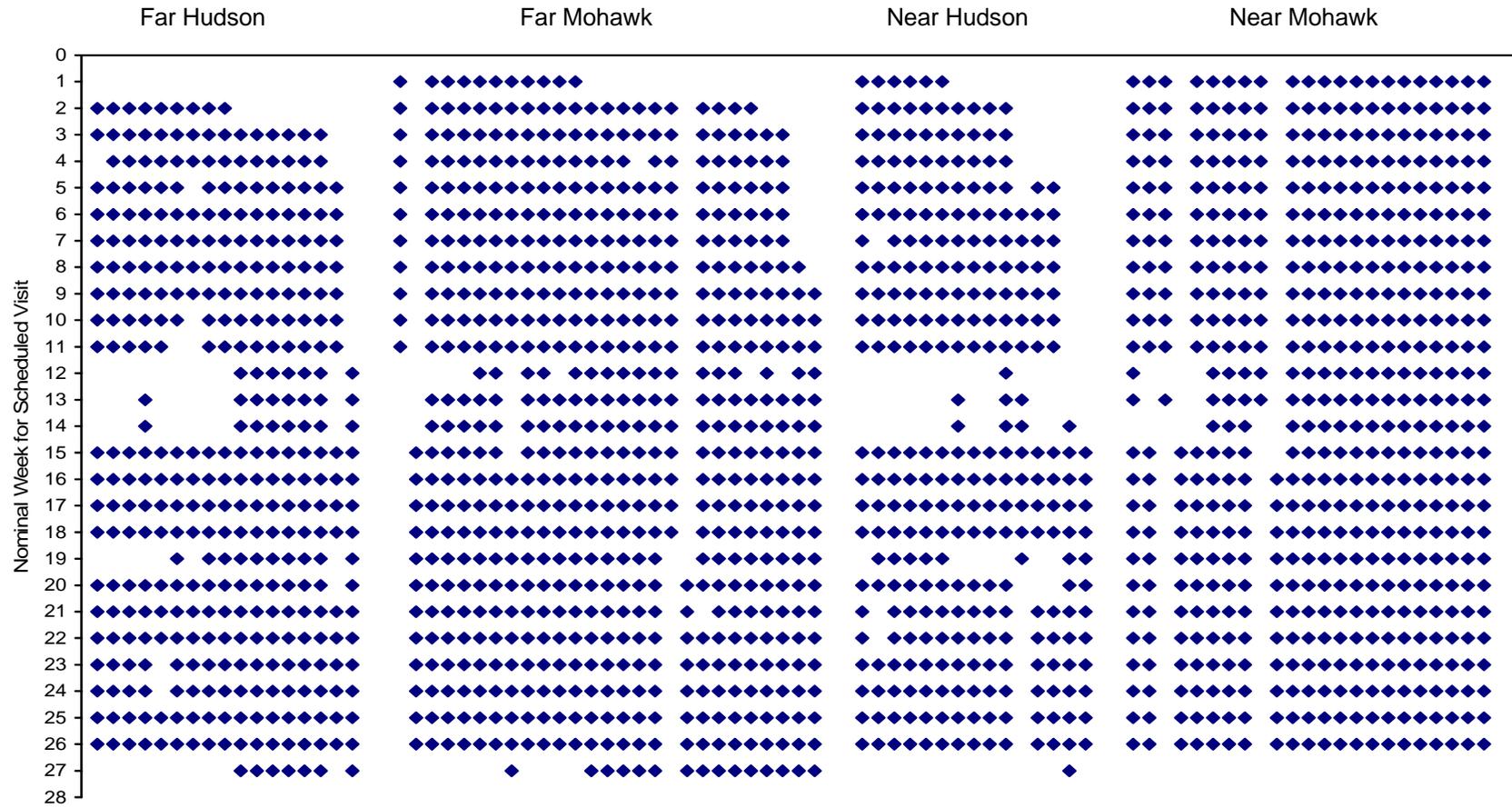


Figure 2. Track plates sooted with an acetylene torch.

Figure 3. Plot of scent station location groups by drainage location by scheduled monitoring visit (nominal week). Each column represents visitation history for a specific scent station. A symbol indicates that either tracks were observed or, if no tracks were present, the track plate was capable of recording tracks at a minimum of one enclosure at the station since the last monitoring visit. A blank indicates that no track plates could be observed for tracks at the station during the visit on that date indicating a loss of record for the station and date.

Scent Station Locations



## METADATA FOR THE TRACK-PLATE VISITATION DATABASE

DATABASE: Mammal\_visitation.xls

This database is a Microsoft Excel spreadsheet containing field data related to visitation of animals to scent stations equipped with track plates distributed within the upper Hudson River and Mohawk River drainages from September 26, 2000 to April 5, 2001. Geographic data for each station was extracted from the *USGS 7.5 Minute Topographic Images* (1:24,000 scale, Appendix 3), *NYS DOT 1:250,000 Atlas Image* (Appendix 4) and *DOT 1:24,000 Planimetric Image* (Appendix 5) of the New York State Master Habitat Data Bank (NYS MHBD; NYS DEC 2003) using ArcView 3.3 software (ESRI 1996).

### DESCRIPTION OF VARIABLES

#### **DRAINAGE**

Track-plate enclosures were located within two major drainage basins: enclosures within the Mohawk River drainage, including the Schoharie Creek drainage, were assigned “Mohawk,” and enclosures within the upper Hudson River drainage, including the Kayaderosseras Creek drainage, were assigned “Hudson.”

#### **DRAINAGE LOCATION**

Stations for track-plate enclosures were categorized based on nominal direct distance within the watershed of the stations from the main stems of either the upper Hudson River or Mohawk River. Enclosures located less than 6 km from the main stems of the Mohawk River and upper Hudson River were assigned “NM” and “NH,” respectively. Enclosures located equal to or greater than 6 km from the main stems of the Mohawk River and upper Hudson River were assigned “FM” and “FH,” respectively.

## **ROUTE**

Stations for track-plate enclosures were grouped into six different routes. Stations located on or near the Schoharie Creek north of Route 162 or associated with south-shore tributaries of the Mohawk River between the Town of Randall and the City of Amsterdam were assigned “LS” (Stations 1-10, 78, and 80). Stations located on tributaries of the Schoharie Creek south of Route 162 and north of the Village of Middleburgh were assigned “US” (Stations 51-60 and 77). Stations located on or near the Mohawk River and associated tributaries north of Route 20, south of Route 67 and in or west of Fonda – Fultonville were assigned “M1” (Stations 11-20, 67 and 79). Stations located on or near the Mohawk River and associated tributaries in the St. Johnsville area and at the NYS DEC Hale Creek Field Station were assigned “M2” (Stations 21-30, 68, 72 and 73). Stations located on or near the Hudson River and associated tributaries south of Glens Falls to the federal dam in Troy, with the exception of Anthony Kill, were assigned “H” (Stations 31-50, 69, 70, 71 and 76). Stations located within the Anthony Kill and Kayaderosseras Creek drainages were assigned “KAY” (Stations 61-66, 74 and 75).

## **STREAM-ROAD INTERSECTION**

Station locations for track-plate enclosures were plotted on *USGS 7.5 Minute Topographic Images* (Appendix 3). The *DOT 1:250,000 Atlas Image* (Appendix 4) and *DOT 1:24,000 Planimetric Image* (Appendix 5) was consulted to identify roads, streams and landmarks used to reference the nearest stream-road intersection to the station location. If a stream or waterbody intersected a road near the station (*i.e.* stream flows under a bridge), “at” was used to indicate an intersection. Streams that did not have a formal name were identified as “Unknown Creek”. All roads or trails were identified by name.

## **X COORDINATE**

Latitude was recorded from the plot of the location of each track-plate station using *USGS 7.5-minute topographic images* from the NYS MHDB (NYS DEC 2003; Appendix 3). Coordinates were recorded in New York Transverse Mercator (NYTM – UTM Zone 18N), North American Datum of 1983 (NAD83) horizontal datum in meters. Typically, a station consisted of a pair of track plate enclosures, one on each side of the stream. Five stations located on the main-stem of the Mohawk River had only one enclosure.

## **Y COORDINATE**

Longitude was recorded from the plot of the location of each track-plate station using *USGS 7.5-minute topographic images* from the NYS MHDB (NYS DEC 2003; Appendix 3). Coordinates were recorded in New York Transverse Mercator (NYTM – UTM Zone 18N), North American Datum of 1983 (NAD83) horizontal datum in meters. A station consisted of a pair of track plate enclosures, one on each side of the stream. Typically, a station consisted of a pair of track plate enclosures, one on each side of the stream. Five stations located on the main-stem of the Mohawk River had only one enclosure.

## **STATION NUMBER**

The number assigned to the locations of each track-plate station. Station numbers ranged from “1” to “80” with two stations having a decimal suffix.

## **BOX NUMBER**

Each track-plate enclosure was assigned a number (1 – 150) that corresponds to the sequence in which they were set out in the field. A decimal suffix added to the enclosure number indicates the box was moved to a new station location due to unexpected circumstances (*i.e.* flooding, inaccessibility, vandalism) during the study period.

## **NOMINAL WEEK**

Track-plate enclosures were scheduled for weekly visitation. This variable indicates the nominal week of the scheduled visit. Visits with the same nominal week are considered comparable with time.

## **DATE SET**

The date on which track-plate enclosures were initially set up at a station by project staff was recorded in the format MM/DD/YYYY. Dates on which enclosures needed to be reset due to loss of track plate or loss of the enclosure were not recorded under **DATE SET**.

## **DATE CHECKED**

The date on which track-plate enclosures were visited or scheduled to be visited by project staff was recorded in the format MM/DD/YYYY.

## **DAYS SINCE SET OR LAST CHECK**

The period in days between the initial set up of enclosures and the first check of the enclosure or the period between a check of the enclosure and a subsequent check was recorded. A “0” was assigned if an enclosure was initially set up, reset, was not visited, or the track plate was not examined for tracks.

## **BOX SET OR EXAMINED**

After setting out enclosures and track plates at stations, enclosures were scheduled for visits at nominal one-week intervals to check and/or collect and replace track plates. If a track-plate enclosure was set up, a visit was made to check a track-plate enclosure, or an enclosure was removed on the indicated date, “yes” is assigned; if no visit was made to the enclosure on the scheduled date or a visit was made but the track plate not examined for tracks, “no” was assigned.

## **ACTIVITY**

The initial set up of an enclosure and placement of a track-plate in an enclosure at a new station on the scheduled date is indicated by “set.” The replacement of a lost enclosure and/or track plate on the scheduled date at a station is indicated by “reset.” The examination of track plates for tracks or the collection and replacement of track plates in enclosures on scheduled dates is indicated by “check.” The removal of enclosures from a station is indicated by “removed.” If no visit was made to an enclosure or the enclosure was visited but the track plate was not examined for tracks, “none” was assigned to **ACTIVITY**.

### **TRACK PLATE STATUS**

Upon arrival to enclosure stations, the status of the track plate was determined. Typically track plates were collected and replaced; “collected-replaced” was assigned for this activity. If a track plate was collected but not replaced, such as during the termination of track recording at a station; “collected-not replaced” was assigned. If a track plate was missing, “lost” was assigned and “replaced” assigned upon replacement of the track plate. If the track plate was found to be missing due to flooding, vandalism etc. and a new track plate installed (sometimes in a new enclosure) during a visit, “lost-replaced” was assigned. “Not replaced” was assigned if the track plate was missing on a previous date and the scheduled visit for replacement of the track plate did not occur on the date. Track plates were not collected because the station was not visited, the station was visited but the track plate was not examined for tracks or, in some cases, the track plate was examined and no tracks were observed. For situations where the track plate was not collected, “not collected” was assigned. Dates on which an enclosure was initially set up at a station were assigned “n/a.”

### **FLOODED/SNOW COVERED**

An enclosure or track plate under water or an enclosure covered with snow during a visit suggested that access by animals to the track plate was potentially limited. This suggested that the period that the track plate could potentially record visitation by animals may have been reduced due to limited

access. For enclosures or track plates that were found flooded or snow-covered during a visit by staff, "98" was entered on the field datasheet and a "1" is assigned to the variable **FLOODED/SNOW COVERED** in the database.

## **RECORDING STATUS**

Upon arrival at the enclosure stations, track plates were inspected for tracks and, typically, were collected and replaced. If a track plate was in place and available for inspection, "record" was assigned to indicate that the track plate was able to record track imprints (on paper or soot) during all or some portion of the period between inspection visits. Recoverable track plates were assigned a recording status of "record" regardless of limitations in the potential for recording tracks due to flood or snow conditions at the time of collection provided that the plates were left during the previous visit in condition to record tracks. Track record could not be obtained if track plates were not in place or were lost due to flooding, vandalism etc. or were not accessible even though in place; "no record" was assigned to the recording status of these plates. (A "99" was recorded or a blank was indicated for track identifications on field sheets if track plates were lost, not in place, or not accessible). Also, "n/a" was assigned when track plates were initially set out.

If the station was not visited or the station was visited but the track plate was not inspected for tracks due to inaccessibility (indicated by "none" for the variable **ACTIVITY**) and the track plate was left during the previous visit in condition to record tracks, "(record)" was assigned to indicate that track plate was presumably able to record track imprints (on paper or soot). If the station was not visited or the station was visited but the track plate was not inspected for tracks (indicated by "none" for the variable **ACTIVITY**) and the track plate was left during the previous visit in condition, usually due to weather, not able to record tracks and found on a subsequent visit in the same condition, "(no record)" was assigned to indicate that track plate was presumably not able to record track imprints (on paper or soot) on those intermediate dates between visits.

## **TRACKS PRESENT**

During each visit, track plates were examined for evidence of tracks. If tracks were present on either the paper or the sooted area of the track plate, “yes” was assigned; if no tracks were present, “no” was assigned. If the track plate was not examined because no visit was made to the enclosure station or a visit was made but the track plate was not examined on a scheduled date, “n/a” was assigned.

### **BOARD COLLECTED**

If the track plate was collected during a visit and check of an enclosure, “yes” was assigned; if the track plate was left in place, “no” was assigned. If the track plate was initially set up, reset, lost or not replaced, “n/a” was assigned.

### **PAPER ARCHIVED**

Contact paper centered on a board with a sooted area on either end comprised a track board. Track imprints from visiting animals were recorded on the contact paper and/or the sooted area. Contact papers with track imprints were collected and archived for further examination and measurement of track imprints. For some visits, contact papers without evidence of track imprints were also collected and archived. If track papers were archived, “yes” was assigned. If the enclosure was not visited, the track plate was missing or the track plate not collected because of the lack of track imprints during a visit, no paper was available for archiving. Dates for which no contact papers were archived are assigned “no.”

### **BOARD ARCHIVED**

Contact paper centered on a board with a sooted area on either end comprised a track board. Track imprints from visiting animals were recorded on the contact paper and/or the sooted area. Boards from track plates with track imprints from weasel species (ermine, mink, fisher and possible long-tailed weasel) only in the sooted area were collected and archived for further

examination and measurement of track imprints. If boards were archived, “yes” was assigned. If the enclosure was not visited, the track plate was missing, or the track plate not collected because of the lack of track imprints during a visit, no board was available for archiving. If track imprints appeared on the contact paper as well as the board, the board may have not been archived. Dates for which no boards were archived are assigned “no.”

## **FREEZING CONDITIONS**

The degree of ice cover on waterbodies adjacent to track-plate enclosures was categorized starting January 1, 2001. No information was collected before January; consequently, blanks were assigned to this variable for visitation dates before January. If no ice cover was observed on the waterbody, “1” was assigned. If ice cover was observed but stream channels and pools were partially open, “2” was assigned. If the waterbody was completely frozen over, “3” was assigned.

## **MINK OBSERVED AT SITE**

If mink were observed near track-plate enclosures during a visit to a track-plate station by staff, a “1” was assigned. A blank indicates no mink were observed during the visit by staff.

## **TRACKS OF WEASEL, MINK OR FISHER AT SITE**

If tracks of weasel, mink, or fisher were observed in the snow, mud or sand in the vicinity of the enclosure during a visit by staff, a “1” was assigned. A blank indicates no tracks of weasel, mink, or fisher were observed during the visit by staff.

## **COMMENTS**

Field observations including missing lure capsules, other animal tracks around site, tracks only appearing on soot, accessibility to track plate, the initial

set up, resets, and removal of enclosures, flooding and snow cover at stations, degree of ice cover in streams, etc. are recorded. Identifications of species that infrequently visit enclosures are recorded.

## **MINK**

A “1” was entered for the variable **MINK** if mink (*Mustela vison*) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no mink tracks were observed.

### **MINK TRACK ON PAPER OR SOOT**

If mink tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If mink tracks were observed only on the sooted area of the track plate, “2” was assigned. If no mink tracks were observed on the track plate, a blank was assigned to this variable.

## **LONG-TAILED WEASEL**

A “1” was entered for the variable **LONG-TAILED WEASEL** if long-tailed weasel (*Mustela fernata*) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. For tracks that were initially identified as long-tailed weasel tracks and subsequently identified as mink, “1a” was assigned. For tracks that were initially identified as long-tailed weasel tracks and subsequently identified as ermine, “1b” was assigned. Tracks identified as long-tailed weasels were additionally identified as either mink or ermine (*Mustela erminea*) because they overlap in size and are similar in shape to those from mink and ermine. A blank indicates no long-tailed weasel tracks were observed.

### **LONG-TAILED WEASEL TRACK ON PAPER OR SOOT**

If long-tailed weasel tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If

long-tailed weasel tracks were observed only on the sooted area of the track plate, “2” was assigned. For tracks that were initially identified as long-tailed weasel tracks and subsequently identified as mink, “1a” and “2a” were assigned for tracks appearing on paper and soot, respectively. For tracks that were initially identified as long-tailed weasel tracks and subsequently identified as ermine, “1b” and “2b” were assigned for tracks appearing on paper and soot, respectively. If no long-tailed weasel tracks were observed on the track plate, a blank was assigned to this variable.

## **ERMINE**

A “1” was entered for the variable **ERMINE** if ermine tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no ermine tracks were observed

## **ERMINE TRACKS ON PAPER OR SOOT**

If ermine tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If ermine tracks were observed only on the sooted area of the track plate, “2” was assigned. If no ermine tracks were observed on the track plate, a blank was assigned to this variable.

## **FISHER**

A “1” was entered for the variable **FISHER** if fisher (*Martes pennanti*) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no fisher tracks were observed.

## **FISHER TRACKS ON PAPER OR SOOT**

If fisher tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If fisher tracks were observed only on the sooted area of the track plate, “2” was assigned. If no fisher tracks were observed on the track plate, a blank was assigned to this variable.

## **RACCOON**

A “1” was entered for the variable **RACCOON** if raccoon (*Procyon lotor*) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no raccoon tracks were observed.

## **RACCOON TRACKS ON PAPER OR SOOT**

If raccoon tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If raccoon tracks were observed only on the sooted area of the track plate, “2” was assigned. If no raccoon tracks were observed on the track plate, a blank was assigned to this variable.

## **SKUNK**

A “1” was entered for the variable **SKUNK** if striped skunk (*Mephitis mephitis*) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no skunk tracks were observed.

## **SKUNK TRACKS ON PAPER OR SOOT**

If skunk tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If skunk tracks were observed only on the sooted area of the track plate, “2” was assigned. If no skunk tracks were observed on the track plate, a blank was assigned to this variable.

## **OPOSSUM**

A “1” was entered for the variable **OPOSSUM** if Virginia opossum (*Didelphis virginiana*) tracks were observed on either contact paper or the sooted

area of the track plate during a visit by staff to the enclosure. A blank indicates no opossum tracks were observed.

### **OPOSSUM TRACKS ON PAPER OR SOOT**

If opossum tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If opossum tracks were observed only on the sooted area of the track plate, “2” was assigned. If no opossum tracks were observed on the track plate, a blank was assigned to this variable.

### **SQUIRREL**

A “1” was entered for the variable **SQUIRREL** if squirrel (Sciuridae) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. The number “1” indicates that one or more squirrels are believed to have visited the enclosure during the period that the track plate was in place. A blank was entered for this variable if no squirrel tracks were observed during the visit by staff. Tracks that could be subsequently identified to species (red squirrel [*Tamiasciurus hudsonicus*] Eastern chipmunk [*Tamias striatus*] or gray squirrel [*Sciurus carolinensis*]) appear under variables **RED SQUIRREL**, **E. CHIPMUNK** and **GRAY SQUIRREL** respectively.

### **SQUIRREL TRACKS ON PAPER OR SOOT**

If squirrel tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If squirrel tracks were observed only on the sooted area of the track plate, “2” was assigned. If no squirrel tracks were observed on the track plate, a blank was assigned to this variable.

### **RED SQUIRREL**

A “1” was entered for the variable **RED SQUIRREL** if red squirrel tracks were observed on either contact paper or the sooted area of the track plate

during a visit by staff to the enclosure. A blank indicates no red squirrel tracks were observed

### **RED SQUIRREL TRACKS ON PAPER OR SOOT**

If red squirrel tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If red squirrel tracks were observed only on the sooted area of the track plate, “2” was assigned. If no red squirrel tracks were observed on the track plate, a blank was assigned to this variable.

### **E. CHIPMUNK**

A “1” was entered for the variable **E. CHIPMUNK** if chipmunk tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no chipmunk tracks were observed.

### **E. CHIPMUNK TRACKS ON PAPER OR SOOT**

If chipmunk tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If chipmunk tracks were observed only on the sooted area of the track plate, “2” was assigned. If no chipmunk tracks were observed on the track plate, a blank was assigned to this variable.

### **GRAY SQUIRREL**

A “1” was entered for the variable **GRAY SQUIRREL** if gray squirrel tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no gray squirrel tracks were observed.

### **GRAY SQUIRREL TRACKS ON PAPER OR SOOT**

If gray squirrel tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If gray squirrel tracks were observed only on the sooted area of the track plate, “2” was assigned. If no gray squirrel tracks were observed on the track plate, a blank was assigned to this variable.

## **CAT**

A “1” was entered for the variable **CAT** if feral cat (*Felis catus*) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no cat tracks were observed.

## **CAT TRACKS ON PAPER OR SOOT**

If cat tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If cat tracks were observed only on the sooted area of the track plate, “2” was assigned. If no cat tracks were observed on the track plate, a blank was assigned to this variable.

## **RABBIT**

A “1” was entered for the variable **RABBIT** if cottontail rabbit (*Sylvilagus* spp.) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no rabbit tracks were observed.

## **RABBIT ON PAPER OR SOOT**

If rabbit tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If rabbit tracks were observed only on the sooted area of the track plate, “2” was assigned. If no rabbit tracks were observed on the track plate, a blank was assigned to this variable.

## **MOUSE/VOLE/SHREW**

A “1” was entered for the variable **MOUSE/VOLE/SHREW** if mouse/vole/shrew (Dipodidae/Muridae/Soricidae) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no mouse/vole/shrew tracks were observed.

## **M/V/S ON PAPER OR SOOT**

If mouse/vole/shrew tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If mouse/vole/shrew tracks were observed only on the sooted area of the track plate, “2” was assigned. If no mouse/vole/shrew tracks were observed on the track plate, a blank was assigned to this variable.

## **FROG**

A “1” was entered for the variable **FROG** if frog (Order Anura) tracks or a partial or whole impression of the body were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no frog tracks or impressions were observed.

## **FROG ON PAPER OR SOOT**

If frog tracks or a partial or whole impression of the body were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If frog tracks or impressions were observed only on the sooted area of the track plate, “2” was assigned. If no frog tracks or impressions were observed on the track plate, a blank was assigned to this variable.

## **SALAMANDER**

A “1” was entered for the variable **SALAMANDER** if salamander (Order Caudata) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no salamander tracks were observed.

#### **SALAMANDER ON PAPER OR SOOT**

If salamander tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If salamander tracks were observed only on the sooted area of the track plate, “2” was assigned. If no salamander tracks were observed on the track plate, a blank was assigned to this variable.

#### **BIRD**

A “1” was entered for the variable **BIRD** if bird (Order Passeriformes) tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no bird tracks were observed.

#### **BIRD ON PAPER OR SOOT**

If bird tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If bird tracks were observed only on the sooted area of the track plate, “2” was assigned. If no bird tracks were observed on the track plate, a blank was assigned to this variable.

#### **OTHER SPECIES**

A “1” was entered for the variable **OTHER SPECIES** if tracks of infrequent species that had not been assigned a specific code were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no infrequent species were observed. Infrequent species are identified under the **COMMENTS** variable.

#### **OTHER SPECIES ON PAPER OR SOOT**

If tracks of infrequent species that had not been assigned a specific code were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If tracks of infrequent species were observed only on the sooted area of the track plate, “2” was assigned. If no tracks of infrequent species were observed on the track plate, a blank was assigned to this variable.

### **UNIDENTIFIED**

A “1” was entered for the variable **UNIDENTIFIED** if unidentifiable tracks were observed on either contact paper or the sooted area of the track plate during a visit by staff to the enclosure. A blank indicates no unidentifiable tracks were observed.

### **UNIDENTIFIED ON PAPER OR SOOT**

If unidentifiable tracks were observed by staff on the contact paper section of the track plate during a visit to an enclosure, “1” was assigned. If unidentifiable tracks were observed only on the sooted area of the track plate, “2” was assigned. If no unidentifiable tracks were observed on the track plate, a blank was assigned to this variable.

### **ENTRY ORDER**

The number assigned to each record to indicate the order of records in the database.

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- Taylor, C. A. and M. G. Raphael. 1988. Identification of mammal tracks from sooted track stations in the Pacific Northwest. *California Fish and Game*. 74(1): 4-15.
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*Electronic*

Environmental Systems Research Institute. 1996. *ArcView GIS 3.2 Software*. Environmental Systems Research Institute, Inc., Redlands, California. 1996.

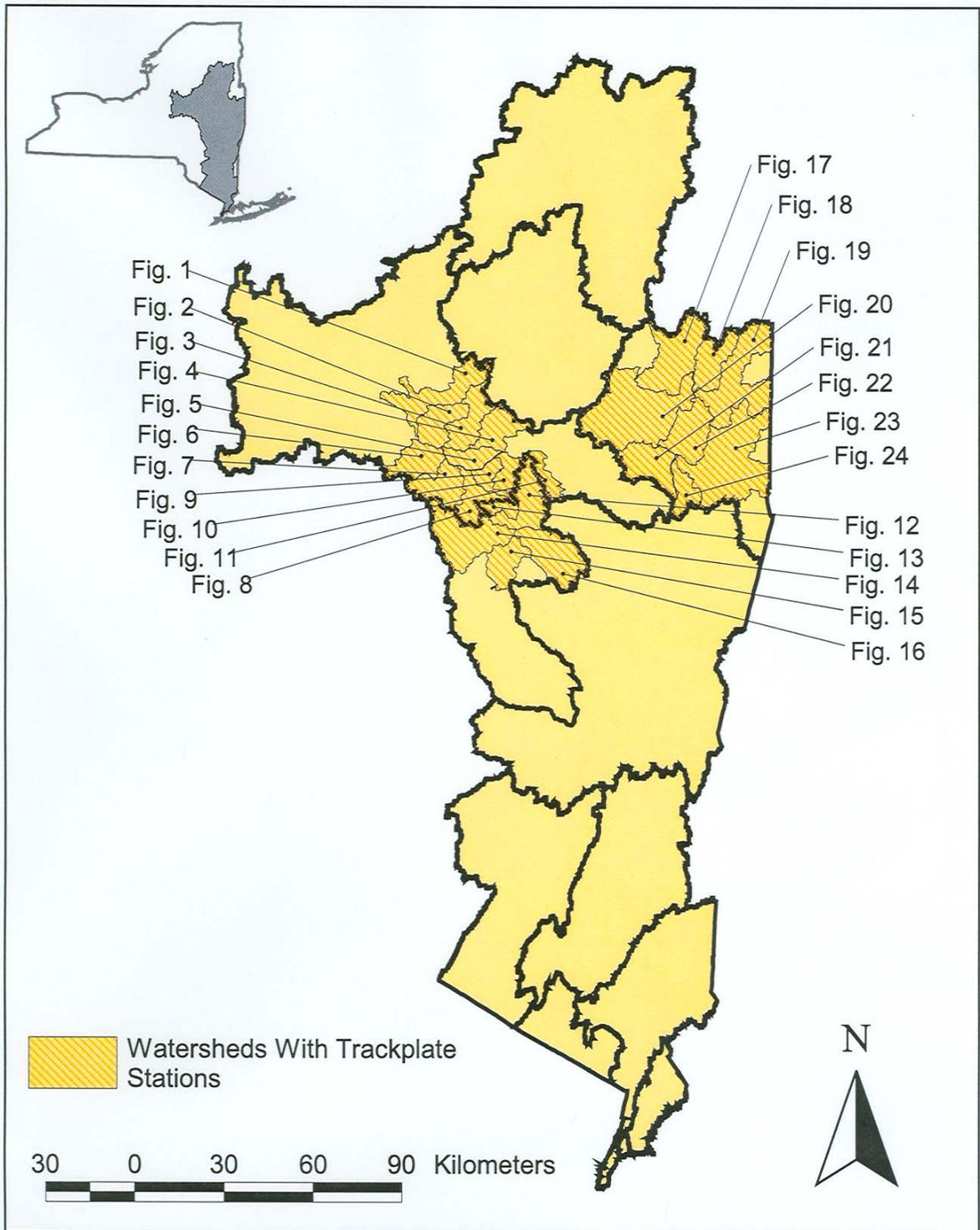
New York State Department of Environmental Conservation. 2003. *Master Habitat Data Bank*. Division of Fish, Wildlife and Marine Resources.

### ACKNOWLEDGMENTS

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## APPENDIX 1

Scent-station locations within the Hudson River and Mohawk River drainages, 2000/2001. Maps were created using ArcView GIS 3.2 (Environmental Systems Research Institute, 1996). Map images were obtained from the Master Habitat Data Bank (New York State Department of Environmental Conservation., 2003).



Index to figures of trackplate station locations within NYS 11 digit HUC watershed boundaries. Eleven digit HUC watershed boundaries (thin outline) are shown within eight digit HUC watershed (bold outline).



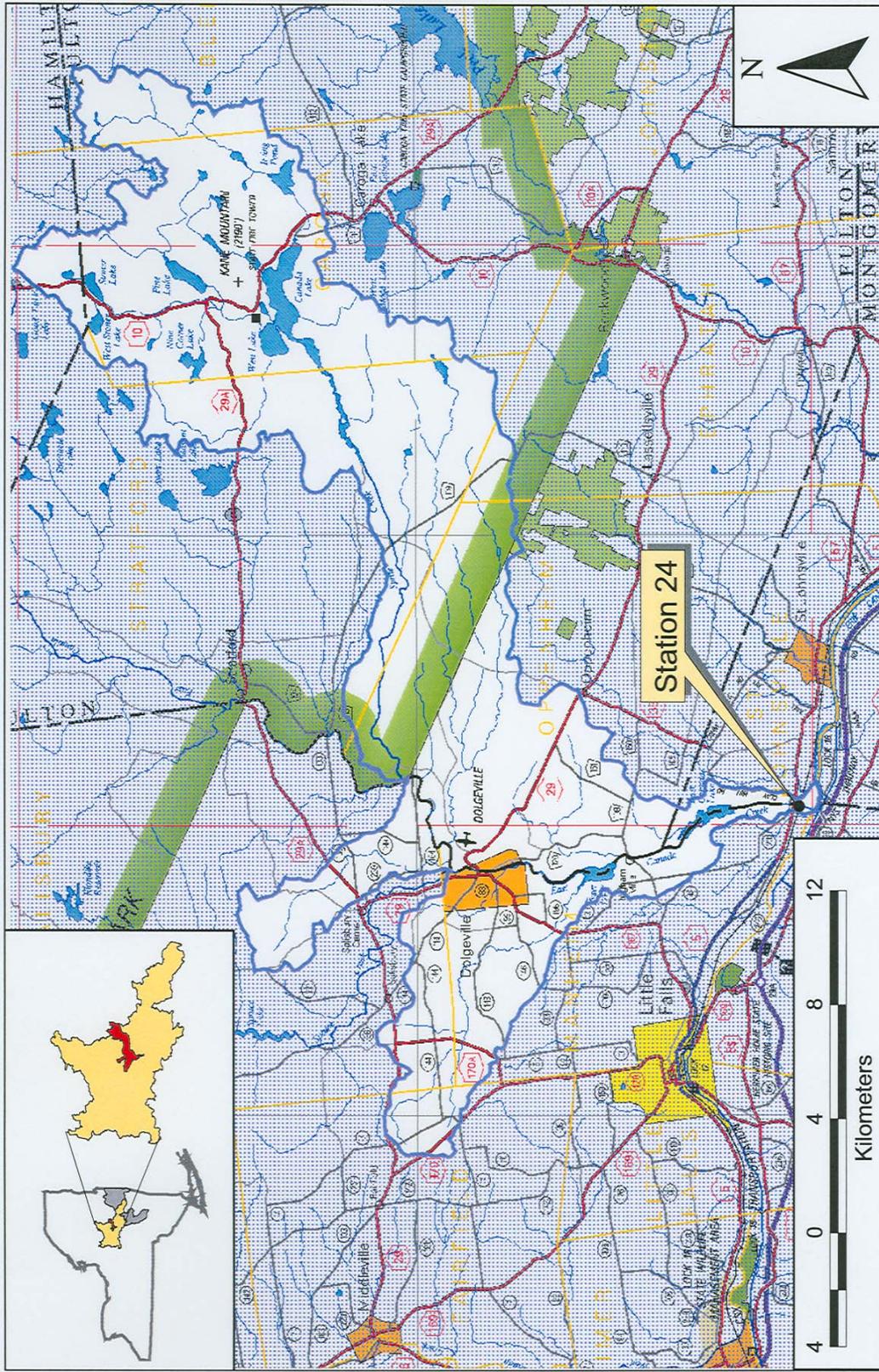


Figure 1. Trackplate station locations in the Lower East Canada Creek Watershed (NYS 11 digit HUC).

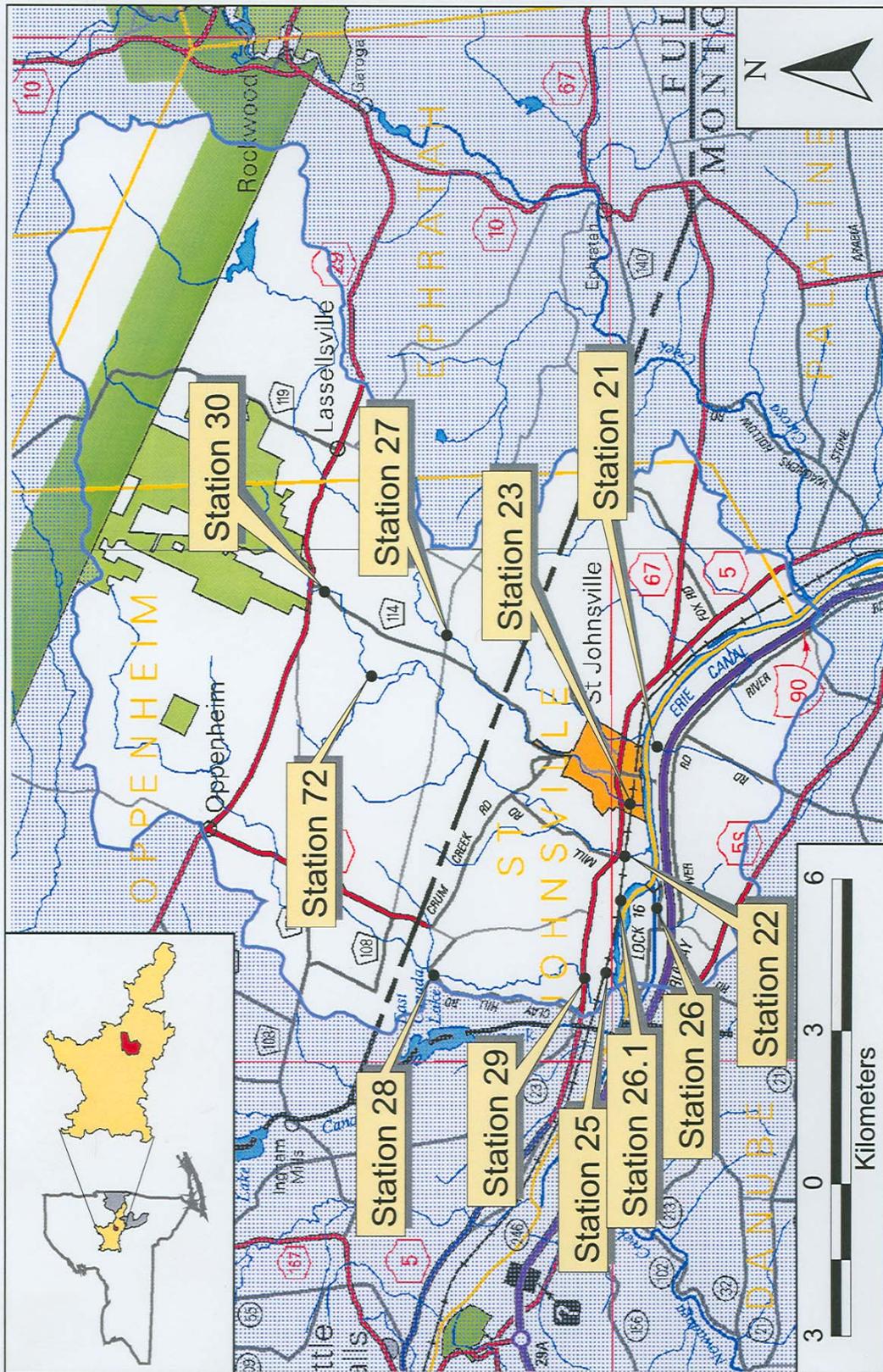


Figure 2. Trackplate station locations in the East Canada Creek to Caroga Creek Watershed (NYS 11 digit HUC).

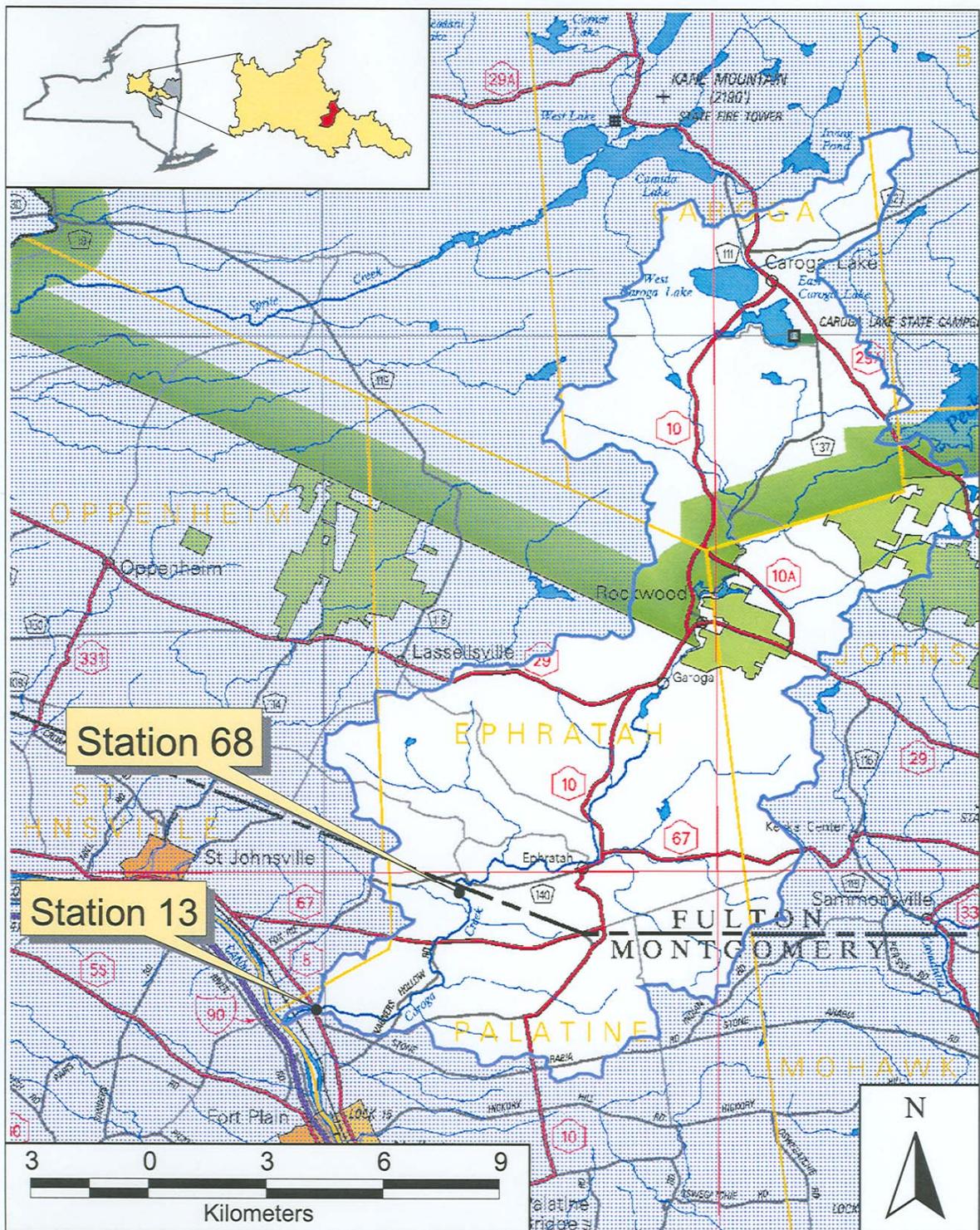


Figure 3. Trackplate station locations in the Caroga Creek Watershed (NYS 11 digit HUC).

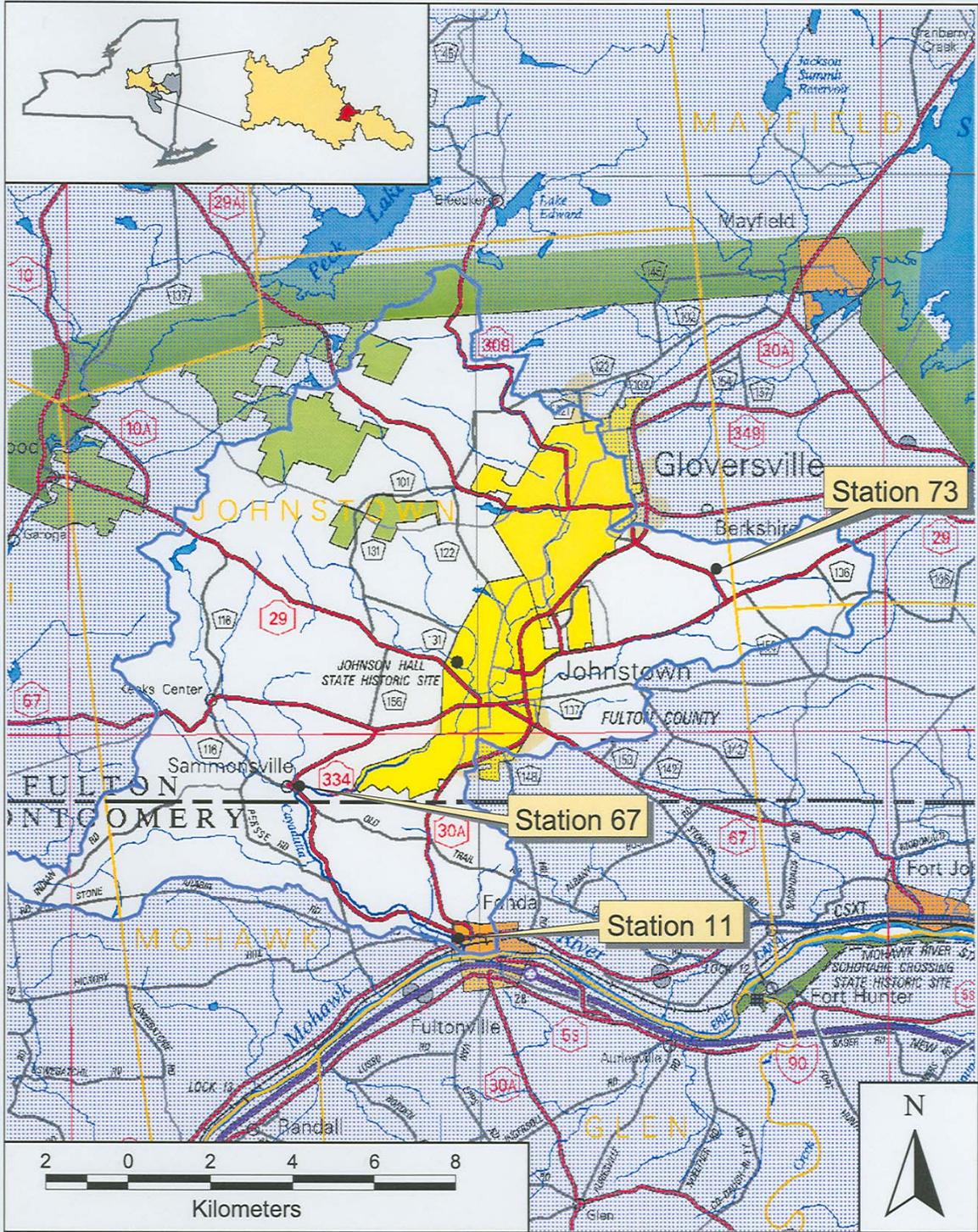


Figure 4. Trackplate station locations in the Cayadutta Creek Watershed (NYS 11 digit HUC).

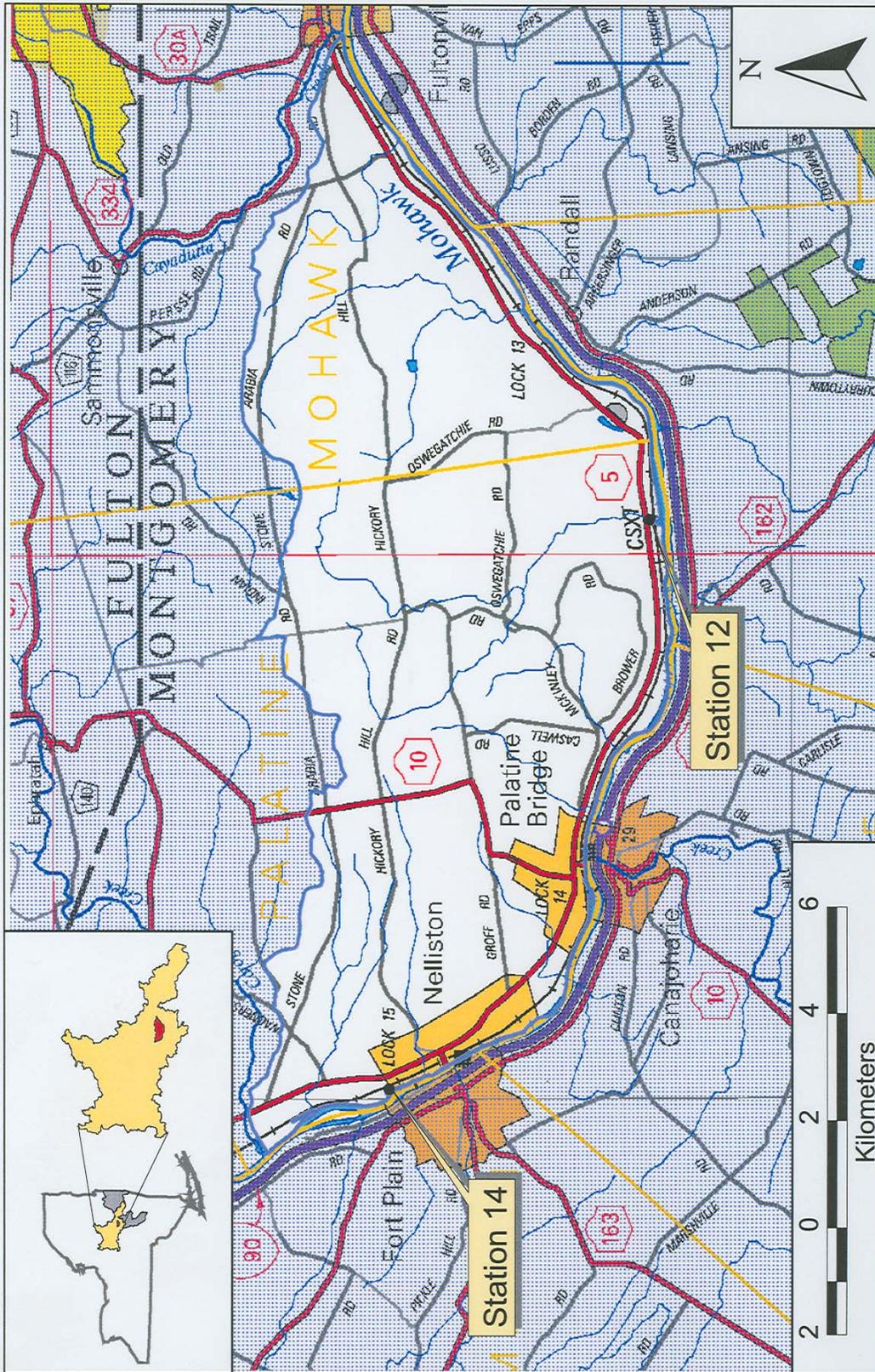


Figure 5. Trackplate station locations in the Caroga Creek to Cayadutta Creek Watershed (NYS 11 digit HUC).

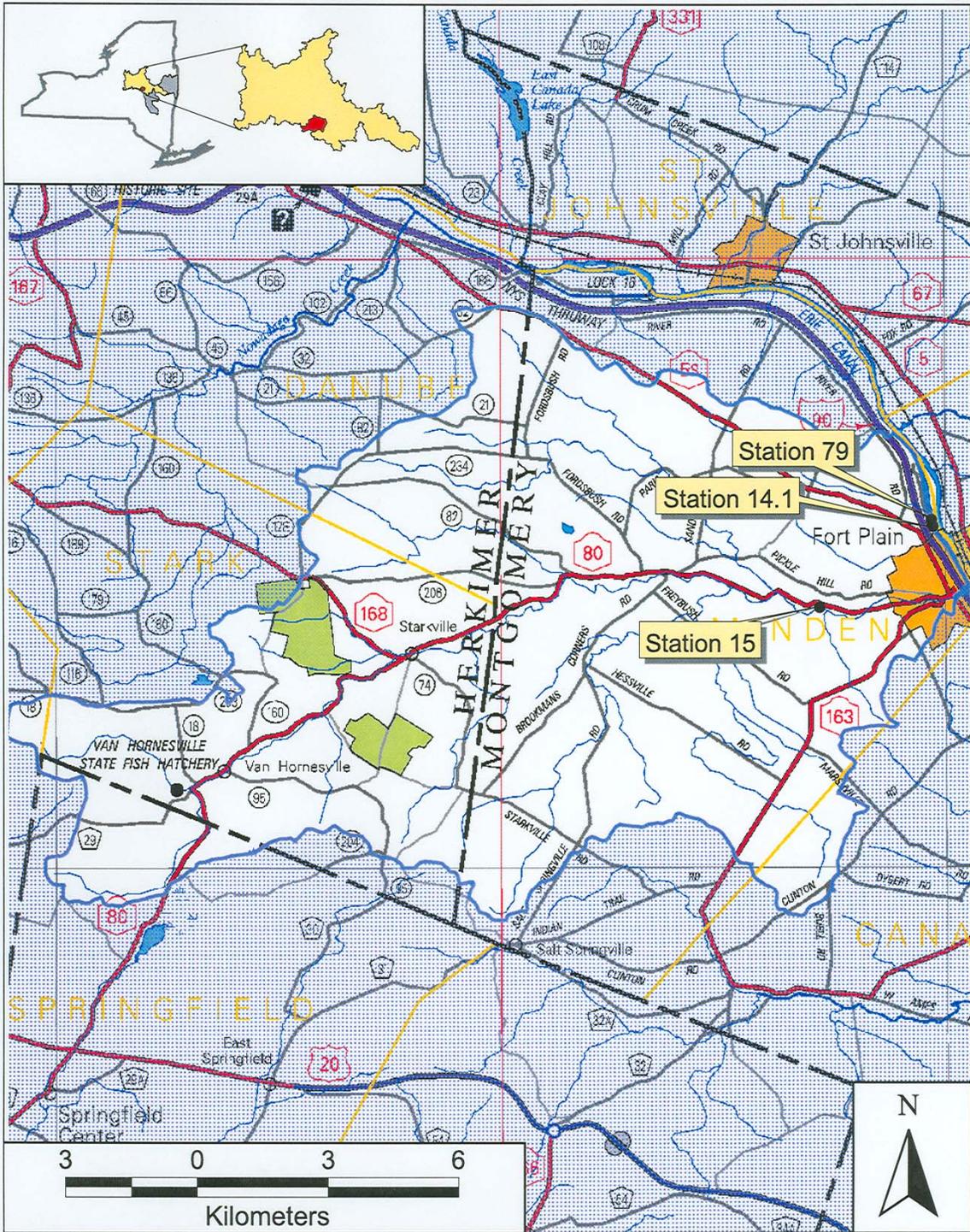


Figure 6. Trackplate station locations in the Otsuaga Creek Watershed (NYS 11 digit HUC).

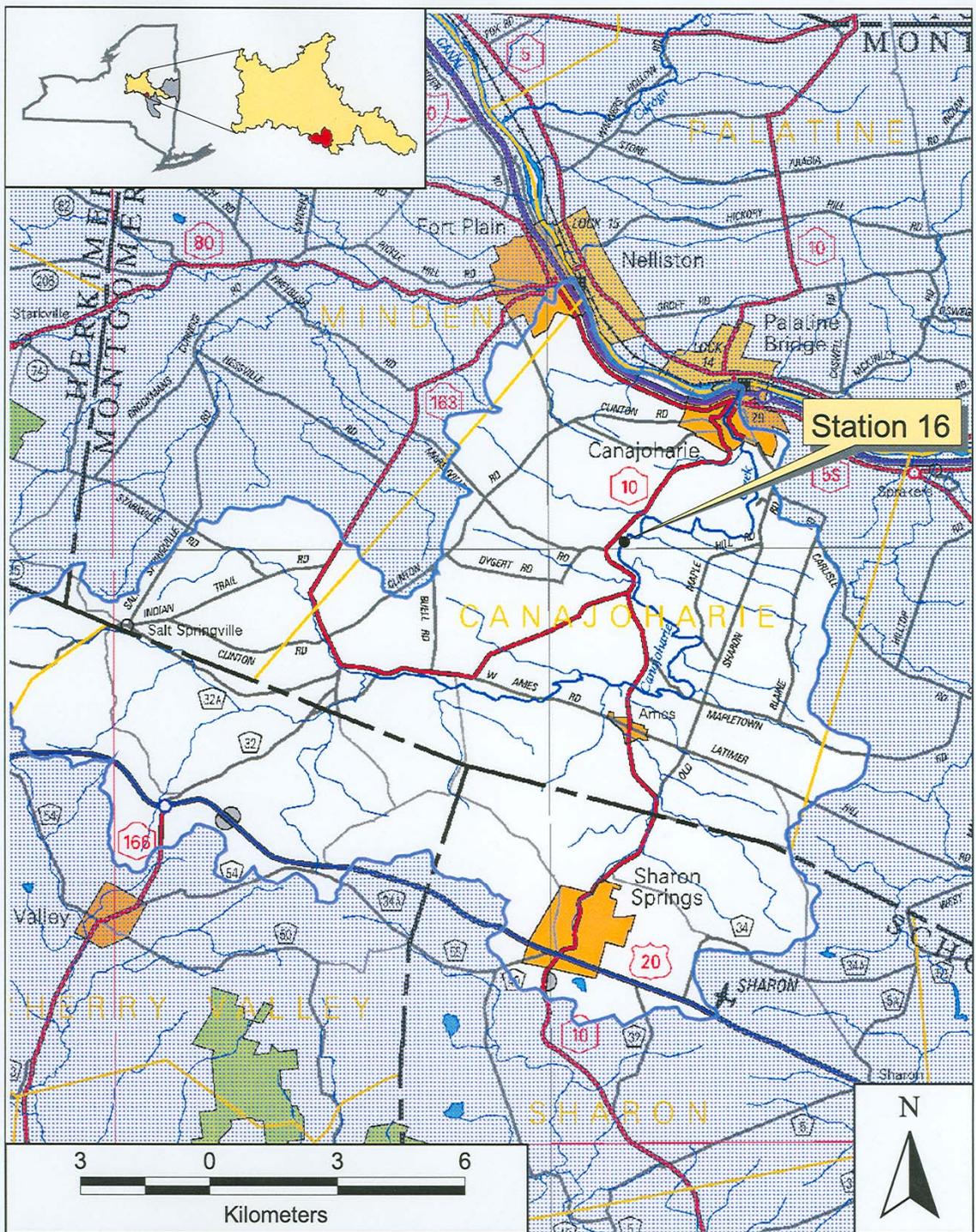


Figure 7. Trackplate station locations in the Otsguago Creek to Canajoharie Creek Watershed (NYS 11 digit HUC).

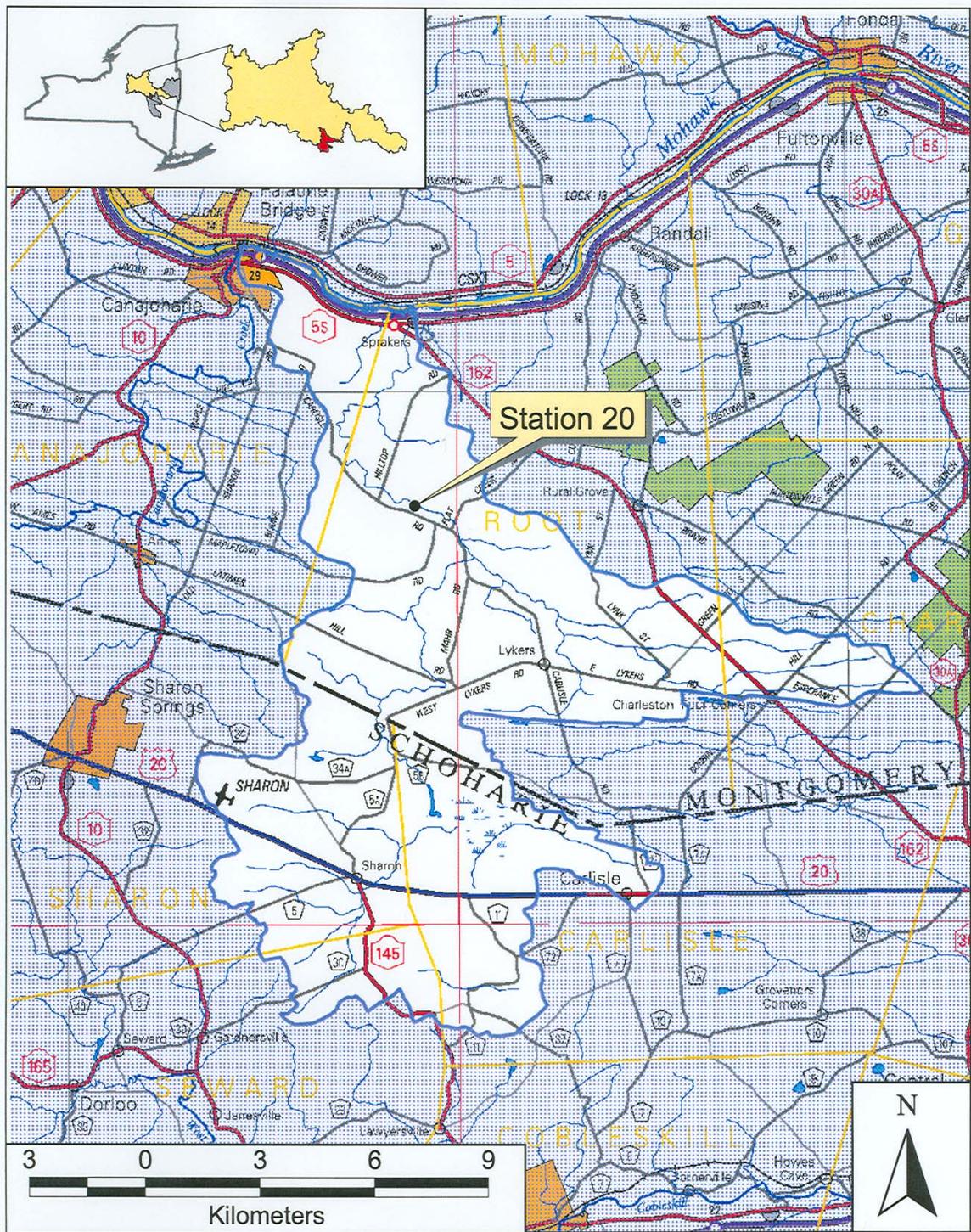


Figure 8. Trackplate station locations in the Canajoharie Creek to Flat Creek Watershed (NYS 11 digit HUC).

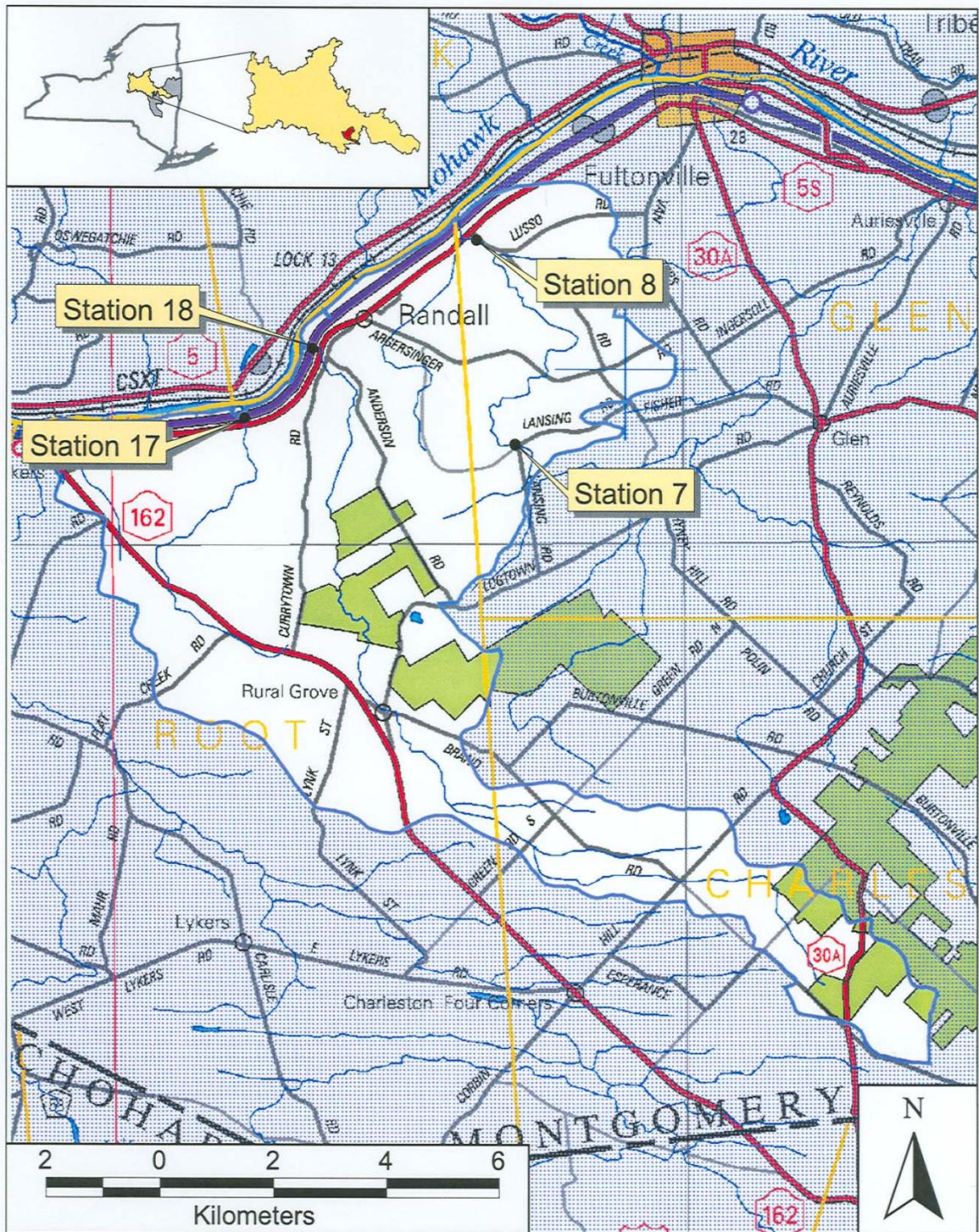


Figure 9. Trackplate station locations in the Flat Creek to Van Wie Creek Watershed (NYS 11 digit HUC).

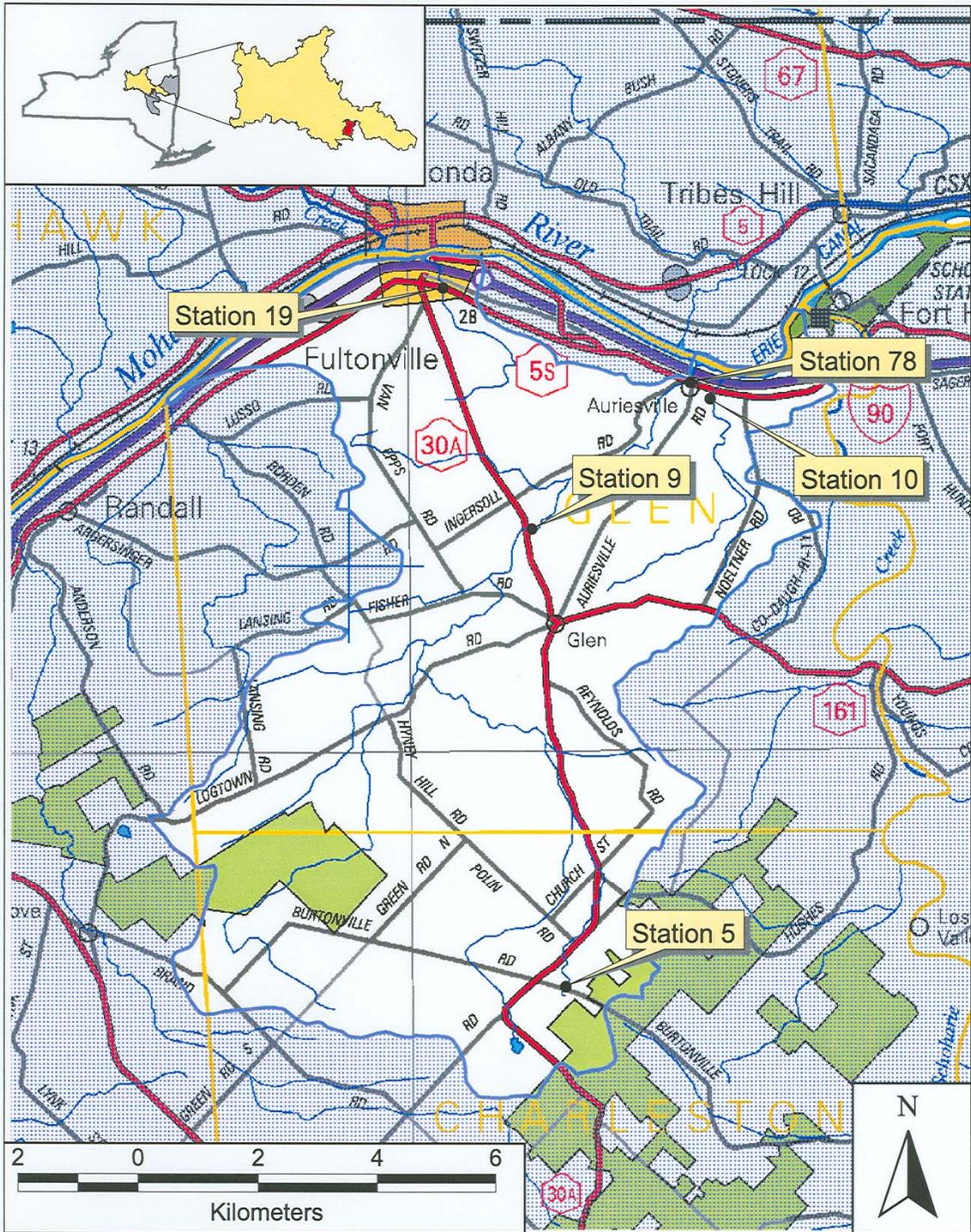


Figure 10. Trackplate station locations in the Van Wie Creek to Schoharie Creek Watershed (HUC 11 digit HUC).

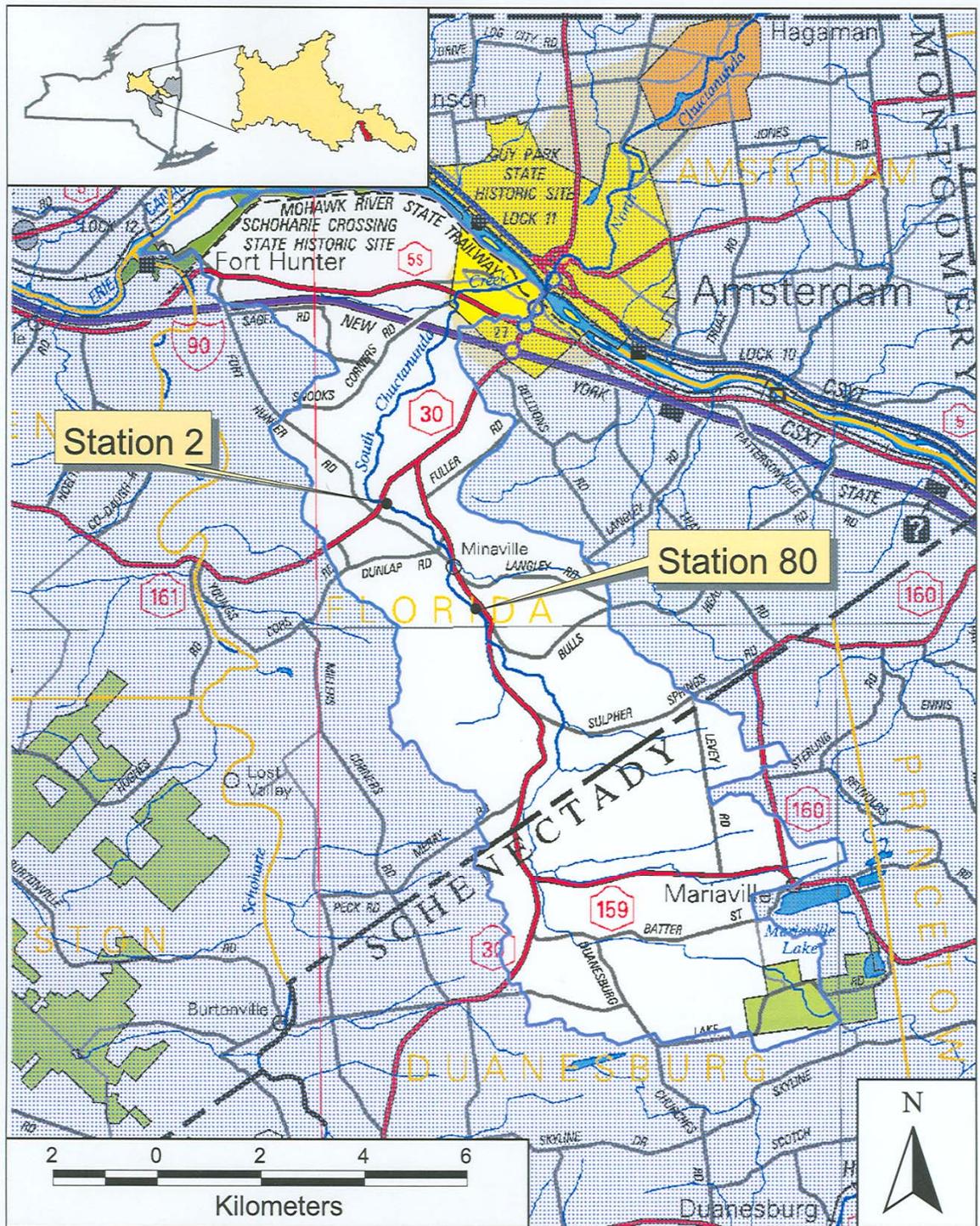


Figure 11. Trackplate station locations in the South Chuctanunda Creek Watershed (NYS 11 digit HUC).

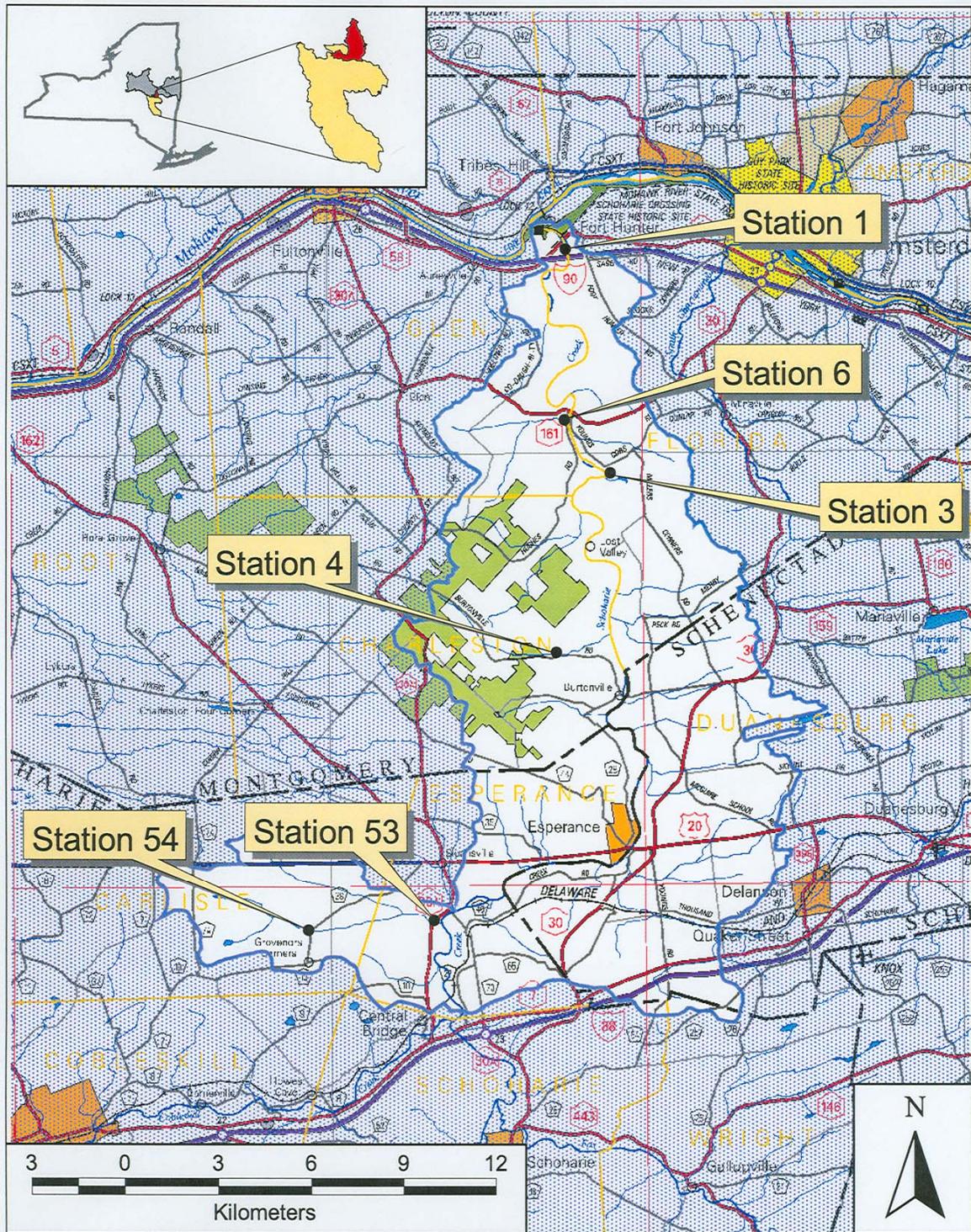


Figure 12. Trackplate station locations in the Lower Schoharie Creek Watershed (NYS 11 digit HUC).

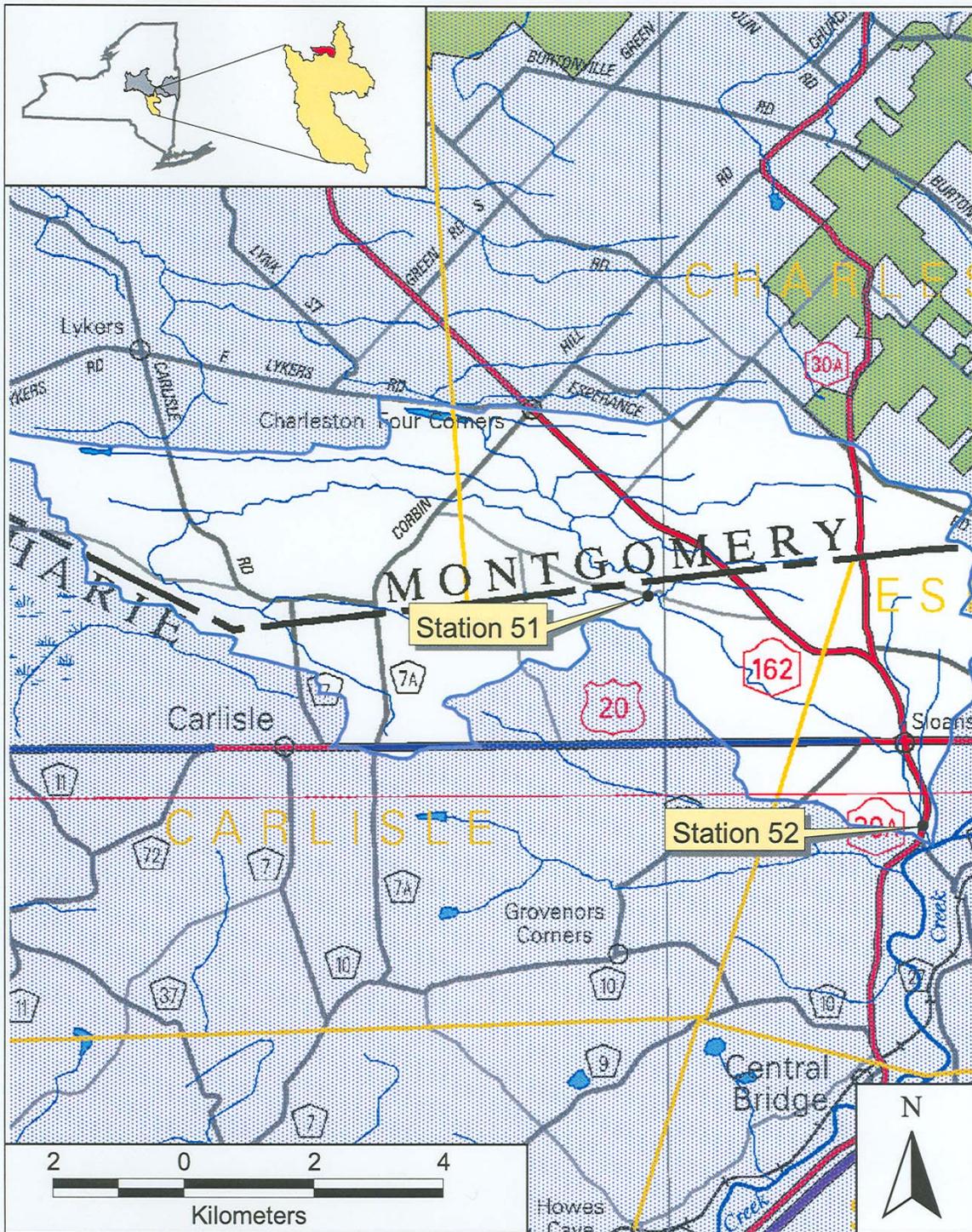


Figure 13. Trackplate station locations in the Fly Creek Watershed (NYS 11 digit HUC).

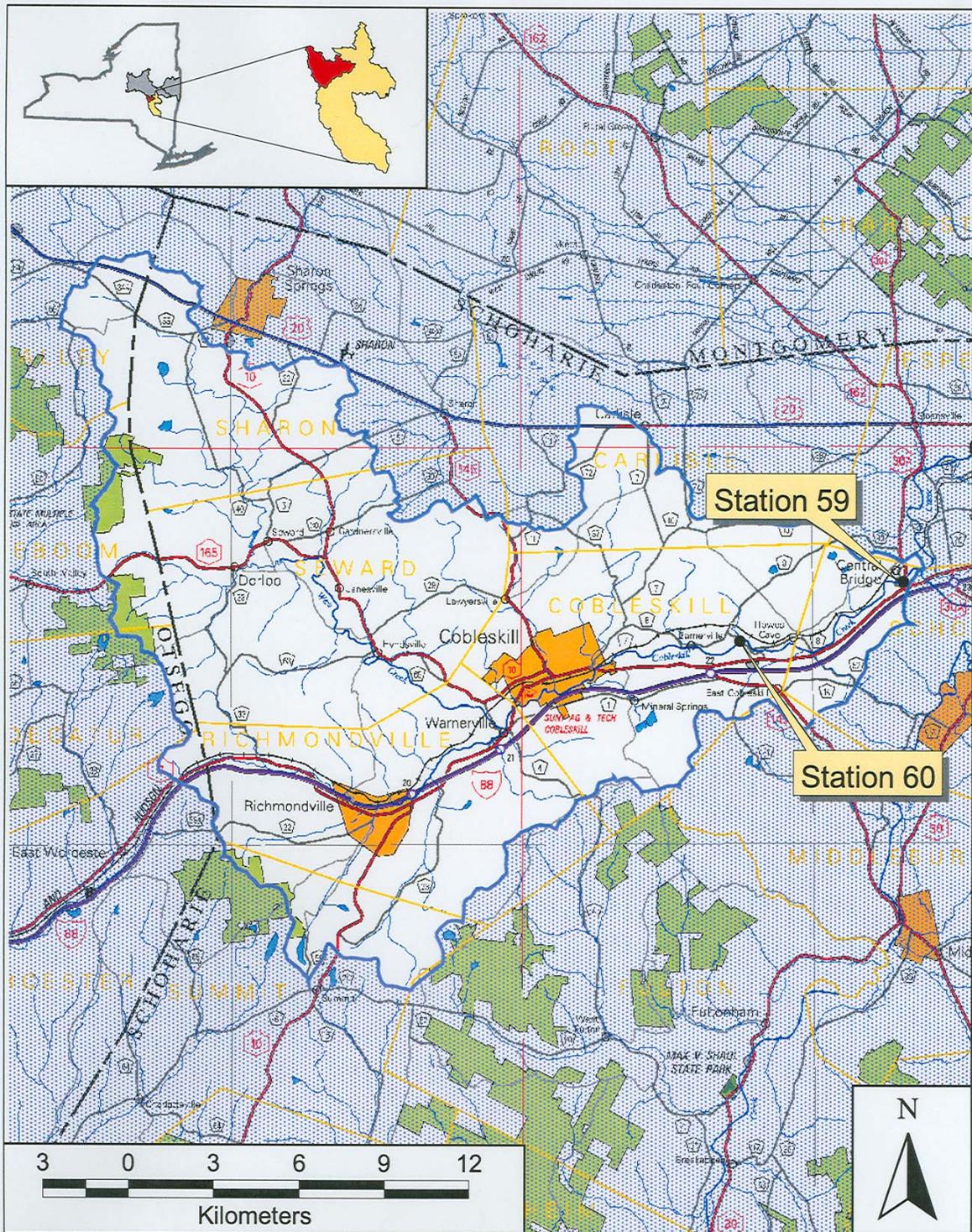


Figure 14. Trackplate station locations in the Cobleskill Creek Watershed (NYS 11 digit HUC).

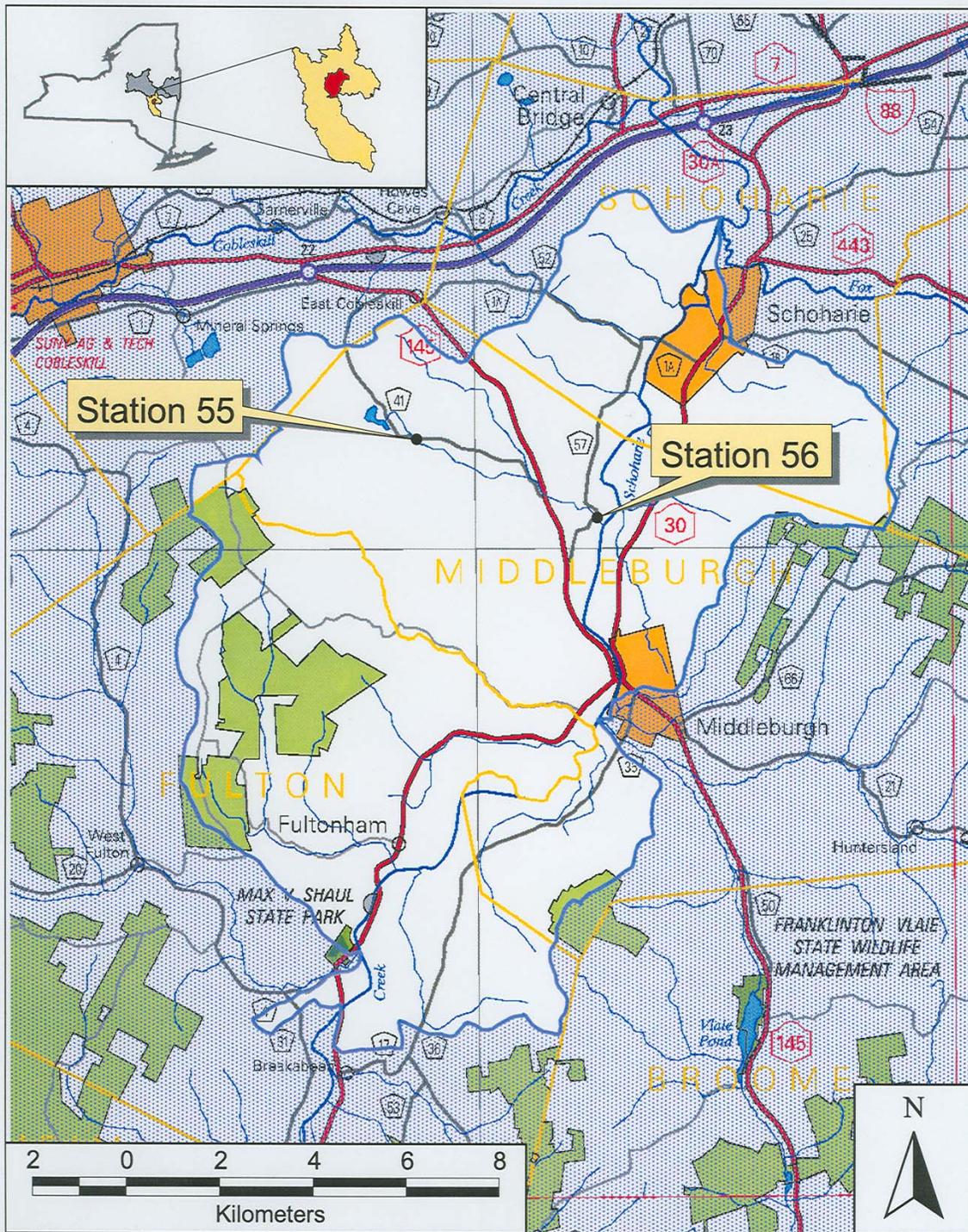


Figure 15. Trackplate station locations in the Middle Schoharie Creek Watershed (NYS 11 digit HUC).

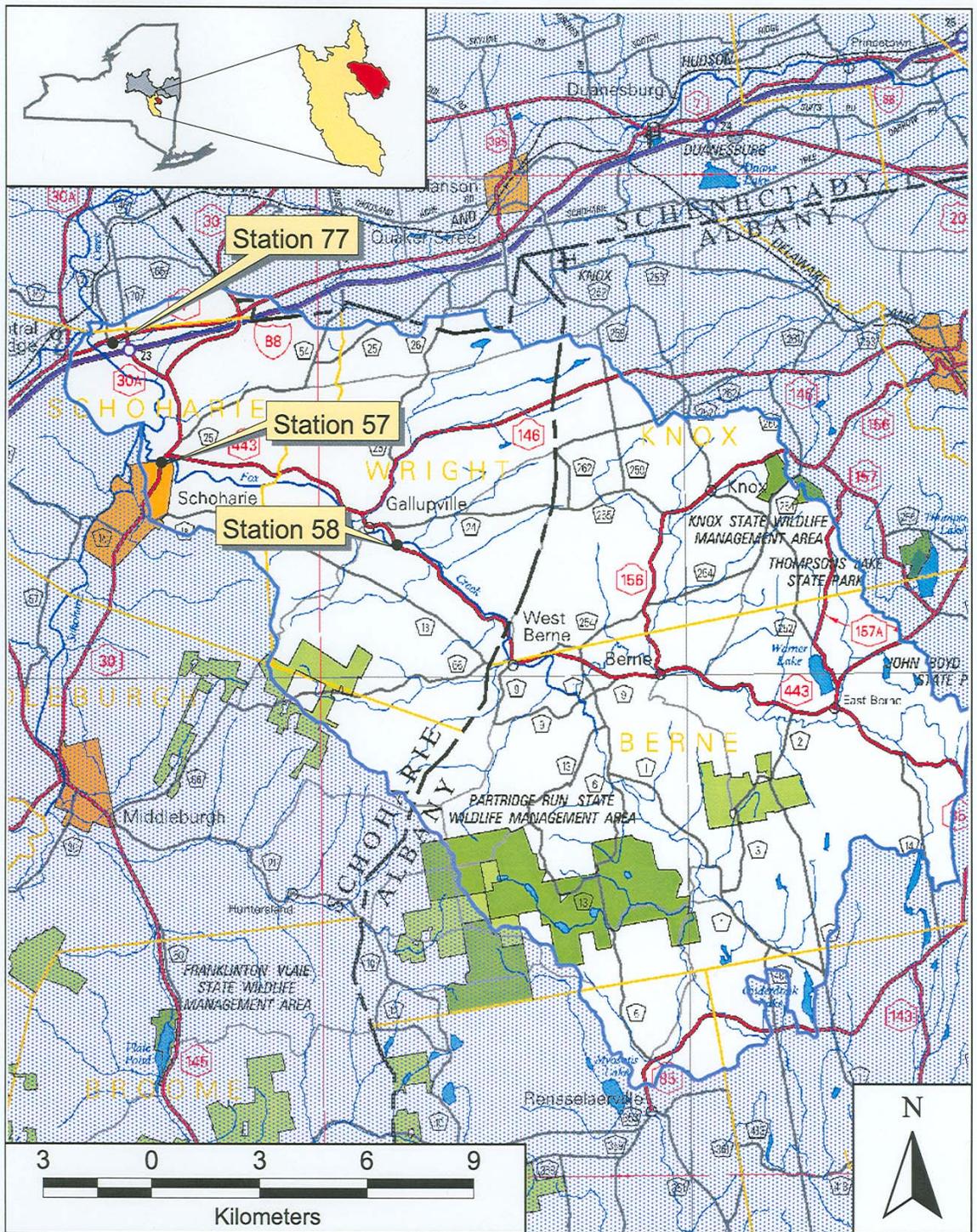


Figure 16. Trackplate station locations in the Fox Creek Watershed (NYS 11 digit HUC).

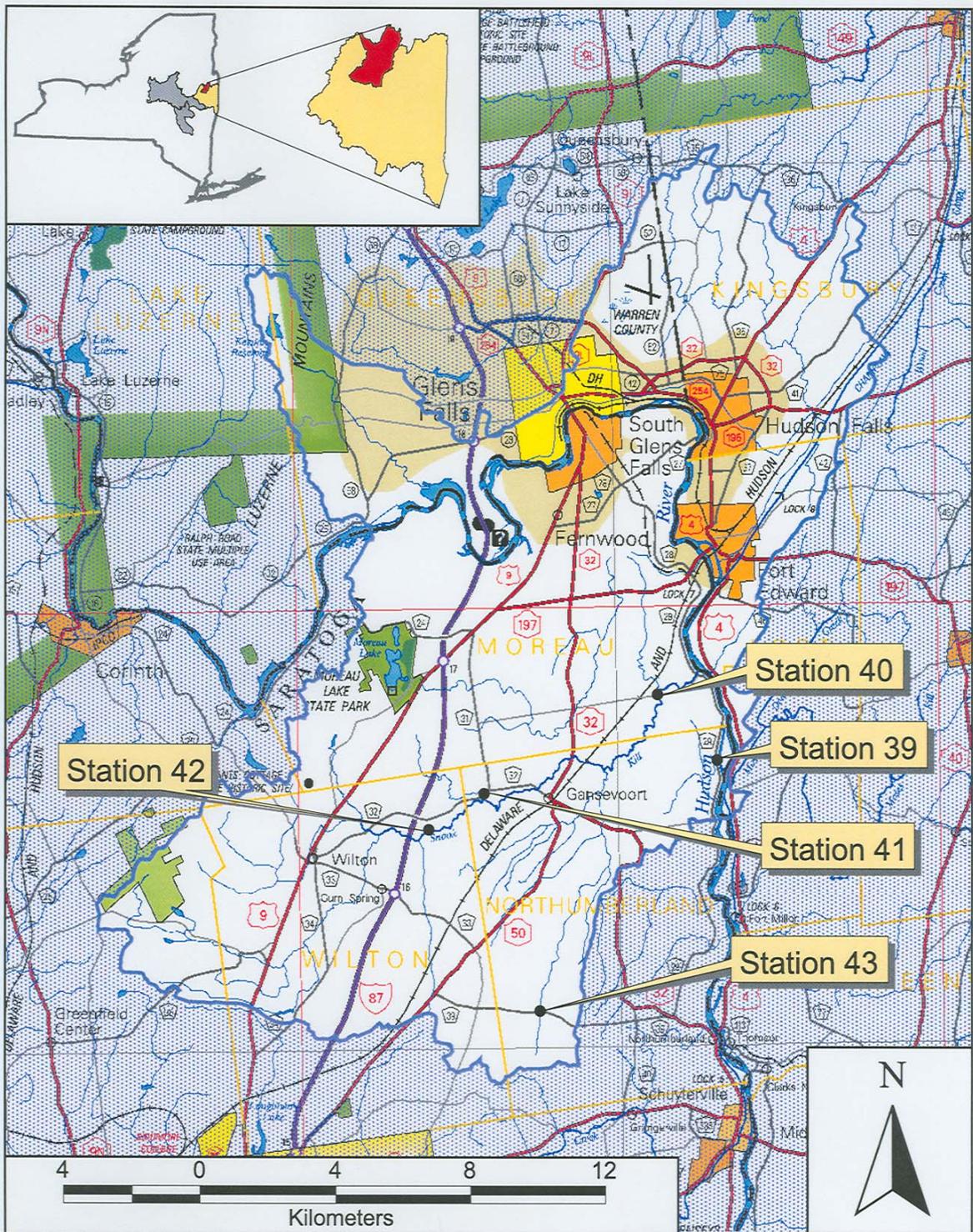


Figure 17. Trackplate station locations in the Hudson River - Clendon Brook to Snook Kill Watershed (NYS 11 digit HUC).

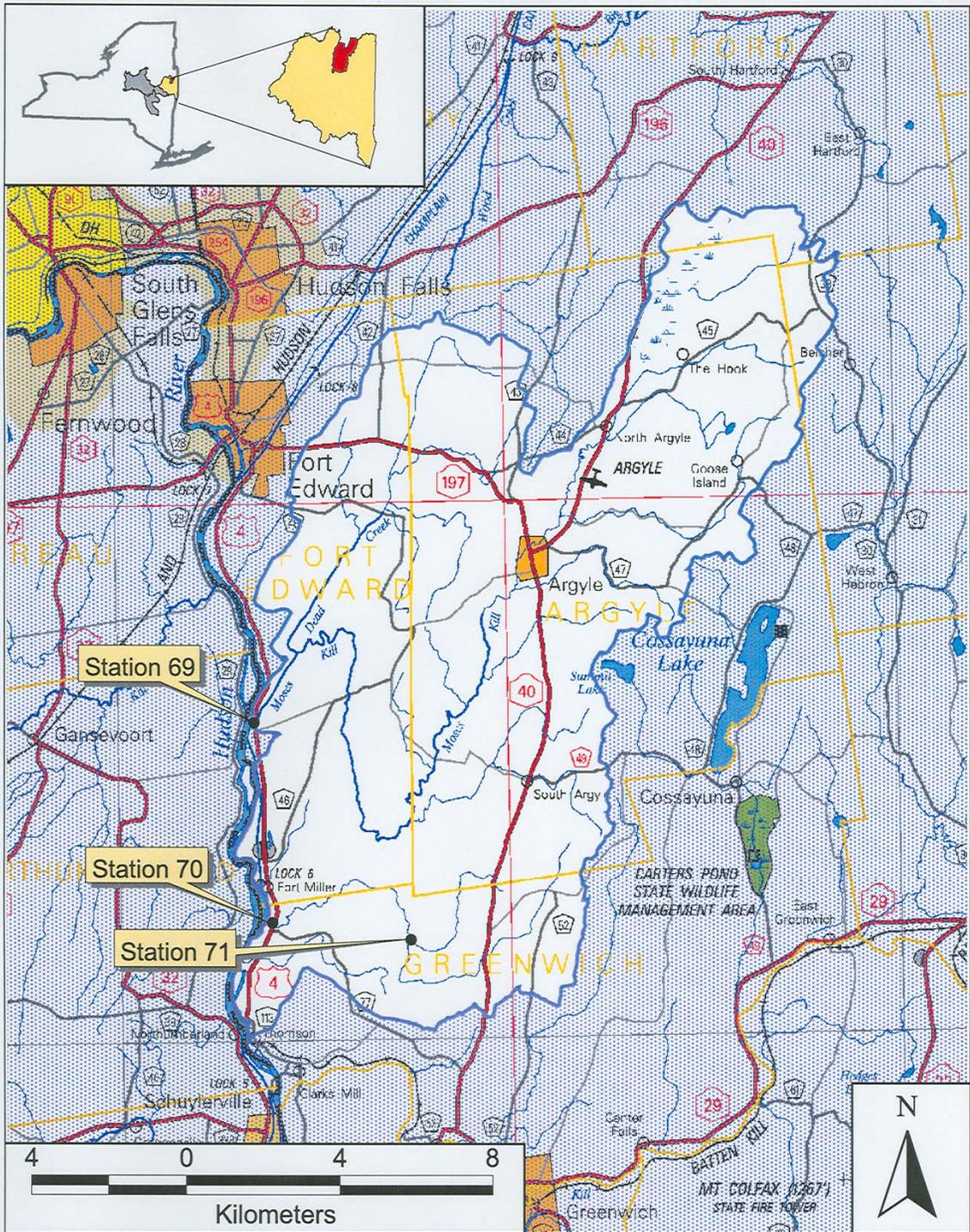


Figure 18. Trackplate station locations in the Hudson River - Snook Kill to Batten Kill Watershed (NYS 11 digit HUC).

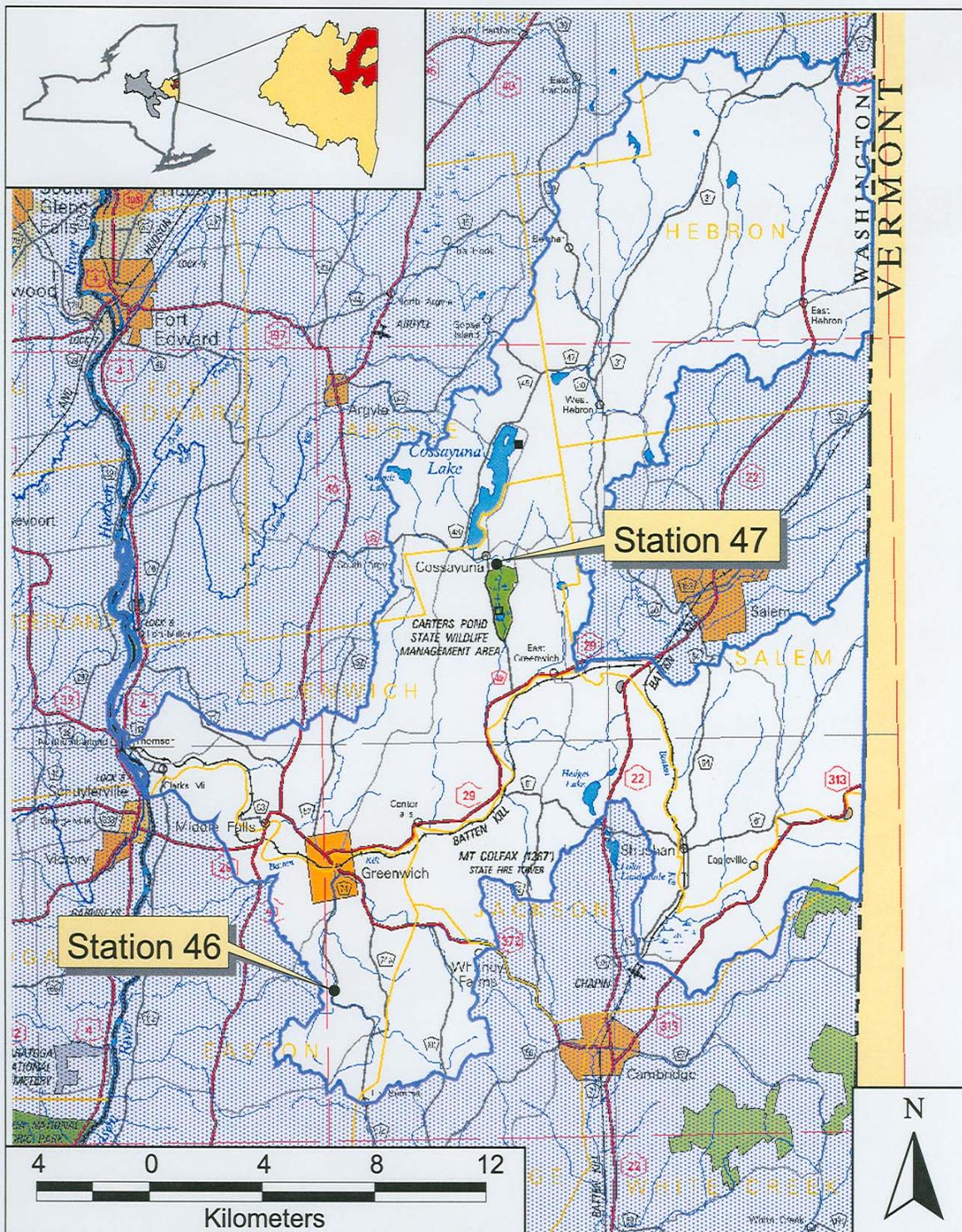


Figure 19. Trackplate station locations in the Batten Kill Watershed (NYS 11 digit HUC).

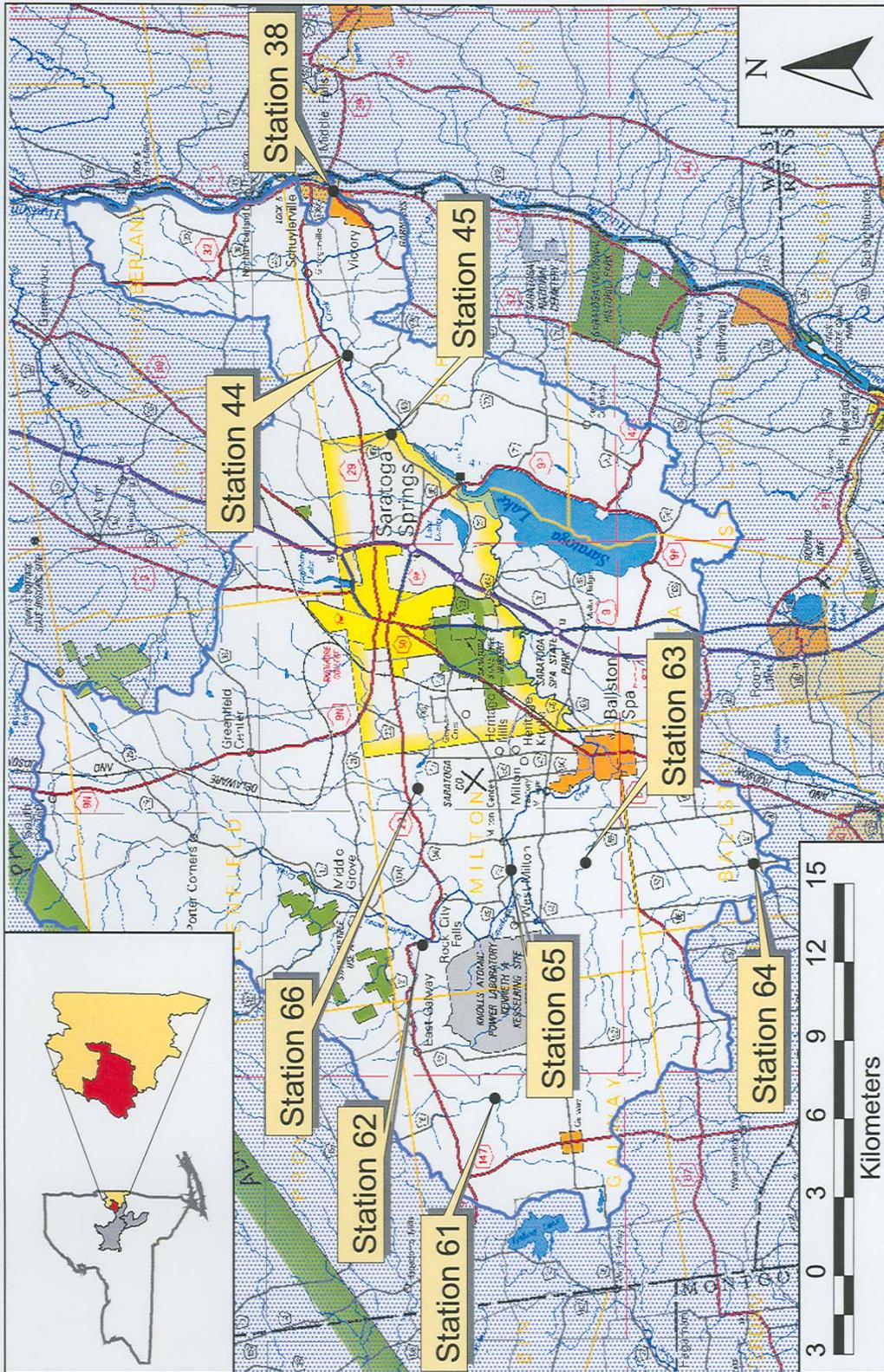


Figure 20. Trackplate station locations in the Hudson River - Snook Kill Fish Creek Watershed (NYS 11 Digit HUC)

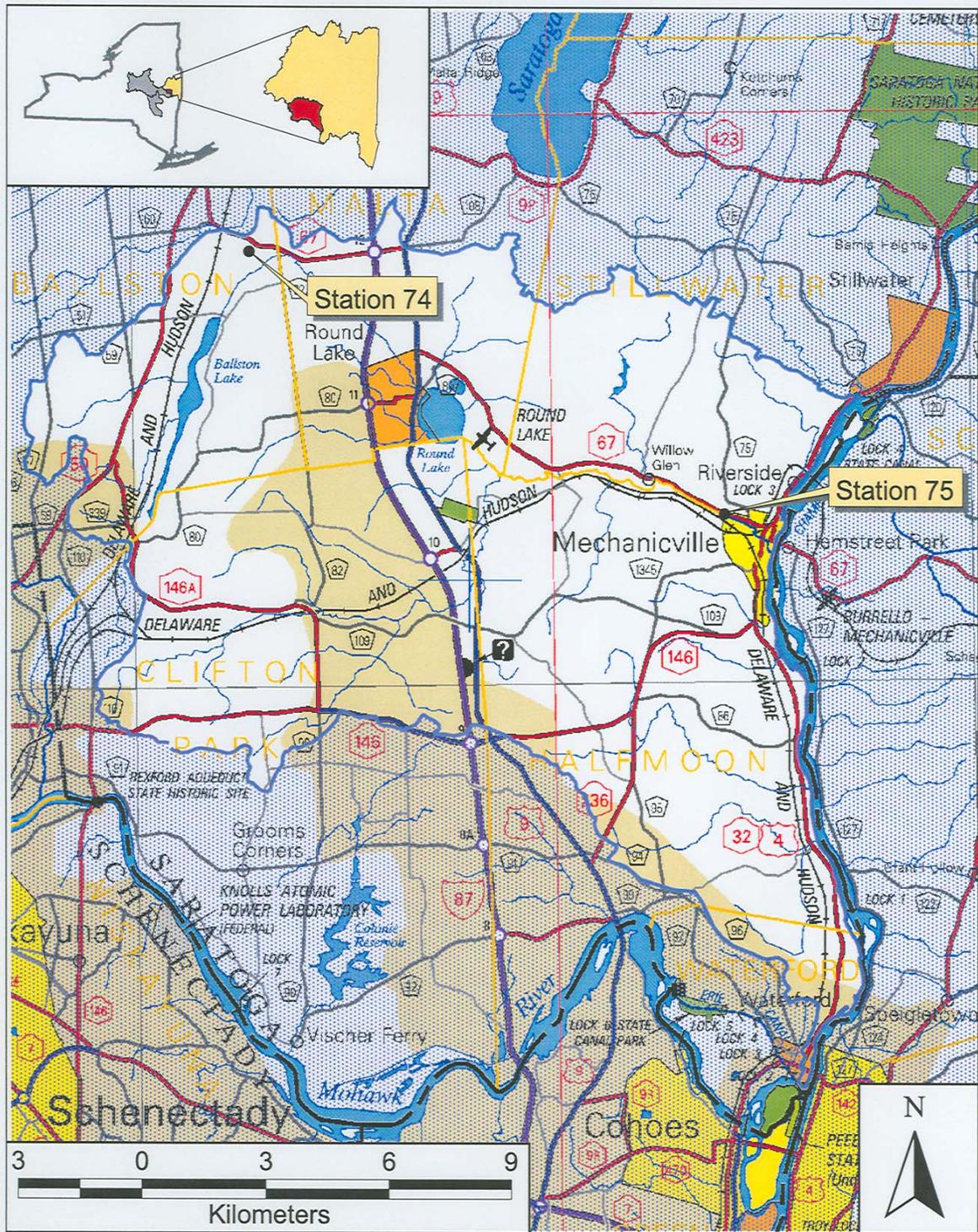


Figure 21. Trackplate station locations in the Hudson River - Hoosic River to Mohawk River Watershed (NYS 11 digit HUC).

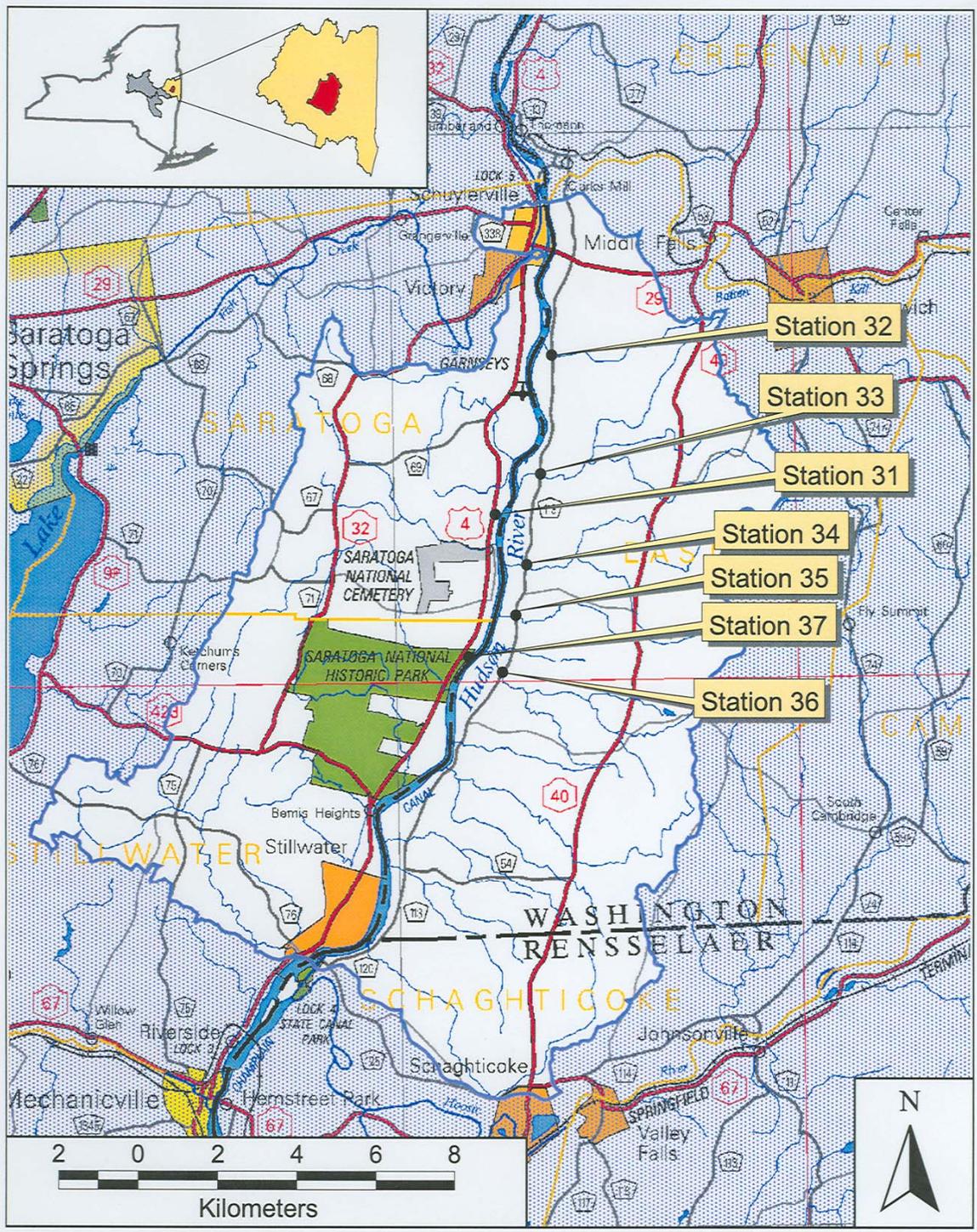


Figure 22. Trackplate station locations in the Hudson River - Fish Creek and Batten Kill to Hoosic River Watershed (NYS 11 digit HUC).

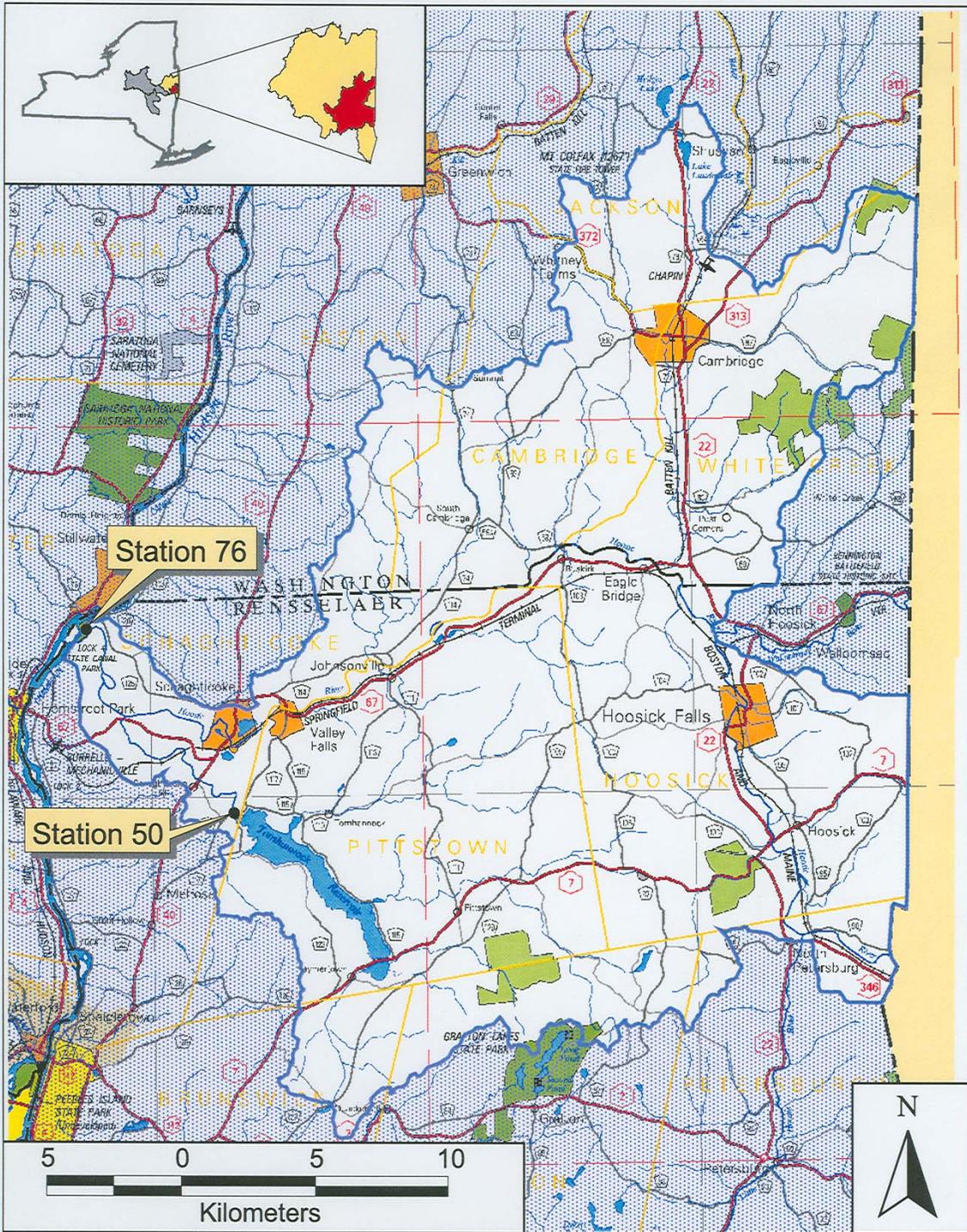


Figure 23. Trackplate station locations in the Hoosic River Watershed (NYS 11 digit HUC).

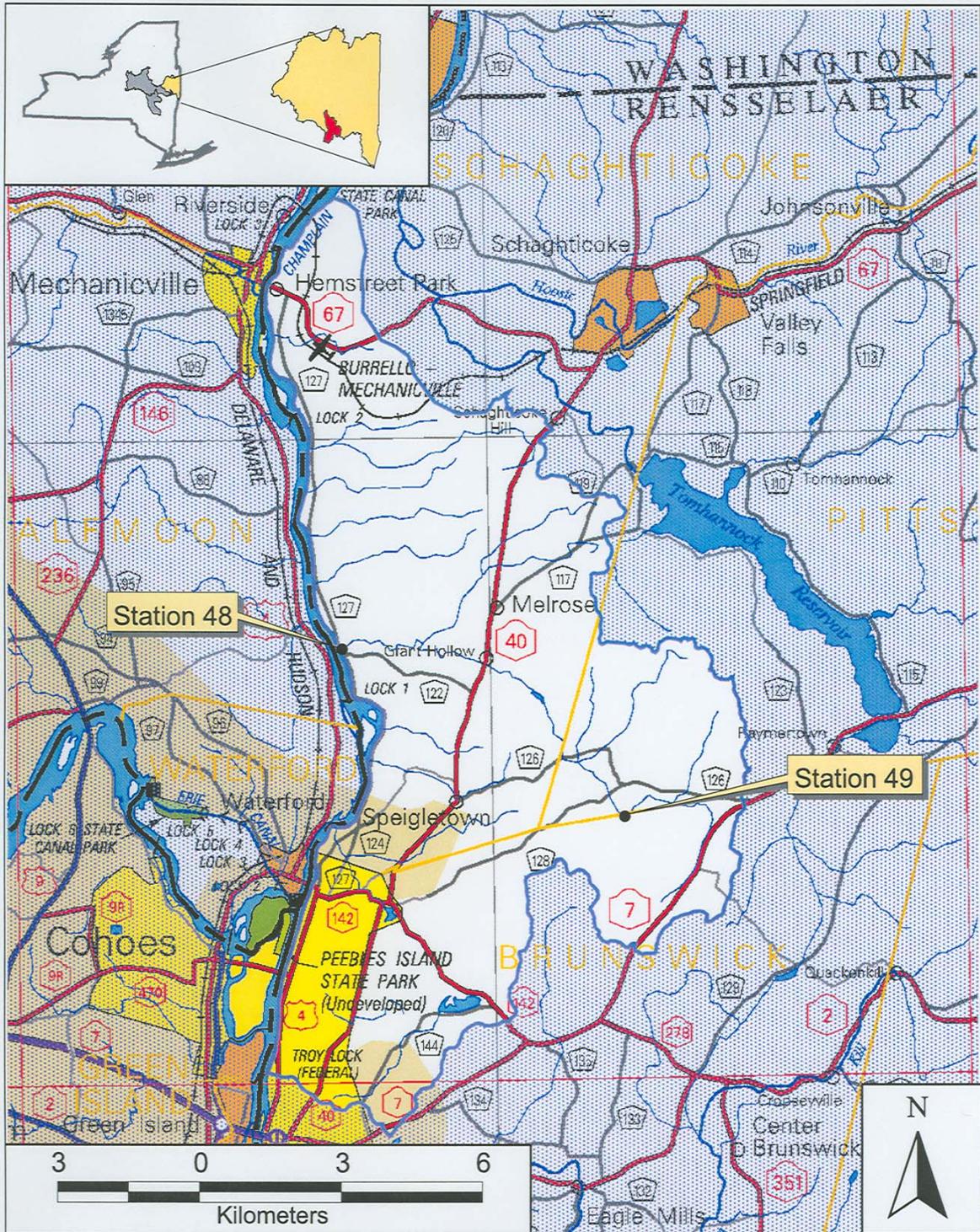


Figure 24. Trackplate station locations in the Hudson River - Hoosic River to Troy, NY Watershed (NYS 11 digit HUC).

## APPENDIX 2

Field data sheet for recording visitation data for track plates at scent stations in the Hudson River  
and Mohawk River drainages, October, 2000 to April 2001



APPENDIX 3

*USGS 7.5 Minute Topographic Images* Theme

U.S. Geological Survey 7.5-minute Quadrangle Map Scans

New York State Master Habitat Data Bank

Habitat Inventory Unit of the Division of Fish, Wildlife and Marine Resources

March 31, 2002

Geographic Data Set: USGS 7.5 Minute Map Scans.

Distribution Contact the HabitatInventory Unit of the Division of Fish, Wildlife and Marine Resources. Data are also available for download from the CornellUniversity Geospatial Information Repository.

Constraints:

Description: The data set consists of scans of U.S.G.S. 7.5 minute quadrangle maps (Digital Raster Graphics). Images are scans of NAD27 (North America Datum of 1927) and NAD83 quadrangles registered to NAD83; the vast majority are NAD27. Images are stored in directories that contain all images needed to cover the geographic area required by a DEC regional office. Image catalogs corresponding to these regional data sets can be used to view the data. Image catalogs are named USGS24.

Available: Statewide

Location: Use the Master Habitat Data Bank's Data Selector, OR  
 For PC Users:  
 \$DATAHOME/ base/imagecat/info/usg24  
 For Central Office Unix Users:  
 /nysdec/gis/prod/gis-serv/decmhdb/reg0/reg0data/  
 base/imagecat/info/usgs24

Completion or Most Recent Revision Date: 31 March 2003.

Type of Data: One band, eight bit, GeoTIFF images.

Source of Information: Image files were contained on CD-ROM's purchased from the U.S. Geological Survey in March 1998. Images are TIFF files and are accompanied by an ESRI world file with a .tfw extension. Collars were removed and images were projected from UTM to NYTM.

Projection and Map Units: NYTM in meters, NAD83 horizontal datum.

Attribute Tables: None

Contact: Habitat Inventory Unit, Division of Fish, Wildlife and Marine Resources

Documentation Date:

Usage Notes:

1. Updated DRG files were acquired from the U.S.G.S in July 2002. The image database is current with U.S.G.S DRG production through that date.
2. Most of the images are scans of NAD27 (North America Datum of 1927) quadrangles that have been registered to NAD83. Thus, quadrangle neatlines visible in these images correspond to NAD27 quadrangle borders. To see an outline of quadrangle borders that matches the visible neatlines, it is necessary to use a data set of NAD27 quadrangle boundaries such as the Quadrangle Border (NAD27), 1:24,000 data set (coverage Q24\_27T083). Some of the newer images were originally produced by the U.S.G.S. in NAD83. The quadrangle neatlines of these images will match the Quadrangle Border, 1:24,000 data set (coverage QUAD24).
3. Checking a sample of the DRG's produced by the U.S.G.S. indicated that the images were mis-registered by as much as 5 pixels (about 12 meters). Although the images were re-registered in an effort to reduce this error, perfect registration was not always possible. We found that some of the original images were scanned with distortion that could not be removed in the re-registration process. Thus, an unknown proportion of the images have errors which, when combined with any errors in the original maps, may exceed the limits of the National Map Accuracy Standards adhered to by the original maps. If a scanned image is to be used where accuracy at the 1:24,000 scale is needed, its registration accuracy should be verified.
4. The maps upon which the images are based used either metric contours

in meters or English contours in feet. There is no easy way to determine which units are used for a particular image because the map collar information is being used. We are working on a method that will allow contour intervals and units to be identified. In the meantime, users need to be aware of the need to use care in determining elevation units from these images.

5. A USGS 7.5 minute Topographic Image File Name Index is available in the coverage DRGIN24. This coverage has a polygon attribute table with a single field (item) named FILENAME. This field has the name of the image file name that fills the polygon.
6. A USGS minute Topographic Image Quadrangle Index (coverage DRGQD24) can be used to determine the image files needed to cover any 7.5 minute quadrangle. The coverage was made by intersecting the image tile index coverage (DRGIN24) with the quadrangle boundary coverage. The fields (items) in the polygon attribute table are the fields from the quadrangle boundary coverage plus FILENAME. FILENAME contains the name of the image file for the polygon. Thus, querying on a polygon will give the corresponding quadrangle name and image file name. All images for a quadrangle can be determined by using the Query Builder to select the quadrangle and looking at the FILENAME field in the selected records.
7. If using the Master Habitat Databank programming, the image will be visible only in the range of scales between 1:500 and 1:200,001.

APPENDIX 4

*DOT 1:250,000 Atlas Image Theme*

New York State Department of Transportation Atlas Image (1:250,000)

New York State Master Habitat Data Bank

Habitat Inventory Unit of the Division of Fish, Wildlife and Marine Resources

New York State Department of Transportation

April 1998

Geographic

Data Set: DOT 1:250,000 Atlas Images.  
Distribution: This data set is maintained by the NYS Department of Transportation  
Constraints: and may not be distributed by DEC staff. All requests should be referred to the Department of Transportation.  
Description: This data set contains images of New York State Department of Transportation Atlas maps. Images are in geo-TIFF format.  
Available: Statewide  
Location: Use the Master Habitat Data Bank's Data Selector, OR  
For PC Users:  
\$DATAHOME/base/imagecat/info/dotatlas  
For Central Office Unix Users:  
/nysdec/gis/prod/gis-serv/decmhdb/reg0/reg0data/  
base/imagecat/info/dotatlas  
  
A statewide version is also available.  
For Central Office PC Users:  
M:\local\images\dotatlas\state\_605.tif  
For Central Office Unix Users:  
/nysdec/gis/prod/gis-serv/decmhdb/local/images/dotatlas/state\_605.tif

Completion or

Most Recent

Revision

Date: April 1998.

Type of Data: Palette Color Raster TIFF Image.

Source of: New York State Department of Transportation via NYS Department of

Information: Environmental Conservation Information Services Division.

Projection

and Map

Units: NYTM in meters, NAD83 horizontal datum.

Attribute

Tables: None

Contact: Habitat Inventory Unit, Division of Fish, Wildlife and Marine Resources

Documentation

Date:

Usage Notes:

1. If using the Master Habitat Databank programming, the image will be visible only above a scale of 1: 5000.
2. This data set is copyrighted by New York State Department of Transportation. Any printed maps using this data set must bear the legend, "Basemap copyrighted by the New York State Department of Transportation. Current understanding is that any maps prepared for external distribution require a license from DOT before this data set can be used. Clarification of this policy is being sought.

APPENDIX 5

*DOT 1:24,000 Planimetric Images* Theme

New York State Department of Transportation Planimetric Map Scans (1:24,000)

New York State Master Habitat Data Bank

Habitat Inventory Unit of the Division of Fish, Wildlife and Marine Resources

New York State Department of Transportation  
7.5-minute quad maps

May 2000

Geographic Data Set: Quadrangle Map Image Scans of 1:24000 Maps.

Distribution: Contact the Geographic Information Systems Unit of the Division of Information Services.

Constraints: the Division of Information Services.

Description: This data set contains scanned images of New York State Department of Transportation planimetric maps that correspond to 7.5 minute quad maps. Images are scans of NAD27 (North America Datum of 1927) quadrangles registered to NAD83. Approximately 40% of the quads also have a scanned topographic image. Images are in TIFF format, are cropped and generally edge matched for seamless viewing and are geographically referenced with world files.

Available: Statewide

Location: Use the Master Habitat Data Bank's Data Selector, OR  
 For PC Users: \$DATAHOME/ base/imagecat/info/dotpln24 or dottop24  
 For Central Office Unix Users: /nysdec/gis/prod/gis-serv/decmhdb/reg0/reg0data/base/imagecat/info/dotpln24 or dottop24

Completion or Most Recent Revision Date: May 2000.

Type of Data: Black and white TIFF image.

Source of Information: New York State Department of Transportation.

Projection and Map Units: NYTM in meters, NAD83 horizontal datum.

Attribute Tables: None

Contact: Habitat Inventory Unit, Division of Fish, Wildlife and Marine Resources

Documentation Date:

Usage Notes:

1. These images are scans of NAD27 (North America Datum of 1927) quadrangles that have been registered to NAD83. Thus, quadrangle neatlines visible in these images correspond to NAD27 quadrangle borders. To see an outline of quadrangle borders that matches the visible neatlines, it is necessary to use a data set of NAD27 quadrangle boundaries such as the Quadrangle Border (NAD27), 1:24,000 data set (coverage Q24\_27T083).
2. Images are known to have inaccuracies in registration. Coordinates obtained by referencing these images may not meet National Map Accuracy Standards. Errors as large as 10 meters are not improbable. Larger errors are unlikely but may occur. If a scanned image is to be used where accuracy at the 1:24,000 scale is needed, its registration accuracy should be verified.
3. If either the "Political Border" or "Quadrangle Boundary" themes are active the quadrangle maps will be covered up. If the map you want to see is covered, turn off the covering themes. You can still see border lines by turning on the "Political Border (line)" or "Quadrangle Boundary (line)" themes. The line themes do not, however, allow you to identify political or quad names.
4. The map images are most useful when you are zoomed in so that only part of a quad is visible on the screen. If you are zoomed out too far, the map information will be too small

- to be readable.
5. Many of the quad map images have a large white border. This border will write over the image from any quads that were drawn previously. If a quad that you want to see is obscured by an adjoining quad's border, either turn off the quad causing the problem or change the order of drawing. If using the Master Habitat Databank programming, this will not be a problem as the background color will automatically be set to transparent.
  6. If using the Master Habitat Databank programming, the image will be visible only in the range of scales between 1: 500 and 1:48,000.