PROJECT XL

CLERMONT COUNTY, OHIO

June 12, 1996

Regulatory Reinvention Pilot Projects:
XL Community, FRL-5322-9
Water Docket, Mail Code 4101
USEPA
401 M Street Southwest
Washington, DC 20460

Re: Clermont County XL Community Pilot Project Proposal

To Whom It May Concern:

Enclosed please find four (4) copies of Clermont County's XL Community Pilot Project Proposal for your review.

Clermont County's proposal for participation in Project XL is viewed as a vehicle to design and implement a community directed, water quality based strategy for achieving and maintaining environmental quality consistent with the County's vision and in partnership with the OEPA and USEPA. Key components of the proposed program are:

- *Collaborative goal setting,*
- *Sampling and monitoring,*
- *Development of a watershed model,*
- *Development of a County Environmental Protection Plan, and*
- *Development of a framework for local permitting and policy making relative to water quality goals.*

The proposed program will include 1) specific and extensive involvement of stakeholders and the public community, and 2) through monitoring and critical evaluation, accountability to all partners and more efficient use of resources in achieving water quality goals.

Our key participants include:

David L. Spinney
Assistant County Administrator
101 East Main Street
Batavia, Ohio 45103
(513) 732-7301

Joe Johnson
HARZA Environmental Services, Inc.
233 South Wacker Drive
Chicago, IL 60606-6392
(312) 831-3800

Paul Braasch, Coordinator
Office of Environmental Quality
101 East Main Street
Batavia, Ohio 45103
(513) 732-7745

Rick Record
Balke Engineers
1848 Summit Road
Cincinnati, Ohio 45237
(513) 761-1700

Should you have any questions, or need further information, please do not hesitate to contact me at (513) 732-7301. I look forward to hearing from you.

Sincerely yours,

David L. Spinney
Assistant County Administrator

Enclosures

cc: *A. Steven Wharton*
Board of County Commissioners
Paul Braasch
Mike Powell
Rick Record
Joe Johnson
Dr. Paul Russell

IN RE: BOARD OF COUNTY COMMISSIONERS...PROPOSAL FOR PARTICIPATION IN THE U.S. EPA'S ENVIRONMENTAL EXCELLENCE AND LEADERSHIP PROGRAM (PROJECT XL)...RATIFIED..... 960607-016

Moved by Mr. Martin, seconded by Mrs. Dorsey, that the Board of County Commissioners approve the following recommendation:

Recommendation of David L. Spinney, Assistant County Administrator, to authorize a proposal for participation in the U.S. EPA's "Environmental Excellence and Leadership Program (Project XL) to pursue funding assistance for the implementation of an overall water quality management strategy and promote regulatory flexibility in exchange for greater environmental benefits, and further authorize the execution of any and all documentation relative thereto.

Upon roll call on the foregoing motion, the vote was as follows:

Mr. Martin, Yea; Mrs. Dorsey, Yea; Mr. Proud, Yea.

AN OUTLINE OF CLERMONT COUNTY'S

XL COMMUNITY PILOT PROGRAM

The XL Community Pilot Program provides Clermont County, Ohio EPA, and the US EPA the vehicle to develop a partnership to allow Clermont County to implement its own community designed and directed strategy to achieve desired environmental quality.

A major outcome of Clermont County's recent work on the development of a county-wide wastewater master plan is the recognition that our wastewater system cannot be managed outside of an overall water resources management strategy. Land use patterns, transportation infrastructure, wastewater treatment, protection of drinking water resources, and the quality of the environment are too intertwined to be addressed independently. If we continue to approach environmental and development issues with a fragmented and compartmentalized approach, we will not achieve satisfactory outcomes.

As one of the fastest growing counties in Ohio, Clermont County (Figure 1-1) must be aggressive and innovative if it is to maintain a balance between economic growth and preservation of the natural character and environment of the County. The following vision statement became the basis for the work on the wastewater master plan:

> *Clermont County should continue to be allowed to evolve as a desirable place to live and work; where "quality of life" factors are high; where a sound balance is maintained between short-term wants and long-term needs; where inevitable changes over time are managed so as to enhance, rather than degrade, the human environment; where quality, sustainable development and growth are supported and encouraged; and where irreplaceable natural resources are protected and recognized as critical to the aesthetic character and long-term well-being of the County.*

A very logical approach to addressing this complex challenge is through the development of a watershed management strategy. As the County began to examine the policies and institutional structures necessary to develop and implement such a strategy it became clear that the existing regulatory and administrative system becomes a serious impediment to achieving our goals.

The Ohio EPA governs the discharge of wastewater treatment plants within Clermont County but does not have responsibility for many areas that directly impact environmental quality including land use, on-site household wastewater systems or most non-point source loads. As a result, the Ohio EPA attempts to improve water quality conditions within the Little Miami River basin by reducing loadings only from point source loads under their jurisdiction. As with any river system, the Little Miami River receives both point and non-point source loads. In many systems, the point sources under OEPA jurisdiction (NPDES Permits) contribute less than 30% of all loads. The Ohio EPA's targeting of only point NPDES permitted source loads may not only prove to be futile but ultimately counter productive.

To achieve water quality goals while maintaining environmentally and economically sustainable growth in Clermont County, the County, not Ohio EPA, needs to take the lead, and be responsible for protecting the environmental quality of its waters. The initial step is the development of a watershed management program.

The County's focus will initially be on the portion of the East Fork of the Little Miami River watershed within the County (Figure 1-2). This area more than any other within the County is critical to achieving the County's vision. It includes:

- *Harsha Lake, a major source of potable water for the residents of the county;*
- *East Fork State Park, a regionally significant park surrounding Harsha Lake;*
- *A closed hazardous and toxic waste landfill above Harsha Lake where significant water quality sampling and monitoring will continue;*
- *A tributary to a National and State Designated Scenic river;*
- *Rapidly urbanizing landscape;*
- *The major point source discharges of the entire East Fork River.*

The County's program will take the following form:

1. **Collaborative Goal Setting -** *Currently water quality goals are dictated by the Ohio EPA and are translated into NPDES discharge permit limits which then become the focus and major tool for achieving water quality. Although the Ohio EPA should retain significant responsibility in protecting the waters of the state, the County too has a considerable stake in protecting its environmental quality and different tools and resources at its disposal. The Ohio EPA, Clermont County, citizens, businesses, other local governments, and non-profit organizations at the community level should collaboratively establish water quality goals for the watershed. Once the goals are established the primary responsibility for achieving those goals should rest at the local level.*

Through a series of meetings, first between Ohio EPA and Clermont County staff and then with representatives of community interests, goals for water quality within the East Fork River Watershed will be defined and agreed upon. The result of this collaborative goal setting effort will be a brief document which describes the water quality goals for the East Fork of the Little Miami River as agreed to by the County and the Ohio EPA.

The principal vehicle for "stakeholder" involvement in goal setting and continued participation in the development of Clermont County's Environmental Protection Plan will be the Standing Committee to the Clermont County Office of Environmental Quality (Figure 1-3). This standing committee will be supplemented on an as needed basis.

2. **Sampling and Monitoring Program** - *The cornerstone for a watershed management strategy is an understanding of the system. Current data is insufficient to be useful as a management tool. The intensive study done by the Ohio EPA in the summer of 1994 is still only a snapshot in time and does not recognize the dynamics of the watershed. Neither does the NPDES monitoring done by the county provide sufficient information to develop an understanding of the system.*

The monitoring program, already begun, will:

- ! *provide detailed data on the existing environmental conditions;*
- ! *help ascertain the impacts of point and non-point pollution on the river;*
- ! *provide data, based on a scientifically defensible experimental design, sufficient to refine Ohio EPA water quality data to assist in the collaborative goal setting process;*
- ! *provide a means to measure the success of the program;*
- ! *develop a responsive monitoring program to allow more timely intervention and management of human impacts upon the watershed;*
- ! *provide the basis for a predictive model to aid in the development of a county environmental protection strategy.*

Results from the sampling program will be compiled in a structured database of information pertaining to the chemical and biological characteristics of the East Fork LMR. This database, which will continue to be updated with new results, will serve as the basis for continued development of the County's environmental protection strategy.

Attachment 1 titled "Draft, Monitoring of the Little Miami and East Fork of the Little Miami Rivers, Clermont County" outlines the sampling program currently envisioned.

3. **Development of a Watershed Model** - *A comprehensive watershed management program requires a simulation framework for assessing the impacts of proposed policies. Such a tool can be used to:*

- ! *predict and test the effectiveness of land use management policies and revise them as necessary;*

- *determine the need for establishing or modifying permitting requirements and performance criteria for existing point and non-point loading sources;*
- *determine the need for and locations of additional treatment facilities or other control measures;*
- *provide a means for allocating credits for achieving water quality benefits within the watershed.*

As part of the County's watershed management program, computer-based models will be selected and integrated to provide a comprehensive tool for predicting the impact of various physical improvements and management strategies on water quality in the East Fork LMR. The simulation system will serve as a key tool in the County's efforts to develop and implement specific, cost-effective strategies for protecting water quality in the East Fork LMR. Attachment 2 titled "Prototype Watershed Management Program, Task Order No. 1" outlines the development of a scope of services for Clermont County's Watershed Management Simulation System.

4. **Development of County Environmental Protection Plan** - *The Ohio EPA's jurisdiction is both too limited and too broad. Limited in that it puts too great an emphasis upon NPDES permitting. This in turn directs limited local resources to improve the end of the pipe discharges often to the exclusion of other areas of impact of equal or greater importance. Too broad in that its focus is statewide and does not address the uniqueness of local conditions.*

The County has established an Office of Environmental Quality to integrate County and state resources and provide an administrative framework to coordinate and facilitate the development of an overall environmental strategy to be documented in a County Environmental Protection Plan. The Plan will spell out the steps the County will take to achieve the agreed upon water quality goals based upon the watershed model evaluation of alternative strategies.

5. **Local Issuance of "PTI's"** - *The County's Environmental Protection Plan and its model for the watershed will provide the objective framework for the County to assume responsibility for evaluating the effectiveness of capital projects as well as policy changes in achieving established water quality goals. As specific actions are undertaken, procedures for monitoring the impacts of the action will be incorporated into the water quality sampling plan. As a result, the process will be reiterative. If actions do not achieve the predicted and desired results, changes will be made and the model recalibrated, effecting modification to the County Environmental Protection Plan.*

Project XL Evaluation Criteria

1. *Expected Environmental Results*
   - *Improvement of water quality and biological conditions in sensitive waterways*
   - *Protection of drinking water supply for County*
   - *Reduction of hazards associated with failing on-site systems*

2. *Stakeholder Support*
   - ! *Provisions for involvement of large number of stakeholders "Partnership for Water Quality"*
   - ! *Proposed framework for continued participation of stakeholders*

3. *Economic Opportunity*
   - ! *Action required to enable County to continue to support economic growth and development while protecting water quality*

4. *Feasibility*
   - ! *Proposed approach is more cost-effective means of meeting water quality goals than traditional point source controls*
   - ! *County is committed to implementation of cost-effective watershed management activities*

5. *Transferability*
   - ! *Approach developed in Clermont readily transferable to other rapidly developing counties or watersheds*
   - ! *Approach consistent with EPA effluent trading policy*

6. *Monitoring, Reporting and Evaluation*
   - ! *Function of OEQ*
   - ! *Ongoing water quality sampling and monitoring program will provide ready means of monitoring progress and impacts of specific actions*

7. *Equitable distribution of Environmental Risks*
   - ! *Proposed approach will not result in any increase in environmental risks. Impacts of actions will be monitored to verify benefits and identify adjustments needed on an ongoing basis.*

8. *Community Planning*
   - ! *Proposed effort brings together community planning efforts related to wastewater management and land use planning/zoning under the umbrella of water quality protection. Will serve as the basis for continued use of integrated approach to community planning involving County, municipal, and township officials as well as members of the Board of Health, environmental groups, the development community and the general public.*

9. *Innovative Approaches*
   - ! *The program is structured to make use of innovative approaches (small diameter gravity sewers, seasonal discharge/non-discharging small community wastewater systems, etc.) where they provide cost-effective and implementable solutions to critical problems.*

10. *Enforcement and Compliance History*
    - ! *Recent record of continuous improvements by County*

DRAFT

MONITORING OF THE LITTLE MIAMI AND EAST FORK OF THE LITTLE MIAMI RIVERS, CLERMONT COUNTY

The Clermont County watershed monitoring program will be developed in three phases.

- *Phase I will consist of the identification of initial sampling sites and the sampling of these sites for limited analytes.*
- **Phase II will be an expansion in the number of sampling sites and of the analytes tested.**
- **In Phase III, methods will be developed to address particular problems and/or concerns.**

Phase I: December 1995 through March 1996

Monitoring sites:

LMR, upstream of O*Bannon Creek at Lyon Ave, in Loveland
O*Bannon Creek, Gibson Rd, upstream of O*Bannon WWTP
O*Bannon Creek, Hutchinson Rd., downstream of O*Bannon WWTP
LMR, upstream of Arrowhead WWTP at Kemper Rd.
LMR, downstream of Arrowhead WWTP at Lake Isabella
Polk Run Creek, RM 1.7, Loveland & Kemper Rds
Sycamore Creek, RM 0.05, downstream of Sycamore WWTP
LMR, at end of Lincoln St, Camp Dennison
LMR, at Ferry St canoe livery
LMR, downstream of East Fork confluence at canoe livery on Roundbottom Rd

East Fork LMR as it enters Clermont Co. from Brown on Burdsall Rd.
East Fork at Jackson Pike
East Fork at McKeever Rd
East Fork at Elklick Rd
East Fork at Clermont Co. Park, SR 222, across from the jail
East Fork at 4610 SR 222
East Fork at Olive-Branch Stonelick Rd
East Fork at Roundbottom Rd at Perintown bridge
East Fork at SR 50 & I-275 exit ramp
East Fork at 475 Roundbottom Rd

Tests:

Water

temperature
pH
conductivity
biological oxygen demand (BOD & CB-BOD)
dissolved oxygen (DO)
suspended solids (SS & TVSS)

hardness
metals, furnace:
- **Silver**
- **Cadmium**
- **Chromium**
- **Copper**
- **Nickel**
- **Lead**

total Kjeldahl nitrogen
nitrate/nitrite/ammonia
phosphorus (PTOT)

Frequency of monitoring:
- **December- ad hoc weekly**
- **January- weekly**
- **February- weekly**
- **March- 1 & 3rd weeks only (except metals)**
  - **3rd week only for metals**

Phase II: Planned to begin Spring 1996

Monitoring sites:
- **all of the Phase I sites, plus**
- **site(s) in Lake Harsha (possibly Miller sites, but yet to be determined)**
- **Pleasant Run Creek, just upstream from confluence with EFLMR, off of Hutchinson Rd behind golf course (old Cobb place)**

Tests:

Water
- **all of the Phase I tests**

Sediments

Chemical testing
- **Phosphate**
- **Heavy metals- ICP/MS**
- **Organics (1)**
- **Acid volatile sulfides (AVS)**

Biological testing:
- **Microtox test**
- **Ames Mutagenicity Assay**
- **IBI (2)**
- **ICI (3)**
- **PLFA (4)**
- **Population genetics assessment (5)**

Frequency of monitoring:
- **chemical water parameters**
  quarterly (Jan, Apr, Jl, Oct)

monitor all locations, except Lake Harsha site(s)

- chemical sediment parameters
  annually
  monitor each location
- biological testing
  - Y Microtox test and mutagenicity assays- quarterly
    monitor each location
  - Y IBI (2): monitor annually
    LMR, upstream of O*Bannon Creek at Lyon Ave, in Loveland
    LMR, at Ferry St canoe livery
    East Fork LMR as it enters Clermont Co. from Brown on Burdsall Rd.
    East Fork at 475 Roundbottom Rd
    site(s) in Lake Harsha (possibly Miller sites, but yet to be determined)
    Pleasant Run Creek, just upstream from confluence with EFLMR, off of Hutchinson Rd behind golf course (old Cobb place)
  - Y ICI (3): monitor annually
    LMR, upstream of O*Bannon Creek at Lyon Ave, in Loveland
    LMR, at Ferry St canoe livery
    East Fork LMR as it enters Clermont Co. from Brown on Burdsall Rd.
    East Fork at 475 Roundbottom Rd
    site(s) in Lake Harsha (possibly Miller sites, but yet to be determined)
    Pleasant Run Creek, just upstream from confluence with EFLMR, off of Hutchinson Rd behind golf course (old Cobb place)
  - Y PLFA (4): monitor annually
    monitor each location
  - Y Population Genetic Assessments (5): monitor annually
    LMR, upstream of O*Bannon Creek at Lyon Ave, in Loveland
    LMR, at Ferry St canoe livery
    East Fork LMR as it enters Clermont Co. from Brown on Burdsall Rd.
    East Fork at 475 Roundbottom Rd
    site(s) in Lake Harsha (possibly Miller sites, but yet to be determined)
    Pleasant Run Creek, just upstream from confluence with EFLMR, off of Hutchinson Rd behind golf course (old Cobb place)
- ad hoc monitoring may also be desirable in response to specific issues or problems.

Phase III: Planned to begin Summer 1996

Monitoring sites:

ad hoc, as needed

Tests:

ad hoc development of tests for specif purposes

These would include tests that would focus on biochemical toxicological assays in invertebrates and on other methods that would contribute to a better understanding of the water quality status of the watersheds (6).

Frequency of monitoring with Phase III

ad hoc

Citations from above text:

1. Chemical Monitoring Scheme for Organics

Organics

- **Total Organic Carbon (TOC) and Total Organic Halogens (TOX) testing are used to monitor each location as an initial screen.**

  Values of 1mg/L or greater for TOC and/or 10 Fg/L (Cl^-) or greater for TOX is followed by testing for volatile organic compounds (VOC) by purge and trap GC/MS methodology (1)

  If the total quantity of VOCs account for the TOC and/or TOX values found originally, there is no need to proceed further. If not, the samples are analyzed for the semi- and non-volatiles that remain.

- **To do this, the samples are concentrated using XAD columns (2) and the organic fraction recovered from these columns is then processed on a reversed-phase HPLC column (3).**

- **Broad spectrum cuts are taken from HPLC column eluents and subjected to toxicological testing**
  - **for cytotoxicity (4)**
  - **for genotoxicity (5)**
  - **for clastogenic toxicity (6)**

- **Fractions eluting from the HPLC columns that demonstrate toxicological properties are subjected to GC/MS for structure identification (7)**

References and notes from Chemical Monitoring for Organics:

1. **USEPA method 624 and analyzing for the 524.2 compounds (CLP list)**
2. **EPA method USEPA/600/4-85/058 [Guidelines for Preparing Environmental and Waste Samples for Mutagenicity (Ames) Testing, 1985].**

3. 1989 OECD method as described in "Guidelines for Testing Chemicals" [OECD 30.03.89 Method 113, Basal, Switzerland, 10pp]
4. Tice, R, EL Schneider and JM Rary, Utilization of Bromodeoxyuridine Incorporation into DNA for the Analysis of Cellular Kinetics. Exp. Cell Research 102: 232- 236 (1976) using a Mitotic and Replication Index Assay with lymphocytes
5. Williams, LR and JE Preston, Procedures for Conducting the Salmonella/microsomal Mutagenicity Assay (Ames test), EPA-600/4-82-068,
6. Heddle, JA, MC Cimino, M Hayashi, F Romagna, MD Shelby et al. Micronuclei as an Index of Cytogenetic Damage: Past, Present and Future. Environ. Mol. Mutagen 18(4): 277-291 (1991).
7. Tabor, MW and JC Loper, Mutagen Isolation Methods: Extraction of Non-volatile Residue Organics from Aqueous Environmental Samples. Adv. Chem. 214: 401-424 (1987).

2. Index of Biological Integrity (IBI)

3. Invertebrate Community Index (ICI)

4. Phospholipid Fatty Acid Profiles (PLFA)

Used to determine the health of the river sedimentary microbial community. Microorganisms form the basis of a food-web that consumes the wastes of all living things. Through their metabolic activity all organic matter within ecosystems is decomposed back to its component elements. As such, microbial communities are very sensitive indicators of pollution. PLFA profiles are specific for living microorganisms and are the only known method for quantifying microbial community structure. There are predictable changes that occur within the microbial community when it is exposed to excess organic matter (for example, a sewage treatment outfall) and that these changes can be detected and quantified by PLFA profiles.

5. Population Genetic Assessments

The effects of pollutants on fish differ depending on the genotypic composition of the fish. Liver, skeletal muscle or whole fish will be homogenized, electrophoretically analyzed and the genoty0ic composition of each sample at each locus will be determined and recorded. The enzyme systems that have been demonstrated to be genetically variable, i.e. demonstrate allelic variation, will provide the raw materials for assessing differential responses to anthropogenic stress.

6. These will include bivalve P-450 and oxygenase function assays, transgenic fish assays, and others.

Submitted: March 14, 1996 Paul T. Russell, PhD