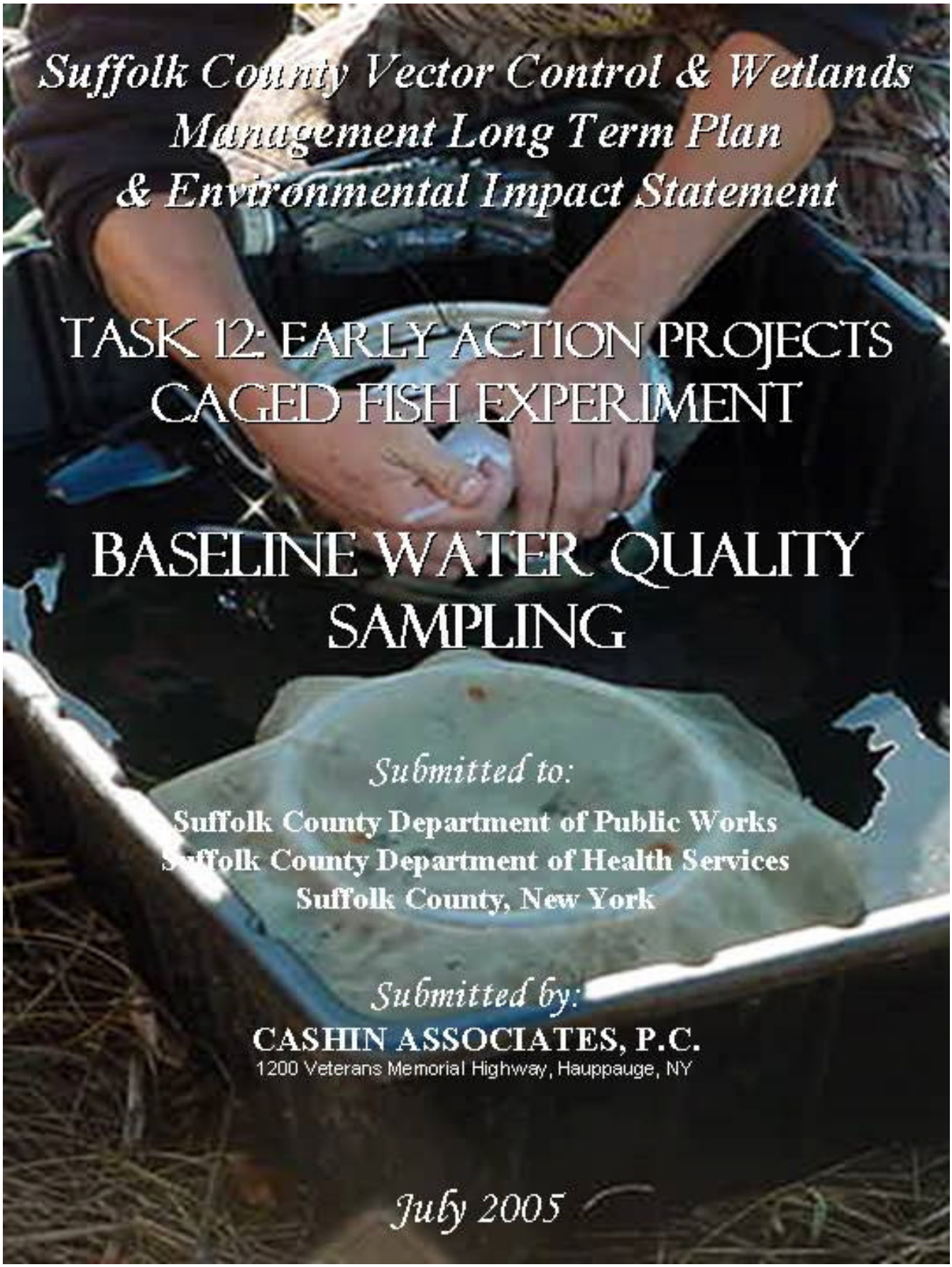

Suffolk County Vector Control & Wetlands Management Long Term Plan & Environmental Impact Statement

TASK 12: EARLY ACTION PROJECTS CAGED FISH EXPERIMENT

BASELINE WATER QUALITY SAMPLING

Submitted to:

Suffolk County Department of Public Works
Suffolk County Department of Health Services
Suffolk County, New York

Submitted by:

CASHIN ASSOCIATES, P.C.
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SUFFOLK COUNTY VECTOR CONTROL AND WETLANDS MANAGEMENT
LONG - TERM PLAN AND ENVIRONMENTAL IMPACT STATEMENT

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This report was prepared by Suffolk County Department of Health Services (SCDHS), and was reviewed and edited by Cashin Associates, P.C. (CA).

LIST OF ABBREVIATIONS AND ACRONYMS

CA	Cashin Associates, P.C.
DEET	Diethyltoluamide
MTBE	Methyl-tertiary-butyl-ether
PBO	Piperonyl butoxide
PEHL	Public and Environmental Health Laboratory
SCDHS	Suffolk County Department of Health Services
SCVC	Suffolk County Vector Control
SVOC	Semi-Volatile Organic Compounds
VOC	Volatile Organic Compounds

The purpose of this project was to determine whether the aerial spraying of vector control chemicals was likely to have adverse effects on wetland populations of fish and invertebrates. Project participants included staff from the Marine Science Research Center in Stony Brook, Southampton College, Suffolk County Vector Control (SCVC), and the Suffolk County Department of Health Services (SCDHS). The role of the SCDHS was to evaluate background water quality and to conduct pesticide deposition monitoring during aerial pesticide applications.

To evaluate background levels of constituents that may adversely affect the caged fish experiments, the SCDHS Office of Ecology collected water samples for the analysis of over 200 organic chemicals, including volatile organic compounds (VOC), chlorinated pesticides, carbamate pesticides, herbicide metabolites, and semi-volatile organic compounds (SVOC), at eight sites initially identified as potential treatment and/or control locations. Locations monitored included Beaver Dam Creek and Fireplace Neck in Brookhaven Hamlet, Havens Point in East Moriches, Johns Neck (Unchachogue Creek) in Shirley, Old Fort Pond in Shinnecock Hills, Pepperidge Hall in Oakdale, and Timber Point in Great River. At the treatment and control sites ultimately selected, Johns Neck and Havens Point, respectively, samples for the analysis of nitrogen and phosphorus nutrients, and pH, were also collected. All analyses were conducted by the SCDHS Public and Environmental Health Laboratory (PEHL).

Results for the eleven sites sampled (summarized in Table 1) were generally unremarkable, and did not indicate the presence of any substances capable of compromising the experiments. Included in the organic positive detects were insignificant levels (0.7-0.9 ug/l) of the now ubiquitous compound methyl-tertiary-butyl-ether, or MTBE, a gasoline additive often detected in surface and ground waters. Also found were varying levels of methyl sulfide (0.8-5 ug/l), a natural breakdown product of organic matter in marine environments, and trace levels of the mosquito repellant diethyltoluamide (DEET), the latter likely associated with residues from the sample collector. Levels of ammonia found were not unusual, ranging from 0.025 to 0.048 mg/l at the Johns Neck and Havens Point sites, as were pH levels, which ranged from 6.7 to 7.5.

Table 1. Results of Preliminary Sampling for the Caged Fish Study

Sampling Site	Sampling Date	VOC * (Positive Detects Only - ug/l)	SVOC *	NH3 (mg/l)	NO2+NO3 (mg/l)	Total N (mg/l)	Total P (mg/l)	pH
Beaver Dam Creek	7/19/04	MTBE (0.7), Methyl sulfide (0.8)	----	----	----	----	----	----
Fireplace Neck	7/19/04	Methyl sulfide (1)	----	----	----	----	----	----
Havens Point	7/16/04	Methyl sulfide (3)	DEET (8.5)	0.048	< 0.005	0.38	< 0.025	7.1
	7/19/04	Methyl sulfide (2)	----	----	----	----	----	----
Johns Neck – Cage	7/16/04	Methyl sulfide (1)	DEET (1.3)	0.025	0.077	0.59	0.122	6.7
	7/19/04	MTBE (0.7), Methyl sulfide (5)	----	----	----	----	----	----
Johns Neck - Mouth	7/16/04	Methyl sulfide (1)	DEET (6.3)	0.032	0.082	0.54	0.025	7.5
Old Fort Pond	8/2/04	Methyl sulfide (5)	----	----	----	----	----	----
Pepperidge Hall	7/19/04	MTBE (0.9), Methyl sulfide (0.8)	Dimethyl phthalate (0.3)	----	----	----	----	----
Timber Point	8/2/04	Methyl sulfide (0.9)	----	----	----	----	----	----
Flax Pond	9/24/04	Methyl sulfide (1)	----	----	----	----	----	----

* Results in parentheses

Monitoring of pesticide deposition was limited to a single event on 8/25/04, when an aerial spray of the adulticide resmethrin was conducted in the Mastic-Shirley area. As with other spray events monitored by the SCDHS, the device utilized to collect the pesticide deposition residues at the caging site consisted of a large Pyrex dish (13"x15") mounted in a Styrofoam cooler containing ice. The device was deployed at the Johns Neck location prior to the onset of spraying (at about 6:00 PM), and retrieved once the spraying had ended and pesticide residues had safely dissipated (at approximately 11:00 PM). The dish was kept covered and secure until delivery to the PEHL the following morning.

Deposition results for this caging trial were similar to those found for other deposition monitoring events, i.e., the synergist piperonyl butoxide (PBO) was detected (0.7 ug/l), but the adulticide resmethrin was not (<0.2 ug/l). Whether this is due to the general instability of resmethrin, a function of the relative chemistry of the two compounds, or is an artifact of the sampling device, is not clear.

During the 8/25/04 aerial spray event, a number of water samples were also collected from the Johns Neck caging site and split between the PEHL and the United States Geological Survey (USGS) laboratory in an attempt to compare water sampling methods used by the two labs. The USGS procedure involves collecting filtered surficial samples, while the method used by Suffolk County is to collect whole (unfiltered) samples from just below the water surface.

Samples collected included one pre-spray ditch sample using the PEHL method (subsurface, whole), two post-spray ditch samples (one by each procedure), and two post-spray channel samples (collected from where the caging site ditch meets the main Unchachogue Creek channel). Results for all samples analyzed by the PEHL were the same: < 0.2 ug/l for resmethrin, and < 0.5 ug/l for PBO.