

APPENDIX A

Work Agreement

UNITED STATES GOVERNMENT

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# Memorandum

TO : Director, Great Lakes Fishery Laboratory

DATE: APR 5 1977

FROM : <sup>Acting</sup> Regional Director, FWS, Twin Cities (AE-LWR)

SUBJECT: 316(b) Work Agreement

This agreement is to establish the respective roles and responsibilities of each party with regard to the 316(b) contract between the East Lansing Field Office (ELFO), Ecological Services, Region III, and the Great Lakes Fishery Laboratory (GLFL), U.S. Fish and Wildlife Service.

A copy of the 316(b) contract, including a description of the work to be performed, is included in Appendix A attached to this agreement.

The East Lansing Field Office shall provide the materials and/or access to the materials associated with the 316(b) review for the GLFL Review Team. This includes the Monroe 316(a) and (b) demonstration reports which have previously been delivered to the GLFL. Mr. Vern Lang has been designated as the ELFO Project Investigator.

The Great Lakes Fishery Laboratory shall review and analyze selected 316(b) demonstration studies as described under the Scope of Work of this contract in Appendix A. The Monroe 316(b) demonstration study shall be the first 316(b) to be reviewed under the terms of this contract. Mr. Thomas Edsall has been designated as the Laboratory Project Leader.

The results of the analysis performed on each 316(b) shall be submitted to the ELFO for review in draft form prior to being finalized by the GLFL. The report shall contain the data analysis as described under the Scope of Work. The format shall contain the necessary information in a narrative form as well as appropriate tables, graphs etc.

Payment for work completed under the terms of this agreement will be submitted as monthly billings not to exceed \$50,000 total. Each billing should include a description of the work or progress completed and a breakdown of the man-hours of effort expended. The ELFO then will complete a PFMS redistribution data sheet to shift dollars and man-days from the Laboratory account to the ELFO station account.



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An interim report shall be furnished to the E1FO by the GLFL, with a copy to the Regional Office, by June 1, 1977, for purposes of evaluating procedures utilized by this contractual approval which shall consist of:

1. Criteria based on confidence levels, sampling, computations, design, and methodologies.
2. Preliminary findings and additional information needed, if any.
3. Problems associated with implementing the methodology.

The final report shall be prepared and submitted to the East Lansing Field Office by December 15, 1977, with a copy to the Regional Office. If you concur with the terms of this agreement, please sign in the appropriate block and return a conformed copy to this office.

Charles A. Heath 4-5-77  
Signed Regional Director, Region III

James A. Kutzeln 4/7/77  
Signed Director, Great Lakes Fishery Laboratory

FY-77 CONTRACT PROPOSALINTRODUCTION

The FY-77 Annual Work Plan Advice for the East Lansing Field Office-Ecological Services contained a specific commitment requiring this station to test and analyze contract methodologies in the permits and licenses program. After considerable discussion among the East Lansing Field Office staff, it was decided that 316(b) demonstration studies should be the target project. Both Section 10 and NPDES programs are directly affected and, to a lesser degree, Nuclear Regulatory Commission projects are related to the proposed contract.

STATEMENT OF WORK

Utilities in the Great Lakes Region, as in the rest of the United States, are required under Section 316 of the Federal Water Pollution Control Act Amendments of 1972 to conduct 316(b) demonstration studies on cooling water intake structures. Section 316(b) requires that cooling water intake structures reflect the best available technology for minimizing adverse environmental impacts. These adverse impacts generally result from entrainment of small aquatic organisms such as macrobenthos and larval fish and impingement of larger organisms, usually adult fish. The objective of conducting intake studies is to obtain the most accurate quantitative estimate of entrainment and impingement losses or damages occurring at a plant. It is then possible to determine what, if any, better technologies exist to minimize adverse impacts at a particular steam electric generating station recognizing that certain impacts may be acceptable to the long-term maintenance and productivity of the aquatic ecosystem in question. Obviously, the real problems are twofold: (1) quantifying intake impacts and (2) predicting the associated impacts on the water body from which cooling water is withdrawn. If the U.S. Fish and Wildlife Service can demonstrate that items 1 and 2 above are adversely impacting the fishery and other aquatic resources by reviewing a particular 316(b) demonstration study and associated data, it may be possible to recommend that a utility provide "better technology" at one or more plants utilizing the Section 10 and NPDES routes. The objective now becomes clear. Is it possible to build a sound case out of a Section 316(b) demonstration study given our statutory responsibilities?

SCOPE OF WORK

The scope of work for this contract includes the review and analysis of selected 316(b) demonstration studies on steam electric power plant intake structures conducted pursuant to PL 92-500, the Federal Water Pollution Act Amendments of 1972. Work under this contract shall be performed as described below:

### Phase I

Phase I involves the review and analysis of the sampling techniques employed by the utility to gather the entrainment and impingement data presented in the 316(b) report. Sampling design and methodologies for fish including eggs, larva, fry, young-of-the-year and other small fish, adult or large fish, macrobenthos, and zooplankton shall be given a detailed scientific analysis to determine if appropriate methods were employed to gather unbiased data and if the sampling program sought answers to the right questions. In each instance cited above, the contractor shall specify if the methods employed by the applicant (utility) are scientifically valid. If the methods employed contain biases, these shall be described. The effects or influences that these biases have on the results (data) shall also be defined.

### Phase II

Phase II involves the review and analysis of the data obtained by the applicant (utility) and presented in or as a part of the 316(b) study. Functions to be performed include the verification of the accuracy of the data presented, calculation of and/or verification of confidence intervals or limits of the data presented. Appropriate statistical testing methods shall be utilized to verify accuracy of results and to determine the magnitude of the sampling variation. The analysis conducted in this phase should determine the real value of the data in terms of biological and statistical significance. Do these data accurately reflect the magnitude of the losses involved due to impingement and entrainment? Delayed or latent mortalities and sublethal effects as a result of entrainment or impingement should be fully discussed.

### Phase III

Phase III involves the analysis of data to determine or predict the impact of the cooling water intake on the fish, macrobenthos, and zooplankton populations of the cooling water source(s). The contractor will, in most instances, need to utilize data sources in addition to the 316(b) study to verify these predictions if made by the applicant and/or to predict the impacts if not done by the applicant.

It will be necessary to determine both the local and far-field effects on the water body from which cooling water is withdrawn. In some instances, two or more cooling water sources such as a river and a lake must be considered. The contractor should determine if the intake is located in a sensitive biological area such as an important spawning or nursery area for any species affected by the intake. Entrainment and impingement impacts caused by the intake under study should be related in a total manner to impacts caused by other power plant intakes on the same body or region of water on sensitive or otherwise important fish stocks if sufficient data is available to permit meaningful predictions.

REPORT

The results of the analysis performed shall be provided to the East Lansing Field Office and the Regional Office in draft form for review prior to being accepted as a final product. The report shall contain the data analysis as described under the Scope of Work. The format shall contain the necessary information in a narrative form as well as appropriate tables, graphs, etc.

Time frames for the report are:

Date Project Initiated: 9/1/76  
Date of Interim Report: 6/1/77  
Date of Final Report: 12/15/77