

FY02 Long Term Resource Monitoring Program Over-Target Funding

Implementation of Gaining Program Efficiencies by Electronic Field Data

Capture and Accessing Data Through the Internet.....	1
Automation of 2000 Land Cover/Land Use – Peoria Pool of the Illinois Waterway and Pool 22 of the Upper Mississippi River.....	2
Bathymetric mapping of the UMRS – Surveys conducted for systemic mapping.....	3

1. Implementation of Gaining Program Efficiencies by Electronic Field Data

The mission of the Long Term Resource Monitoring Program (LTRMP) is to provide decision makers with the information needed to maintain the Upper Mississippi River System as a viable multiple-use large-river ecosystem. We are committed to making our data readily accessible to river managers and the public in a timely manner. Because of the volume alone, collecting, processing, managing, and reporting of LTRMP field data is a significant investment of time and money. The LTRMP water quality, fish, vegetation, and macroinvertebrate components collect more than 13,000 data points per year, with a variety of parameters collected at each site (roughly 356,000 observations). The volume and demands to quickly disseminate LTRMP data lead us to use computer technology to deliver the data in a timely manner.

Currently, all LTRMP components, except for the fish component, are using electronic data capture in the field. In FY03, the fish component also will begin using an electronic data entry program on ruggedized laptop computers. The electronic datasheets are designed to look similar to the “old” paper datasheets and have preloaded fields and dropdown menus to decrease data entry. An electronic data sheet allows us to have built-in data verification. By using electronic data capture, most of the errors in data recording that occur can be caught at the source (i.e., in the field) by use of syntax, contextual, and range checks made by data capture software run on a laptop computer, thus preventing most “bad” data from ever entering the system. Also, with electronic data capture, the data are available to the principal investigator about 2–3 months sooner than if paper datasheets are sent to a data entry contractor. Thus, the clean data and annual reports will be available at least 2 months sooner to river managers and the public.

Also in FY03, two other areas to gain efficiencies by field staff and Program Partners will be explored. First, we will assess the integration of a digital balance and an electronic fish measuring board linked to a ruggedized laptop computer. A major element of the workload is processing large number of fish for length and weight. Electronic devices that automate length and weight measurements reduce this workload by increasing staff efficiency. Also, any outliers are brought to the field station staff’s attention before the fish is discarded.

Secondly, new ways of accessing LTRMP data will be explored. A new LTRMP Internet public Web browser for accessing LTRMP component data will be created. Initially, an “Aquatic Vegetation Stratified Random Sampling” browser will be developed using new Internet technology and will be used as a template for other the LTRMP component browser upgrades. The new browser will allow the general public to query data and will return a data file that the user can download and use in programs, such as SAS, Microsoft Excel, Microsoft Access, and ARC/INFO. Each LTRMP component will have two browsers—one for QA data for the public and one for non-QA data for LTRMP and field stations’ internal users. When the new data (current collection year) has been QA and released by the component specialists and field station’s staff, the data will be made available to the public without a password necessary for access, as is currently the procedure. The new browsers will be developed using newer technologies for faster querying and data returns for users.

trend pools are complete and available for download via the Internet. In addition, LCU data for the Alton Pool, and Pools 24 and 25 have recently been completed and are available for download via the UMESC web site. This proposal offers to complete the vegetation datasets for the Peoria Pool and one-half of the process for Pool 22, both contiguous to large portions of previously completed 2000 LCU.

Objectives

Assist in the integrated UMRS management planning by completing the Year 2000 LCU for the Peoria Pool of the Illinois River and one-half of Pool 22 of the UMRS.

Methods

Aerial photographs of the entire UMRS were taken in color infrared (CIR) at 1:24,000 and in True Color (TC) at 1:16,000-scale in the late summer of 2000. TC aerial photos of Pools 22 and Peoria will be scanned, rectified, and served via the UMESC Internet site. The CIR aerial photos will be interpreted and automated using the 31-class LTRMP vegetation classification (see Attachment A). This database will be prepared by or under the supervision of competent and trained professional staff using documented standard operated procedures and will be subject to rigorous quality control (QC) assurances (NBS, 1995). The Peoria Pool dataset will be provided in the NAD27 and NAD83 datums and in the UTM Zone 16 projection. Once complete, the Pool 22 dataset will be provided in the NAD27 and NAD83 datums and in the UTM Zone 15 projection. This funding will accelerate the automation of Pool 22 resulting in completion of one-half of the process this fiscal year. The remaining effort (data automation, crosswalk, and final QA/QC) will be accomplished in early FY03 pending funding for the completion of Pool 22.

FY02 Schedule of Products

Task A. Complete automation of 2000 LCU datasets for Peoria Pool and photo interpretation of Pool 22. Serve via the UMESC Internet site.

Task B. Georeference, mosaic, and compress approximately 90 1:16,000 scale true color aerial photos for Peoria Pool and approximately 60 photos for Pool 22. Serve via the UMESC Internet site.

Total Funding required for Pool 22:	\$ 29.100
Total Funding required for Peoria Pool:	\$ 60,000
Total Funding required:	\$ 89.100

Milestones

September 30, 2002 Complete LCU dataset and photo mosaic for Illinois River Peoria Pool and one-half of the process for Pool 22 of the Mississippi River.

USGS UMESC Project Point of Contact
Ms. Linda Leake
Telephone: 608-783-7550 x13

USGS UMESC Financial Point of Contact
Ms. Linda Ott
Telephone: 608-781-6264

USGS UMESC Technical Point of Contact
Larry Robinson
Telephone: 608-783-7550 x33

Attachment A.

LTRMP 31-Class Vegetation Classification

UMR_CODE	UMR_CLASS	UMR_CLASS_DESCRIPTION	HYDRO_DESCRIPTION
AG	Agriculture	All obviously cultivated fields. This category may include transitional fallow fields that show evidence of tilling.	Infrequently Flooded Non-Forest
CN	Conifers	All natural or semi-natural evergreen communities. Typically Pine, but occasionally Cedar.	Infrequently Flooded Forest
DMA	Deep Marsh Annual	Dominated by Wild Rice, but may include floating-leaf species, submergents, or deep marsh perennials.	Semipermanently Flooded Non-Forest
DMP	Deep Marsh Perennial	Persistent emergents that prefer lots of water. Dominated by Arrowhead, Bur-reed, and Cattail and may include Pickerelweed, Giant Reed Grass, and Bulrush.	Semipermanently Flooded Non-Forest
DMS	Deep Marsh Shrub	Shrubby vegetation >25%, dominated by Buttonbush and Water Willow, frequently growing in standing water. May include RFA, SV, and deep marsh perennials.	Semipermanently Flooded Shrubs
DV	Developed	Areas that are predominantly artificial in nature such as cities/towns, large farmsteads, and industrial complexes.	Infrequently Flooded Non-Forest
FF	Floodplain Forest	Softwood forests growing on saturated soils near the main channel and in floodplain backwaters. These forest are predominantly Silver Maple, but also include Elm, Cottonwood, Black Willow, and River Birch.	Seasonally Flooded Forest
GR	Grassland	Drier upland grass or grass/forb fields. May include fallow fields, sand prairies, and shrubby vegetation < 25%.	Infrequently Flooded Non-Forest
LF	Lowland Forest	Lowland Forest - More common on southern reaches of the UMRS. These forests grow along the river banks on sites that are drier than FF sites. Typical species include many Hickories, Pecan, River Birch.	Temporarily Flooded Forest
LV	Levee	All continuous dikes or embankments designed for flood protection. More common on southern reaches of the UMRS and typically covered with mixed grass and forbs.	Infrequently Flooded Non-Forest
MUD	Mud	Exposed, non-vegetated mudflats. May occur near the main channel or in backwaters.	Seasonally Flooded Non-Forest
NPC	No Photo Coverage	Gaps in photo coverage. May include areas obscured by clouds or shadows.	No Photo Coverage
OW	Open Water	All non-vegetated open bodies of water.	Permanently Flooded Non-Forest
PC	Populus Community	Predominantly Cottonwood (>50%) but may include willow and other floodplain forest species.	Seasonally Flooded Forest
PN	Plantation	All commercially-grown evergreen plantations, large nurseries, and orchards. Typically will be Red or White Pine.	Infrequently Flooded Forest
PS	Pasture	All grass fields used for the production of livestock.	Infrequently Flooded Non-Forest
RD	Roadside Grass/Forbs	Grass/forb-covered right-of-ways along side of roads, highways, and railroads.	Infrequently Flooded Non-Forest
RFA	Rooted Floating Aquatics	Typically Lotus and Lily, but may include Water Shield and Water Primrose. Frequently grows with submergent vegetation when RFA density is < 90%.	Permanently Flooded Non-Forest
SB	Sand Bar	Exposed sand bars typically found in and near the main channel, and often associated with wing dams and islands.	Temporarily Flooded Non-Forest
SC	Salix Community	Predominantly Willow (>50%) but may include Cottonwood and other floodplain forest species.	Seasonally Flooded Forest

SD	Sand Dunes/Spoil	Sand spoil banks, beaches, and other sparsely-vegetated sandy areas.	Infrequently Flooded Non-Forest
SM	Sedge Meadow	Dominated by mixed Sedges but may include perennial emergents and moist soil grass/forbs.	Temporarily Flooded Non-Forest
SMA	Shallow Marsh Annual	Typically Wild Millet and Beggarsticks and other annual species that favor mudflats and shallow basins.	Seasonally Flooded Non-Forest
SMP	Shallow Marsh Perennial	The transition zone between deep marsh and wet meadow that is dominated by Bulrush, and to a lesser extent Cattail, Arrowhead, Bur-reed, Giant Reed Grass, Smartweed, and other moist soil species.	Seasonally Flooded Non-Forest
SMS	Shallow Marsh Shrub	Mixed shrubs >25%, but typically Sandbar Willow growing near the main channel and in backwaters along with mixed emergents, grasses, and forbs.	Seasonally Flooded Shrubs
SS	Shrub/Scrub	Shrubby vegetation > 25% on drier soils with a mixed grass/forb understory.	Infrequently Flooded Shrubs
SV	Submerged Aquatic Vegetation	All submersed aquatic vegetation.	Permanently Flooded Non-Forest
UF	Upland Forest	Forests growing at the edge or out of the UMRS floodplain. Species include Red/White Oak, Hickories, Elm, and other deciduous trees.	Infrequently Flooded Forest
WM	Wet Meadow	Dominated by moist soil grasses such as Reed Canary Grass and Rice Cutgrass. Also includes Loosestrife, Smartweed, and small inclusions of other mixed emergents, grasses, and forbs.	Saturated Soil Non-Forest
WMS	Wet Meadow Shrub	Mixed shrubby vegetation > 25%, typically Alder, Elder, False Indigo, Dogwood and/or Willow with a sedge/grass/forb understory.	Temporarily Flooded Shrubs
WS	Wooded Swamp	Most common in southern reaches of UMRS. Includes Bald Cypress, Water Tupelo, Sorgum, and Black Ash.	Semipermanently Flooded Forest

Density Modifier

A = 10-33%

B = 33-66%

C = 66-90%

D = > 90%

Height Modifier

1 = 0-20 feet

2 = 20-50 feet

3 = > 50 feet

3. Bathymetric mapping of the UMRS – Surveys conducted for systemic mapping

This proposed work is an enhancement of Task 2.7 in the FY2002 Scope of Work. The Long Term Resource Monitoring Program has continued to collect bathymetric data in order to complete a one-time systemic GIS database. The Upper Midwest Environmental Sciences Center (UMESC) will complete identification of gaps in the systemic database as part of base-funded Task 2.7. Surveys will be conducted to fill these gaps, or conducted in newly selected pools (Pool 20 and Peoria Pool are currently proposed), by Rock Island District hydrosurvey section. St. Louis District will complete wingdam surveys that were not completed in FY2001. All data collected will be processed in a GIS at UMESC, as funded in Task 2.7. The status of the pool-wide GIS coverages will be depicted by a map on the LTRMP web site (www.umesc.usgs.gov/aquatic/bathymetry/status.html).

Objectives

To complete additional pool-wide surveys in order to expedite the completion of a systemic GIS bathymetric data set for the UMRS.

Methods

No major changes to the existing methodology used in the past by LTRMP are anticipated. The methods for bathymetric surveys by boat are designed to produce data suitable for generating a pool-wide GIS coverage using interpolation between sample points.

FY02 Schedule of Products

Standard set of products (i.e. data, images) available through the UMESC bathymetry web pages for completed pools.

Funding provided to Rock Island District:	\$ 15,000
Funding provided to St. Louis District:	\$ 70,000
Total Funding required:	\$ 85,000

Milestones

September 30, 2002 Standard set of products (i.e. data, images) available through the UMESC bathymetry web pages for completed pools.