

APPENDIX B - PUBLIC OUTREACH

Press Release

From: Barbara Williamson
Subject: riparian press release
Date: July 8, 1999

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NAU geology faculty begins study
of Verde Valley riparian area

FLAGSTAFF, Ariz. - Northern Arizona University researchers are documenting how the riparian areas surrounding the Verde River have changed since 1946. The NAU geology department received funding from the Arizona Water Protection Fund for this project.

"The project is unique because we are determining how vegetation distributions changed every 10 years from 1946 to the present," said Abe Springer, principal investigator for the study.

The study will determine which vegetation changes were caused by human activities in the watershed and which changes were the result of natural factors such as flood and drought. Researchers will rely on historic aerial photographs to help them document the vegetation changes. The study will examine about 13,000 acres in a corridor from three miles below Oak Creek to seven miles above Clarkdale.

"Through this study we can identify sites that have the potential for restoration to a condition that provides habitat for native species," said Sharon Masek Lopez, research assistant for the study.

Information gathered through this project will help land managers and the general public make decisions regarding the future management of the Verde Valley riparian system. Organizations such as the Verde Watershed Association, Dead Horse Ranch State Park and The Nature Conservancy have already expressed an interest in the findings from the study.

For more information contact Sharon Masek Lopez at smasek@infomagic.com, visit the web site at <http://vishnu.glg.nau.edu/verde/> or write to Sharon Masek Lopez, Department of Geology, P.O. Box 4099, Northern Arizona University, Flagstaff, AZ 86011-4099.


- NAU -

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<http://www.nau.edu/~paffairs/>
<http://www.nau.edu/~paffairs/today1.html>

Figure B-1. Press release July 8, 1999 regarding initiation of the Upper Verde Valley Riparian Area Historical Analysis.

APPENDIX B (continued)



Verde Valley vegetation history to be studied

by Lu Stitt
Staff Writer

The Verde Valley is getting a lot of attention from people who want to study the area, particularly where preservation is concerned.

A new study, which began recently, will find out what the Verde Valley looked like historically and compare it to what is here today. The results of the research may be used to help with water studies currently planned for the same area, said Sharon Masek Lopez, research assistant for the study.

Called the Upper Verde Valley Riparian Area Historical Analysis, it will study vegetation and trees, and the relationship between surface water, groundwater and the trees.

The historical analysis is a research project partially funded by the Arizona Water Protection Fund, set up to help understand and protect riparian areas in Arizona.

Lopez, a student at Northern Arizona University (NAU) is working with professor Abe Springer, who teaches hydro-geology.

SHE APPLIED for and received a \$42,000 grant for the study. NAU kicked in another \$20,000. Work began in May and will run through October of 2000. The area of study will encompass the upper Verde Valley from the Camp Verde town limits, north to the mouth of Sycamore Canyon.

The study will take an historical look at the type, amount, size and location of trees, particularly willow, cottonwood and mesquite.

"We'll also take a look at how humans and nature have changed the vegetation," said Lopez.

For instance, Lopez said heavy mining in the first part of the century had a definite impact.

To see what has changed, Lopez will look at data and aerial photography from the 1940s to 1995, the last year an aerial photograph was taken. She will look at the pictures using a stereoscope to see them in 3-D to better distinguish one type of vegetation from another, she said.

Using a mylar overlay, Lopez will record information from the photographs and compare them with historical data.

"**WE'LL HAVE** photos from the 80s, the 70s, 50s and 40s, and through a computer process, be able to see how the vegetation has changed," Lopez said.

One of the benefits of Lopez' work will be to add to information being gathered for water studies in the upper Verde Valley. She said there may be a groundwater modeling study done and the information will be useful for the modeling effort.

"They need information about riparian water use to make the model complete," said Lopez.

The main areas to look at for use are domestic, municipal, industrial and agriculture. They also will talk to people who have a well and use water for any of the above uses.

Lopez said that historically, before settlers moved into the Verde Valley, the Indians did not use wells, they probably just drew water from the river.

"**WITH PEOPLE** digging wells, the groundwater changed," she said.

Another result of Lopez' research will be to use historical evidence to identify riparian sites that have the potential to be restored.

Lopez plans to be in the Verde Valley for field studies from mid- to late August and is looking for people who can talk with her about the area's history.

"I need to find out as much as I can, particularly with water use. I'd like to talk to people who have lived there most of their lives and know its history," Lopez said.

People interested in getting involved in Lopez' research can contact her at the web site: <http://visimn.glg.nau.edu/verde/>, or by mail, at Sharon Masek Lopez, Department of Geology, Northern Arizona University, Flagstaff, 86011.

Figure B-2. This article appeared in the Cottonwood Journal Extra July 14, 1999 and the following week in the Sedona Red Rock News.

Concerning an interview played on KAFF Radio

George Davis, news reporter for KAFF Country Radio Station in Flagstaff, interviewed Sharon Masek Lopez in August and ran a short piece about the research project for two consecutive days during their morning news hour. Mr. Davis intended to give us a transcript, but we never received one. KAFF Radio serves northern Arizona including the Verde Valley.

Concerning coverage on Television Station KNAZ, Channel 2 News

On Thursday July 8, 1999, KNAZ (NBC affiliate) Channel 2 news in Flagstaff gave a 10-15 second news spot about the study as part of their "Around Arizona" segment. No transcript was provided.

Verde Valley riparian area study begins

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"The project is unique because we are determining how vegetation distributions changed every 10 years from 1946 to present," said Abe Springer, the primary investigator for the study.

The study will determine what vegetation changes were caused by human activities in the watershed and what changes were the result of natural factors such as flood and drought.

Researchers will rely on historic aerial photographs to help them document the vegetation changes. The study will examine about 13,000 acres in a corridor from three miles below Oak Creek to seven miles above Clarkdale.

"Through this study, we can identify sites that have the potential for restoration to a condition that provides habitat for native species," said Sharon Masek Lopez, research assistant to the study.

Information gathered through this project



Courtesy photo

At Dead Horse Ranch State Park, Nancy Burnett (Cottonwood) and Sharon Masek Lopez (NAU) discuss the Upper Verde Valley riparian area historical analysis that is under way.

will help land managers and the general public make decisions regarding the future management of the Verde Valley riparian system. Organizations such as the Verde Watershed Association, Dead Horse Ranch State Park and The Nature Conservancy have already expressed an interest in the

findings from the study.

For more information, contact Lopez at smasek@infomagic.com; visit the web site <http://vishnu.glg.nau.edu/verde>; or write Sharon Masek Lopez, Department of Geology, PO Box 4099, Northern Arizona University, Flagstaff, 86011-4099.

Figure B-3. This article appeared in the Verde Independent during Summer 1999.



Special Projects

Photos Show Verde River Changes Over Time

Researchers from Northern Arizona University's Geology Department are interpreting historic photos to document changes in riparian conditions along a stretch of the Verde River, from 1946 to the present. They will examine historical aerial photos of about 13,000 acres, from three miles below Oak Creek to seven miles above Clarkdale, to document vegetation changes. Professor Abe Springer is the project's primary investigator, and Sharon Masek Lopez is the research assistant.

The goal of the project is to determine the causes of vegetation changes, whether due to human activities in the watershed or the result of natural causes such as flood or drought. Information about past and changing river conditions will guide decisions about the future management of the Verde Valley riparian system. Areas suitable for future revegetation will be better identified.

The researchers at first searched literature and data relevant to the study. For example, histories of the Verde Valley were examined to determine land use practices that may have affected riparian areas. They also examined existing hydrologic information for the Verde Valley, including reports, water level data for wells, climate data and stream gauging data. This information helps explain the interaction between the hydrologic system and the riparian system. Remote sensing riparian studies also were reviewed to ensure methodological compatibility.

To interpret the aerial photos (scale range 1:12,000 to 1:30,000) researchers are viewing the photos using a stereoscope and then digitizing tree stand polygons directly onto the scanned photographs using ArcView. Two classes of vegetation will be mapped. These are Fremont cottonwood/Goodding willow (*Populus fremontii*/*Salix gooddingii*) and velvet mesquite (*Prosopis velutina*).



The study area near Cottonwood in 1968

The researchers found that it is not practical to map individual willow stands since they are usually not distinguishable from cottonwood stands.

Along with vegetation coverage, the researchers also are interpreting land use by digitizing land use types by decade on separate GIS covers. Land use types include forest, agriculture, residential

and industrial/commercial, with others designated if necessary. The river channel will also be mapped as well as bare sediment along the channel.



The study area near Cottonwood in 1995

Work began with the most recent set of photos. (e.g. 1995). After interpreting photos the researchers ground-truthed samples. Ground-truthing involves taking photos and completed photo interpretation print outs into the field to check for accuracy in interpretation of tree species and extent of tree stands.

ArcView will be used for the GIS analysis. Digital spatial data sets will be created that can be made available in ArcView shapefile format or ArcInfo coverage format. Attributes will be assigned to each polygon. For the tree stands, attributes include species, density and water use. Various analyses of the data will be performed.

Kyle Bohnenstiehl of North American Geographical Information Systems is serving as the project's GIS analyst. He will conduct a time series analysis comparing the six different layers (decades) of data. The analyses will be useful to compare vegetation from decade to decade and quantitatively show shifts or trends. Tables and graphs will be generated to display this information in an understandable format to the public.

The project also will develop An Assessment of Human Influence report to discuss changes in riparian vegetation in the Verde Valley, between the 1940s and 1990s as influenced by human activity in the watershed. Much vegetation change is natural, associated with climate cycles over time. Human activity in the watershed, however, also can have a significant effect on the distribution and density of riparian tree species.

Additional information about the project can be found on the web site (<http://vishnu.glg.nau.edu/verde>) or by contacting Sharon Masek Lopez, research assistant, Upper Verde Valley Riparian Area Historical Analysis: email, smasek@infomagic.com or phone, 520-525-1980.

This project is funded by the Arizona Water Protection Fund. The Arizona Legislature created the fund in 1994 to support projects to enhance riparian areas of the state.

Figure B-4. This article appeared in the University of Arizona Water Resources Research Center's *Arizona Water Resource* newsletter January 2000.

APPENDIX B (continued)

WATER 07-17 11:34a @
VERDE VALLEY STUDY
7-17-99 11:00
NORTHERN ARIZONA UNIVERSITY RESEARCHERS WILL SOON DISCOVER HOW VERDE RIVER VEGETATION HAS CHANGED OVER THE PAST FIFTY YEARS. OVER AN 18 MONTH PERIOD, THE UNIVERSITY WILL BE EXAMINING AERIAL PHOTOGRAPHS WHICH HAVE BEEN TAKEN AT TEN YEAR INTERVALS BY THE U.S. GEOLOGICAL SURVEY, THE FOREST SERVICE AND YAVAPAI COUNTY. ACCORDING TO NAU RESEARCH ASSISTANT SHARON LOPEZ, THE STUDY WILL DETERMINE WHICH VEGETATION CHANGES RESULTED FROM HUMAN ACTIVITIES AND WHICH CHANGES WERE THE RESULT OF NATURAL FACTORS.
CART 30 ...OF ABOUT FIFTY YEARS... 25 SEC
LOPEZ SAYS FUNDING FOR THE STUDY IS BEING PROVIDED BY THE ARIZONA WATER PROTECTION FUND AND IT WILL DOVETAIL WITH A PROPOSED STUDY OF VERDE RIVER WATER RESOURCES CONDUCTED BY THE DEPARTMENT OF WATER RESOURCES.
CART 22 ...TIE IN WITH THAT MODEL... 17 SEC
THE STUDY WILL EXAMINE ABOUT 13,000 ACRES IN A CORRIDOR FROM THREE MILES BELOW THE RIVER'S CONFLUENCE WITH OAK CREEK TO SEVEN MILES ABOVE CLARKDALE.
XX
?HOW HAS VEGETATION ALONG THE VERDE RIVER CHANGED IN THE LAST 50 YEARS AND WHAT AFFECT HAS IT HAD ON WATER? THESE ARE QUESTIONS THAT WILL BE ADDRESSED BY A STUDY BEING CONDUCTED BY NAU GEOLOGY DEPARTMENT RESEARCHERS. THE STUDY WILL EXAMINE AERIAL PHOTOGRAPHS OF THE RIVER FROM THREE MILES BELOW IT'S CONFLUENCE WITH OAK CREEK TO SEVEN MILES ABOVE CLARKDALE. THIS STUDY WILL COINCIDE WITH A PROPOSED STUDY TO BE CONDUCTED BY THE DEPARTMENT OF WATER RESOURCES AND IS BEING FUNDED BY THE ARIZONA WATER PROTECTION FUND. ACCORDING TO NAU RESEARCH ASSISTANT SHARON LOPEZ, THE STUDY WILL REVEAL IMPORTANT INFORMATION REGARDING VERDE RIVER WATER
CART 47 ...GOOD FOR NATIVE SPECIES... 37 SEC
LOPEZ SAYS THE STUDY WILL DETERMINE WHICH VEGETATION CHANGES WERE CAUSED BY HUMAN ACTIVITIES IN THE WATERSHED AND WHICH CHANGES WERE THE RESULT OF NATURAL FACTORS SUCH AS FLOOD AND DROUGHT.
XX
N.A.U. GEOLOGY DEPARTMENT RESEARCHERS WILL BE PORING OVER AERIAL PHOTOGRAPHS OF THE VERDE RIVER IN AN EFFORT TO DETERMINE HOW VEGETATION IN THE RIVER CORRIDOR HAS CHANGED OVER THE PAST 50 YEARS. THE UNIVERSITY WILL BE CONDUCTING THE STUDY FOR THE NEXT 18 MONTHS. ACCORDING TO N.A.U. RESEARCH ASSISTANT SHARON LOPEZ, THE PROJECT WILL COINCIDE WITH A PROPOSED STUDY TO BE CONDUCTED BY THE DEPARTMENT OF WATER RESOURCES
CART 22 ...TIE IN WITH THAT MODEL... 17 SEC
LOPEZ SAYS THAT BESIDES THE RAMIFICATION TO HUMAN USERS OF VERDE RIVER WATER, THE STUDY WILL ALSO DETERMINE HOW NATIVE SPECIES HAVE BEEN AFFECTED
CART 47 ...GOOD FOR NATIVE SPECIES... 37 SEC
THE STUDY WILL BE CONDUCTED ALONG A CORRIDOR FROM THREE MILES BELOW OAK CREEK TO SEVEN MILES ABOVE CLARKDALE.

Figure B-5. This is a transcript from a radio news feature that ran on KAZM Radio, 780 AM, Sedona July 17, 1999.

APPENDIX B (continued)

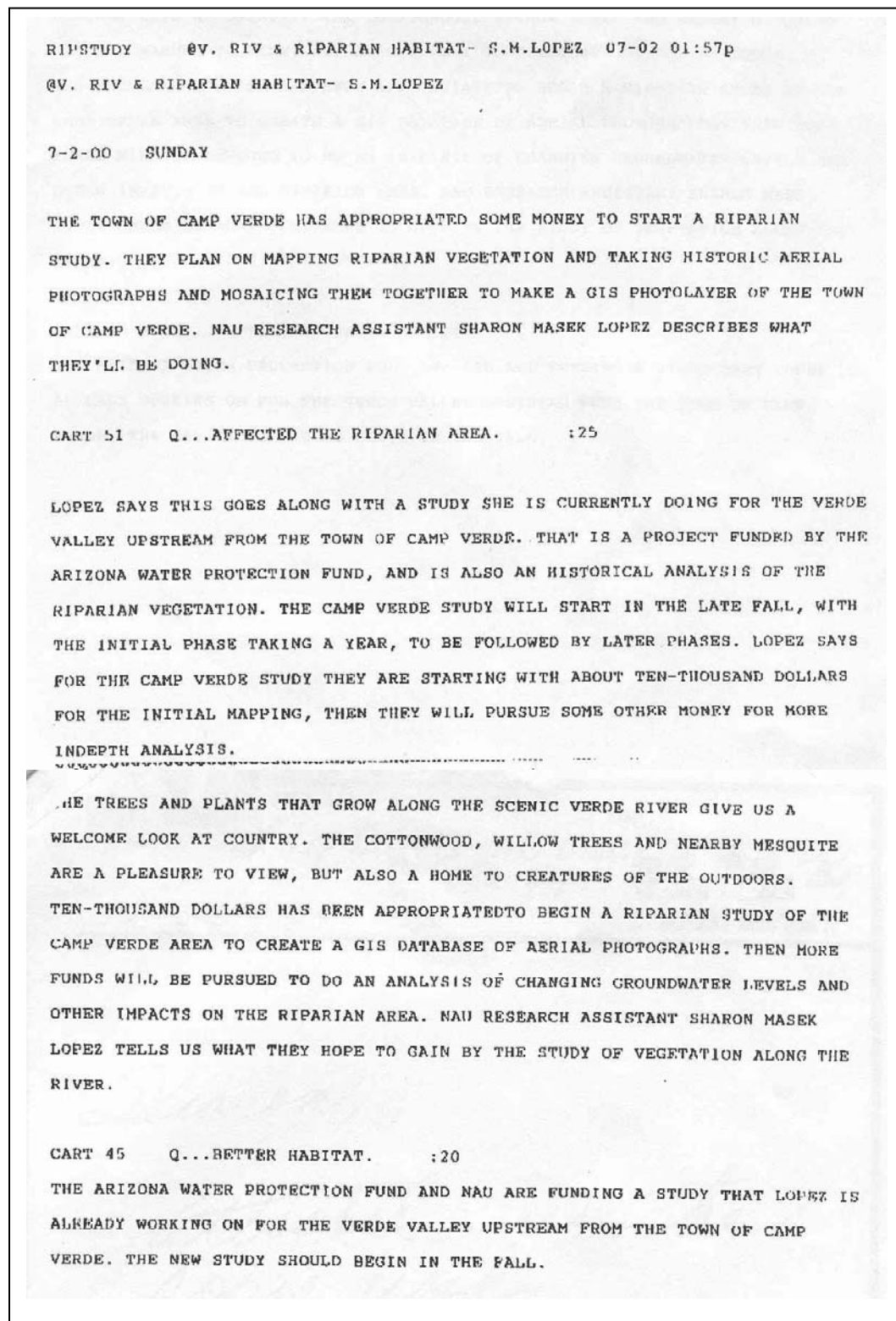


Figure B-6. This is a transcript from a radio news feature that ran on KAZM Radio, 780 AM, Sedona July 2, 2000.