

CITY OF WASILLA

290 E. HERNING AVE.
WASILLA, ALASKA 99687
PHONE: (907) 373-9050
FAX: (907) 373-0788

COUNCIL MEMORANDUM NO. 90-61

FROM: Deputy Administrator

DATE: August 9, 1990

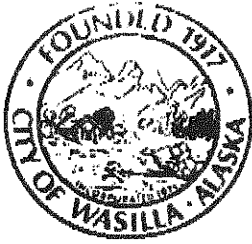
RE: Lake Lucille Study

Gilfilian Engineering has completed the first portion of an analysis of organic material impact on Lake Lucille. The work was funded on a 50-50 basis with a Clean Water Act grant and matched with City storm water grant funds.

We have applied for Clean Water Act grant funds from DEC to continue work preliminary to the ultimate goal of determining how to improve the lake. The next step is to determine the Water Budget which is the sources and amounts of inflow vs. the outflow and loss of water. Funds requested are for \$9,600 and the City will be required to appropriate matching funds.

Recommend introduction and adoption of Ordinance 90-28 to appropriate \$9,600 from Municipal Grant No. 4/86-313 to this project.

Robert E. Harris
Deputy Administrator



CITY OF WASILLA

290 E. HERNING AVE.
WASILLA, ALASKA 99687
PHONE: (907) 373-9050
FAX: (907) 373-0788

August 8, 1990

Alaska Department of Environmental Conservation
Water Quality Management Section
P. O. Box 0
Juneau, Alaska 99811-1800

Attention: Mr. George Franklet

Re: Local Water Quality Planning Grant

Dear Mr. Franklet:

Forwarded herewith is the project description for determining the Lake Lucille Water Budget. The data that we expect to acquire through the planning grant funds is necessary to future work that will address lake restoration under Section 314 of the Clean Water Act as amended by the Water Quality Act of 1987.

The City of Wasilla will be the prime contractor for the project and the City's contract engineering firm, Gilfilian Engineering, Inc., will be the sub-contractor and perform the actual data collection. The City of Wasilla will contribute 50% of the total project costs (\$19,200) and respectfully requests that project grant funds in a matching amount of \$9,600 be awarded.

Sincerely,

John C. Stein
Mayor, City of Wasilla

JCS/sbh

**GRANT PROPOSAL
FOR
LOCAL WATER QUALITY PLANNING
RFGP #2**

A Proposal Submitted to the
Alaska Department Environmental Conservation
Division of Environmental Quality
Water Quality Management Section

August 8, 1990

PROJECT DESCRIPTION

PROJECT NAME: Lake Lucille Water Budget
City of Wasilla, Alaska

PROJECT OBJECTIVE:

Determine the water budget for Lake Lucille by measuring the water flow into and out of the lake. The water budget includes measurements of the surface and groundwater inputs and changes in lake level.

The water budget of Lake Lucille is currently unknown, and is essential for determining the annual nutrient, organic matter, and sediment loads to the lake and establishing the assimilation capacity of the lake.

In order to make sound recommendations for restoring or improving the lake's water quality, the water budget of the lake must be determined with a reasonable degree of accuracy. Water inflow to the lake is from ground water, and no defined stream enters the lake. However, an undetermined amount of inflow results from the discharge of partially treated storm water at two (2) locations on the lake that are connected to the Parks Highway drainage system. The lake is drained by Lucille Creek located on the western end of the lake. Water outflows by ground water at the west end of the lake may be a significant factor. The water budget should provide a means to evaluate the significance of the

budget should provide a means to evaluate the significance of the outflow and inflow sources.

Grant Proposal to ADEC, RFGP #2
Lake Lucille Water Budget
Page 2, August 8, 1990

PROJECT BACKGROUND:

Lake Lucille is a 146.3 hectometers urban lake located in the City of Wasilla. In June, 1989 the City of Wasilla received a grant under ADEC's Local Water Quality Planning Program (RFGP #1) for the purpose of conducting a one year water quality study of Lake Lucille. The final report on the findings of the study has been completed and is being made available for distribution.

As found in earlier studies, the 1989-90 water quality study noted the lake continues to be adversely affected by nuisance growths of submerged aquatic plants and severe depletion of dissolved oxygen during the ice covered winter months. These water quality problems have persisted over the years and appears not to have improved as a result of the elimination of on-site septic tank systems on the lots surrounding the lake by connection to a municipal STEP sewer system.

However, storm water from the major drainage systems serving the Parks Highway has continued to discharge to the lake at two locations along the northern shoreline. The environmental impact on the lake resulting from the storm water discharges may be

Grant Proposal to ADEC, RFGP #2
Lake Lucille Water Budget
Page 2, August 8, 1990

PROJECT BACKGROUND:

Lake Lucille is a 146.3 hectometers urban lake located in the City of Wasilla. In June, 1989 the City of Wasilla received a grant under ADEC's Local Water Quality Planning Program (RFGP #1) for the purpose of conducting a one year water quality study of Lake Lucille. The final report on the findings of the study has been completed and is being made available for distribution.

As found in earlier studies, the 1989-90 water quality study noted the lake continues to be adversely affected by nuisance growths of submerged aquatic plants and severe depletion of dissolved oxygen during the ice covered winter months. These water quality problems have persisted over the years and appears not to have improved as a result of the elimination of on-site septic tank systems on the lots surrounding the lake by connection to a municipal STEP sewer system.

However, storm water from the major drainage systems serving the Parks Highway has continued to discharge to the lake at two locations along the northern shoreline. The environmental impact on the lake resulting from the storm water discharges may be significant with respect to the lake's total inflow. Determining the lake's water budget should provide a means to evaluate this source of inflow with respect to groundwater inflow.

PROJECT TASKS AND OUTPUTS:

The water budget will be determined by measuring the water flow into and out of the lake by the following methods:

- A stilling well will be installed with a continuous water level recording device located near the outlet of the lake. The outlet discharge flow will be measured with a current meter and correlated to the water levels recorded in the stilling well.
- Twelve (12) ground water piezometers will be installed in sets of 2 at strategic locations around the lake. The piezometer will consist of steel cased sand point wells. Each set of 2 piezometers will be placed approximately 100-feet and 200-feet from the edge of the lake at 6 different locations. A benchmark survey will be made to establish vertical control elevations between the wells. The elevations of the ground water will be measured on a monthly basis in relationship to the lake level. The piezometers will be used to define the ground water basin about the lake.
- The City of Wasilla meteorological station located at City Hall will be used to collect precipitation data. This data is continuously recorded and averaged on an hourly basis.

The above water budget components will be measured over a one (1) year period of time. At the conclusion of the 12 months of monitoring work, a final report will be prepared that will summarize the findings and provide a description of the lake's water budget.

It is anticipated the water budget will be used for future work to address lake restoration under Section 314 of the Clean Water Act, as amended by the Water Quality Act of 1987.

PROJECT SCHEDULE:

In lieu of a project flow chart, the following section describes the schedule for completion of project tasks and outputs:

TASK	DATE
Contract Start Date	September 24, 1990 (Per RFP)
Install Piezometers and Stilling Well Recorder	October 1990
Perform Vertical Control Survey And Outlet Discharge Measurements	By October 31, 1990
Collect Monthly Piezometer Elevations, Water Level Measurements from the Stilling Well Recorder and Precipitation Data	November 1990 thru October 1991
Final Report	Completed on or before December 31, 1991

Grant Proposal to ADEC, RFGP #2
 Lake Lucille Water Budget
 Page 5, August 8, 1990

PROJECT BUDGET:

I. Installation of Piezometers and Stilling Well Recorder

A. Personnel

1. Project Manager	2 Mandays @ \$480/MD	\$ 960.00
2. Field Technician	3 Mandays @ \$360/MD	\$1,080.00

B. Equipment and Supplies

1. Piezometers	12 @ \$350/each	\$4,200.00
2. Stilling Well Recorder		\$2,500.00

II. Vertical Control Survey and Stream Flow Measurement

A. Personnel

1. Project Manager	2 Mandays @ \$480/MD	\$ 960.00
2. Field Technician	2 Mandays @ \$360/MD	\$ 720.00

III. Monthly Data Collection (12 Months)

A. Personnel

1. Field Technician	12 Mandays @ \$360/MD	\$4,320.00
---------------------	-----------------------	------------

IV. Project Coordination and Final Report Preparation

A. Personnel

1. Principal	2 Mandays @ \$760/MD	\$1,520.00
2. Project Manager	4 Mandays @ \$480/MD	\$1,920.00
3. Technician	2 Mandays @ \$360/MD	\$ 720.00
4. Secretary	1 Manday @ \$200/MD	\$ 200.00

B. Supplies

1. Report Copies and Material		\$ 100.00
-------------------------------	--	-----------

TOTAL PROPOSAL BUDGET **\$19,200.00**
 =====