



Release Date: Monday March 7th, 2005

Lake Champlain Basin Program Announcement

Request for Proposals

Update of Lake Champlain Basin Land Use Data and Nonpoint Source Phosphorus Loading Analysis

The Lake Champlain Basin Program is pleased to announce a Request for Proposals for the development of an updated land use/land cover GIS data layer, and accompanying phosphorus loading analysis, for the Lake Champlain Basin. This information will provide an update to the currently available 1993 land use data, reflecting land use change from 1993 to 2003.

While a higher resolution and high-categorical precision land use/land cover dataset will be produced for the Basin during the next 3 to 4 years, it is essential that the update called for in this RFP be undertaken to provide updated data in the short-term. Current land use data will enable the generation of new estimates of nonpoint source phosphorus loading using the methods and models employed by a land use and phosphorus export study conducted for the Lake Champlain Basin Program (Hegman *et al.*, 1999). This will enable analysis of the effects of changing land use in the Basin, and documentation of progress towards the phosphorus reduction goals called for in the lakewide management plan for Lake Champlain, [*Opportunities for Action*](#).

The Basin Program is seeking proposals to create an updated (around the year 2003) land use dataset covering the entire Lake Champlain Basin, and estimation of nonpoint source phosphorus loading for each major land use category.

The RFP is available from the Basin Program website at <http://www.lcbp.org> or you can contact the Basin Program office at 802/372-3213 (800/468-LCBP toll free in New York and Vermont), to receive a copy via US Postal Service.

To facilitate the review process, applicants must submit proposals in both paper and electronic format. Please see the RFP and attached proposal format information for complete details.

DEADLINE NOTICE:

Hardcopy (8 copies) and electronic versions (no facsimiles) of proposals must be RECEIVED by the Lake Champlain Basin Program office by the close of business:

Friday, April 8th, 2005.

LATE OR INCOMPLETE PROPOSALS WILL NOT BE CONSIDERED

Lake Champlain Basin Program Request for Proposals

Update of Lake Champlain Basin Land Use Data and Nonpoint Source Phosphorus Loading Analysis

I. Background

The Lake Champlain Basin Program is a partnership between state, provincial, and federal government agencies, as well as many local groups, all working together to protect and enhance the environmental integrity and the social and economic benefits of Lake Champlain. In 1996, the Basin Program completed *Opportunities for Action: An Evolving Plan for the Future of Lake Champlain*, a comprehensive management plan for Lake Champlain, addressing a range of issues from water quality to recreation. The highest priorities in the plan are reducing phosphorus pollution, reducing pollution from toxic contaminants, protecting human health, and controlling the introduction, spread, and impact of nuisance non-native aquatic species.

Phosphorus loading to Lake Champlain is strongly influenced by land use in the watershed. A land use phosphorus export study conducted for the Lake Champlain Basin Program using 1993 land use and land cover data provided important information on the sources of nonpoint source phosphorus loading to the lake. Agricultural land generates much higher rates of phosphorus runoff per acre than forestland, and developed land yields even more phosphorus per acre than agricultural land. For example, only about 6% of the land in the basin is in the “developed” category, but developed land generates 37% of the nonpoint source phosphorus loading to Lake Champlain.

Conversion of forestland or agricultural land into developed land is occurring rapidly in some portions of the basin. Tracking changes in land use over time is therefore an essential aspect of monitoring phosphorus loading to the lake. However, the land use data coverage for the basin has not been updated since 1993 and significant changes in land use and phosphorus loading may have occurred since then due to land use conversions.

II. Lake Champlain Basin Land Use and Phosphorus Loading Analysis

The Basin Program is seeking proposals to provide an updated land use/land cover GIS data layer, and accompanying phosphorus loading analysis, for the Lake Champlain Basin. The previous phosphorus export analysis (Hegman *et al.*, 1999) using 1993 land use data was based on images obtained by the Landsat satellite. While this satellite is not longer fully functioning, images from as recently as 2003 are available for processing. This project will obtain satellite images (equivalent to Landsat or better) recorded during 2002, or more recently, covering the entire Lake Champlain Basin, classify the images to identify at least the four major land use categories of forest, agricultural, developed land and water, and provide the land use

classifications in a Geographic Information System (GIS) for analysis.

The updated land use data will then be used to generate new estimates of nonpoint source phosphorus loading using the methods and models employed by the earlier study (Hegman *et al.*, 1999). Phosphorus loading estimates will be summarized by state or province, town, and sub-watershed. Major changes in land use and predicted phosphorus loading that have occurred since 1993 will be highlighted.

Tasks:

- Obtain satellite images equivalent to Landsat or better that were collected in 2002 or more recently and cover the entire Lake Champlain Basin.
- Classify the images to identify at least four major land use categories including forested, agricultural, developed land, and water.
- Conduct an accuracy assessment on the classification. An accuracy of at least 86% across all classes (equivalent to the 1993 coverage) will be required.
- Provide the classified data in a Geographic Information System (GIS) format. The data must meet the Vermont Center for Geographic Information's (VCGI) metadata and quality standards.
- Assess and describe the comparability of this new land use dataset to the 1993 coverage (detailed in Millette, 1997).
- Use the land use data to generate new estimates of nonpoint source phosphorus loading using the methods and loadings coefficients developed by Hegman *et al.*, (1999).
- Summarize the new land use data and phosphorus loading estimates by state and province, sub-watershed and town.
- Compare land use and phosphorus loadings between 1992 and 2002. Identify major changes that have occurred.
- The deliverable product of this work will be a final report to the Lake Champlain Basin Program and a GIS raster database available to all users documenting land use and nonpoint source phosphorus loading in the Lake Champlain Basin, current to 2002/2003. In addition to the LCBP, VCGI will be the repository of the completed GIS database.
- The successful applicant will be required to prepare brief quarterly reports documenting progress on each objective and task in the project (see Proposal Format Requirements below). A final report describing all data, methods, results, and QA/QC procedures will be required at project completion.

- The applicant will be required to present the project results to the Technical Advisory Committee and/or the Lake Champlain Steering Committee.

References:

Hegman, W., D. Wang, and C. Borer. 1999. Estimation of Lake Champlain basinwide nonpoint source phosphorus export. Lake Champlain Basin Program Technical Report No. 31. Grand Isle, VT.

Millette, T. 1997. Development of land cover/land use geographic information system data layer for the Lake Champlain Basin and Vermont northern forest lands project areas. Lake Champlain Basin Program Technical Report No. 24. Grand Isle, VT.

Copies of these reports are available by contacting the Lake Champlain Basin Program at 802-372-3213.

III. Summary of Other Requirements for the Selected Proposal

- For the selected proposal, an approved workplan will be required before a contract can be completed and the work begun. Workplan guidance will be provided at the time of proposal selection.
- A Quality Assurance Project Plan must be submitted and approved before data collection begins.
- When approved, the final report will be edited for content and style in consultation with the contractor and published as part of the Basin Program's Technical Report Series.
- The final GIS database will be housed at the Vermont Center for Geographic Information (VCGI), where it will be publicly available.

IV. Eligibility

Eligible organizations include colleges, universities, nonprofit organizations, for-profit companies, and government agencies.

V. Proposal Evaluation and Selection Criteria

Proposals will be judged according to how well they address the following:

1. Demonstrated knowledge of and experience in the fields of remote sensing, land use data, and Geographic Information Systems.

2. Technical merit of the proposal.
3. Technical credentials of the investigators.
4. Extent to which the proposal addresses the tasks described in Section II.
5. Ability to complete the project in a timely manner. (The LCBP is eager to have this project completed as soon as possible).
6. Potential to enhance the technical infrastructure and abilities within the basin.
7. Clarity, conciseness and adherence to the attached proposal guidelines.
8. Demonstrated ability to create documents that are accessible to and can be used by local natural resource managers.

VI. Budget and Match Requirements

A total of \$63,000 is available for this project.

VII. Period of Performance

Work is to be completed within 12 months of the execution of a contract.

VIII. Schedule and Requirements for Proposal Submission

- Please follow the format requested in the attached proposal guidelines.
- Eight (8) paper copies of each proposal must be RECEIVED by the LCBP office by close of business on **Friday, April 8, 2005.**
- In addition, please submit an ELECTRONIC VERSION of your proposal, either on diskette or via e-mail. Electronic versions must also be RECEIVED by close of business on **Friday, April 8, 2005.**
- An approved workplan will be required before a contract can be completed and the work begun. Projects involving environmental data collection must also submit a Quality Assurance Project Plan. QAPPs must be approved prior to the start of any data collection work.

Send proposals and direct all questions to:

Technical Coordinator

Lake Champlain Basin Program
PO Box 204
54 West Shore
Grand Isle, VT 05458
802/372-3213

Lake Champlain Basin Program

Technical Proposal Format Requirements

Proposals should adhere to following format and an 8 page maximum length (font size 12), not including budget information, references cited and investigator resumes.

TITLE - concise and descriptive.

POINT OF CONTACT: Name, organization, address, and electronic mail address.

ABSTRACT: Brief description of proposed work.

INTRODUCTION: Brief overview of what the project is, how it relates to past projects (in the basin and elsewhere), and what it will accomplish in relation to the RFP.

OBJECTIVES AND TASKS: List the project's objectives and describe in detail the tasks that will be performed relative to each objective, including methods and approaches.

Note: Projects involving environmental data collection must submit a Quality Assurance Project Plan to LCBP. QAPPs must be approved prior to the start of any data collection work.

DELIVERABLES: Detailed description of the planned products from each task of the project. Required deliverables: quarterly progress reports and a final report.

SCHEDULE: Timeline showing anticipated dates for completion of the major tasks and deliverables. Quarterly progress reports are due on the last day of December, March, June, and September. Work is to be completed within two years of the execution of a contract.

DETAILED BUDGET JUSTIFICATION: Cost breakdown by major budget categories (i.e. personnel, equipment), linking costs to specific tasks/deliverables wherever possible. Breakdown should show both LCBP costs, costs covered by partner organizations (if applicable), and totals. (1 page, not included in the 8 page maximum total for the proposal)

TECHNICAL REFERENCES CITED: List all references used for the proposal (not included in the 8 page maximum total for the proposal).

CURRICULUM VITAE/RESUME OF PRINCIPAL INVESTIGATORS: Include up to 5 references for publications pertinent to proposed project. Please limit to one page per investigator, not included in the 8 page maximum total for the proposal.