

Project Summary
Premium Standard Farms
Consent Decree Biological Monitoring

Due to environmental problems associated with hog manure spills into Missouri State waters a legal action was initiated in 1995 against Premium Standard Farms (PSF), Princeton, Missouri. Sections of the consent decree required the company to perform environmental monitoring. The exact language was as follows:

By February 15, 1996, PSF shall retain a consulting firm for the purpose of macroinvertebrate biomonitoring at selected sites owned and/or operated by PSF in the state of Missouri. The duration of the biomonitoring program shall be five (5) years and the maximum cost to PSF shall be set at thirty-five thousand dollars and no cents (\$35,000.00) per year. The name of the consulting firm and Curriculum Vitae of the persons doing the biomonitoring shall be forwarded to the MDNR by this date. After approval of the Curriculum Vitae by the MDNR, the MDNR's Environmental Services Program and the consulting firm shall select appropriate monitoring sites for this program.

The consultant shall follow the aquatic macroinvertebrate sampling protocol and habitat assessment protocol developed by the MDNR to ensure the comparability of PSF data with data collected by the MDNR. The first samples shall be collected between March 15 and April 15, 1996. Thereafter, the samples shall be collected annually between March 15, and April 15. Data from the sampling shall be submitted to the MDNR within six (6) months of the collection date in spreadsheet format. In the event the biomonitoring program data indicates a water quality concern in the receiving stream, the MDNR may require PSF to conduct frequent visual and chemical monitoring to identify specific pollutant sources.

Because a monetary amount was given in the consent decree the ESP negotiated with PSF and their selected contractor for the number of sites that were to be monitored. Initially ESP proposed monitoring at thirteen (13) locations but PSF disagreed and through negotiation a total of 11 sites were agreed upon. The ESP then attempted to select the sites for optimum biological monitoring situations. The sites selected are as follows:

**Premium Standard Farms
Macroinvertebrate Monitoring Locations**

North Blackbird Creek - Putnam Co.

#1) SW1/4; Sec. 27; T66N; R18W
*James Myers
Cincinnati IA
(515) 658-2940

#2) N1/2; Sec. 28; T66N; R18W
*Richard Stottlemeyer
Unionville MO
(816) 947-2556

Pearl Summers
Unionville MO
(816) 947-2741

#3) E1/2; Sec. 19; T66N; R18W
Roger Pearson
Unionville MO
(816) 947-2356

West Locust Creek - Putnam Co.

#1) E1/2; Sec. 20; T65N; R20W (Downstream from Hwy EE Bridge)
*William Bruce
Lucerne MO
(816) 793-2632 or (816) 793-2631

- #2) SW1/4; Sec. 17; T65N; R20W (Upstream from Hwy EE Bridge past first tributary)
*William Bruce
Lucerne MO
(816) 793-2632 or (816) 793-2631
- #3) NE1/4; Sec. 6; T65N; R20W (Downstream from Hwy 136 Bridge)
Dale Hamilton
Lucerne MO
(816) 793-3221

Mussel Fork Creek - Sullivan Co.

- #1) SW1/4; Sec. 26; T62N; R18W (Upstream from county road bridge)
*Dennis Foster
Green City MO
(816) 874-4465
- #2) W1/2; Sec. 23; T62N; R18W (Upstream from Hwy H Bridge)
*Don Jepson
Green City MO
(816) 874-4235
- *Roy Heaton
Green City MO
(816) 874-4423

West Medicine Creek - Mercer Co.

- #1) S1/2; Sec. 17; T64N; R22W (Upstream from county road bridge)
James Lyons
(816) 748- 4157
- #2) E1/2; Sec. 31; T65N; R22W
PSF
- #3) N1/2; Sec. 31; T65N; R22W (Downstream from county road bridge)
PSF

* Landowners wish to be notified before sampling

Two streams, North Blackbird Creek and Mussel Fork, were selected because of manure spills in 1995. The North Blackbird Creek spill was in December 1995 and the Mussel Fork spill was in the summer of 1995. Two other streams, West Locust Creek and West Medicine Creek, were chosen and study sites were located based upon proximity to land application areas.

During the initial sampling period, Randy Sarver, of MDNR, ESP was present at all sampling locations. Basic biological sampling and habitat assessment training was given to the consultant for consistency of data. At that time the decision was made that habitat assessment would be adequate if performed on the 1st, 3rd, and 5th years.

Other than the initial training, Randy Sarver performed observations in 1997, an oversight audit in 1998, and side by side sampling at one location (West Medicine Creek) in 2000. The following memo is from the 1997 audit:

MEMO

On Saturday March 28, 1998 and Sunday March 29, 1998 oversight of Premium Standard Farms consultants Greg Wallace and Tommy O'Connor, of H2O'C, Ltd., was conducted by Randy James Sarver of the Missouri Department of Natural Resources, Division of Environmental Quality, Environmental Service Program, Water Quality Monitoring Unit. Observations were made concerning field water chemistry measurements, macroinvertebrate sampling techniques, and habitat assessment procedures. Standard Operating Procedures and field training had been provided to the consultants during the first sampling season in 1996.

The sites at which observations were made are as follows:

March 28, 1998

Mussel Fork - Sullivan Co., Site #1 SW1/4 S26 T62N R18W @ Dennis Foster property

Mussel Fork - Sullivan Co., Site #2 W1/2 S23 T62N R18W @ Don Jepson property

March 29, 1998

North Blackbird Creek - Putnam Co., Site #1 SW1/4 S27 T66N R18W @ James Meyers property

North Blackbird Creek - Putnam Co., Site #2 N1/2 S28 T66N R18W @ Richard Stottlemeyer property

Comments:

Tommy O'Connor using a Corning brand meter with interchangeable pH, Oxygen, and Conductivity probes took temperature, pH, Oxygen, and Conductivity measurements at streamside. Oxygen would not zero correctly using a sodium sulfite standard. Alkalinity, Hardness, and Turbidity were collected in a plastic container for later analysis. No preservative technique was observed.

Four standard habitats (non-flow, flow with fine substrate, snags, and root mats) were sampled for macroinvertebrates at each site. Water levels were observed to be at the top of the lower bank and no problems were apparent with the consultants in being able to sample.

Habitat assessment procedures were observed and some feedback was given as to the scoring of several parameters. The consultants used the recommended procedure of breaking the stream down into ten transects according to the MDNR Habitat Assessment Procedure. My emphasis to the consultants was that a consistent interpretation of habitat scoring be applied at all locations. No major habitat changes were observed from the initial trip in 1996.

Randy Sarver

Aquatic Biologist

Data for all years was submitted by PSF within the six-month deadline. Electronic copies of the data reside within a database at the ESP. The ESP performed some basic analysis of the five (5) year data set. Analysis consists of assessment of biological data by application of draft biological criteria for wadeable/perennial streams. In order to assess the data using draft criteria the original data was modified to eliminate one habitat, flowing water over fine substrate. This habitat was a part of the protocol when the consent decree was initiated but was later dropped from the standard protocol by the Missouri Department of Natural Resources.

It is worthy to note that PSF merged with Continental Grain in 1999. This change in ownership resulted in a modification in the consultants. The ESP requested and evaluated Curriculum Vitae from any new individuals involved in the study.