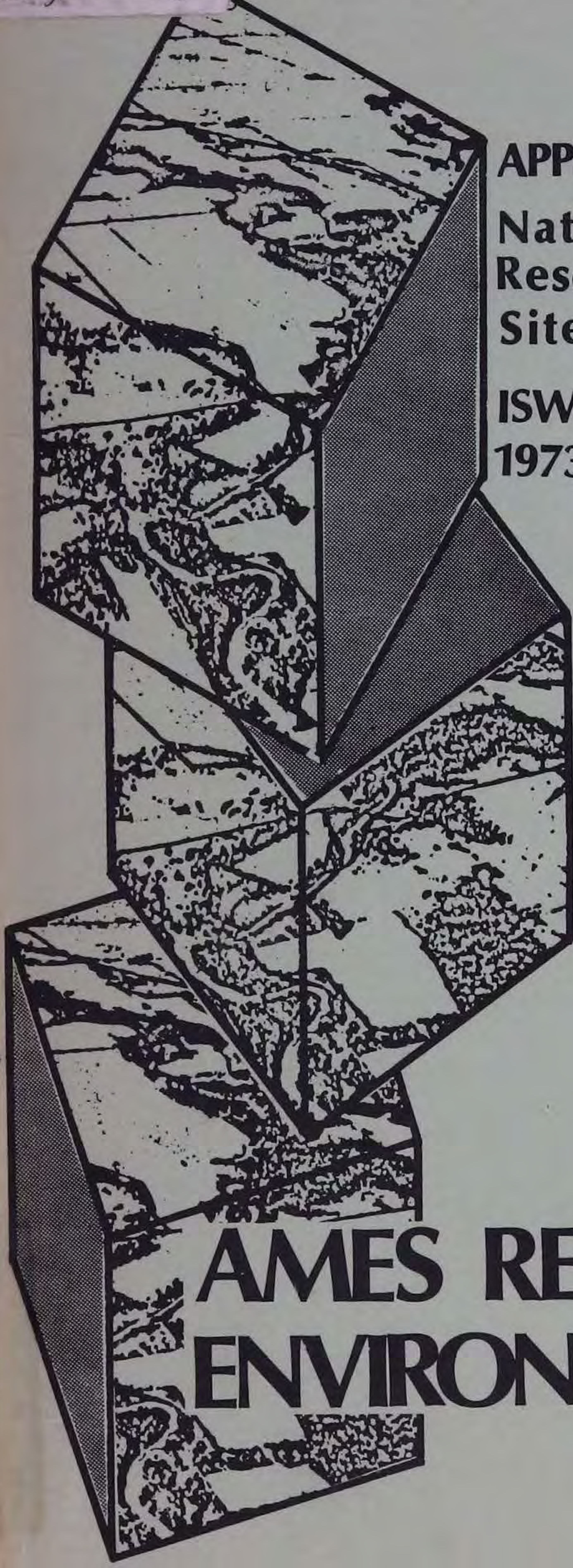


APPENDIX 1 — Vol. 1

Natural and Archaeological Resources of the Reservoir Site and Stream System

ISWRRI-60-A1-Vol. 1
1973

AMES RESERVOIR ENVIRONMENTAL STUDY

Iowa State Water Resources Research Institute
Iowa State University
Ames, Iowa 50010

Ames Reservoir Environmental Study

Appendix 1

Volume I

Natural and Archaeological Resources of the Reservoir Site and Stream System

by

Iowa State Water Resources Research Institute
and Engineering Research Institute,
Iowa State University,
Ames, Iowa

Prepared for:
U. S. Army
Corps of Engineers
Rock Island District
Contract DACW25-72-C-0033

Category Leaders:
Roger Q. Landers
Dept. of Botany and Plant Pathology
Iowa State University
and
Lyle V. A. Sendlein
Dept. of Earth Science
Iowa State University

For the Upper Skunk River Basin: A landscape overview, vegetation, wildlife, and archarological inventories, limnological and fisheries studies, geologic implications, and an eco-system comparative study.

Iowa State University
ISWRRI-60-A1-Vol. I

1973

Ames Reservoir Environmental Study

Appendix 1

(Published in two volumes)
Volume I

Natural and Archaeological Resources of the Reservoir Site and Stream System

Table of Contents

Appendix 1

Natural and Archaeological Resources of the
Reservoir Site and Stream System

GENERAL ACKNOWLEDGMENTS

Appendix 1 contains descriptions and impressions of the natural and archaeological resources of 34 square miles of the upper Skunk River basin. The studies were conducted by the faculty and research graduate assistants of the Departments of Landscape Architecture, Botany and Plant Pathology, Forestry, Sociology and Anthropology, Earth Science, and Zoology and Entomology of Iowa State University, and the Department of Zoology of the University of Iowa. In one or two instances, advanced undergraduates participated in the collection of data in conjunction with formal courses under supervision of faculty members.

The Rock Island District, U.S. Army Corps of Engineers, supported the environmental review study through a research contract, DACW 25-72-0033. The purpose of the project review is to provide a comprehensive and authoritative basis for preparation of an adequate environmental impact statement by the Corps of Engineers in compliance with the National Environmental Policy Act of 1969, PL 91-190. The specific objective of Appendix 1 studies is to assemble information on the unique properties of the reservoir site and stream system, to estimate the extent of changes with and without the project, and to compare these changes with various alternative plans of development.

From the initiation of the study until January 1973 when drafts were completed, members of the ISU group met weekly to discuss aspects of the study. In later meetings it became the means by which a consensus was reached regarding recommendations for alternative plans for development.

This provided as close to an interdisciplinary study as was practical without full time participants. Much of the coordination between disciplines was based on the grid procedure, photographs, and other provisions of the Land Use Analysis Laboratory at Iowa State University.

The cooperation of the landowners in the study area of the Ames Reservoir was greatly appreciated. Kermit Miskell and Mrs. Autin Getz coordinated for the Story City landowner's group. Special acknowledgments are treated by the group leaders serving as co-authors of the several chapters contained in Appendix 1. Group leaders who contributed much to the successful completion of the study included, in addition to the category leaders: James Sinatra, Landscape Architecture; George Thomson, Forestry; Roger Bachmann, Zoology and Entomology; Michael Peterson, Zoology and Entomology; David Gradwohl, Anthropology; and William Platt, Zoology (University of Iowa). Coordinating staff personnel for the Rock Island District, Corps of Engineers, included for this category: Robert Hurlbutt, Contract Administrator; Frank Collins and Mick Cockerill, Environment Resources Section, for environmental studies; and San Doak, General Engineering, and Kenneth Jensen, Materials, for geological studies.

The general guidance and support of Dean D. J. Zaffarano, Vice President for Research and the principal investigators, Merwin Dougal of Iowa State University and Kenneth Dueker of the University of Iowa should also be duly recognized.

AMES RESERVOIR ENVIRONMENTAL STUDY

Appendix I. Natural and Archaeological Resources of the Reservoir Site and Stream System

Chapter 1

LANDSCAPE OVERVIEW

Contribution to the Ames Reservoir Environmental Resources Review Study

Sponsored by

U. S. Army Corps of Engineers Contract DACW25-72-G-0033

by

James B. Sinatra

Paul F. Anderson

J. Craig Taggart

Glenn H. Beavers

1973

CONTENTS

LIST OF FIGURES

LIST OF TABLES

Chapter 1

LANDSCAPE OVERVIEW

by

James B. Sinatra, Paul F. Anderson, J. Craig Taggart, and Glenn H. Beavers

Introduction

The first phase of the landscape overview research was a visual analysis. The reservoir study area was interpreted photographically and by artists' sketches to show the change that would be brought about by the proposed reservoir alternatives. Numerous field visits were made to reflect on the aesthetics of the existing site.

The second phase of the research was to delineate a site study area and create a computer data bank of resource information pertinent to the project, in order to quantify resource change by the reservoir alternatives. Resource information was collected from existing sources such as aerial photographs, soils maps, and field reconnaissance. The data were programmed so they could be recalled in computer graphic or tabular form. This enabled the researchers to quantify and identify the pattern of resource change within the site study area.

The third phase was to use the resource information to illustrate the pattern of land types for various reservoir-associated uses inside and outside the take-line. In addition, site types were grouped by common resource attributes, and the propensity of these site types for recreation and residential activities were discussed.

The fourth and final phase was to quantify change of the timber resource by the reservoir alternatives within Story County.

Sinatra is an associate professor of landscape architecture. Anderson is a graduate research assistant in landscape architecture, Taggart a graduate student in landscape architecture, and Beavers an undergraduate research assistant. All are at Iowa State University.

part one

visual analysis

VISUAL ANALYSIS

Photographs

The major patterns visible in Fig. 1-1-1 are the timber in the river valleys, the agricultural fields, the major roads, and the urban areas. Of these, the natural pattern (timber) would be most affected by the inundation of the proposed Ames Reservoir.

The following visual overview gives an overall perception from ground and aerial photographs of the immediate area to be changed by the proposed reservoir alternatives. The photographs in Figs. 1-1-2 through 1-1-24 were taken in winter, spring, and summer of 1972. This visual documentation follows the Skunk River and its tributaries within the reservoir study area.

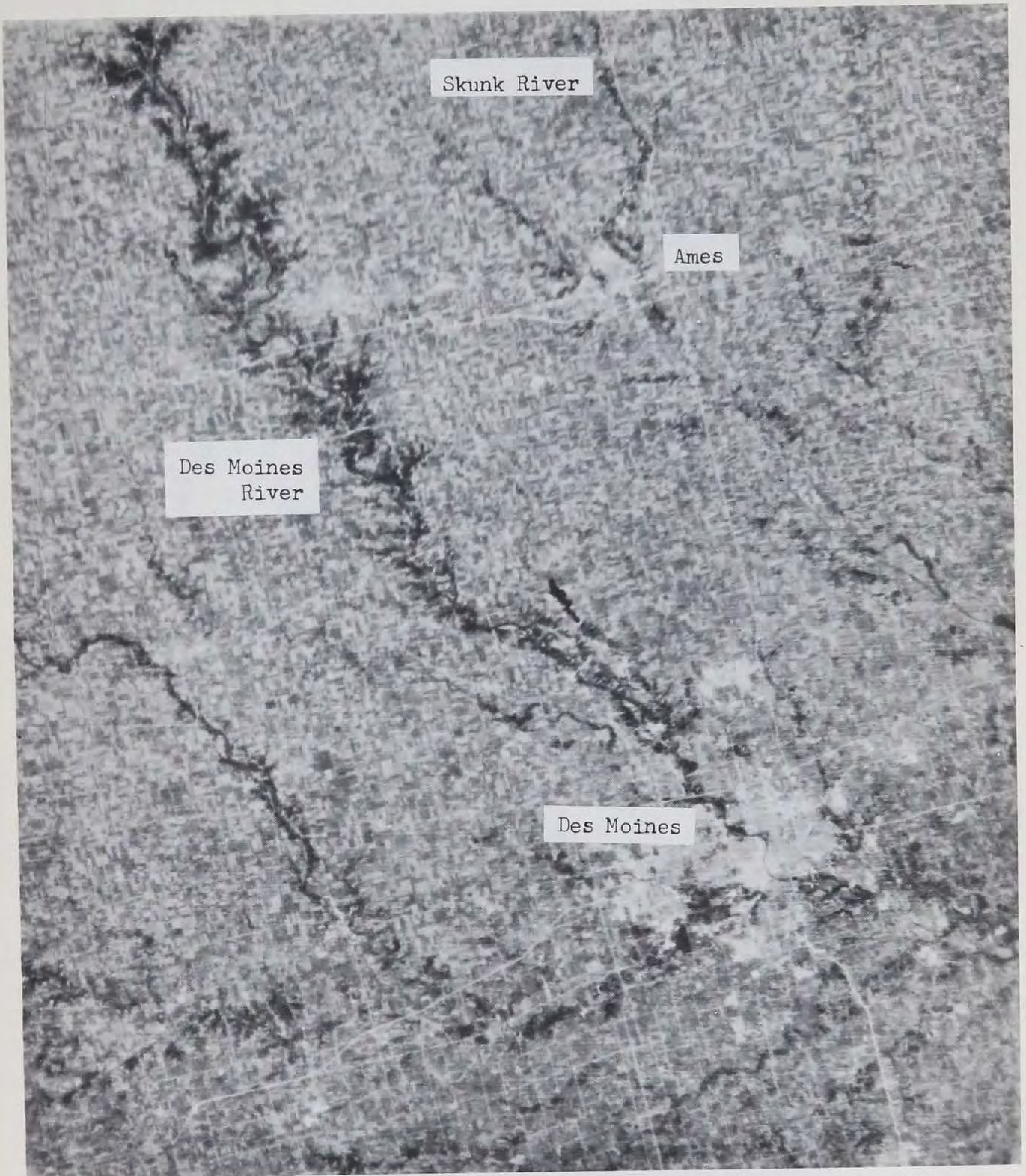


Figure 1-1-1. Space photograph of the central Iowa region showing Des Moines (lower right), Ames (upper right), and the Skunk River. (ERTS-A photograph courtesy of NASA project NAS5-21839; image number 1057-16325-5, dated 18 September 1972.)

Figure 1-1-2. An aerial overview from approximately one mile north of the dam site looking north up the Skunk River (center) to Story City (upper left). Keigley Creek is to the left and Bear Creek is to the right. The confluence of Keigley Creek and Bear Creek with the Skunk River at Soper's Mill (center) forms a concentrated, but diverse, element on the landscape. The timber line follows the interstate on its west side at a distance of ¼ mile and crosses only at Bear Creek and Long Dick Creek, creating a vegetative space (top center) which includes a rest stop and the scenic overlook.

Figure 1-1-3. One of several drainage ditches in Hamilton County that contribute to the beginnings of the Skunk River. The scene, looking northwest, is three miles south of Blairsburg in Hamilton County.

Figure 1-1-4. The Skunk River in Hamilton County three miles north of Ellsworth. The natural river channel is in a shallow valley with a narrow band of streamside vegetation.

Figure 1-1-5. The upper Skunk River approximately four miles above Story City looking east in Hamilton County. Here the river begins to make a visual contrast to the surrounding farmland, with a narrow timber band which heightens the topographic variation. Little Wall Lake, the only natural lake in the upper basin, is at left.

Figure 1-1-6. Looking east toward Story City and the Skunk River; Long Dick Creek (upper middle-right) and the town of Roland are in the background. The narrow band of timber widens and is visible from the interstate.

Figure 1-1-7. Long Dick Creek (top left) and the Skunk River in the foreground; looking east. Long Dick Creek crosses under I-35 creating visual interest perpendicular to the traffic movement.

Figure 1-1-8. Looking northwest up the Skunk River to Story City (background) with Bear Creek (middle right). From I-35 the timber appears as a strong greenbelt in contrast to the overall landscape scene.

Figure 1-1-9. Skunk River at I-35 scenic overlook in study area. Presently, the scenic overlook affords a good view of the valley and timber.

Figure 1-1-10. View from I-35 scenic overlook west toward timber along the Skunk River. The timber becomes a dominant vertical element and color contrast to the sky and ground plane. A contrasting foreground and frame for the view is formed by the surrounding cedars.

Figure 1-1-11. Upper Bear Creek approximately three miles above the Skunk River. This and Figure 1-1-10 show the diversity of spaces along Bear Creek. The occasional open areas and enclosures of human scale are appealing to the hiker.

Figure 1-1-12. Bear Creek approximately 1¼ miles above the Skunk River; looking northeast.

Figure 1-1-13. View of Bear Creek ¼ mile above the Skunk River. One proposed island is to the right; looking southwest. Where the Skunk River and Bear Creek are both open and closed spaces formed by the timber.

Figure 1-1-14. Bridge at Soper's Mill area (center); looking northwest across the Skunk River. Keigley Creek is in the background. Soper's Mill has a high identity with the river because it is the most popular public access to the river in the area.

Figure 1-1-15. The bowstring bridge across the Skunk River at Soper's Mill is two miles above the dam site. The narrow valley and romantic bridge make the access quite appealing to hikers, fisherman, and picnickers.

Figure 1-1-16. Skunk River just below Soper's Mill; looking south.

Figure 1-1-17. Looking east at Keigley Creek (foreground), drainage ditch #1 (middle left), the Skunk River and Bear Creek (upper left). The dendritic drainage pattern is emphasized by the confluence of the four streams. In contrast, the Skunk-Keigley Plateau (center) is open and flat.

Figure 1-1-18. Keigley Creek 2½ miles upstream from its mouth on the Skunk River; looking south. As the stream flows closer to the Skunk it becomes less open and more timbered.

Figure 1-1-19. Keigley Creek approximately one mile above the Skunk River; looking east toward the Skunk River (background).

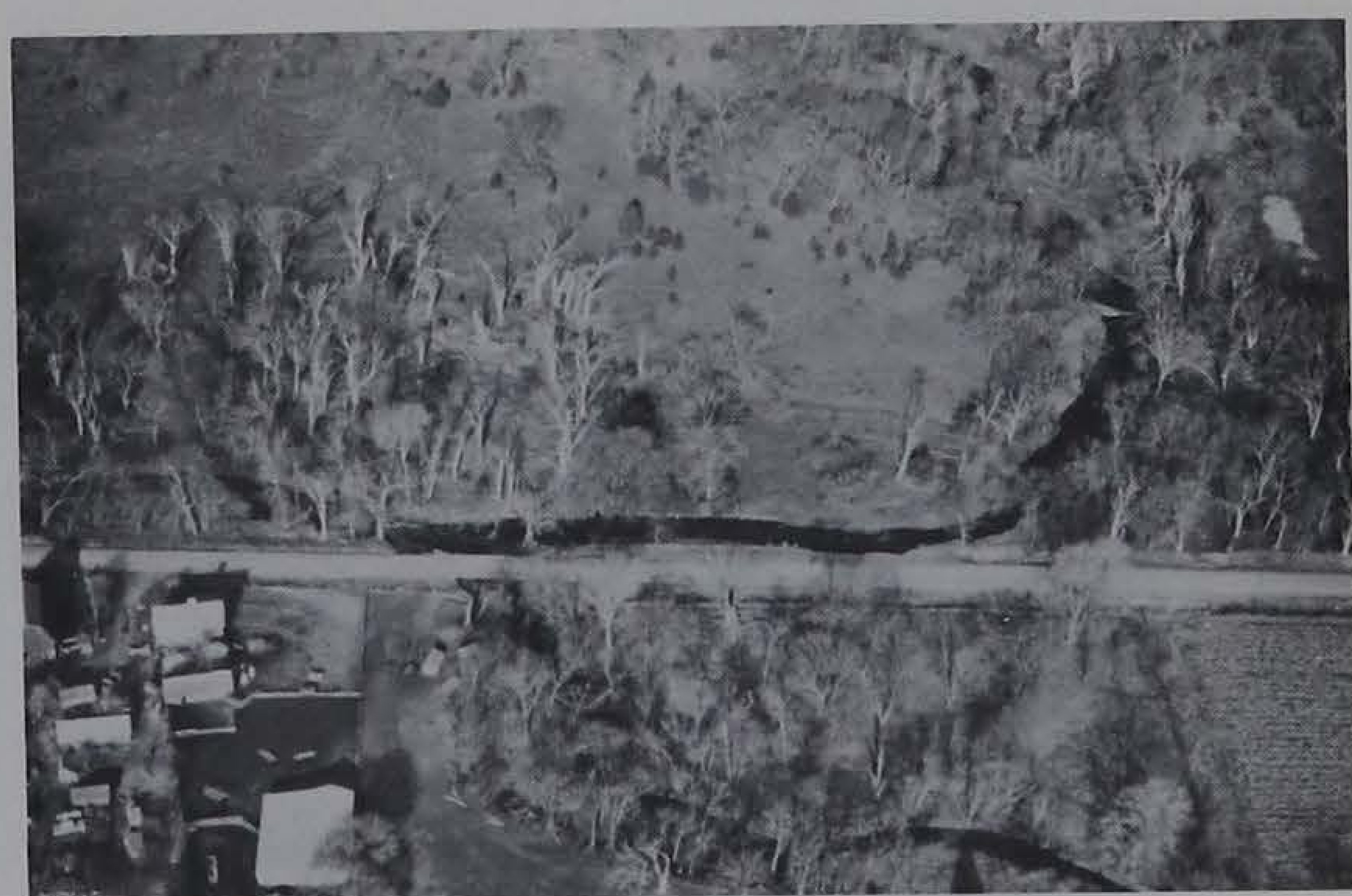


Figure 1-1-20. Drainage ditch #1 passing under a Story County Road in Section 36, LaFayette Township; $1\frac{1}{4}$ miles above the Skunk River. Keigley Creek flows from upper right to center left. The confluence of the two streams is in the center.

Figure 1-1-21. Looking south down the Skunk River approximately ½ mile above the dam site. The timber forms a visual barrier and strong corridor to the river traveller.

Figure 1-1-22. Looking north across the Skunk River at the dam site (right). The dense timber, topographic variation, and rock outcrops create a diverse visual quality at the dam site.

Figure 1-1-23. The Skunk River two miles south of Ames; looking north. This portion of river, though channelized in the early 1900s, is now meandering.

Figure 1-1-24. Looking southeast across the broad floodplain three miles south of Ames. The timber is present only on the valley slopes (upper right) while the straightened river channel (upper left) is surrounded by cropland.

Slide Collection

To gain a better feeling for the visual qualities of the proposed Ames Reservoir study area, 1200 ground and aerial slides were taken from March to September, both within and around the study area proper. About half the slides are aerial shots which give a general overview of the area and help to relate specific landmarks to the area as a whole. Many of the aerial photos were taken after a snowfall, so that the shape and character of the wooded waterways could easily be seen. Other aerial photographs allow a closer look at specific landmarks, such as the Soper's Mill Access, the scenic overlook, Interstate 35, Peterson's quarry, several towns, and all major creeks as well as the Skunk River.

The majority of the remaining slides were taken from the ground on various trips into the field from April to September. Throughout the summer, the entire length (within the study area) of all major creeks and the Skunk River were walked and photographed in depth. The ground slides supplement the aerial slides by affording an on-the-spot look at specific landmarks, as well as an overall feeling for the nature of the upland and lowland woods and adjoining agricultural lands.

From these 1200 slides, 120 were assembled into a 30-minute presentation reflecting the visual character of the land in and around the study area. The show begins with maps which relate the study area to the state of Iowa and the upper Skunk River basin. Then maps of the 34 sections comprising the study area are indicated on a Story County highway map, along with a diagramatic sketch which indicates the locations of well known landmarks within the study area. A Corps of Engineers topographic map, indicating all areas to be inundated, is also shown. This is followed by winter aerial photographs which give an overview of the area.

The rest of the slides, which make up the majority of the show, offer an in-depth look at the study area, starting in Hamilton County, just above Story City, and proceeding down the Skunk River and its tributaries to a spot below the dam site. Slides of appropriate portions of a Corps of Engineers topographic map (shown earlier) are inserted to indicate location of the areas being shown. Also, sketches taken from several of these slides are shown to indicate the visual character of the land at various water levels of the proposed reservoir. These sketches follow the slides from which they were taken.

A shorter 15-minute version of this same show is available. Through these shows, the viewer can gain a visual feeling for the land included in the proposed reservoir study area. He can also see how this visual character might be changed by inundation.

Artist's Sketches

The following sketches are taken from aerial photographs depicting an overview of the area to be affected by inundation of the proposed reservoir, as well as specific locations of interest within the reservoir study area. These sketches depict the study area as it is now, as well as its visual quality after inundation. This was determined through the Army Corps of Engineers Reservoir General Plan Map, scale 1:25,000, and the Army Corps of Engineers aerial photographs, scale 1:12,000, date 4-11-67.

The first six sketches represent alternatives to the proposed reservoir. These sketches were taken from a slide showing the area to be affected by inundation from one mile north of the dam site. The illustration is viewed looking north toward Story City.

The six alternatives and sketches are as follows:

Alternative #1 - Ames Reservoir, as planned by the Corps of Engineers, with two subimpoundments - design memo #1.

A. Ames Reservoir - Conservation pool, elevation 950
Flood Pool, elevation 976

B. Bear Creek Subimpoundment - Conservation pool, elevation 970
Flood pool, elevation 979

C. Dam Site Subimpoundment - Conservation pool, elevation 1000

Alternative #2 - Ames Reservoir as planned by the Corps of Engineers, but with no subimpoundments.

Ames Reservoir - Conservation pool, elevation 950
Flood pool, elevation 976

Alternative #3 - Ames Reservoir, minimum conservation pool for recreation only, elevation 940.

Alternative #4 - Minimum Conservation pool, limited flood control storage of 3.6 inches and subimpoundments.

A. Ames Reservoir - Conservation pool, elevation 940
Flood pool, elevation 965

B. Bear Creek Subimpoundment - Conservation pool, elevation 970
Flood pool, elevation 979

C. Dam Site Subimpoundment - Conservation pool, elevation 1000

Alternative #5 - Tributary recreation lake development only

A. Bear Creek Subimpoundment - Conservation pool, elevation 970
Flood pool, elevation 979

B. Dam Site Subimpoundment - Conservation pool, elevation 1000

Alternative #6 - Recreation and open space use, scenic river in natural state, no impoundments, essentially existing conditions.

Principal Investigators' Note:

Additional alternatives were introduced by other categories involved in the Ames Reservoir Environmental Study subsequent to this study (nine in all). These are discussed and reported in detail in the Summary Report, Appendix 3, Recreation and Open Space Uses, and Appendix 6, Economic Evaluation. The additional alternatives include proposals for maximum and minimum greenbelt concepts, and are directed towards more complete development for recreation and open space use. These newer alternatives have not been studied separately in this appendix but are essentially included in Alternative #6 since they are recreationally oriented and similar in resource utilization. The relationship among these alternatives are listed below, which provides identification and comparative designations for alternative development plans studied for the Ames Reservoir site by all categories.

Description of Alternatives	Alternative numbers used by: ARES Summary Report	Category 1
Ames Reservoir with two sub-impoundments as planned by Corps Design Memorandum.	#1	#1
Ames Reservoir as planned by the Corps but without the subimpoundments, recreational planning and development added.	#1a	#2
Ames Reservoir as a smaller conservation pool, for recreation only, no flood pool.	#2	#3
Two tributary subimpoundments and recreation development only.	#3	#5
Greenbelt, open-space plan with minimum acquisition, stream system recreation only.	#4	Somewhat reflects #6

Comprehensive greenbelt, open-space with maximum public acquisition of land natural stream system recreation only.	#4a	Somewhat reflects #6
Ames Reservoir as planned but with absolute minimum recreation development and planning no subimpoundments.	#5	Somewhat reflects #2
Reduced-scope, multi-purpose project, includes smaller flood control pool and optimum recreation development with the two subimpoundments.	#6	#4
Do-nothing on status quo, no recreation development, no capital improvements, use existing recreational facilities only.	#7	#6

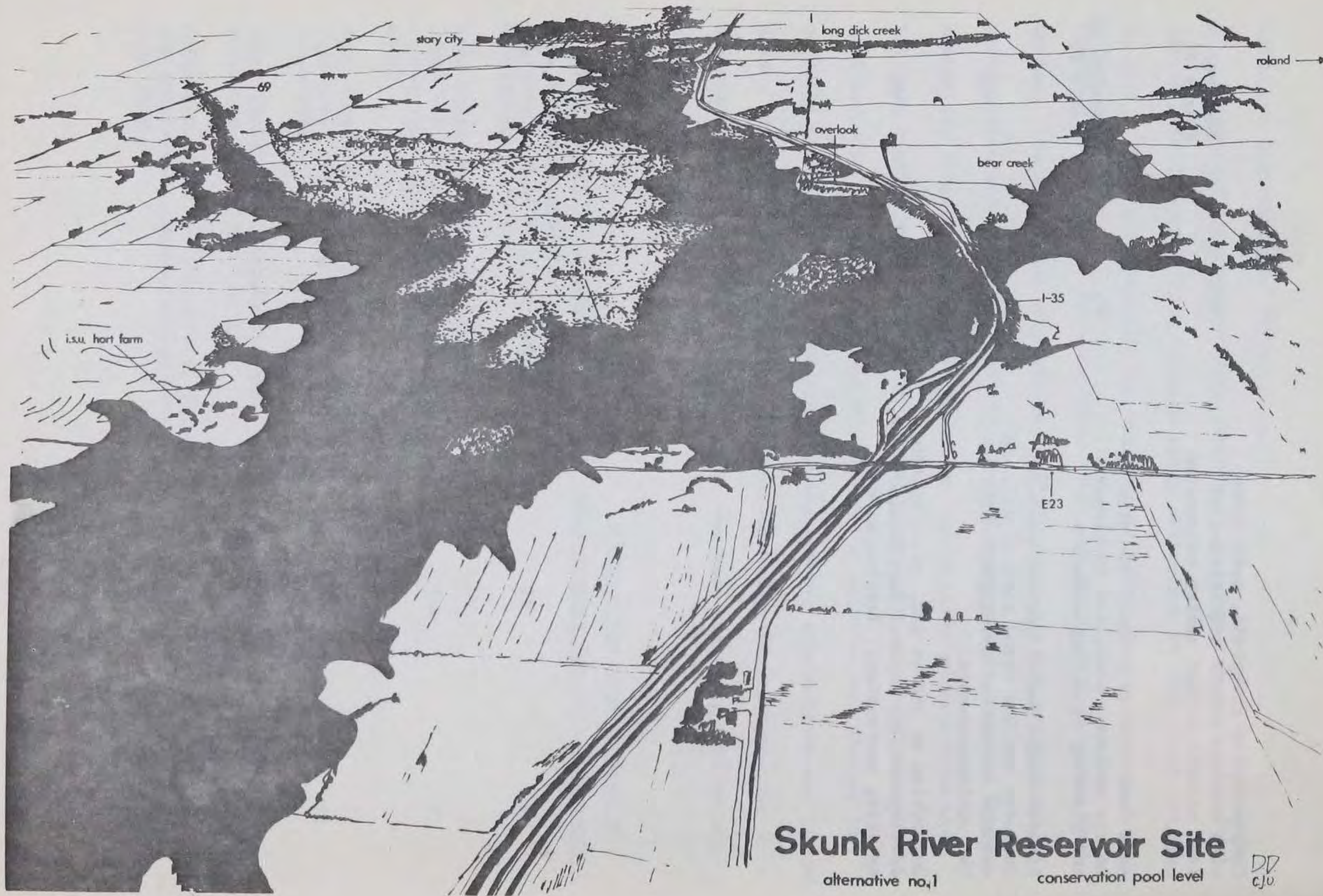

story city
long dick creek
roland
69
overlook
bear creek
I-35
i.s.u. hort farm
E23
Skunk River Reservoir Site
alternative no. 1
conservation pool level
DD
CJU

Fig. 1-1-25

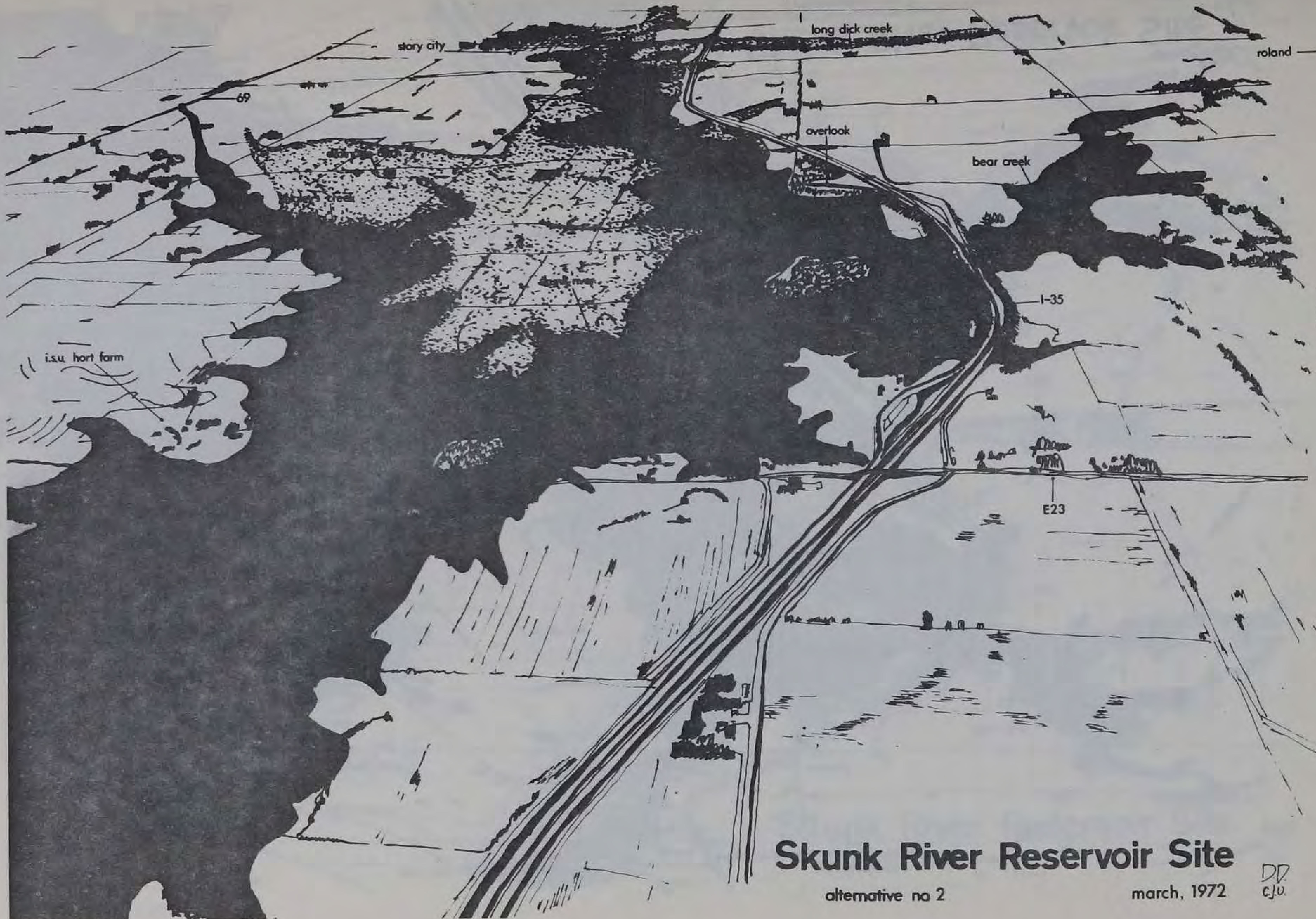

story city
long dick creek
roland →
69
overlook
bear creek
i.s.u. hort farm
I-35
E23
Skunk River Reservoir Site
alternative no 2
march, 1972
D.D.
C.J.U.

Fig. 1-1-26

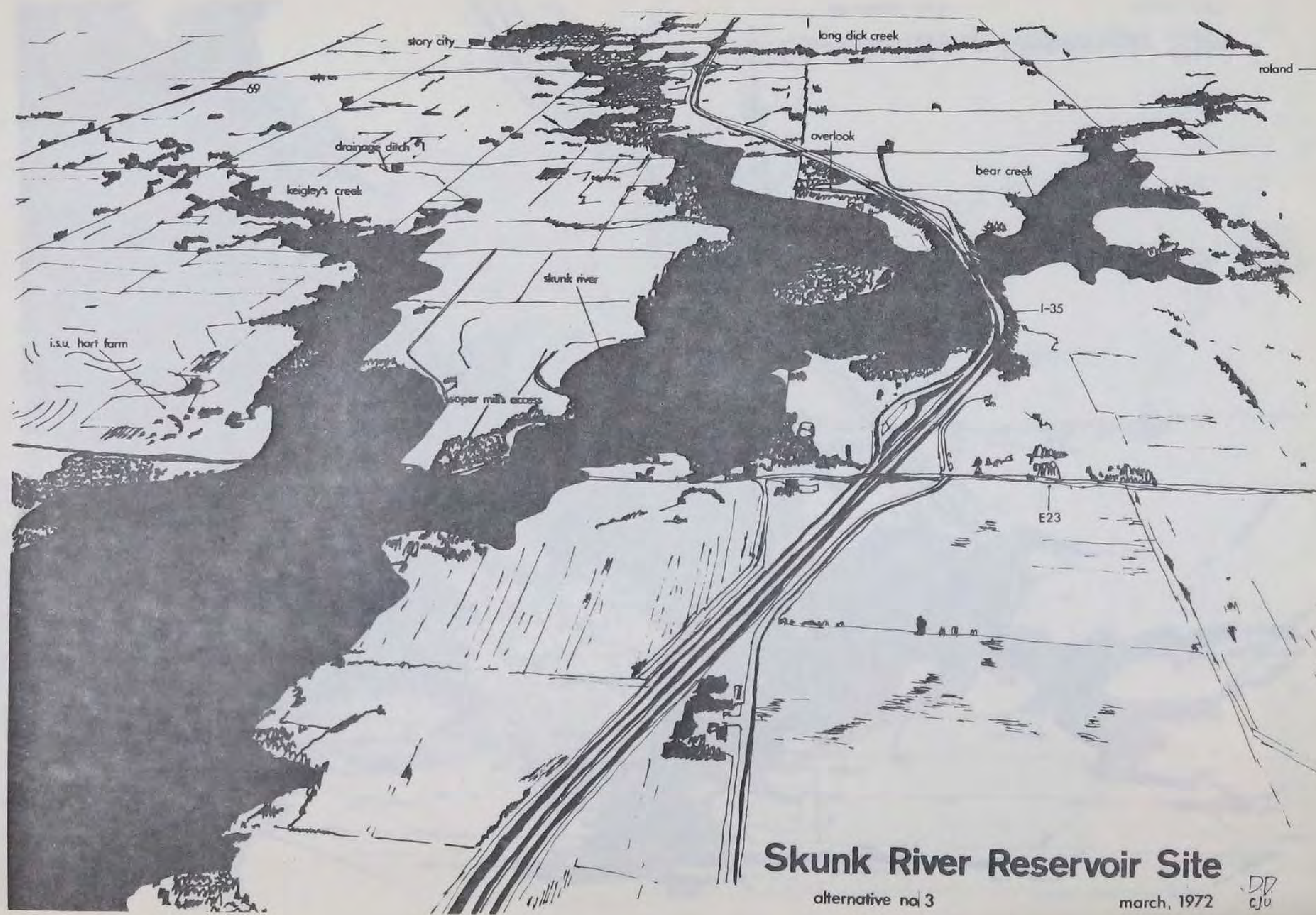

story city
long dick creek
roland
69
overlook
drainage ditch
bear creek
keigley's creek
skunk river
I-35
i.s.u. hort farm
soper mill's access
E23
Skunk River Reservoir Site
alternative no. 3
march, 1972

Fig. 1-1-27


story city
long dick creek
roland
69
overlook
bear creek
keigley's creek
i.s.u. hort farm
I-35
E23
Skunk River Reservoir Site
alternative no 4
march, 1972

Fig. 1-1-28


story city
69
long dick creek
roland
overlook
drainage ditch 1
bear creek
keigley's creek
skunk river
I-35
i.s.u. hort farm
soper mill's access
E23
Skunk River Reservoir Site
alternative no. 5
march, 1972
DD
cju

Fig. 1-1-29

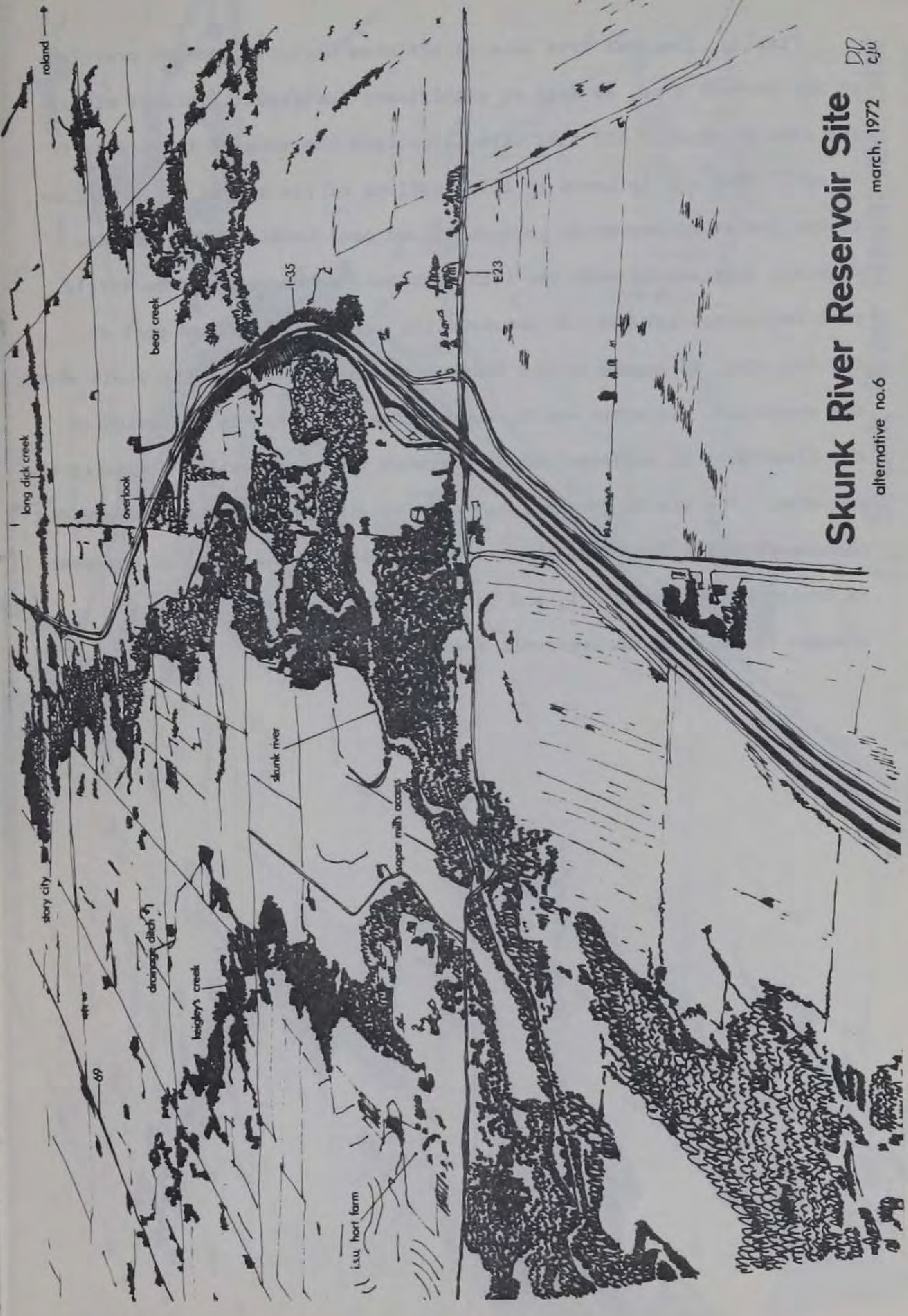

roland
long dick creek
bear creek
I-35
E23
overlook
story city
skunk river
soper mill access
drainage ditch
keigleys creek
69
i.s.u. hort farm
Skunk River Reservoir Site
alternative no.6
march, 1972
DD
cju

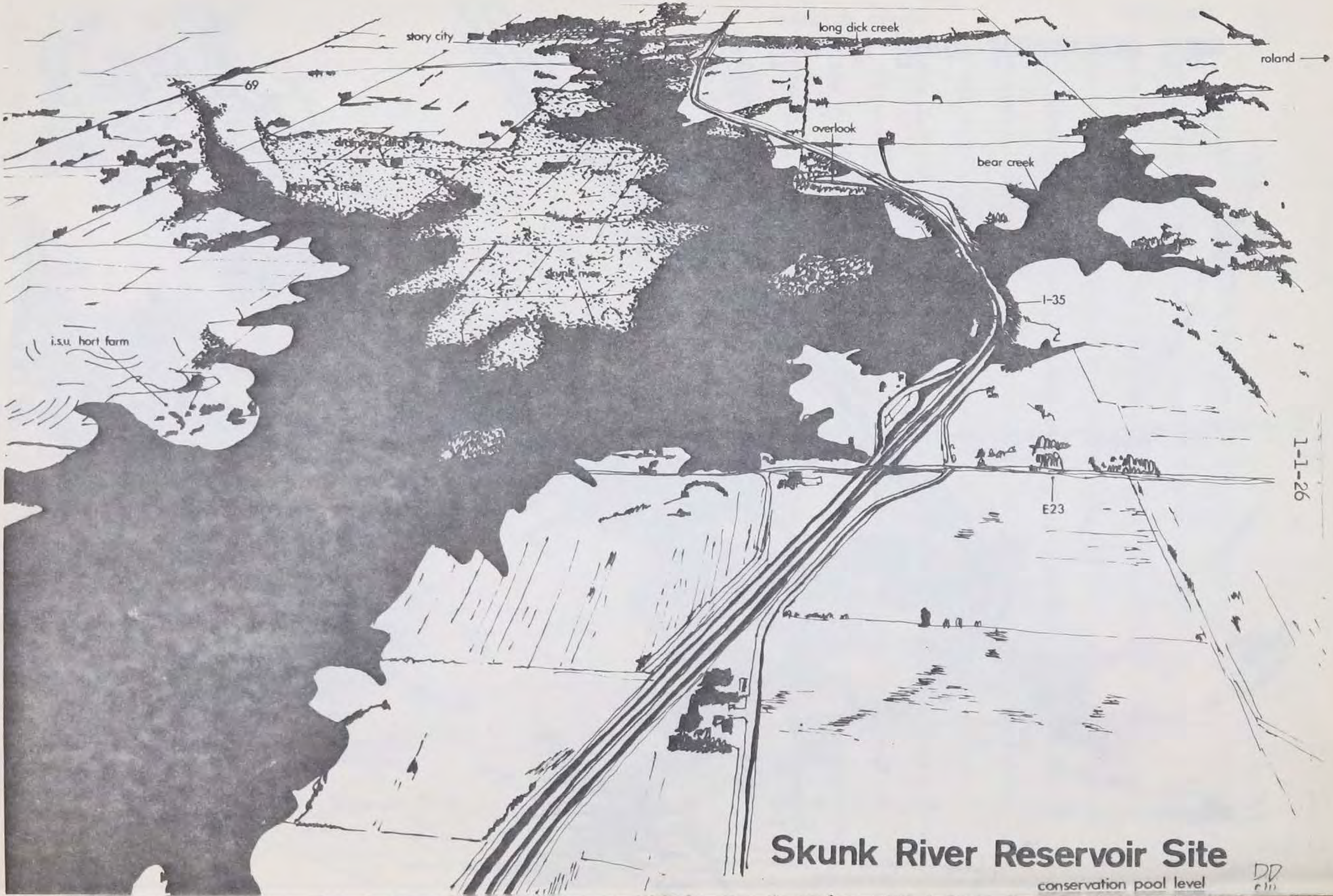
Fig. 1-1-30

Finally, the last five sets of sketches depict a general overview of the project area, as well as significant individual features within the area of study. All five sets illustrate the area or feature as it is now. They are followed by illustrations of its visual quality after inundation at conservation pool and flood pool levels. The dam site sequence consists of only two illustrations, as there would be little real difference between the conservation pool and the flood pool at the dam site, in regard to the lateral extent here of the two pools along the shoreline. In other words, the vertical increase in elevation of the flood pool is confined largely between the steep valley slopes at the dam site. The visual perceptions contained in these five sets represent changes forecast for alternative 1 as proposed by the Corps of Engineers in Design Memorandum No. 1, and to a modified or lesser extent the changes forecast by an reservoir development.

Skunk River Reservoir Site

existing valley march, 1972

Fig. 1-1-31



Skunk River Reservoir Site

conservation pool level

DD

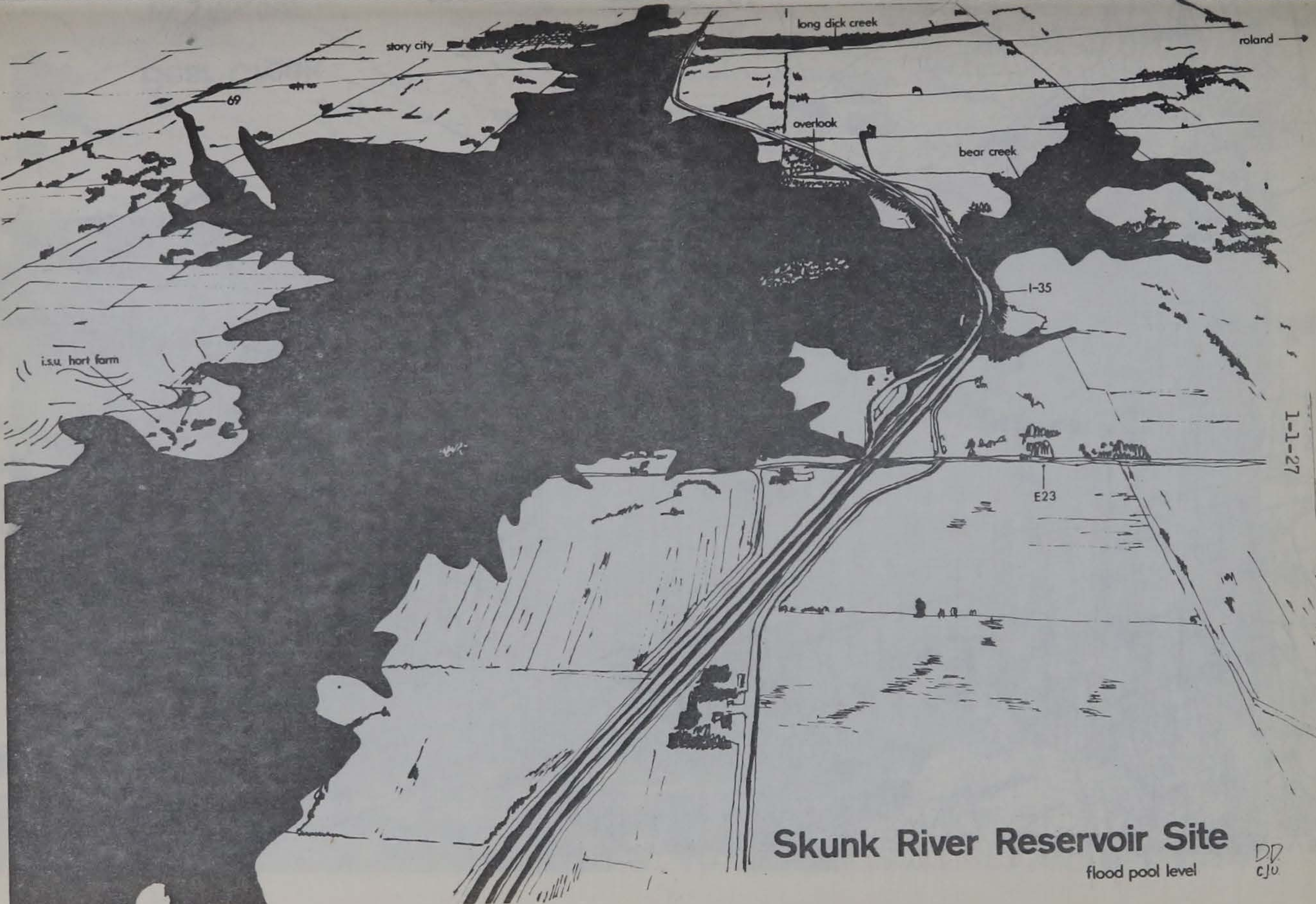

long dick creek
story city
roland
69
overlook
bear creek
I-35
i.s.u. hort farm
E23
Skunk River Reservoir Site
flood pool level
D.D.
CJU

Fig. 1-1-33


Bear Creek

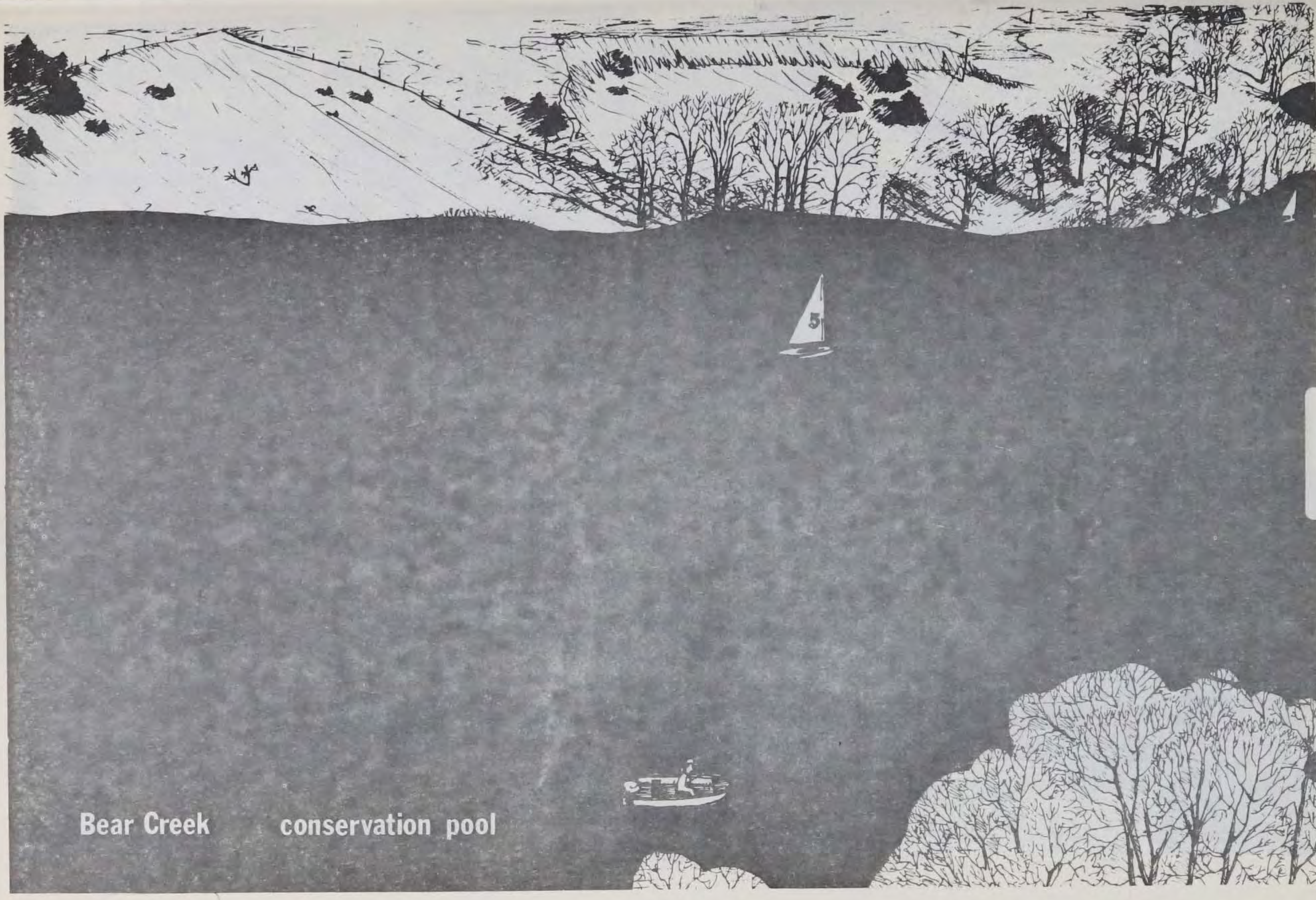


Fig. 1-1-35

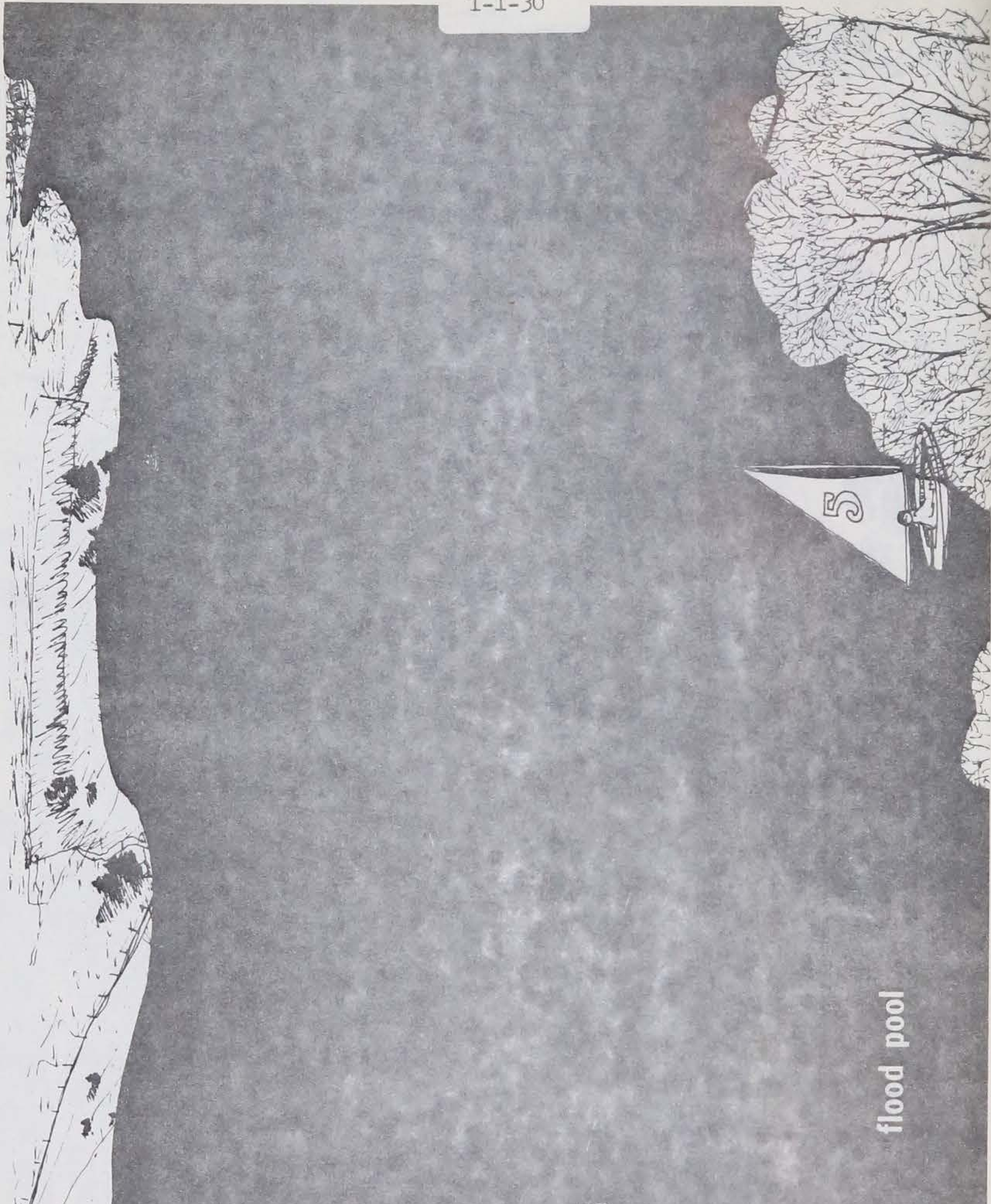


Fig. 1-1-36

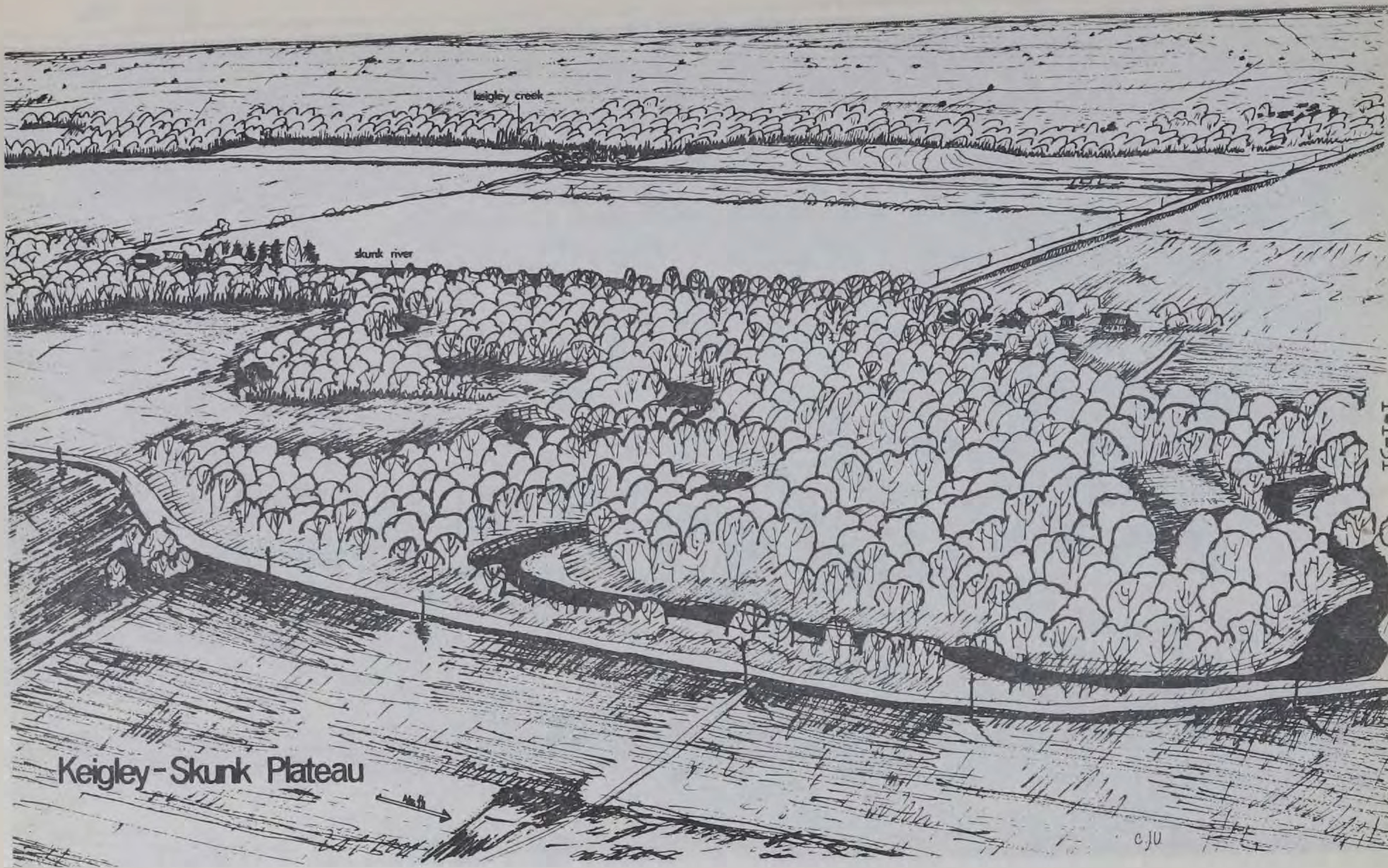


Fig. 1-1-37

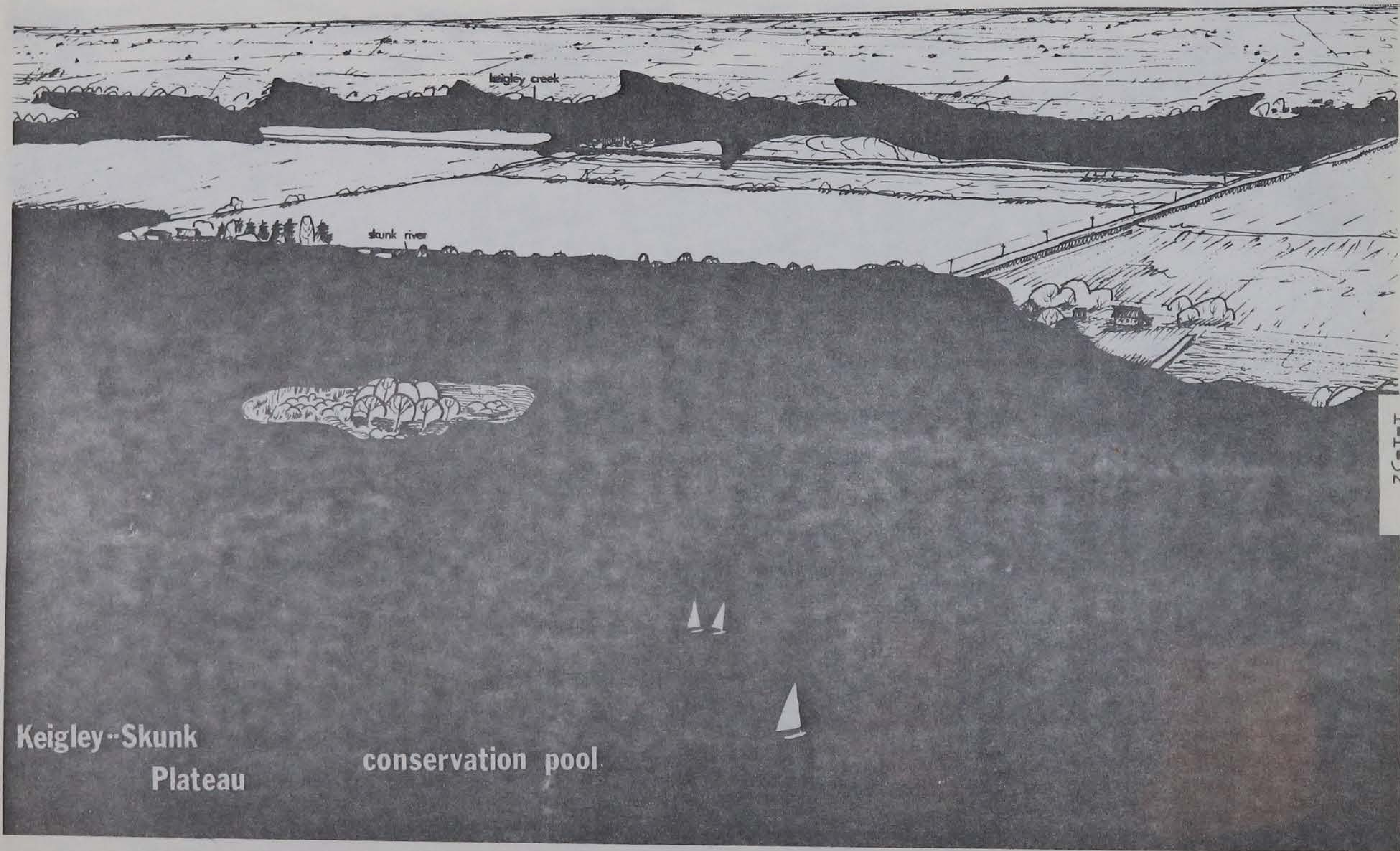

keigley creek
skunk river
Keigley--Skunk
Plateau
conservation pool

Fig. 1-1-38

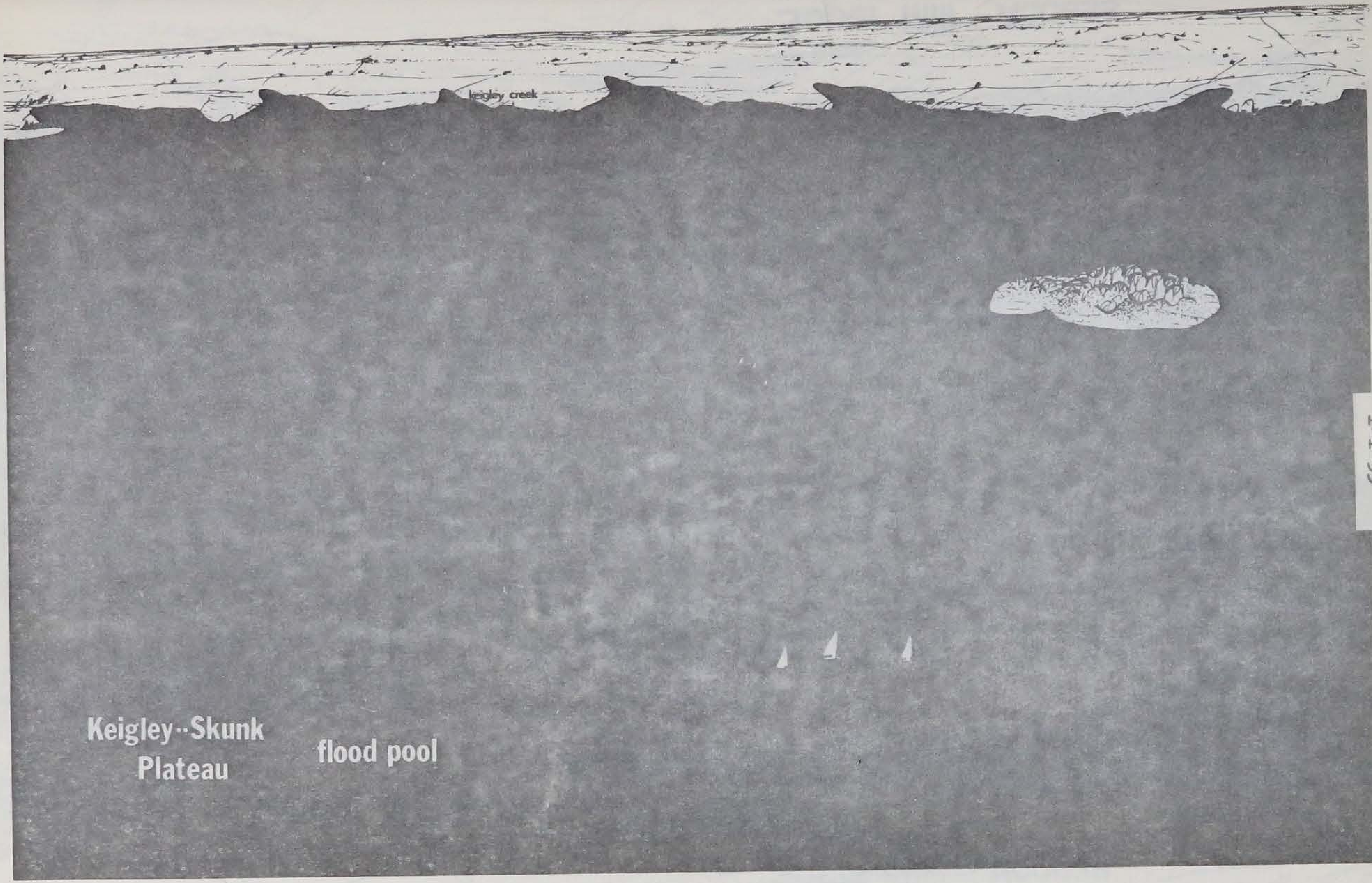


Fig. 1-1-39

Soper Mill Access

1-1-34

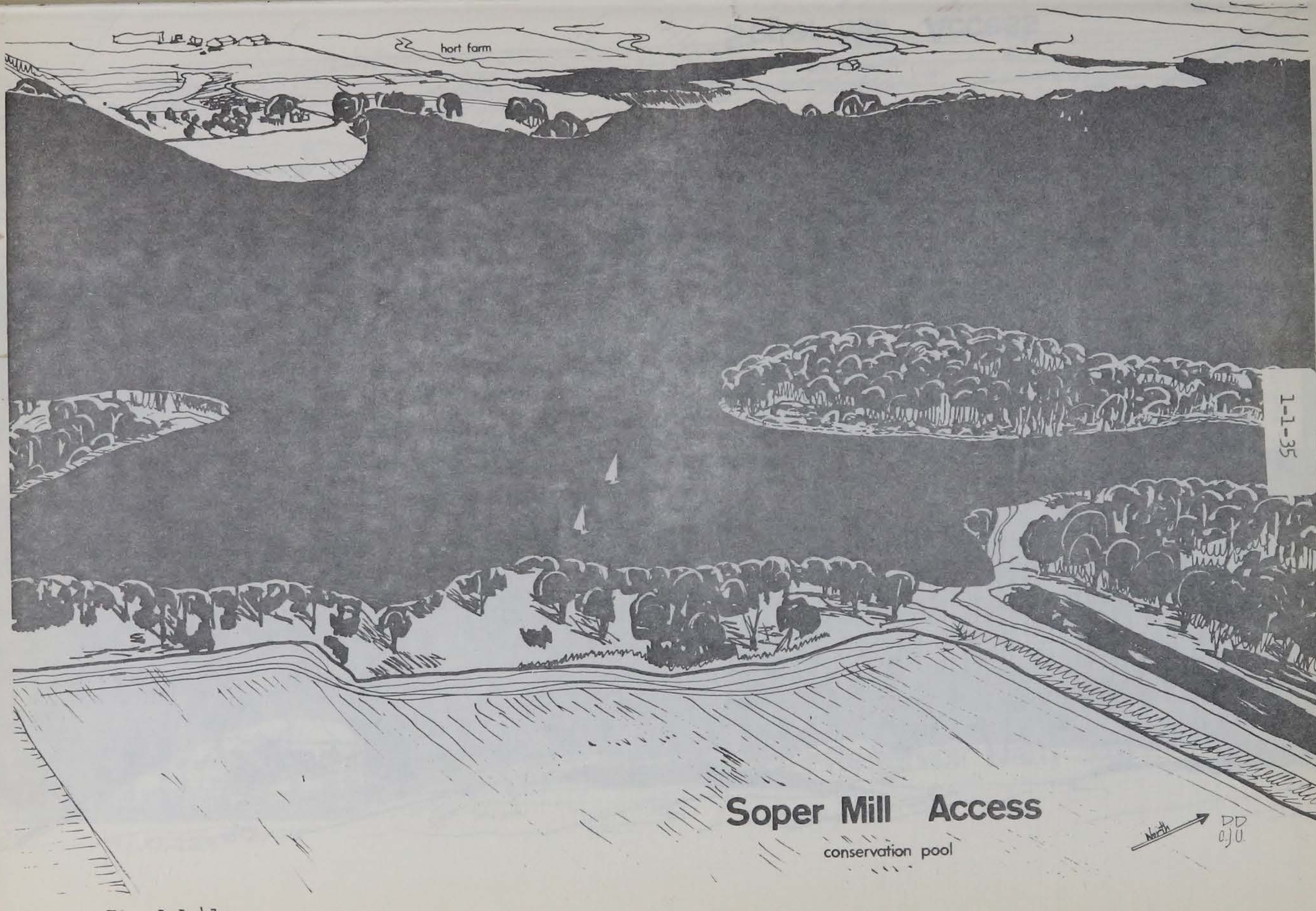
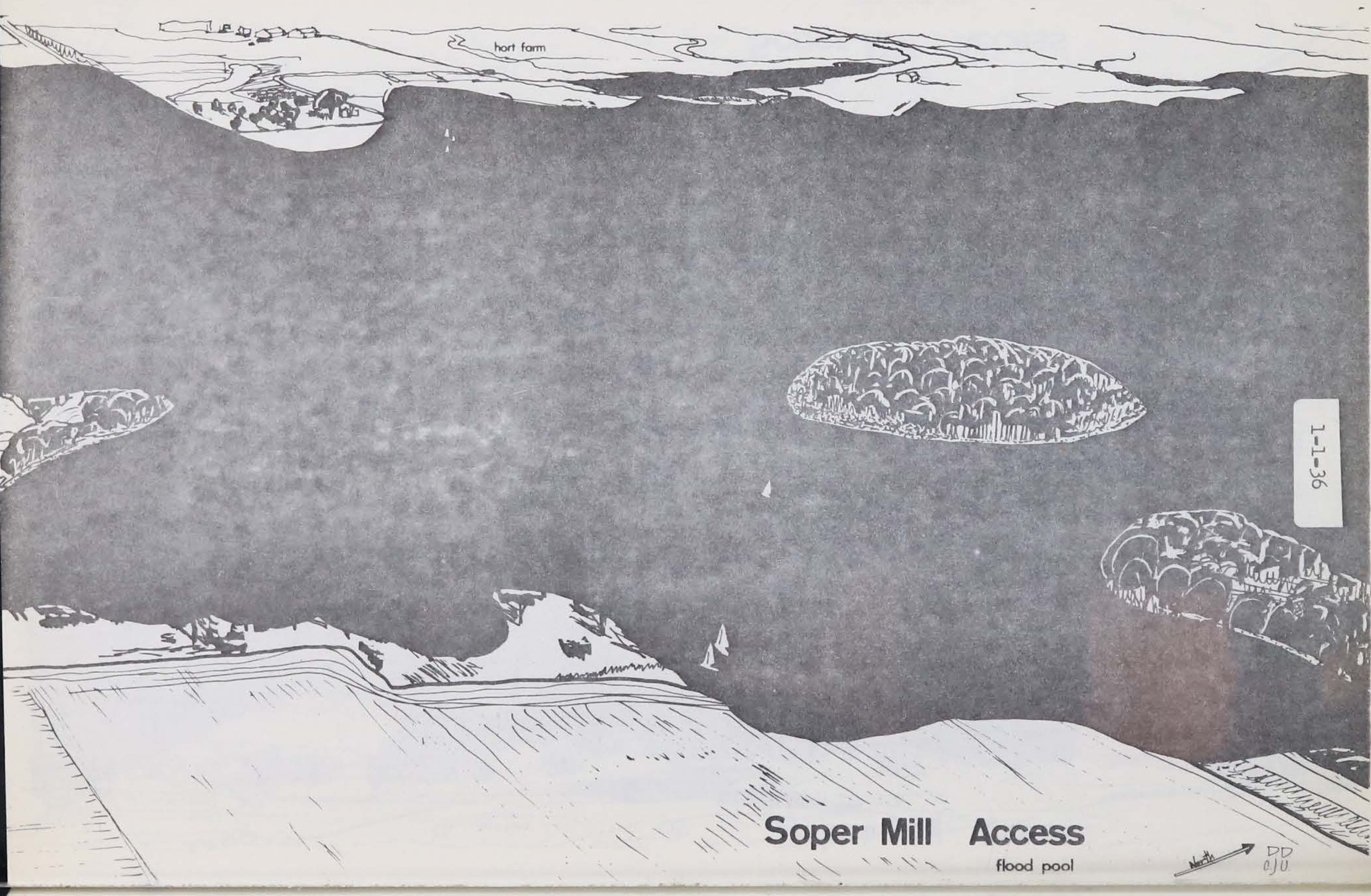


Fig. 1-1-41



1-1-36
hort farm
Soper Mill Access
flood pool
North
DD
OJU

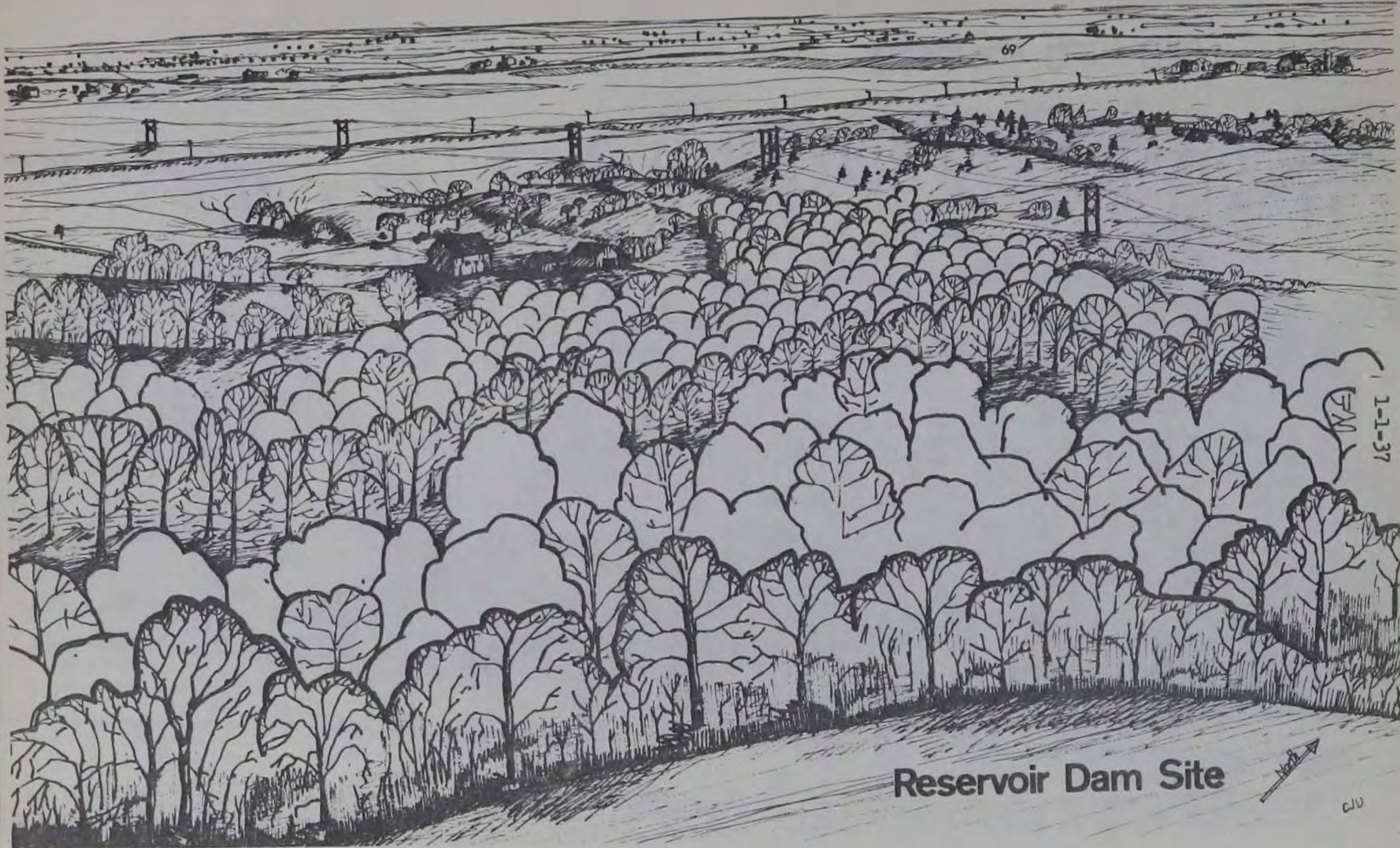


Fig. 1-1-43

part two

resource data

RESOURCE DATA

The Data Inventory

The methods for collecting, storing, and displaying resource data have been developed by the Land Use Analysis Laboratory (LUAL) research team during the past two years. The techniques used in this data inventory have been adapted from similar inventories of Story County, Iden Farm (Ames), and also Honey Hill (New Hampshire) by Harvard University's Laboratory for Computer Graphics under contract to the New England Division, U.S. Army Corps of Engineers.

A computer inventory. Three steps are required in the preparation of a computer map: 1) providing the computer with data in a form acceptable to the machine (input), 2) the analysis of the data and preparation of the map within the computer's memory (processing), and 3) the actual display of the map by the computer (output).

Some of the characteristics of computer inventory data are large amounts of data, data in machine readable form or readily converted, a record of the locations of all the data, and accurate data.

The computer can be programmed to perform a variety of arithmetic and logical operations on the data. Also, calculations based on spatial proximity may be performed. The output map is constructed of graphic symbols generally ranging from white to black.

The computer mapping program was adapted by Glenn Beavers of LUAL after Grid III by Sinton and Steinitz of Harvard to process and display large amounts of data collected on a rectangular grid coordinate system. Two sets of data input are required by the program: 1) the data and its spatial description, and 2) a series of instructions for analysis and display of the data.

The data is processed in order according to its grid cell location (spatial description): row by row from top to bottom and from left to right within each row (as in reading a book). The size and shape of the map is controlled by the user as are irregular outlines, if needed. The number of cells is essentially unlimited and depends on the hardware available.

For the map printout, the data values are generally grouped in levels, each level having its own unique printout character (/, *, ⊕). The user can specify the number of levels, the size or limits of each level, the maximum data value, and the minimum data value. The user can also control the symbolism of the printout characters in a gray scale between white and black, a dot map, or alphanumeric symbols.

The spatial coordinate system. The computer must be able to identify every location on the surface of the map which it prepares. An x-y grid coordinate system allows the computer to identify, locate, and separate any one point from all other points on the map.

The grid coordinate system used for this study is based on the legal description of land, i.e. township, range, and section lines. This system was selected because of its prevalence in Iowa and the ease of referencing field data and previously existing data.

Data cell size. The data cell used in this study is a subunit of a section (640 acres). Considered in the choice of cell size were the accuracy and detail of existing information, the size of the uses considered for the area, and the detail of the decisions to be made from the data. In effect, the cell size selected must be a common denominator. Information may be aggregated or generalized into larger units if comparisons are necessary with less specific data and no detail is lost.

The cell size is then evaluated for its practical limits in data handling in regard to hardware processing and storage capacity and in regard to time available for and cost of data coding and processing.

A grid cell size of 2.66 acres of approximately 1/240 of a section was selected for this study. The 2.66 acre cell is a subunit (¼) of the cell size (10.6 acres) used for an existing Story County inventory. The cell measures approximately 264 feet in an east-west direction and 440 feet in a north-south direction. The rectangular cell shape was used to more accurately reflect the rectangular printout character used in the graphic display of maps.

Occasionally, a section of abnormal size was encountered. In these cases, the normal cell size (2.66 acres) was used throughout the section except at the northern or eastern edge of the section where the last row of cells took up the slack, i.e. became as large as necessary to accomodate the enlarged section.

The spatial accuracy of the data is defined by the cell size. The location of point data (e.g. dwelling unit location) is known only to be within a particular cell. Similarly, the location of line data (e.g. roads) is known only to be within certain cells but the exact path is unknown. For area data (e.g. wooded pasture), the presence and amount (percentage of the cell occupied) is known but the pattern or location of the area within the cell is unknown.

Defining the study area. The study area includes land which is directly influenced by the development of the site.

The study area considered for computer analysis and display by Category I was first delineated on the USGS Ames Quadrangle as the land within a boundary 1 mile outside of the maximum flood pool elevation (976). This boundary was then adjusted to the nearest section line for convenience of data gathering and graphic display. The area for the study is 34 sections or approximately 22,000 acres. There are 8160 cells at approximately 2.66 acres each.

Data sources. The resource data for this study came from a variety of existing and gathered sources. The major sources were black and white aerial photographs provided by the Corps of Engineers, USGS topographic quadrangle map, USDA soils map, black and white aerial photographs provided by the ASCS state office, and field investigations.

A complete list of sources appears in the data file list in Appendix 1-1-1

The aerial photographs proved to be an invaluable source for land use, soils, vegetation, highway, surficial water, archaeological and other informati The type and amount of data interpreted from the photographs was determined by the scale, film, and date of the photography. Field checking was done in many cases to aid in the identification of the data.

The data inventory process. The Corps of Engineers provided black and white aerial photographs in stereo coverage. Alternate photographs in the flight lines were selected, one for each of the 34 sections in the study area, to serve as a base for data gathering and transformation.

A grid of the 2.66 acre cells (on plastic) was positioned on the photographs and the rows and columns were consecutively numbered for identification. Each section was identified as to its county, township, section number, and photograph number. Copies were made of each photograph with its overlay and were distributed among the study categories as a reference. See Appendix 1-1-3 for the handbook of photographs, Ames Lake Coordinate System.

All data in computer storage was entered using this grid coordinate system. The aerial photographs with grids were used in the field for referencir of gathered data as well as in the lab for transferring soils, topography, and other information into computer form.

Data file. The data was initially punched on computer cards, with two cards of information per cell. Later, the information on the cards was transferred to magnetic tape for storage.

A listing of all the resource information contained on the tape is included in App. 1-1-2, including each specific data variable and its four digit code number. The variable classes are shown in Table 1-1-1. The information is listed in the order it was punched on the original data cards.

Selection of data variables. The number and types of data variables used is dependent on the information available and the anticipated needs in analysis. As much flexibility as possible was built into the inventory system to allow additional data variables, an updating of data values, an aggregation of data variables, or a selection of specific variable units for display from a hierarchy.

Variable classes are major groups of data (archaeological sites, vegetation, etc.) and variable units are more specific types of data (upland forest, wooded pasture, dry prairie, etc.) within a variable class.

Data output. The output in this study can be divided into three types: resource data maps and resource suitability maps, and resource summary tables (see Table 1-1-2).

Resource data maps contain a direct (unweighted) presentation of data in a single variable class, though only selected data variables are used. Resource suitability maps combine several variable classes of data in a derived (weighted) presentation. For a discussion of the weighting procedure see page 1-1-177.

Table 1-1-1. Resource data (variable classes) in computer storage.

0001	Elevation, center of cell
0002	Elevation, center of 3rd quadrant
0003	Elevation, center of 4th quadrant
0004	Elevation, center of 2nd quadrant
0005	Elevation, center of 1st quadrant
0006	Soils/old
0007	Surficial water
0008	Township and range
0009	Section number
0010	Ownership and parcel size
0011	Vegetation/Pudil, primary
0012	Vegetation/Pudil, secondary
0013	Archaeological sites
0014	Proximity to take line
0015	Column of cell
0016	Row of cell
0017	Road classification and highway orientation
0018	Road surface type
0019	Average daily travel
0020	Land use, primary
0021	Land use, secondary
0022	Land use, tertiary
0023	Vegetation/Landers, primary
0024	Vegetation/Landers, secondary
0025	Vegetation/Landers, tertiary
0026	Slope percent
0027	Elevation, median in cell
0028	Slope aspect
0098	Pool blankout override
0100	Elevation, 0.66 acre print out
0099	Best choice of primary, secondary, tertiary data

Resource summary tables contain an unweighted total acreage of each data variable unit. A total estimate is listed for the existing resource (Alternative 6) as well as a total, high estimate, and low estimate of the resource remaining after the inundation indicated by each alternative.

Table 1-1-2. Ames reservoir data output.

		Alternatives 1	2	3	4	5	6
RESOURCE DATA MAPS							
1.	Elevation	X	X	X	X	X	X
2.	Flat slopes in fluctuating pool	X					
3.	Surficial water	X	X	X	X	X	X
4.	Reservoir pool levels	X					
5.	Restricted soil types	X	X	X	X	X	X
6.	Prime agricultural soils	X					X
7.	Vegetation/Landers	X	X	X	X	X	X
8.	Vegetation/Pudil	X	X	X	X	X	X
9.	Urban-rural vegetation/Pudil	X		X	X		X
10.	Habitat vegetation/Pudil	X		X	X		X
11.	Archaeological sites	X	X	X	X	X	X
RESOURCE SUMMARY TABLES							
12.	Land use	X	X	X	X	X	X
13.	Vegetation/Landers	X	X	X	X	X	X
14.	Vegetation/Pudil	X	X	X	X	X	X
15.	Soils/old	X	X	X	X	X	X
16.	Archaeological sites	X	X	X	X	X	X
RESOURCE SUITABILITY MAPS							
17.	Soils for residential development	X					X
18.	Residential development (Milligan)	X					X
19.	Picnic areas	X	X	X	X	X	X
20.	Public campgrounds	X	X	X	X	X	X
21.	Boat ramps	X					
22.	Swimming beaches	X					
23.	Wildlife habitat quality - Raccoon	X	X	X	X	X	X
24.	Wildlife census data - Raccoon	X	X	X	X	X	X
25.	Wildlife population density - Raccoon	X	X	X	X	X	X
26.	Habitat quality - all wildlife species	X					X
27.	Habitat quality - all mammal species	X					X
28.	Habitat quality - all bird species	X					X
29.	Story County natural timber	X					

Resource Data Maps

Eleven resource data maps (see Table 1-1-2) were obtained from the data bank. Each is a direct (unweighted) presentation of the inventoried data from a single variable class (e.g. Vegetation/Landers).

The maps show the <u>pattern</u> of resources as they exist and how they change with each alternative.

<u>How to read a resource data map</u>. The maps include six major parts: text, alternative description, sources, legend, frequency, and histogram.

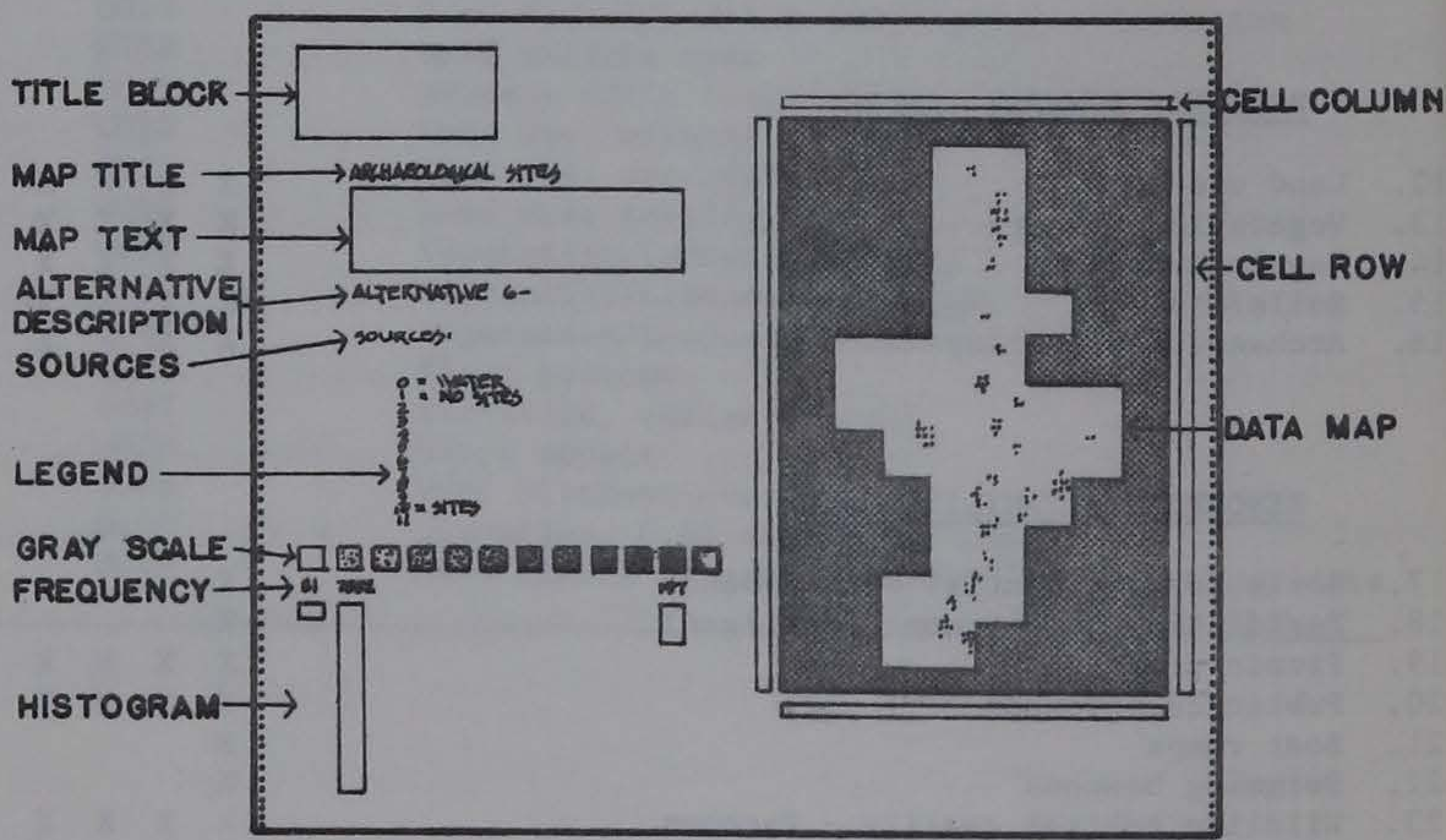


Fig. 1-1-45. Resource data map.

A text is provided with each map to give a background to the reader and some preliminary interpretation of the data. In each case the text was written before the map was produced and interpretation of the results is not included in the text.

The description of the project alternative being evaluated is also included in the text. In each case, the maximum water elevation and the maximum area inundated is shown. It is realized that because of the fluctuating pool in Alternatives #1, #2, and #4, some resources would be only temporarily inaccessible or changed at the fringes of the pool, while other resources would be terminally impacted by the fluctuating pool.

The specific sources of the data are included at the end of the text for further examination.

The legend indicates the printout character (gray level) assigned to each variable unit on the printout. In most cases a maximum of ten characters is used because of the difficulty to distinguish between more than 10 gray levels.

The number of cells in the study area having a particular printout character is listed as "frequency" at the top of the histogram. To convert this value to the number of acres in the study area, multiply the frequency by 2.66 acres/cell.

The histogram accompanying each map shows the relative percentage of the study area occupied by each of the ten data variables. Also shown are the low and high values, often representing the inundated area of each alternative.

In some cases not all six alternatives were presented. Alternatives #2 and #5 were omitted because of their similarity in impact to Alternatives #1 and #6 respectively.

Elevation (Fig. 1-1-46 thru 1-1-51). The elevation map graphically illustrates that a strong river valley along the Skunk River begins at Story City, continues south and narrows to the dam site, then broadens into a wider valley south of the dam site. The highest elevations in the study area are found on the middle west side (sections 1 and 12 of Franklin Township, sections 27 and 36 of LaFayette Township) and the lower east side (sections 4, 7, and 14 of Milford Township). These areas would most likely have the most direct views of the proposed lake (without vegetational barriers) and should be included in the purchase of reservoir lands.

The rank of alternatives by acres inundated in descending order is 1, 2, 4, 3, 5, and 6. There is very little difference in eliminating the subimpoundments in Alternative #2 (51 acres or a decrease of 1% in the pool acreage of Alternative #1). However, there may be considerable loss or gain of resources such as vegetation, minerals, or recreation. In terms of acres inundated, the elimination of the Bear Creek subimpoundment changes very little.

Alternative #3 (Fig. 1-1-48) reduces the inundation of the tributaries considerably, especially Bear Creek. The slopes become more exposed at this lower elevation map, as is the dendritic drainage pattern in the study area.

1-1-49

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.J.ANDERSON
PROGRAMMER-ANALYST G.M.GROVERS
DATA PREPARATION J.C.TAGGART, T.SMUCK, A.PUDIL, D.FAHLANDER,
S.CECIL, D.DEVRIES, W.SCHUTTLER, D.HENRY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPC N.JONES, E.JOHNSON, R.HEPPNER, D.ALLEN, D.FORNELIUS, D.WELLS

ELEVATION - ALTERNATIVE #1

THE TOPOGRAPHIC ELEVATION WAS RECORDED AT THE CENTROID OF EACH 2.44 ACRE CELL AS WELL AS THE ELEVATION OF THE CENTROID OF EACH QUADRANT OF THAT CELL YIELDING FIVE DATA POINTS PER CELL. TOPOGRAPHIC INFORMATION WAS TAKEN FROM THE BEST SOURCES AVAILABLE.

APPROXIMATELY 80% OF THE STUDY AREA HAD BEEN MAPPED FROM THE CORPS OF ENGINEERS AERIAL PHOTOGRAPHS (1967) IN FIVE FOOT INTERVALS-TO (GENERALLY) A MAXIMUM ELEVATION OF 990 FEET. FROM THIS, ELEVATIONS WERE INTERPOLATED TO THE NEAREST FOOT. THE CORPS OF ENGINEERS MAP ENCOMPASSED ALL AREAS TO BE INUNDATED. THE REMAINING 20% OF THE STUDY AREA HAD BEEN MAPPED BY THE U.S. GEOLOGIC SURVEY IN 1912 AT A CONTOUR INTERVAL OF 20 FEET. ELEVATIONS WERE INTERPOLATED TO THE NEAREST TWO FEET.

THE WATER SHOWN IS AT FULL POOL ELEVATIONS AND MAXIMUM LAND AREA INUNDATED FOR EACH ALTERNATIVE. ALL ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.

A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 970
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1 INCH = 200 FEET, 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = 880 - 900

2 = 900 - 920

3 = 920 - 940

4 = 940 - 960

5 = 960 - 980

6 = 980 - 1000

7 = 1000 - 1020

8 = 1020 - 1040

9 = 1040 - 1060

10 = 1060 - 1080

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.57 ST. DEV. = 7.16

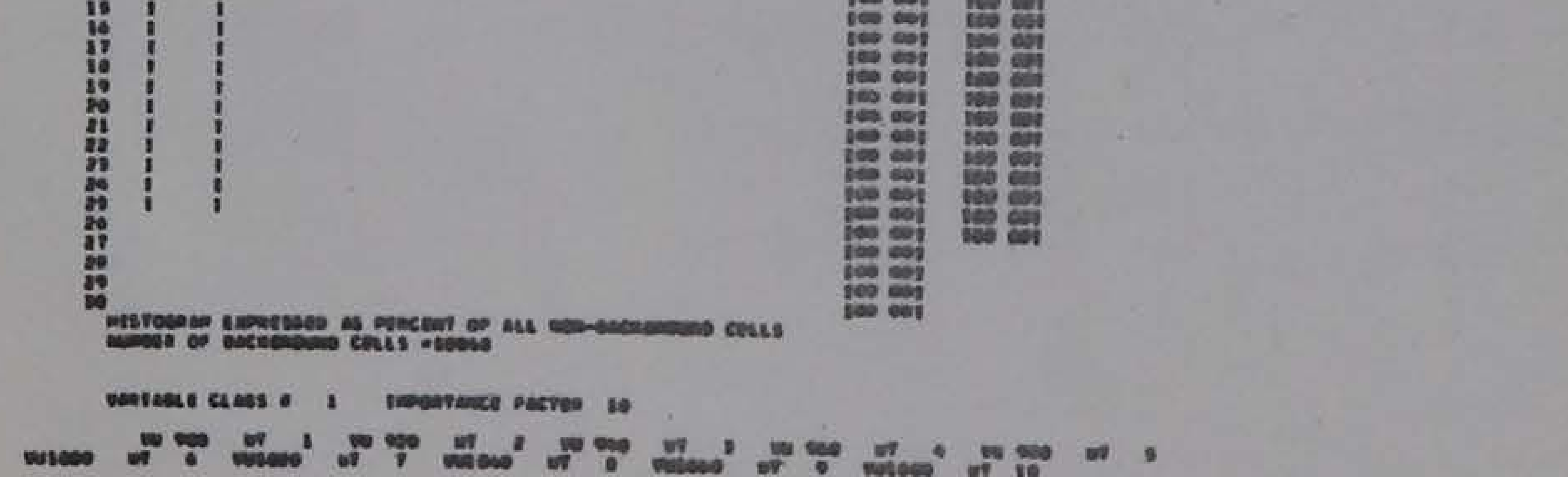
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10060

VARIABLE CLASS # 1 IMPORTANCE FACTOR 10

VU 900 WT 1 VU 920 WT 2 VU 940 WT 3 VU 960 WT 4 VU 980 WT 5
VU1000 WT 6 VU1020 WT 7 VU1040 WT 8 VU1060 WT 9 VU1080 WT 10

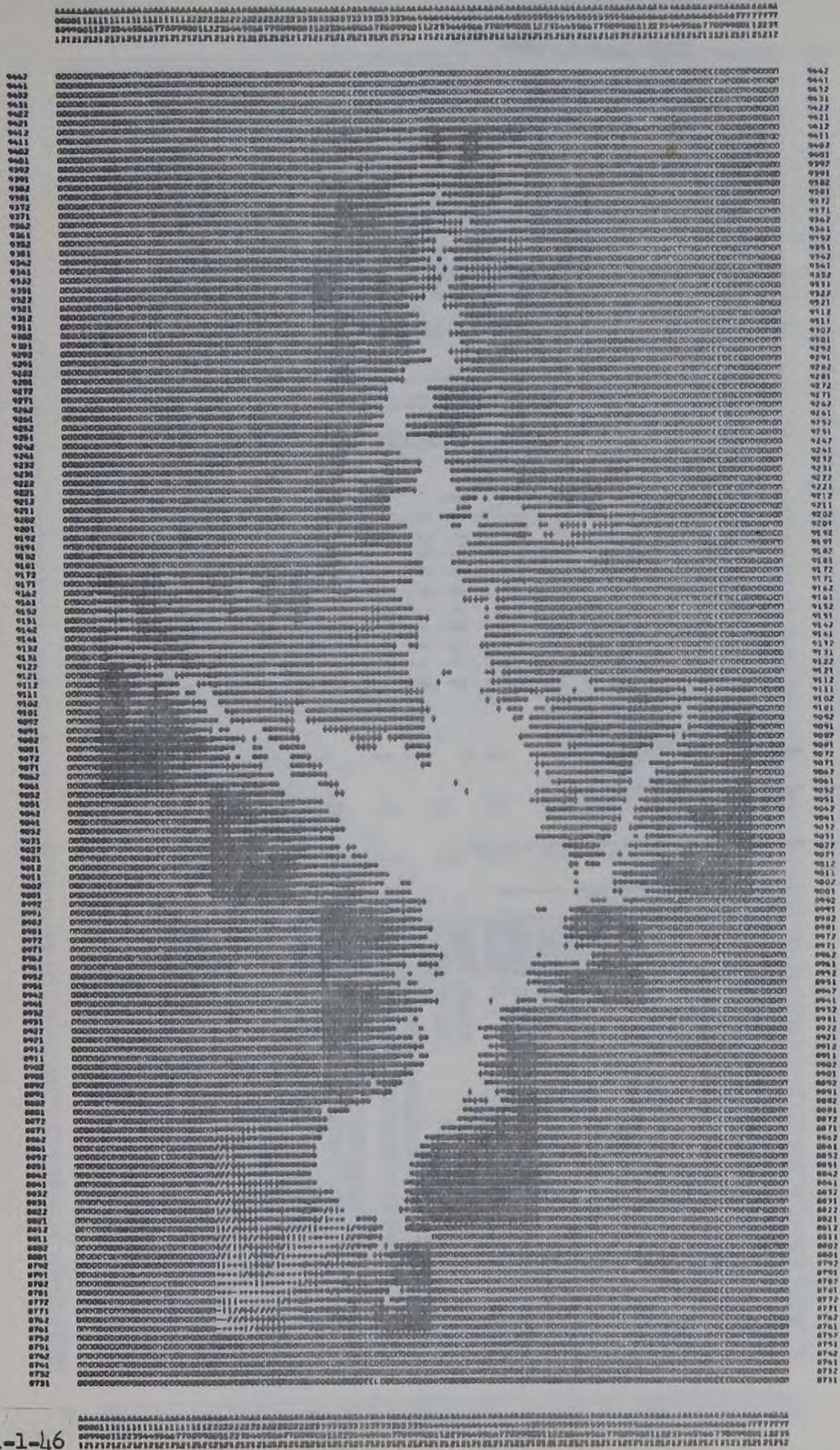


Fig. 1-1-46

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS [illegible], [illegible]
PROGRAMMER-ANALYST [illegible]
DATA PREPARATION [illegible]
[illegible]
GRAPHICS [illegible]
AND [illegible]

ELEVATION - ALTERNATIVE #2

THE TOPOGRAPHIC ELEVATION WAS RECORDED AT THE CENTROID OF EACH 2.00 ACRE CELL AS WELL AS THE ELEVATION OF THE CENTROID OF EACH QUADRANT OF THAT CELL YIELDING FIVE DATA POINTS PER CELL. TOPOGRAPHIC INFORMATION WAS TAKEN FROM THE BEST SOURCES AVAILABLE.

APPROXIMATELY [illegible] OF THE STUDY AREA HAD BEEN MAPPED FROM THE CORPS OF ENGINEERS AERIAL PHOTOGRAPHS (1967) IN FIVE FOOT INTERVALS TO [illegible] A MAXIMUM ELEVATION OF 980 FEET. FROM THIS, ELEVATIONS WERE INTERPOLATED TO THE NEAREST FOOT. THE CORPS OF ENGINEERS MAP ENCOMPASSED ALL AREAS TO BE INUNDATED. THE REMAINING [illegible] OF THE STUDY AREA HAD BEEN MAPPED BY THE U.S. GEOLOGIC SURVEY IN 1962 AT A CONTOUR INTERVAL OF 20 FEET. ELEVATIONS WERE INTERPOLATED TO THE NEAREST TWO FEET.

THE WATER SHOWN IS AT FULL POOL ELEVATIONS AND MAXIMUM LAND AREA INUNDATED FOR EACH ALTERNATIVE. ALL ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION 900
FLOOD POOL, ELEVATION 976

SOURCE: CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1 INCH = 200 FEET, 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1962.

LEGEND

0 = WATER

1 = 880 - 900

2 = 900 - 920

3 = 920 - 940

4 = 940 - 960

5 = 960 - 980

6 = 980 - 1000

7 = 1000 - 1020

8 = 1020 - 1040

9 = 1040 - 1060

10 = 1060 - 1080

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.68 ST. DEV. = 7.12

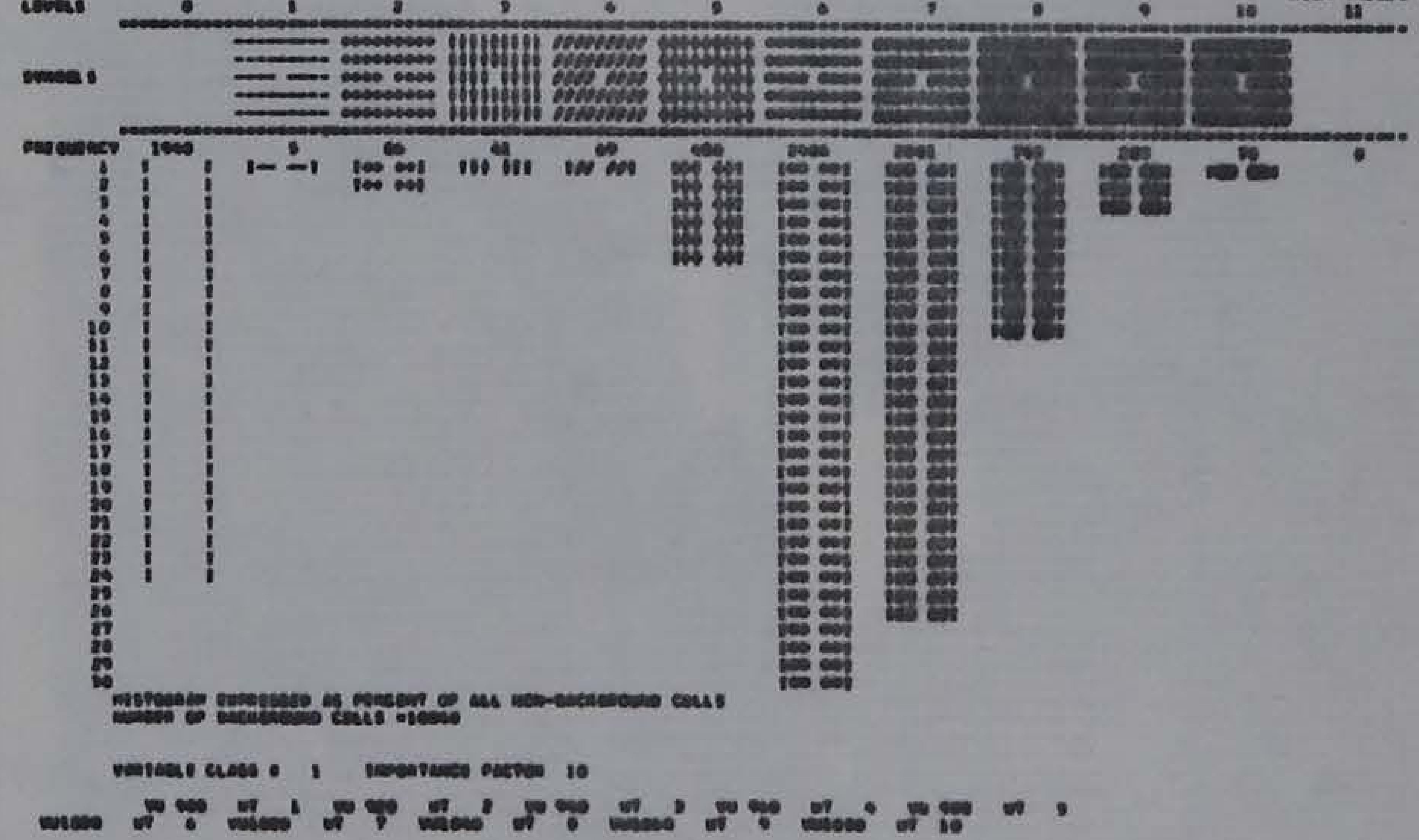
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10840

VARIABLE CLASS # 1 IMPORTANCE FACTOR 10

[illegible]

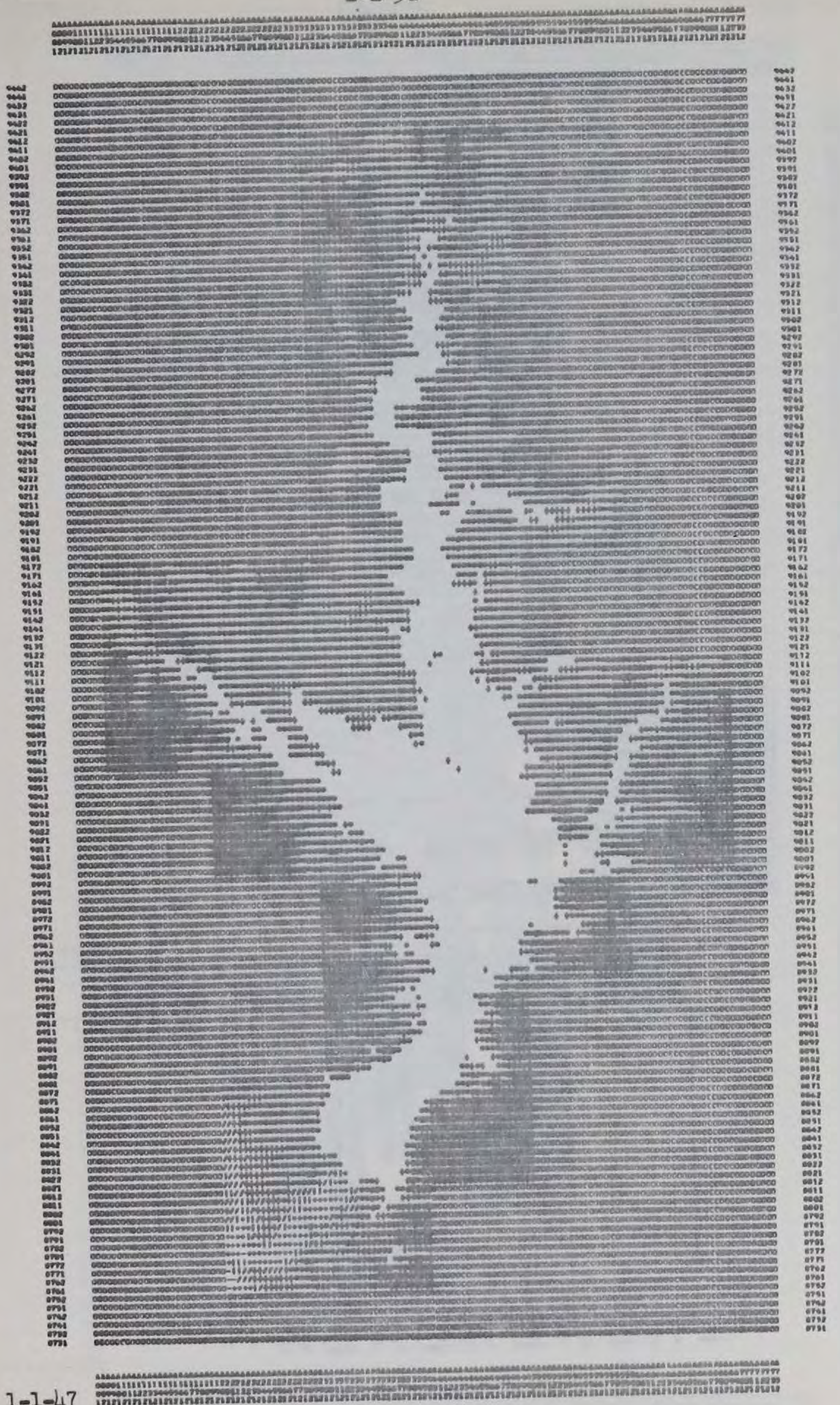


Fig. 1-1-47

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUGIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.URAN, D.DEPRENGER
KPO M.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

ELEVATION - ALTERNATIVE #3

THE TOPOGRAPHIC ELEVATION WAS RECORDED AT THE CENTROID OF EACH 2.66 ACRE CELL AS WELL AS THE ELEVATION OF THE CENTROID OF EACH QUADRANT OF THAT CELL YIELDING FIVE DATA POINTS PER CELL. TOPOGRAPHIC INFORMATION WAS TAKEN FROM THE BEST SOURCES AVAILABLE.

APPROXIMATELY 80% OF THE STUDY AREA HAD BEEN MAPPED FROM THE CORPS OF ENGINEERS AERIAL PHOTOGRAPHS (1967) IN FIVE FOOT INTERVALS TO (GENERALLY) A MAXIMUM ELEVATION OF 990 FEET. FROM THIS, ELEVATIONS WERE INTERPOLATED TO THE NEAREST FOOT. THE CORPS OF ENGINEERS MAP ENCOMPASSED ALL AREAS TO BE INUNDATED. THE REMAINING 20% OF THE STUDY AREA HAD BEEN MAPPED BY THE U.S. GEOLOGIC SURVEY IN 1912 AT A CONTOUR INTERVAL OF 20 FEET. ELEVATIONS WERE INTERPOLATED TO THE NEAREST TWO FEET.

THE WATER SHOWN IS AT FULL POOL ELEVATIONS AND MAXIMUM LAND AREA INUNDATED FOR EACH ALTERNATIVE. ALL ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

SOURCE: CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1 INCH = 200 FEET, 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = 880 - 900

2 = 900 - 920

3 = 920 - 940

4 = 940 - 960

5 = 960 - 980

6 = 980 - 1000

7 = 1000 - 1020

8 = 1020 - 1040

9 = 1040 - 1060

10 = 1060 - 1080

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 5.18 ST. DEV. = 4.07

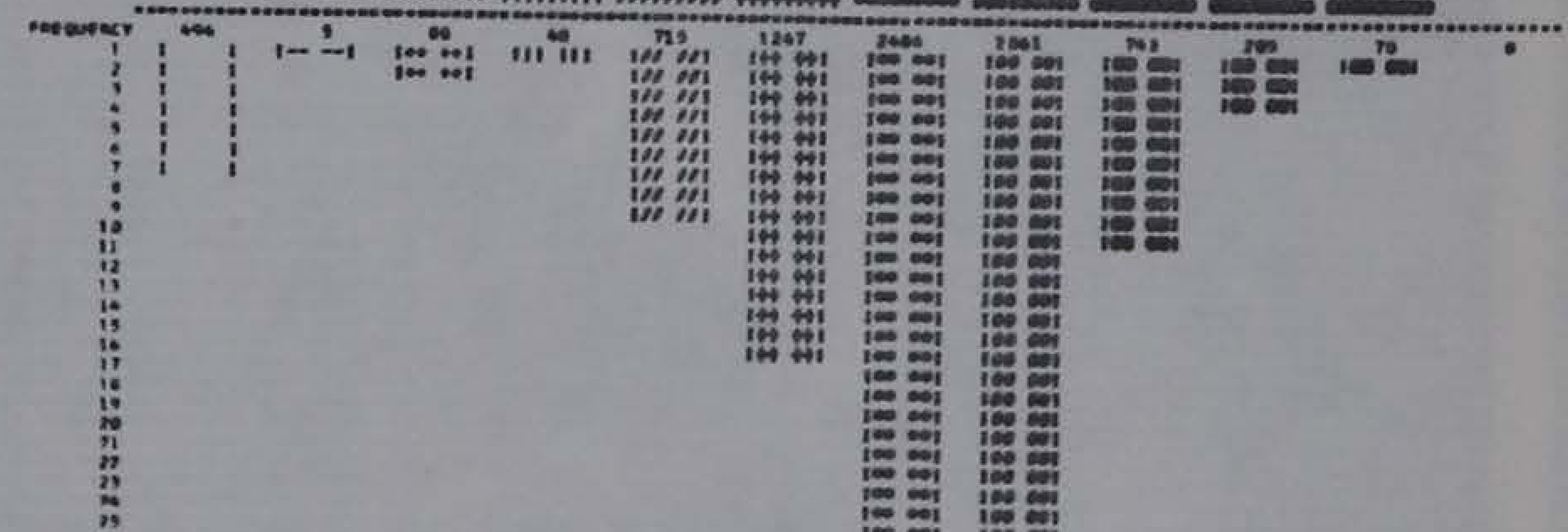
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0

VARIABLE CLASS # 1 IMPORTANCE FACTOR 5

VU 900 WT 1 VU 920 WT 2 VU 940 WT 3 VU 960 WT 4 VU 980 WT 5
VU1000 WT 6 VU1020 WT 7 VU1040 WT 8 VU1060 WT 9 VU1080 WT 10

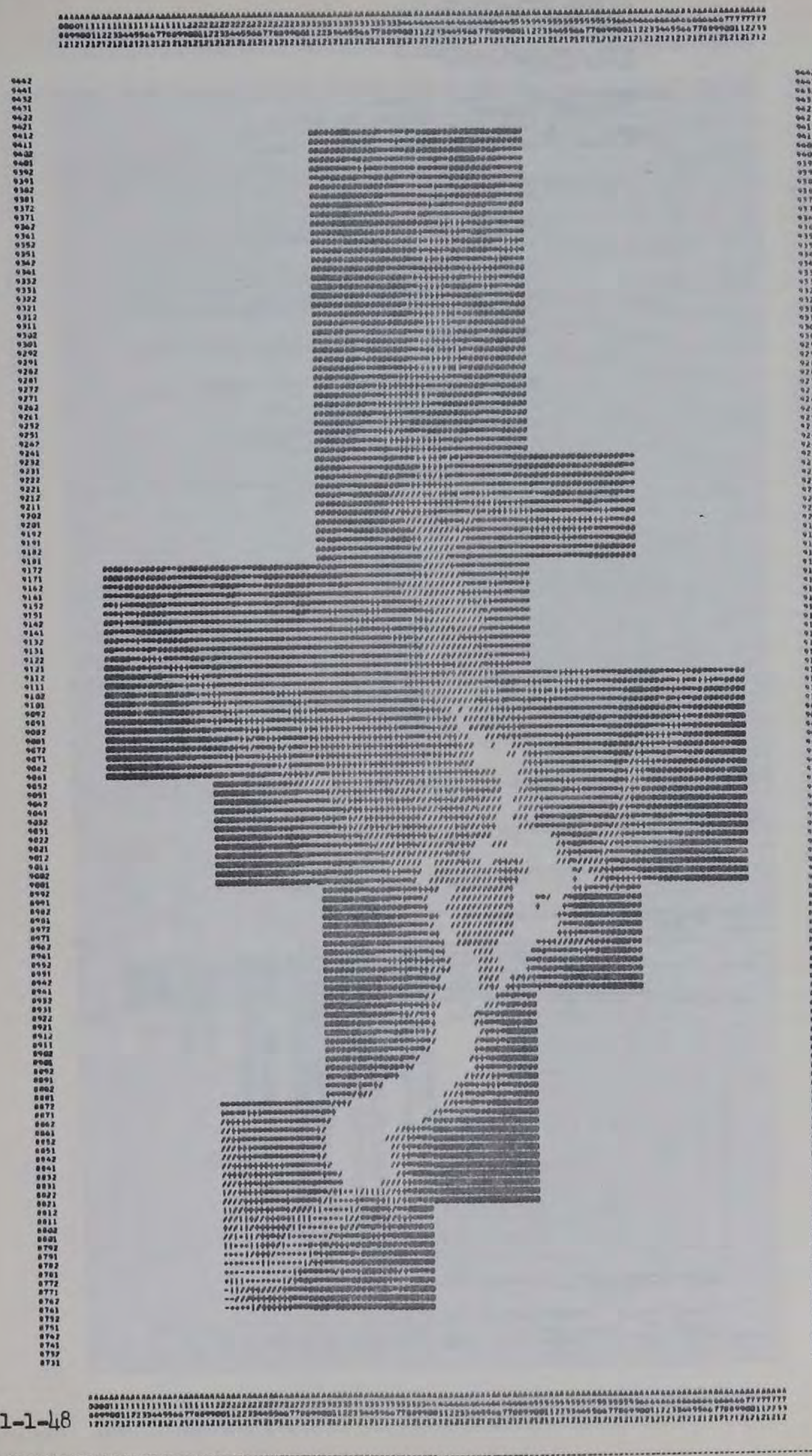


Fig. 1-1-48

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.J.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SAUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO H.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.PILLS

ELEVATION - ALTERNATIVE 04

THE TOPOGRAPHIC ELEVATION WAS RECORDED AT THE CENTROID OF EACH 2.46 ACRE CELL AS WELL AS THE ELEVATION OF THE CENTROID OF EACH QUADRANT OF THAT CELL YIELDING FIVE DATA POINTS PER CELL. TOPOGRAPHIC INFORMATION WAS TAKEN FROM THE BEST SOURCES AVAILABLE.

APPROXIMATELY 80% OF THE STUDY AREA HAD BEEN MAPPED FROM THE CORPS OF ENGINEERS AERIAL PHOTOGRAPHS (1967) IN FIVE FOOT INTERVALS TO (GENERALLY) A MAXIMUM ELEVATION OF 990 FEET. FROM THIS, ELEVATIONS WERE INTERPOLATED TO THE NEAREST FOOT. THE CORPS OF ENGINEERS MAP ENCOMPASSED ALL AREAS TO BE INUNDATED. THE REMAINING 20% OF THE STUDY AREA HAD BEEN MAPPED BY THE U.S. GEOLOGIC SURVEY IN 1912 AT A CONTOUR INTERVAL OF 20 FEET. ELEVATIONS WERE INTERPOLATED TO THE NEAREST TWO FEET.

THE WATER SHOWN IS AT FULL POOL ELEVATIONS AND MAXIMUM LAND AREA INUNDATED FOR EACH ALTERNATIVE. ALL ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.

ALTERNATIVE 04 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.

A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAMSITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1 INCH = 200 FEET, 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER
1 = 880 - 900
2 = 900 - 920
3 = 920 - 940
4 = 940 - 960
5 = 960 - 980
6 = 980 - 1000
7 = 1000 - 1020
8 = 1020 - 1040
9 = 1040 - 1060
10 = 1060 - 1080
11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 3.36 ST. DEV. = 4.15

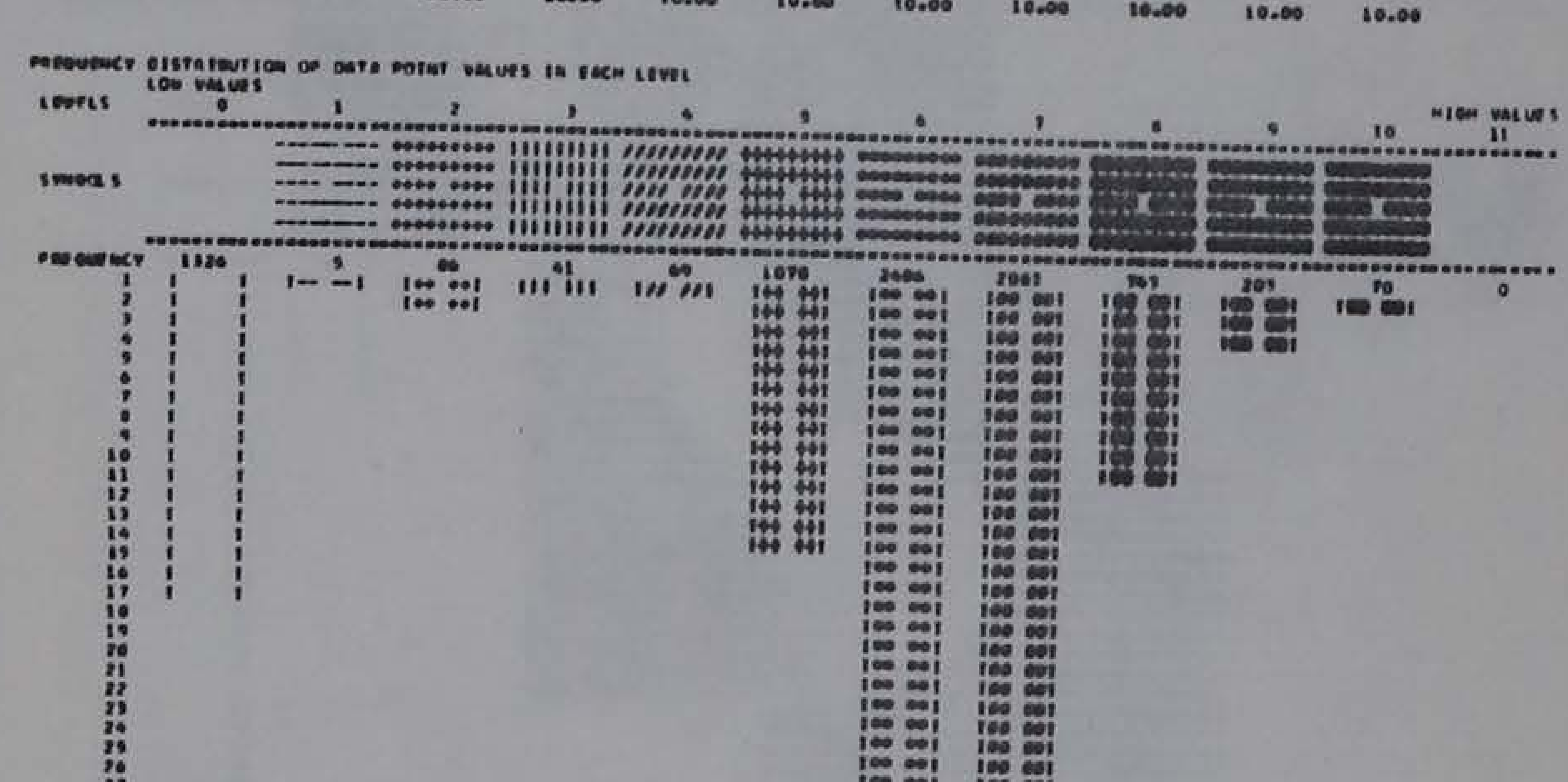
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 1 IMPORTANCE FACTOR 10

VU 900 WT 1 VU 920 WT 2 VU 940 WT 3 VU 960 WT 4 VU 980 WT 5
VU1000 WT 6 VU1020 WT 7 VU1040 WT 8 VU1060 WT 9 VU1080 WT 10

MAP 10, SHEET 1, DATA SET 1

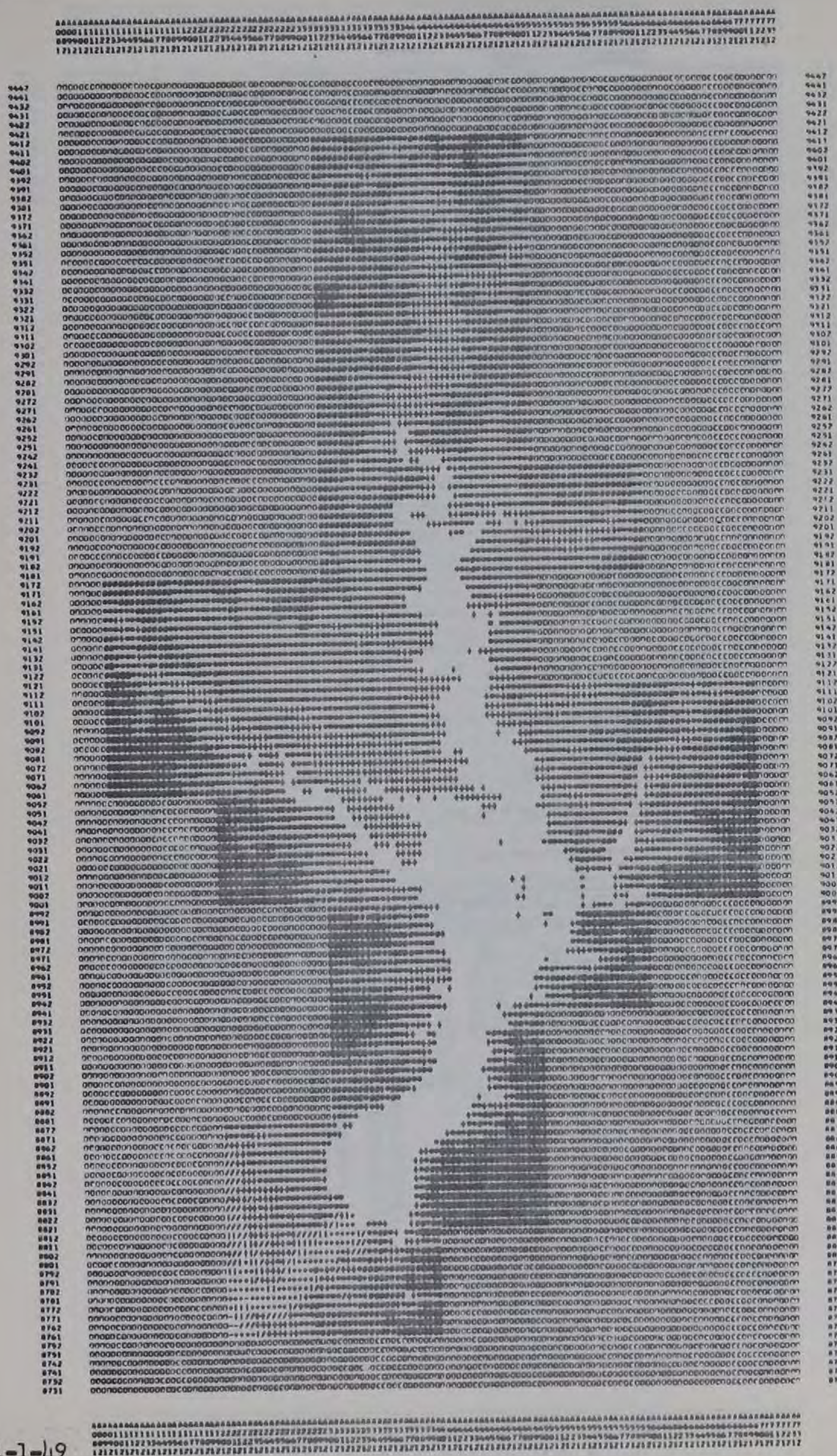


Fig. 1-1-49

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.OPPRENGER
KPC N.JONES, E.SWANSON, R.HOFFMAN, D.ALLEN, D.FERNELIUS, D.HILLS

ELEVATION - ALTERNATIVE #5

THE TOPOGRAPHIC ELEVATION WAS RECORDED AT THE CENTROID OF EACH 2.66 ACRE CELL AS WELL AS THE ELEVATION OF THE CENTROID OF EACH QUADRANT OF THAT CELL YIELDING FIVE DATA POINTS PER CELL. TOPOGRAPHIC INFORMATION WAS TAKEN FROM THE BEST SOURCES AVAILABLE.

APPROXIMATELY 80% OF THE STUDY AREA HAD BEEN MAPPED FROM THE CORPS OF ENGINEERS AERIAL PHOTOGRAPHS (1967) IN FIVE FOOT INTERVALS TO (GENERALLY) A MAXIMUM ELEVATION OF 990 FEET. FROM THIS, ELEVATIONS WERE INTERPOLATED TO THE NEAREST FOOT. THE CORPS OF ENGINEERS MAP ENCOMPASSED ALL AREAS TO BE INUNDATED. THE REMAINING 20% OF THE STUDY AREA HAD BEEN MAPPED BY THE U.S. GEOLOGIC SURVEY IN 1912 AT A CONTOUR INTERVAL OF 20 FEET. ELEVATIONS WERE INTERPOLATED TO THE NEAREST TWO FEET.

THE WATER SHOWN IS AT FULL POOL ELEVATIONS AND MAXIMUM LAND AREA INUNDATED FOR EACH ALTERNATIVE. ALL ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.

A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1 INCH = 200 FEET, 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = 880 - 900

2 = 900 - 920

3 = 920 - 940

4 = 940 - 960

5 = 960 - 980

6 = 980 - 1000

7 = 1000 - 1020

8 = 1020 - 1040

9 = 1040 - 1060

10 = 1060 - 1080

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 5.79 ST. DEV. = 2.28

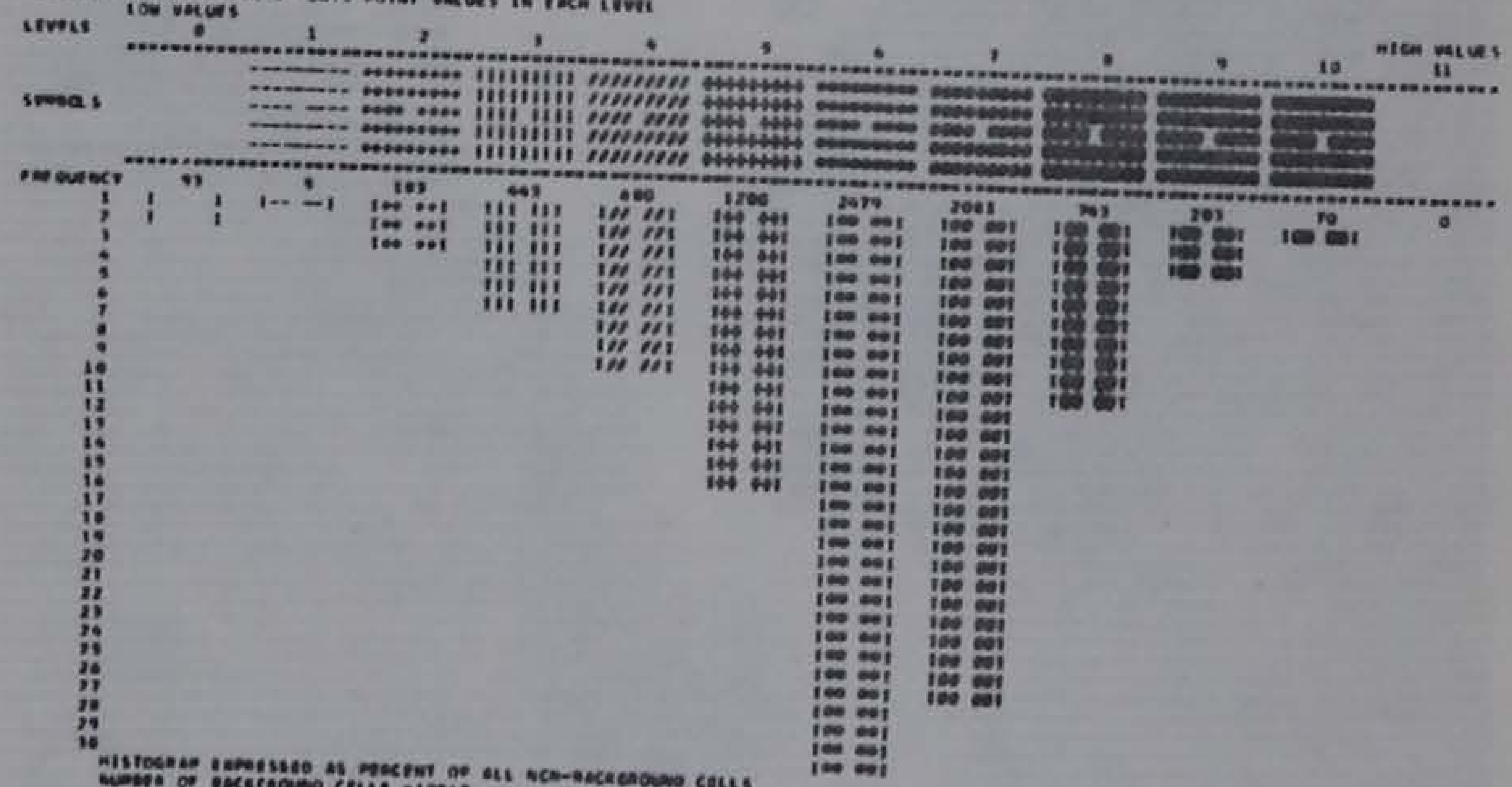
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10060

VARIABLE CLASS # 1 IMPORTANCE FACTOR 10

VU 900 WT 1 VU 920 WT 2 VU 940 WT 3 VU 960 WT 4 VU 980 WT 5
VU1000 WT 6 VU1020 WT 7 VU1040 WT 8 VU1060 WT 9 VU1080 WT 10

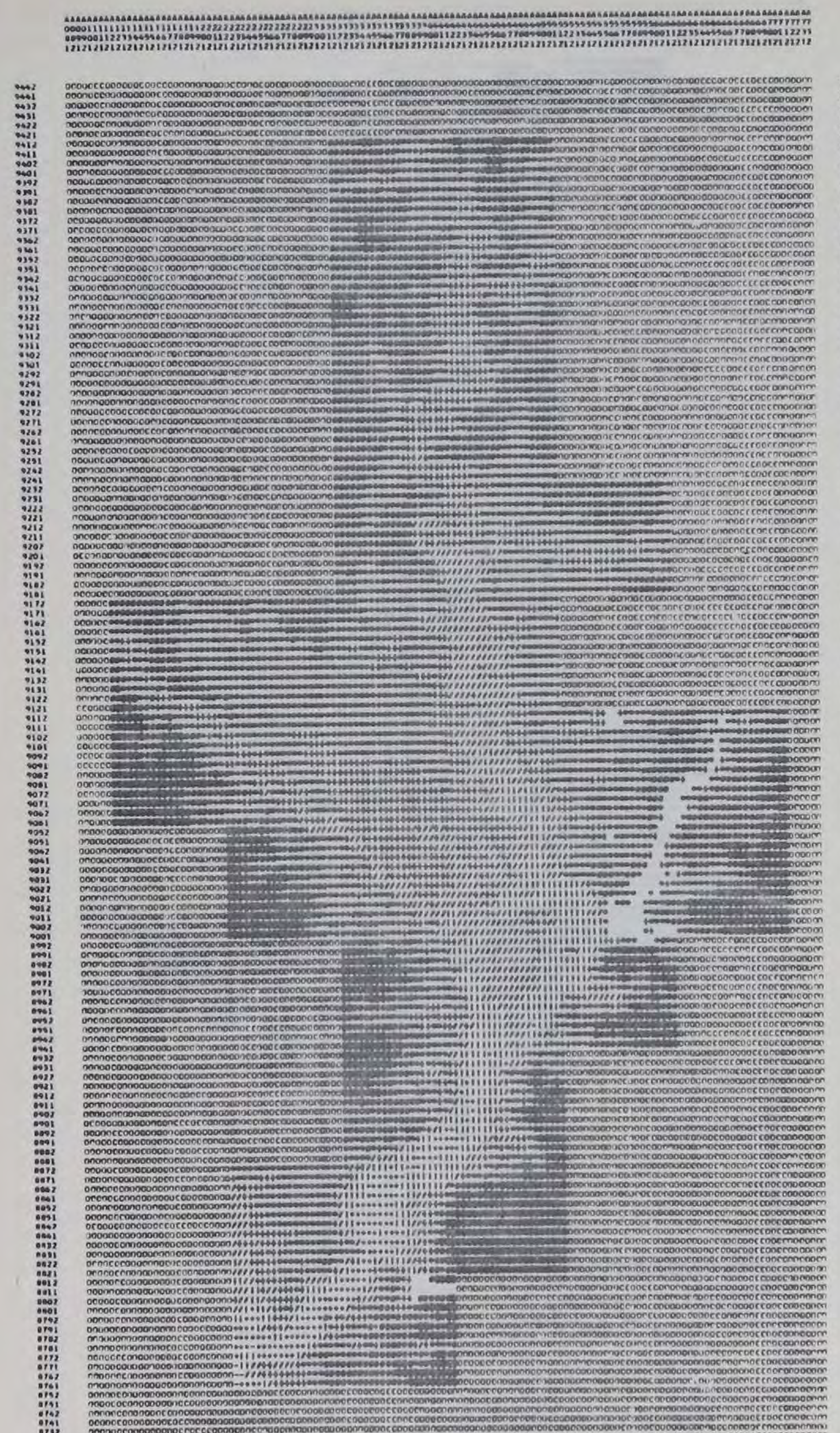


Fig. 1-1-50

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION A.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.OBPRENGER
RPO R.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

ELEVATION - ALTERNATIVE 06

THE TOPOGRAPHIC ELEVATION WAS RECORDED AT THE CENTROID OF EACH 2.86 ACRE CELL AS WELL AS THE ELEVATION OF THE CENTROID OF EACH QUADRANT OF THAT CELL YIELDING FIVE DATA POINTS PER CELL. TOPOGRAPHIC INFORMATION WAS TAKEN FROM THE BEST SOURCES AVAILABLE.

APPROXIMATELY 80% OF THE STUDY AREA HAD BEEN MAPPED FROM THE CORPS OF ENGINEERS AERIAL PHOTOGRAPHS (1967) IN FIVE FOOT INTERVALS TO (GENERALLY) A MAXIMUM ELEVATION OF 990 FEET. FROM THIS, ELEVATIONS WERE INTERPOLATED TO THE NEAREST FOOT. THE CORPS OF ENGINEERS MAP ENCOMPASSED ALL AREAS TO BE INUNDATED. THE REMAINING 20% OF THE STUDY AREA HAD BEEN MAPPED BY THE U.S. GEOLOGIC SURVEY IN 1912 AT A CONTOUR INTERVAL OF 20 FEET. ELEVATIONS WERE INTERPOLATED TO THE NEAREST TWO FEET.

THE WATER SHOWN IS AT FULL POOL ELEVATIONS AND MAXIMUM LAND AREA INUNDATED FOR EACH ALTERNATIVE. ALL ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL.

ALTERNATIVE 06 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCE: CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1 INCH = 200 FEET, 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = 880 - 900

2 = 900 - 920

3 = 920 - 940

4 = 940 - 960

5 = 960 - 980

6 = 980 - 1000

7 = 1000 - 1020

8 = 1020 - 1040

9 = 1040 - 1060

10 = 1060 - 1080

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 5.56 ST. DEV. = 1.53

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

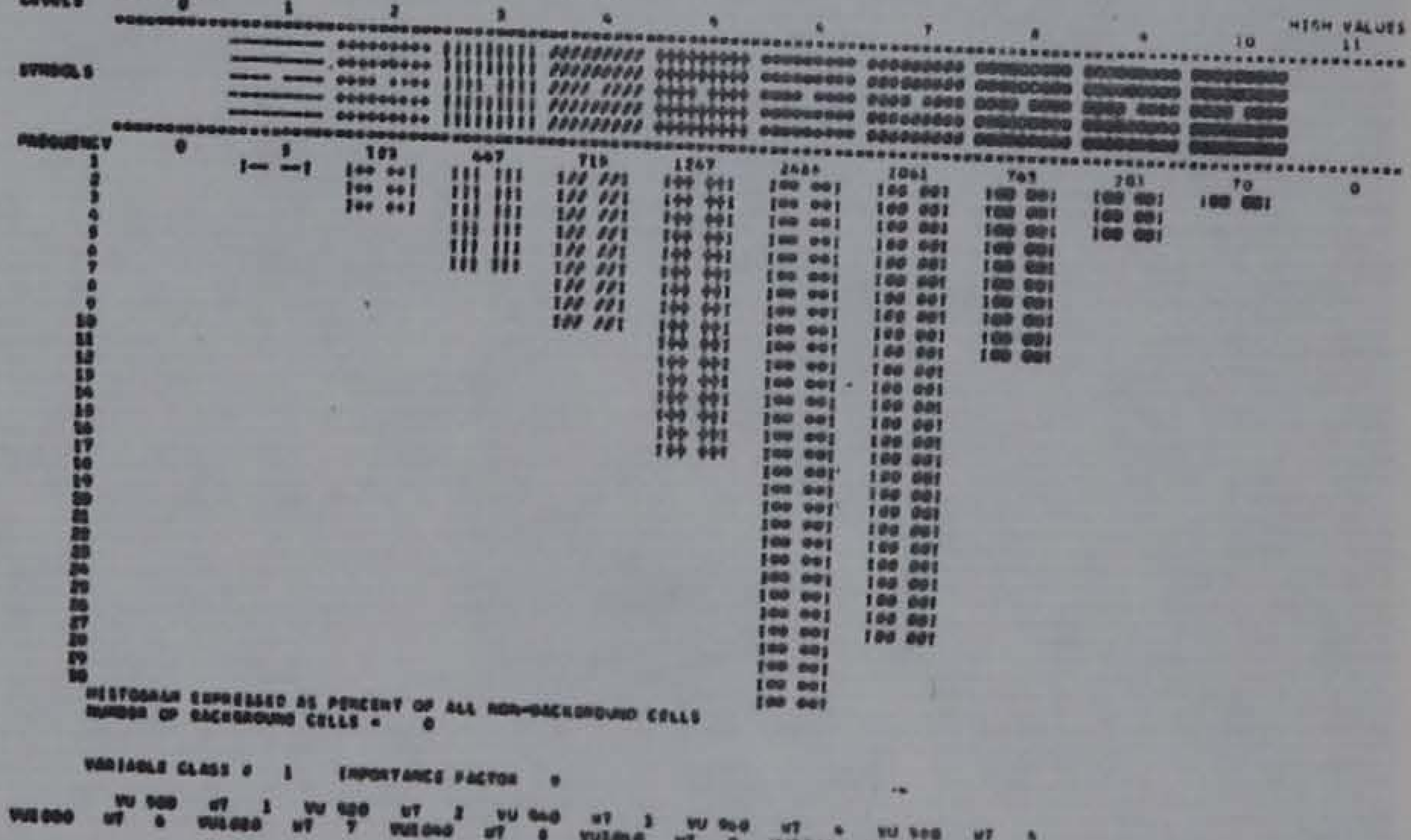
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	0	5	193	447	715	1267	2484	2061	769	281	70	0

SYMBOLS



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0

VARIABLE CLASS # 1 IMPORTANCE FACTOR 9

VU 900 WT 1 VU 920 WT 2 VU 940 WT 3 VU 960 WT 4 VU 980 WT 5
VU1000 WT 6 VU1020 WT 7 VU1040 WT 8 VU1060 WT 9 VU1080 WT 10

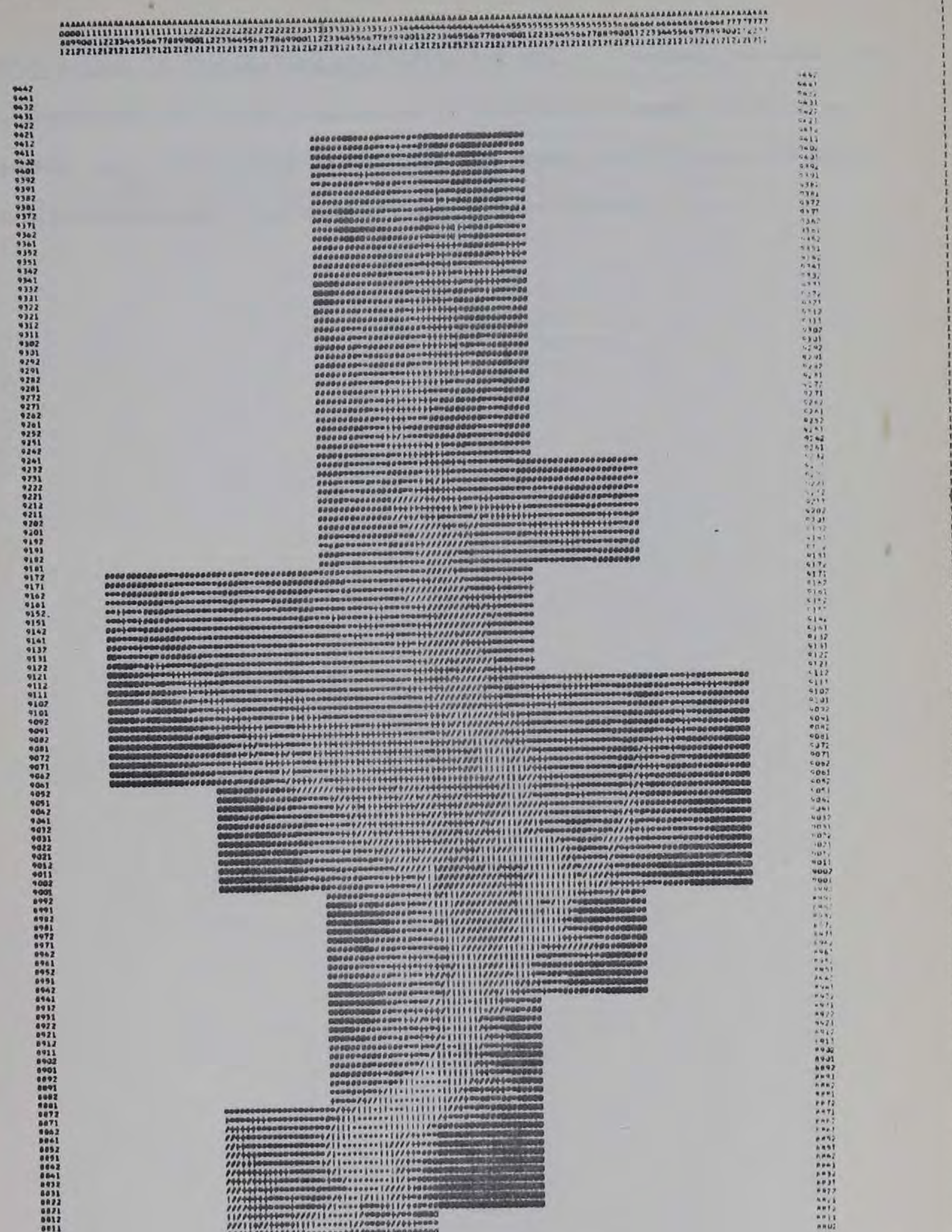


Fig. 1-1-51

<u>Flat slopes in fluctuating pool</u> (Fig. 1-1-52). A total of 4190 acres of the inundated land in Alternative #1 is less than or equal to 5% slope. The minimum pool (elevation 933) contains 769 acres, which leaves 175 acres in the fluctuating pool that have a slope greater than 5%.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHACK, A.PUCIL, D.PAXLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.UBAN, D.DEPPENGER
KPO N.JONES, F.SWANSON, R.HOPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

FLAT SLOPES IN FLOOD POOL - ALTERNATIVE #1

THOSE AREAS IN THE RESERVOIR POOL WITH LESS THAN 5% SLOPE ARE CONSIDERED IMPORTANT FOR VEGETATION ANALYSIS. THESE AREAS, HAVING ELEVATIONS OF 933 TO 976 AND BEING SUBJECT TO PERIODIC INUNDATION, HAVE HIGHLY VARIABLE VEGETATION PATTERNS AND ARE OFTEN LEFT BARE FOR SOME TIME AFTER FLOODING. MANAGEMENT OF THESE AREAS DEPENDS ON THE PERIODICITY OF INUNDATION AND THE AMOUNT OF LAND AFFECTED. THIS ANALYSIS CONSIDERS THOSE FLAT SLOPES IN ALTERNATIVE #1 ONLY.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES : CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,5000, 1912.

LEGEND

0 = OTHER

1 =

2 =

3 =

4 =

5 = SLOPES LESS THAN OR EQUAL TO 5%

6 =

7 =

8 =

9 =

10 =

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -24.02 ST. DEV. = 17.69

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

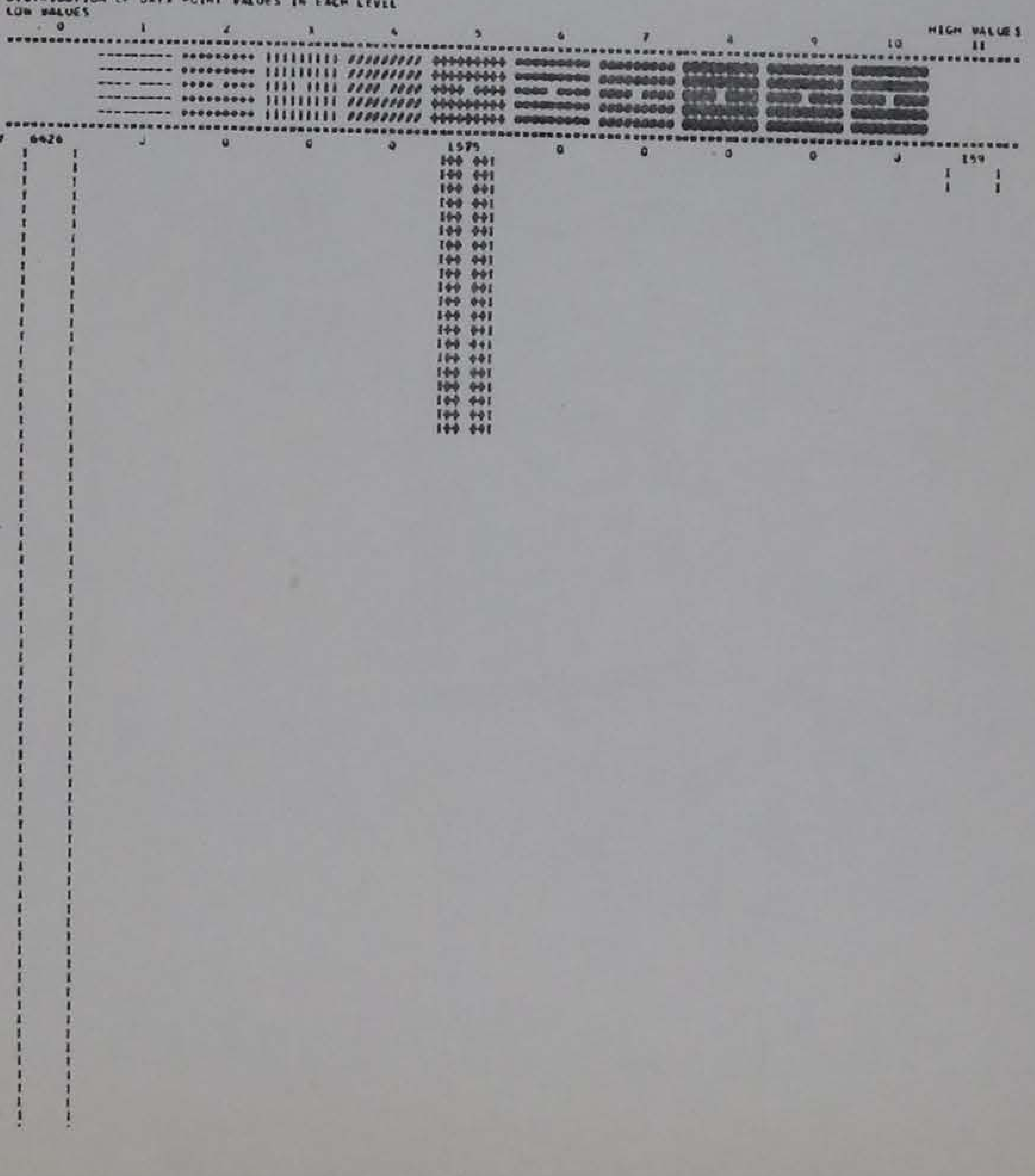
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	6426	0	0	0	0	1575	0	0	0	0	0	159

SYMBOLS



1-1-63

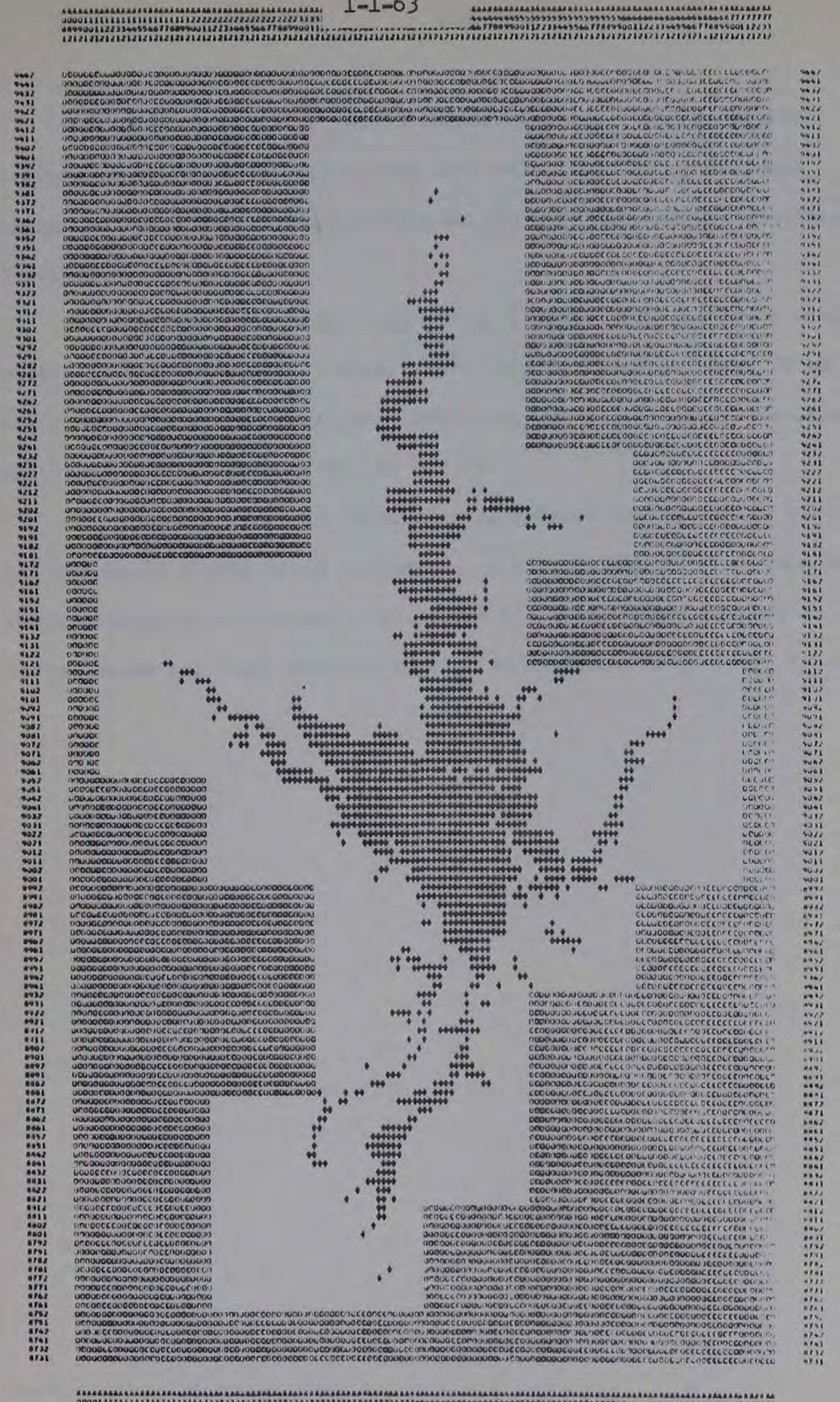


Fig. 1-1-52

Surficial water (Fig. 1-1-53 through 1-1-58). The dendritic drainage pattern of the study area is a relatively young drainage system in Iowa, due to its location on the Cary Lobe of the Wisconsin Glaciation.

The greatest topographic and stream diversity in the study area occurs in the Soper's Mill area. Here Keigley Creek and Bear Creek meet the river with a wide range of elevations, and all alternatives inundate this area except Alternatives #5 and #6.

The tradeoffs for the existing stream-based recreation in either (a) increased stream-based recreation in Alternative #6; (b) lake-based recreation in Alternatives 1, 2, 3, and 4; or (c) a combination of stream-based and lake-based recreation in Alternative #5 (Fig. 1-1-57).

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, C.SEYMOUR, M.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPRENGER
KPC N.JONES, E.SWANSON, R.MCEPPNER, D.ALLEN, D.PERNELIUS, D.HILLS

SURFICIAL WATER (ALTERNATIVE #1)

SURFICIAL WATER DATA WAS INTERPRETED FROM AERIAL PHOTOGRAPHS AND THE STORY COUNTY SOILS MAP. THE CLASSIFICATION SCHEME WAS ADAPTED FROM THE STRAHLER METHOD.

PONDED WATER INCLUDES ALL PONDS, LAKES, LAGOONS, AND OTHER NON-LINEAR BODIES OF OPEN WATER. WHEN TWO SURFICIAL WATER TYPES EXISTED IN THE SAME CELL, THE TYPE WITH THE LARGER AREA OR HIGHER STREAM ORDER WAS RECORDED.

IN EACH ALTERNATIVE, THE PROPOSED WATER SURFACE IS ALSO SHOWN (5,7).

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO 01.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:17,000, 6-11-67.
STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1970.

LEGEND

0 = PONDED WATER

1 = FLOWING STREAMS

2 = INTERMITTENT STREAMS

3 =

4 =

5 = CONSERVATION POOL

6 =

7 = FLOOD POOL

8 =

9 =

10 = NONE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 6.41 ST. DEV. = 4.66

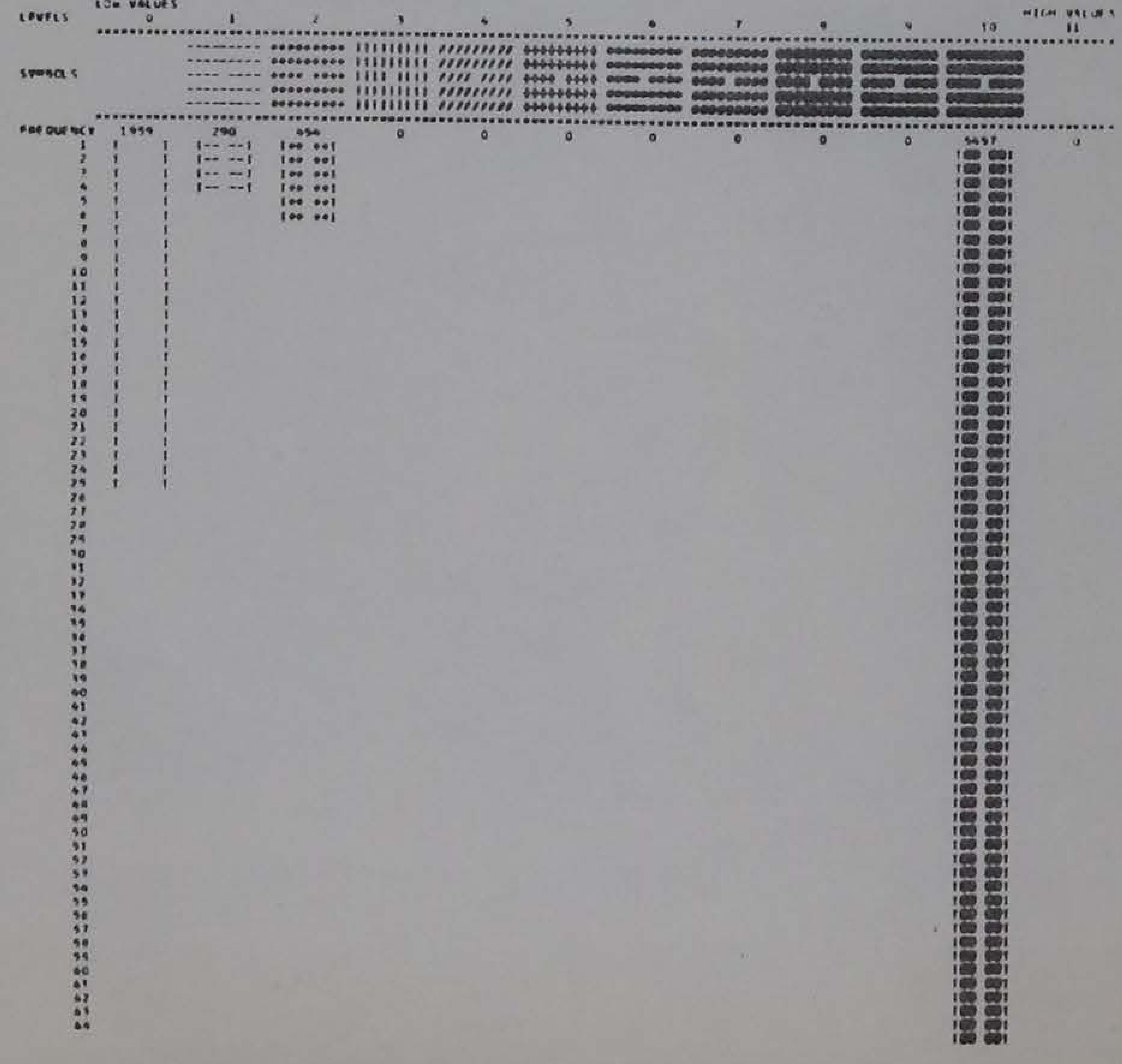
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



MAP 15,SHEET 1,DATA SET 1

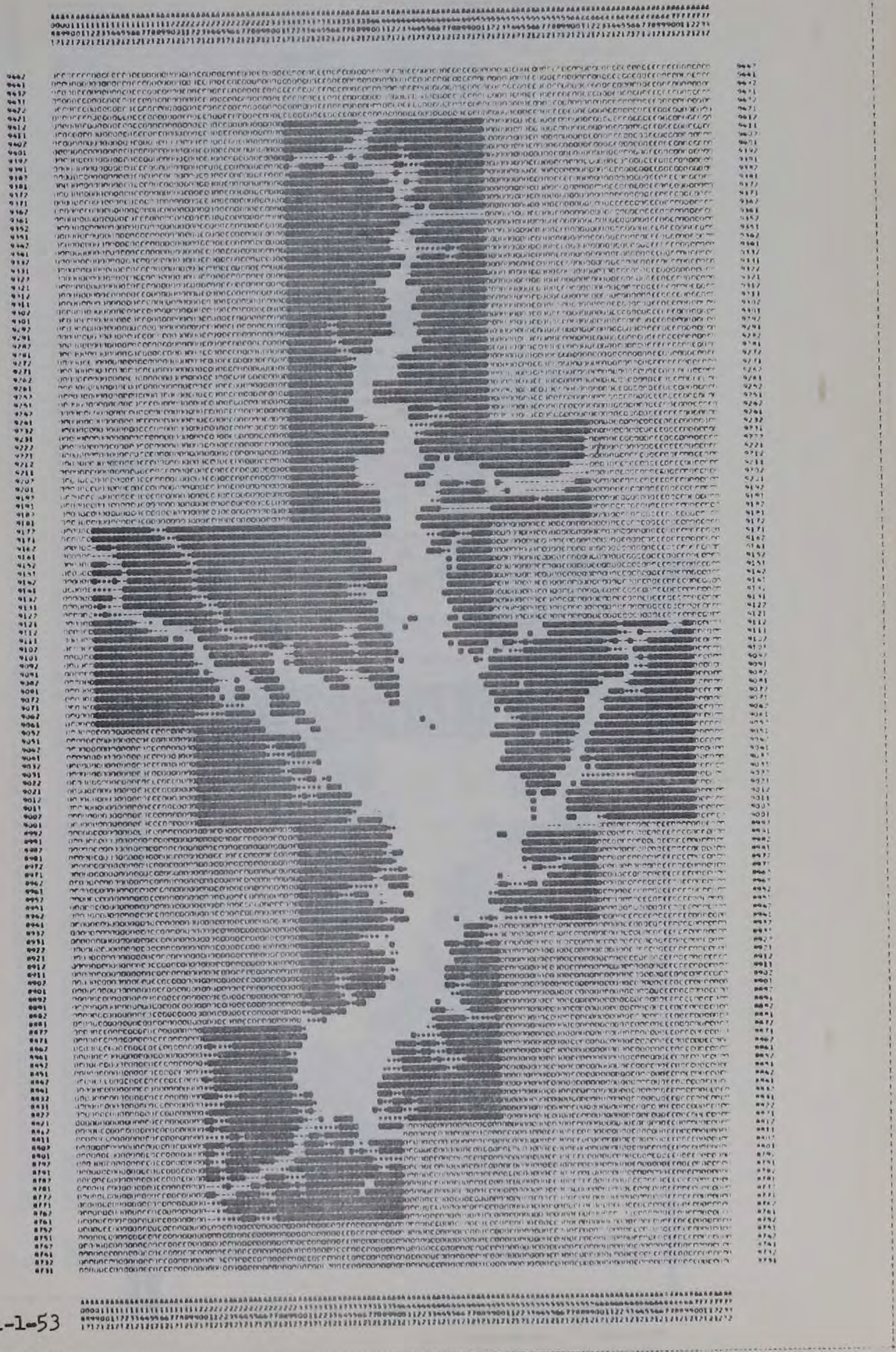


Fig. 1-1-53

AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-67

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY,
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS A.D. SINATRA, P.F. ANDERSON
PROGRAMMER-ANALYST G.M. GRAVES
DATA PREPARATION J.C. TAGGART, T. SHUCK, A. PUDIL, W. FARLANDER,
L. CECIL, D. SEYMOUR, W. SCHUTTLER, D. KENNY
GRAPHICS C.J. URAN, D. DEPRENGER
KPO R. JONES, T. SWANSON, R. NOEPPNER, D. ALLEN, G. FERNELIUS, R. HILLS

SURFICIAL WATER (ALTERNATIVE #2)

SURFICIAL WATER DATA WAS INTERPRETED FROM AERIAL PHOTOGRAPHS AND THE STORY COUNTY SOILS MAP. THE CLASSIFICATION SCHEME WAS ADAPTED FROM THE [illegible] METHOD.

PONDED WATER INCLUDES ALL PONDS, LAKES, LAGOONS, AND OTHER NON-LINEAR BODIES OF OPEN WATER. WHEN TWO SURFICIAL WATER TYPES EXISTED IN THE SAME CELL, THE TYPE WITH THE LARGER AREA OR HIGHER STREAM ORDER WAS RECORDED.

IN EACH ALTERNATIVE, THE PROPOSED WATER SURFACE IS ALSO SHOWN (5,7).

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION [illegible]

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1":[illegible], [illegible].
STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, [illegible].

LEGEND

0 = PONDED WATER

1 = FLOWING STREAMS

2 = INTERMITTENT STREAMS

3 =

4 =

5 = CONSERVATION POOL

6 =

7 = FLOOD POOL

8 =

9 =

10 = NONE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = [illegible] ST. DEV. = [illegible]

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
         LOW VALUES                                                                      HIGH VALUES
LEVELS      0       1         2         3         4         5         6         7         8         9        10        11
         ***********************************************************************************************************
                    --------- 000000000 111111111 222222222 333333333 444444444 555555555 666666666 777777777 888888888
                    --------- 000000000 111111111 222222222 333333333 444444444 555555555 666666666 777777777 888888888
SYMBOLS             ---- ---- 0000 0000 1111 1111 2222 2222 3333 3333 4444 4444 5555 5555 6666 6666 7777 7777 8888 8888
                    --------- 000000000 111111111 222222222 333333333 444444444 555555555 666666666 777777777 888888888
                    --------- 000000000 111111111 222222222 333333333 444444444 555555555 666666666 777777777 888888888
         ***********************************************************************************************************
FREQUENCY  1917    299       477       0         0         0         0         0         0         0        177         0
   1      I       I    I--- ---I  I00 00I                                                                I00 00I
   2      I       I    I--- ---I  I00 00I                                                                I00 00I
   3      I       I    I--- ---I  I00 00I                                                                I00 00I
   4      I       I    I--- ---I  I00 00I                                                                I00 00I
   5      I       I               I00 00I                                                                I00 00I
   6      I       I               I00 00I                                                                I00 00I
   7      I       I                                                                                      I00 00I
   8      I       I                                                                                      I00 00I
   9      I       I                                                                                      I00 00I
  10      I       I                                                                                      I00 00I
  11      I       I                                                                                      I00 00I
  12      I       I                                                                                      I00 00I
  13      I       I                                                                                      I00 00I
  14      I       I                                                                                      I00 00I
  15      I       I                                                                                      I00 00I
  16      I       I                                                                                      I00 00I
  17      I       I                                                                                      I00 00I
  18      I       I                                                                                      I00 00I
  19      I       I                                                                                      I00 00I
  20      I       I                                                                                      I00 00I
  21      I       I                                                                                      I00 00I
  22      I       I                                                                                      I00 00I
  23      I       I                                                                                      I00 00I
  24      I       I                                                                                      I00 00I
  25                                                                                                     I00 00I
  26                                                                                                     I00 00I
  27                                                                                                     I00 00I
  28                                                                                                     I00 00I
  29                                                                                                     I00 00I
  30                                                                                                     I00 00I
  31                                                                                                     I00 00I
  32                                                                                                     I00 00I
  33                                                                                                     I00 00I
  34                                                                                                     I00 00I
  35                                                                                                     I00 00I
  36                                                                                                     I00 00I
  37                                                                                                     I00 00I
  38                                                                                                     I00 00I
  39                                                                                                     I00 00I
  40                                                                                                     I00 00I
  41                                                                                                     I00 00I
  42                                                                                                     I00 00I
  43                                                                                                     I00 00I
  44                                                                                                     I00 00I
  45                                                                                                     I00 00I
  46                                                                                                     I00 00I
  47                                                                                                     I00 00I
  48                                                                                                     I00 00I
  49                                                                                                     I00 00I
  50                                                                                                     I00 00I
  51                                                                                                     I00 00I
  52                                                                                                     I00 00I
  53                                                                                                     I00 00I
  54                                                                                                     I00 00I
  55                                                                                                     I00 00I
  56                                                                                                     I00 00I
  57                                                                                                     I00 00I
  58                                                                                                     I00 00I
  59                                                                                                     I00 00I
  60                                                                                                     I00 00I
  61                                                                                                     I00 00I
  62                                                                                                     I00 00I
  63                                                                                                     I00 00I
  64                                                                                                     I00 00I
  65                                                                                                     I00 00I
  66                                                                                                     I00 00I
  67                                                                                                     I00 00I
HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0
```

VARIABLE CLASS # 7 IMPORTANCE FACTOR 9

VU 0 VT 10 VU 3 VT 0 VU 2 VT 7 VU 9 VT 1 VU

1-1-68

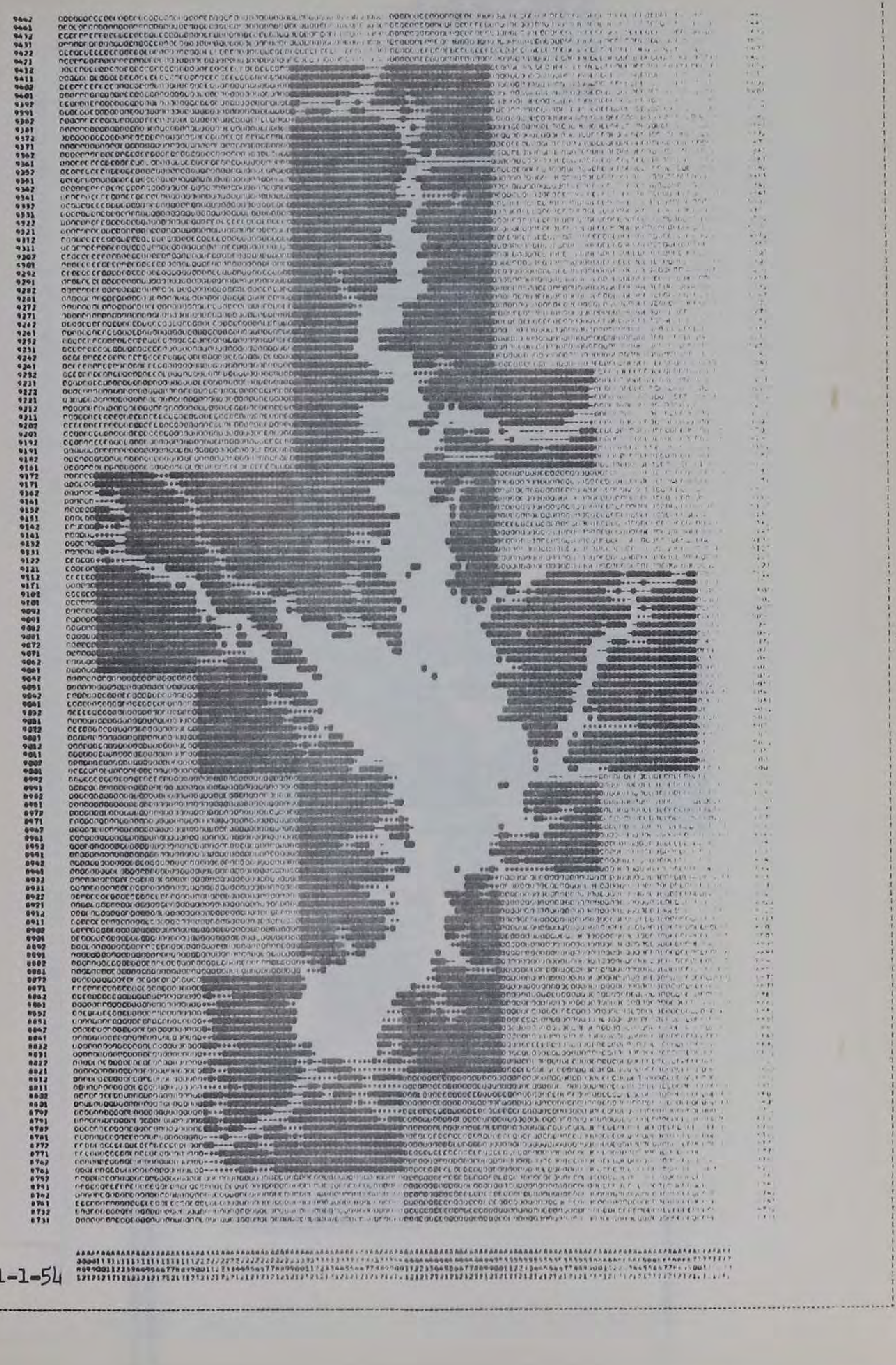


Fig. 1-1-54

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST D.H.STAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, R.PUDIL, D.PAXLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, C.DEPPRENGER
RPO N.JONES, F.SWANSON, R.MCERPMER, D.ALLEN, [illegible], D.MILLS

SURFICIAL WATER (ALTERNATIVE #3)

SURFICIAL WATER DATA WAS INTERPRETED FROM AERIAL PHOTOGRAPHS AND THE STORY COUNTY SOILS MAP. THE CLASSIFICATION SCHEME WAS ADAPTED FROM THE [illegible] METHOD.

PONDED WATER INCLUDES ALL PONDS, LAKES, LAGOONS, AND OTHER [illegible] OF OPEN WATER. WHEN TWO SURFICIAL WATER TYPES EXISTED IN THE SAME CELL, THE TYPE WITH THE LARGER AREA OR HIGHER STREAM [illegible] WAS RECORDED.

IN EACH ALTERNATIVE, THE PROPOSED WATER SURFACE IS ALSO SHOWN [illegible].

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL [illegible] ONLY, ELEVATION 960.

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE [illegible], [illegible].
STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, [illegible].

LEGEND

0 = PONDED WATER

1 = FLOWING STREAMS

2 = INTERMITTENT STREAMS

3 =

4 =

5 = CONSERVATION POOL

6 =

7 = FLOOD POOL

8 =

9 =

10 = NONE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.93 MEAN = 7.44 ST. DEV. = [illegible]

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

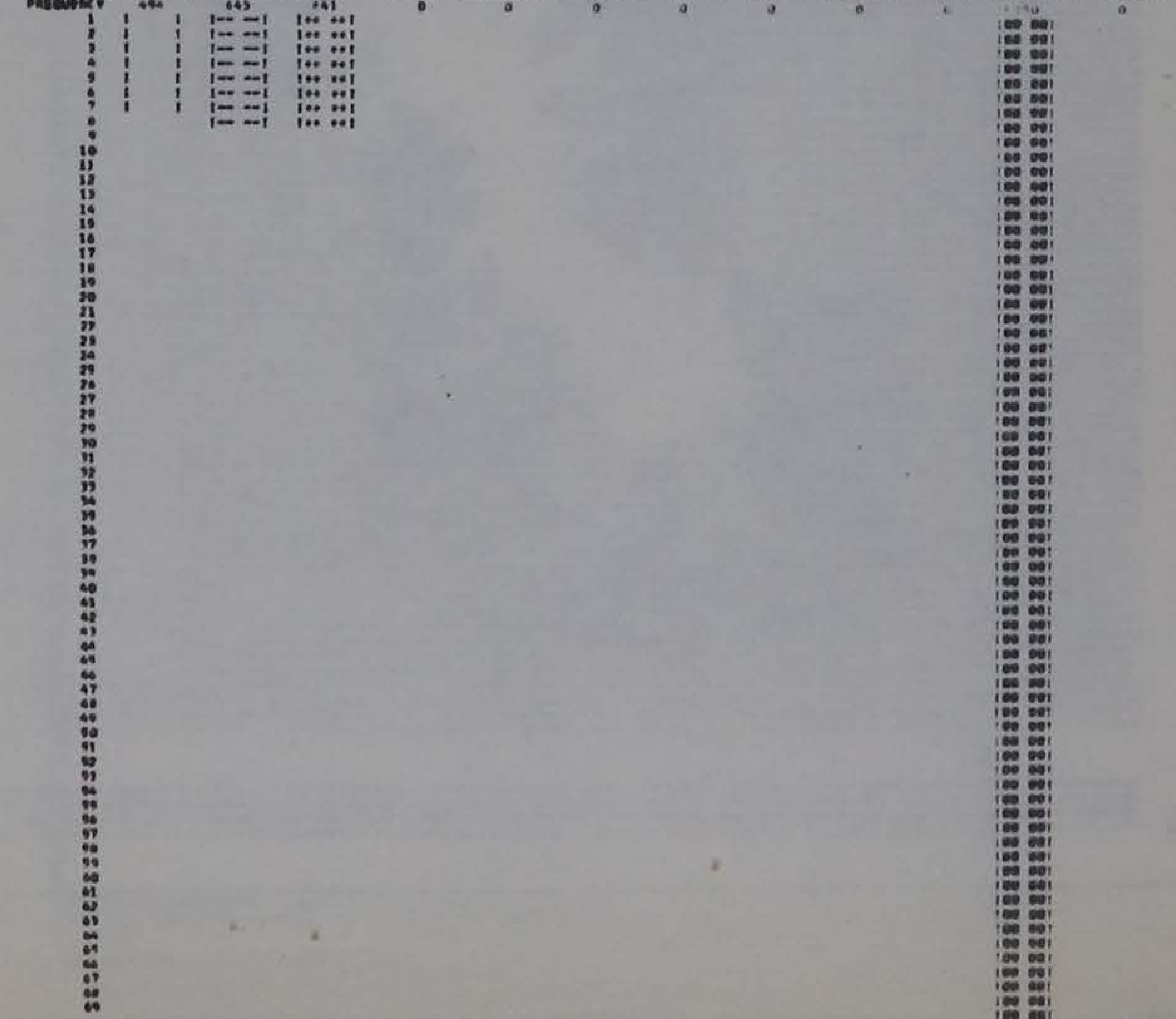
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.6[illegible]	[illegible]	[illegible]
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	[illegible]	[illegible]	[illegible]

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	494	645	641	0	0	0	0	0	0	[illegible]	[illegible]	0



MAP 11, SHEET 1, DATA SET 1

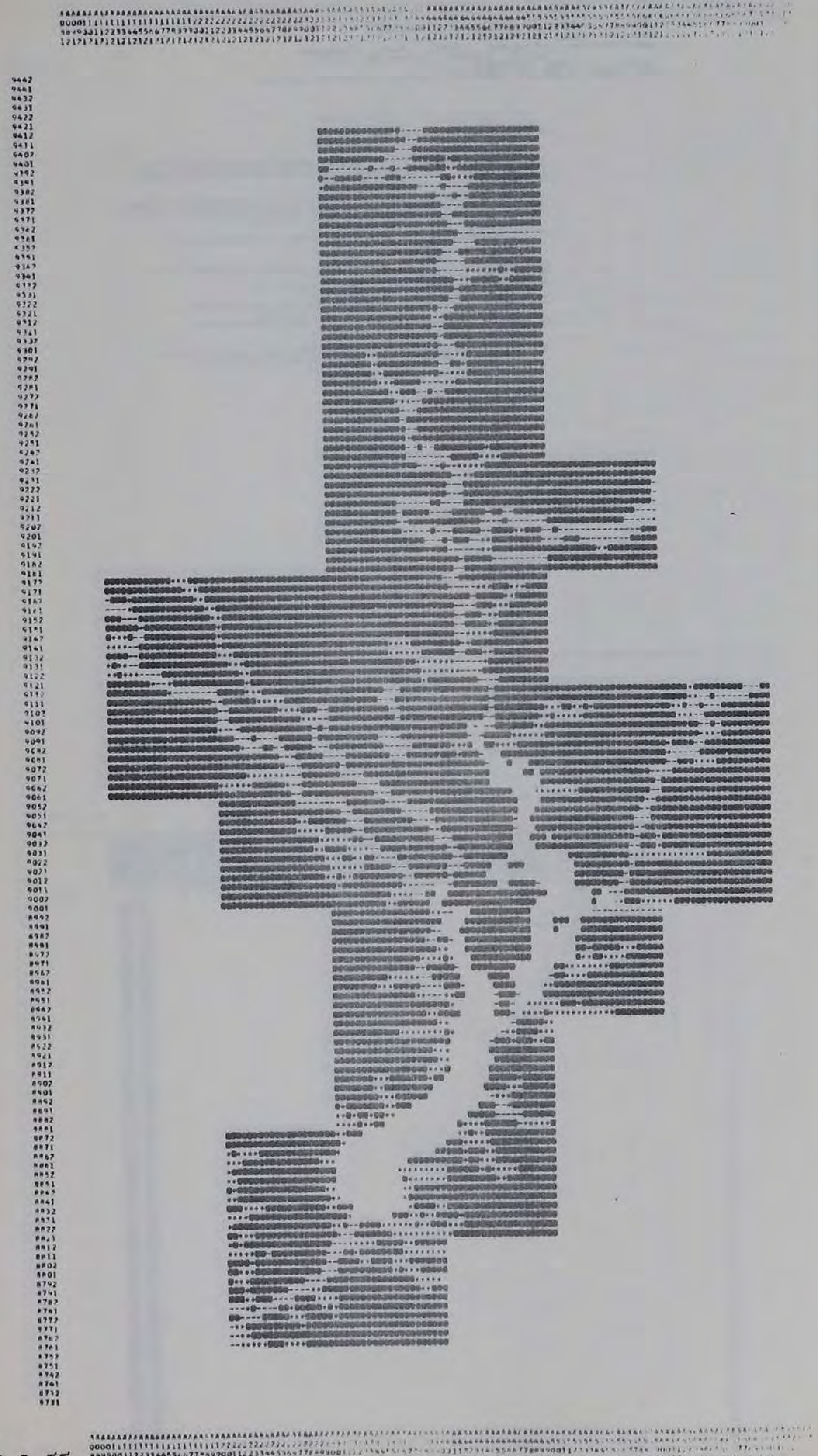


Fig. 1-1-55

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FORNELIUS, D.HILLS

SURFICIAL WATER (ALTERNATIVE #4)

SURFICIAL WATER DATA WAS INTERPRETED FROM AERIAL PHOTOGRAPHS AND THE STORY COUNTY SOILS MAP. THE CLASSIFICATION SCHEME WAS ADAPTED FROM THE STRAHLER METHOD.

PONDED WATER INCLUDES ALL PONDS, LAKES, LAGOONS, AND OTHER NON-LINEAR BODIES OF OPEN WATER. WHEN TWO SURFICIAL WATER TYPES EXISTED IN THE SAME CELL, THE TYPE WITH THE LARGER AREA OR HIGHER STREAM ORDER WAS RECORDED.

IN EACH ALTERNATIVE, THE PROPOSED WATER SURFACE IS ALSO SHOWN (5,7).

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 973
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.

LEGEND

0 = PONDED WATER

1 = FLOWING STREAMS

2 = INTERMITTENT STREAMS

3 =

4 =

5 = CONSERVATION POOL

6 =

7 = FLOOD POOL

8 =

9 =

10 = NONE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 5.78 ST. DEV. = 7.41

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

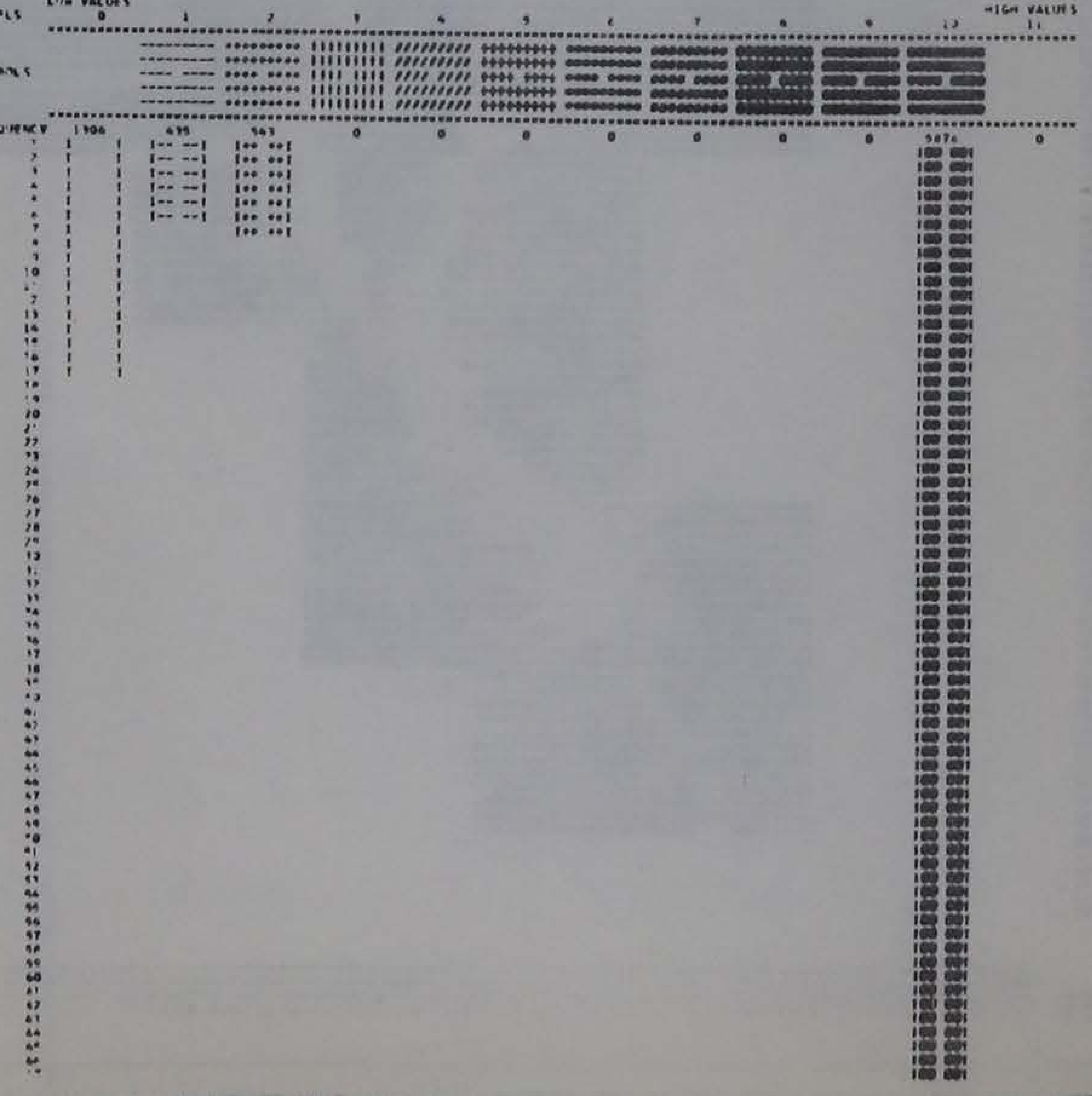
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	13.33	13.33	13.33	13.33	13.33	13.33

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1306	435	543	0	0	0	0	0	0	0	5876	0



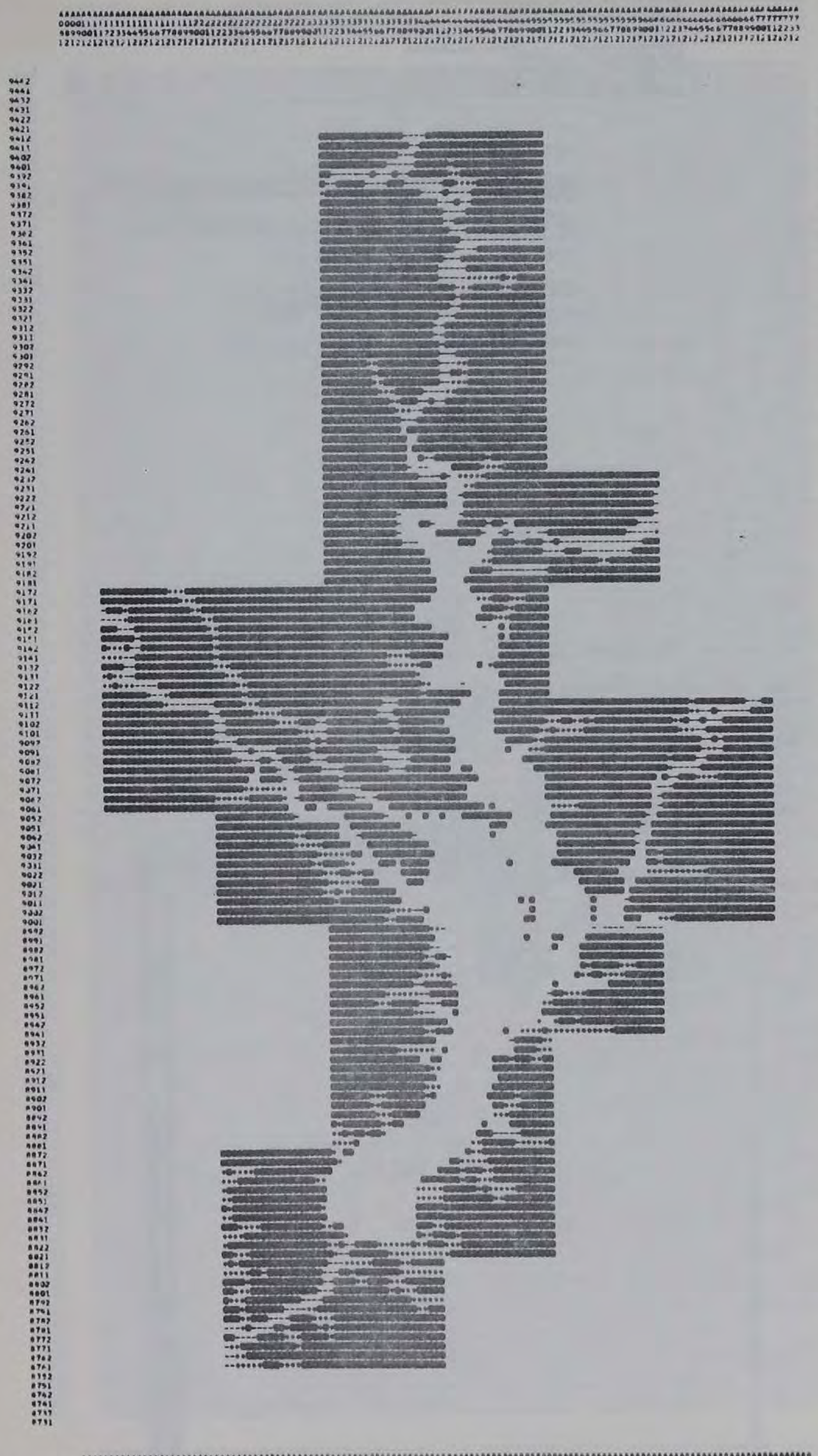


Fig. 1-1-56

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.DEMOURS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUGIL, D.FABLINGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO M.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

SURFICIAL WATER (ALTERNATIVE #5)

SURFICIAL WATER DATA WAS INTERPRETED FROM AERIAL PHOTOGRAPHS AND THE STORY COUNTY SOILS MAP. THE CLASSIFICATION SCHEME WAS ADAPTED FROM THE STRAHLER METHOD.

PONDED WATER INCLUDES ALL PONDS, LAKES, LAGOONS, AND OTHER NON-LINEAR BODIES OF OPEN WATER. WHEN TWO SURFICIAL WATER TYPES EXISTED IN THE SAME CELL, THE TYPE WITH THE LARGER AREA OR HIGHER STREAM ORDER WAS RECORDED.

IN EACH ALTERNATIVE, THE PROPOSED WATER SURFACE IS ALSO SHOWN (5,7).

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 978
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.

LEGEND

0 = PONDED WATER

1 = FLOWING STREAMS

2 = INTERMITTENT STREAMS

3 =

4 =

5 = CONSERVATION POOL

6 =

7 = FLOOD POOL

8 =

9 =

10 = NONE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 8.21 ST. DEV. = 3.05

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

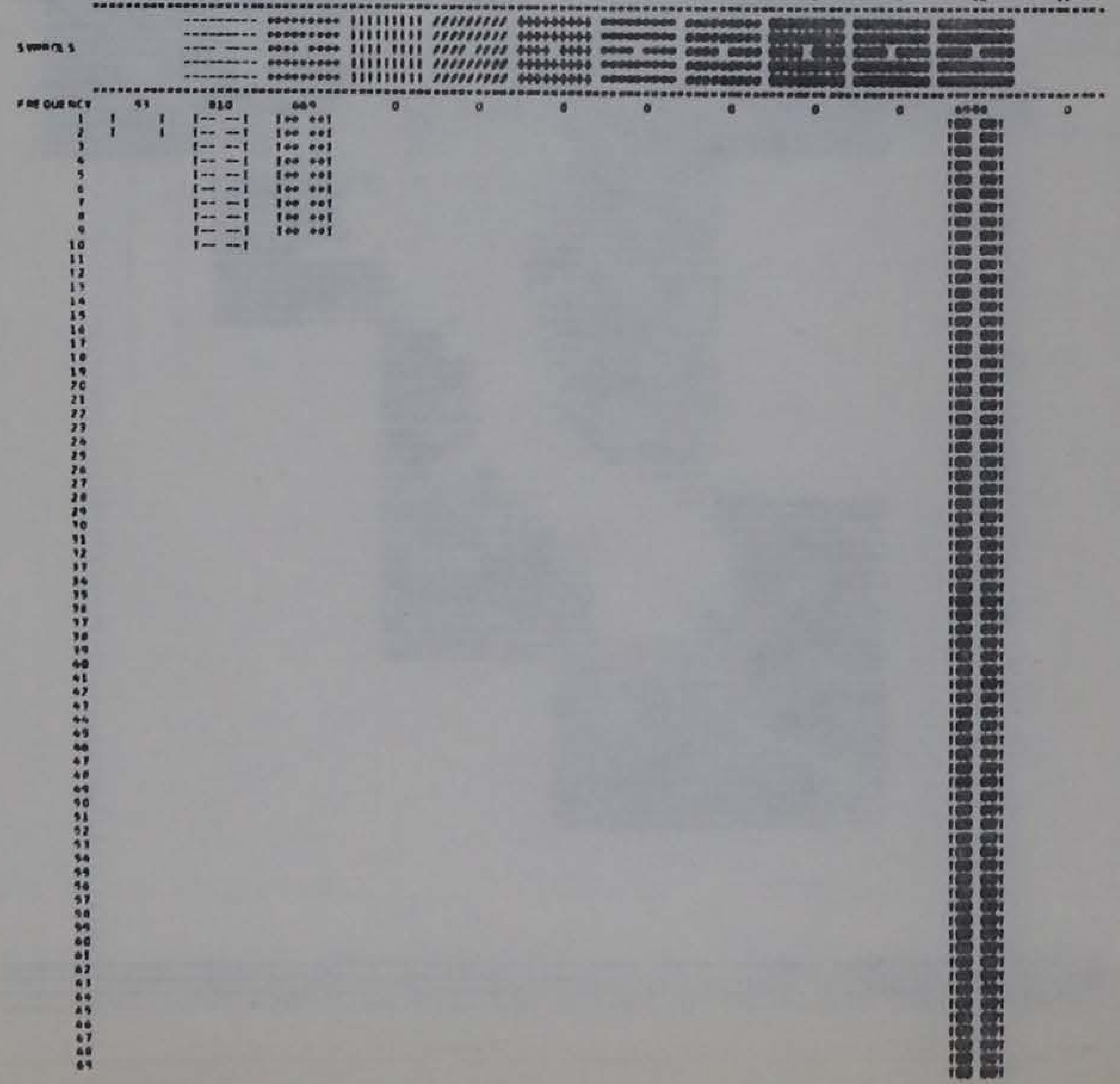
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	51	810	669	0	0	0	0	0	0	0	6900	0



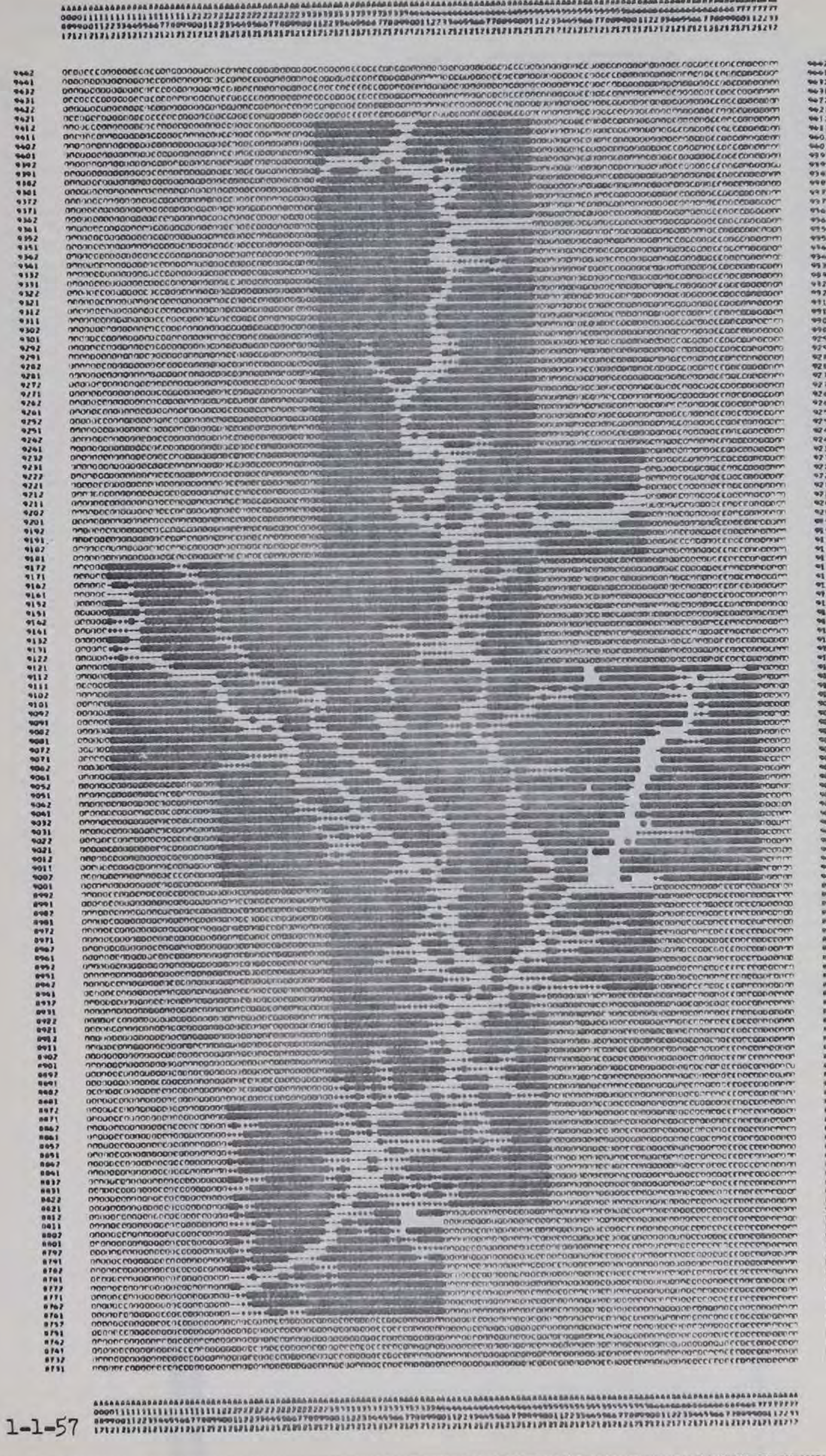


Fig. 1-1-57

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.P.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAHLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.UBAN, D.DEPRENGER
APO R.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.MILLS

SURFICIAL WATER (ALTERNATIVE #6)

SURFICIAL WATER DATA WAS INTERPRETED FROM AERIAL PHOTOGRAPHS AND THE STORY COUNTY SOILS MAP. THE CLASSIFICATION SCHEME WAS ADAPTED FROM THE STRAHLER METHOD.

PONDED WATER INCLUDES ALL PONDS, LAKES, LAGOONS, AND OTHER NON-LINEAR BODIES OF OPEN WATER. WHEN TWO SURFICIAL WATER TYPES EXISTED IN THE SAME CELL, THE TYPE WITH THE LARGER AREA OR HIGHER STREAM ORDER WAS RECORDED.

IN EACH ALTERNATIVE, THE PROPOSED WATER SURFACE IS ALSO SHOWN (5,7).

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-13-67.
STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1950.

LEGEND

0 = PONDED WATER

1 = FLOWING STREAMS

2 = INTERMITTENT STREAMS

3 =

4 =

5 = CONSERVATION POOL

6 =

7 = FLOOD POOL

8 =

9 =

10 = NONE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 9.30 ST. DEV. = 3.38

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

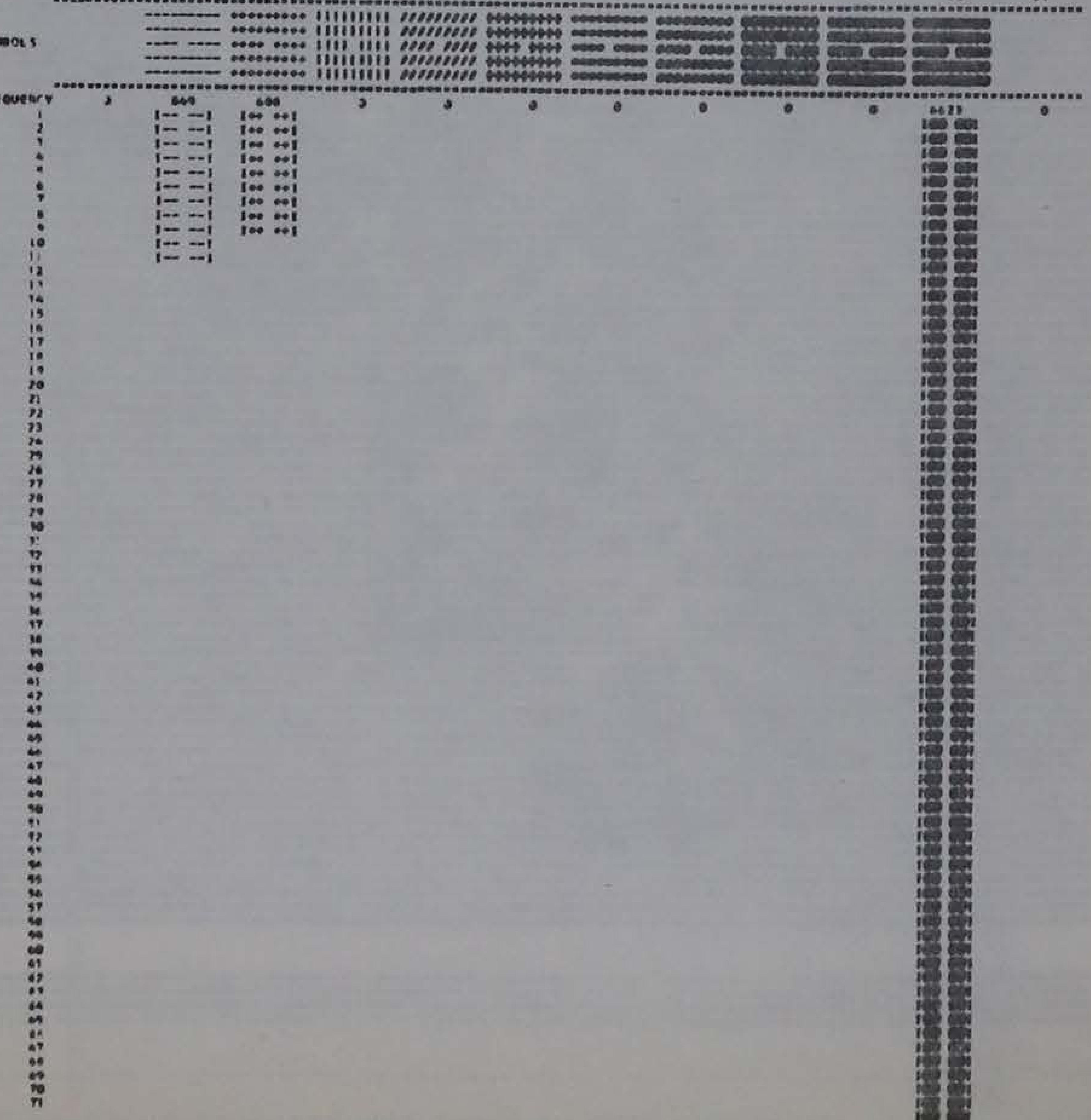
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.93

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	3	649	600	3	3	0	0	0	0	0	6623	0



MAP 4,SHEET 1,DATA SET 1

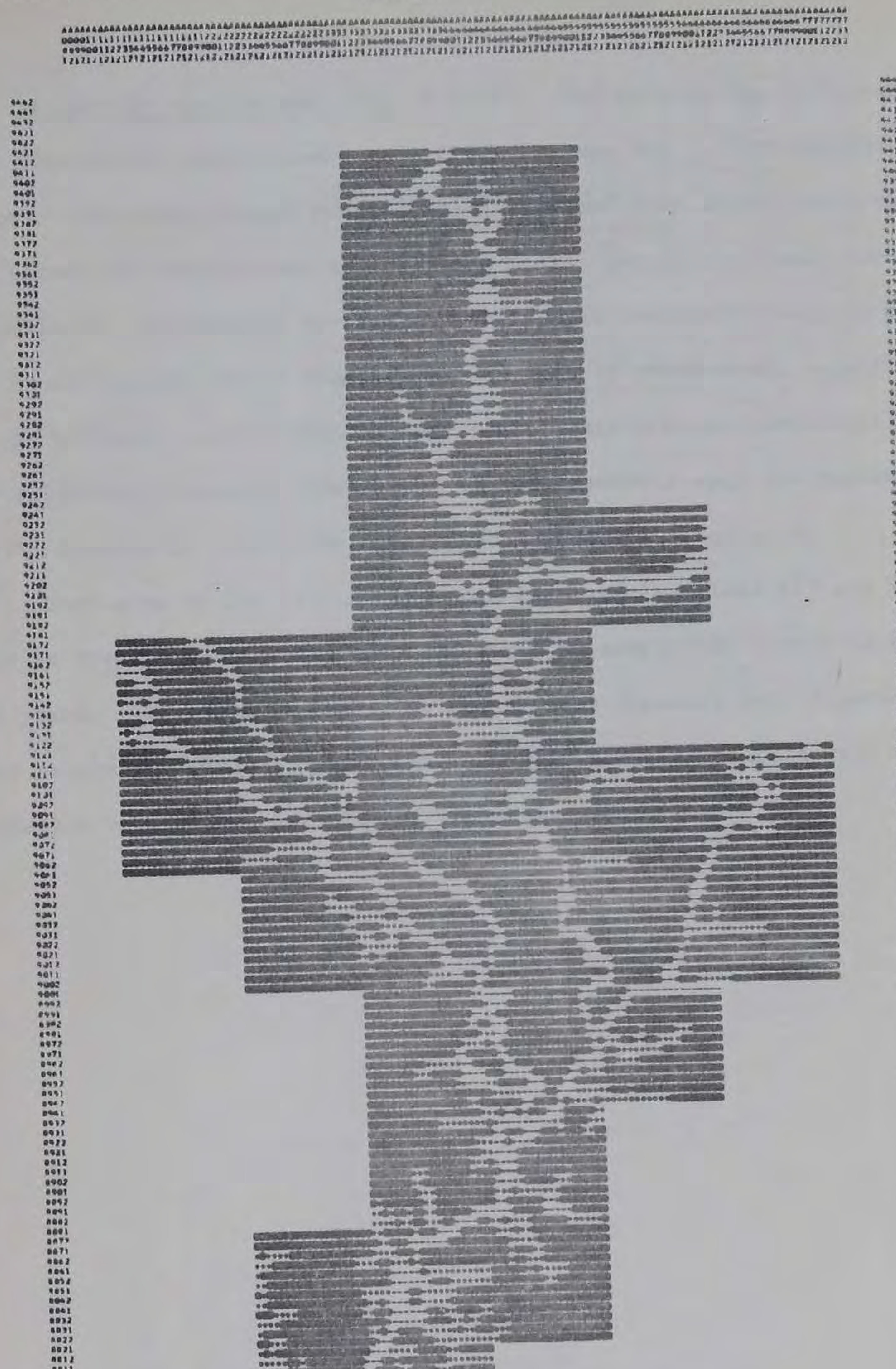


Fig. 1-1-58

Reservoir pool levels (Fig. 1-1-59). The area of the (Alternative #1) fluctuating pool between elevations 950 and 965 is approximately 1300 acres. This area, which would completely flood once in 10 years, may be termed the active zone of the flood pool. The active zone, often called "mudflats", is normally covered in part by the reservoir pool, in part by annual plants (weedy vegetation), in part by young woody vegetation (e.g. willows), and in part by bare soil. This zone is characterized by relatively frequent fluctuation of the reservoir pool and relatively rapid changes in vegetative cover (see Appendix 1, Chapter 3).

That area in the fluctuating pool between elevations 965 and 976 may be termed the inactive zone and would be completely inundated once in 70 years. This zone is characterized by less frequent pool fluctuations and vegetative changes. Approximately 2500 acres is contained in the inactive zone, twice the area of the active zone.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.J.ANDERSON
PROGRAMMER-ANALYST G.H.SEAVERS
DATA PREPARATION A.C.TAGGART, T.SMUCH, A.PUDIL, D.FAHLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.HENRY
GRAPHICS C.JOHAN, D.DEPRENGER
KPO N.JONES, T.SWANSON, R.MCEPPNER, D.ALLEN, D.FERNELIUS, D.PILLS

RESERVOIR POOL LEVELS

THE AMES RESERVOIR, AS PROPOSED, HAS A CONSERVATION POOL OF ELEVATION 950. HOWEVER, DURING EXTREMELY WET OR DRY PERIODS, THE POOL ELEVATION COULD RAISE AS HIGH AS 976 OR AS LOW AS 933 (GENERAL DESIGN MEMORANDUM #1, TABLE 1-15).

THOSE AREAS WHICH ARE TEMPORARILY INUNDATED AT PERIODIC INTERVALS ARE EXTREMELY IMPORTANT FOR RESERVOIR MANAGEMENT IN A VISUAL, RECREATIONAL, AND VEGETATIONAL SENSE.

TO BETTER UNDERSTAND THE AREAS AFFECTED, THIS MAP SHOWS THE MINIMUM AND MAXIMUM POOL ELEVATIONS AND THE POOL ELEVATIONS IN BETWEEN AT FIVE FOOT INTERVALS. THE NUMBER OF 2.66 ACRE CELLS IN EACH INTERVAL IS SHOWN UNDER THE GRAY SCALE AS FREQUENCY.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
PLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
PLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: GENERAL DESIGN MEMORANDUM #1, CORPS OF ENGINEERS.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500,1962.

LEGEND

0 =

1 = 933-940 (ONCE IN 9 TO 50 YEARS)

2 = 940-945 (ONCE IN 2 TO 9 YEARS)

3 =

4 = 945-950 (ONCE EVERY YEAR TO 2 YEARS)

5 = 950-955 (ONCE EVERY YEAR TO 3 YEARS)

6 = 955-960 (ONCE IN 3 TO 6 YEARS)

7 = 960-965 (ONCE IN 6 TO 10 YEARS)

8 =

9 = 965-970 (ONCE IN 10 TO 19 YEARS)

10 = 970-976 (ONCE IN 19 TO 70 YEARS)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -28.77 ST. DEV. = 20.60

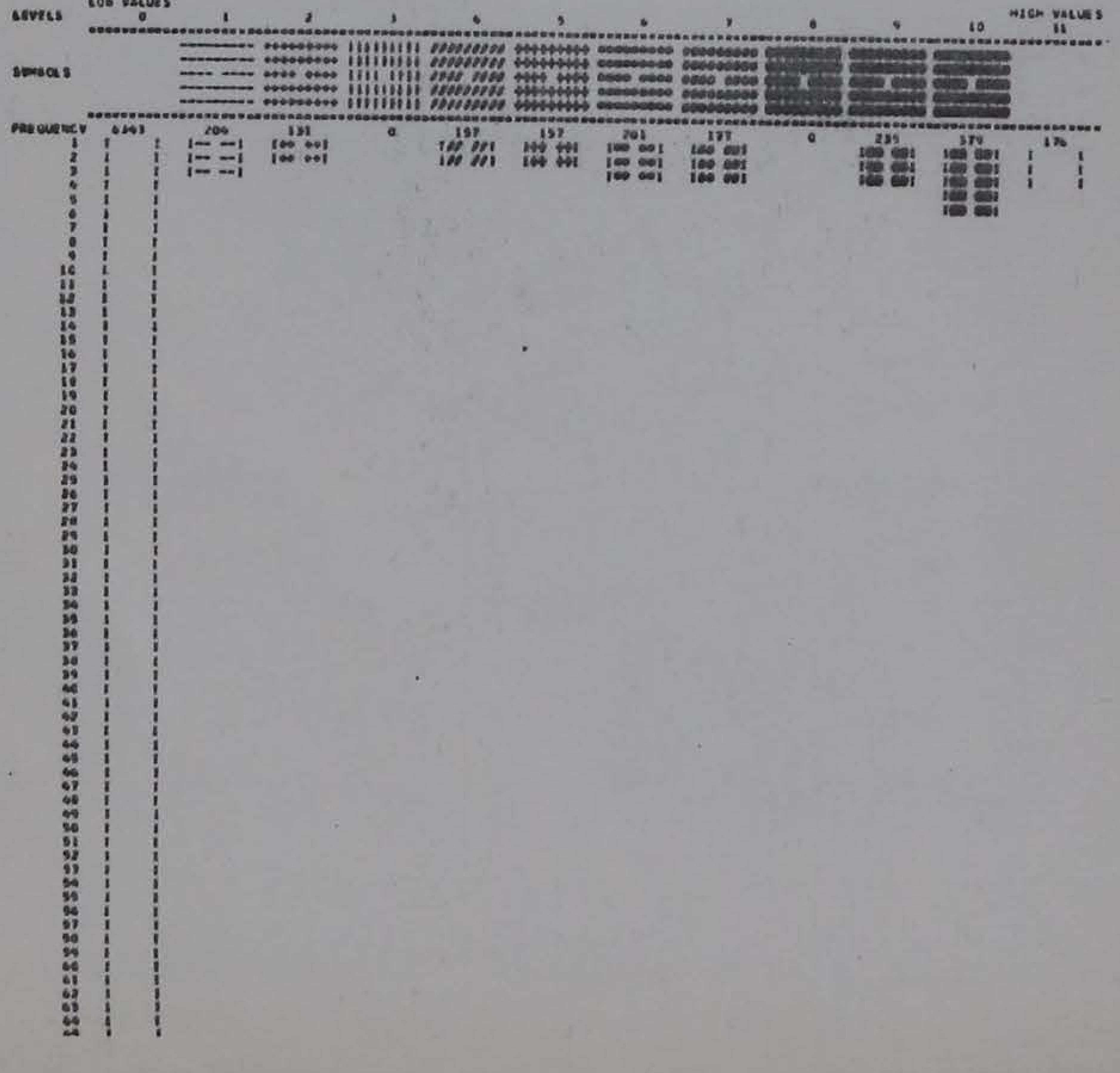
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



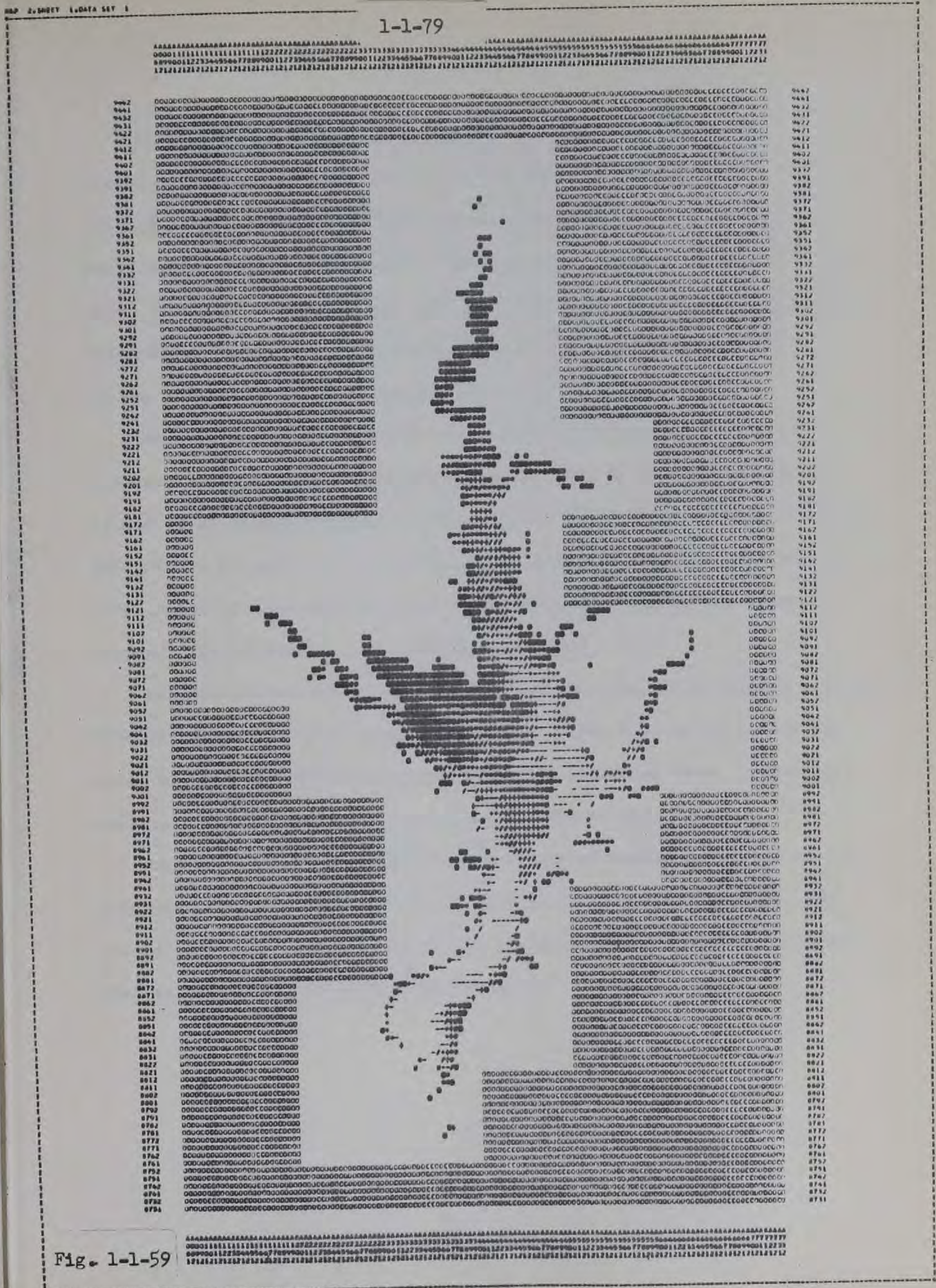


Fig. 1-1-59

Restricted soil types (Fig. 1-1-60 through 1-1-65). Soils with erosion restrictions occur on the slopes that, in Alternative #1 (Fig. 1-1-60), would become the reservoir pool edge. These slopes would become subject to erosion from wave action of the fluctuating pool, from loss of vegetation, and from foot traffic (hikers, picnicers, swimmers). The lower pool levels (<965) would increase the amount of the slopes above water subject to erosion by foot traffic.

Most of the erodable soils in the study area are located on the steeper slopes around the permanent pool (950), especially in sections 12 and 13 of Franklin Township and sections 7 and 18 of Milford Township. The uplands adjacent to these slopes are often suitable for recreation development so care must be taken to restrict the use of the adjacent slopes. Trails must be well graded and marked.

Wetness restrictions occur on the soils of the Skunk-Keigley plateau. With inundations, these soils, though well tiled now, would become excessively wet for intensive recreation or residential uses. Other uses, such as wildlife management, could be applied to this area.

Unrestricted areas occur on the uplands of middle west side of the proposed reservoir (sections 1, 12, and 14 of Franklin Township), the middle east side (sections 29 and 32 of Howard Township), and the lower east side (section 18 of Milford Township).

```
ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS   J.R.SINATRA,  P.F.ANDERSON
PROGRAMMER-ANALYST  G.H.BEAVERS
DATA PREPARATION   J.C.TAGGART,  T.SHUCK,  A.PUCIL,  D.FARLANGER,
                   S.CECIL,  D.SEYMOUR,  W.SCHUTTLER,  D.KENNY
GRAPHICS   C.J.URAN,  D.DEPRENGER
KPO  A.JONES,  E.SWANSON,  R.HOPPNER,  D.ALLEN,  D.FERNELIUS,  D.HILLS


                   RESTRICTED SOIL TYPES (ALTERNATIVE #1)

                   THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST PERCENTAGE OF
                   EACH CELL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL.  ONLY ONE SOIL TYPE WAS
                   NOTED FOR EACH CELL BECAUSE OF THE COARSENESS OF THE DATA AVAILABLE.  THESE SOIL
                   TYPES WERE RECORDED FROM A 1938 USDA COUNTY SOIL MAP, THE MOST COMPLETE DATA
                   AVAILABLE FOR PUBLIC USE.  SOME OF THE SOIL NAMES HAD CHANGED SINCE AND
                   CORRELATIONS WERE MADE TO UPDATE THE INFORMATION.  THE SOIL TYPES WERE RECORDED
                   USING THE STANDARDIZED USDA SOIL NUMBER.  FROM THIS SOIL NUMBER, INFORMATION
                   CONCERNING SOIL TEXTURE, PERMEABILITY, INFILTRATION RATE, ENGINEERING CAPABILITY
                   AND SUITABILITY (USE) CLASS COULD BE DETERMINED.

                   THOSE CELLS CONTAINING SOIL TYPES WITH EROSION OR WETNESS RESTRICTIONS ARE
                   INDICATED ON THE PRINTOUT MAP.  ALTHOUGH THE RESTRICTIONS GENERALLY APPLY TO
                   AGRICULTURAL USE, THEY ALSO IMPLY RESTRICTIONS ON RECREATION USES AND
                   RESIDENTIAL DEVELOPMENT.

                   THOSE RESTRICTIONS APPLY ONLY TO EXISTING SOIL CONDITIONS AND DO NOT INCLUDE
                   THOSE THAT RESULT FROM RESERVOIR IMPOUNDMENT.

                   ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO
                   SUBIMPOUNDMENTS - DESIGN MEMO #1.
                   A.  AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
                                        FLOOD POOL, ELEVATION 976
                   B.  BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
                                                   FLOOD POOL, ELEVATION 979
                   C.  DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

                   SOURCE:  STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1938.


                                    LEGEND

                                    0 = WATER

                                    1 = NO WETNESS OR EROSION RESTRICTIONS

                                    2 =

                                    3 =

                                    4 =

                                    5 = WETNESS RESTRICTIONS

                                    6 =

                                    7 =

                                    8 =

                                    9 =

                                    10 = EROSION RESTRICTIONS

                                    11 =


DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF      0.0  AND     10.90  MEAN =     -0.42 ST. DEV. =       5.09

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
 MINIMUM             0.0      1.09      2.18      3.27      4.36      5.45      6.54      7.63      8.72      9.81
 MAXIMUM             1.09     2.18      3.27      4.36      5.45      6.54      7.63      8.72      9.81     10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
                    10.00     10.00     10.00     10.00     10.00     10.00     10.00     10.00     10.00     10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
          LOW VALUES
LEVELS        0         1         2         3         4         5         6         7         8         9        10      HIGH VALUES
                                                                                                                              11
      ****************************************************************************************************************************
                 --------- +++++++++ IIIIIIIII ///////// +++++++++ ooooooooo 000000000 
                 --------- +++++++++ IIIIIIIII ///////// +++++++++ ooooooooo 000000000 
SYMBOLS          ---- ---- ++++ ++++ IIII IIII //// //// ++++ ++++ oooo oooo 0000 0000 
                 --------- +++++++++ IIIIIIIII ///////// +++++++++ ooooooooo 000000000 
                 --------- +++++++++ IIIIIIIII ///////// +++++++++ ooooooooo 000000000 
      ****************************************************************************************************************************
FREQUENCY   1959      4959         0         0         0      1321         0         0         0         0       511          0
       1    I    I   I-- --I                              I++ ++I                                           I## ##I
       2    I    I   I-- --I                              I++ ++I                                           I## ##I
       3    I    I   I-- --I                              I++ ++I                                           I## ##I
       4    I    I   I-- --I                              I++ ++I                                           I## ##I
       5    I    I   I-- --I                              I++ ++I                                           I## ##I
       6    I    I   I-- --I                              I++ ++I                                           I## ##I
       7    I    I   I-- --I                              I++ ++I                                           I## ##I
       8    I    I   I-- --I                              I++ ++I                                           I## ##I
       9    I    I   I-- --I                              I++ ++I
      10    I    I   I-- --I                              I++ ++I
      11    I    I   I-- --I                              I++ ++I
      12    I    I   I-- --I                              I++ ++I
      13    I    I   I-- --I                              I++ ++I
      14    I    I   I-- --I                              I++ ++I
      15    I    I   I-- --I                              I++ ++I
      16    I    I   I-- --I                              I++ ++I
      17    I    I   I-- --I                              I++ ++I
      18    I    I   I-- --I                              I++ ++I
      19    I    I   I-- --I
      20    I    I   I-- --I
      21    I    I   I-- --I
      22    I    I   I-- --I
      23    I    I   I-- --I
      24    I    I   I-- --I
      25    I    I   I-- --I
      26             I-- --I
      27             I-- --I
      28             I-- --I
      29             I-- --I
      30             I-- --I
      31             I-- --I
      32             I-- --I
      33             I-- --I
      34             I-- --I
      35             I-- --I
      36             I-- --I
      37             I-- --I
      38             I-- --I
      39             I-- --I
      40             I-- --I
      41             I-- --I
      42             I-- --I
      43             I-- --I
      44             I-- --I
      45             I-- --I
      46             I-- --I
      47             I-- --I
      48             I-- --I
      49             I-- --I
      50             I-- --I
      51             I-- --I
      52             I-- --I
      53             I-- --I
        HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
        NUMBER OF BACKGROUND CELLS =10040

        VARIABLE CLASS #   6    IMPORTANCE FACTOR  10

             VU  20   WT   1   VU  21   WT   9   VU  26   WT   1   VU  27   WT   5   VU  47   WT   1
   VU  48   WT   5   VU 106   WT   1   VU 107   WT   5   VU 150   WT   1   VU 151   WT  10
```

MAP 14,SHEET 1,DATA SET 1

Fig. 1-1-60

1-1-83

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANDER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, [illegible]
GRAPHICS C.J.UBAN, D.DEPRENGER
KPO R.JONES, L.SWANSON, R.HOEPPNER, J.ALLEN, [illegible]

RESTRICTED SOIL TYPES (ALTERNATIVE #2)

THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST [illegible] OF EACH CELL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL. ONLY [illegible] WAS NOTED FOR EACH CELL BECAUSE OF THE [illegible] OF THE DATA AVAILABLE. [illegible] TYPES WERE RECORDED FROM A 1934 USDA COUNTY SOIL MAP, THE MOST [illegible] AVAILABLE FOR PUBLIC USE. SOME OF THE SOIL NAMES HAVE CHANGED SINCE [illegible] CORRELATIONS WERE MADE TO UPDATE THE INFORMATION. THE SOIL TYPES [illegible] USING THE STANDARDIZED USDA SOIL NUMBER. FROM THIS SOIL NUMBER, INFORMATION CONCERNING SOIL TEXTURE, PERMEABILITY, INFILTRATION RATE, [illegible] AND SUITABILITY (USE) CLASS COULD BE DETERMINED.

THOSE CELLS CONTAINING SOIL TYPES WITH [illegible] INDICATED IN THE PRINTOUT MAP. ALTHOUGH THE [illegible] AGRICULTURAL USE, THEY ALSO IMPLY RESTRICTIONS [illegible] RESIDENTIAL DEVELOPMENT.

THESE RESTRICTIONS APPLY ONLY TO EXISTING SOIL CONDITIONS [illegible] THOSE THAT RESULT FROM RESERVOIR IMPOUNDMENT.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE [illegible] WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION [illegible]
FLOOD POOL, ELEVATION [illegible]

SOURCE: STORY COUNTY SOILS MAP, USDA, SCALE [illegible]

LEGEND

0 = WATER

1 = NO WETNESS OR [illegible] RESTRICTIONS

2 =

3 =

4 =

5 = WETNESS RESTRICTIONS

6 =

7 =

8 =

9 =

10 = EROSION RESTRICTIONS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 [illegible]

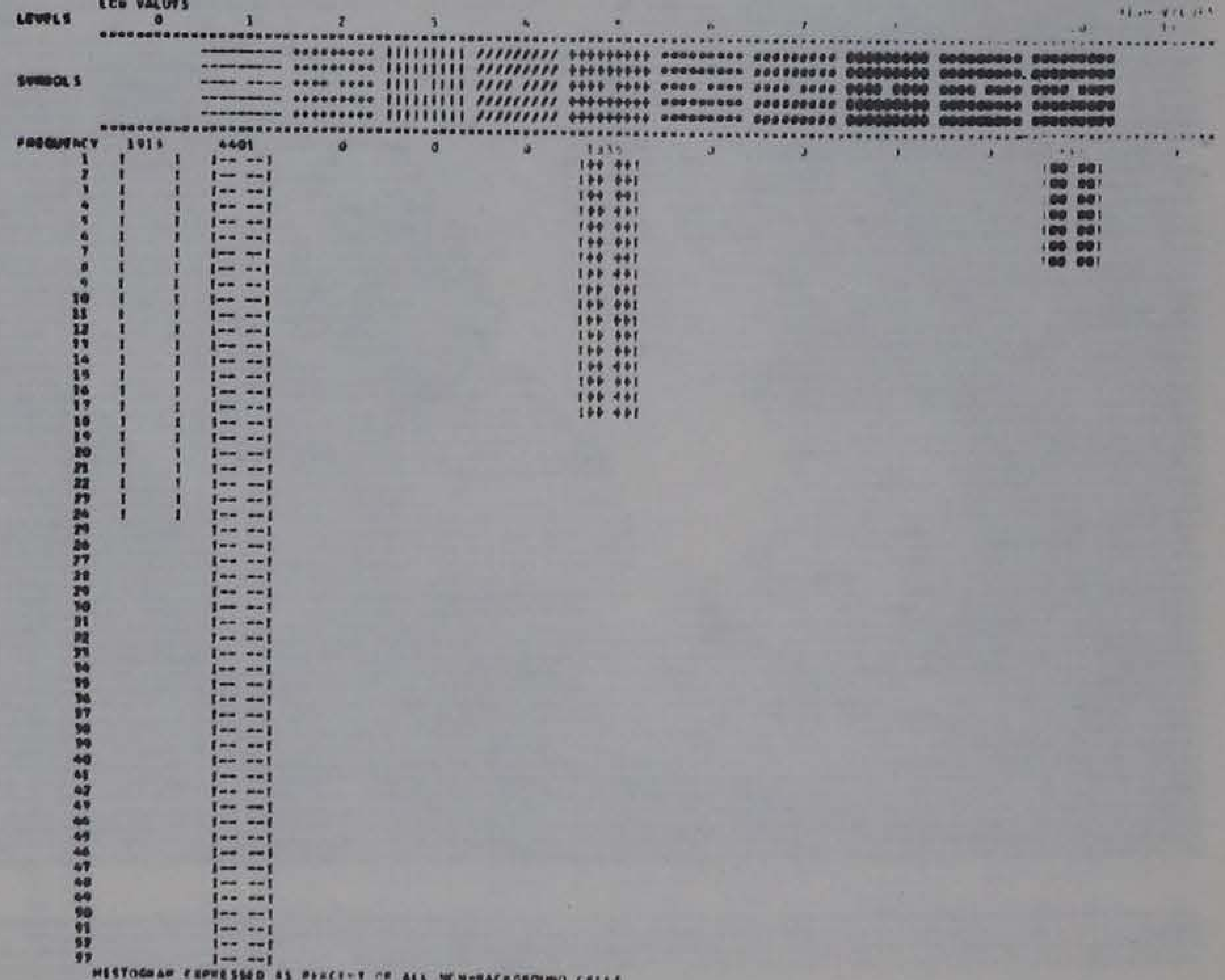
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAXIMUM	1.09	2.18	3.27	4.36	5.45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	[illegible]	[illegible]

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0

VARIABLE CLASS # 6 IMPORTANCE FACTOR [illegible]

VU 20 WT 1 VU 21 WT 5 VU 26 WT 1 VU 27 WT 5 VU [illegible] WT [illegible]
VU 40 WT 5 VU 106 WT 1 VU 107 WT 5 VU 150 WT 1 VU [illegible] WT 10
VU 186 WT 1 VU 187 WT 10 VU 233 WT 1 VU 234 WT 10 VU [illegible] WT 1

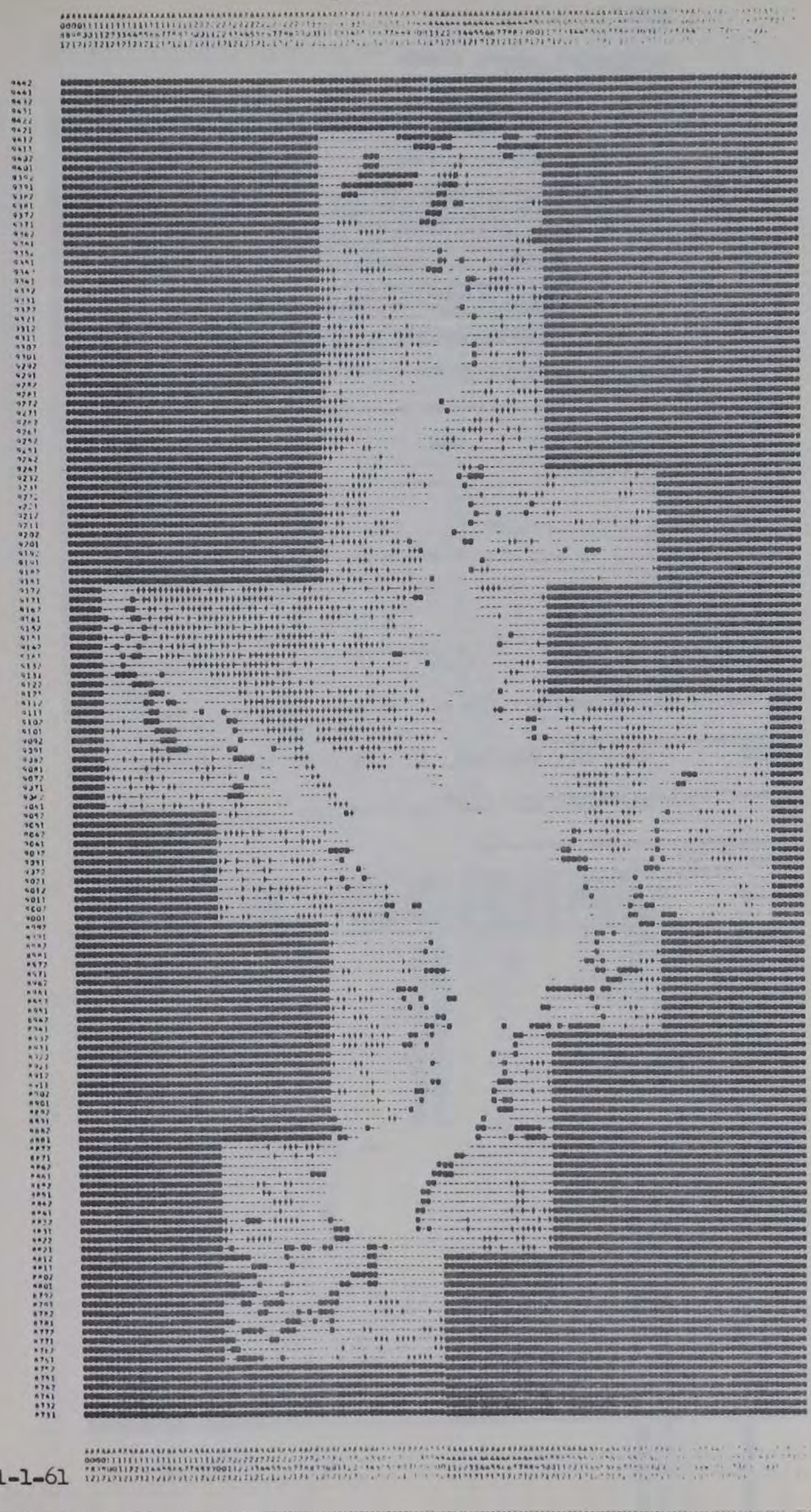


Fig. 1-1-61

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SMUCK, A.PUDIL, D.FARLANGER, S.CECIL, D.SEYMOUR, M.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPPRENGER
GPO R.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.MILLS

RESTRICTED SOIL TYPES (ALTERNATIVE #3)

THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST PERCENTAGE OF EACH CELL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL. ONLY ONE SOIL TYPE WAS NOTED FOR EACH CELL BECAUSE OF THE COARSENESS OF THE DATA AVAILABLE. THESE SOIL TYPES WERE RECORDED FROM A 1978 USDA COUNTY SOIL MAP, THE MOST COMPLETE DATA AVAILABLE FOR PUBLIC USE. SOME OF THE SOIL NAMES HAD CHANGED SINCE AND CORRELATIONS WERE MADE TO UPDATE THE INFORMATION. THE SOIL TYPES WERE RECORDED USING THE STANDARDIZED USDA SOIL NUMBER. FROM THIS SOIL NUMBER, INFORMATION CONCERNING SOIL TEXTURE, PERMEABILITY, INFILTRATION RATE, ENGINEERING CAPABILITY AND SUITABILITY (USE) CLASS COULD BE DETERMINED.

THOSE CELLS CONTAINING SOIL TYPES WITH EROSION OR WETNESS RESTRICTIONS ARE INDICATED ON THE PRINTOUT MAP. ALTHOUGH THE RESTRICTIONS GENERALLY APPLY TO AGRICULTURAL USE, THEY ALSO IMPLY RESTRICTIONS ON RECREATION USES AND RESIDENTIAL DEVELOPMENT.

THOSE RESTRICTIONS APPLY ONLY TO EXISTING SOIL CONDITIONS AND DO NOT INCLUDE THOSE THAT RESULT FROM RESERVOIR IMPOUNDMENT.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 960.

SOURCE: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1978.

LEGEND

0 = WATER

1 = NO WETNESS OR EROSION RESTRICTIONS

2 =

3 =

4 =

5 = WETNESS RESTRICTIONS

6 =

7 =

8 =

9 =

10 = EROSION RESTRICTIONS

11 =

[illegible] IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 1.93 ST. DEV. = 4.11

[illegible] VALUE RANGE APPLYING TO EACH LEVEL

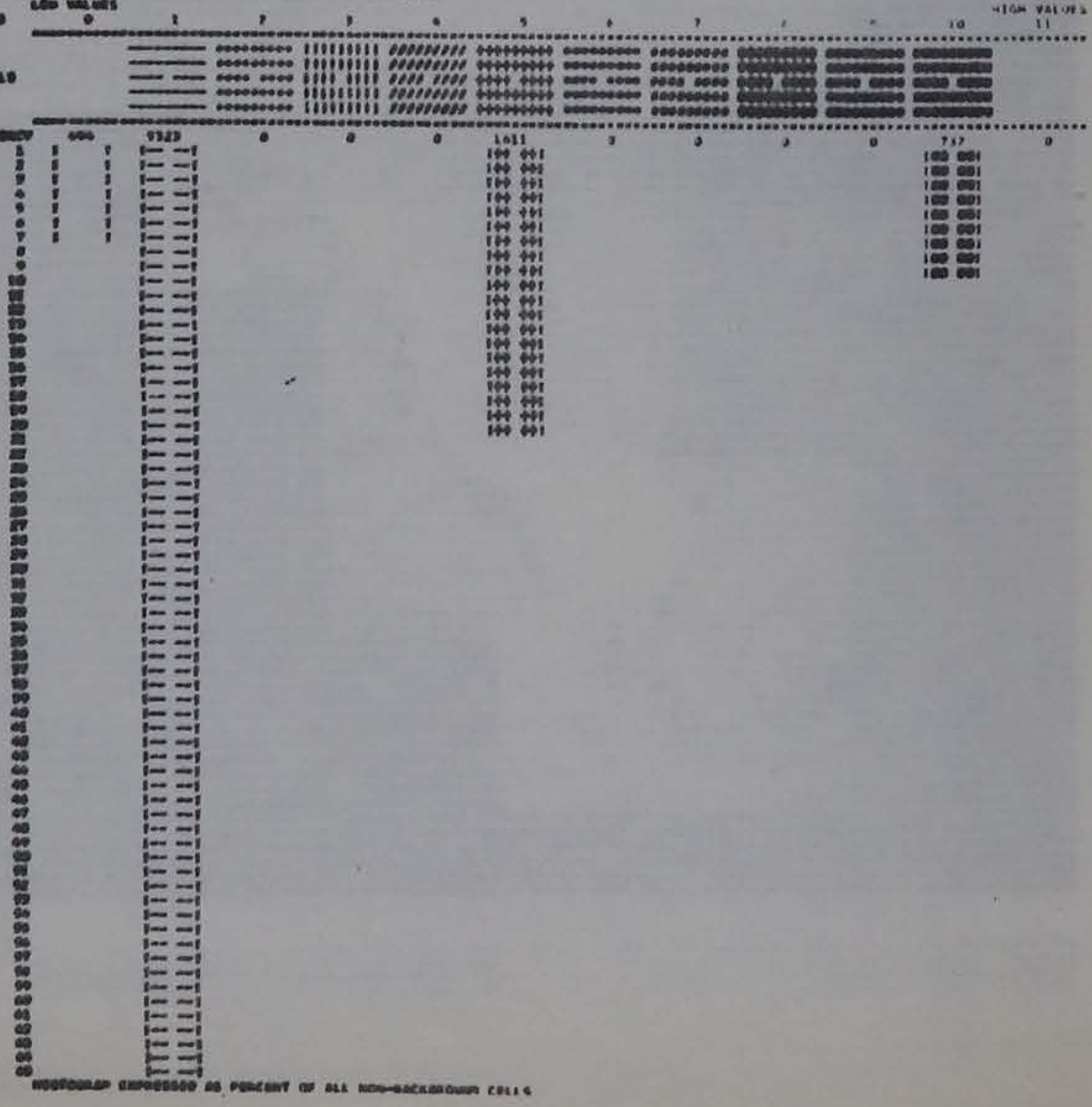
[illegible]	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
[illegible]	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	606	9323	0	0	0	1611	0	0	0	0	717	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS

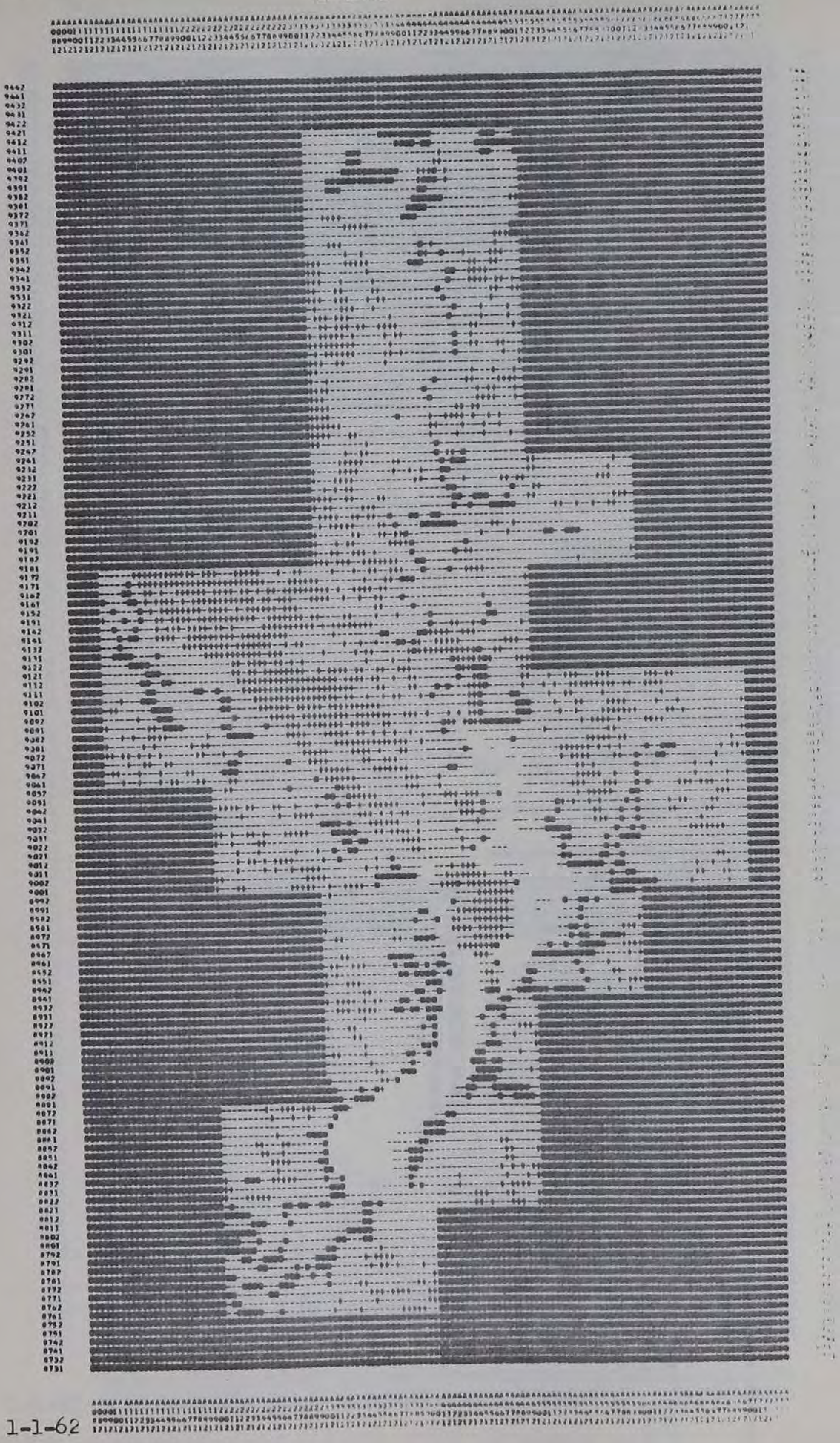


Fig. 1-1-62

1-1-87

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.PERNELIUS, D.HILLS

RESTRICTED SOIL TYPES (ALTERNATIVE 04)

THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST PERCENTAGE OF EACH CEL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL. ONLY ONE SOIL TYPE WAS NOTED FOR EACH CELL BECAUSE OF THE COARSENESS OF THE DATA AVAILABLE. THESE SOIL TYPES WERE RECORDED FROM A 1930 USDA COUNTY SOIL MAP, THE MOST COMPLETE DATA AVAILABLE FOR PUBLIC USE. SOME OF THE SOIL NAMES HAD CHANGED SINCE AND CORRELATIONS WERE MADE TO UPDATE THE INFORMATION. THE SOIL TYPES WERE RECORDED USING THE STANDARDIZED USDA SOIL NUMBER. FROM THIS SOIL NUMBER, INFORMATION CONCERNING SOIL TEXTURE, PERMEABILITY, INFILTRATION RATE, ENGINEERING CAPABILITY AND SUITABILITY (USE) CLASS COULD BE DETERMINED.

THOSE CELLS CONTAINING SOIL TYPES WITH EROSION OR WETNESS RESTRICTIONS ARE INDICATED ON THE PRINTOUT MAP. ALTHOUGH THE RESTRICTIONS GENERALLY APPLY TO AGRICULTURAL USE, THEY ALSO IMPLY RESTRICTIONS ON RECREATION USES AND RESIDENTIAL DEVELOPMENT.

THOSE RESTRICTIONS APPLY ONLY TO EXISTING SOIL CONDITIONS AND DO NOT INCLUDE THOSE THAT RESULT FROM RESERVOIR IMPOUNDMENT.

ALTERNATIVE 04 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAP SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.

LEGEND

0 = WATER

1 = NO WETNESS OR EROSION RESTRICTIONS

2 =

3 =

4 =

5 = WETNESS RESTRICTIONS

6 =

7 =

8 =

9 =

10 = EROSION RESTRICTIONS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.62 ST. DEV. = 5.30

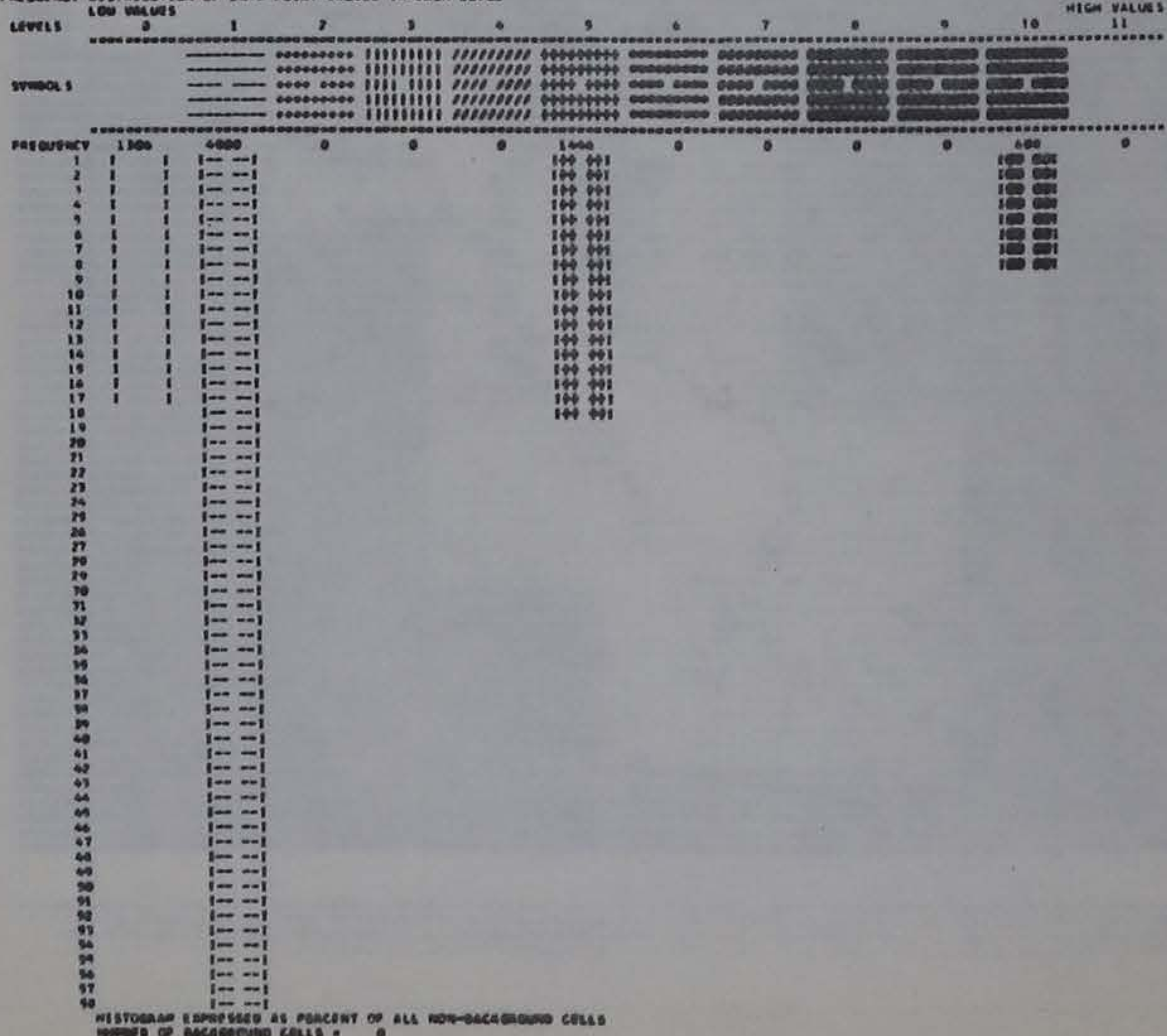
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0

MAP 12, SHEET 1, DATA SET 1

1-1-88

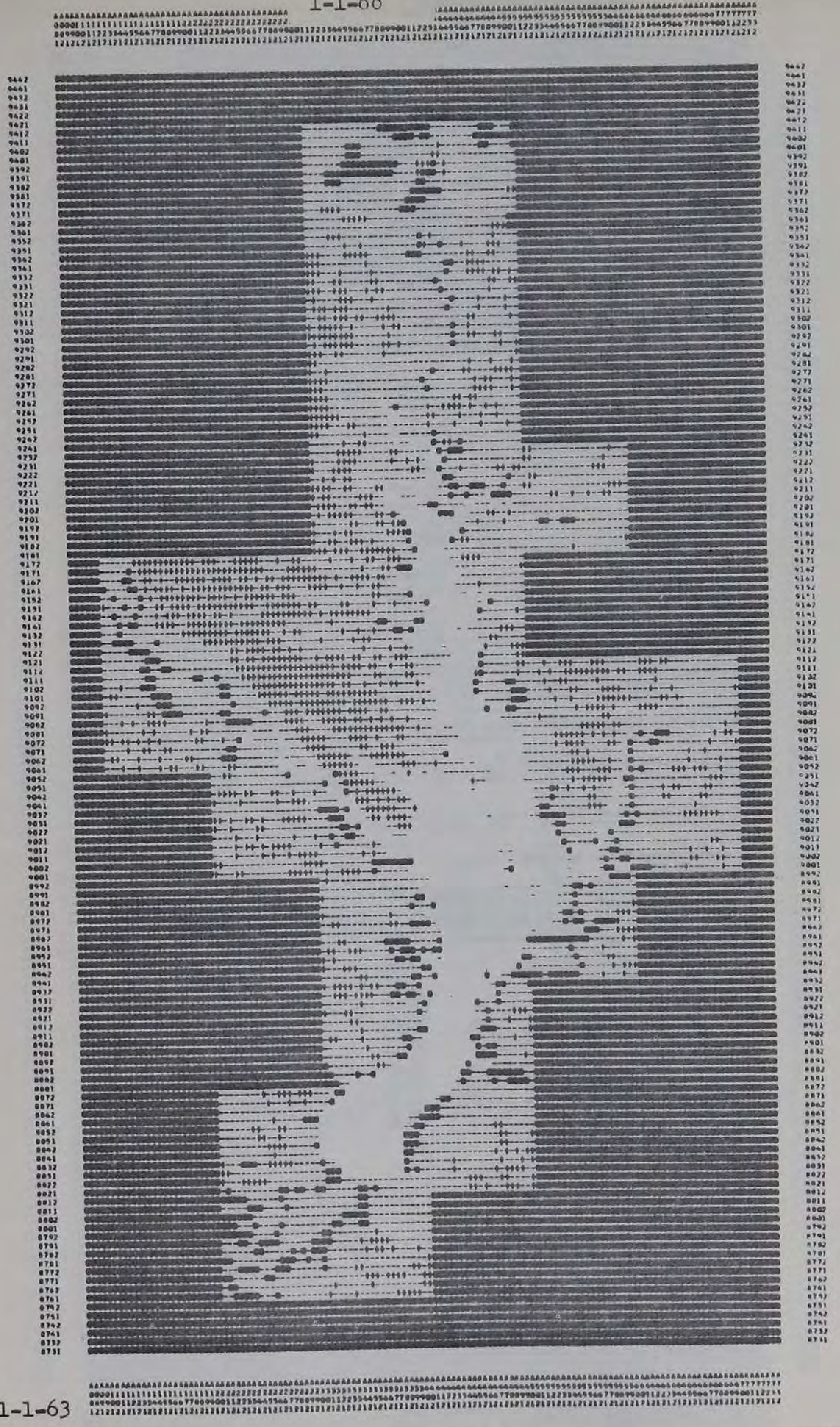


Fig. 1-1-63

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAHLANDER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.HENRY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPD K.JONES, T.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.MILLS

RESTRICTED SOIL TYPES (ALTERNATIVE 05)

THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST PERCENTAGE OF EACH CELL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL. ONLY ONE SOIL TYPE WAS NOTED FOR EACH CELL BECAUSE OF THE COARSENESS OF THE DATA AVAILABLE. THESE SOIL TYPES WERE RECORDED FROM A 1930 USDA COUNTY SOIL MAP, THE MOST COMPLETE DATA AVAILABLE FOR PUBLIC USE. SOME OF THE SOIL NAMES HAD CHANGED SINCE AND CORRELATIONS WERE MADE TO UPDATE THE INFORMATION. THE SOIL TYPES WERE RECORDED USING THE STANDARDIZED USDA SOIL NUMBER. FROM THIS SOIL NUMBER, INFORMATION CONCERNING SOIL TEXTURE, PERMEABILITY, INFILTRATION RATE, ENGINEERING CAPABILITY AND SUITABILITY (USE) CLASS COULD BE DETERMINED.

THOSE CELLS CONTAINING SOIL TYPES WITH EROSION OR WETNESS RESTRICTIONS ARE INDICATED ON THE PRINTOUT MAP. ALTHOUGH THE RESTRICTIONS GENERALLY APPLY TO AGRICULTURAL USE, THEY ALSO IMPLY RESTRICTIONS ON RECREATION USES AND RESIDENTIAL DEVELOPMENT.

THOSE RESTRICTIONS APPLY ONLY TO EXISTING SOIL CONDITIONS AND DO NOT INCLUDE THOSE THAT RESULT FROM RESERVOIR IMPOUNDMENT.

ALTERNATIVE 05 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.

LEGEND

0 = WATER

1 = NO WETNESS OR EROSION RESTRICTIONS

2 =

3 =

4 =

5 = WETNESS RESTRICTIONS

6 =

7 =

8 =

9 =

10 = EROSION RESTRICTIONS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.40 ST. DEV. = 3.11

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

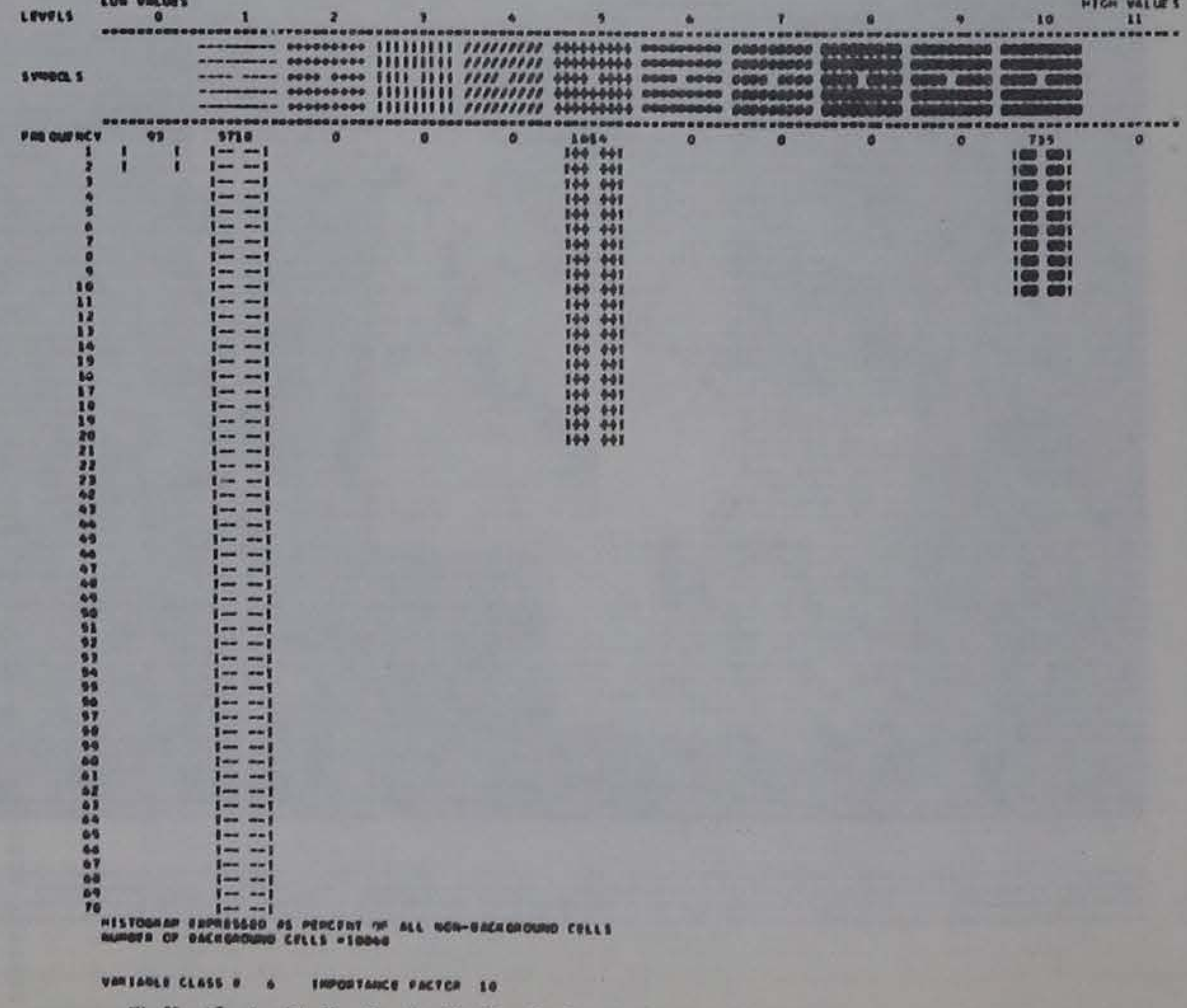
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	93	5718	0	0	0	1654	0	0	0	0	735	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 6 IMPORTANCE FACTOR 10

VU 20 WT 1 VU 21 WT 5 VU 26 WT 1 VU 27 WT 5 VU 47 WT 1
VU 48 WT 5 VU 106 WT 1 VU 107 WT 5 VU 190 WT 1 VU 191 WT 10
VU 186 WT 1 VU 187 WT 10 VU 255 WT 1 VU 256 WT 10 VU 291 WT 1

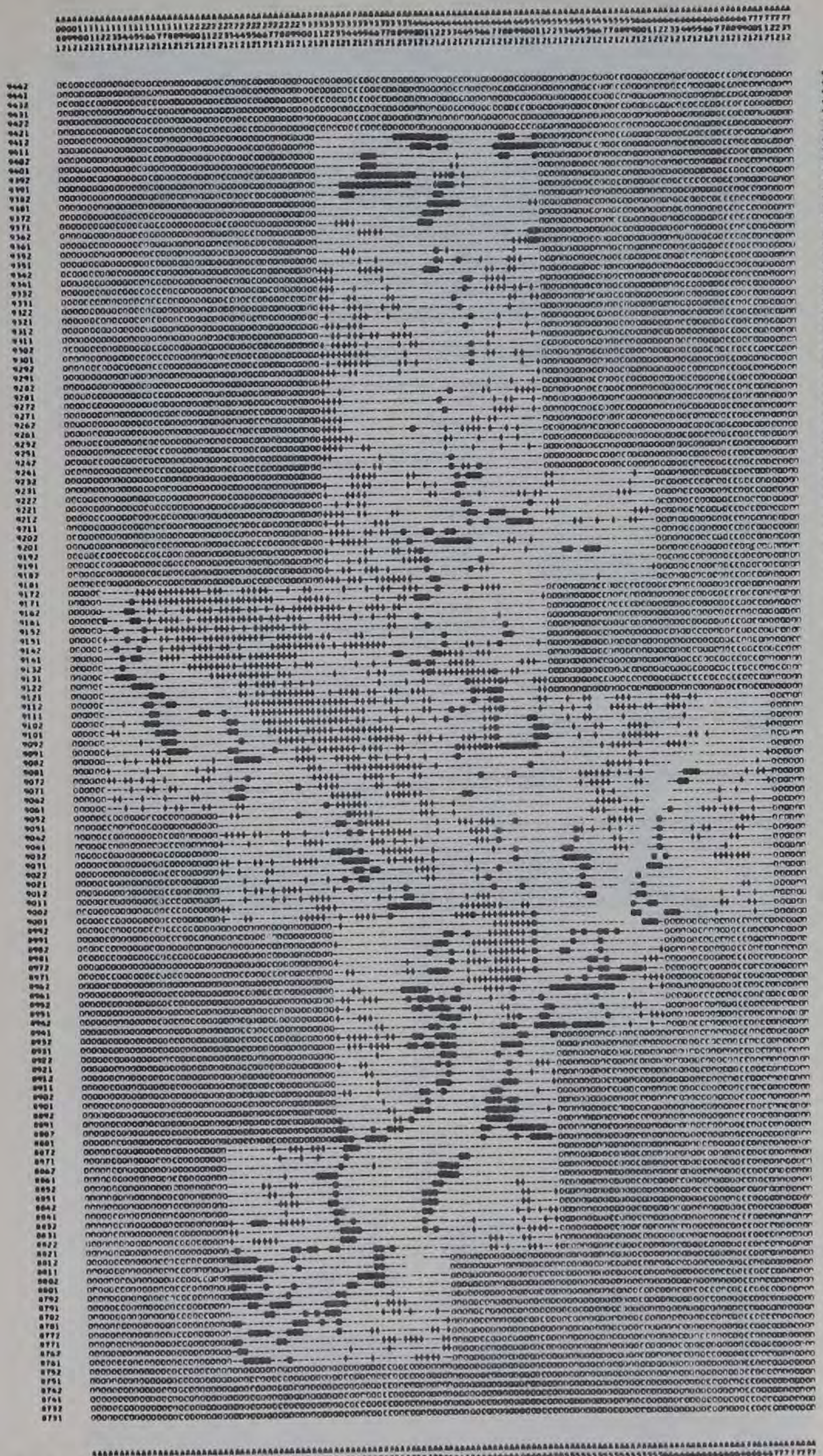


Fig. 1-1-64

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-91

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BROWNS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAHLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.REARY
GRAPHICS C.J.URAN, D.OFFNERGUN
KPO W.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.PERNELIUS, D.MILLS

RESTRICTED SOIL TYPES (ALTERNATIVE 06)

THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST PERCENTAGE OF EACH CELL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL. ONLY ONE SOIL TYPE WAS NOTED FOR EACH CELL BECAUSE OF THE COARSENESS OF THE DATA AVAILABLE. THESE SOIL TYPES WERE RECORDED FROM A 1930 USDA COUNTY SOIL MAP, THE MOST COMPLETE DATA AVAILABLE FOR PUBLIC USE. SOME OF THE SOIL NAMES HAD CHANGED SINCE AND CORRELATIONS WERE MADE TO UPDATE THE INFORMATION. THE SOIL TYPES WERE RECORDED USING THE STANDARDIZED USDA SOIL NUMBER. FROM THIS SOIL NUMBER, INFORMATION CONCERNING SOIL TEXTURE, PERMEABILITY, INFILTRATION RATE, ENGINEERING CAPABILITY AND SUITABILITY (USE) CLASS COULD BE DETERMINED.

THOSE CELLS CONTAINING SOIL TYPES WITH EROSION OR WETNESS RESTRICTIONS ARE INDICATED ON THE PRINTOUT MAP. ALTHOUGH THE RESTRICTIONS GENERALLY APPLY TO AGRICULTURAL USE, THEY ALSO IMPLY RESTRICTIONS ON RECREATION USES AND RESIDENTIAL DEVELOPMENT.

THOSE RESTRICTIONS APPLY ONLY TO EXISTING SOIL CONDITIONS AND DO NOT INCLUDE THOSE THAT RESULT FROM RESERVOIR IMPOUNDMENT.

ALTERNATIVE 06 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCE: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.

LEGEND

0 = WATER

1 = NO WETNESS OR EROSION RESTRICTIONS

2 =

3 =

4 =

5 = WETNESS RESTRICTIONS

6 =

7 =

8 =

9 =

10 = EROSION RESTRICTIONS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.63 ST. DEV. = 2.04

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

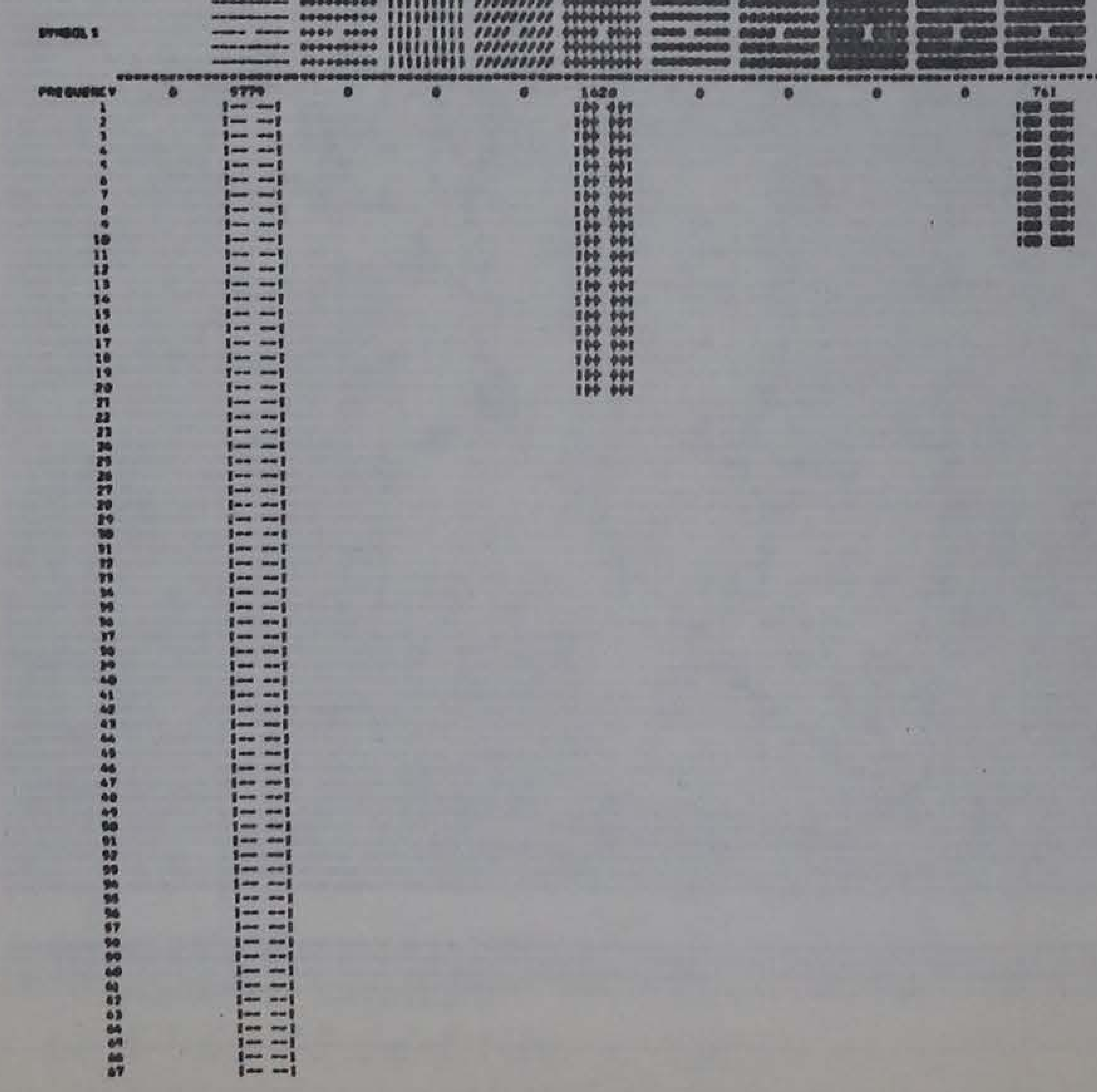
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	0	5779	0	0	0	1620	0	0	0	0	761	0



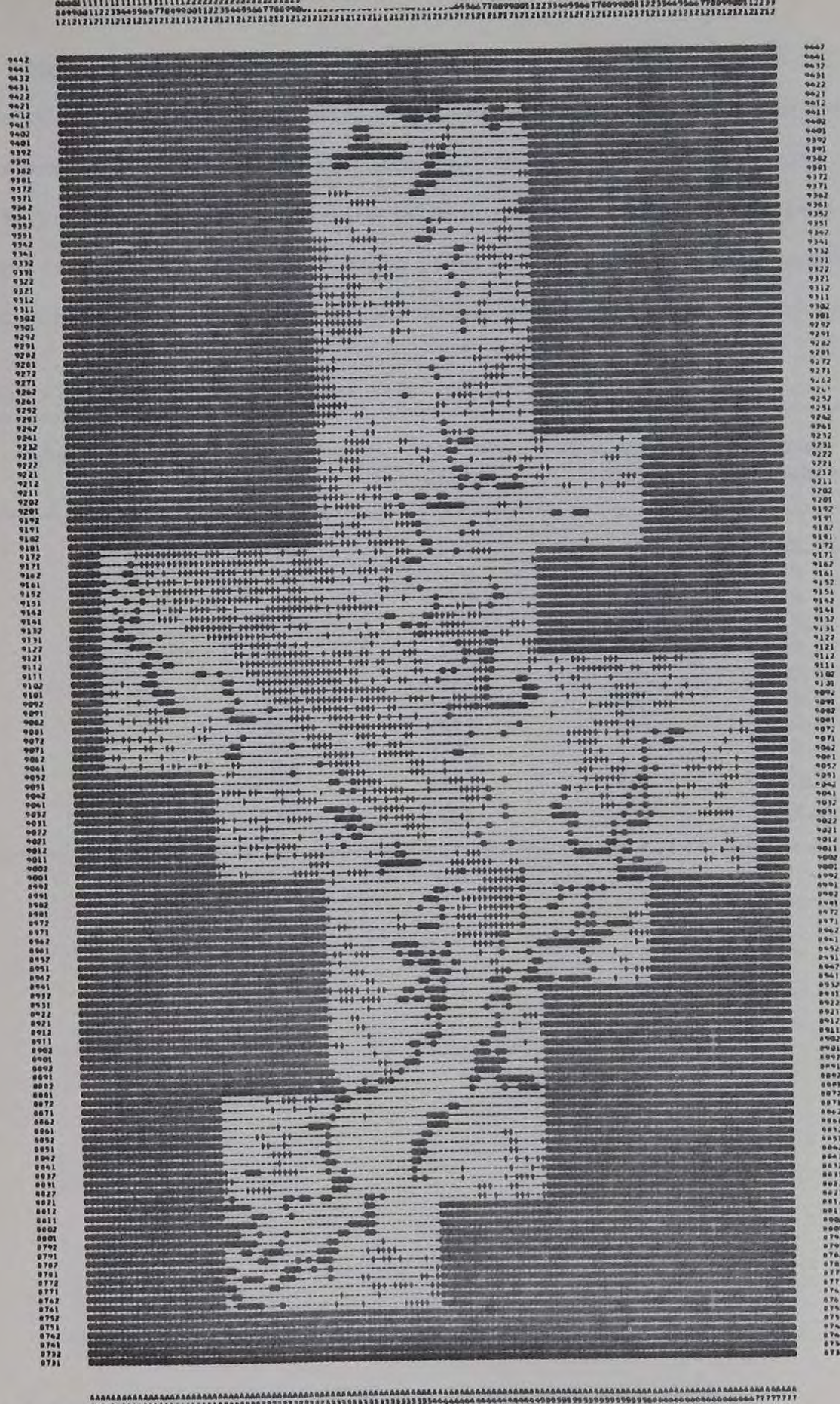


Fig. 1-1-65

Prime agricultural soils (Fig. 1-1-66 thru 1-1-67). These soils generally occur on the uplands; conversely, the poorer agricultural soils are found on the slopes and bottoms along the streams. There would be little loss (20%) of the prime soils with inundation because of their location away from the reservoir pool. The following table gives the percentage loss in each gray level (the soils in levels 8, 9, and 10 are considered prime agricultural soils).

Table 1-1-3. Prime agricultural soil loss.

Gray Level	Alt. 6 Cells	Alt. 1 Cells	Loss Cells	Loss Percentage
1	274	184	90	32.9%
2	0	0	0	0
3	0	0	0	0
4	113	87	26	23.0
5	586	412	174	29.7
6	363	254	109	30.0
7	238	83	155	65.1
8	517	412	105	20.4
9	3309	2579	730	22.0
10	2760	2190	570	20.6
TOTAL	8160	6201	1959	24.0

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.GRAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPRENGER
KPO H.JONES, E.SWANSON, R.HCEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

PRIME AGRICULTURAL SOILS

THE SOILS IN THE RESERVOIR STUDY AREA WERE MAPPED ACCORDING TO THEIR RELATIVE PROPENSITY FOR AGRICULTURAL PRODUCTION.

THE SOIL PRODUCTIVITY RATINGS WERE TAKEN FROM TABLE 6 (PAGE 42) OF THE SOIL SURVEY OF STORY COUNTY, IOWA, UNDER THE COLUMN "PRODUCTIVITY UNDER DOMINANT CURRENT PRACTICE". THE BEST CASE WAS TAKEN FOR EACH SOIL LISTED.
EACH SOIL IN THE STUDY AREA WAS GIVEN A SCORE (1 TO 10). THE HIGHER SCORE INDICATES THE BETTER SOILS FOR AGRICULTURAL USE, AND THE LOWER SCORE, THE WORSE SOILS.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: SOIL SURVEY OF STORY COUNTY, IOWA, 1930.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 10-20% OF MAXIMUM POSSIBLE SCORE

3 = 20-30% OF MAXIMUM POSSIBLE SCORE

4 = 30-40% OF MAXIMUM POSSIBLE SCORE

5 = 40-50% OF MAXIMUM POSSIBLE SCORE

6 = 50-60% OF MAXIMUM POSSIBLE SCORE

7 = 60-70% OF MAXIMUM POSSIBLE SCORE

8 = 70-80% OF MAXIMUM POSSIBLE SCORE

9 = 80-90% OF MAXIMUM POSSIBLE SCORE

10 = 90-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 4.11 ST. DEV. = 8.12

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

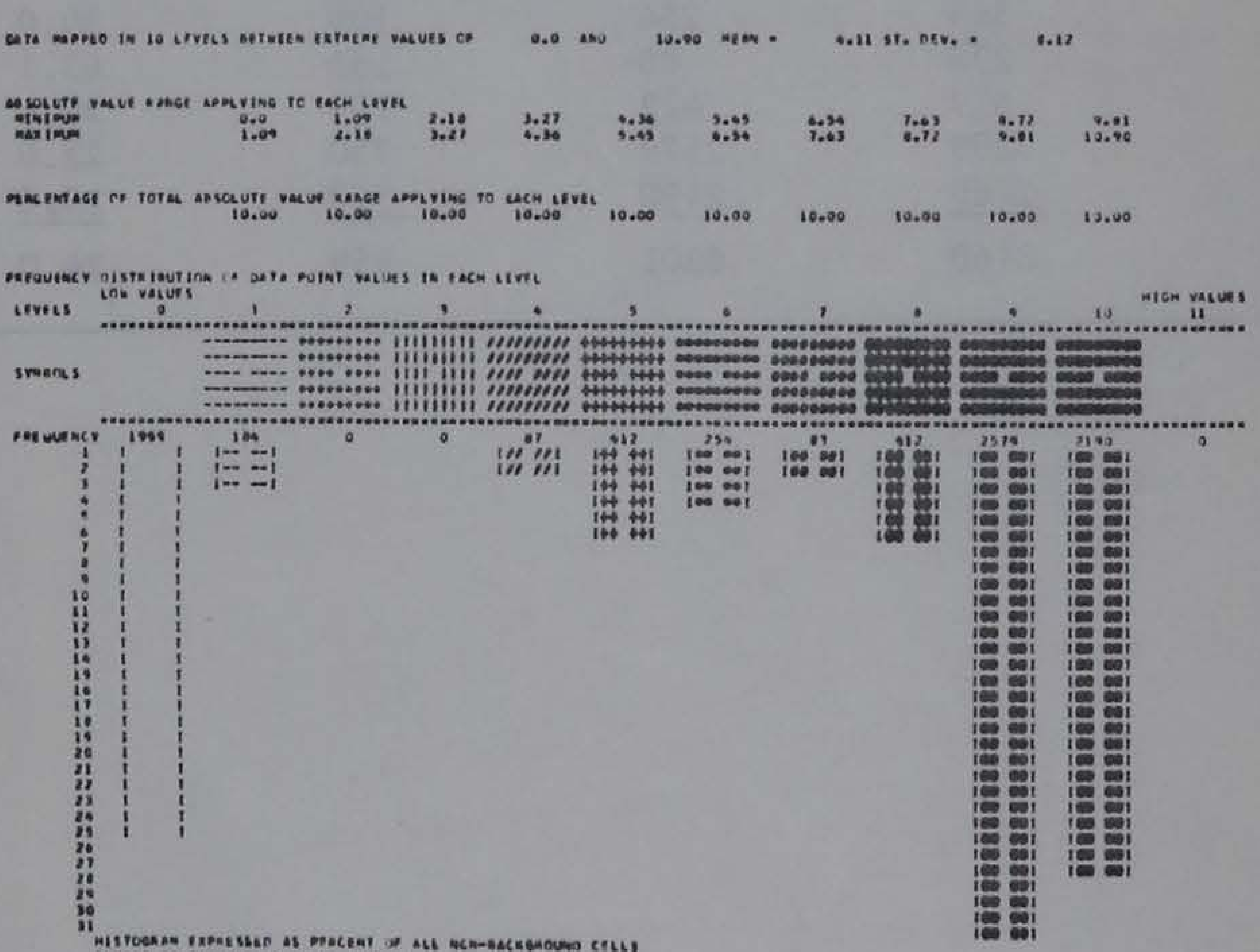
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES										HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
FREQUENCY	1999	184	0	0	87	412	254	87	412	2579	2190	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10846

VARIABLE CLASS # 6 IMPORTANCE FACTOR 10

VU 17 WT 10 VU 21 WT 1 VU 27 WT 10 VU 38 WT 7 VU 43 WT 10
VU 45 WT 8 VU 48 WT 10 VU 49 WT 9 VU 95 WT 10 VU 56 WT 6
VU 62 WT 9 VU 65 WT 7 VU 102 WT 1 VU 107 WT 10 VU 108 WT 6
VU 110 WT 7 VU 136 WT 9 VU 149 WT 8 VU 191 WT 1 VU 179 WT 4
VU 187 WT 1 VU 203 WT 3 VU 284 WT 1 VU 302 WT 5 VU

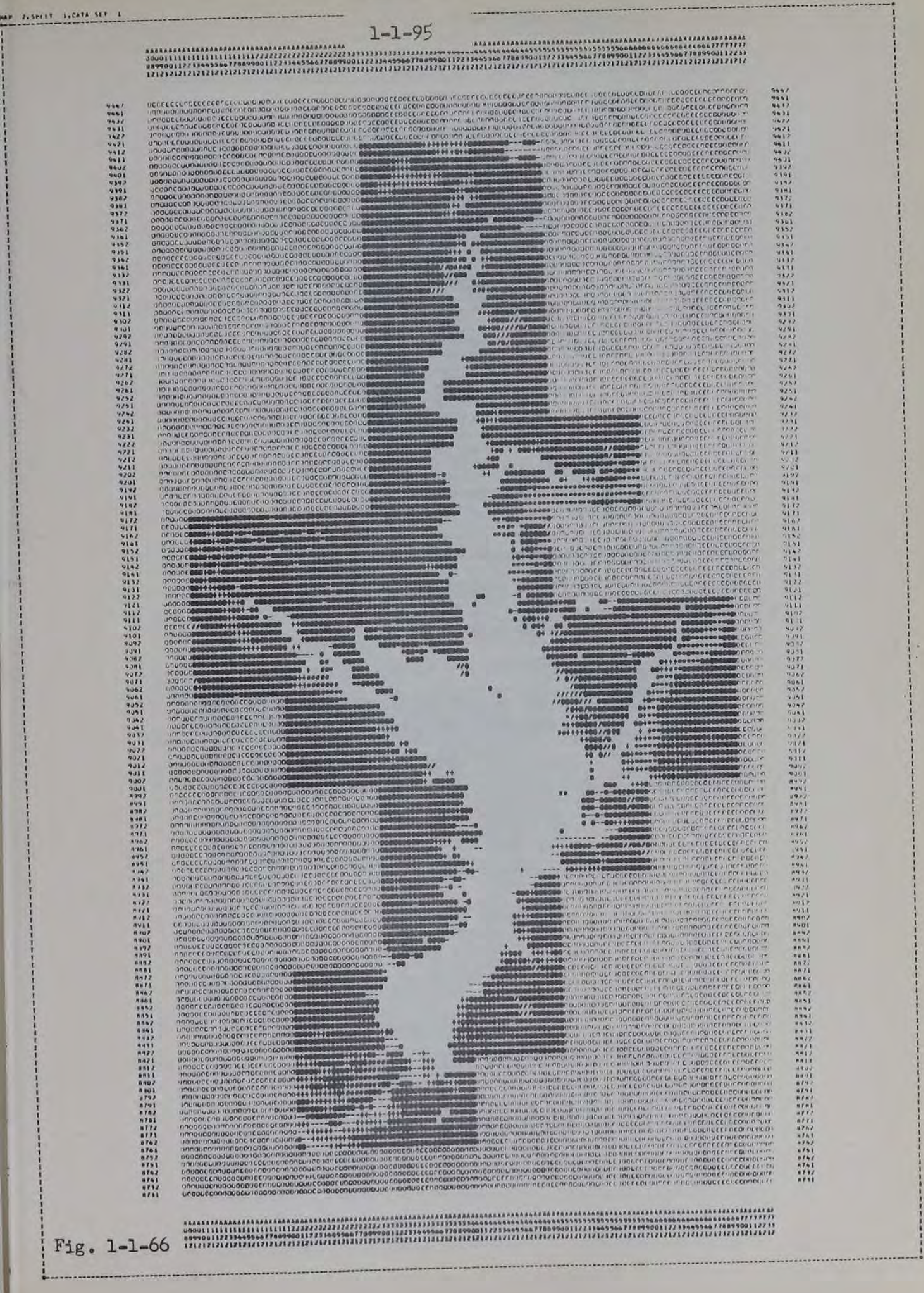


Fig. 1-1-66

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, M.J.ANDERSON
PROGRAMMER-ANALYST G.M.HEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAALANGER,
S.CECIL, D.SEYMOUR, M.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, W.DEPRENGER
KPC M.JONES, P.SWANSON, R.MCELHANEY, D.ALLEN, D.CORNELIUS, D.MILLS

PRIME AGRICULTURAL SOILS

THE SOILS IN THE RESERVOIR STUDY AREA WERE MAPPED ACCORDING TO THEIR RELATIVE PROPENSITY FOR AGRICULTURAL PRODUCTION.

THE SOIL PRODUCTIVITY RATINGS WERE TAKEN FROM TABLE 6 (PAGE 92) OF THE SOIL SURVEY OF STORY COUNTY, IOWA, UNDER THE COLUMN "PRODUCTIVITY UNDER DOMINANT CURRENT PRACTICES". THE BEST CASE WAS TAKEN FOR EACH SOIL LISTED.
EACH SOIL IN THE STUDY AREA WAS GIVEN A SCORE (1 TO 10). THE HIGHER SCORE INDICATES THE BETTER SOILS FOR AGRICULTURAL USE, AND THE LOWER SCORE, THE WORST SOILS.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS. ESSENTIALLY EXISTING CONDITIONS.

SOURCE: SOIL SURVEY OF STORY COUNTY, IOWA, 1970.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 10-20% OF MAXIMUM POSSIBLE SCORE

3 = 20-30% OF MAXIMUM POSSIBLE SCORE

4 = 30-40% OF MAXIMUM POSSIBLE SCORE

5 = 40-50% OF MAXIMUM POSSIBLE SCORE

6 = 50-60% OF MAXIMUM POSSIBLE SCORE

7 = 60-70% OF MAXIMUM POSSIBLE SCORE

8 = 70-80% OF MAXIMUM POSSIBLE SCORE

9 = 80-90% OF MAXIMUM POSSIBLE SCORE

10 = 90-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 8.46 ST. DEV. = 2.07

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

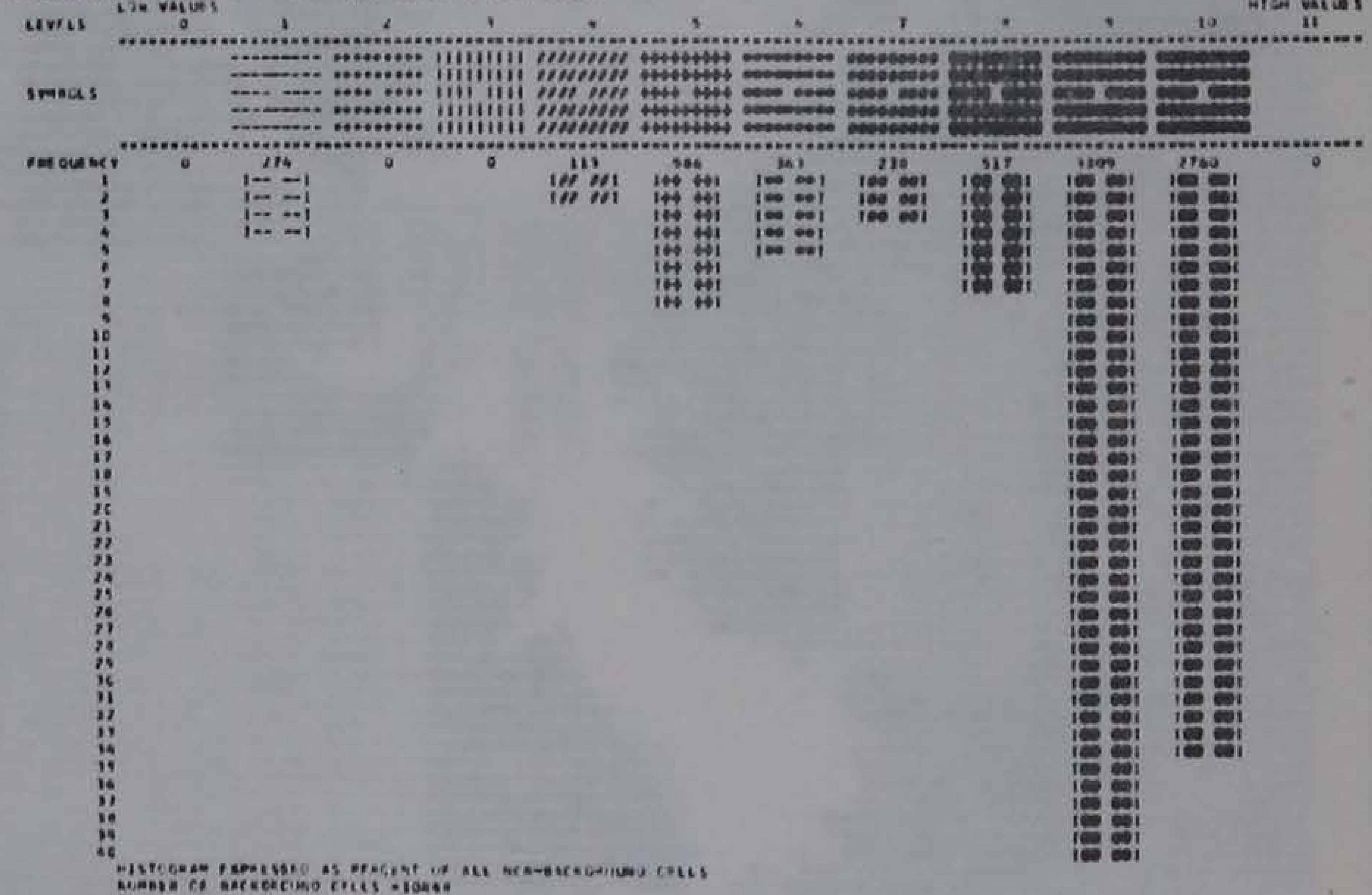
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	0	274	0	0	113	586	361	230	517	1309	2760	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10848

VARIABLE CLASS # 6 IMPORTANCE FACTOR 10

VU 12 WT 13 VU 21 WT 1 VU 27 WT 10 VU 38 WT 7 VU 43 WT 10
VU 45 WT 8 VU 48 WT 10 VU 49 WT 9 VU 55 WT 10 VU 56 WT 8
VU 67 WT 5 VU 65 WT 7 VU 102 WT 1 VU 107 WT 10 VU 108 WT 6
VU 110 WT 7 VU 134 WT 9 VU 149 WT 4 VU 151 WT 1 VU 175 WT 4
VU 187 WT 1 VU 221 WT 1 VU 236 WT 1 VU 302 WT 5 VU

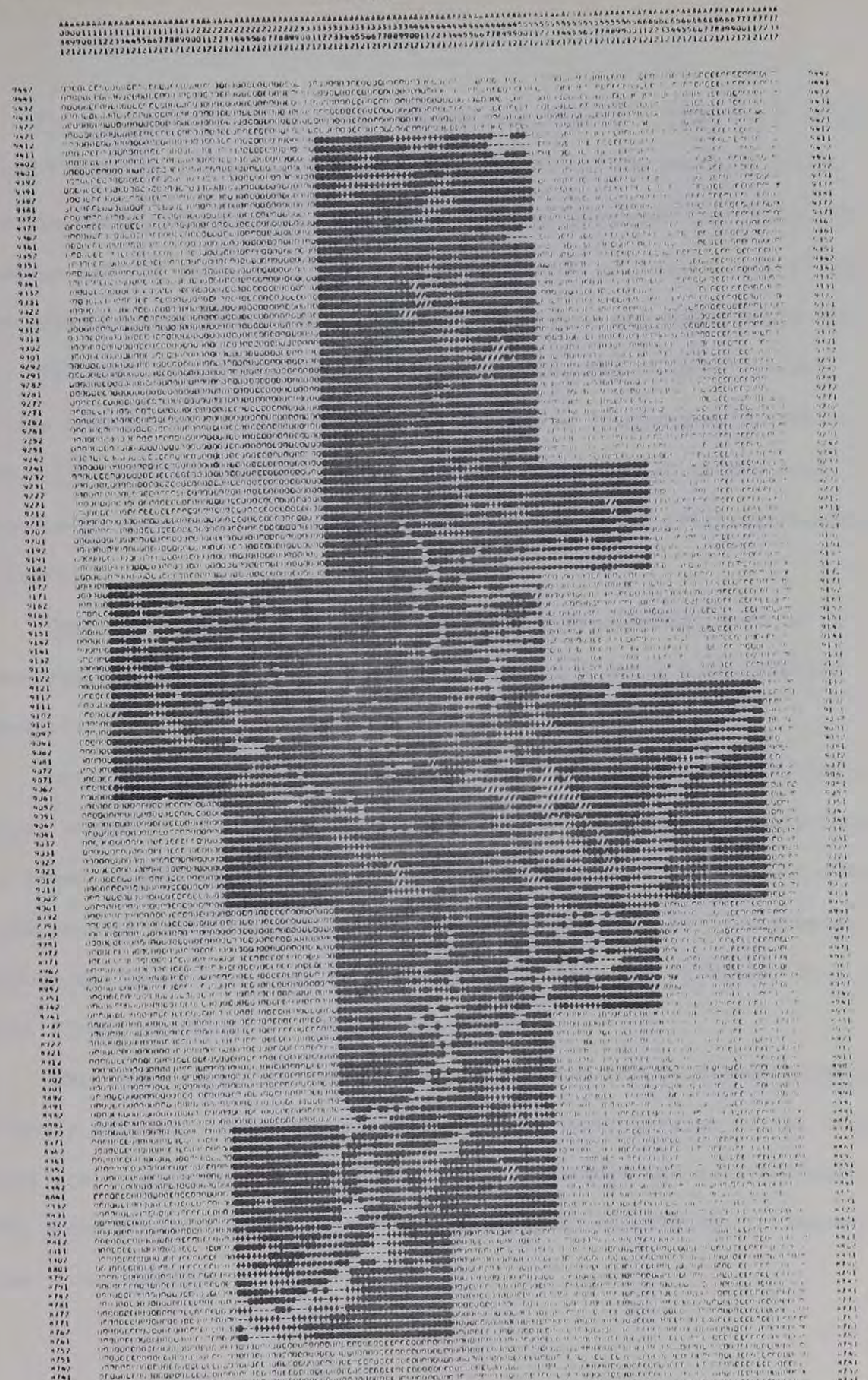


Fig. 1-1-67

Vegetation/Landers (Fig. 1-1-68 through 1-1-73). Most of the overstory timber in the reservoir area is found along the stream valleys. Unfortunately, the maximum pool level (976) of Alternatives #1 and #2 removes most of this (64%). The greatest amount of timber left is the bottomland forest which occurs below the dam site and above Story City.

The pool in Alternative #4 (elevation 965, Fig. 1-1-71) leaves little more of the timber edge, but Alternative #3 (maximum elevation 940, Fig. 1-1-70) leaves a timber edge at the perimeter of the pool, especially on the east side, and would save the major existing vegetation patterns.

There is a decrease in each vegetation type although none is completely inundated. See Appendix 1, Chapter 3 for a more detailed analysis.

Large trees killed by inundation, often called ghost trees, are a major visual problem in reservoir construction. They are usually found in lower elevations of the flood pool in large quantities and, if a major road crosses the reservoir in the same area, are seen by many people. Though the ghost trees may be beneficial for fish and wildlife, they are many times considered unsightly by the public.

This same situation could also occur in the proposed Ames Reservoir. Highway 221 would cross the reservoir in the lower portion of the flood pool and Interstate 35 would parallel the reservoir its entire length. The ghost trees in these sensitive areas should be clearcut to improve the visual quality.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-99

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPPENGER
KPO N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.PERNELIUS, D.HILLS

VEGETATION/LANDERS - ALTERNATIVE #1

THE VEGETATION TYPE FOR EACH CELL WAS INTERPRETED FROM THE AERIAL PHOTOGRAPHS AND THEN CLOSELY CHECKED WITH FIELD OBSERVATIONS. THE CLASSIFICATION SYSTEM WAS SET UP TO INCLUDE ALL VEGETATION TYPES LIKELY TO BE FOUND IN THE STATE AND IS EXPANDABLE. THE PRIMARY, SECONDARY, AND TERTIARY VEGETATION TYPES (BY AREA) WERE RECORDED WITH THE AREA IN THE CELL OF EACH EXPRESSED AS A PERCENTAGE. E.G. 60% PRIMARY TYPE, 30% SECONDARY TYPE, AND 10% TERTIARY TYPE. THE VEGETATION TYPES SHOWN ARE CONSIDERED AS COMMON TO THE SITE AND IMPORTANT FOR VEGETATION ANALYSIS.

ALTERNATIVE 01 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO 01.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
GROUND SURVEY, 3-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1917.

LEGEND

0 = WATER

1 = OTHER

2 = CULTIVATED (3100 - 3500)

3 = PASTURE (4100)

4 = PRAIRIE/MARSH (4200 - 4500)

5 = UNIQUE (5100 - 5800)

6 = EDGE (6100 - 6600)

7 = WOODED PASTURE (7100 - 7400)

8 = PASTURE-LARGE TREES (7500 - 7600)

9 = UPLAND FOREST (9100 - 9300)

10 = BOTTOMLAND FOREST (9400 - 9500)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.42 ST. DEV. = 5.61

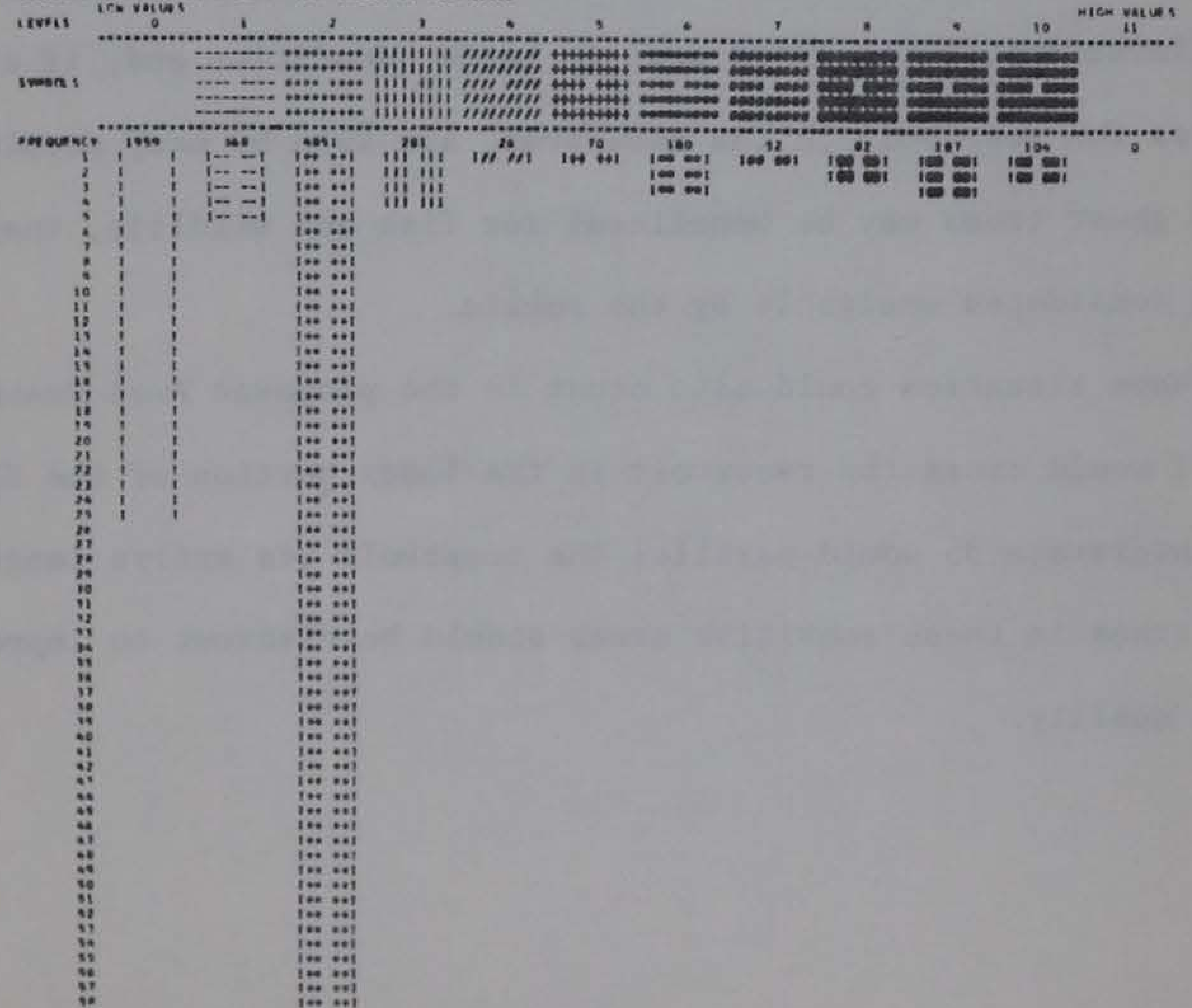
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10068

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

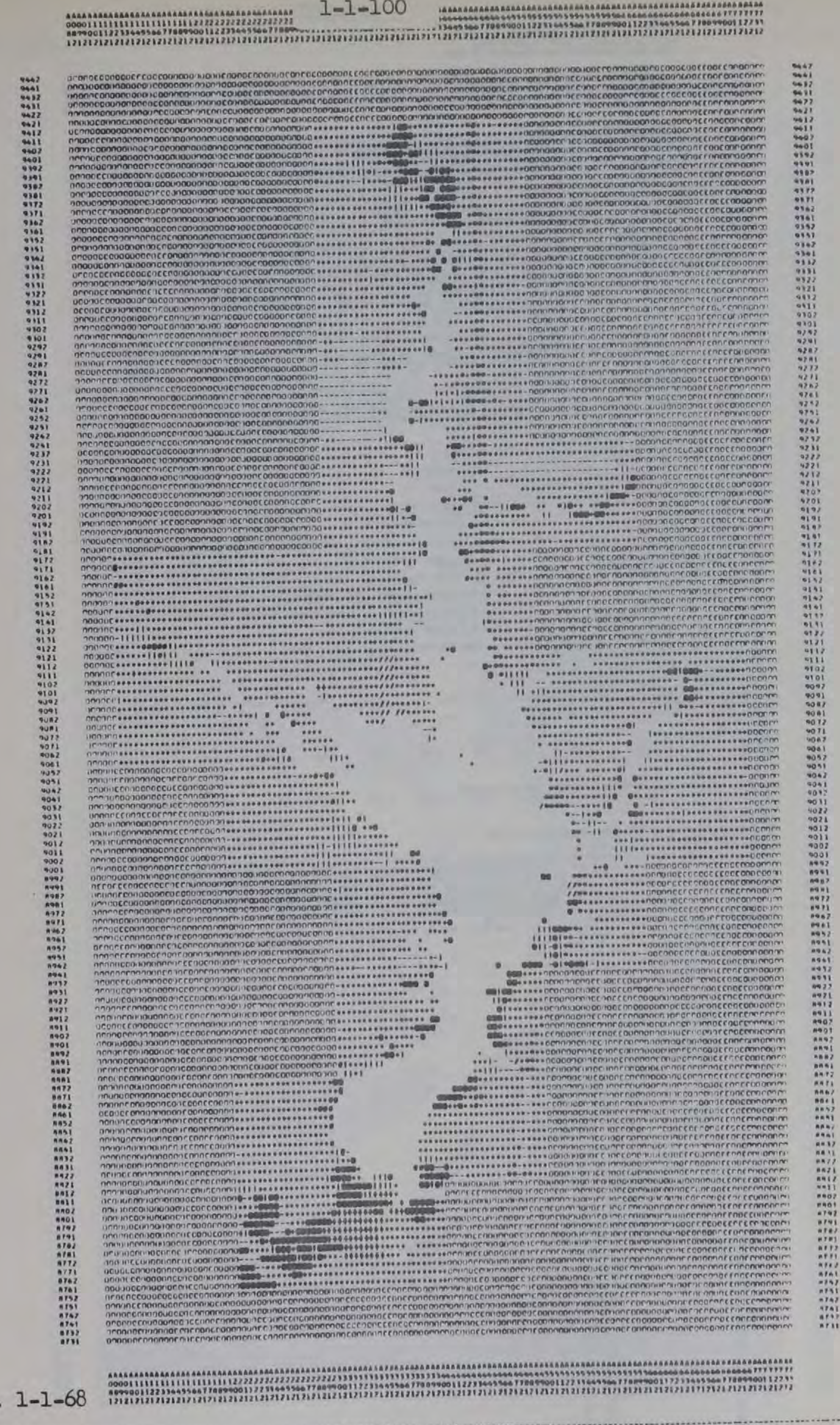


Fig. 1-1-68

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.GRAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUBIL, D.FAHLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPRENGER
KPO M.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.WILLS

VEGETATION/LANDERS - ALTERNATIVE #2

THE VEGETATION TYPE FOR EACH CELL WAS INTERPRETED FROM THE AERIAL PHOTOGRAPHS AND THEN CLOSELY CHECKED WITH FIELD OBSERVATIONS. THE CLASSIFICATION SYSTEM WAS SET UP TO INCLUDE ALL VEGETATION TYPES LIKELY TO BE FOUND IN THE STATE AND IS EXPANDABLE. THE PRIMARY, SECONDARY, AND TERTIARY VEGETATION TYPES (BY AREA) WERE RECORDED WITH THE AREA IN THE CELL OF EACH EXPRESSED AS A PERCENTAGE. E.G. 60% PRIMARY TYPE, 30% SECONDARY TYPE, AND 10% TERTIARY TYPE. THE VEGETATION TYPES SHOWN ARE CONSIDERED AS COMMON TO THE SITE AND IMPORTANT FOR VEGETATION ANALYSIS.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
GROUND SURVEY, 3-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = CULTIVATED (3100 - 3900)

3 = PASTURE (4100)

4 = PRAIRIE/MARSH (4200 - 4500)

5 = UNIQUE (5100 - 5000)

6 = BOGS (6100 - 6600)

7 = WOODED PASTURE (7100 - 7400)

8 = PASTURE-LARGE TREES (7500 - 7600)

9 = UPLAND FOREST (9100 - 9300)

10 = BOTTOMLAND FOREST (9400 - 9500)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.38 ST. DEV. = 5.62

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

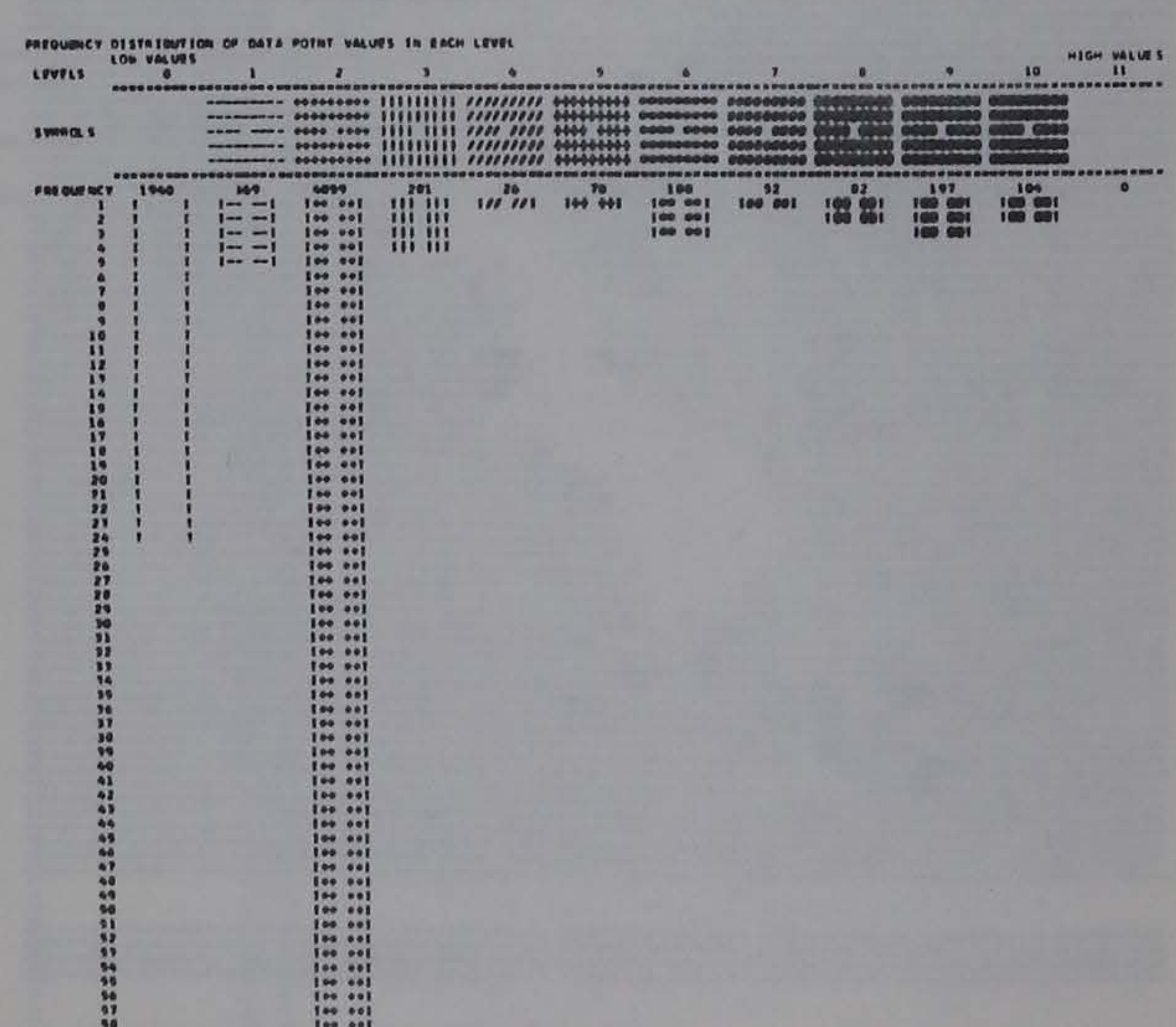
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1940	169	4099	201	26	70	100	52	82	197	104	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10060

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

VU2000 WT 1 VU3000 WT 2 VU4000 WT 1 VU4100 WT 3 VU4900 WT 4
VU5000 WT 5 VU6000 WT 6 VU7000 WT 7 VU7500 WT 8 VU8000 WT 1
VU9100 WT 9 VU9600 WT 10 VU0000 WT 1 WT

AP 3,SHEET 1,DATA SET 1

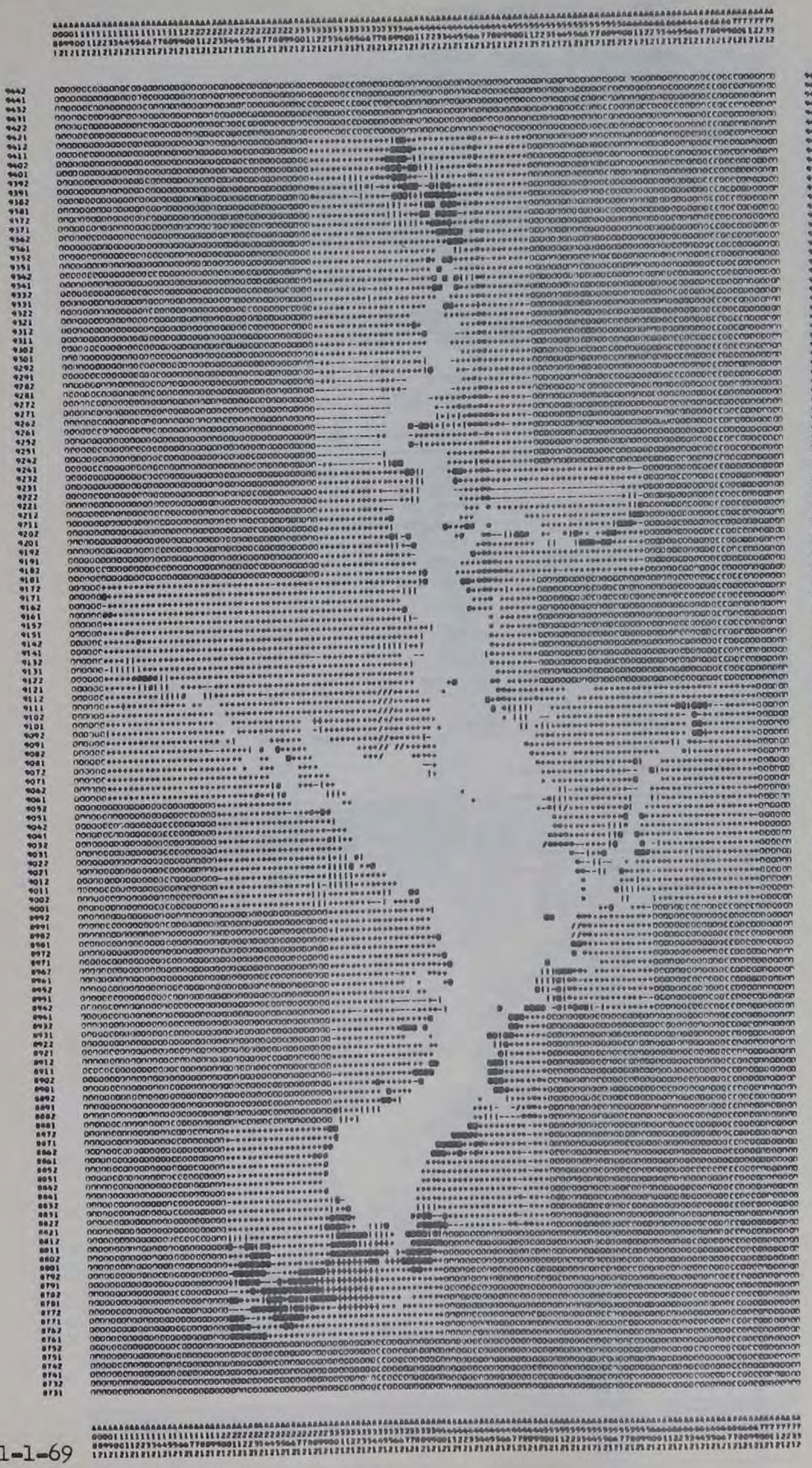


Fig. 1-1-69

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.DEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAHLANDER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.HENRY
GRAPHICS C.J.URAN, D.DEPRENGER
KPO M.JONES, E.SWANSON, D.MESPPNER, D.ALLEN, D.PERNELIUS, D.MILLS

VEGETATIONAL ANDERS - ALTERNATIVE 03

THE VEGETATION TYPE FOR EACH CELL WAS INTERPRETED FROM THE AERIAL PHOTOGRAPHS AND THEN CLOSELY CHECKED WITH FIELD OBSERVATIONS. THE CLASSIFICATION SYSTEM WAS SET UP TO INCLUDE ALL VEGETATION TYPES LIKELY TO BE FOUND IN THE STATE AND IS EXPANDABLE. THE PRIMARY, SECONDARY, AND TERTIARY VEGETATION TYPES (BY AREAS) WERE RECORDED WITH THE AREA IN THE CELL OF EACH EXPRESSED AS A PERCENTAGE. E.G. 60% PRIMARY TYPE, 30% SECONDARY TYPE, AND 10% TERTIARY TYPE. THE VEGETATION TYPES SHOWN ARE CONSIDERED AS COMMON TO THE SITE AND IMPORTANT FOR VEGETATION ANALYSIS.

ALTERNATIVE 03 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY. ELEVATION 940.

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
GROUND SURVEY, 3-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = CULTIVATED (9100 - 9900)

3 = PASTURE (4100)

4 = PRAIRIE/MARSH (4200 - 4900)

5 = UNIQUE (9100 - 9800)

6 = EDGE (6100 - 6600)

7 = WOODED PASTURE (7100 - 7400)

8 = PASTURE-LARGE TREES (7500 - 7600)

9 = UPLAND FOREST (9100 - 9300)

10 = BOTTOMLAND FOREST (9400 - 9900)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.14 ST. DEV. = 3.03

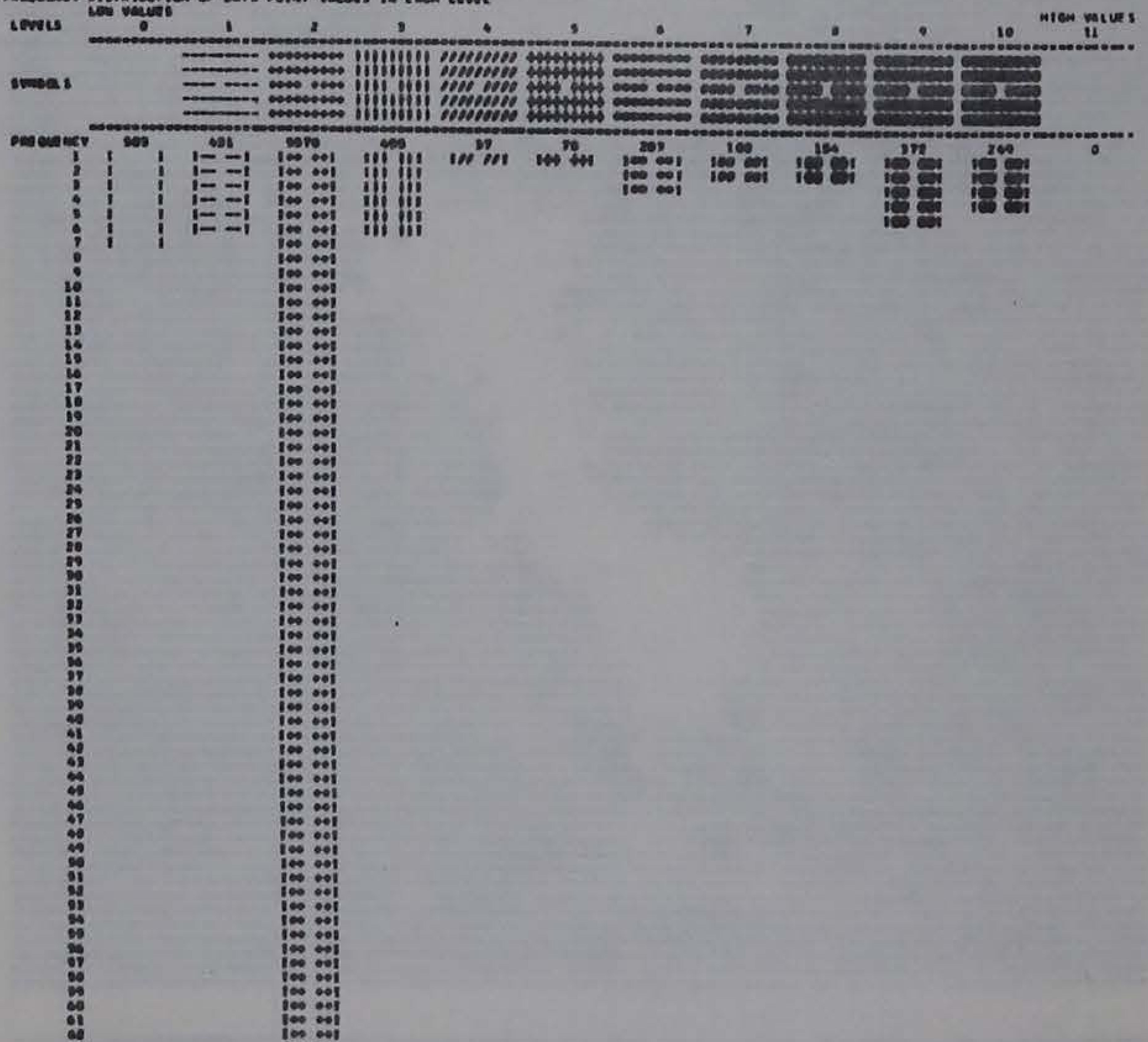
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10046

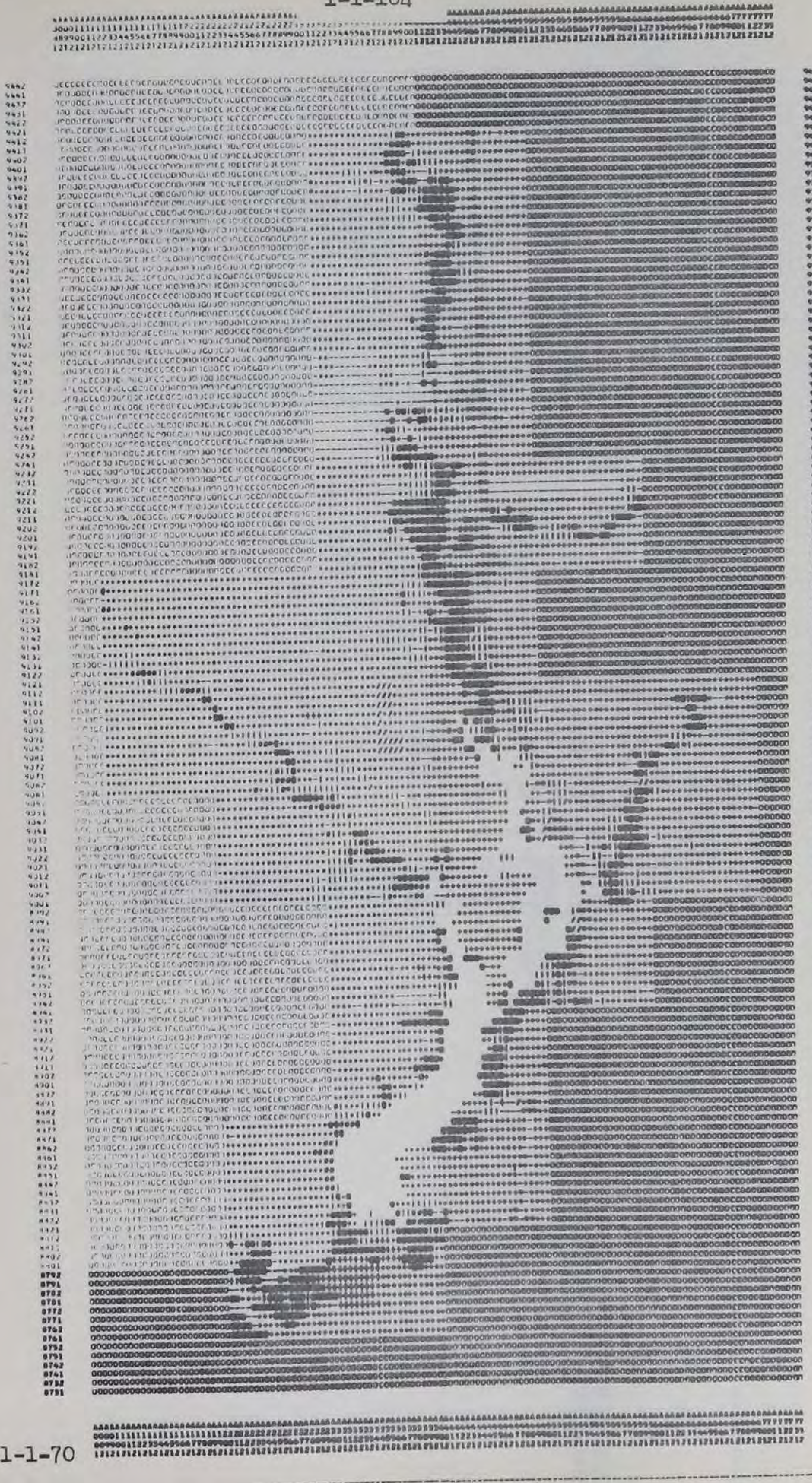


Fig. 1-1-70

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.STRATRA, P.F.ANDERSEN
PROGRAMMER-ANALYST G.M.PEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAXLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.KEARY
GRAPHICS C.J.UBAN, D.DEPREAGER
KPC N.JONES, E.SWANSON, R.PCEPPNER, D.ALLEN, C.FERNELIUS, D.MILLS

VEGETATION/LANDERS - ALTERNATIVE #4

THE VEGETATION TYPE FOR EACH CELL WAS INTERPRETED FROM THE AERIAL PHOTOGRAPHS AND THEN CLOSELY CHECKED WITH FIELD OBSERVATIONS. THE CLASSIFICATION SYSTEM WAS SET UP TO INCLUDE ALL VEGETATION TYPES LIKELY TO BE FOUND IN THE STATE AND IS EXPANDABLE. THE PRIMARY, SECONDARY, AND TERTIARY VEGETATION TYPES (BY AREA) WERE RECORDED WITH THE AREA IN THE CELL OF EACH EXPRESSED AS A PERCENTAGE. E.G. 60% PRIMARY TYPE, 30% SECONDARY TYPE, AND 10% TERTIARY TYPE. THE VEGETATION TYPES SHOWN ARE CONSIDERED AS COMMON TO THE SITE AND IMPORTANT FOR VEGETATION ANALYSIS.

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.4 INCHES AND SUBIMPOUNDMENTS
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
GROUND SURVEY, 3-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = CULTIVATED (3100 - 3500)

3 PASTURE (4100)

4 = PRAIRIE/MARSH (4200 - 4500)

5 = UNIQUE (5100 - 5800)

6 = ROCK (6100 - 6600)

7 = WOODED PASTURE (7100 - 7400)

8 = PASTURE-LARGE TREES (7500 - 7600)

9 = UPLAND FOREST (9100 - 9300)

10 = BOTTOMLAND FOREST (9400 - 9500)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.65 ST. DEV. = 5.05

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

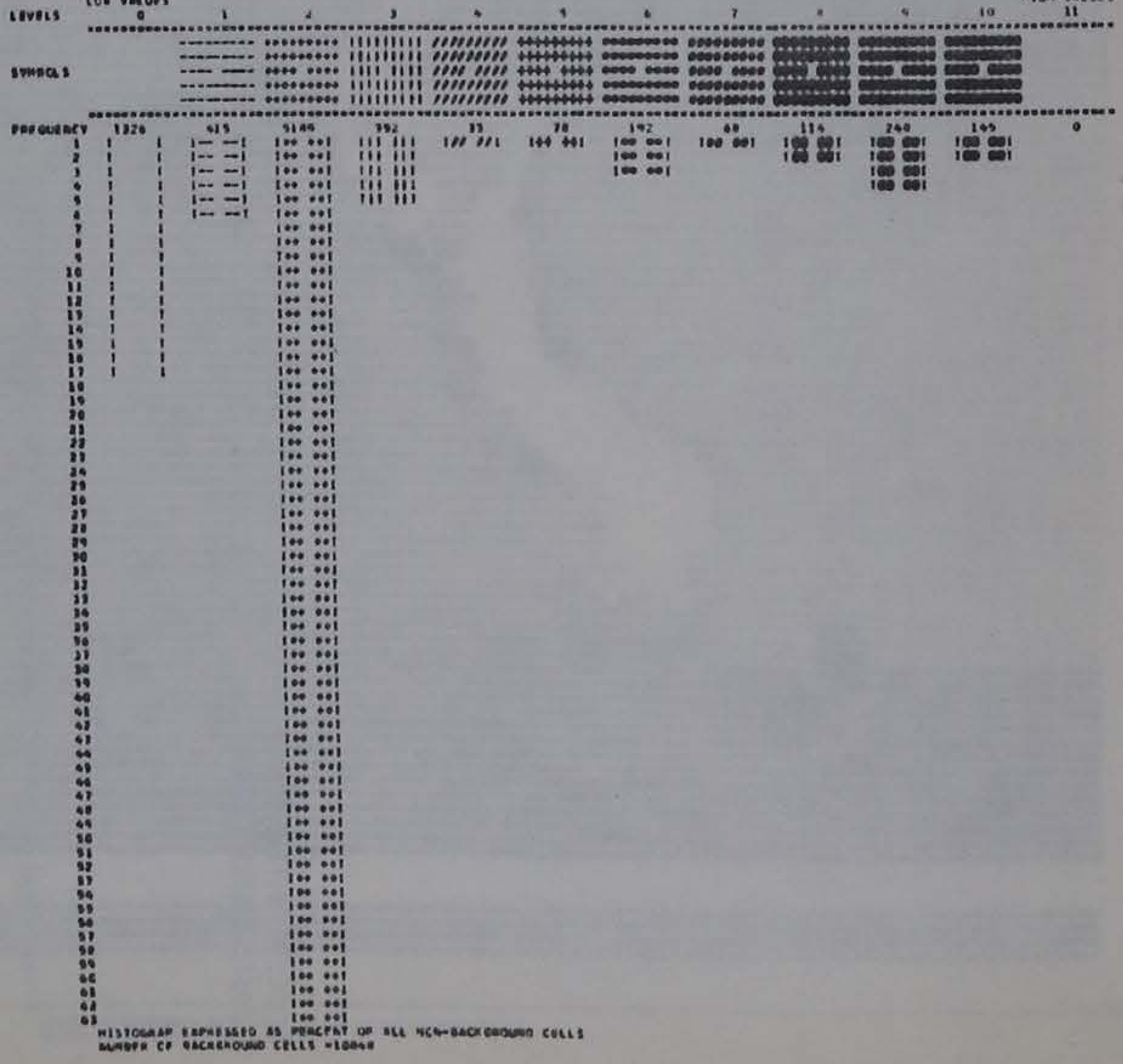
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1326	615	5149	392	33	78	192	68	114	240	145	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10848

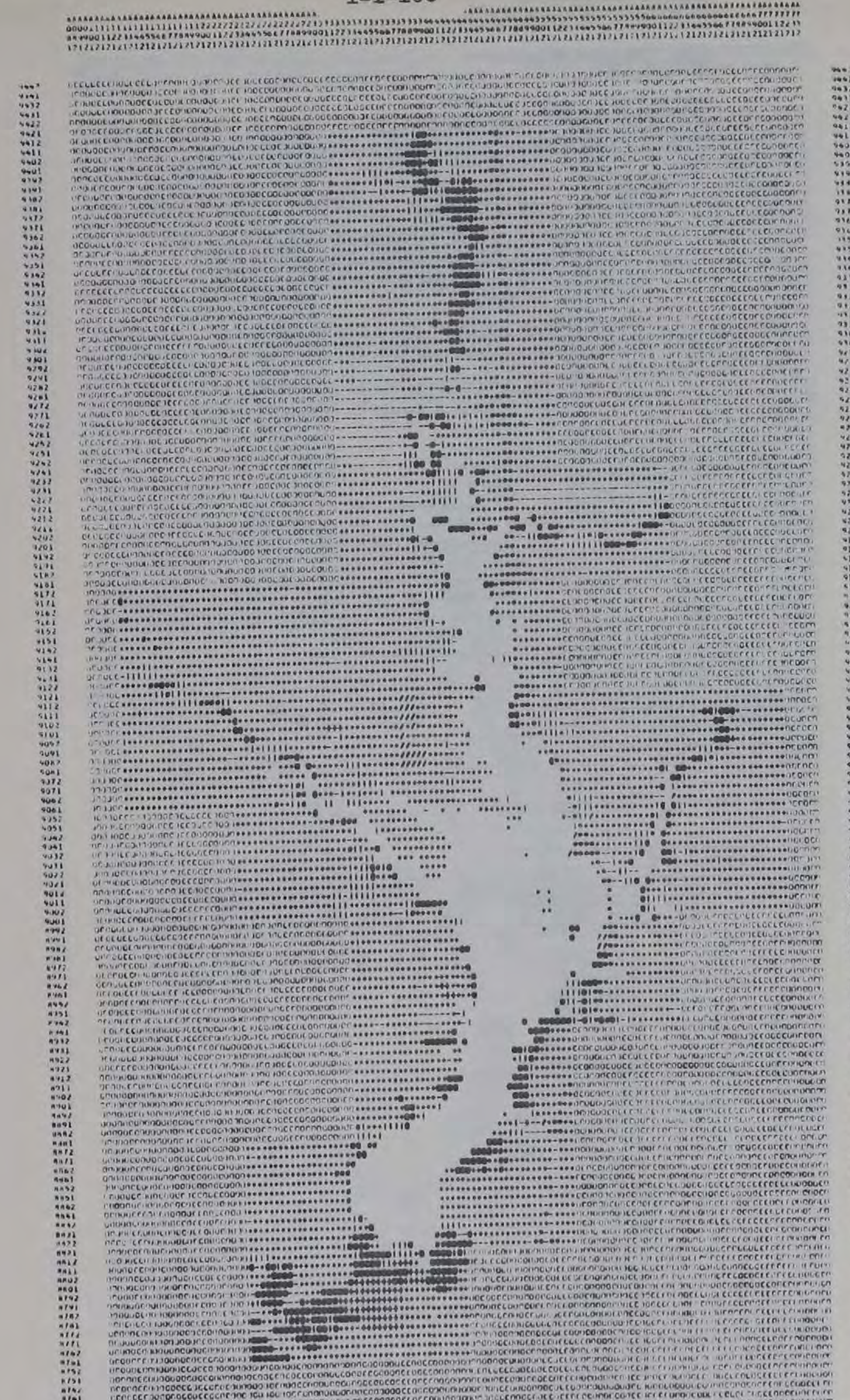


Fig. 1-1-71

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.PARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FENNELIUS, D.PILLS

VEGETATION/LANDERS - ALTERNATIVE #5

THE VEGETATION TYPE FOR EACH CELL WAS INTERPRETED FROM THE AERIAL PHOTOGRAPHS AND THEN CLOSELY CHECKED WITH FIELD OBSERVATIONS. THE CLASSIFICATION SYSTEM WAS SET UP TO INCLUDE ALL VEGETATION TYPES LIKELY TO BE FOUND IN THE STATE AND IS EXPANDABLE. THE PRIMARY, SECONDARY, AND TERTIARY VEGETATION TYPES (BY AREA) WERE RECORDED WITH THE AREA IN THE CELL OF EACH EXPRESSED AS A PERCENTAGE. E.G. 60% PRIMARY TYPE, 30% SECONDARY TYPE, AND 10% TERTIARY TYPE. THE VEGETATION TYPES SHOWN ARE CONSIDERED AS COMMON TO THE SITE AND IMPORTANT FOR VEGETATION ANALYSIS.

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
GROUND SURVEY, 3-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = CULTIVATED (3100 - 3500)

3 = PASTURE (4100)

4 = PRAIRIE/MARSH (4200 - 4900)

5 = UNIQUE (5100 - 5800)

6 = EDGE (6100 - 6600)

7 = WOODED PASTURE (7100 - 7400)

8 = PASTURE-LARGE TREES (7500 - 7600)

9 = UPLAND FOREST (9100 - 9300)

10 = BOTTOMLAND FOREST (9400 - 9500)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.95 ST. DEV. = 2.85

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

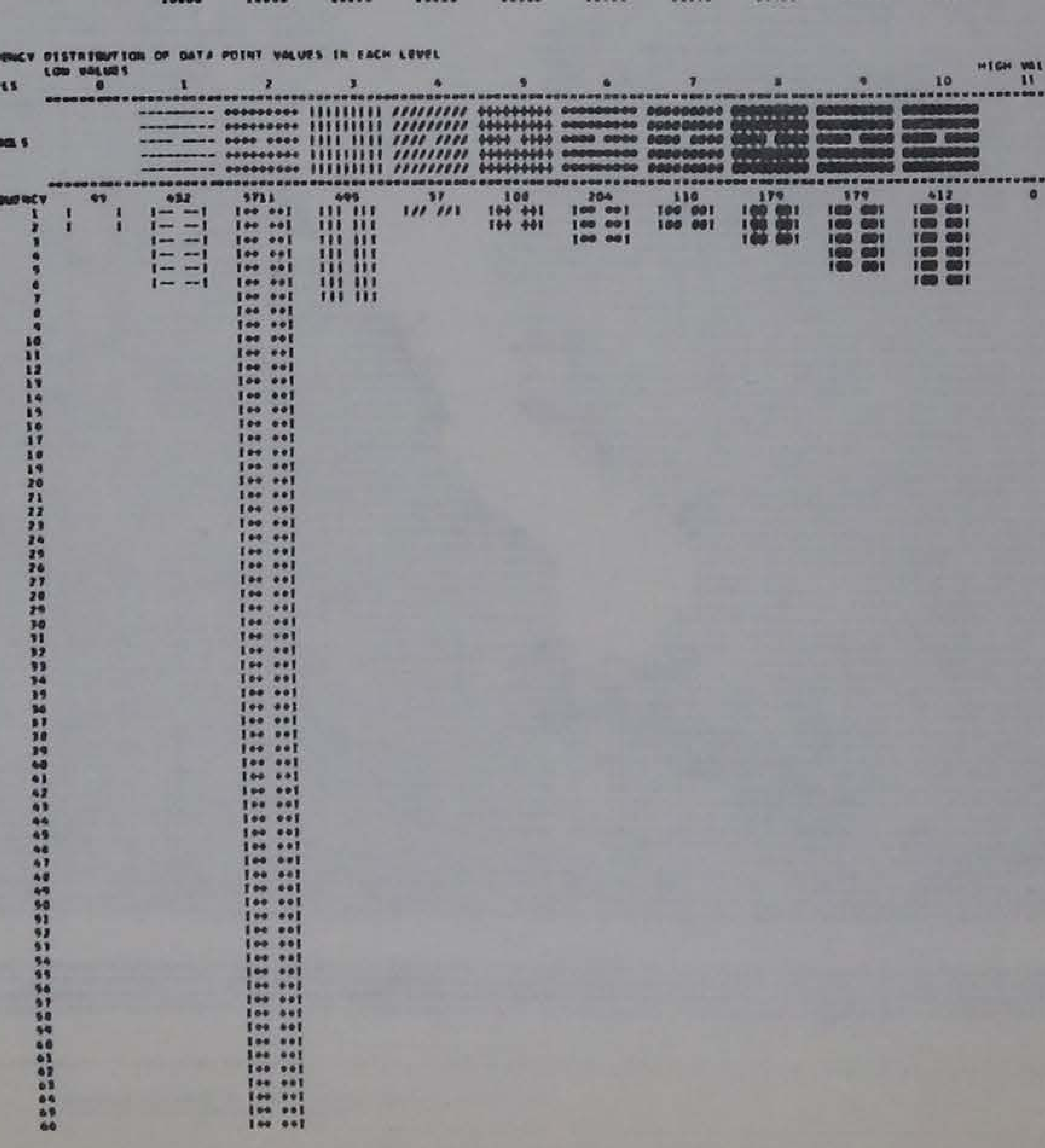
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	99	482	5711	495	37	108	204	110	179	179	412	0

SYMBOLS



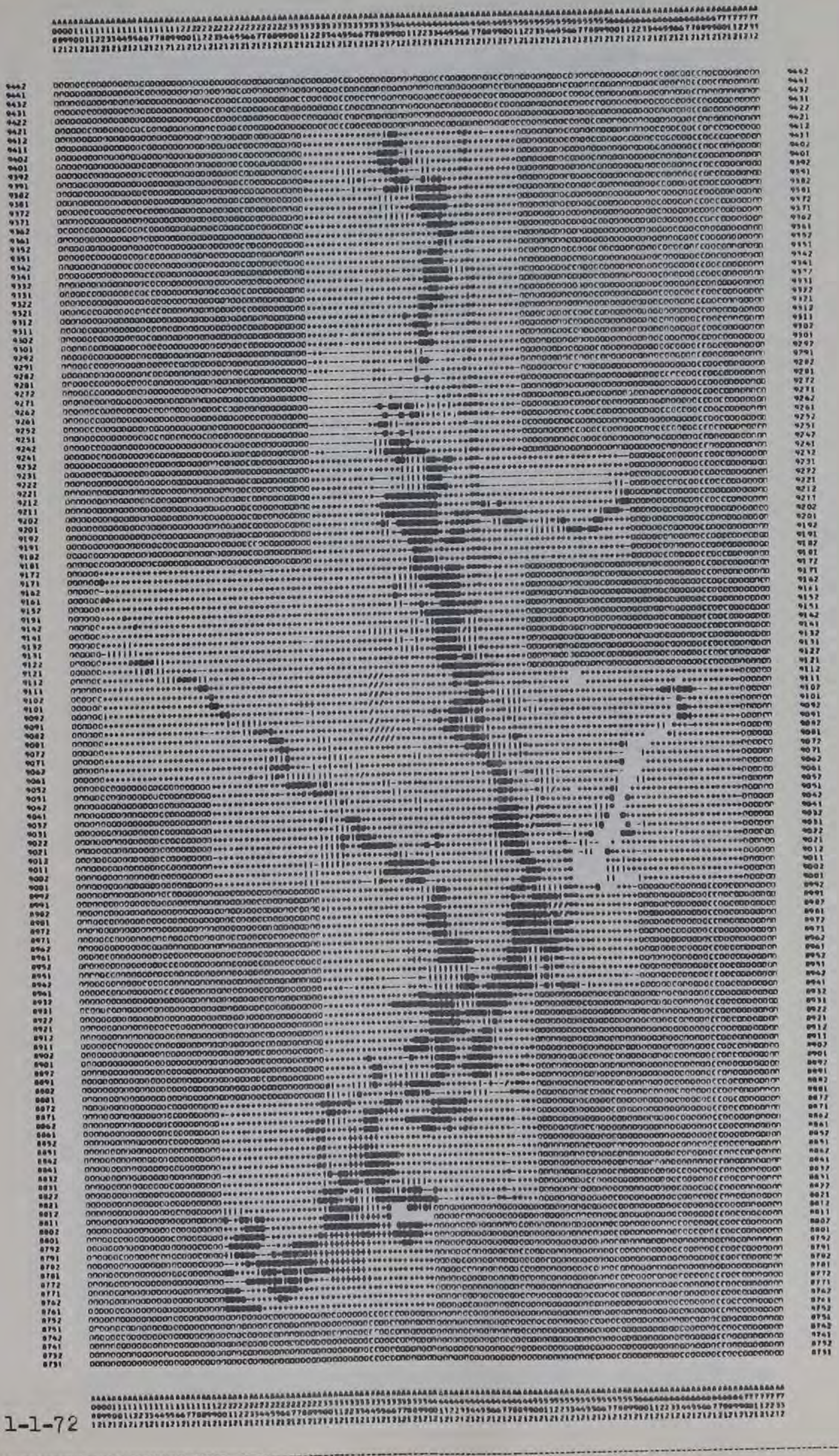


Fig. 1-1-72

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.UBAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, R.MCEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

VEGETATION/LANDERS - ALTERNATIVE 06

THE VEGETATION TYPE FOR EACH CELL WAS INTERPRETED FROM THE AERIAL PHOTOGRAPHS AND THEN CLOSELY CHECKED WITH FIELD OBSERVATIONS. THE CLASSIFICATION SYSTEM WAS SET UP TO INCLUDE ALL VEGETATION TYPES LIKELY TO BE FOUND IN THE STATE AND IS EXPANDABLE. THE PRIMARY, SECONDARY, AND TERTIARY VEGETATION TYPES (BY AREA) WERE RECORDED WITH THE AREA IN THE CELL OF EACH EXPRESSED AS A PERCENTAGE. E.G. 60% PRIMARY TYPE, 30% SECONDARY TYPE, AND 10% TERTIARY TYPE. THE VEGETATION TYPES SHOWN ARE CONSIDERED AS COMMON TO THE SITE AND IMPORTANT FOR VEGETATION ANALYSIS.

ALTERNATIVE 06 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
GROUND SURVEY, 5-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = CULTIVATED (3100 - 3500)

3 = PASTURE (4100)

4 = PRAIRIE/MARSH (4200 - 4900)

5 = UNIQUE (5100 - 5800)

6 = EDGE (6100 - 6600)

7 = WOODED PASTURE (7100 - 7400)

8 = PASTURE-LARGE TREES (7500 - 7600)

9 = UPLAND FOREST (9100 - 9300)

10 = BOTTOMLAND FOREST (9400 - 9900)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 3.13 ST. DEV. = 2.51

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

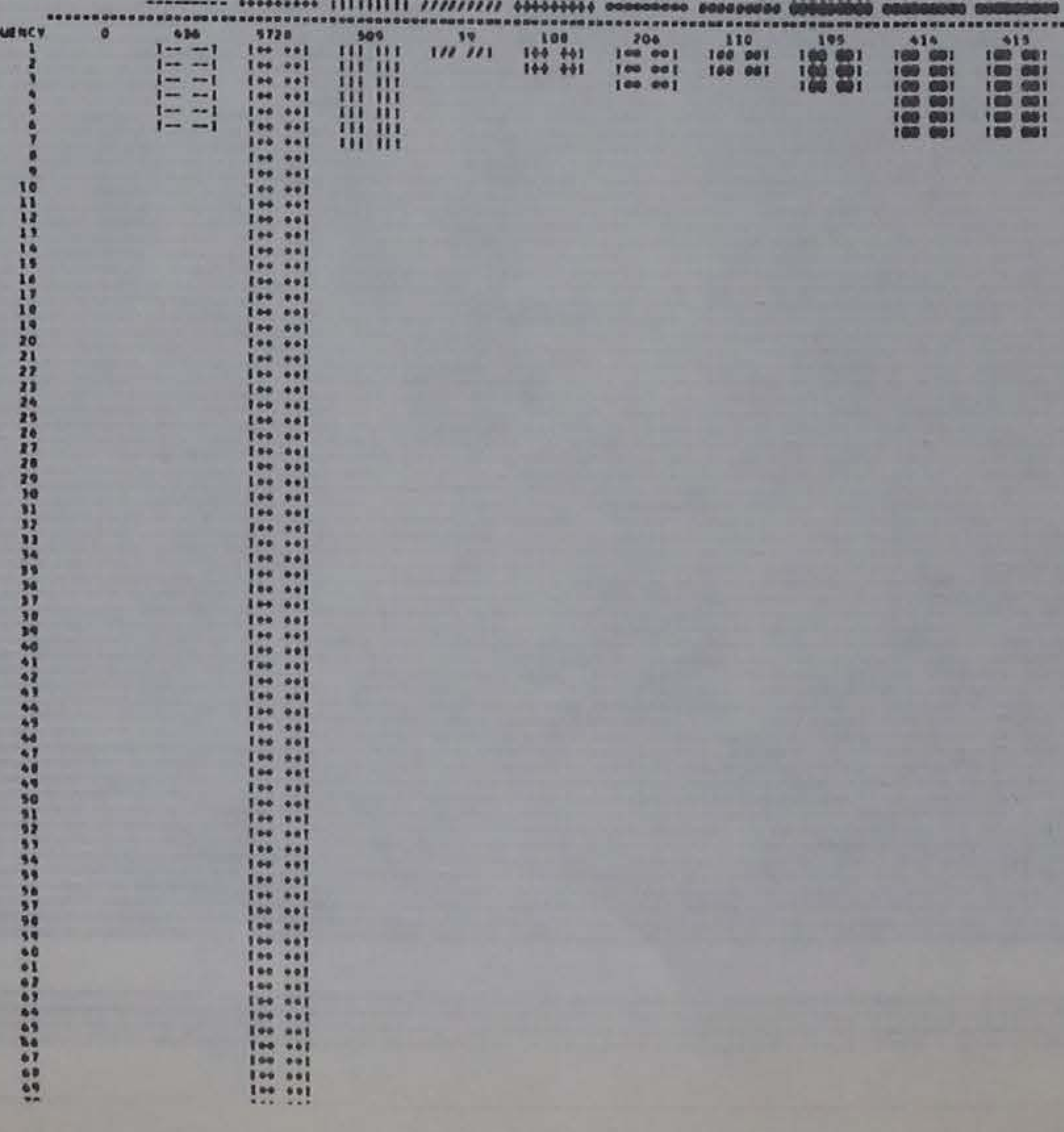
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
SYMBOLS												
FREQUENCY	0	436	5720	509	39	108	206	110	195	414	415	0



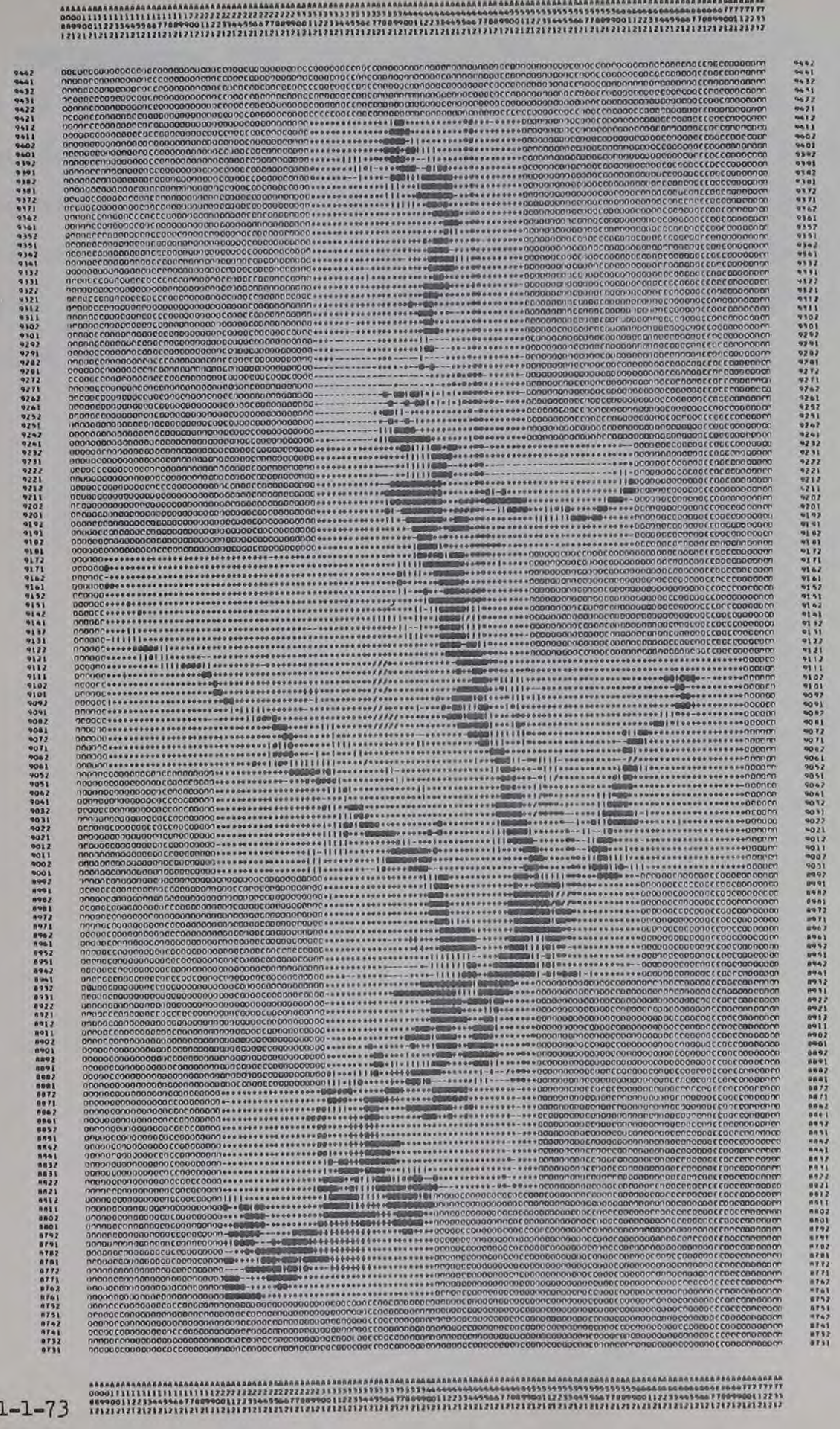


Fig. 1-1-73

Vegetation/Pudil (Fig. 1-1-74 thru 1-1-79). Another set of vegetation data was compiled by Al Pudil, a graduate student in the Department of Landscape Architecture at Iowa State. The technique involved recording the primary and secondary vegetation type for each cell grided on each aerial photograph. No field work was done for this data set in contrast to the data compiled by Landers, Cecil, and Groneman (see Appendix 1, Chapter 3), which relied, at least in part, on field surveys.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, C.FAALANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPPERGER
KPC N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

VEGETATION/PUCIL (ALTERNATIVE #1)

NATURAL TREE COVER TYPES IN THE RESERVOIR SITE WERE MAPPED FOR COMPARISON WITH THOSE IN STORY COUNTY. COMPARISON OF COVER AREAS HAS ALSO BEEN MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND ESTIMATES FROM A SAMPLING METHOD (THOMPSON, 1972).

TREE COVER IN THE COUNTY HAS BEEN MAPPED (PUCIL, 1972) FROM AERIAL PHOTOGRAPHS (1939, 1953, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY. PLANTED TREE PATTERNS (WINDBREAKS, RESIDENTIAL, ORCHARDS, FARMYARDS, WOODLOTS, ETC.) AND UNDERSTORY VEGETATION ARE NOT SHOWN.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.

LEGEND

0 = WATER
1 = OTHER
2 = ROADSIDE
3 = SECOND GROWTH
4 = SCATTERED TREES
5 = STRINGER
6 = STRIP FOREST
7 = URBAN (OPEN FOREST)
8 = OPEN FOREST
9 = URBAN FOREST
10 = FOREST
11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -1.31 ST. DEV. = 5.13

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

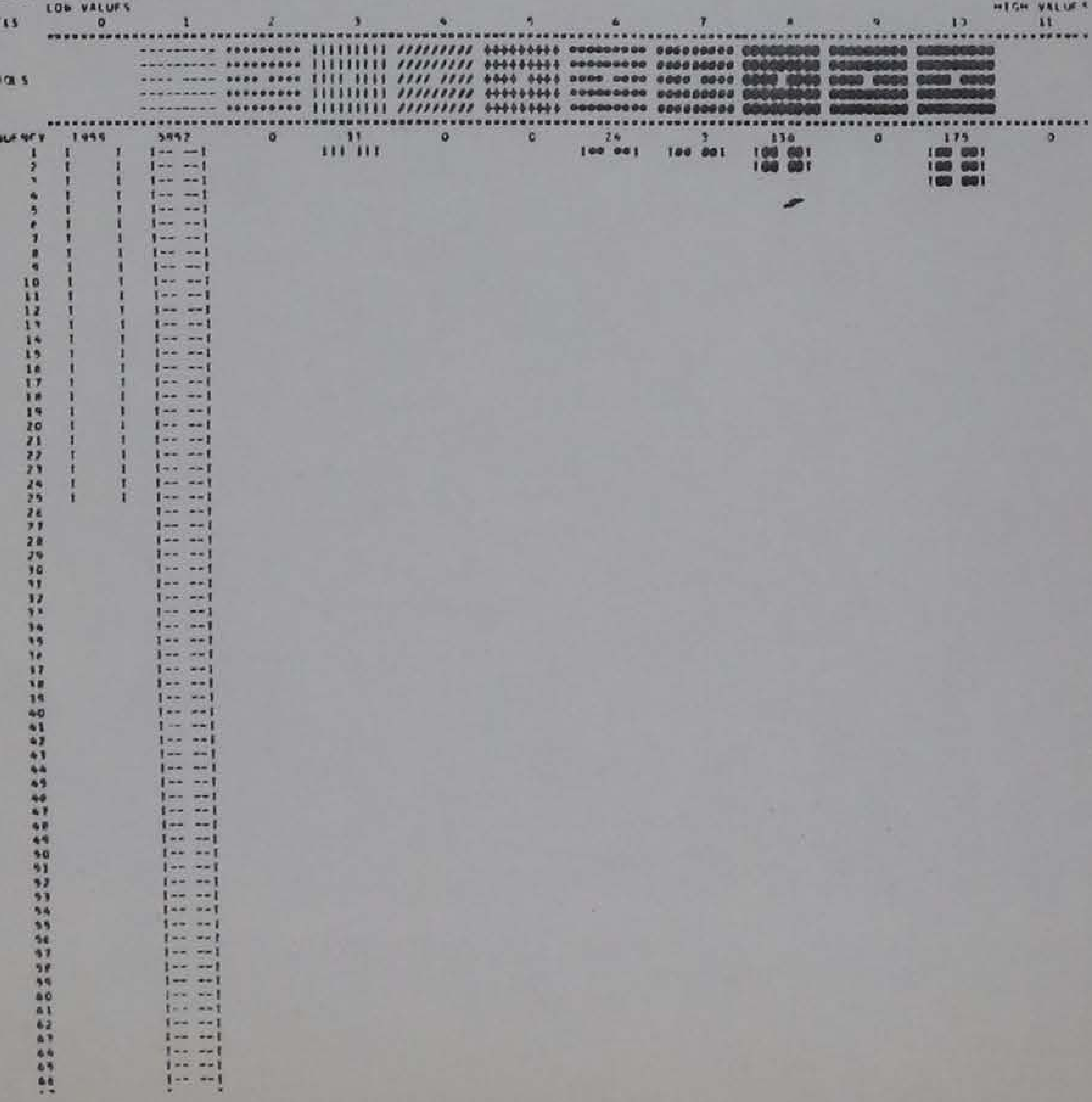
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	1955	5952	0	11	0	0	24	3	136	0	175	0



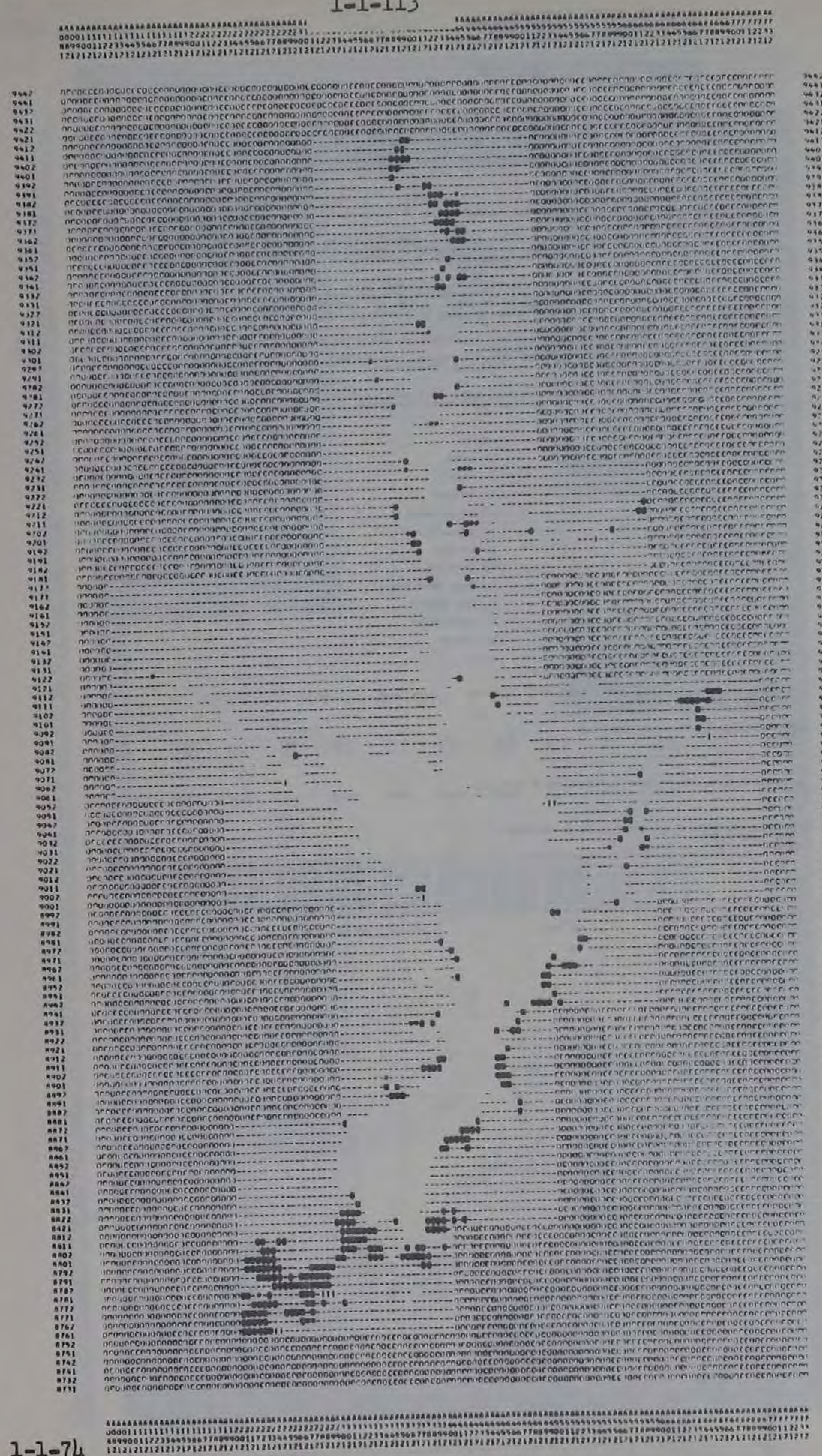


Fig. 1-1-74

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.W.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
CPO M.JONES, E.SWANSON, R.HOEPPNER, G.ALLEN, D.PERNELIUS, D.HILLS

VEGETATION/PUDIL (ALTERNATIVE #2)

NATURAL TREE COVER TYPES IN THE RESERVOIR SITE WERE MAPPED FOR COMPARISON WITH THOSE IN STORY COUNTY. COMPARISON OF COVER AREAS HAS ALSO BEEN MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND ESTIMATES FROM A SAMPLING METHOD (THOMPSON, 1972).

TREE COVER IN THE COUNTY HAS BEEN MAPPED (PUDIL, 1972) FROM AERIAL PHOTOGRAPHS (1930, 1953, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY. PLANTED TREE PATTERNS (WINDBREAKS, RESIDENTIAL, ORCHARDS, FARMYARDS, WOODLOTS, ETC.) AND UNDERSTORY VEGETATION ARE NOT SHOWN.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1967.

LEGEND

0 = WATER

1 = OTHER

2 = ROADSIDE

3 = SECOND GROWTH

4 = SCATTERED TREES

5 = STRINGER

6 = STRIP FOREST

7 = URBAN (OPEN FOREST)

8 = OPEN FOREST

9 = URBAN FOREST

10 = FOREST

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -1.23 ST. DEV. = 5.12

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

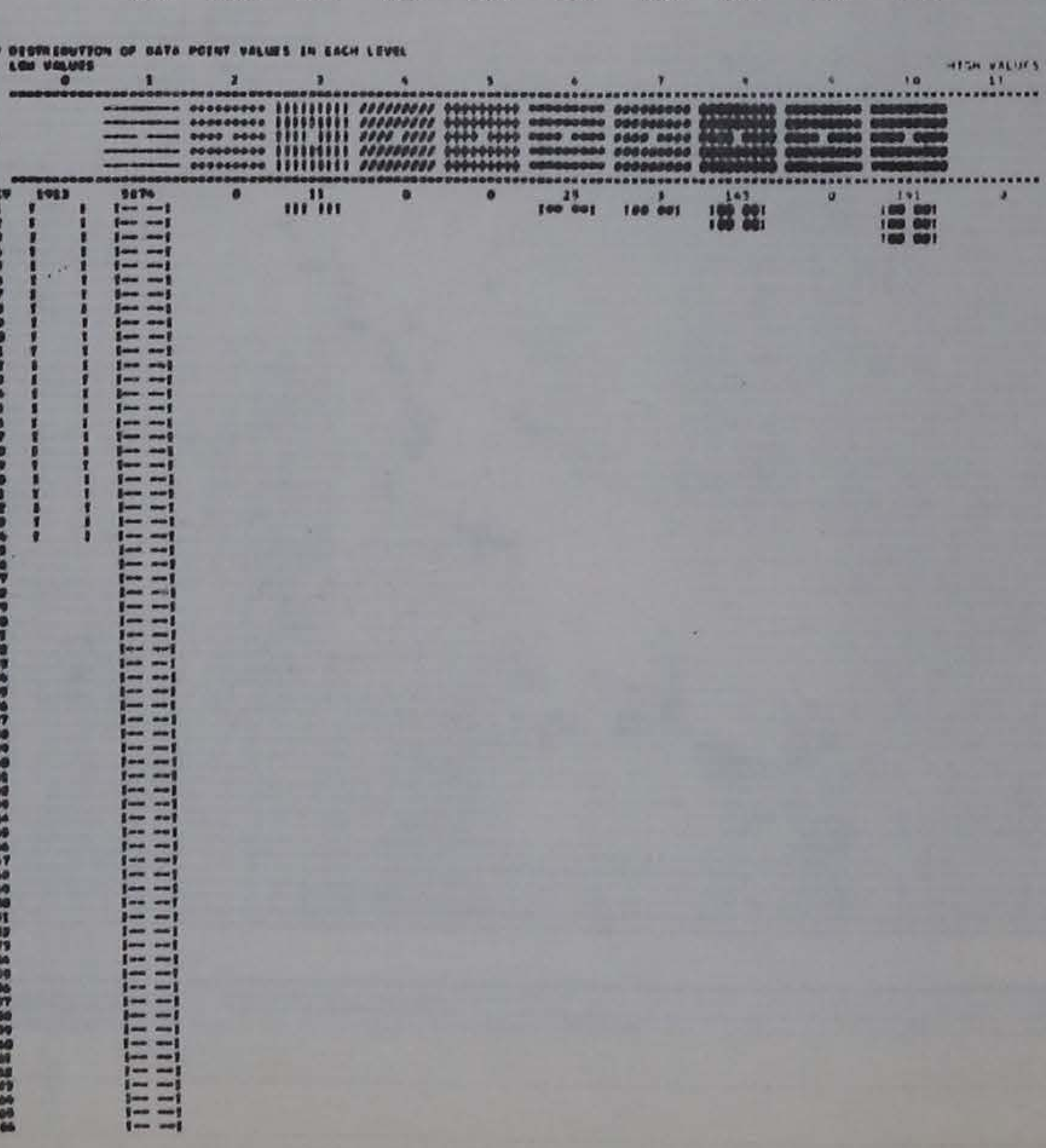
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES										HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
FREQUENCY	1913	5874	0	11	0	0	25	3	143	0	191	2

SYMBOLS



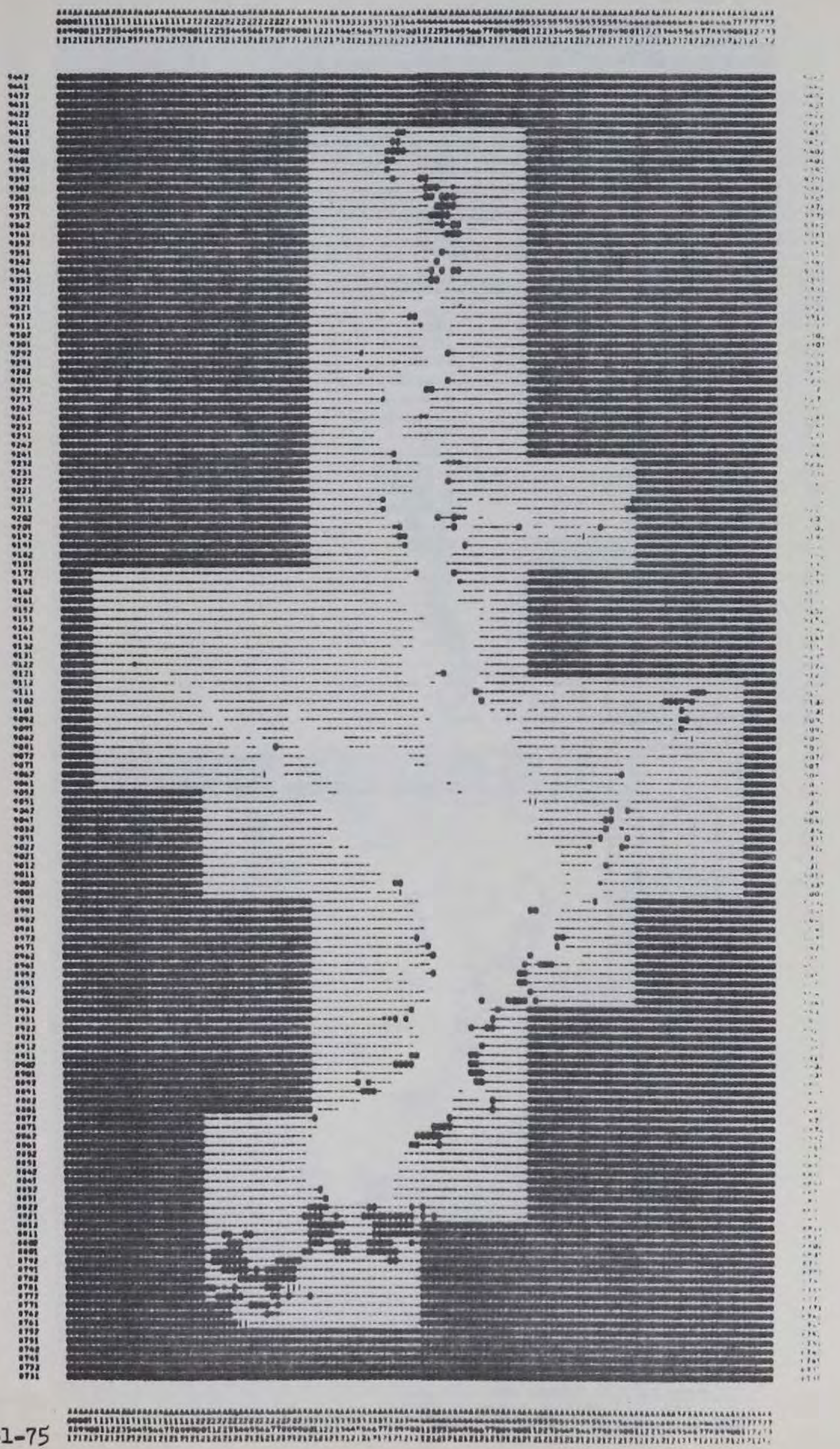


Fig. 1-1-75

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KFAHY
GRAPHICS C.J.UBAN, D.DEPRENGER
KPD R.JONES, E.SWANSON, B.HOEPPNER, D.ALLEN, J.FERNELIUS, D.HILLS

VEGETATION/PUDIL (ALTERNATIVE #3)

NATURAL TREE COVER TYPES IN THE RESERVOIR SITE WERE MAPPED FOR COMPARISON WITH THOSE IN STORY COUNTY. COMPARISON OF COVER AREAS HAS ALSO BEEN MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND ESTIMATES FROM A SAMPLING METHOD (THOMPSON, 1972).

TREE COVER IN THE COUNTY HAS BEEN MAPPED (PUDIL, 1972) FROM AERIAL PHOTOGRAPHS (1939, 1953, AND 1969) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY. PLANTED TREE PATTERNS (WINDBREAKS, RESIDENTIAL, ORCHARDS, FARMYARDS, WOODLOTS, ETC.) AND UNDERSTORY VEGETATION ARE NOT SHOWN.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.

LEGEND

0 = WATER

1 = OTHER

2 = ROADSIDE

3 = SECOND GROWTH

4 = SCATTERED TREES

5 = STRINGER

6 = STRIP FOREST

7 = URBAN (OPEN FOREST)

8 = OPEN FOREST

9 = URBAN FOREST

10 = FOREST

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 1.34 ST. DEV. = [illegible]

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

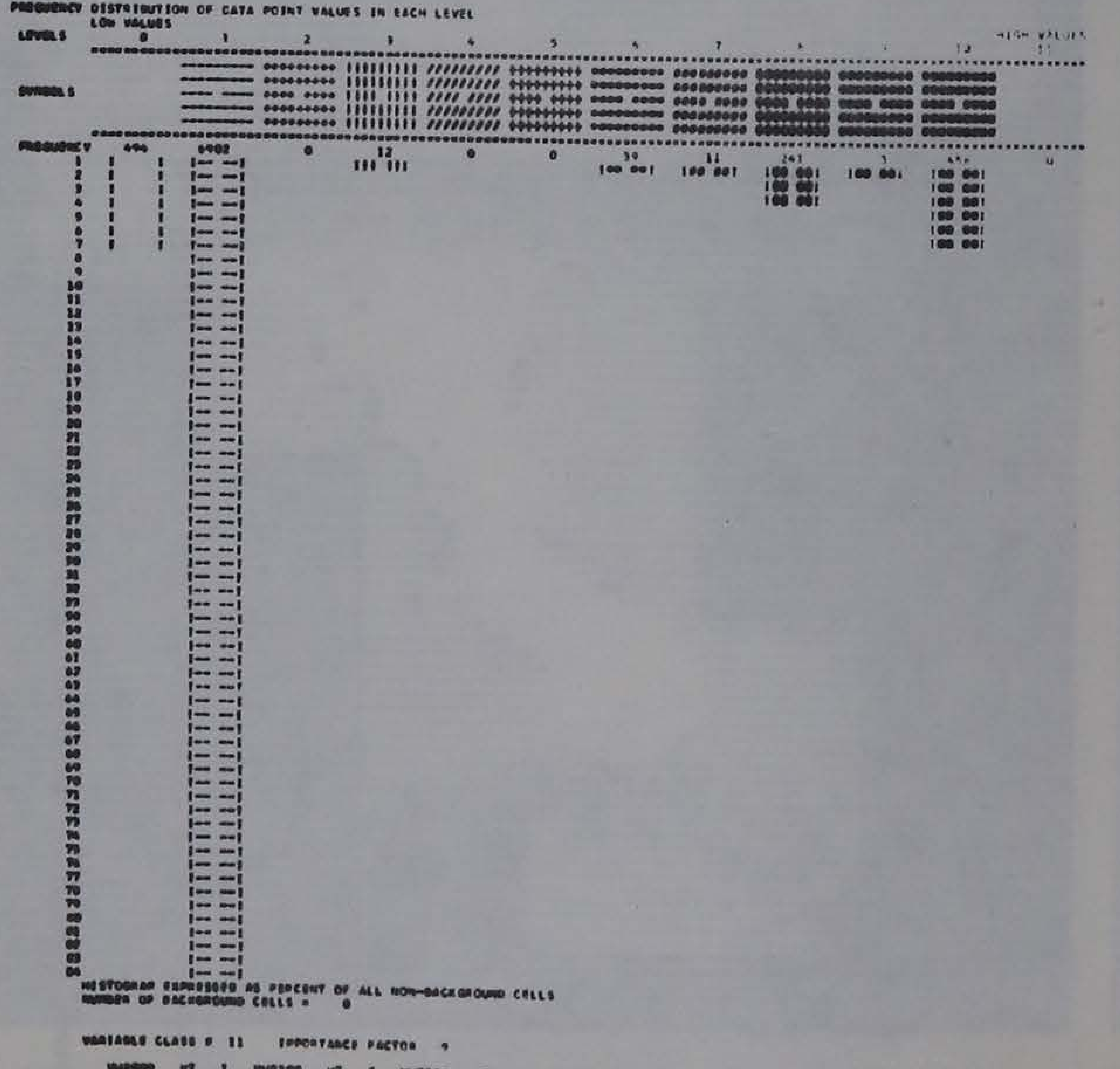
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	494	6902	0	12	0	0	39	11	241	3	[illegible]	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0

VARIABLE CLASS # 11 IMPORTANCE FACTOR 9

	VU2000	WT	1	VU2199	WT	5	VU2299	WT	1	VU2399	WT	2	VU2499	WT 1
VU2500	WT	1	VU2699	WT	4	VU3200	WT	1	VU4399	WT	7	VU4499	WT	9
VU5990	WT	1	VU6699	WT	0	VU6999	WT	1	VU7599	WT	10	VU7699	WT	6

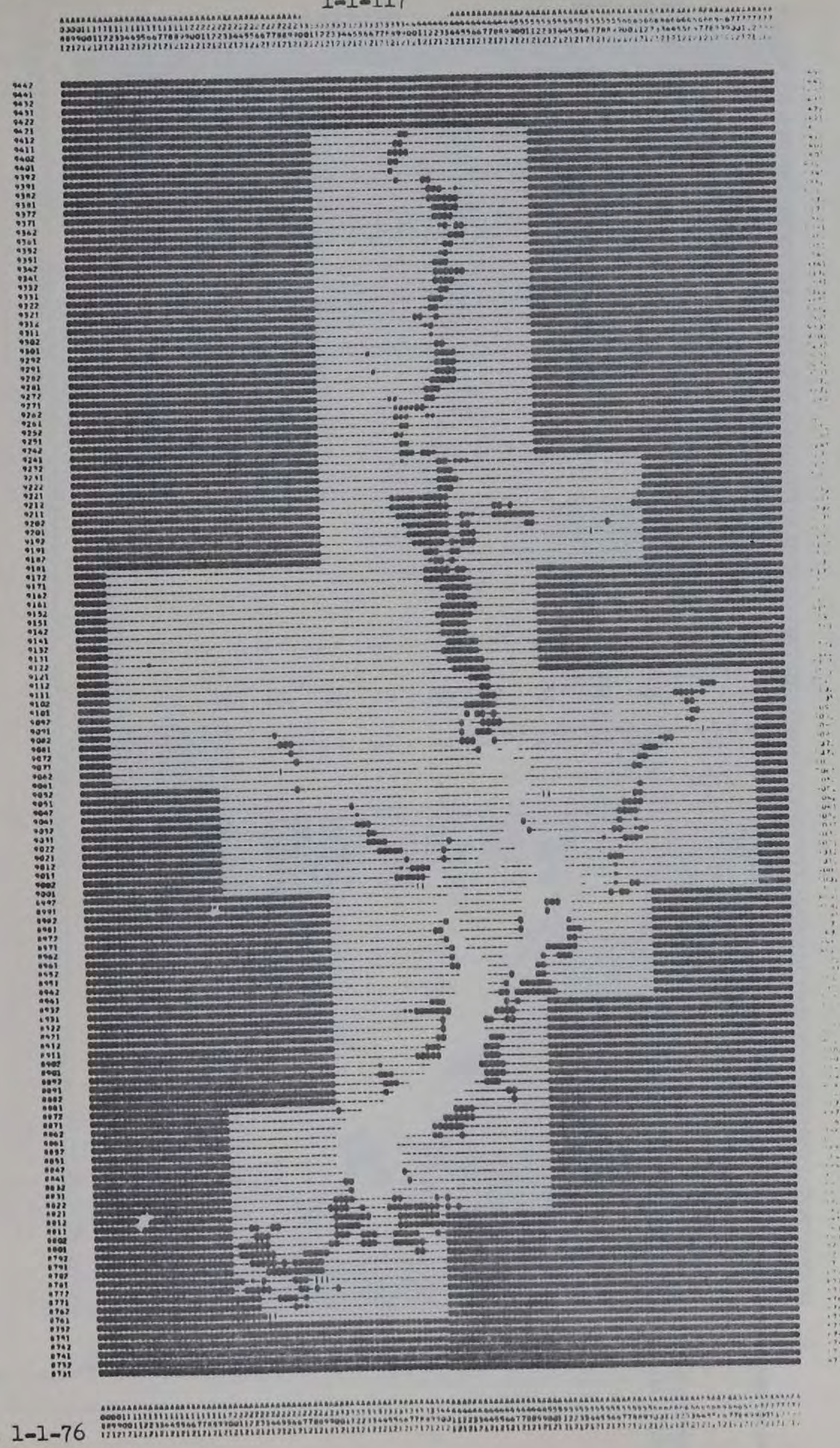


Fig. 1-1-76

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.WEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAALANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.OPPRENGER
KPO N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, J.FERNELIUS, D.HILES

VEGETATION/PUDIL (ALTERNATIVE #4)

NATURAL TREE COVER TYPES IN THE RESERVOIR SITE WERE MAPPED FOR COMPARISON WITH THOSE IN STORY COUNTY. COMPARISON OF COVER AREAS HAS ALSO BEEN MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND ESTIMATES FROM A SAMPLING METHOD (THOMPSON, 1972).

TREE COVER IN THE COUNTY HAS BEEN MAPPED (PUDIL, 1972) FROM AERIAL PHOTOGRAPHS (1939, 1959, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY. PLANTED TREE PATTERNS (WINDBREAKS, RESIDENTIAL, ORCHARDS, FARMYARDS, WOODLOTS, ETC.) AND UNDERSTORY VEGETATION ARE NOT SHOWN.

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 963
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 977
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.

LEGEND

0 = WATER

1 = OTHER

2 = ROADSIDE

3 = SECOND GROWTH

4 = SCATTERED TREES

5 = STRINGER

6 = STRIP FOREST

7 = URBAN (OPEN FOREST)

8 = OPEN FOREST

9 = URBAN FOREST

10 = FOREST

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = [illegible] ST. DEV. = [illegible]

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
          LOW VALUES                                                                              HIGH VALUES
LEVELS        0          1         2         3         4         5         6         7         8         9         10        11
         ****************************************************************************************************************
                    ---------  ********* IIIIIIIII ///////// +++++++++ ========= OOOOOOOOO OOOOOOOOO OOOOOOOOO OOOOOOOOO
                    ---------  ********* IIIIIIIII ///////// +++++++++ ========= OOOOOOOOO OOOOOOOOO OOOOOOOOO OOOOOOOOO
SYMBOLS             ---- ----  **** **** IIII IIII //// //// ++++ ++++ ==== ==== OOOO OOOO OOOO OOOO OOOO OOOO OOOO OOOO
                    ---------  ********* IIIIIIIII ///////// +++++++++ ========= OOOOOOOOO OOOOOOOOO OOOOOOOOO OOOOOOOOO
                    ---------  ********* IIIIIIIII ///////// +++++++++ ========= OOOOOOOOO OOOOOOOOO OOOOOOOOO OOOOOOOOO
         ****************************************************************************************************************
FREQUENCY    1906       6956        0        11         0         0        33        10      [illegible]  1   [illegible]   0
     1    I       I  I--- ---I          III III                     I00 00I   I00 00I   I00 00I   I00 00I   I00 00I
     2    I       I  I--- ---I                                                          I00 00I             I00 00I
     3    I       I  I--- ---I                                                          I00 00I             I00 00I
     4    I       I  I--- ---I                                                                              I00 00I
     5    I       I  I--- ---I
     6    I       I  I--- ---I
     7    I       I  I--- ---I
     8    I       I  I--- ---I
     9    I       I  I--- ---I
    10    I       I  I--- ---I
    11    I       I  I--- ---I
    12    I       I  I--- ---I
    13    I       I  I--- ---I
    14    I       I  I--- ---I
    15    I       I  I--- ---I
    16    I       I  I--- ---I
    17    I       I  I--- ---I
    18               I--- ---I
    19               I--- ---I
    20               I--- ---I
    21               I--- ---I
    22               I--- ---I
    23               I--- ---I
    24               I--- ---I
    25               I--- ---I
    26               I--- ---I
    27               I--- ---I
    28               I--- ---I
    29               I--- ---I
    30               I--- ---I
    31               I--- ---I
    32               I--- ---I
    33               I--- ---I
    34               I--- ---I
    35               I--- ---I
    36               I--- ---I
    37               I--- ---I
    38               I--- ---I
    39               I--- ---I
    40               I--- ---I
    41               I--- ---I
    42               I--- ---I
    43               I--- ---I
    44               I--- ---I
    45               I--- ---I
    46               I--- ---I
    47               I--- ---I
    48               I--- ---I
    49               I--- ---I
    50               I--- ---I
    51               I--- ---I
    52               I--- ---I
    53               I--- ---I
    54               I--- ---I
    55               I--- ---I
    56               I--- ---I
    57               I--- ---I
    58               I--- ---I
    59               I--- ---I
    60               I--- ---I
    61               I--- ---I
    62               I--- ---I
    63               I--- ---I
    64               I--- ---I
    65               I--- ---I
    66               I--- ---I
    67               I--- ---I
    68               I--- ---I
    69               I--- ---I
```

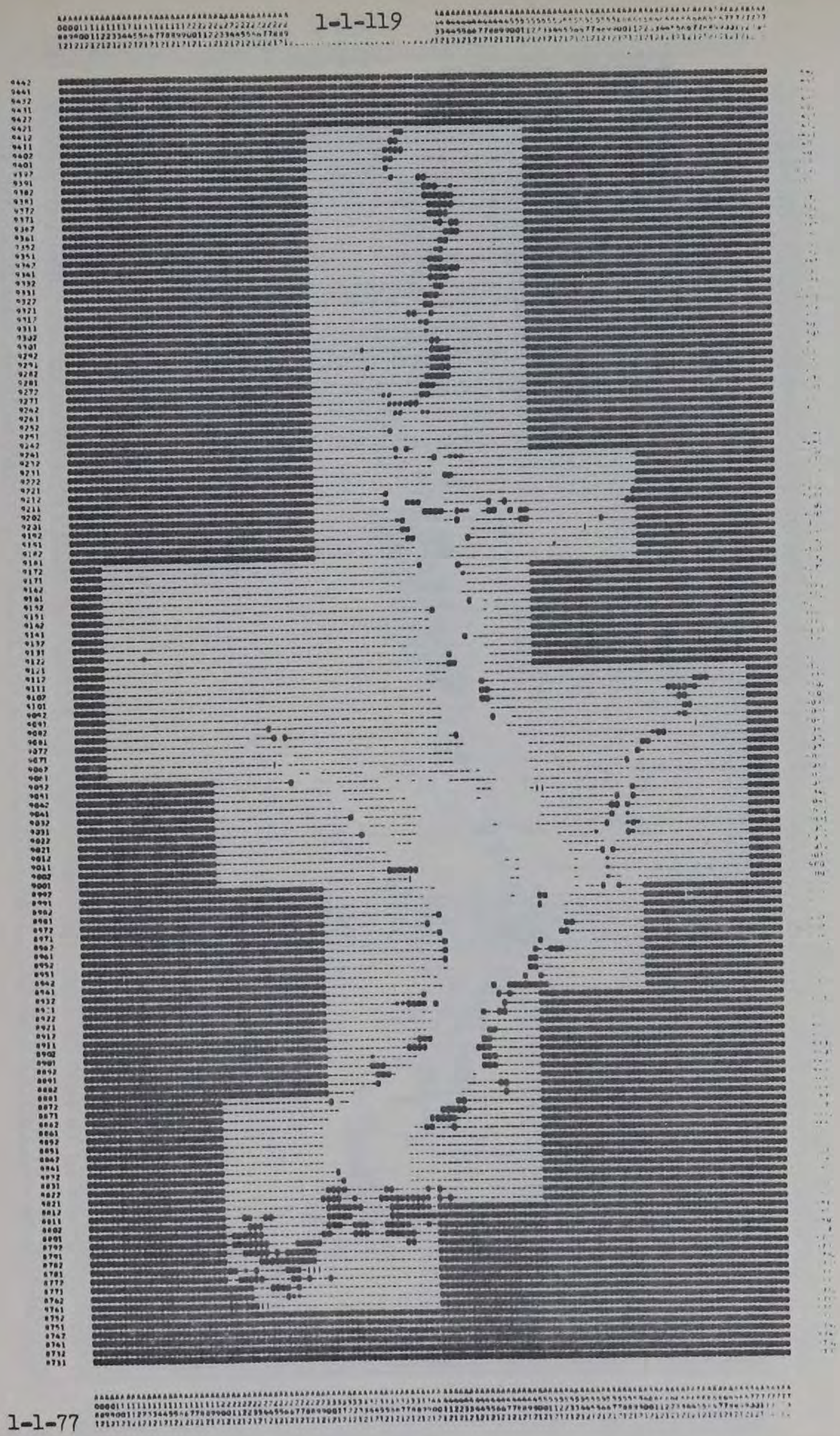


Fig. 1-1-77

```
ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS  J.R.SINATRA,  P.F.ANDERSON
PROGRAMMER-ANALYST  G.M.BEAVERS
DATA PREPARATION   J.C.TAGGART,  T.SHUCK,  A.PUCIL,  D.FARLANGER,
                   S.CECIL,  D.SEYMOUR,  W.SCHUTTLER,  D.KENNY
GRAPHICS   C.J.URBAN,  D.DEPRENGER
RPD  N.JONES,  P.SWANSON,  R.HOPPNER,  D.ALLEN,  D.FERNELIUS,  D.HILLS


          VEGETATION/PUDIL (ALTERNATIVE #5)

          NATURAL TREE COVER TYPES IN THE RESERVOIR SITE WERE MAPPED FOR COMPARISON WITH
          THOSE IN STORY COUNTY.  COMPARISON OF COVER AREAS HAS ALSO BEEN MADE WITH A
          FIELD INVENTORY (LANDERS, 1972) AND ESTIMATES FROM A SAMPLING METHOD (THOMPSON,
          1972).

          TREE COVER IN THE COUNTY HAS BEEN MAPPED (PUDIL, 1972) FROM AERIAL PHOTOGRAPHS
          (1939, 1953, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH
          QUANTITATIVELY AND SPATIALLY.  PLANTED TREE PATTERNS (WINDBREAKS, RESIDENTIAL,
          ORCHARDS, FARMYARDS, WOODLOTS, ETC.) AND UNDERSTORY VEGETATION ARE NOT SHOWN.

          ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
          A.  BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
                                          FLOOD POOL, ELEVATION 979
          B.  DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

          SOURCE:  CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
                   ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.

                         LEGEND

                         0 = WATER

                         1 = OTHER

                         2 = ROADSIDE

                         3 = SECOND GROWTH

                         4 = SCATTERED TREES

                         5 = STRINGER

                         6 = STRIP FOREST

                         7 = URBAN (OPEN FOREST)

                         8 = OPEN FOREST

                         9 = URBAN FOREST

                         10 = FOREST

                         11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF      0.0  AND     10.90  MEAN =      1.82 ST. DEV. =      2.91

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
 MINIMUM              0.0      1.09      2.18      3.27      4.36      5.45      6.54      7.63      8.72      9.81
 MAXIMUM              1.09     2.18      3.27      4.36      5.45      6.54      7.63      8.72      9.81     10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
                     10.00    10.00     10.00     10.00     10.00     10.00     10.00     10.00     10.00     10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
         LOW VALUES                                                                                          HIGH VALUES
LEVELS       0         1         2         3         4         5         6         7         8         9        10        11
        ************************************************************************************************************************
FREQUENCY    93      7110        0        12         0         0        32        11       364         3       555         0
      1   I    I   I-- --I              III III                      I00 00I   I00 00I   I00 00I   I00 00I   I00 00I
      2   I    I   I-- --I                                                                I00 00I             I00 00I
      3            I-- --I                                                                I00 00I             I00 00I
      4            I-- --I                                                                I00 00I             I00 00I
      5            I-- --I                                                                I00 00I             I00 00I
      6            I-- --I                                                                                    I00 00I
      7            I-- --I                                                                                    I00 00I
      8            I-- --I
      9            I-- --I
     10            I-- --I
     11            I-- --I
     12            I-- --I
     13            I-- --I
     14            I-- --I
     15            I-- --I
     16            I-- --I
     83            I-- --I
     84            I-- --I
     85            I-- --I
     86            I-- --I
     87            I-- --I
       HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
       NUMBER OF BACKGROUND CELLS =10848

       VARIABLE CLASS #  11    IMPORTANCE FACTOR  10

          VU2099   WT   1   VU2199   WT   5   VU2299   WT   1   VU2399   WT   2   VU2499   WT   3
VU2599   WT   1   VU2699   WT   4   VU4299   WT   1   VU4399   WT   7   VU4499   WT   9
VU5999   WT   1   VU6099   WT   8   VU6999   WT   1   VU7599   WT  10   VU7699   WT   6
```

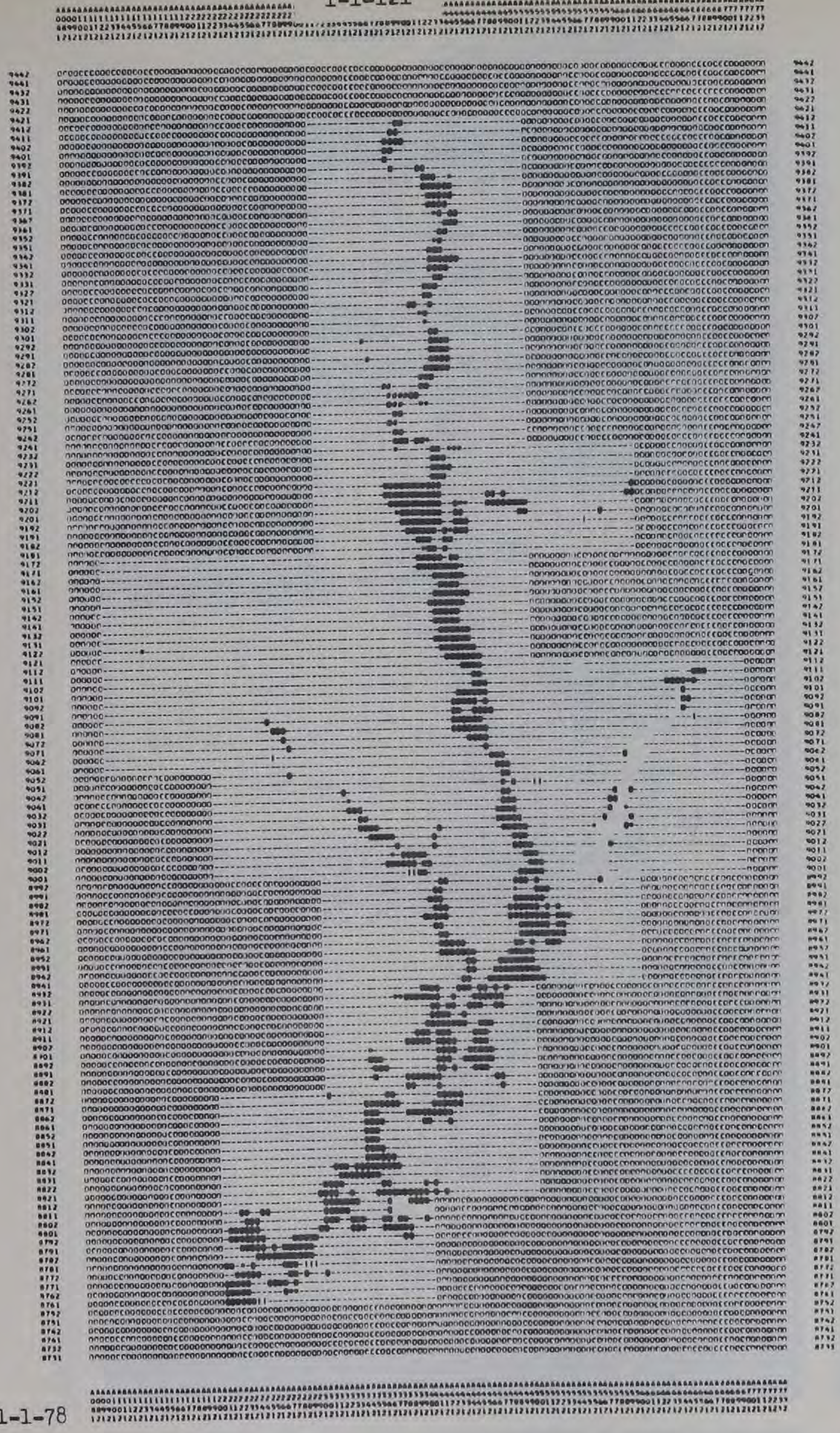


Fig. 1-1-78

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAHLANDER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO M.JONES, F.SWANSON, G.HOEPPNER, D.ALLEN, D.PERNELIUS, D.WELLS

VEGETATION/PUDIL (ALTERNATIVE 06)

NATURAL TREE COVER TYPES IN THE RESERVOIR SITE WERE MAPPED FOR COMPARISON WITH THOSE IN STORY COUNTY. COMPARISON OF COVER AREAS HAS ALSO BEEN MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND ESTIMATES FROM A SAMPLING METHOD (THOMPSON, 1972).

TREE COVER IN THE COUNTY HAS BEEN MAPPED (PUDIL, 1972) FROM AERIAL PHOTOGRAPHS (1939, 1953, AND 1968) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY. PLANTED TREE PATTERNS (WINDBREAKS, RESIDENTIAL, ORCHARDS, FARMYARDS, WOODLOTS, ETC.) AND UNDERSTORY VEGETATION ARE NOT SHOWN.

ALTERNATIVE 06 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.

LEGEND

0 = WATER

1 = OTHER

2 = ROADSIDE

3 = SECOND GROWTH

4 = SCATTERED TREES

5 = STRINGER

6 = STRIP FOREST

7 = URBAN (OPEN FOREST)

8 = OPEN FOREST

9 = URBAN FOREST

10 = FOREST

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.00 MEAN = 1.90 ST. DEV. = 2.67

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	0	7190	0	12	0	0	40	11	390	3	578	0

```
PERCENT     1       3      6        7        8        9        10
  1      I-- --I  III III  I00 00I  I00 00I  I00 00I  I00 00I  I00 00I
  2      I-- --I                             I00 00I           I00 00I
  3      I-- --I                             I00 00I           I00 00I
  4      I-- --I                             I00 00I           I00 00I
  5      I-- --I                             I00 00I           I00 00I
  6      I-- --I                                               I00 00I
  7      I-- --I                                               I00 00I
  8      I-- --I                                               I00 00I
  9      I-- --I
 10      I-- --I
 11      I-- --I
 12      I-- --I
 13      I-- --I
 14      I-- --I
 15      I-- --I
 16      I-- --I
 17      I-- --I
 18      I-- --I
 19      I-- --I
 20      I-- --I
 21      I-- --I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0

VARIABLE CLASS # 11 IMPORTANCE FACTOR 9

VU2099 WT 1 VU2199 WT 5 VU2299 WT 1 VU2399 WT 2 VU2499 WT 3
VU7599 WT 1 VU2699 WT 4 VU6299 WT 1 VU6399 WT 7 VU6499 WT 9
VU6999 WT 1 VU6099 WT 8 VU6999 WT 1 VU7599 WT 10 VU7699 WT 6

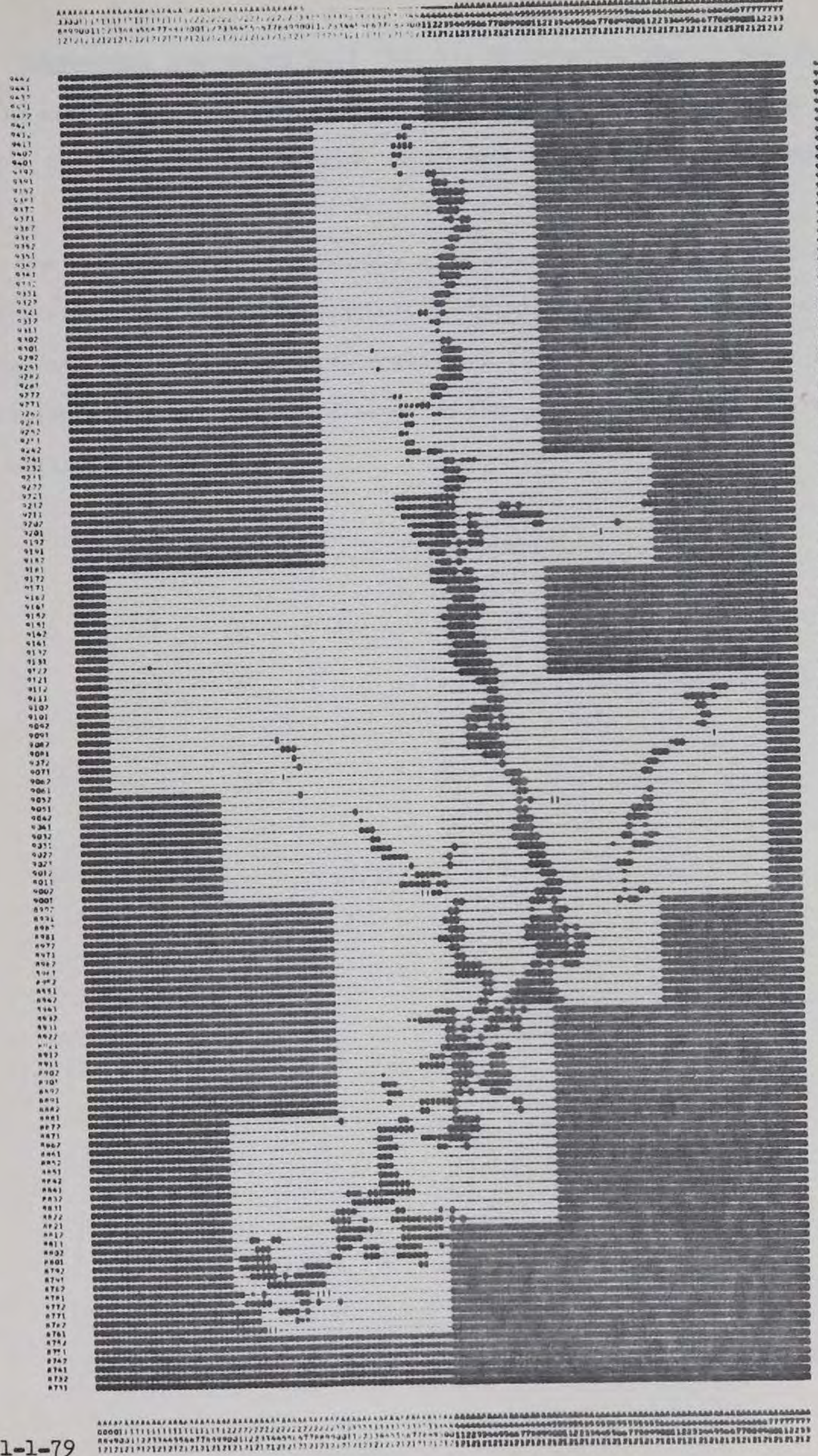


Fig. 1-1-79

Urban-Rural Vegetaion/Pudil Fig. 1-1-80 thru 1-1-83. The following set of maps varies from the previous set (Vegetation/Pudil) only in the vegetation types selected for output. Both sets are drawn from the same data set.

The vegetation types shown are a broad cross-section of types covering most of the study area. Planted vegetation (residential, agriculture, farmstead, parks, etc.) as well as natural vegetation (forest, stringer, strip forest, etc.), are included to show man's influence on the vegetation through his settlement and agricultural patterns.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.P.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAHLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO N.JONES, F.SWANSON, R.MCEPPNER, D.ALLEN, D.PERNELIUS, D.HILLS

URBAN-RURAL VEGETATION/PUDIL - ALTERNATIVE 01

URBAN AND RURAL VEGETATION TYPES IN THE RESERVOIR SITE WERE MAPPED FOR EXAMINATION OF PATTERNS. THIS IS A BROAD CROSS-SECTION OF VEGETATION TYPES COVERING MOST OF THE STUDY AREA SHOWING MAN'S INFLUENCE, THROUGH HIS SETTLEMENT PATTERNS, ON NATURAL VEGETATION AREAS.

COMPARISON OF THIS DATA CAN BE MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND WITH AERIAL PHOTOGRAPHS (1939, 1953, 1959, AND 1969) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

ALTERNATIVE 01 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO 01.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = AGRICULTURE (1000-1300)

3 = OPEN FIELD (URBAN) (4200)

4 = FARMSTEAD (3100)

5 = RESIDENTIAL (URBAN) (4100)

6 = STRINGER (RURAL) (2100)

7 = OPEN FOREST (URBAN AND RURAL) (4900, 6000)

8 = STRIP FOREST (RURAL) (7600)

9 = FOREST (URBAN) (4400)

10 = FOREST (RURAL)(7000-7500)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.57 ST. DEV. = 5.40

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

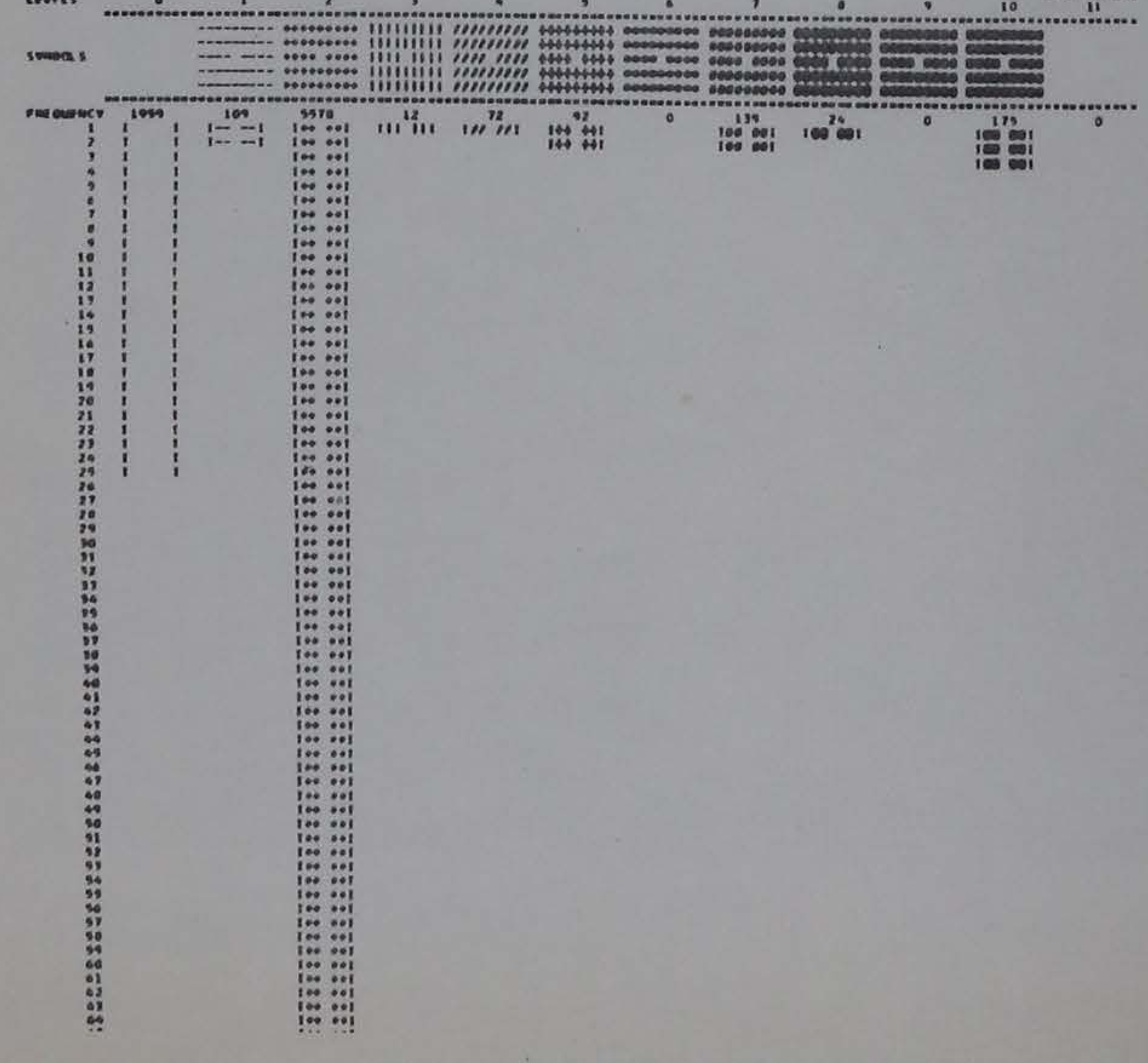
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	1959	109	5578	12	72	92	0	139	24	0	175	0



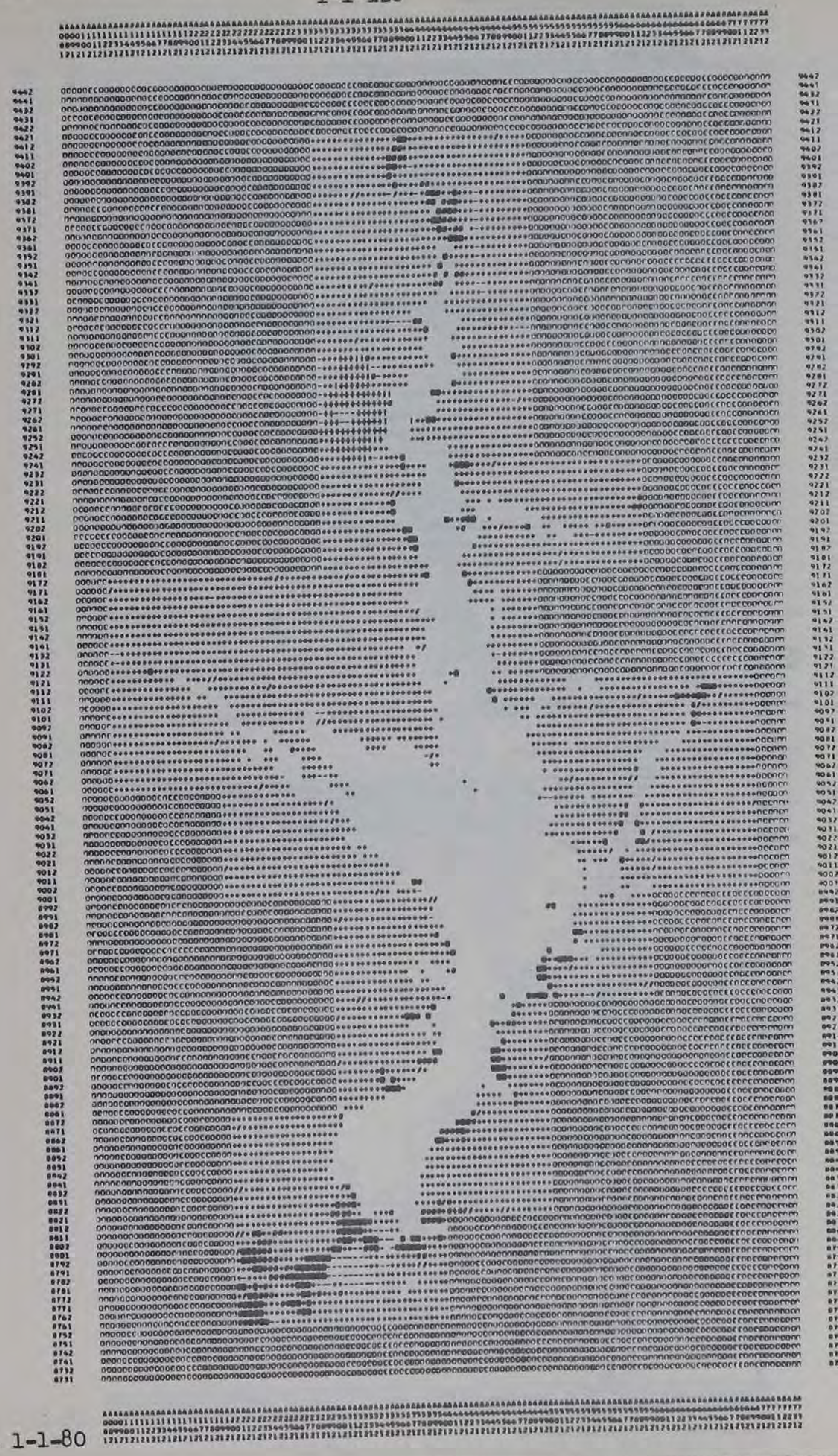


Fig. 1-1-80

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION A.C.TAGGART, T.SHUCK, A.PUDIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, H.SCHUTTLER, D.KENNY
GRAPHICS C.J.UDAN, D.DEPRENGER
KPO N.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.PILLS

URBAN-RURAL VEGETATION/PUDIL - ALTERNATIVE #3

URBAN AND RURAL VEGETATION TYPES IN THE RESERVOIR SITE WERE MAPPED FOR EXAMINATION OF PATTERNS. THIS IS A BROAD CROSS-SECTION OF VEGETATION TYPES COVERING MOST OF THE STUDY AREA SHOWING MAN'S INFLUENCE, THROUGH HIS SETTLEMENT PATTERNS, ON NATURAL VEGETATION AREAS.

COMPARISON OF THIS DATA CAN BE MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND WITH AERIAL PHOTOGRAPHS (1939, 1953, 1959, AND 1969) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1969.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = AGRICULTURE (1000-1300)

3 = OPEN FIELD (URBAN) (4200)

4 = FARMSTEAD (3100)

5 = RESIDENTIAL (URBAN) (4100)

6 = STRINGER (RURAL) (2100)

7 = OPEN FOREST (URBAN AND RURAL) (4300, 6000)

8 = STRIP FOREST (RURAL) (7600)

9 = FOREST (URBAN) (4400)

10 = FOREST (RURAL)(7000-7500)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 1.95 ST. DEV. = 3.60

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81,	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
          LOW VALUES                                                                                  HIGH VALUES
LEVELS        0         1         2         3         4         5         6         7         8         9        10        11
          ***********************************************************************************************************
                    ---------  +++++++++ IIIIIIIII ///////// +++++++++ ooooooooo 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
                    ---------  +++++++++ IIIIIIIII ///////// +++++++++ ooooooooo 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
SYMBOLS             ---- ----  ++++ ++++ IIII IIII //// //// ++++ ++++ oooo oooo 0000 0000 @@@@ @@@@ @@@@ @@@@ @@@@ @@@@
                    ---------  +++++++++ IIIIIIIII ///////// +++++++++ ooooooooo 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
                    ---------  +++++++++ IIIIIIIII ///////// +++++++++ ooooooooo 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
          ***********************************************************************************************************
FREQUENCY     503       115       6601       10        85        92         0        290       39         3        456        0
        1  I     I   I-- --I   I++ ++I   III III   I// //I   I++ ++I             I00 00I   I@@ @@I   I@@ @@I   I@@ @@I
        2  I     I   I-- --I   I++ ++I             I// //I   I++ ++I             I00 00I                       I@@ @@I
        3  I     I             I++ ++I                                           I00 00I                       I@@ @@I
        4  I     I             I++ ++I                                           I00 00I                       I@@ @@I
        5  I     I             I++ ++I                                                                         I@@ @@I
        6  I     I             I++ ++I                                                                         I@@ @@I
        7  I     I             I++ ++I
        8                      I++ ++I
        9                      I++ ++I
       10                      I++ ++I
       11                      I++ ++I
       12                      I++ ++I
       13                      I++ ++I
       14                      I++ ++I
       15                      I++ ++I
       16                      I++ ++I
       17                      I++ ++I
       18                      I++ ++I
       19                      I++ ++I
       20                      I++ ++I
       21                      I++ ++I
       22                      I++ ++I
       23                      I++ ++I
       24                      I++ ++I
       25                      I++ ++I
       26                      I++ ++I
       45                      I++ ++I
       46                      I++ ++I
       47                      I++ ++I
       48                      I++ ++I
       49                      I++ ++I
       50                      I++ ++I
       51                      I++ ++I
       52                      I++ ++I
       53                      I++ ++I
       54                      I++ ++I
       55                      I++ ++I
       56                      I++ ++I
       57                      I++ ++I
       58                      I++ ++I
       59                      I++ ++I
       60                      I++ ++I
       61                      I++ ++I
       62                      I++ ++I
       63                      I++ ++I
       64                      I++ ++I
       65                      I++ ++I
       66                      I++ ++I
       67                      I++ ++I
       68                      I++ ++I
       69                      I++ ++I
       70                      I++ ++I
       71                      I++ ++I
       72                      I++ ++I
       73                      I++ ++I
       74                      I++ ++I
       75                      I++ ++I
       76                      I++ ++I
       77                      I++ ++I
       78                      I++ ++I
       79                      I++ ++I
       80                      I++ ++I
     HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
     NUMBER OF BACKGROUND CELLS =10040
```

VARIABLE CLASS # 11 IMPORTANCE FACTOR 10

```
         VU 999   WT  1   VU1999   WT  2   VU2099   WT  1   VU2199   WT  6   VU3099   WT  1
VU3199   WT  4   VU4099   WT  1   VU4199   WT  5   VU4299   WT  3   VU4399   WT  7
VU4499   WT  9   VU5099   WT  1   VU6099   WT  7   VU6999   WT  1   VU7999   WT 10
VU7099   WT  8   VU8099   WT  1   VU
```

1-1-128

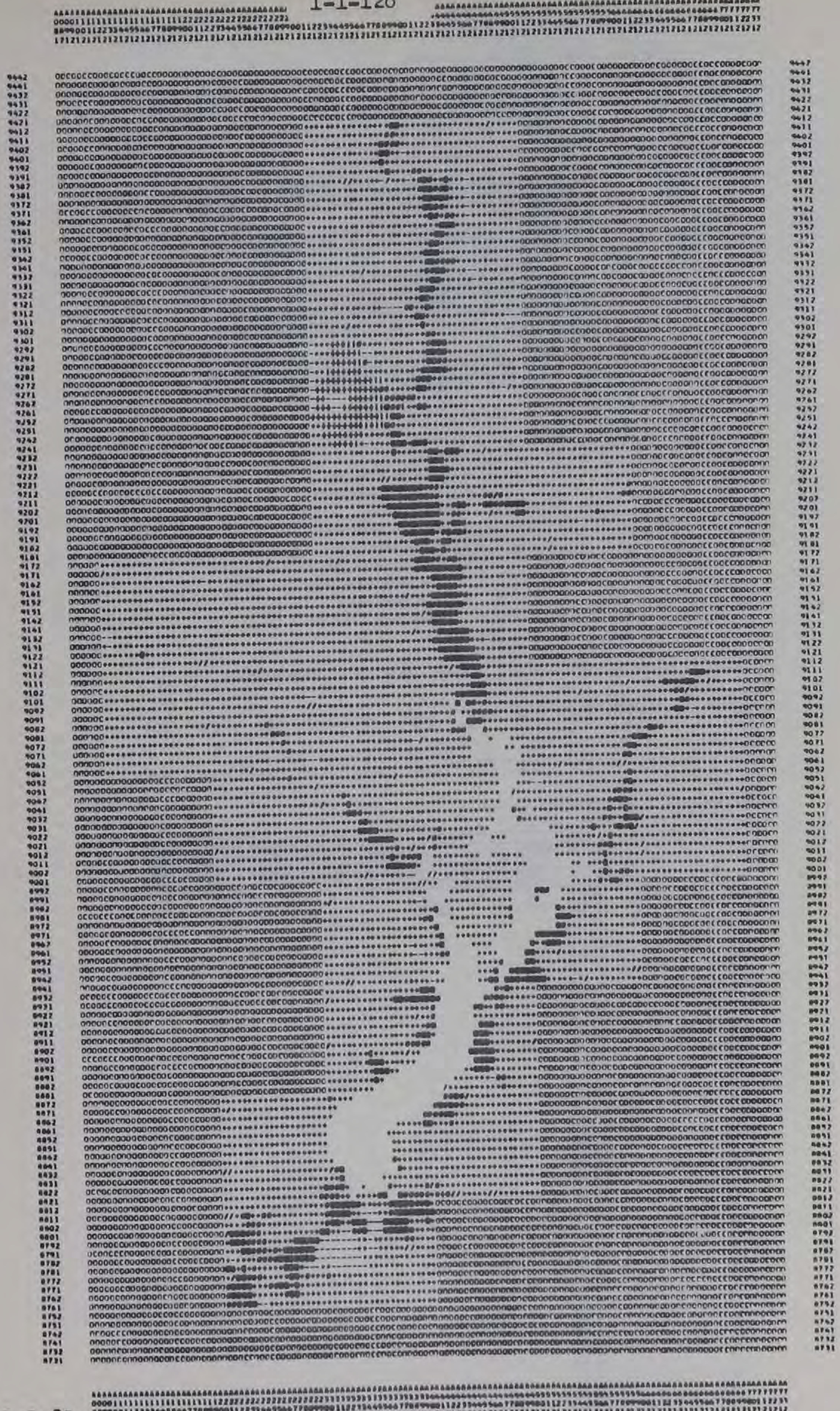


Fig. 1-1-81

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAKLANGER,
S.CECIL, D.SEYMOUR, W.SCHUITLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPRENGER
KPC N.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

URBAN-RURAL VEGETATION/PUDIL - ALTERNATIVE 04

URBAN AND RURAL VEGETATION TYPES IN THE RESERVOIR SITE WERE MAPPED FOR EXAMINATION OF PATTERNS. THIS IS A BROAD CROSS-SECTION OF VEGETATION TYPES COVERING MOST OF THE STUDY AREA SHOWING MAN'S INFLUENCE, THROUGH HIS SETTLEMENT PATTERNS, ON NATURAL VEGETATION AREAS.

COMPARISON OF THIS DATA CAN BE MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND WITH AERIAL PHOTOGRAPHS (1939, 1953, 1959, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

ALTERNATIVE 04 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965.
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = AGRICULTURE (1000-1300)

3 = OPEN FIELD (URBAN) (4200)

4 = FARMSTEAD (3100)

5 = RESIDENTIAL (URBAN) (4100)

6 = STRINGER (RURAL) (2100)

7 = OPEN FOREST (URBAN AND RURAL) (4300, 6000)

8 = STRIP FOREST (RURAL) (7600)

9 = FOREST (URBAN) (4400)

10 = FOREST (RURAL)(7000-7500)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.49 ST. DEV. = 4.90

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

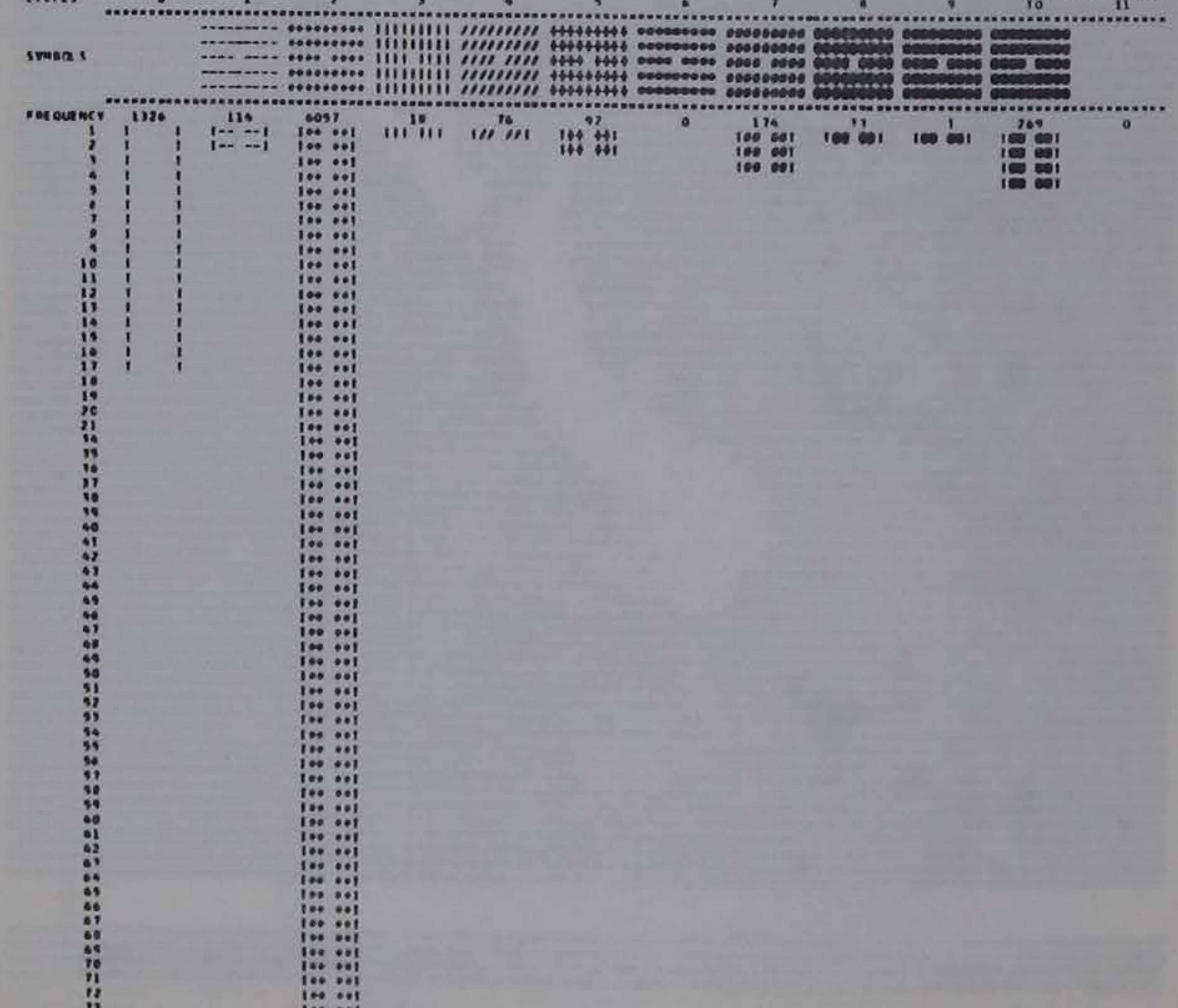
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1326	114	6057	18	76	92	0	174	11	1	269	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10848

P 20,SHEET 1,DATA SET 1

1-1-130

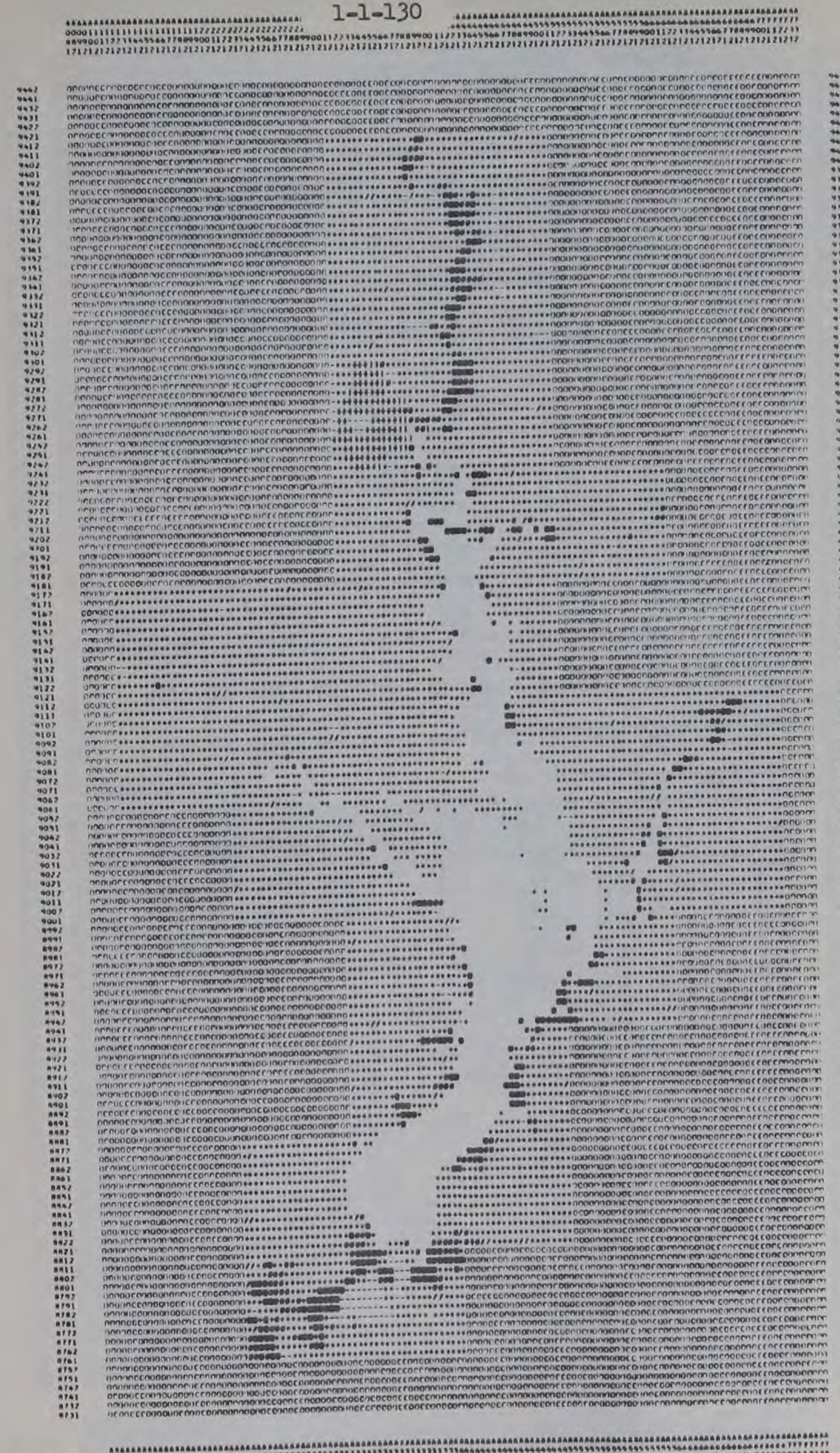


Fig. 1-1-82

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAHLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.OPPRENGER
KPO N.JONES, T.SWANSON, B.HOEPPNER, D.ALLEN, D.PERNELIUS, D.HILLS

URBAN-RURAL VEGETATION/PUDIL - ALTERNATIVE #6

URBAN AND RURAL VEGETATION TYPES IN THE RESERVOIR SITE WERE MAPPED FOR EXAMINATION OF PATTERNS. THIS IS A BROAD CROSS-SECTION OF VEGETATION TYPES COVERING MOST OF THE STUDY AREA SHOWING MAN'S INFLUENCE, THROUGH HIS SETTLEMENT PATTERNS, ON NATURAL VEGETATION AREAS.

COMPARISON OF THIS DATA CAN BE MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND WITH AERIAL PHOTOGRAPHS (1939, 1955, 1959, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTION CONDITIONS.

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = OTHER

2 = AGRICULTURE (1000-1300)

3 = OPEN FIELD (URBAN) (4700)

4 = FARMSTEAD (3100)

5 = RESIDENTIAL (URBAN) (4100)

6 = STRINGER (RURAL) (2100)

7 = OPEN FOREST (URBAN AND RURAL) (4300, 8000)

8 = STRIP FOREST (RURAL) (7600)

9 = FOREST (URBAN) (4400)

10 = FOREST (RURAL)(7000-7900)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.87 ST. DEV. = 2.30

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
           LOW VALUES                                                                                     HIGH VALUES
LEVELS         0          1         2         3         4         5         6         7         8         9        10        11
           ***************************************************************************************************************
                     ---------  *********  IIIIIIIII  /////////  +++++++++  ooooooooo  000000000  @@@@@@@@@  @@@@@@@@@  @@@@@@@@@
                     ---------  *********  IIIIIIIII  /////////  +++++++++  ooooooooo  000000000  @@@@@@@@@  @@@@@@@@@  @@@@@@@@@
SYMBOLS              ---- ----  **** ****  IIII IIII  //// ////  ++++ ++++  oooo oooo  0000 0000  @@@@ @@@@  @@@@ @@@@  @@@@ @@@@
                     ---------  *********  IIIIIIIII  /////////  +++++++++  ooooooooo  000000000  @@@@@@@@@  @@@@@@@@@  @@@@@@@@@
                     ---------  *********  IIIIIIIII  /////////  +++++++++  ooooooooo  000000000  @@@@@@@@@  @@@@@@@@@  @@@@@@@@@
           ***************************************************************************************************************
FREQUENCY      0        129       6844        18        87        97         0       165        40         1       578         0
       1             I-- --I    I** **I    III III    I// //I    I++ ++I              I00 00I    I@@ @@I    I@@ @@I    I@@ @@I
       2             I-- --I    I** **I               I// //I    I++ ++I              I00 00I                          I@@ @@I
       3                        I** **I                                               I00 00I                          I@@ @@I
       4                        I** **I                                               I00 00I                          I@@ @@I
       5                        I** **I                                               I00 00I                          I@@ @@I
       6                        I** **I                                                                                I@@ @@I
       7                        I** **I                                                                                I@@ @@I
       8                        I** **I                                                                                I@@ @@I
       9                        I** **I                                                                                I@@ @@I
      10                        I** **I
      11                        I** **I
      12                        I** **I
      13                        I** **I
      14                        I** **I
      15                        I** **I
      16                        I** **I
      17                        I** **I
      18                        I** **I
      19                        I** **I
      20                        I** **I
      21                        I** **I
      22                        I** **I
      23                        I** **I
      24                        I** **I
      25                        I** **I
      26                        I** **I
      27                        I** **I
      28                        I** **I
      29                        I** **I
      30                        I** **I
      31                        I** **I
      32                        I** **I
      33                        I** **I
      34                        I** **I
      35                        I** **I
      36                        I** **I
      37                        I** **I
      38                        I** **I
      39                        I** **I
      40                        I** **I
      41                        I** **I
      42                        I** **I
      43                        I** **I
      44                        I** **I
      45                        I** **I
      46                        I** **I
      47                        I** **I
      48                        I** **I
      49                        I** **I
      50                        I** **I
      51                        I** **I
      52                        I** **I
      53                        I** **I
      54                        I** **I
      55                        I** **I
      56                        I** **I
      57                        I** **I
      58                        I** **I
      59                        I** **I
      60                        I** **I
      61                        I** **I
      62                        I** **I
      63                        I** **I
      64                        I** **I
      65                        I** **I
      66                        I** **I
      67                        I** **I
      68                        I** **I
      69                        I** **I
      70                        I** **I
      71                        I** **I
      72                        I** **I
      73                        I** **I
      74                        I** **I
      75                        I** **I
      76                        I** **I
      77                        I** **I
      78                        I** **I
      79                        I** **I
      80                        I** **I
      81                        I** **I
      82                        I** **I
      83                        I** **I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10848

VARIABLE CLASS # 11 IMPORTANCE FACTOR 10

VU 999 WT 1 VU1999 WT 2 VU2999 WT 1 VU2199 WT 4 VL5099 WT 1
VU5199 WT 4 VU6099 WT 1 VU6199 WT 5 VU6299 WT 3 VU6399 WT 7

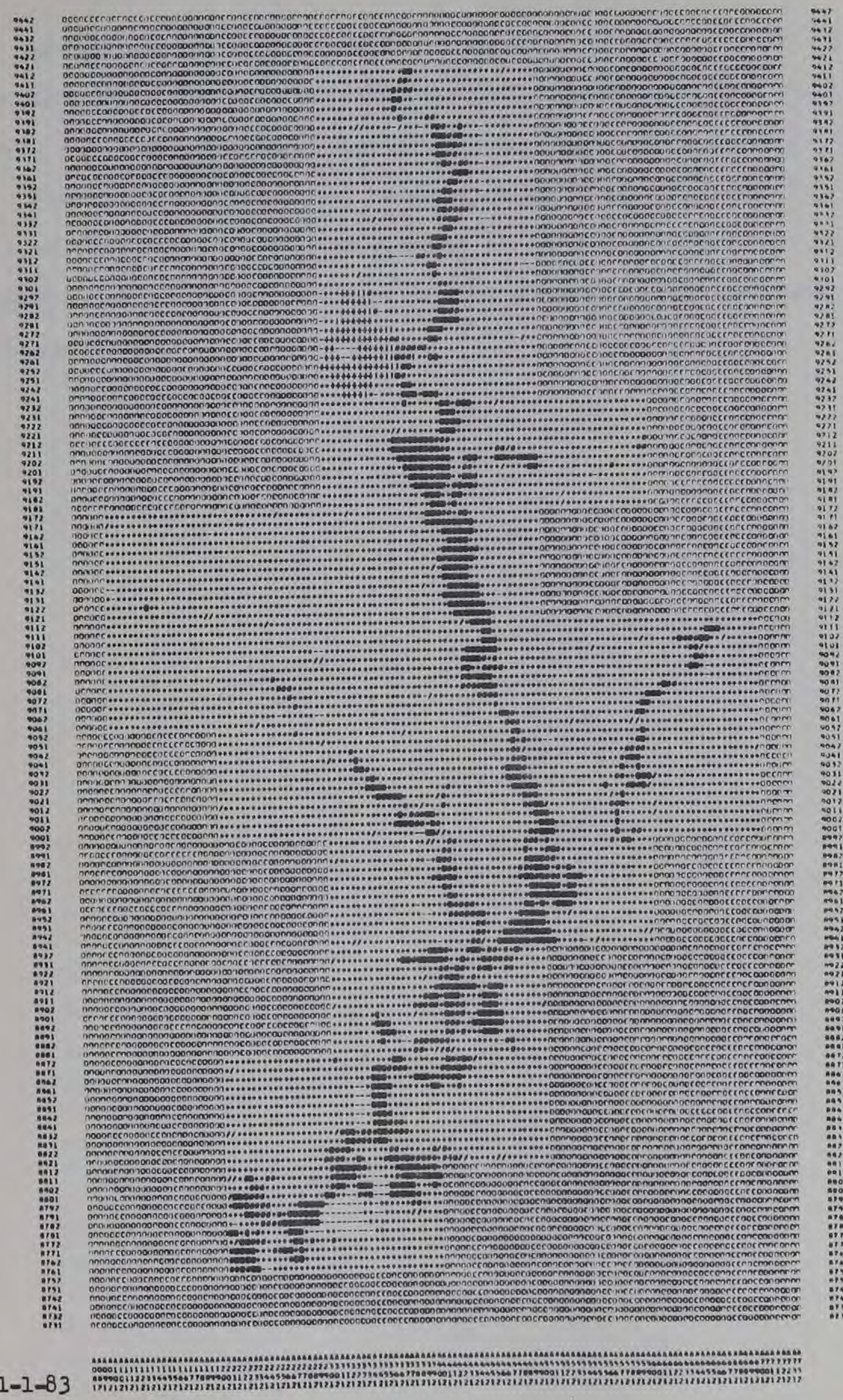


Fig. 1-1-83

Habitat Vegetation/Pudil (Fig. 1-1-84 thru 1-1-87). Again, the next four maps were taken from the same data set as Vegetation/Pudil (Fig. 1-1-74 thru 1-1-79) and Urban-Rural Vegetation/Pudil (Fig. 1-1-80 thru 1-1-83).

Some of the more important cover types and water areas used by wildlife were selected for output. Such features as railroad right-of-way (running diagonally across the extreme west side of the study area) are visible on the print-out maps.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.A.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO M.JONES, I.SWANSON, R.HOFFMAN, D.ALLEN, D.CORNELIUS, D.WELLS

HABITAT VEGETATION/PUDIL - ALTERNATIVE 01

VEGETATION TYPES USED AS WILDLIFE HABITAT IN THE RESERVOIR SITE WERE MAPPED FOR EXAMINATION OF PATTERNS. THESE INDICATE THE IMPORTANT COVER TYPES AND WATER AREAS USED BY WILDLIFE.

COMPARISON OF THE DATA CAN BE MADE WITH A FIELD INVENTORY (LANDERS 1972) AND WITH AERIAL PHOTOGRAPHS (1939, 1953, 1959, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

ALTERNATIVE 01 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO 4.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1952.

LEGEND

0 = WATER (PROPOSED IMPOUNDMENTS)

1 = OTHER

2 = POTHOLES (0700)

3 = PONDS (0500)

4 = RAILROAD RIGHT OF WAY (2700)

5 = ROADSIDE (2300)

6 = STRINGER (2100)

7 = FENCEROW (2200)

8 = OPEN FOREST (6000)

9 = URBAN FOREST (6400)

10 = RURAL FOREST (7000-7600)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.96 ST. DEV. = 9.51

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

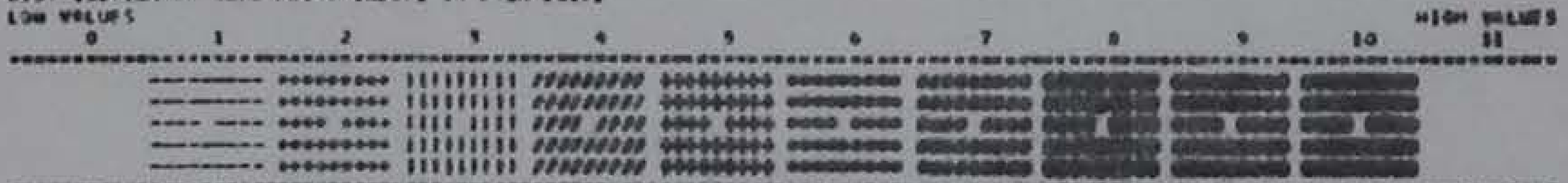
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

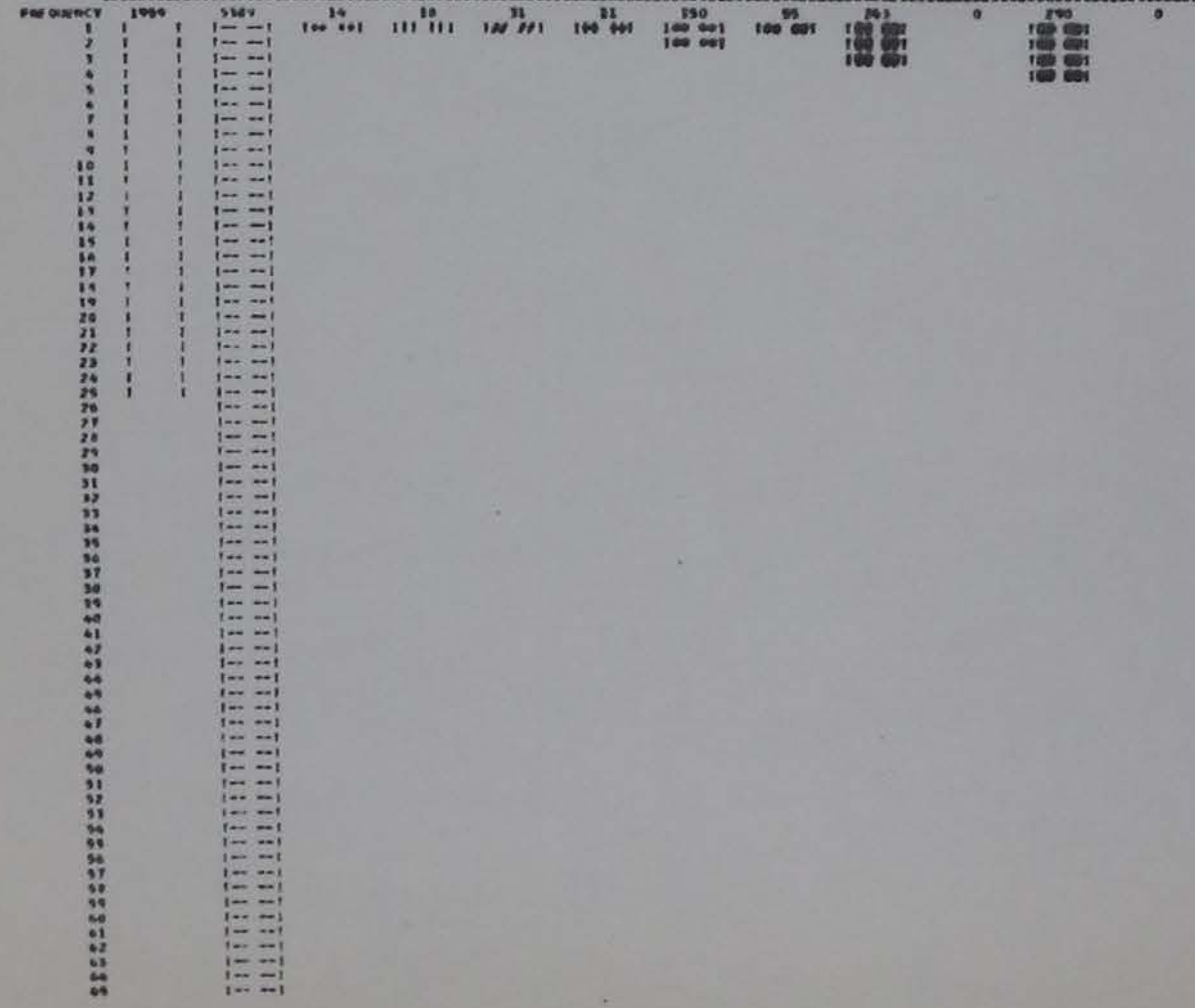
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
SYMBOLS												
FREQUENCY	1999	5569	14	10	31	31	350	95	263	0	290	0





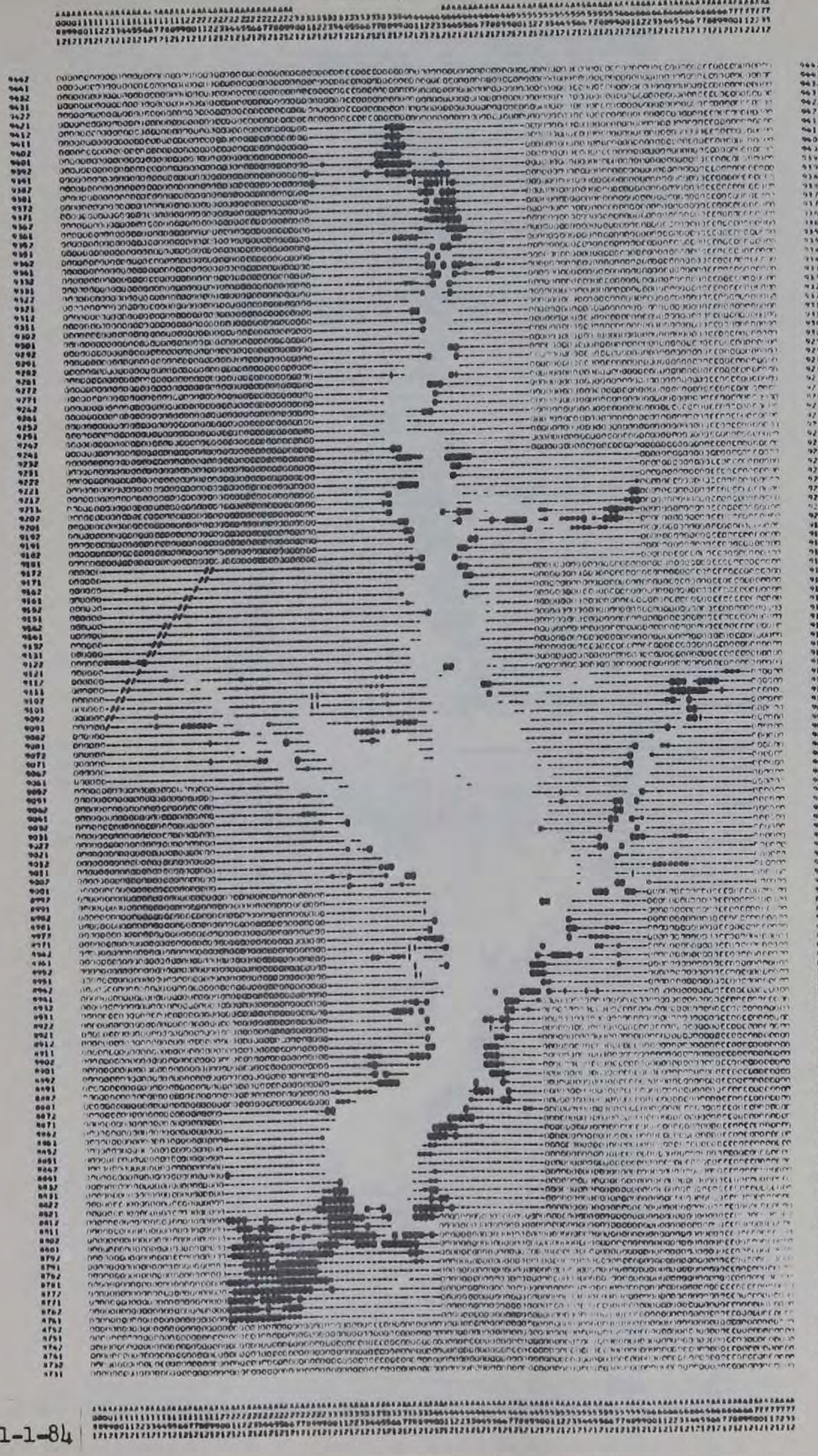


Fig. 1-1-84

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOW
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOW

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, K.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPU R.JONES, L.SWANSON, R.HOPPNER, D.ALLEN, D.FRANCLIUS, D.HILLS

HABITAT VEGETATION/PUDIL - ALTERNATIVE #3

VEGETATION TYPES USED AS WILDLIFE HABITAT IN THE RESERVOIR SITE WERE MAPPED FOR EXAMINATION OF PATTERNS. THESE INDICATE THE IMPORTANT COVER TYPES AND WATER AREAS USED BY WILDLIFE.

COMPARISON OF THE DATA CAN BE MADE WITH A FIELD INVENTORY (LANDERS 1972) AND WITH AERIAL PHOTOGRAPHS (1939, 1953, 1959, AND 1969) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 960.

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER (PROPOSED IMPOUNDMENTS)

1 = OTHER

2 = POTHOLES (0700)

3 = PONDS (0500)

4 = RAILROAD RIGHT OF WAY (2700)

5 = ROADSIDE (2300)

6 = STRINGER (2100)

7 = FENCEROW (2200)

8 = OPEN FOREST (6000)

9 = URBAN FOREST (6400)

10 = RURAL FOREST (7000-7600)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 5.80 ST. DEV. = 4.11

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

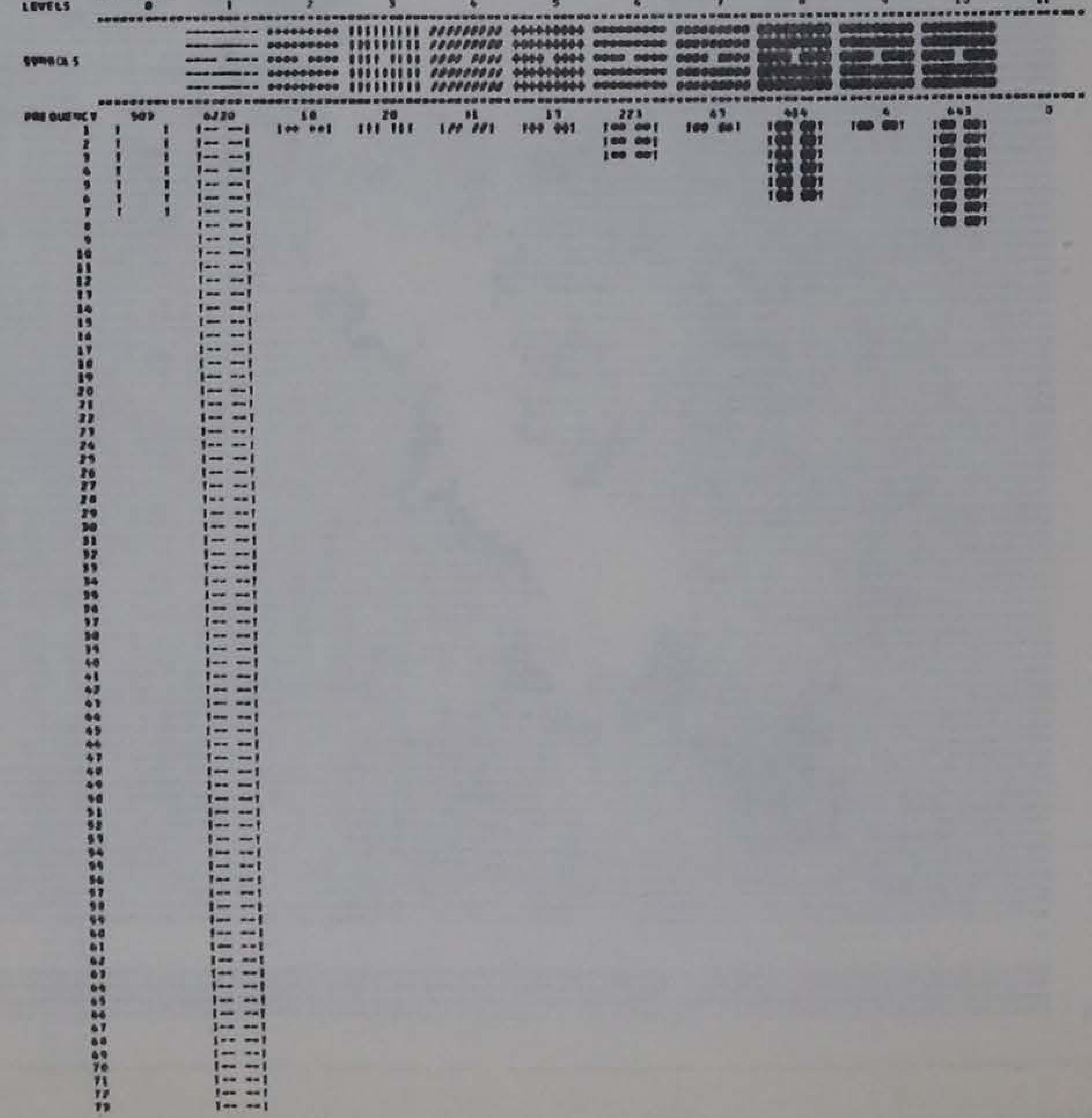
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	509	6220	18	20	31	13	223	63	404	6	643	0



12.SHEET 1.DATA SET 1

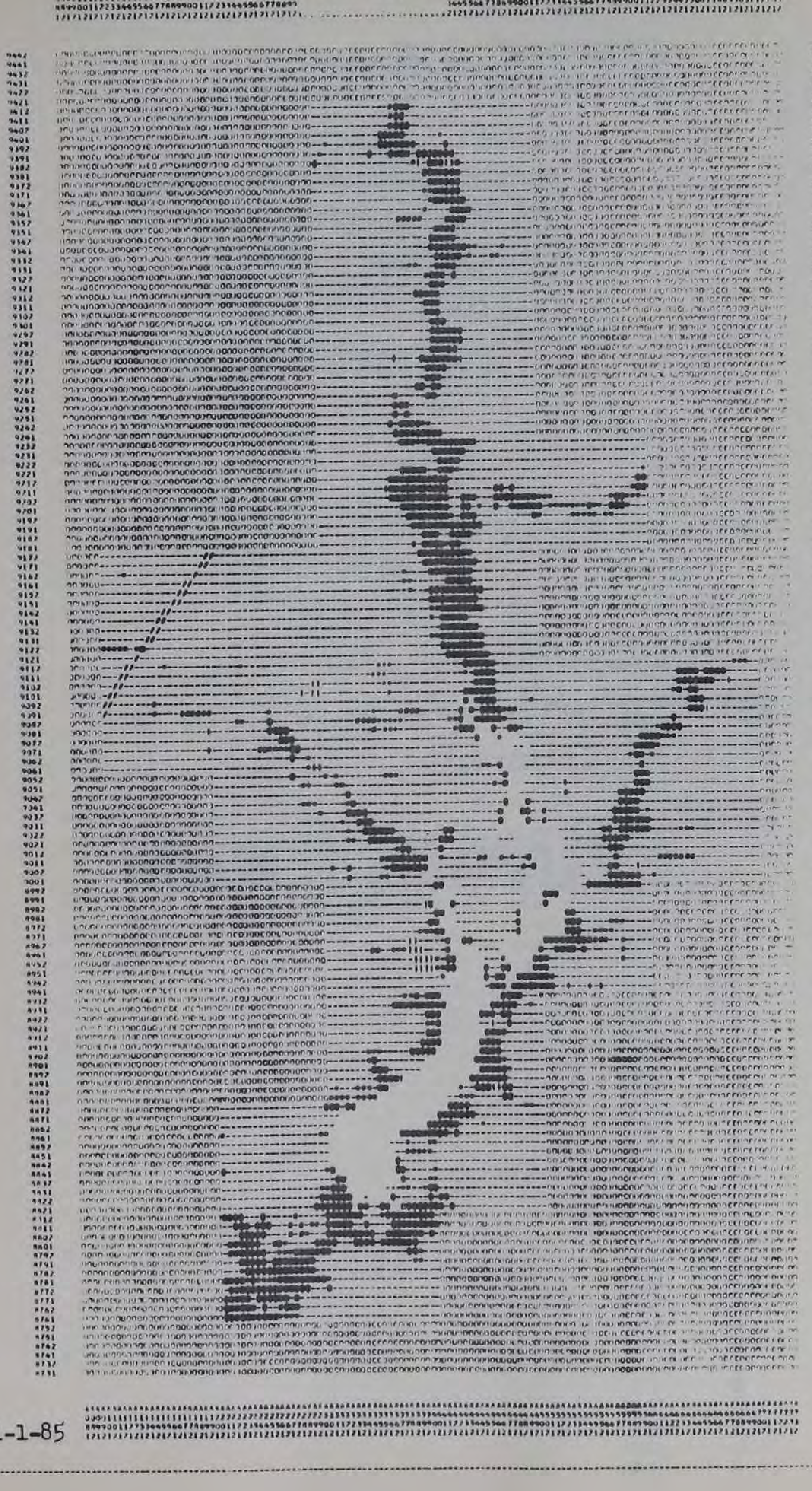


Fig. 1-1-85

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-138

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST D.M.BEAVERS
DATA PREPARATION J.C.TAGGERT, T.SMICK, A.PUDIL, D.FARLINGER,
S.CECIL, D.SEYMOUR, R.SCHUTTLER, D.KRANY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO N.JONES, T.SWANSON, F.HOEPPNER, D.ALLEN, D.FERNALIUS, D.MILLS

HABITAT VEGETATION/MODIL - ALTERNATIVE #4

VEGETATION TYPES USED AS WILDLIFE HABITAT IN THE RESERVOIR SITE WERE MAPPED FOR EXAMINATION OF PATTERNS. THESE INDICATE THE IMPORTANT COVER TYPES AND AREAS USED BY WILDLIFE.
COMPARISON OF THE DATA CAN BE MADE WITH A FIELD INVENTORY (EARLIER 1972) AND WITH AERIAL PHOTOGRAPHS (1939, 1951, 1959, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 977
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER (PROPOSED IMPOUNDMENTS)

1 = OTHER

2 = POTHOLES (0700)

3 = PONDS (0500)

4 = RAILROAD RIGHT OF WAY (2706)

5 = ROADSIDE (2300)

6 = STRINGER (2100)

7 = FENCEROW (2200)

8 = OPEN FOREST (6000)

9 = URBAN FOREST (4400)

10 = RURAL FOREST (7000-7600)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.10 ST. DEV. = 5.06

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

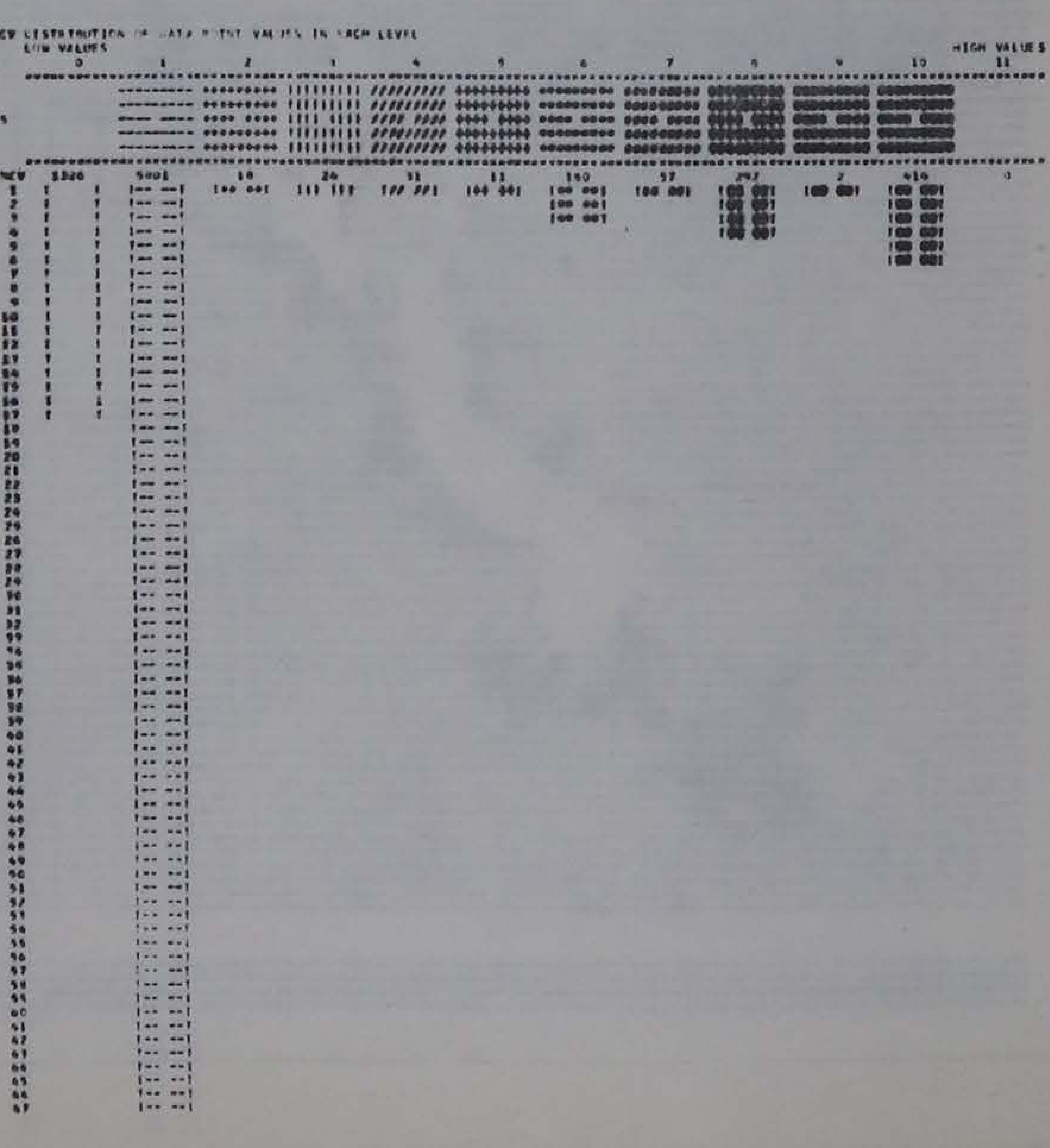
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1320	5001	18	26	31	11	150	57	292	2	416	0



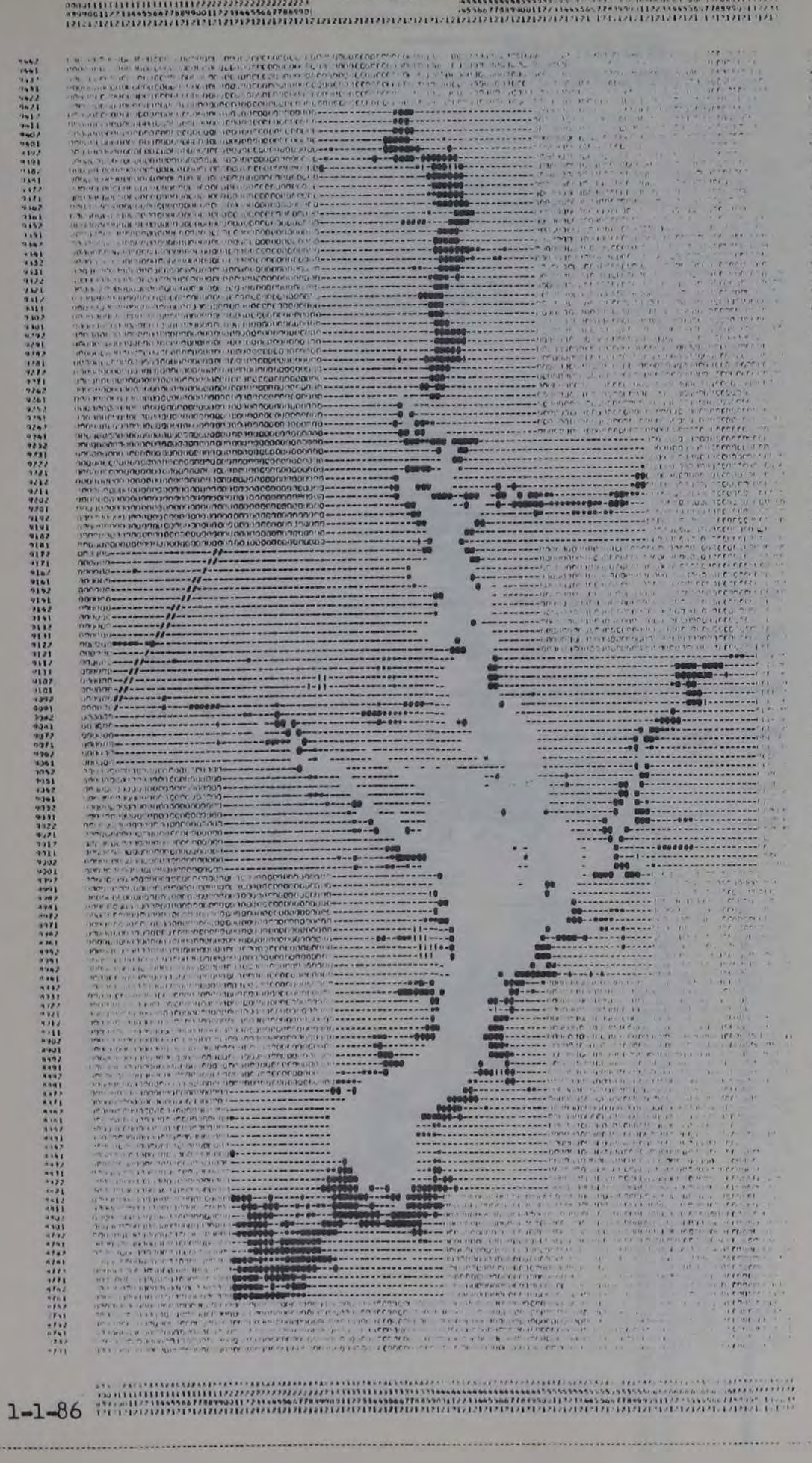


Fig. 1-1-86

1-1-140

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUGIL, D.PARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERWY
GRAPHICS C.J.URAN, D.DEPRENGER
KPD N.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.PERNELIUS, D.HILLS

HABITAT VEGETATION/PUDIL - ALTERNATIVE # 6

VEGETATION TYPES USED AS WILDLIFE HABITAT IN THE RESERVOIR SITE WERE MAPPED FOR EXAMINATION OF PATTERNS. THESE INDICATE THE IMPORTANT COVER TYPES AND WATER AREAS USED BY WILDLIFE.

COMPARISON OF THE DATA CAN BE MADE WITH A FIELD INVENTORY (LANDERS 1977) AND WITH AERIAL PHOTOGRAPHS (1939, 1953, 1959, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE NO IMPOUNDMENTS. ESSENTIALLY EXISTING CONDITIONS.

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000, 1965.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER (PROPOSED IMPOUNDMENTS)

1 = OTHER

2 = POTHOLES (0700)

3 = PONDS (0500)

4 = RAILROAD RIGHT OF WAY (2700)

5 = ROADSIDE (2900)

6 = STRINGER (2100)

7 = FENCEROW (2200)

8 = OPEN FOREST (6000)

9 = URBAN FOREST (4600)

10 = RURAL FOREST (7000-7600)

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.59 ST. DEV. = 3.19

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

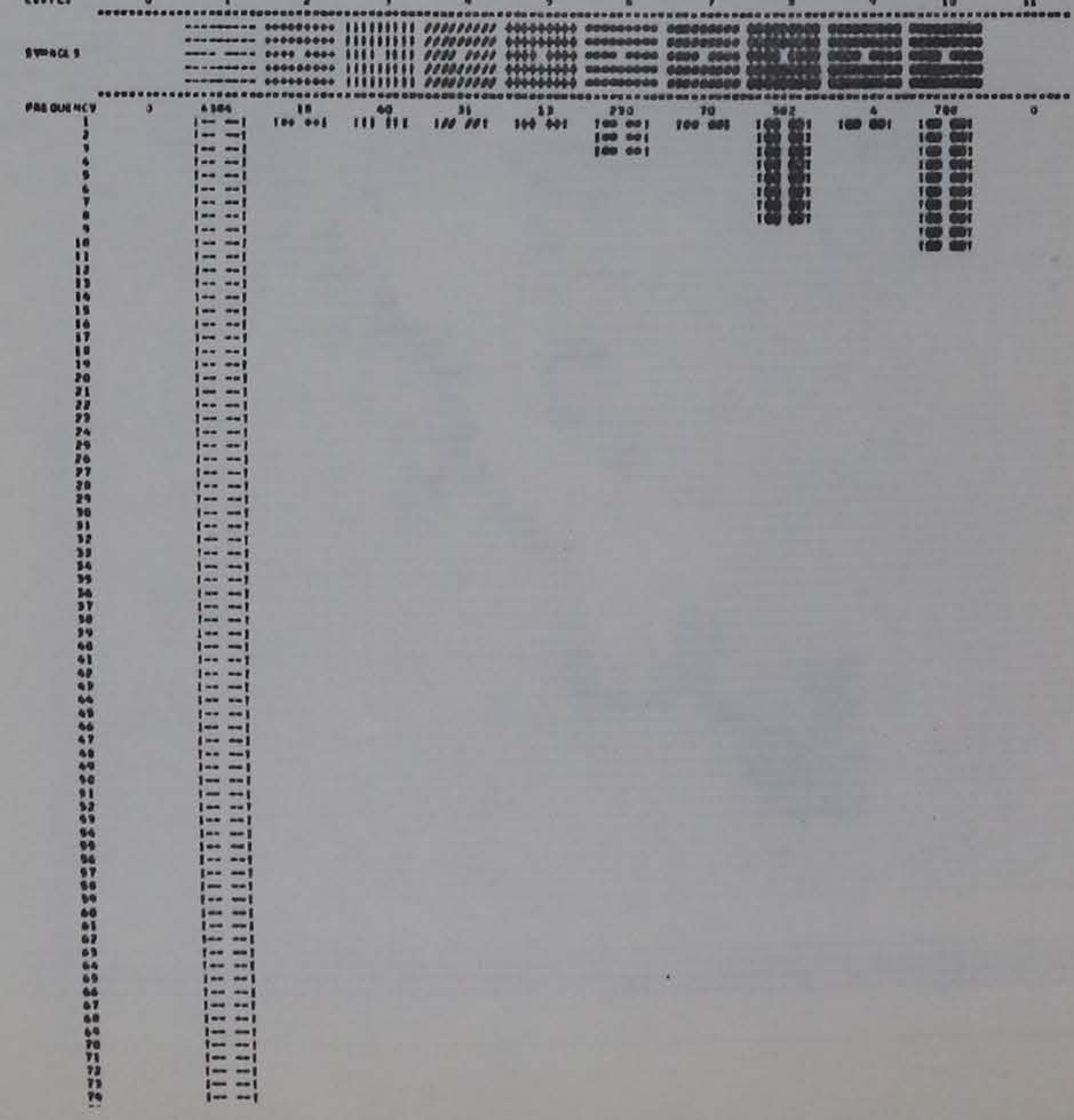
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES										HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
FREQUENCY	0	4384	18	40	35	13	290	70	502	6	700	0

SYMBOLS



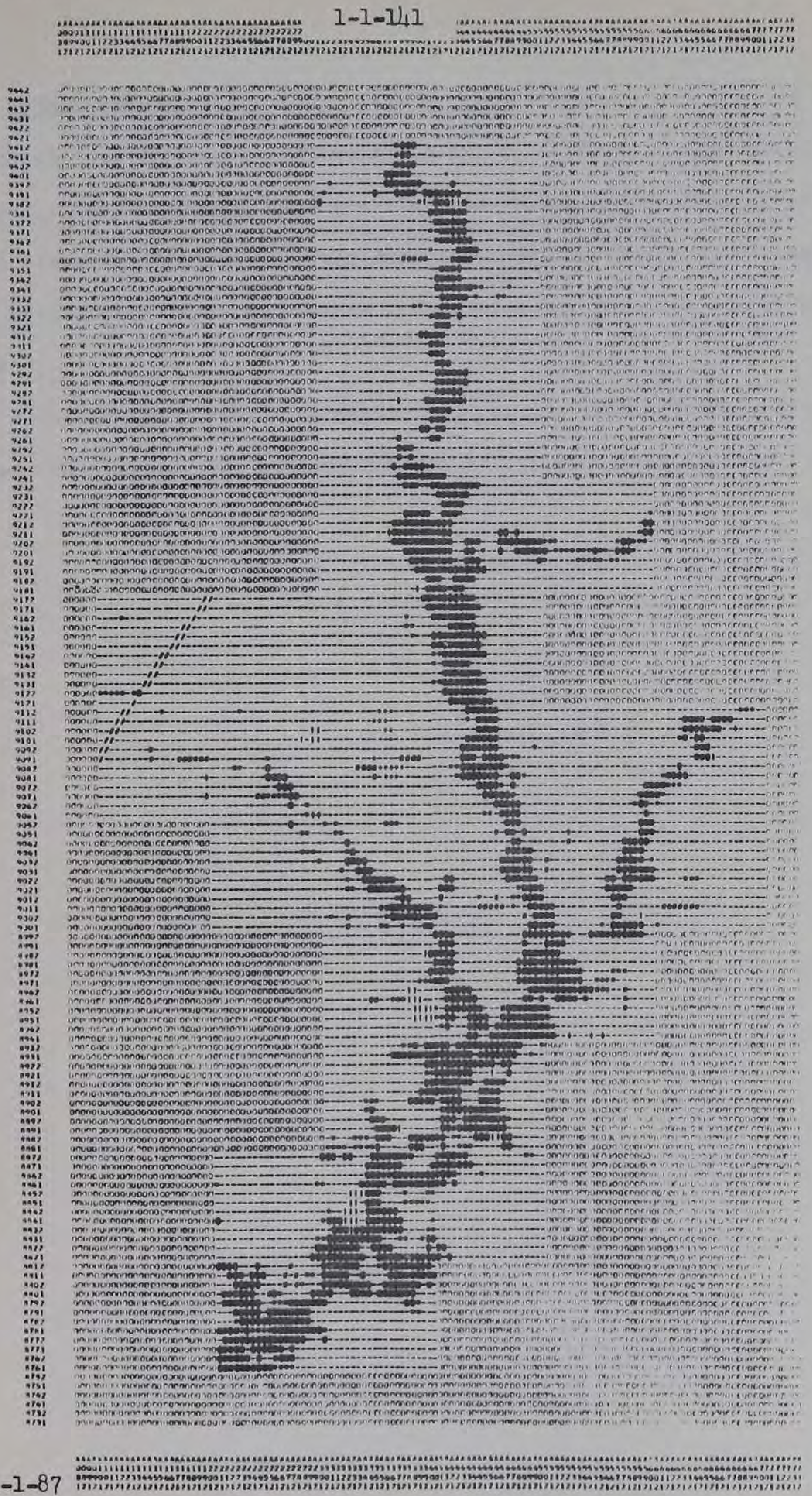


Fig. 1-1-87

Archaeological sites (Fig. 1-1-88 thru 1-1-93). As the amount of inundated land decreases (Alternatives #1, 2, 4, 3, 5, 6) the number of archaeological sites increases. The greatest concentration of sites after inundation (pool elevation 976) is near the dam site. Should construction begin, utmost care will be required to preserve and provide interpretive access for these sites.

Pool elevation 940 (Alternative #3) permits access to many sites in the Soper's Mill area. The subimpoundments affect the sites little.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-143

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SMICK, A.PUCIL, D.FARLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.BERRY
GRAPHICS C.JJUDGE, D.DEPRENGER
RPO W.JONES, T.SWANSON, R.MOEPPNER, D.ALLEN, D.PERNELIUS, M.MILLS

ARCHAEOLOGICAL SITES (ALTERNATIVE 01)

AN EXTENSIVE GROUND SURVEY WAS USED TO LOCATE ARCHAEOLOGICAL SITES IN THE RESERVOIR STUDY AREA. WORK PREVIOUS TO THIS STUDY HAD BEEN STARTED FOR THE NATIONAL PARK SERVICE AS AN INVENTORY OF POTENTIALLY ENDANGERED SITES. CULTURAL AFFILIATION, SITE TYPE, AND NATURE OF EVIDENCE WERE LISTED FOR EACH SITE.

IN CELLS WHERE MORE THAN ONE TYPE OF SITE OCCURRED, THE TYPE THAT WAS NOT REPRESENTED IN ADJACENT CELLS WAS GIVEN PREFERENCE. IN CELLS WHERE MORE THAN ONE ACTIVITY TOOK PLACE, THE DOMINANT ACTIVITY WAS GIVEN PREFERENCE.

ONLY THOSE SITES WHICH REMAIN ABOVE THE FLOOD CONTROL POOL LEVEL ARE SHOWN.

ALTERNATIVE 01 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO 01.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. OAK SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: SUMMARY OF ARCHAEOLOGICAL SITES IN THE AMES RESERVOIR AREA, BY DAVID M. GRADWOHL AND NANCY M. OSBORN, DEPT. OF SOCIOLOGY AND ANTHROPOLOGY, IOWA STATE UNIVERSITY, AUGUST, 1972.

LEGEND

0 = WATER

1 = NO SITES

2 =

3 =

4 =

5 =

6 =

7 =

8 =

9 =

10 = ARCHAEOLOGICAL SITES

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -1.94 ST. DEV. = 4.87

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
SYMBOLS		---------	ooooooooo	IIIIIIIII	/////////	+++++++++	ooooooooo	ooooooooo	[illegible]	[illegible]	[illegible]	
FREQUENCY	1959	6120	0	0	0	0	0	0	0	0	71	0
											100.001	

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10060

VARIABLE CLASS 0 11 IMPORTANCE FACTOR 10

WW 0 WT 1 WWWWWW WT 10 WW

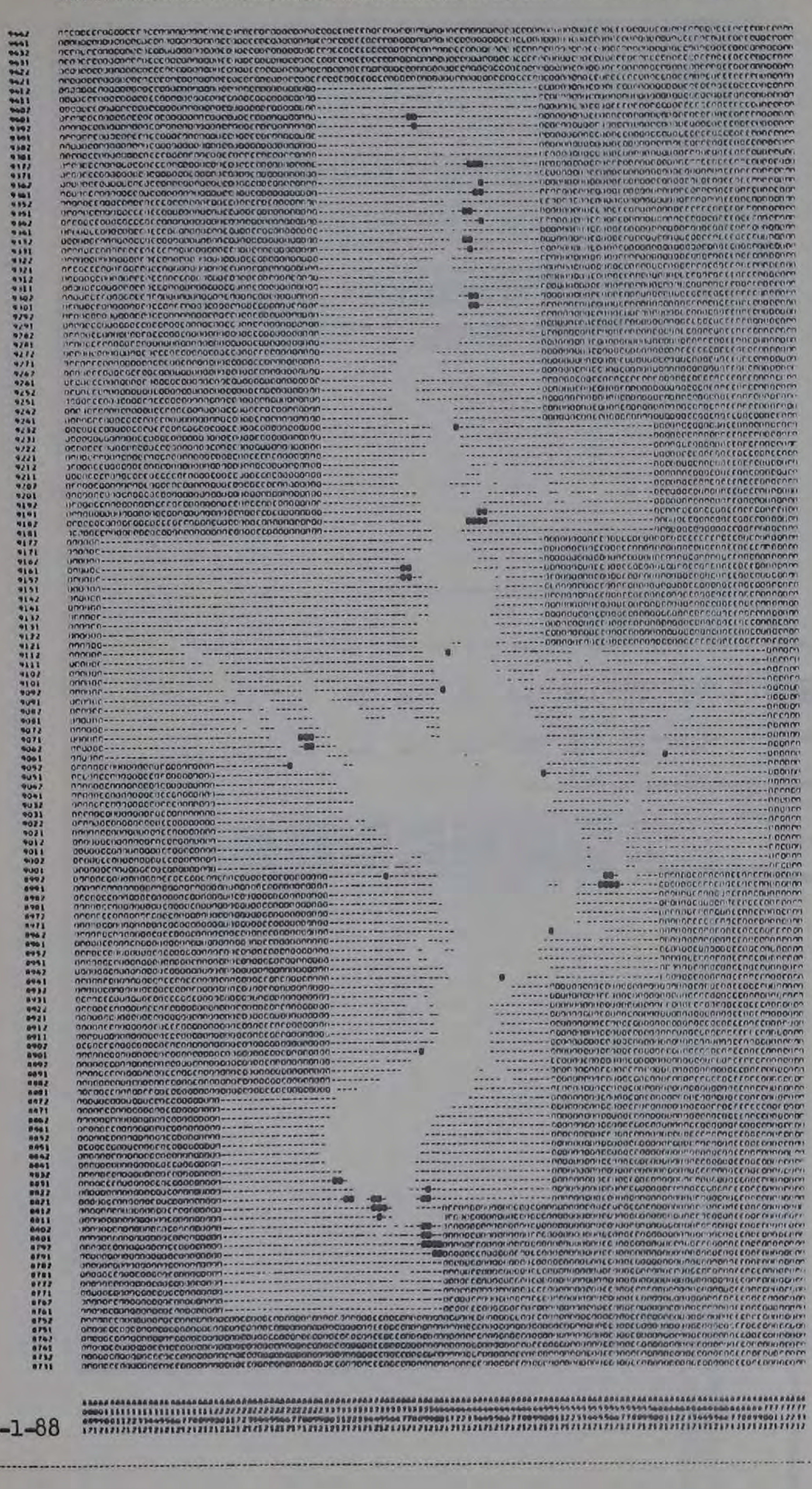


Fig. 1-1-88

AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-145

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUOTL, C.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, C.DEPRENGER
KPO N.JONES, E.SWANSON, P.HOEPPNER, D.ALLEN, D.PERNELIUS, D.HILLS

ARCHAEOLOGICAL SITES (ALTERNATIVE #2)

AN EXTENSIVE GROUND SURVEY WAS USED TO LOCATE ARCHAEOLOGICAL SITES IN THE RESERVOIR STUDY AREA. WORK PREVIOUS TO THIS STUDY HAD BEEN STARTED BY THE NATIONAL PARK SERVICE AS AN INVENTORY OF POTENTIALLY ENDANGERED SITES. CULTURAL AFFILIATION, SITE TYPE, AND NATURE OF EVIDENCE WERE LISTED FOR EACH SITE.

IN CELLS WHERE MORE THAN ONE TYPE OF SITE OCCURRED, THE TYPE THAT WAS NOT REPRESENTED IN ADJACENT CELLS WAS GIVEN PREFERENCE. IN CELLS WHERE MORE THAN ONE ACTIVITY TOOK PLACE, THE DOMINANT ACTIVITY WAS GIVEN PREFERENCE.

ONLY THOSE SITES WHICH REMAIN ABOVE THE FLOOD CONTROL POOL LEVEL ARE SHOWN.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION 953
FLOOD POOL, ELEVATION 976

SOURCE: SUMMARY OF ARCHAEOLOGICAL SITES IN THE AMES RESERVOIR AREA, BY DAVID M. GRADWOHL AND NANCY M. OSBORN, DEPT. OF SOCIOLOGY AND ANTHROPOLOGY, IOWA STATE UNIVERSITY, AUGUST, 1972.

LEGEND

0 = WATER

1 = NO SITES

2 =

3 =

4 =

5 =

6 =

7 =

8 =

9 =

10 = ARCHAEOLOGICAL SITES

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = [illegible] ST. DEV. = [illegible]

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

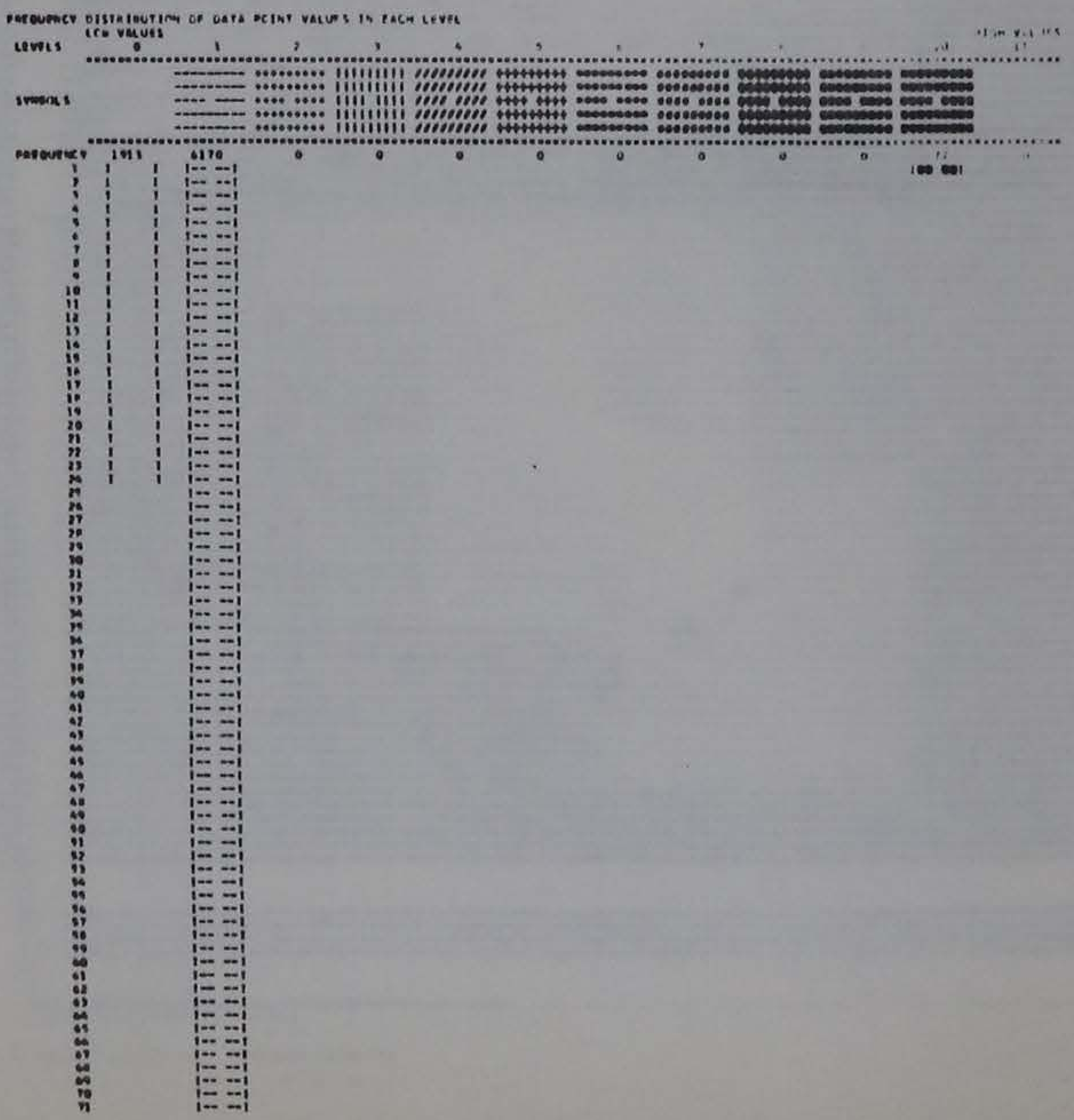
MINIMUM	0.0	1.09	2.19	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1911	6170	0	0	0	0	0	0	0	0	72	0



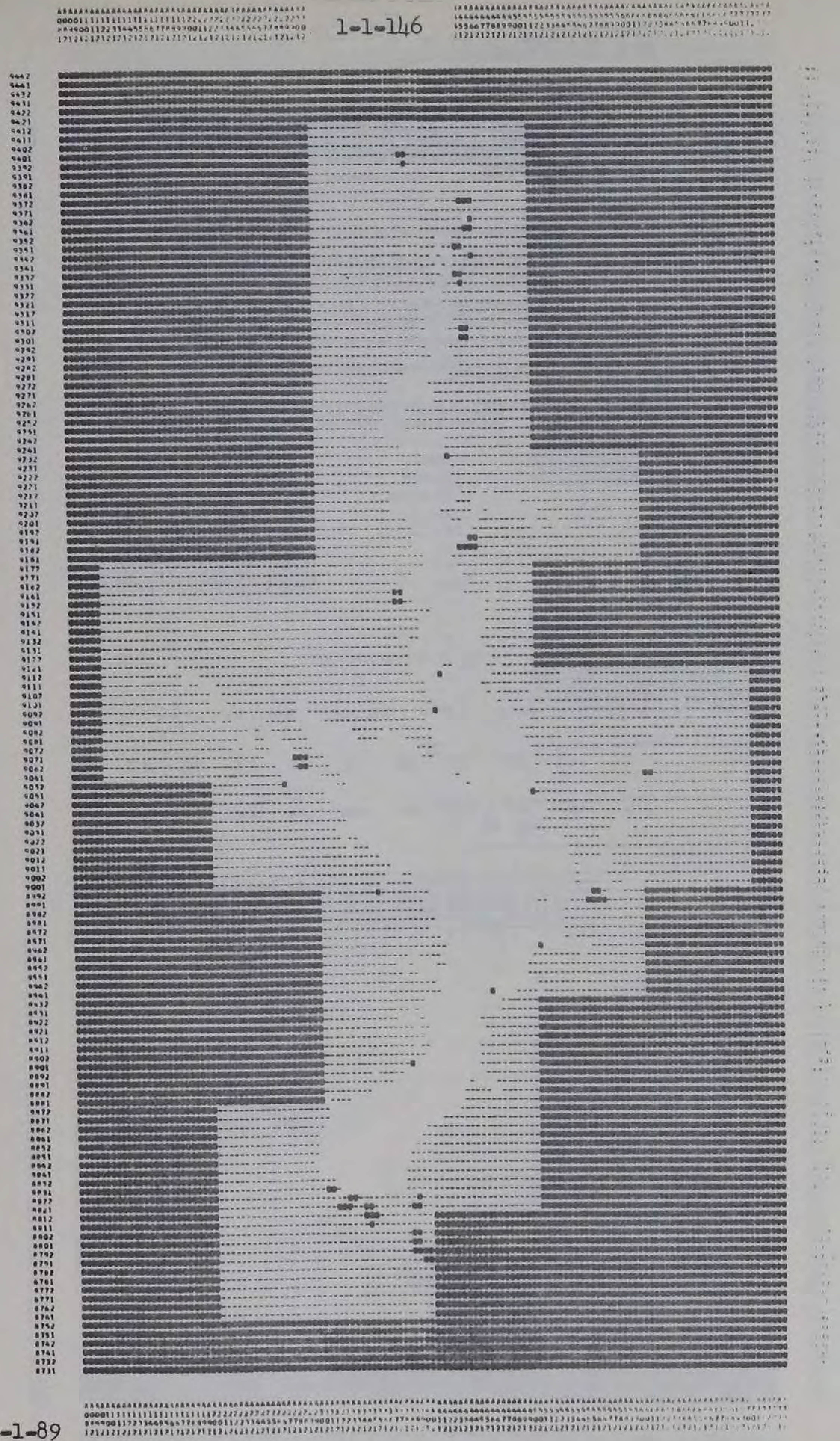


Fig. 1-1-89

ENVIRCNMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY CF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.UBAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, A.HOEPPNER, D.ALLEN, D.PERNELIUS, J.HILLS

ARCHAEOLOGICAL SITES (ALTERNATIVE #3)

AN EXTENSIVE GROUND SURVEY WAS USED TC LOCATE ARCHAEOLOGICAL SITES IN THE RESERVOIR STUDY AREA. WORK PREVIOUS TO THIS STUDY HAD BEEN STARTED FOR THE NATICNAL PARK SERVICE AS AN INVENTORY OF POTENTIALLY ENDANGERED SITES. CULTURAL AFFILIATION, SITE TYPE, AND NATURE OF EVIDENCE WERE LISTED FOR EACH SITE.

IN CELLS WHERE MORE THAN ONE TYPE OF SITE OCCURED, THE TYPE THAT WAS NOT REPRESENTED IN ADJACENT CELLS WAS GIVEN PREFERENCE. IN CELLS WHERE MORE THAN ONE ACTIVITY TOOK PLACE, THE DOMINANT ACTIVITY WAS GIVEN PREFERENCE.

ONLY THOSE SITES WHICH REMAIN ABOVE THE FLOOD CONTROL POOL LEVEL ARE SHOWN.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

SOURCE: SUMMARY OF ARCHAEOLOGICAL SITES IN THE AMES RESERVOIR AREA, BY DAVID M. GRADWOHL AND NANCY M. OSBORN, DEPT. OF SOCIOLOGY AND ANTHROPOLOGY, IOWA STATE UNIVERSITY, AUGUST, 1977.

LEGEND

0 = WATER

1 = NO SITES

2 =

3 =

4 =

5 =

6 =

7 =

8 =

9 =

10 = ARCHAEOLOGICAL SITES

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.50 ST. DEV. = 2.97

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	494	1517	0	0	0	0	0	0	0	0	149	0

```
SYMBOLS
          ---------  .........  |||||||||  /////////  +++++++++  
FREQUENCY   494        1517        0          0          0      0   0   0   0   0   149   0
     1    I     I    I-- --I                                                    I██ ██I
     2    I     I    I-- --I                                                    I██ ██I
     3    I     I    I-- --I
     4    I     I    I-- --I
     5    I     I    I-- --I
     6    I     I    I-- --I
     7    I     I    I-- --I
     8               I-- --I
     9               I-- --I
    10               I-- --I
    11               I-- --I
    12               I-- --I
    13               I-- --I
    14               I-- --I
    15               I-- --I
    16               I-- --I
    83               I-- --I
    84               I-- --I
    85               I-- --I
    86               I-- --I
    87               I-- --I
    88               I-- --I
    89               I-- --I
    90               I-- --I
    91               I-- --I
    92               I-- --I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0

VARIABLE CLASS # 13 IMPORTANCE FACTOR 9

VU 0 WT 1 VU9999 WT 10 VU

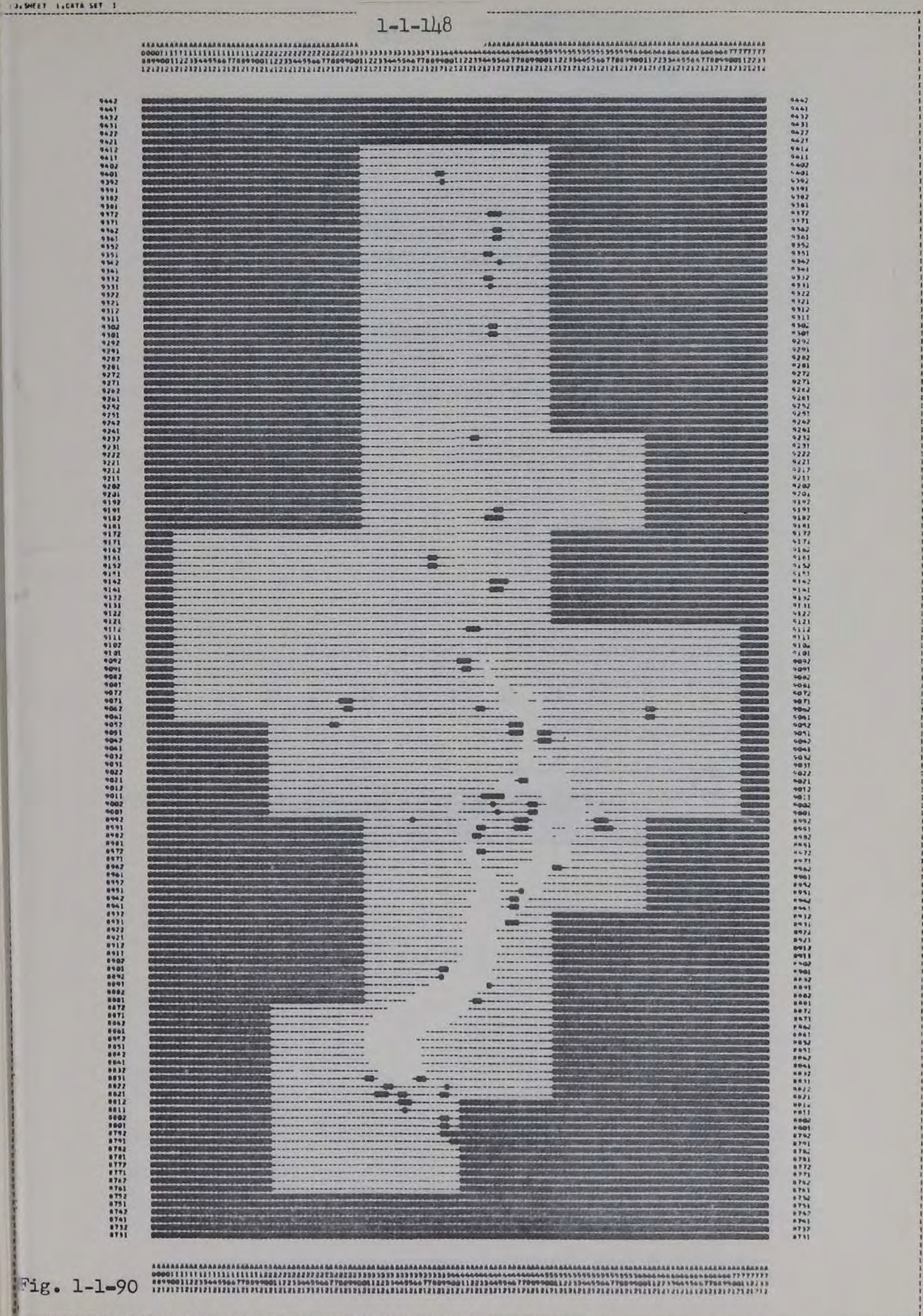


Fig. 1-1-90

```
ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA
```

1-1-149

```
PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS  J.D.SINATRA,  P.F.ANDERSON
PROGRAMMER-ANALYST  G.H.BEAVERS
DATA PREPARATION   J.C.TAGGART,  T.SHUCK,  A.PUOIL,  D.FARLANGER,
                   S.CECIL,  D.SEYMOUR,  W.SCHUTTLER,  D.KENNY
GRAPHICS   C.J.UBAN,  D.DEPRENGER
KPO  N.JONES,  E.SWANSON,  R.HOEPPNER,  D.ALLEN,  D.PERNELIUS,  D.HILLS


ARCHAEOLOGICAL SITES (ALTERNATIVE 04)

AN EXTENSIVE GROUND SURVEY WAS USED TO LOCATE ARCHAEOLOGICAL SITES IN THE
RESERVOIR STUDY AREA.  WORK PREVIOUS TO THIS STUDY HAD BEEN STARTED FOR THE
NATIONAL PARK SERVICE AS AN INVENTORY OF POTENTIALLY ENDANGERED SITES.  CULTURAL
AFFILIATION, SITE TYPE, AND NATURE OF EVIDENCE WERE LISTED FOR EACH SITE.

IN CELLS WHERE MORE THAN ONE TYPE OF SITE OCCURED,  THE TYPE THAT WAS NOT
REPRESENTED IN ADJACENT CELLS WAS GIVEN PREFERENCE.   IN CELLS WHERE MORE THAN
ONE ACTIVITY TOOK PLACE, THE DOMINANT ACTIVITY WAS GIVEN PREFERENCE.

ONLY THOSE SITES WHICH REMAIN ABOVE THE FLOOD CONTROL POOL LEVEL ARE SHOWN.

ALTERNATIVE 04 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE
OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A.  AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
                     FLOOD POOL, ELEVATION 965
B.  BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 973
                                FLOOD POOL, ELEVATION 979
C.  DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE:  SUMMARY OF ARCHAEOLOGICAL SITES IN THE AMES RESERVOIR AREA, BY DAVID M.
         GRADWOHL AND NANCY M. OSBORN, DEPT. OF SOCIOLOGY AND ANTHROPOLOGY,
         IOWA STATE UNIVERSITY, AUGUST, 1972.


                LEGEND

                0 = WATER

                1 = NO SITES

                2 =

                3 =

                4 =

                5 =

                6 =

                7 =

                8 =

                9 =

                10 = ARCHAEOLOGICAL SITES

                11 =
```

```
DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF     0.0  AND    10.90  MEAN =    -0.66 ST. DEV. =     4.19
```

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

```
FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
          LOW VALUES                                                                                  HIGH VALUES
LEVELS        0         1         2         3         4         5         6         7         8         9        10        11
        ***********************************************************************************************************************
                   --------- ********* ||||||||| ///////// +++++++++ ooooooooo 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
                   --------- ********* ||||||||| ///////// +++++++++ ooooooooo 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
SYMBOLS            ---- ---- **** **** |||| |||| //// //// ++++ ++++ oooo oooo 0000 0000 @@@@ @@@@ @@@@ @@@@ @@@@ @@@@
                   --------- ********* ||||||||| ///////// +++++++++ ooooooooo 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
                   --------- ********* ||||||||| ///////// +++++++++ ooooooooo 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
        ***********************************************************************************************************************
FREQUENCY   1306      6760        0         0         0         0         0         0         0         0        94         0
     1   I     I   I-- --I                                                                                  I@@ @@I
     2   I     I   I-- --I                                                                                  I@@ @@I
     3   I     I   I--  -I
     4   I     I   I-- --I
     5   I     I   I-- --I
     6   I     I   I-- --I
     7   I     I   I-- --I
     8   I     I   I-- --I
     9   I     I   I-- --I
    10   I     I   I-- --I
    11   I     I   I-- --I
    12   I     I   I-- --I
    13   I     I   I-- --I
    14   I     I   I-- --I
    15   I     I   I-- --I
    16   I     I   I-- --I
    17   I     I   I-- --I
    18             I-- --I
    19             I-- --I
    20             I-- --I
    21             I-- --I
    22             I-- --I
    23             I-- --I
    24             I-- --I
    25             I-- --I
    26             I-- --I
    27             I-- --I
    28             I-- --I
    29             I-- --I
    30             I-- --I
    31             I-- --I
    32             I-- --I
    33             I-- --I
    34             I-- --I
    35             I-- --I
    36             I-- --I
    37             I-- --I
    38             I-- --I
    39             I-- --I
    40             I-- --I
    41             I-- --I
    42             I-- --I
   HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
   NUMBER OF BACKGROUND CELLS =     0

   VARIABLE CLASS #  11    IMPORTANCE FACTOR   9

      VU   0   WT   1   V/9999   WT  10   VU
```

11,SHEET 1,DATA SET 1

1-1-150

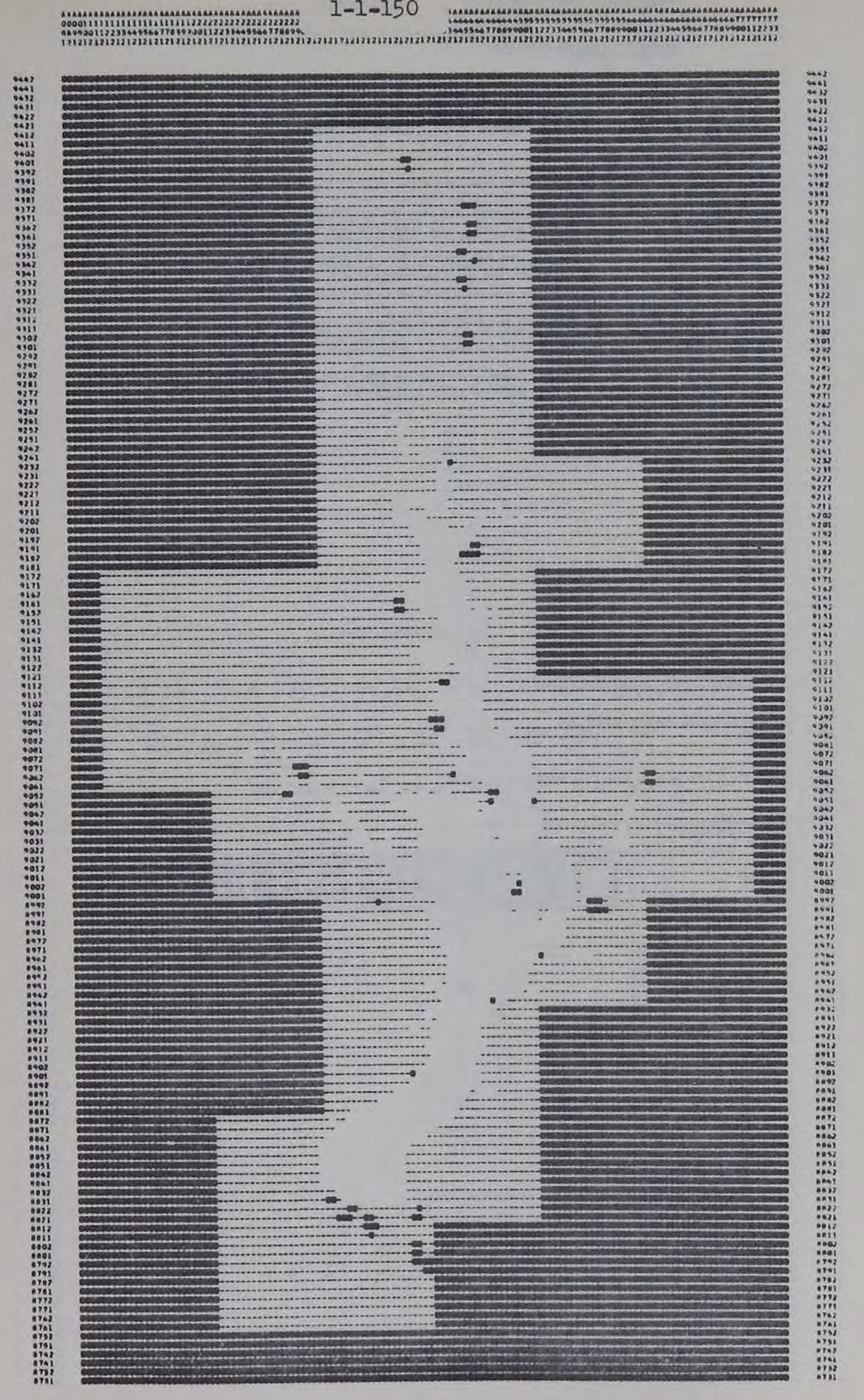


Fig. 1-1-91

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-151

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.W.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.UBAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

ARCHAEOLOGICAL SITES (ALTERNATIVE #5)

AN EXTENSIVE GROUND SURVEY WAS USED TO LOCATE ARCHAEOLOGICAL SITES IN THE RESERVOIR STUDY AREA. WORK PREVIOUS TO THIS STUDY HAD BEEN STARTED FOR THE NATIONAL PARK SERVICE AS AN INVENTORY OF POTENTIALLY ENDANGERED SITES. CULTURAL AFFILIATION, SITE TYPE, AND NATURE OF EVIDENCE WERE LISTED FOR EACH SITE.

IN CELLS WHERE MORE THAN ONE TYPE OF SITE OCCURED, THE TYPE THAT WAS NOT REPRESENTED IN ADJACENT CELLS WAS GIVEN PREFERENCE. IN CELLS WHERE MORE THAN ONE ACTIVITY TOOK PLACE, THE DOMINANT ACTIVITY WAS GIVEN PREFERENCE.

ONLY THOSE SITES WHICH REMAIN ABOVE THE FLOOD CONTROL POOL LEVEL ARE SHOWN.

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: SUMMARY OF ARCHAEOLOGICAL SITES IN THE AMES RESERVOIR AREA, BY DAVID M. GRADWOHL AND NANCY M. OSBORN, DEPT. OF SOCIOLOGY AND ANTHROPOLOGY, IOWA STATE UNIVERSITY, AUGUST, 1972.

LEGEND

0 = WATER

1 = NO SITES

2 =

3 =

4 =

5 =

6 =

7 =

8 =

9 =

10 = ARCHAEOLOGICAL SITES

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 1.09 ST. DEV. = 1.92

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
            LOW VALUES                                                                       HIGH VALUES
 LEVELS         0         1         2         3         4         5         6         7         8         9        10        11
         ************************************************************************************************************************
                     --------- ********* IIIIIIIII ///////// +++++++++ OOOOOOOOO OOOOOOOOO @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
                     --------- ********* IIIIIIIII ///////// +++++++++ OOOOOOOOO OOOOOOOOO @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
 SYMBOLS             ---- ---- **** **** IIII IIII //// //// ++++ ++++ OOOO OOOO OOOO OOOO @@@@ @@@@ @@@@ @@@@ @@@@ @@@@
                     --------- ********* IIIIIIIII ///////// +++++++++ OOOOOOOOO OOOOOOOOO @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
                     --------- ********* IIIIIIIII ///////// +++++++++ OOOOOOOOO OOOOOOOOO @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
         ************************************************************************************************************************
 FREQUENCY     93       7070         0         0         0         0         0         0         0         0       197         0
       1    I     I   I-- --I                                                                                  I@@ @@I
       2    I     I   I-- --I                                                                                  I@@ @@I
       3              I-- --I                                                                                  I@@ @@I
       4              I-- --I
       5              I-- --I
       6              I-- --I
       7              I-- --I
       8              I-- --I
       9              I-- --I
      10              I-- --I
      11              I-- --I
      12              I-- --I
      13              I-- --I
      14              I-- --I
      81              I-- --I
      82              I-- --I
      83              I-- --I
      84              I-- --I
      85              I-- --I
      86              I-- --I
      87              I-- --I
      88              I-- --I
      89              I-- --I
      90              I-- --I
      91              I-- --I
      92              I-- --I
      93              I-- --I
      94              I-- --I
      95              I-- --I
      96              I-- --I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 13 IMPORTANCE FACTOR 10

VU 0 WT 1 VU9999 WT 10 VU

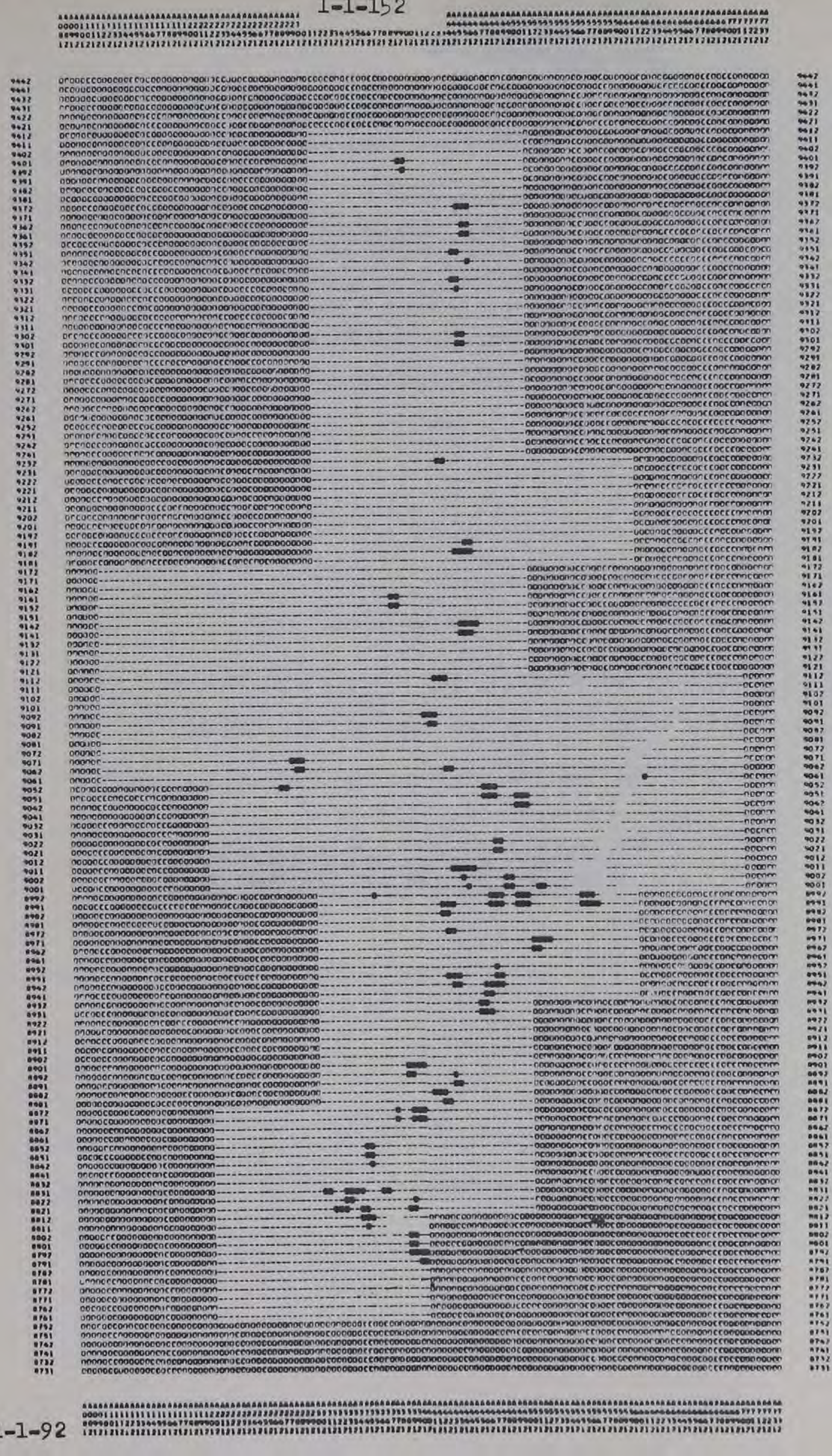


Fig. 1-1-92

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-153

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D. SINATRA, P.F. ANDERSON
PROGRAMMER-ANALYST G.M. BEAVERS
DATA PREPARATION J.C. TAGGART, T. SHUCK, A. PUDIL, D. PARLANGER, S. CECIL, D. SEYMOUR, W. SCHUTTLER, D. KENNY
GRAPHICS C.J. UBAN, D. DEPRENGER
KPU N. JONES, E. SWANSON, R. HOEPPNER, D. ALLEN, D. PERNELIUS, D. MILLS

ARCHAEOLOGICAL SITES (ALTERNATIVE #6)

AN EXTENSIVE GROUND SURVEY WAS USED TO LOCATE ARCHAEOLOGICAL SITES IN THE RESERVOIR STUDY AREA. WORK PREVIOUS TO THIS STUDY HAD BEEN STARTED FOR THE NATIONAL PARK SERVICE AS AN INVENTORY OF POTENTIALLY ENDANGERED SITES. CULTURAL AFFILIATION, SITE TYPE, AND NATURE OF EVIDENCE WERE LISTED FOR EACH SITE.

IN CELLS WHERE MORE THAN ONE TYPE OF SITE OCCURED. THE TYPE THAT WAS NOT REPRESENTED IN ADJACENT CELLS WAS GIVEN PREFERENCE. IN CELLS WHERE MORE THAN ONE ACTIVITY TOOK PLACE, THE DOMINANT ACTIVITY WAS GIVEN PREFERENCE.

ONLY THOSE SITES WHICH REMAIN ABOVE THE FLOOD CONTROL POOL LEVEL ARE SHOWN.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCE: SUMMARY OF ARCHAEOLOGICAL SITES IN THE AMES RESERVOIR ARE . BY DAVID M. GRADWOHL AND NANCY M. OSBORN, DEPT. OF SOCIOLOGY AND ANTHROPOLOGY, IOWA STATE UNIVERSITY, AUGUST, 1972.

LEGEND

0 = WATER

1 = NO SITES

2 =

3 =

4 =

5 =

6 =

7 =

8 =

9 =

10 = ARCHAEOLOGICAL SITES

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 1.22 ST. DEV. = 1.39

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.39	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
           LOW VALUES                                                                              HIGH VALUES
LEVELS         0         1         2         3         4         5         6         7         8         9        10        11
*****************************************************************************************************************************
                    ---------  +++++++++ IIIIIIIII ///////// ++++++++ ========= 000000000 ######### ######### #########
                    ---------  +++++++++ IIIIIIIII ///////// ++++++++ ========= 000000000 ######### ######### #########
SYMBOLS             ---- ----  ++++ ++++ IIII IIII //// //// ++++ +++ ==== ==== 0000 0000 #### #### #### #### #### ####
                    ---------  +++++++++ IIIIIIIII ///////// ++++++++ ========= 000000000 ######### ######### #########
                    ---------  +++++++++ IIIIIIIII ///////// ++++++++ ========= 000000000 ######### ######### #########
*****************************************************************************************************************************
FREQUENCY      0       7940        0         0         0         0         0         0         0         0        200        0
      1              I-- --I                                                                                     I## ##I
      2              I-- --I                                                                                     I## ##I
      3              I-- --I                                                                                     I## ##I
      4              I-- --I
      5              I-- --I
      6              I-- --I
      7              I-- --I
      8              I-- --I
      9              I-- --I
     10              I-- --I
     11              I-- --I
     12              I-- --I
     13              I-- --I
     14              I-- --I
     15              I-- --I
     16              I-- --I
     83              I-- --I
     84              I-- --I
     85              I-- --I
     86              I-- --I
     87              I-- --I
     88              I-- --I
     89              I-- --I
     90              I-- --I
     91              I-- --I
     92              I-- --I
     93              I-- --I
     94              I-- --I
     95              I-- --I
     96              I-- --I
     97              I-- --I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = 0

VARIABLE CLASS # 13 IMPORTANCE FACTOR 9

VU 0 WT 1 VU9999 WT 10 VU

SHEET 1,DATA SET 1

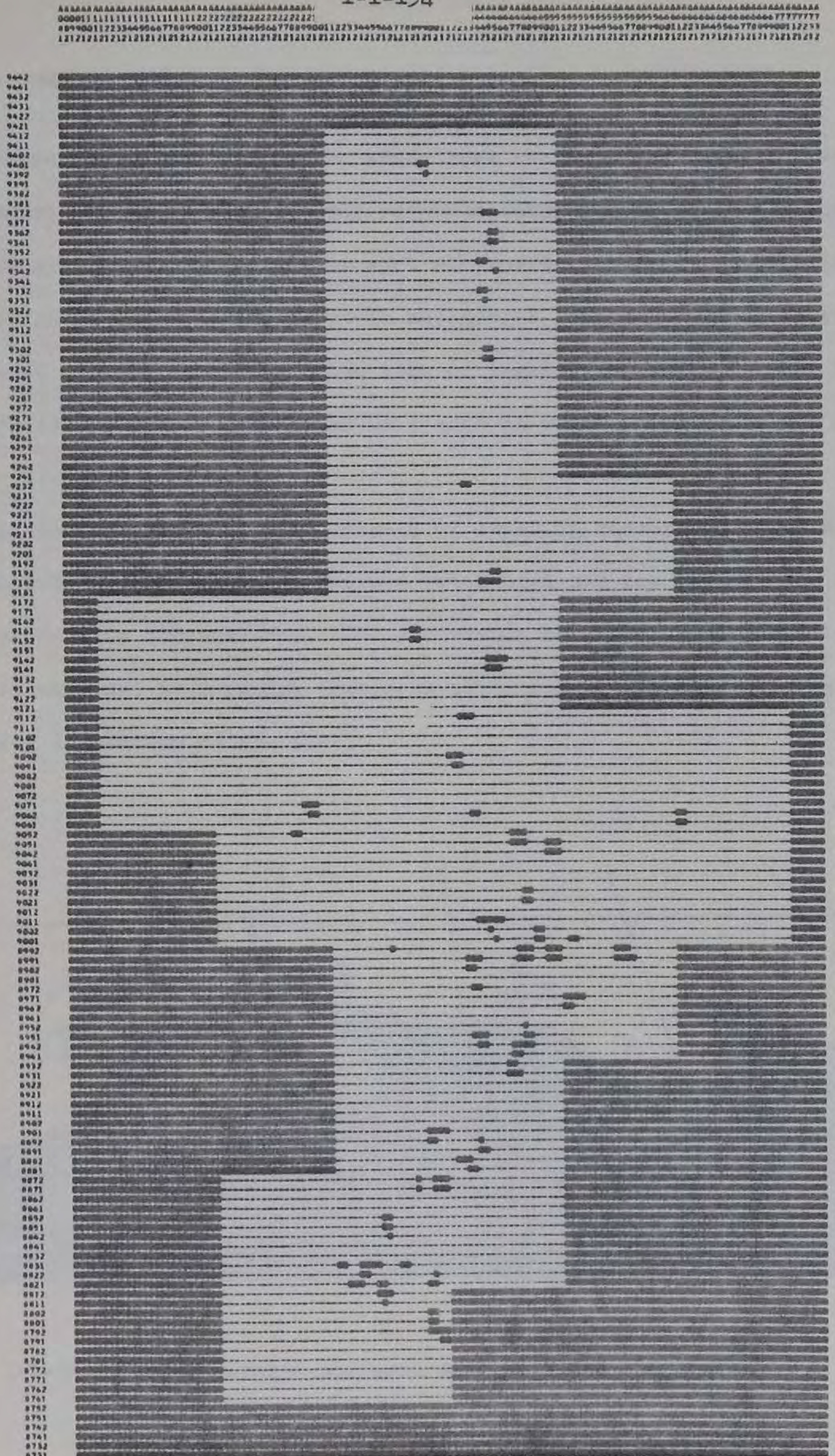


Fig. 1-1-93

Resource Summary Tables

Resource gain and loss in the study area can be shown quantitatively by a summary of the acreage of each resource remaining after inundation.

The maximum pool elevation of each alternative is used in analysis. The resource of land use inundated is considered terminally impacted for the purpose of this analysis. Each loss of vegetation, soils, archaeological sites, or land resource is matched by a gain in water resource in the study area.

The tables contain a total acreage of existing resource or land use (Alternative #6) and the total acreage (with high and low limits) for each of the other five alternatives. The difference between the high and low limits is obtained by counting (respectively) none or all of a cell as lost by partial inundation of the cell.

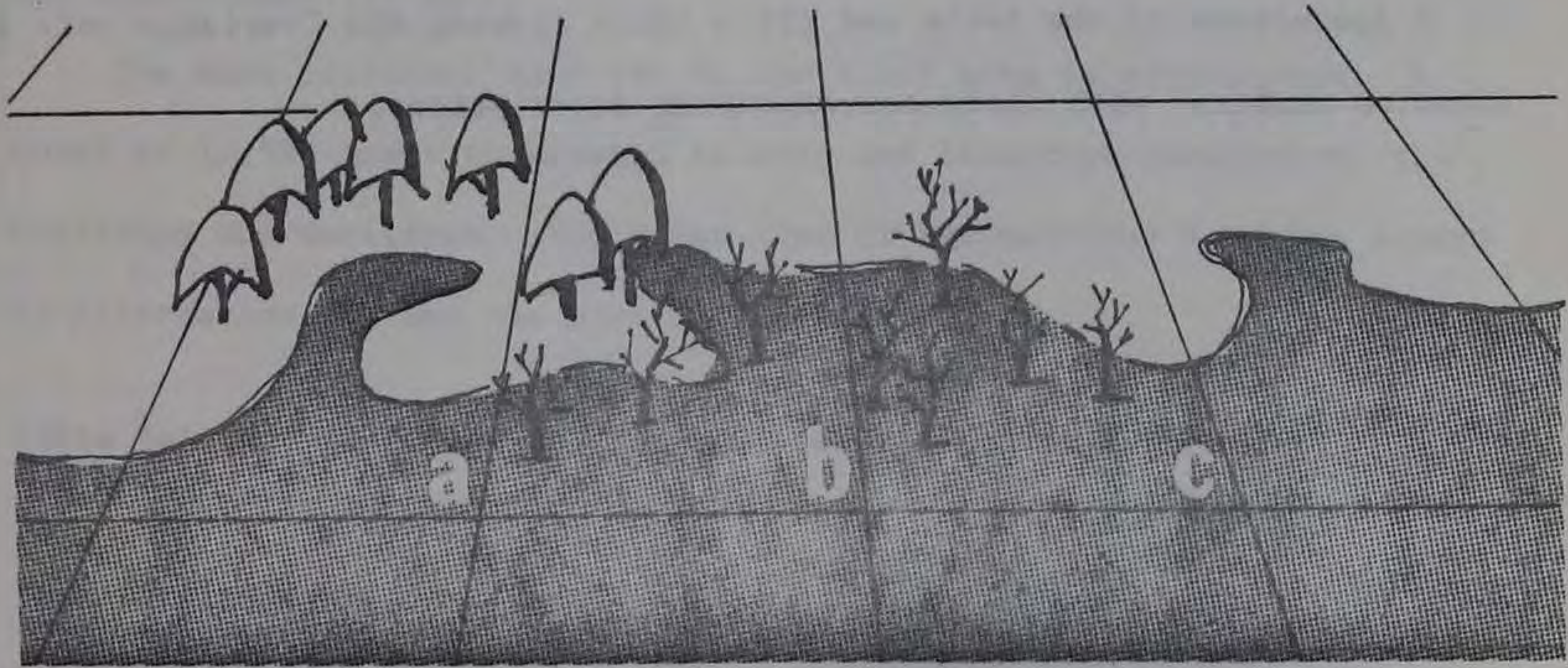


Fig. 1-1-94. Total acreage estimate with high and low limits.

Cell "b" in Fig. 1-1-94 is partially inundated. Three of the five elevation points in the cell (three-fifths) are inundated; therefore, in the total acreage column of the resource summary tables, two-fifths of the resource in c "b" is added to the total remaining.

The high limit of the amount of resource remaining after inundation is represented by cell "a". In this case, all of the resource in the cell is assumed to remain, even with partial inundation of the cell. Conversely, cell "c" shows how the low limit remaining was computed, assuming all of the resource (e.g. timber) in the cell was covered by partial inundation.

The cells shown in Fig. 1-1-94 are special cases. They are cells at the pool edge and make up a small portion of the total cells inundated. But this computation technique, giving a median estimate as well as low and high limits results in a more realistic, flexible acreage total that takes into account the variations within individual cells.

Summary table output. Preceeding each summary table output sheet are (1) a discussion of the table and (2) a table showing the "variable unit ident fication numbers" with their corresponding descriptions.

Land use-summary of types. The largest land uses of the reservoir study area (by acreage) are grain crop agriculture (17,175 ac.), non-commercial forest (2470 ac.), pasture (521 ac.), highway and street r.o.w. (474 ac.), single family dwellings (367 ac.), farm dwellings (198 ac.), mining (gravel extraction, 148 ac.), and water areas (132 ac.).

Additional land uses with structures include mobile housing (5 ac.), general retail (17 ac.), schools (11 ac.), and farm buildings (61 ac.). Open space type uses include cemeteries (11 ac.), golf course (57 ac.), and parks (17 ac.).

Smaller land uses (by acreage) are retirement homes (5 ac.), electric utility (1 ac.), sewage disposal (1 ac.), grain elevator (1 ac.), gas station (2 ac.), auto salvage yard (3 ac.), contract construction services (1 ac.), church (1 ac.), group or organized camp (3 ac.), misc. recreation (6 ac.), feed lot (7 ac.), poultry (7 ac.), misc. agriculture (28 ac.), and unused land (26 ac.).

The most prevalent land use in the study area is agriculture. A total of 17,998 acres is devoted to crop and livestock production, its buildings and dwellings. The least loss of agricultural land use occurs in Alternative #6, and the most in Alternative #1.

Table 1-1-4. Land use variable unit identification numbers.[a]

1000	RESIDENTIAL	1242	County homes
1111	Single family	1250	Religious quarters
1112	Farm dwelling	1300	Residential hotels
1120	Two family	1400	Mobile home parks
1130	Multi-family	1500	Transient lodgings
1210	Rooming and boarding houses	1510	Hotels and motels
1220	Membership lodgings	1900	Other residences
1230	Residence halls and dorms	2000	MANUFACTURING
1240	Retirement homes	2100	Food and kindred products

[a] Classifications adapted from Standard Land Use Coding Manual, Department of Transportation, Bureau of Public Roads, January, 1965.

2200	Textile mill products
2300	Apparel (finished)
2400	Lumber and wood products
2500	Furniture and fixtures
2600	Paper and allied products
2700	Printing, publishing, etc.
2800	Chemicals, etc.
2900	Petroleum refining, etc.
3100	Rubber and plastic products
3200	Stone, clay, and glass
3262	Concrete manufacturing
3263	Ready mix concrete
3300	Primary metal industries
3400	Fabricated metal products
3500	Professional and scientific
3900	Miscellaneous
4000	TRANSP., COMMUNIC., UTILITIES
4100	Railroad, rapid transit
4210	Bus transportation
4220	Motor freight transportation
4300	Aircraft transportation
4350	Airport clear zone
4400	Marine craft transportation
4500	Highway and street r.o.w.
4600	Auto parking
4710	Telephone communication
4720	Telegraph communication
4730	Radio communication
4740	Television communication
4742	Television relay
4750	Radio/television communication
4810	Electric utility
4820	Gas
4824	Gas pressure control station
4830	Water/irrigation utilities
4833	Water storage
4840	Sewage disposal
4850	Solid waste disposal
4900	Miscellaneous
5000	TRADE
5100	Wholesale
5152	Grain elevator
5156	Wholesale livestock
5200	Retail bldg. materials
5211	Lumber yard
5252	Retail farm equipment
5300	Retail general
5350	Shopping center
5400	Retail food
5500	Retail auto, marine, air
5530	Gas station
5550	Mobile home sales
5555	Auto salvage yard
5600	Retail apparel
5700	Retail furniture
5800	Retail eating/drinking
5900	Miscellaneous
6000	SERVICES
6100	Finance, ins., real estate
6200	Personal services
6230	Beauty shop/barber shop
6241	Funeral home
6242	Cemetery
6300	Business services
6391	Research facility
6400	Repair services
6500	Professional services
6513	Hospital
6517	Medical services
6600	Contract const. services
6620	Well drilling services
6700	Government services
6730	Post office
6811	Educational - primary
6813	Educational - secondary
6820	Educational - college
6830	Educational - special
6900	Miscellaneous
6911	Church, synagog, temple
7000	CULTURAL AND RECREATIONAL
7100	Cult. activ., nature exhibits
7210	Entertainment assembly
7213	Drive-in movie
7220	Sports assembly
7230	Other public assembly
7300	Amusements
7400	Recreation
7412	Golf course
7420	Playground, athletic area
7432	Swimming pool
7500	Resorts and group camps
7520	Group or organized camps
7600	Parks
7900	Miscellaneous
8000	RESOURCE PRODUC. AND EXTRACT.
8110	Grain crop agriculture
8120	Pasture
8130	Feedlot
8140	Poultry
8150	Farm buildings
8190	Miscellaneous agriculture
8210	Agricultural processing
8220	Animal husbandry services
8300	Forestry
8400	Fishing and related activ.
8500	Mining and related activ.
8900	Miscellaneous
9000	UNDEVELOPED LAND/WATER
9100	Undeveloped/unused land
9200	Non-commercial forest
9300	Water areas
9900	Miscellaneous

AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-159

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.REAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUGIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.D.WUAN, D.DEPPENGER
KPC W.JONES, E.SWANSON, R.HUEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

LAND USE - SUMMARY OF TYPES

THE PRIMARY, SECONDARY, AND TERTIARY LAND USES (BY AREA) FOR EACH CELL IN THE STUDY AREA WERE INTERPRETED AND RECORDED FROM AERIAL PHOTOGRAPHS. FIELD CHECKS WERE ALSO USED IN SOME CASES TO VERIFY THE INTERPRETATIONS. ACCOMPANYING THE LAND USE CODE WAS THE RELATIVE PERCENTAGE OF THE CELL OCCUPIED BY THAT LAND USE. THE LAND USE CLASSIFICATION SCHEME WAS ADAPTED FROM STANDARD LAND USE CODING MANUAL, DEPARTMENT OF TRANSPORTATION, BUREAU OF PUBLIC ROADS, 1965.

THE ACREAGE SHOWN FOR EACH LAND USE IS THE TOTAL AREA OCCUPIED BY THAT USE, WHETHER IT BE THE PRIMARY, SECONDARY, OR TERTIARY LAND USE IN A CELL. FOR INSTANCE, IF PARK LAND WAS THE SECONDARY LAND USE AND OCCUPIED 30% OF A 2.66 ACRE CELL, THE AMOUNT ADDED TO THE TOTAL ACREAGE WOULD BE 0.30 X 2.66 = 0.80 ACRES.

THE TABLE SHOWS THE ACREAGE OF EACH LAND USE REMAINING IN THE STUDY AREA AFTER INUNDATION AND THE HIGH AND LOW ESTIMATES OF THE EXTREMES THAT THIS VALUE MIGHT TAKE FOR EACH PROPOSED ALTERNATIVE.

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
GROUND SURVEY, 6-13-72.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS. ESSENTIALLY EXISTING CONDITIONS.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

VAR. UNIT I.D. NO.	ALT. 06 TOTAL ACRES	ALT. #1 TOTAL ACRES	ALT. #1 HIGH EST. ACRES	ALT. #1 LOW EST. ACRES	ALT. #2 TOTAL ACRES	ALT. #2 HIGH EST. ACRES	ALT. #2 LOW EST. ACRES	ALT. #3 TOTAL ACRES	ALT. #3 HIGH EST. ACRES	ALT. #3 LOW EST. ACRES	ALT. #4 TOTAL ACRES	ALT. #4 HIGH EST. ACRES	ALT. #4 LOW EST. ACRES	ALT. #5 TOTAL ACRES	ALT. #5 HIGH EST. ACRES	ALT. #5 LOW EST. ACRES
1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1111	367	354	359	349	354	359	348	366	367	366	360	364	358	367	367	367
1112	198	165	174	150	166	174	153	191	198	185	176	177	169	197	190	192
1120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1130	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1240	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
1242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1400	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
1500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1510	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3262	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3263	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4500	474	416	459	366	416	459	366	473	474	466	491	472	429	470	470	470
4600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4710	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4720	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4740	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4742	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4810	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4820	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4833	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4840	1	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1
4850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5152	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5300	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
5350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5530	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5555	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
5600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6242	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
6300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6391	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6513	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6517	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6600	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6811	4	4	6	4	6	4	4	4	4	4	4	4	4	4	4	4
6813	7	6	7	5	6	7	5	7	7	7	7	7	7	7	7	7
6820	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6911	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7213	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7412	57	23	32	15	22	32	15	97	97	97	93	97	40	97	97	97
7420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7432	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7520	3	2	3	1	2	3	1	3	3	3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7600	17	3	5	0	3	5	0	17	17	17	16	17	16	17	17	15
7900	6	0	3	0	0	3	0	2	4	1	0	3	0	[illegible]	[illegible]	[illegible]
8000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8110	17175	16060	16613	15047	16062	16625	15037	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8120	921	297	341	203	266	310	212	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8130	7	6	6	6	6	6	6	7	7	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8160	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
8180	61	92	95	40	92	95	40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8190	26	28	28	20	28	20	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8210	0	0	0	0	0	0	0	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8800	140	107	104	101	103	100	100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9100	26	13	16	13	13	16	13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9200	2670	606	1119	657	940	1136	690	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9380	132	60	60	36	60	60	95	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 1-1-5

ALL COMPUTED FIGURES HAVE A POSSIBLE ERROR OF PLUS OR MINUS [illegible] OF THE [illegible]. THIS ERROR IS [illegible] DUE TO THE COMPUTATIONAL TECHNIQUES [illegible] AND IS INDEPENDENT OF ALL [illegible] IN THE DATA COLLECTION AND DATA PREPARATION. [illegible] LESS THAN [illegible].

Vegetation/Landers - summary of types. The largest vegetation type (by acreage) is agriculture, both planted (such as crops, windbreaks, and woodlots) or managed (such as pasture and ditches). The total area for all agricultural vegetation in the study area is 17,503 acres. Again, the least loss in this vegetation type would occur in Alternative #6, and the most in Alternative #1.

Prairie potholes (i.d. number 4500) cover 150 acres. Though these could have been drained and plowed, they remain today as a unique vegetation type and should be preserved for study and enjoyment. For a complete interpretation of this data see Appendix 1, Chapter 3.

Table 1-1-6. Vegetation/Landers variable unit identification numbers.

1000	STRUCTURES	5600	Coal spoils
1100	Farm buildings and yard	5700	Prairie plantings
1200	Urban dwellings and yard	5800	Quarry spoils - pioneer trees
1300	Bridges	6000	EDGE - NARROW VARYING HEIGHTS
1400	Roadways	6100	Wooded to cultivated
1500	Industry	6200	Wooded to pasture
2000	URBAN	6300	Stringers - riparian growth
2100	Golf courses, open playground	6400	Fence rows
2200	Wooded parks	6500	Ditches and roadsides
2300	Green belt	6600	Windbreaks
2400	Cemetery	7000	WOODED PASTURE, 5-25% COVER
2500	Other	7100	Juniper - obvious abundance
3000	CULTIVATED	7200	Juniper-honey locust
3100	Row crops	7300	Honey locust - obv. abundance
3200	Small grain	7400	Shrubs
3300	Hay	7500	Scattered large trees
3400	Fallow and soil bank	7600	Scattered large trees w/under
3500	Truck gardens	8000	TREE PLANTINGS
3600	Other	8100	Conifer timber
4000	NON-FORESTED, < 5% CROWN COVER	8200	Christmas trees
4100	Pasture - perennial grasses	8300	Orchard
4200	Dry prairie relics	8400	Hardwood
4300	Mesic prairie relics	8500	Mixed farmlot planting
4400	Marsh	9000	FOREST, > 25% CROWN COVER
4500	Prairie potholes	9100	Upland forest, oak-hickory
4600	Other	9200	Upland forest, elm-ash
5000	UNIQUE	9300	Upland forest, maple-basswood
5100	Quarry	9400	Bottomland forest, scant unde
5200	Cliffs and rock outcrops	9500	Bottomland forest, woody unde
5300	Open bogs	9600	Boreal relic forest
5400	Ponds and reservoirs	9700	Other
5500	Seeps, springs, and fens		

NVIRONMENTAL RESOURCES REVIEW STUDY
IES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
RPS OF ENGINEERS, ROCK ISLAND DISTRICT
WA STATE UNIVERSITY AND UNIVERSITY OF IOWA

EPARED BY IOWA LAND USE ANALYSIS LABORATORY
PARTMENT OF LANDSCAPE ARCHITECTURE
WA STATE UNIVERSITY

ORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
OGRAMMER-ANALYST G.H.BEAVERS
TA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
APHICS C.J.UBAN, D.DEPRENGER
D N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

VEGETATION/LANDERS - SUMMARY OF TYPES

THE VEGETATION TYPE FOR EACH CELL WAS INTERPRETED FROM THE AERIAL PHOTOGRAPHS AND THEN CLOSELY CHECKED WITH FIELD OBSERVATIONS. THE CLASSIFICATION SYSTEM WAS SET UP TO INCLUDE ALL VEGETATION TYPES LIKELY TO BE FOUND IN THE REGION AND IS EXPANDABLE. THE PRIMARY, SECONDARY, AND TERTIARY VEGETATION TYPES (BY AREA) WERE RECORDED WITH THE AREA IN THE CELL OF EACH EXPRESSED AS A PERCENTAGE, E.G. 60% PRIMARY TYPE, 30% SECONDARY TYPE, AND 10% TERTIARY TYPE.

THE ACREAGE SHOWN FOR EACH TYPE IS THE TOTAL AREA OCCUPIED BY THAT TYPE, WHETHER IT BE THE PRIMARY, SECONDARY, OR TERTIARY TYPE IN A CELL. FOR INSTANCE, IF PASTURE WAS THE SECONDARY TYPE AND OCCUPIED 30% OF A 2.66 ACRE CELL, THE AMOUNT ADDED TO THE TOTAL ACREAGE WOULD BE 0.30 X 2.66 = 0.80 ACRES.

THE TABLE SHOWS THE ACREAGE OF EACH VEGETATION TYPE REMAINING IN THE STUDY AREA AFTER INUNDATION AND THE HIGH AND LOW ESTIMATES OF THE EXTREMES THAT THIS VALUE MIGHT TAKE FOR EACH PROPOSED ALTERNATIVE.

SOURCES: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
GROUND SURVEY, 3-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500,1912.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

ALTERNATIOVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

Table 1-1-7

VAR. UNIT I.D. NO.	ALT. #6	ALT. #1			ALT. #2			ALT. #3			ALT. #4			ALT. #5		
	TOTAL ACRES	TOTAL ACRES	HIGH EST. ACRES	LOW EST. ACRES	TOTAL ACRES	HIGH EST. ACRES	LOW EST. ACRES	TOTAL ACRES	HIGH EST. ACRES	LOW EST. ACRES	TOTAL ACRES	HIGH EST. ACRES	LOW EST. ACRES	TOTAL ACPES	HIGH EST. ACRES	LOW EST. ACRES
1000	132	129	129	129	129	129	129	132	132	132	132	132	132	132	132	132
1100	376	306	325	282	308	325	285	364	372	356	335	343	322	372	375	366
1200	431	402	405	394	402	405	394	431	431	431	430	431	429	431	431	431
1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1400	39	38	39	35	38	39	35	39	39	39	39	39	39	39	39	39
1500	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
2000	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2100	42	7	12	3	7	12	3	42	42	42	38	42	28	42	42	42
2200	70	37	52	22	38	52	24	70	70	70	64	68	56	64	68	61
2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2400	22	21	21	21	21	21	21	21	21	21	21	21	21	22	22	22
2500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3000	14473	12229	12548	11864	12240	12559	11870	14064	14161	13963	13063	13227	12857	14388	14415	14347
3100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3200	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3500	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4000	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4100	1275	717	845	573	720	848	570	1147	1179	1115	912	1007	805	1236	1250	1217
4200	25	18	22	14	18	22	14	24	25	24	19	22	16	25	25	25
4300	45	35	41	29	35	41	29	45	45	45	45	45	45	45	45	45
4400	7	2	2	2	2	2	2	7	7	7	2	3	2	7	7	7
4500	27	16	18	12	16	18	12	22	23	21	19	19	19	27	27	27
4600	5	1	1	1	1	1	1	5	5	5	3	3	1	1	1	1
5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5100	150	84	88	79	84	88	79	88	88	88	88	89	88	150	150	150
5200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5400	45	21	30	13	21	30	13	36	36	36	32	34	29	45	45	44
5500	9	7	9	6	7	9	6	9	9	9	9	9	9	9	9	9
5600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5800	96	83	85	81	83	85	81	85	85	85	84	85	83	96	96	96
6000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6100	26	10	12	6	10	12	4	18	19	17	13	14	11	26	26	26
6200	12	3	5	1	4	6	3	12	12	11	5	7	2	8	9	7
6300	400	160	204	116	162	204	121	322	339	305	221	254	187	382	389	372
6400	103	72	75	68	72	75	68	95	98	92	80	83	76	101	101	100
6500	1070	884	949	812	885	950	814	1030	1045	1012	957	987	920	1063	1065	1061
6600	14	12	13	12	12	13	12	14	14	14	13	14	13	14	14	14
7000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7100	161	99	132	66	100	132	67	151	157	143	126	139	108	158	161	155
7700	35	9	16	3	9	16	3	33	35	28	15	25	10	35	35	35
7300	38	19	22	16	19	22	16	37	37	35	23	28	19	38	38	38
7400	71	22	28	16	23	28	17	59	64	54	27	30	22	70	71	70
7500	460	149	245	151	150	246	155	383	401	364	269	309	222	424	434	412
7600	123	66	73	55	66	73	56	88	102	80	73	80	67	114	115	113
8000	50	44	48	37	44	48	37	50	50	50	49	50	48	50	50	50
8100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8200	3	2	3	2	2	3	2	3	3	3	3	3	3	3	3	3
8300	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
8400	1	0	1	0	0	1	0	1	1	1	1	1	1	1	1	1
8500	20	13	14	13	13	14	13	18	18	17	15	16	14	20	20	20
9000	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
9100	789	373	484	263	392	490	286	782	750	634	489	581	364	722	745	698
9200	151	63	85	40	68	88	45	127	140	109	82	98	61	140	143	138
9300	148	44	70	31	49	72	36	124	135	114	69	93	49	140	144	139
9400	91	31	35	27	31	35	27	69	77	59	41	52	32	91	91	91
9500	878	213	266	162	213	266	162	491	552	434	301	352	260	833	833	833
9600	8	0	0	0	0	0	0	5	7	1	0	0	0	8	8	8
9700	1	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0

ALL COMPUTED FIGURES HAVE A POSSIBLE ERROR OF PLUS OR MINUS 00.941% OF THE VALUE GIVEN. THIS ERROR IS STRICTLY DUE TO THE COMPUTATIONAL TECHNIQUES USED AND IS INDEPENDENT OF ALL ERRORS INHERENT IN THE DATA COLLECTION AND DATA PREPARATION. TEST EVALUATIONS OF DATA PREPARATION ERRORS INDICATE ERRORS BEING MADE AT THE RATE OF 00.642% OF ITEMS HANDLED, OR IN OTHER WORDS 00.642% OF THE DATA SAMPLES WERE INCORECTLY PREPARED FOR THE COMPUTER. AFTER PROCESSING FOR ERRORS THIS ERROR PERCENTAGE MAY BE SAFELY ASSUMED TO BE LESS THAN 00.083%.

Vegetation/Pudil - summary of types. The major types of timber in the reservoir study area are urban timber and rural timber. Urban timber consists of tree lined residential streets, parks, playgrounds, schools, and open areas at the urban fringe. Most of the 343 acres of urban timber is found in and around Story City. The other area classified as urban vegetation is Arrasmith Road (near the dam site) because of its residential character.

Rural timber is generally associated with streams. It is found on the steeper slopes which were not cleared for farming. There is 2467 acres of rural timber in the study area which includes open forest (923 ac.), forest (1438 ac.), and strip forest (106 ac.). The greatest loss of rural timber would occur in Alternative #1, the least loss in Alternative #6, with Alternatives #2, #4, #3, and #5 as intermediate steps. See Story County Timber Resources in this chapter (starting page 1-1-282) for a complete discussion of rural timber.

Another important vegetational resource in the study area is edge vegetation. This provides important food and cover for the wildlife of the area. Edge vegetation includes stringers and drainage ditches (73 ac.), scattered trees (28 ac.), fence row, ditches and roadsides, and transition zones such as wooded to cultivated and wooded to pasture (see Vegetation/Landers - summary of types, Table 1-1-7).

Table 1-1-8. Vegetation/Pudil variable unit identification numbers.

0000	OTHER
0100	Wet prairie
0200	Dry prairie
0300	Bog, marsh
0400	Seeps, springs, fens
0500	Ponds, reservoirs
0600	Quarries
0700	Potholes, etc.
0800	Rock outcrops
0900	Sand
1000	AGRICULTURAL
1100	Cultivated
1200	Pasture
1300	Soil bank
2000	EDGE
2100	Stringer, drainage ditch, etc.
2200	Fence row
2300	Roadside, ditches
2400	Second growth, pastured areas
2500	Other
2600	Scattered trees (not in abundance to indicate open forest)
2700	Railroad right-of-way
3000	RURAL
3100	Farmstead
3200	Windbreak
3300	Woodlot
3400	Cemetery
4000	URBAN
4100	Residential, street, yard, school
4200	Open field (playground, golf course)
4300	Scattered, wooded (open)
4400	Wooded
4500	Unique plantings
4600	Hard surface
4700	Commercial
5000	COMMERCIAL PLANTINGS
5100	Nursery
5200	Tree farm
5300	Orchard
5400	Truck farm
6000	OPEN FOREST (5-25% CROWN COVER)
7000	FOREST
7100	Upland forest (oak-hickory)
7200	Upland forest (elm-ash)
7300	Upland forest (maple-linden)
7400	Floodplain forest
7500	Boreal forest relic
7600	Strip forest

A LAND USE ANALYSIS LABORATORY
ANDSCAPE ARCHITECTURE
ERSITY

ALYSTS J.B.SINATRA, P.F.ANDERSON
YST G.H.BEAVERS
N J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
UBAN, D.DEPRENGER
E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

VEGETATION/PUDIL - SUMMARY OF TYPES

VEGETATION TYPES IN THE RESERVOIR SITE, BOTH NATURAL AND PLANTED, WERE MAPPED FOR COMPARISON WITH THOSE IN STORY COUNTY. COMPARISON OF COVER AREAS HAS ALSO BEEN MADE WITH A FIELD INVENTORY (LANDERS, 1972) AND ESTIMATES FROM A SAMPLING METHOD (THOMPSON, 1972). TREE COVER IN THE COUNTY HAS BEEN MAPPED (PUDIL, 1972) FROM AERIAL PHOTOGRAPHS (1939, 1953, AND 1965) TO IDENTIFY HISTORICAL TRENDS IN LOSS AND GAIN, BOTH QUANTITATIVELY AND SPATIALLY.

THE ACREAGE SHOWN FOR EACH TYPE IS THE TOTAL AREA OCCUPIED BY THAT TYPE, WHETHER IT BE THE PRIMARY OR SECONDARY TYPE IN A CELL. FOR INSTANCE, IF PASTURE WAS THE SECONDARY TYPE AND OCCUPIED 30% OF A 2.66 ACRE CELL, THE AMOUNT ADDED TO THE TOTAL ACREAGE WOULD BE 0.30 X 2.66 = 0.80 ACRE.

THE TABLE SHOWS THE ACREAGE OF EACH VEGETATION TYPE REMAINING IN THE STUDY AREA AFTER INUNDATION AND THE HIGH AND LOW ESTIMATES OF THE EXTREMES THAT THIS VALUE MIGHT TAKE FOR EACH PROPOSED ALTERNATIVE.

SOURCE: CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000,1967.
ASCS STORY COUNTY AERIAL PHOTOGRAPHS, SCALE 1:20,000,1965.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS. ESSENTIALLY EXISTING CONDITIONS.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

Table 1-1-9

VAR. UNIT I.D. NO.	ALT. #6 TOTAL ACRES	ALT. #1 TOTAL ACRES	ALT. #1 HIGH EST. ACRES	ALT. #1 LOW EST. ACRES	ALT. #2 TOTAL ACRES	ALT. #2 HIGH EST. ACRES	ALT. #2 LOW EST. ACRES	ALT. #3 TOTAL ACRES	ALT. #3 HIGH EST. ACRES	ALT. #3 LOW EST. ACRES	ALT. #4 TOTAL ACRES	ALT. #4 HIGH EST. ACRES	ALT. #4 LOW EST. ACRES	ALT. #5 TOTAL ACRES	ALT. #5 HIGH EST. ACRES	ALT. #5 LOW EST. ACRES
0	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	52	21	29	15	21	29	15	33	33	33	31	33	29	52	52	52
600	142	115	118	112	115	118	112	118	118	118	117	118	115	142	142	142
700	4	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4
800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1000	17886	14476	15096	13772	14498	15107	13810	17210	17396	17018	15735	16064	15320	17750	17800	17680
1100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2100	73	45	54	37	45	54	38	70	72	69	54	61	48	72	73	71
2200	16	12	12	11	12	12	11	15	16	15	12	14	12	16	16	16
2300	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2400	41	26	29	18	26	29	18	40	40	40	30	32	28	41	41	41
2600	28	16	19	12	16	20	12	25	26	24	21	23	19	27	27	26
2700	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
3000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3100	256	206	220	185	208	220	188	244	250	239	224	229	211	253	256	245
3200	18	16	16	15	16	16	15	18	18	18	17	17	16	18	18	18
3300	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
3400	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
4000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4100	262	261	262	260	261	262	260	262	262	262	262	262	262	262	262	262
4200	49	29	37	21	29	37	21	49	49	49	48	49	46	49	49	49
4300	26	3	4	2	3	4	2	26	26	26	21	26	14	26	26	26
4400	6	0	0	0	0	0	0	6	6	6	2	6	0	6	6	6
4500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4600	152	136	147	123	136	147	123	152	152	152	143	148	136	152	152	152
4700	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5300	4	3	4	2	3	4	2	4	4	4	4	4	4	4	4	4
5400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6000	923	350	421	276	354	426	282	632	705	562	434	512	360	880	888	864
7000	1438	444	620	301	471	636	338	1118	1203	1002	668	829	512	1379	1406	1356
7100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7600	106	61	80	34	63	82	36	102	105	101	83	97	65	90	99	80

ALL COMPUTED FIGURES HAVE A POSSIBLE ERROR OF PLUS OR MINUS 00.941% OF THE VALUE GIVEN. THIS ERROR IS STRICTLY DUE TO THE COMPUTATIONAL TECHNIQUES USED AND IS INDEPENDENT OF ALL ERRORS INHERENT IN THE DATA COLLECTION AND DATA PREPARATION. TEST EVALUATIONS OF DATA PREPARATION ERRORS INDICATE ERRORS BEING MADE AT THE RATE OF 00.642% OF ITEMS HANDLED, OR IN OTHER WORDS 00.642% OF THE DATA SAMPLES WERE INCORECTLY PREPARED FOR THE COMPUTER. AFTER PROCESSING FOR ERRORS THIS ERROR PERCENTAGE MAY BE SAFELY ASSUMED TO BE LESS THAN 00.083%.

Soils/old survey - summary of types. The major soils of the study are Clarion loam (6407 ac), Webster silty clay loam (4067 ac), Webster loam (2730 ac), Clarion fine sandy loam (1234 ac), and Wabash loam (1102 ac).. The Webster and Wabash soils rank low to average for residential and recreational use while the Clarion soils rank high. All of these soils rank high as prime agricultural soils. Only Webster silty clay loam has wetness restrictions. The Wabash soil is found in the bottomland, the Webster soils on terraces and swales, and the Clarion soils on the upland.

Again, the alternative projects affect the loss of these soils differently. Alternative #1 would inundate 2473 acres of the above listed soils; Alternative #2 - 2452 acres, Alternative #4 - 1469 acres, Alternative #3 - 426 acres, and Alternative #5 - 108 acres.

Table 1-1-10. Soils/old survey variable unit identification numbers.

0012	Bremer loam
0021	Peat
0027	Wabash silty clay
0038	Buckner loam
0043	Bremer silty clay loam
0045	Buckner fine sandy loam
0048	Wabash silty clay loam
0049	Wabash loam
0055	Webster loam
0056	Webster clay loam
0060	Waukesha loam
0062	Wabash fine sandy loam
0065	Lindley loam
0102	Sarpy fine sandy loam
0107	Webster silty clay loam
0108	O'Neill loam
0110	O'Neill fine sandy loam
0111	Lamoure silty clay loam
0112	Lamoure loam
0138	Clarion loam
0149	Clarion fine sandy loam
0151	Clarion loam - steep phase
0175	Dickinson fine sandy loam
0187	Lindley loam - steep phase
0203	Thurman loamy fine sand
0234	Clarion fine sandy loam - steep phase
0252	Clarion loam - eroded phase
0256	Muck
0301	Clarion fine sandy loam - eroded phase
0302	Ames fine sandy loam

OWA LAND USE ANALYSIS LABORATORY
LANDSCAPE ARCHITECTURE
IVERSITY

ANALYSTS J.B.SINATRA, P.F.ANDERSON
ALYST G.H.BEAVERS
ION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
J.UBAN, D.DEPRENGER
E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

SOILS/OLD - SUMMARY OF TYPES

THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST PERCENTAGE OF EACH CELL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL. ONLY ONE SOIL TYPE WAS NOTED FOR EACH CELL BECAUSE OF THE COARSENESS OF THE DATA AVAILABLE. THESE SOIL TYPES WERE RECORDED FROM A 1938 USDA COUNTY SOIL MAP, THE MOST COMPLETE DATA AVAILABLE FOR PUBLIC USE. SOME OF THE SOIL NAMES HAD CHANGED SINCE AND CORRELATIONS WERE MADE TO UPDATE THE INFORMATION. THE SOIL TYPES WERE RECORDED USING THE STANDARDIZED USDA SOIL NUMBER. FROM THIS SOIL NUMBER, INFORMATION CONCERNING SOIL TEXTURE,PERMEABILITY, INFILTRATION RATED, ENGINEERING CAPABILITY AND SUITABILITY (USE) CLASS COULD BE EXAMINED.

THE TABLE SHOWS THE ACREAGE OF EACH SOIL TYPE REMAINING IN THE STUDY AREA AFTER INUNDATION AND THE HIGH AND LOW ESTIMATES OF THE EXTREMES THAT THIS VALUE MIGHT TAKE FOR EACH PROPOSED ALTERNATIVE.

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1938.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS. ESSENTIALLY EXISTING CONDITIONS.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

Table 1-1-11

VAR. UNIT I.D. NO.	ALT. #6 TOTAL ACRES	ALT. #1 TOTAL ACRES	ALT. #1 HIGH EST. ACRES	ALT. #1 LOW EST. ACRES	ALT. #2 TOTAL ACRES	ALT. #2 HIGH EST. ACRES	ALT. #2 LOW EST. ACRES	ALT. #3 TOTAL ACRES	ALT. #3 HIGH EST. ACRES	ALT. #3 LOW EST. ACRES	ALT. #4 TOTAL ACRES	ALT. #4 HIGH EST. ACRES	ALT. #4 LOW EST. ACRES	ALT. #5 TOTAL ACRES	ALT. #5 HIGH EST. ACRES	ALT. #5 LOW EST. ACRES
12	179	9	18	2	9	18	2	102	118	92	52	63	39	174	174	174
21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	243	79	95	71	79	95	71	195	211	179	124	134	118	243	243	243
43	132	23	29	15	23	29	15	97	108	87	34	39	31	132	132	132
45	132	24	26	21	24	26	21	61	71	52	29	44	21	132	132	132
48	185	28	31	23	28	31	23	157	174	121	36	37	34	185	185	185
49	1102	168	264	97	168	264	97	730	808	663	407	515	293	1073	1081	1062
55	2730	2270	2302	2236	2271	2304	2238	2717	2730	2698	2441	2484	2397	2727	2727	2725
56	134	107	108	103	107	108	103	134	134	134	134	134	134	134	134	134
60	60	19	23	13	19	23	13	42	47	39	26	29	23	60	60	60
62	499	244	269	224	264	282	251	330	346	319	277	296	264	471	483	459
65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	4067	3460	3528	3385	3466	3531	3391	4055	4067	4038	3751	3769	3724	4055	4062	4051
108	824	555	584	518	557	586	520	678	692	666	587	610	565	810	814	806
110	385	140	163	113	142	166	116	269	306	229	162	179	148	382	383	380
111	74	0	0	0	0	0	0	74	74	74	18	26	7	74	74	74
112	599	239	322	169	245	325	177	502	528	467	369	412	311	575	589	560
138	6407	6118	6291	5878	6122	6291	5891	6396	6399	6386	6315	6362	6230	6397	6407	6375
149	1234	1051	1118	964	1061	1123	983	1216	1218	1210	1157	1192	1115	1180	1199	1152
151	446	241	325	158	241	325	158	410	438	375	307	377	222	446	446	446
175	298	226	248	200	226	248	200	289	296	285	256	272	237	298	298	296
187	142	139	142	132	139	142	132	142	142	142	140	142	134	142	142	142
203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
234	113	70	81	52	70	81	52	93	103	84	76	87	63	113	113	113
252	806	537	642	428	537	642	428	779	795	755	650	710	586	803	803	803
256	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
301	502	344	417	280	348	420	285	497	502	491	415	459	367	431	451	407
302	232	190	200	177	191	200	179	213	224	203	200	206	192	231	232	229

ALL COMPUTED FIGURES HAVE A POSSIBLE ERROR OF PLUS OR MINUS 00.941% OF THE VALUE GIVEN. THIS ERROR IS STRICTLY DUE TO THE COMPUTATIONAL TECHNIQUES USED AND IS INDEPENDENT OF ALL ERRORS INHERENT IN THE DATA COLLECTION AND DATA PREPARATION. TEST EVALUATIONS OF DATA PREPARATION ERRORS INDICATE ERRORS BEING MADE AT THE RATE OF 00.642% OF ITEMS HANDLED, OR IN OTHER WORDS 00.642% OF THE DATA SAMPLES WERE INCORECTLY PREPARED FOR THE COMPUTER. AFTER PROCESSING FOR ERRORS THIS ERROR PERCENTAGE MAY BE SAFELY ASSUMED TO BE LESS THAN 00.083%.

Archaeological sites - summary of types. The largest number of sites found (by average) are prehistoric domestic sites (23 acres), woodland tradition domestic settlements (10 acres), and archaic or woodland tradition domestic settlements (4 acres).

Of this 37 acres, 26 acres would be inundated by Alternatives #1 and #2, 21 acres by Alternative #4, 10 acres by Alternative #3, and none by Alternative #5. For a more complete interpretation and discussion of the data see Appendix 1, Chapter 6.

Table 1-1-12. Archaeological sites variable unit identification numbers.

0000	No archaeological site in cell
CULTURAL AFFILIATION	
1---	Paleo Indian or big game hunting tradition
2---	Paleo Indian tradition or archiac tradition
3---	Archaic tradition
4---	Archaic tradition or woodland tradition
5---	Woodland tradition
6---	Woodland tradition or late prehistoric traditions
7---	Late prehistoric traditions (i.e. Mississippian tradition, etc.)
8---	Prehistoric, undetermined
9---	Historic, native American
0---	Historic, Euro-American
SITE TYPE	
-1--	Domestic settlement - camp or village
-2--	Domestic settlement - farm or homestead
-3--	Mortuary - burial mound
-4--	Mortuary - cemetary
-5--	Animal kill, drive, or butchering site
-6--	Quarry or collecting station
-7--	Industrial site (i.e. kiln, mill, etc.)
-8--	Other
NATURE OF EVIDENCE	
--10	Stone artifacts and debitage
--20	Ceramics, stone artifacts and debitage
--30	Ceramics and/or metal and/or glass
--40	Structures or structural remains (i.e. buildings, graves, etc.)
--50	Structures or structural remains and other associated artifacts
--60	Faunal remains and associated artifacts

AL RESOURCES REVIEW STUDY
OIR SITE, SKUNK RIVER, AMES, IOWA
GINEERS, ROCK ISLAND DISTRICT
UNIVERSITY AND UNIVERSITY OF IOWA

IOWA LAND USE ANALYSIS LABORATORY
OF LANDSCAPE ARCHITECTURE
UNIVERSITY

S-ANALYSTS J.D.SINATRA, P.F.ANDERSON
ANALYST G.H.BEAVERS
ATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
C.J.URAN, D.DEPRENGER
, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

ARCHAEOLOGICAL SITES - SUMMARY OF TYPES

AN EXTENSIVE GROUND SURVEY WAS USED TO LOCATE ARCHAEOLOGICAL SITES IN THE RESERVOIR STUDY AREA. WORK PREVIOUS TO THIS STUDY HAD BEEN STARTED FOR THE NATIONAL PARK SERVICE AS AN INVENTORY OF POTENTIALLY ENDANGERED SITES. CULTURAL AFFILIATION, SITE TYPE, AND NATURE OF EVIDENCE WERE LISTED FOR EACH SITE. IN CELLS WHERE MORE THAN ONE TYPE OF SITE OCCURED, THE TYPE THAT WAS NOT REPRESENTED IN ADJACENT CELLS WAS GIVEN PREFERENCE. IN CELLS WHERE MORE THAN ONE ACTIVITY TOOK PLACE, THE DOMINANT ACTIVITY WAS GIVEN PREFERENCE.

THE TABLE SHOWS THE ACREAGE OF SITES (BY CULTURAL AFFILIATION, SITE TYPE, AND NATURE OF EVIDENCE) REMAINING IN THE STUDY AREA AFTER INUNDATION AND THE HIGH AND LOW ESTIMATES OF THE EXTREMES THAT THIS VALUE MIGHT TAKE FOR EACH PROPOSED ALTERNATIVE.

SOURCES: SUMMARY OF ARCHAEOLOGICAL SITES IN THE AMES RESERVOIR AREA, BY DAVID M. GRADWOHL AND NANCY M. OSBORN, DEPT. OF SOCIOLOGY AND ANTHROPOLOGY, IOWA STATE UNIVERSITY, AUGUST, 1972.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500. 1912.

ALTERNATIVE 06 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

ALTERNATIVE 01 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO 01.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE 02 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

ALTERNATIVE 03 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

ALTERNATIVE 04 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

ALTERNATIVE 05 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

Table 1-1-13

VAR. UNIT I.D. NO.	ALT. #6 TOTAL ACRES	ALT. #1 TOTAL ACRES	ALT. #1 HIGH EST. ACRES	ALT. #1 LOW EST. ACRES	ALT. #2 TOTAL ACRES	ALT. #2 HIGH EST. ACRES	ALT. #2 LOW EST. ACRES	ALT. #3 TOTAL ACRES	ALT. #3 HIGH EST. ACRES	ALT. #3 LOW EST. ACRES	ALT. #4 TOTAL ACRES	ALT. #4 HIGH EST. ACRES	ALT. #4 LOW EST. ACRES	ALT. #5 TOTAL ACRES	ALT. #5 HIGH EST. ACRES	ALT. #5 LOW EST. ACRES
0	7124	1628	1719	1529	1633	1722	1537	2002	2033	1966	1793	1852	1726	2099	2108	2086
230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
450	2	1	2	1	1	2	1	2	2	2	2	2	1	2	2	2
740	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3110	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
4110	4	0	1	0	0	1	0	2	3	2	1	1	0	4	4	4
4610	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
5110	6	2	3	2	2	3	2	6	6	6	3	4	3	6	6	6
5120	4	1	1	1	1	1	1	3	3	3	1	1	1	4	4	4
5610	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5620	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
6110	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8110	23	8	10	6	8	11	6	16	18	14	11	13	9	23	23	22
8610	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1

ALL COMPUTED FIGURES HAVE A POSSIBLE ERROR OF PLUS OR MINUS 00.941% OF THE VALUE GIVEN. THIS ERROR IS STRICTLY DUE TO THE COMPUTATIONAL TECHNIQUES USED AND IS INDEPENDENT OF ALL ERRORS INHERENT IN THE DATA COLLECTION AND DATA PREPARATION. TEST EVALUATIONS OF DATA PREPARATION ERRORS INDICATE ERRORS BEING MADE AT THE RATE OF 00.642% OF ITEMS HANDLED, OR IN OTHER WORDS 00.642% OF THE DATA SAMPLES WERE INCORECTLY PREPARED FOR THE COMPUTER. AFTER PROCESSING FOR ERRORS THIS ERROR PERCENTAGE MAY BE SAFELY ASSUMED TO BE LESS THAN 00.083%.

part three

resource suitability and analysis

RESOURCE SUITABILITY AND ANALYSIS

Resource Suitability Maps

The twelve resource suitability maps were obtained by weighting one or more variable classes to produce an attractiveness or site selection scheme for a potential land use or land resource.

Some maps are a product of as many as seven data classes (e.g. slope + soil + aspect + road access + proximity to water + vegetative cover = residential development scheme), while others (e.g. soils for residential development) are simply the product of various soils weighted against each other.

Because data was not available for all alternatives, some resource potential maps have results for Alternative #1 only or Alternatives #1 and #6.

The resource potential map output contains a text, sources, alternative description, legend, histogram, and map. See pages 1-1-46 thru 1-1-47 for the description of each.

Weighting and use of the site selection form. The process of site selection can be made more responsive to specific needs for a particular use by assigning "weights" to each of the variable classes considered important in locating that use on the land, rather than considering each variable class to be of equal importance. "Weighting" simply means, for example, that if slope face and slope percent are important to a user in locating a picnic site - but slope face is more important (that is, the user is willing to accept a site that may not have the needed slope percent because the slope face is right) - more emphasis (weight) can be placed on the slope face variable class.

The following text explains the procedure for the use of the site selection form, and illustrates the process of weighting. You may refer to the example on page 1-1-182 as the form is completed.

Procedure.

A) Starting with the site selection form, supply all the information at the top of the first page. If more than one page is needed for a particular site selection problem, only "Page," "Land Use," and "Date" need to be completed on all subsequent pages. "Alternative," "Model," and "Special Option" will normally be specified when needed.

"Max. No. of Weighted Variable Units" and "No. of Variables Used" will be explained further in the text.

B) This site selection form is set up so that both the variable class (slope face, slope percent, etc.) and the variable units of that variable class (for slope percent, 0-2%, 3-7%, etc.) can be weighted individually. Each variable class will be weighted in the large box on the left of the page; each variable unit of each variable class will be weighted in one of the smaller boxes immediately to the right of the large box (there are thirty boxes available for weighting the variable units of each variable class; usually all of these will not be used).

C) Select those variable classes which provide information considered essential and/or desirable in locating a particular land use on the study site. Using the data file list for that particular study area, write the code number of each variable class chosen in the top half of the large box on the left edge of each set of thirty smaller boxes. When finished, write the total number of variable classes used in this site selection process in the blank following "No. of Variables Used."

D) The next step is to weight these variable classes according to their relative importance in making that land use work on the site, according to user specifications. As mentioned previously, weighting enables a user to show more preference or need for one variable class over another. Each variable class is thus weighted against all others by assigning it a number from 1 to 10, a number 1 indicating that a variable class is "most important," and number 10 "least important." Two or more variable classes can be weighted as being equally important; however, if all variable classes are weighted the same, each will be considered as important as all the others.

E) In a similar manner, write the code number (according to the variable list) of each variable unit of each variable class in the top half of the smaller blocks to the right of the variable class block on the sheet. Thirty spaces are provided since some variables have more units than others, although often there will be ten or less. Where there are fewer than thirty-one variable units to be used for a particular variable class, fill out the boxes starting from the left on the top row, and working sequentially to the right, leaving no blank boxes between those used. Again assign weights to each variable unit, on a scale from 1 to 10, a weight of 1 indicating a unit is most desirable, a 10 indicating a unit is least desirable. In the space behind "Max. No. of Weighted Variable Units" on the site selection form, write the number indicating the total of the most variable units that were weighted for any one of all the variables chosen for the land use.

Explanation. In the computer analysis procedure, the weighting number assigned to any variable class is subtracted from 11 in order to give a "multiplier", which indicates the dominance of that particular variable class. For example, if one of the variable classes was weighted 1, its multiplier would be 10; in contrast, a variable class weighted 10 would only have a multiplier of 1. This multiplier has its effect on the weights assigned to individual variable units, a multiplier of 10 for example (from a variable class weighted a 1, most important) meaning that all the variable unit weight numbers of that variable class will be multiplied by ten. Thus, both the desirable and undesirable variable units of the variable class weighted "most important" assume a greater significance in the site selection procedure than those of a variable class weighted "least important."

When the actual analysis is done on a cell by cell basis, all these numbers resulting from the multiplication of the variable class multiplier times the individual variable unit weight numbers per each variable class are added together to give a "score" for each cell, a high number indicating that a cell is not a acceptable for the chosen land use as one with a lower number. The fact that the analysis of each cell (representing a combination of on-site conditions) will result in a different score through the use of this weighting process than any other cell having even a slightly different coded physical make-up, in the final result gives a range of numbers as scores. This range, from the highest possible number plus 0.9[a] to zero will

---

(a) 0.9 is added so that the highest number will be included in one of the ten equal categories. In the process of assigning a score of any cell to one of the ten equal ranges, the computer separates numbers into these categories if that cell score is greater than or equal to the lowest possible score (zero) and less than the highest possible score (the top number of the range plus 0.9). If the top number of the whole range was also the number of the highest possible score, any cell with that score would not be correctly assigned to a range.

be divided equally by the computer into ten blocks of numbers[b], each block representing an equal range of total scores. In the map output, every cell will be assigned to a particular block, determined by its score, and printed as a symbol representative of that block. According to prior procedures, cells with low scores are printed as lighter tones (indicating they are more acceptable for the chosen land use) in overall effect; and cells with high scores as darker tones (less acceptable for the chosen land use) in overall effect.

Illustration. The following two pages illustrate a completed site selection form used to locate a picnic site on a hypothetical study area coded by 40 acre cells; and with this example, explain how the weighting scheme would produce a site selection map.

(b) The limits of this range can also be manipulated by the user to cells with increasing divergent site conditions into the same output category. When this is done, only the cells with the most divergence from the average (for example, the cells with the very lowest scores as most acceptable) will be displayed on output as distinctive from all the rest. The procedure is useful when the equal breakdown by the computer shows many cells as acceptable for a particular use, and it is more desirable to have a breakdown of the relative values of these cells to save on field checking effort.

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use Picnic Site
Study Area test area
Alternative --
Cell Size 40 acres
Model --
Special Option --
No. of Variables Used 2
Max. No. of Weighted Variable Units 7
Date January, 1973
Your Name(s) Tim Shuck

0002 1	0001 5	0002 1	0003 3	0004 7	0005 8	0006 10	
0003 3	0001 9	0002 5	0003 3	0004 1	0005 10	0006 10	0007 4

1-1-182

<u>Datafile for test study area:</u>

0001 Slope face
- 0001 North
- 0002 South
- 0003 East
- 0004 West

0004 Surface water
- 0001 None
- 0002 Stream
- 0003 Small creek
- 0004 River
- 0005 Pond

0002 Slope percent
- 0001 Flat
- 0002 0-2%
- 0003 3-7%
- 0004 8-12%
- 0005 13-22%
- 0006 23+%

0003 Vegetation type
- 0001 Row crop
- 0002 Pasture
- 0003 Natural prairie
- 0004 Mixed trees and grassland
- 0005 Bottomland woods
- 0006 Upland woods
- 0007 Orchard

In this example, only two of the four variable classes in the datafile were considered important in locating the picnic site; these were listed and weighted as shown. As explained previously, the weight assigned to each variable class indicating its importance factor is first subtracted from 11 to give the multiplier:

code no.	0002
weight	1

-- weighted as 1, 11-1 = 10, multiplier is 10

code no.	0003
weight	3

-- weighted as 3, 11-3 = 8, multiplier is 8

The weight numbers assigned to each variable unit of a variable class are then multiplied by the multiplier of that variable:

code no. 0002	code no.	0001	0002	0003	0004	0005	0006
weight 1 (10x)	weight	5	1	3	7	8	10
	multiplication product	50	10	30	70	80	100

code no. 0003	code no.	0001	0002	0003	0004	0005	0006	0007
weight 3 (8x)	weight	9	5	3	1	10	10	4
	multiplication product	72	40	24	8	80	80	32

From this point assume that, for this study area, one of the following conditions describes every cell:

A) 0001 Flat
0001 Row crop

B) 0002 0-2%
0001 Row crop

C) 0002 0-2%
0004 Mixed trees and grassland

D) 0003 3-7%
0003 Natural prairie

E) 0005 13-22%
0006 Upland woods

F) 0006 23+%
0004 Mixed trees and grassland

G) 0006 23+%
0006 Upland woods

H) 0002 0-2%
0007 Orchard

I) 0004 8-12%
0002 Pasture

J) 0001 Flat
0003 Natural prairie

K) 0005 13-22%
0004 Mixed trees and grassland

L) 0001 Flat
0005 Bottomland woods

Next, determine the "score" for each cell, as a sum of the product of the variable multiplier and variable unit weight of each of the two variables chosen for the study:

A) 50 + 72 = 132
B) 10 + 72 = 82
C) 10 + 8 = 18
D) 30 + 54 - 84
E) 80 + 80 = 160
F) 100 + 8 = 108
G) 100 + 80 = 180
H) 10 + 32 = 42
I) 70 + 40 = 110
J) 10 + 24 = 34
K) 80 + 8 = 88
L) 50 + 80 = 130

The range of scores for this study area is from 0 to 180.9 (lowest possible to highest possible). When this is divided equally into ten blocks of numbers, the breakdown is as follows:

0.00 - 18.09
18.09 - 36.18
36.18 - 54.27
54.27 - 72.36
72.36 - 90.45
90.45 - 108.54
108.54 - 126.63
126.63 - 144.72
144.72 - 162.81
162.81 - 180.90

When each of the twelve possible site conditions is assigned to one of these breakdowns according to its score, the result is:

0.00 - 18.09	----	C
18.09 - 36.18	----	J
36.18 - 54.27	----	D, H
54.27 - 72.36	----	none
72.36 - 90.45	----	B, K
90.45 - 108.54	----	F
108.54 - 126.63	----	I
126.63 - 144.72	----	A, L
144.72 - 162.81	----	E
162.81 - 180.90	----	G

In the printout, all "C" cells would be the lightest overall tone (best sites), all "G" cells the darkest tone (worst sites), with a series of gray tones getting progressively darker from "J" to "E."

By comparing these results to the original weighting scheme, the "C" cells correspond to the most preferred conditions of both variables; the "G" cells correspond to two of the least desired conditions of the variables. The effects of weighting are evident in the "B" cells, where even though slope percent is the most desirable, the vegetation type is highly undesirable, so that these cells are overall less attractive then the "D" cells, for example, which combine two acceptable (though not best) factors of slope percent and vegetation type. The advantage of weighting is that cells (such as the "D" cells) which might not otherwise be considered because of some negative factors, are still displayed on output as potential sites, ranked on a uniform scale form best to worst.

<u>Evaluation of potential sites.</u> It is necessary to do some field survey work at the end of this process. Generally, if a reasonably large number of cells are in the study area, the iterative processes will only lead to a limiting case selection and not a specific site. Whether this proves to be true in a specific case or not, it is still highly recommended that a field check be made, since the data set does not measure exact boundary conditions but rather approximates them in unit steps determined by the scale used. The use of the process does mean that fewer sites will have to be checked to find an acceptable one, though the end choice of the alternative to be used is still one the user must make.

<u>Soils for residential development</u> (Fig. 1-1-95 through 1-1-96). Most of the attractive sites (gray levels 8, 9, and 10) are found on the uplands of the west side and lower east side. Few of these good sites are inundated (7.9%) in Alternative #1, while those that are inundated have less attractiveness for residential development.

If and when residential development occurs in the reservoir area, it will probably be on the west side. This is because (1) the interstate restricts access and views of the reservoir on the east side, (2) a take line close to the reservoir on the west side would permit good access and views, and (3) residential development has already begun on the lower west side (section 23, Franklin Township).

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BRAGERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAULHABER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.RENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
NPO W.JONES, D.SWANSON, R.HOFFMAN, D.ALLEN, D.FENNELIUS, D.PILLS

SOILS FOR RESIDENTIAL SITES (FAULHABER) - ALTERNATIVE #1

THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST PERCENTAGE OF EACH CELL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL. ONLY ONE SOIL TYPE WAS NOTED FOR EACH CELL BECAUSE OF THE COARSENESS OF THE DATA AVAILABLE. THESE SOIL TYPES WERE RECORDED FROM A 1930 USDA COUNTY SOIL MAP, THE MOST COMPLETE DATA AVAILABLE FOR PUBLIC USE. SOME OF THE SOIL NAMES HAD CHANGED SINCE AND CORRELATIONS WERE MADE TO UPDATE THE INFORMATION. THE SOIL TYPES WERE RECORDED USING THE STANDARDIZED USDA SOIL NUMBER. FROM THIS SOIL NUMBER, INFORMATION CONCERNING SOIL TEXTURE, PERMEABILITY, INFILTRATION RATE, ENGINEERING CAPABILITY AND SUITABILITY (USE) CLASS COULD BE ESTIMATED.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS PROPENSITY FOR RESIDENTIAL DEVELOPMENT. THE SCORE IS BASED ON THE SOIL'S ABILITY TO SUPPORT FOUNDATIONS AND SUITABILITY FOR SEPTIC TANK INSTALLATION.

IF SEWERS WERE INSTALLED IN THE STUDY AREA THE SEPTIC TANK PARAMETER WOULD BE REMOVED AND THE REMAINING PARAMETER WOULD BE FOUNDATION. THE RESULTING MAP OUTPUT IS DIFFERENT FROM THE ABOVE AND IS SHOWN ON SOILS FOR RESIDENTIAL FOUNDATIONS (FAULHABER).

THE HIGHER SCORE INDICATES A MORE SUITABLE, DESIRABLE SITE AND A LOWER SCORE, A MORE LIMITED, UNDESIRABLE SITE.
ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #3.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 970
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 10-20% OF MAXIMUM POSSIBLE SCORE

3 = 20-30% OF MAXIMUM POSSIBLE SCORE

4 = 30-40% OF MAXIMUM POSSIBLE SCORE

5 = 40-50% OF MAXIMUM POSSIBLE SCORE

6 = 50-60% OF MAXIMUM POSSIBLE SCORE

7 = 60-70% OF MAXIMUM POSSIBLE SCORE

8 = 70-80% OF MAXIMUM POSSIBLE SCORE

9 = 80-90% OF MAXIMUM POSSIBLE SCORE

10 = 90-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED TO 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.42 ST. DEV. = 7.41

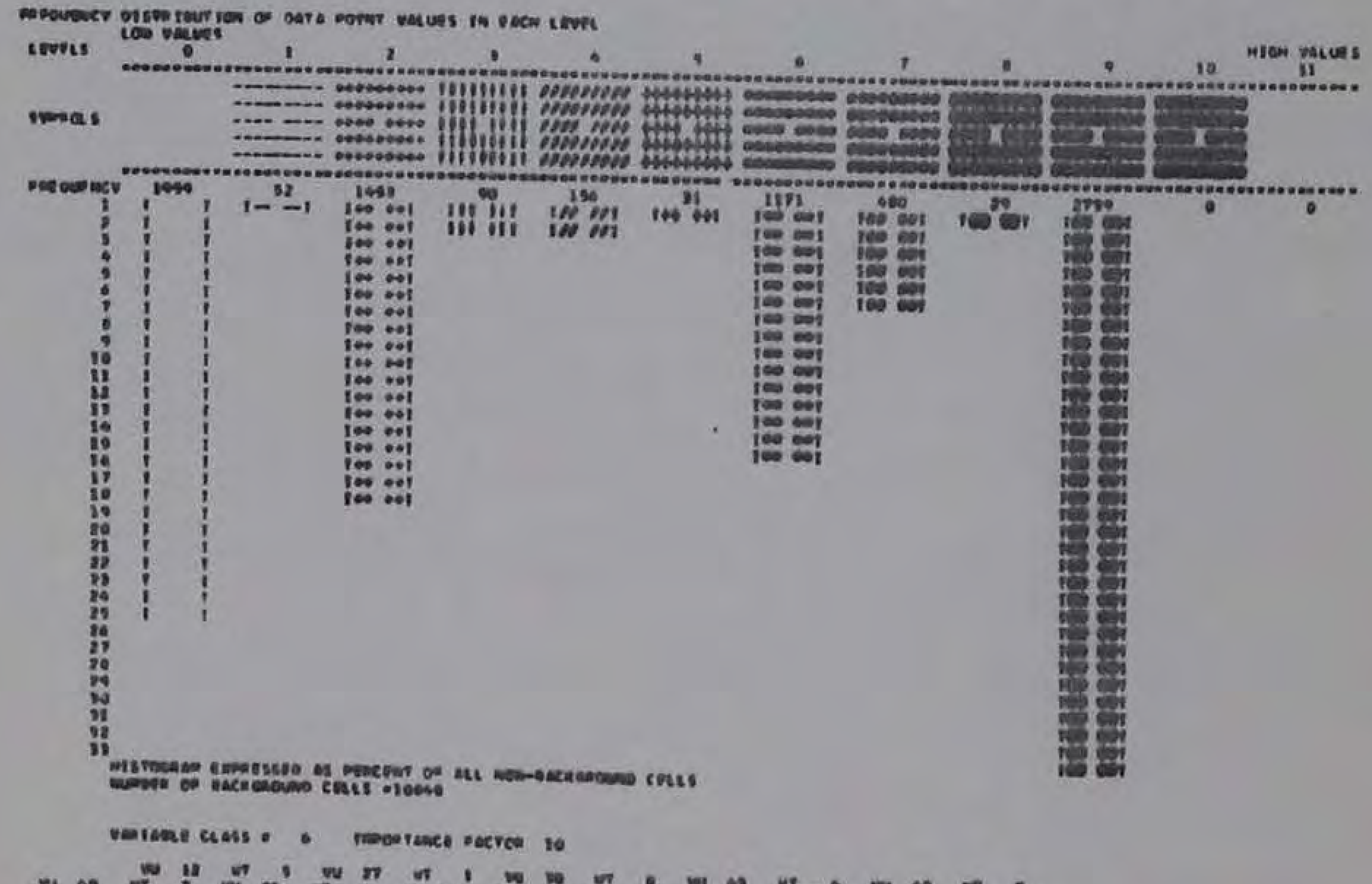
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 6 IMPORTANCE FACTOR 10

		VU 12	WT 5	VU 27	WT 1	VU 30	WT 8	VU 43	WT 4	VU 48	WT 7
VU 49	WT 3	VU 55	WT 6	VU 56	WT 1	VU 60	WT 9	VU 62	WT 4		
VU 65	WT 6	VU 102	WT 3	VU 107	WT 2	VU 118	WT 7	VU 131	WT 2		
VU 112	WT 3	VU 149	WT 9	VU 175	WT 6	VU 187	WT 4	VU 205	WT 6		
VU 234	WT 9	VU 252	WT 7	VU 256	WT 1	VU 302	WT 6	VU 308	WT 2		

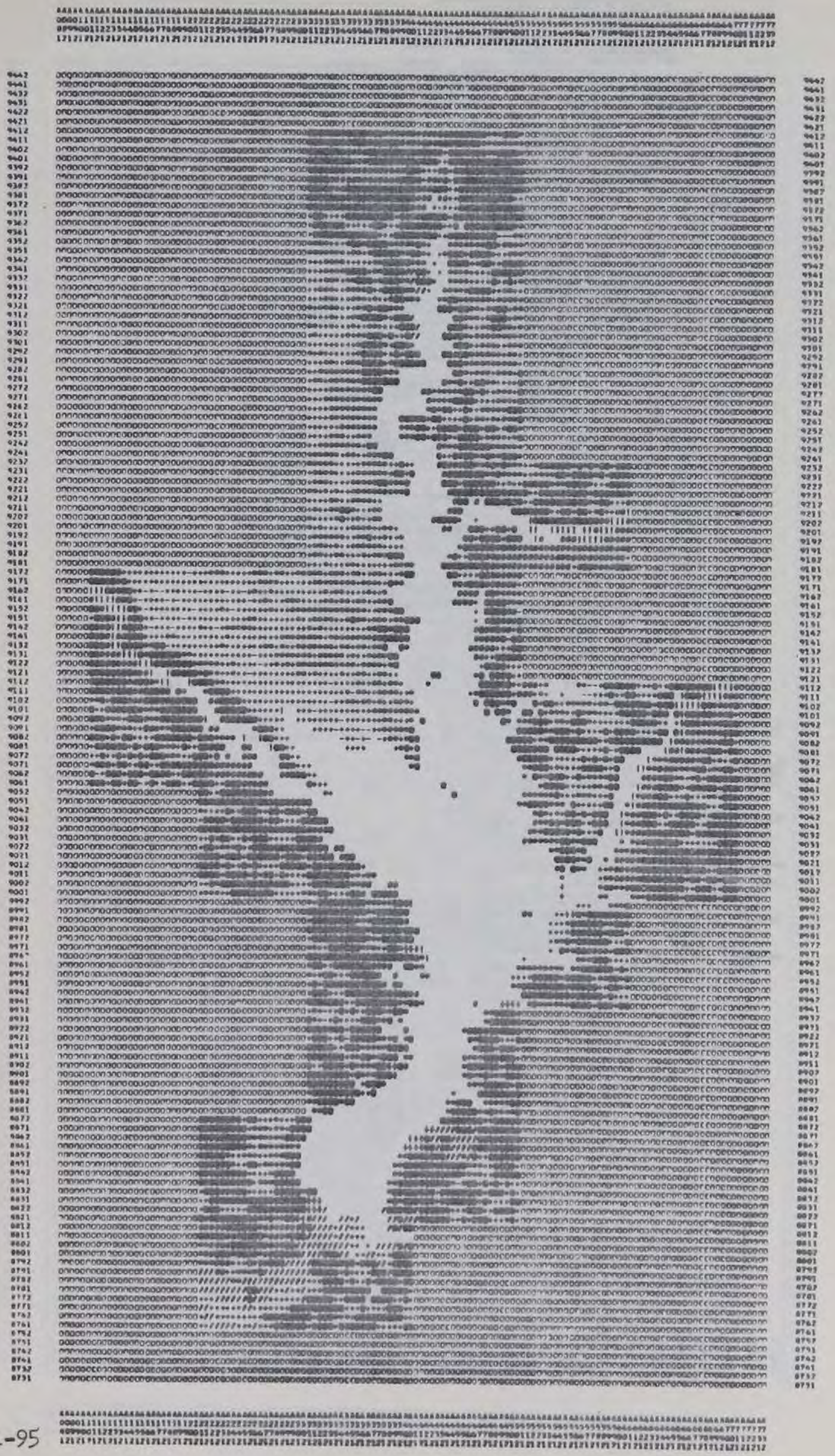


Fig. 1-1-95

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.A.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCEL, D.FAHLANDER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.URAN, D.DERNINGER
KPO W.JONES, F.SWANSON, R.MOEPPNER, D.ALLEN, D.FERNELIUS, D.MILLS

SOILS FOR RESIDENTIAL SITES (FAHLANDER) - ALTERNATIVE 06

THE DOMINANT SOIL TYPE, THAT IS THE SOIL COVERING THE GREATEST PERCENTAGE OF EACH CELL, WAS RECORDED AS THE SOIL TYPE FOR THAT CELL. ONLY ONE SOIL TYPE WAS NOTED FOR EACH CELL BECAUSE OF THE COARSENESS OF THE DATA AVAILABLE. THESE SOIL TYPES WERE RECORDED FROM A 1950 USDA COUNTY SOIL MAP, THE MOST COMPLETE DATA AVAILABLE FOR PUBLIC USE. SOME OF THE SOIL NAMES HAD CHANGED SINCE AND CORRELATIONS WERE MADE TO UPDATE THE INFORMATION. THE SOIL TYPES WERE RECORDED USING THE STANDARDIZED USDA SOIL NUMBER. FROM THIS SOIL NUMBER, INFORMATION CONCERNING SOIL TEXTURE, PERMEABILITY, INFILTRATION RATE, ENGINEERING CAPABILITY AND SUITABILITY (USE) CLASS COULD BE ESTIMATED.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS PROPENSITY FOR RESIDENTIAL DEVELOPMENT. THE SCORE IS BASED ON THE SOIL'S ABILITY TO SUPPORT FOUNDATIONS AND SUITABILITY FOR SEPTIC TANK INSTALLATION.

IF SEWERS WERE INSTALLED IN THE STUDY AREA THE SEPTIC TANK PARAMETER WOULD BE REMOVED AND THE REMAINING PARAMETER WOULD BE FOUNDATION. THE RESULTING MAP OUTPUT IS DIFFERENT FROM THE ABOVE AND IS SHOWN ON SOILS FOR RESIDENTIAL FOUNDATIONS (FAHLANDER).

THE HIGHER SCORE INDICATES A MORE SUITABLE, DESIRABLE SITE AND A LOWER SCORE, A MORE LIMITED, UNDESIRABLE SITE.

ALTERNATIVE 06 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1950.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 10-20% OF MAXIMUM POSSIBLE SCORE

3 = 20-30% OF MAXIMUM POSSIBLE SCORE

4 = 30-40% OF MAXIMUM POSSIBLE SCORE

5 = 40-50% OF MAXIMUM POSSIBLE SCORE

6 = 50-60% OF MAXIMUM POSSIBLE SCORE

7 = 60-70% OF MAXIMUM POSSIBLE SCORE

8 = 70-80% OF MAXIMUM POSSIBLE SCORE

9 = 80-90% OF MAXIMUM POSSIBLE SCORE

10 = 90-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 9.04 ST. DEV. = 2.06

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

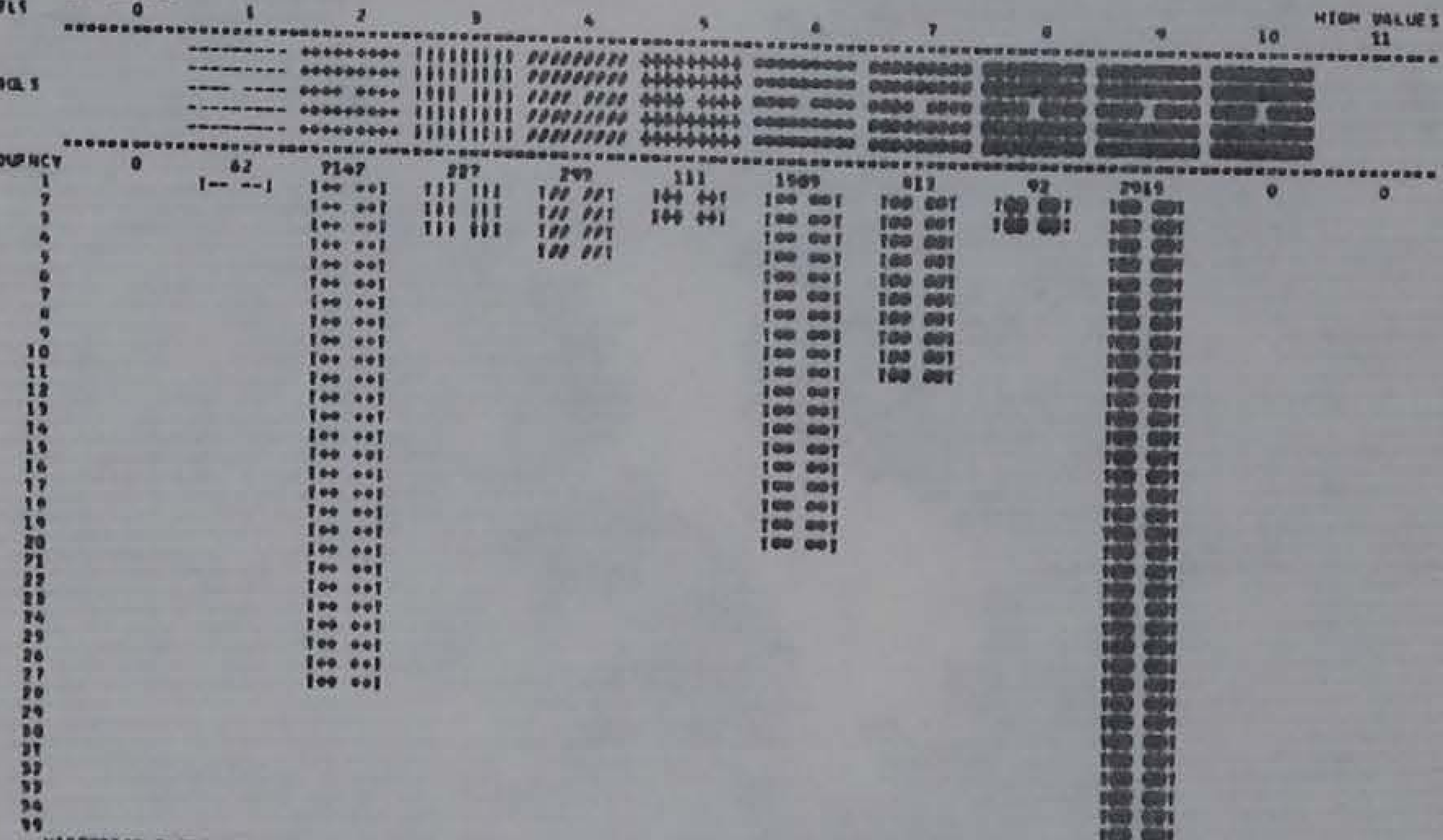
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	0	62	7147	227	299	111	1509	813	92	2919	0	0

SYMBOLS



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10000

VARIABLE CLASS # 6 IMPORTANCE FACTOR 10

		VU	12	WT	5	VU	27	WT	1	VU	38	WT	0	VU	43	WT	4	VU	45	WT	7
VU	49	WT	7	VU	55	WT	6	VU	56	WT	1	VU	60	WT	9	VU	62	WT	4
VU	65	WT	6	VU	102	WT	3	VU	107	WT	2	VU	110	WT	7	VU	111	WT	7
VU	112	WT	9	VU	149	WT	0	VU	175	WT	6	VU	187	WT	4	VU	207	WT	6
VU	294	WT	5	VU	252	WT	7	VU	256	WT	1	VU	301	WT	6	VU	362	WT	2

MAP 2,SHEET 1,DATA SET 1

Fig. 1-1-96

Residential development (Fig. 1-1-97 and 1-1-98). Again, attractive sites for residential development (according to Milligan) exist on the west side of the proposed reservoir (section 12, Franklin Township) and the east side in the Soper's Mill area (sections 5 and 7, Milford Township). Attractive sites for residences also indicate, for the most part, attractive sites for recreation buildings.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-193

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.[illegible]
DATA PREPARATION [illegible], T.[illegible], A.[illegible], D.[illegible],
[illegible], D.SEYMOUR, W.SCHUTTLER, D.[illegible]
GRAPHICS C.J.[illegible], D.[illegible]
AND [illegible], [illegible], [illegible], D.ALLEN, D.[illegible], D.[illegible]

RESIDENTIAL DEVELOPMENT (MILLIGAN) - ALTERNATIVE #1

RESIDENTIAL DEVELOPMENT PATTERNS IN THE RESERVOIR AREA WERE PREDICTED USING NATURAL SCIENCE DATA. SITE SELECTION IS BASED ON SOILS, VEGETATION, ROAD ACCESS, VIEWS OF WATER, AND SLOPE.

THIS MODEL IS A PRELIMINARY RUN TO TEST THE ASSUMPTIONS MADE ABOUT THE EMERGING PATTERNS DURING AND AFTER PROPOSED RESERVOIR CONSTRUCTION. THE ASSUMPTIONS MADE ARE THAT THE PREFERRED RESIDENTIAL SITES WILL HAVE A VIEW OF THE RESERVOIR POOL, GOOD ROAD ACCESS TO RECREATIONAL FACILITIES AND SHOPPING, DESIRABLE SOILS FOR FOUNDATIONS AND SEPTIC TANKS, MODERATE SLOPE, AND WOODED AREAS.

EACH CELL IN THE RESERVOIR SITE WAS GIVEN A SCORE ACCORDING TO ITS PROPENSITY FOR RESIDENTIAL DEVELOPMENT. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1950.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 6-11-67.
GROUND SURVEY, 3-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
GROUND SURVEY, 6-15-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 10-20% OF MAXIMUM POSSIBLE SCORE

3 = 20-30% OF MAXIMUM POSSIBLE SCORE

4 = 30-40% OF MAXIMUM POSSIBLE SCORE

5 = 40-50% OF MAXIMUM POSSIBLE SCORE

6 = 50-60% OF MAXIMUM POSSIBLE SCORE

7 = 60-70% OF MAXIMUM POSSIBLE SCORE

8 = 70-80% OF MAXIMUM POSSIBLE SCORE

9 = 80-90% OF MAXIMUM POSSIBLE SCORE

10 = 90-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 450.90 MEAN = 186.26 ST. DEV. = 117.69

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

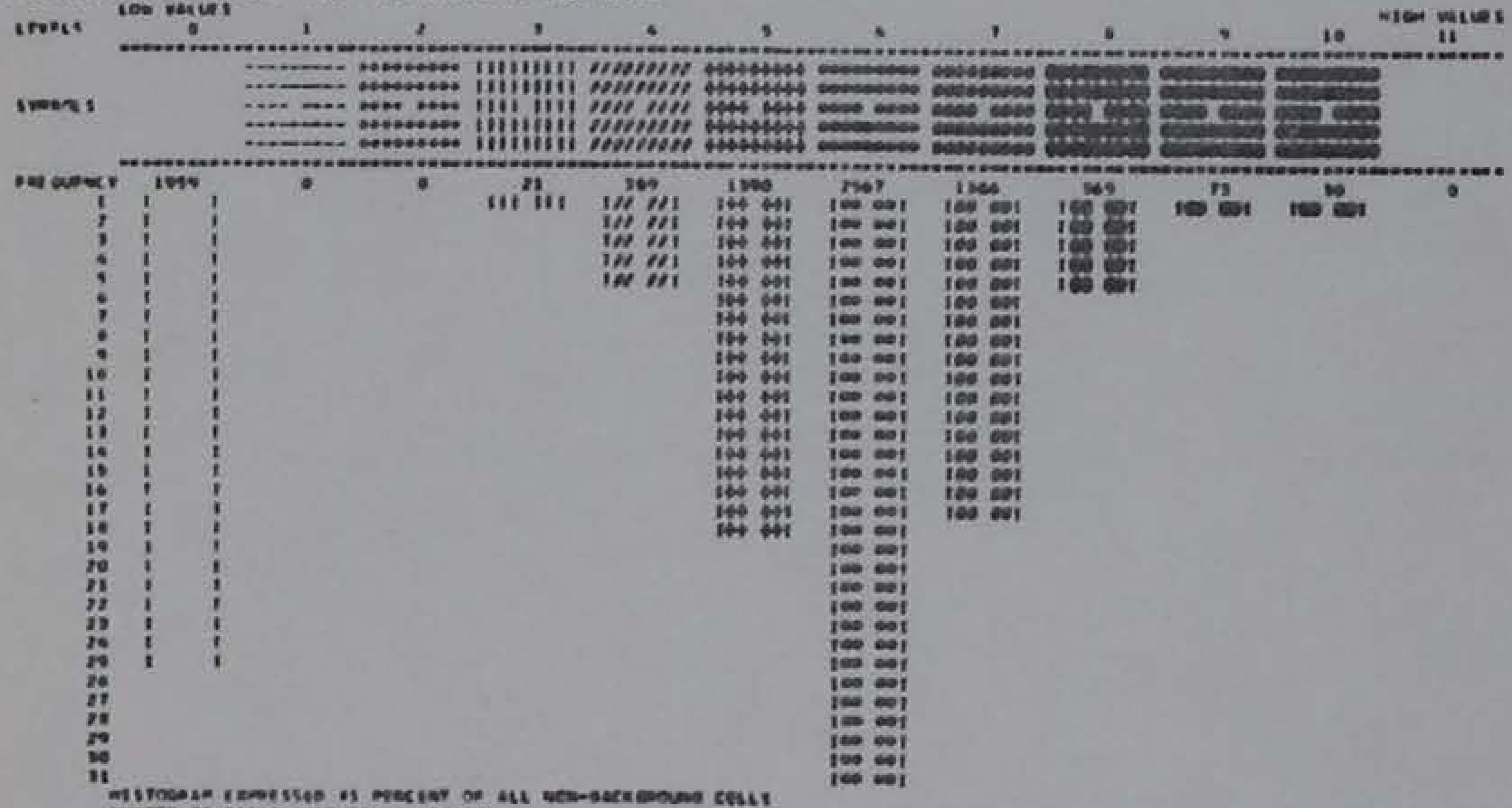
MINIMUM	0.0	45.09	90.18	135.27	180.36	225.45	270.54	315.63	360.72	405.81
MAXIMUM	45.09	90.18	135.27	180.36	225.45	270.54	315.63	360.72	405.81	450.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	1959	0	0	21	369	1390	2567	1366	569	73	50	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 10 IMPORTANCE FACTOR 4

		VU	0	WT	1	VU1000	WT	3	VU2000	WT	5	VU3000	WT	7	VU4000	WT	9
VU5000	WT	10	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

		VU	17	WT	5	VU	27	WT	1	VU	50	WT	0	VU	48	WT	4
VU 49	WT	7	VU	55	WT	6	VU	56	WT	1	VU	60	WT	9	VU	62	WT 6
VU 65	WT	6	VU	102	WT	3	VU	107	WT	7	VU	110	WT	7	VU	111	WT 7
VU 117	WT	1	VU	149	WT	5	VU	175	WT	6	VU	187	WT	4	VU	203	WT 6
VU 294	WT	5	VU	292	WT	7	VU	296	WT	1	VU	301	WT	6	VU	302	WT 7
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

		VU	2	WT	7	VU	5	WT	0	VU	10	WT	10	VU	15	WT	9
VU 55	WT	4	VU	50	WT	2	VU	100	WT	1	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0

VARIABLE CLASS # 1 IMPORTANCE FACTOR 6

		VU	976	WT	1	VU	961	WT	2	VU	990	WT	10	VU1000	WT	9	VU1010
VU1020	WT	7	VU1030	WT	6	VU1040	WT	5	VU1050	WT	4	VU1060	WT	1			
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0
VU 0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT	0	VU	0	WT 0

Fig. 1-1-97

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.P.ANDERSON
PROGRAMMER-ANALYST G.M.REBERS
DATA PREPARATION J.C.TAGGART, T.LANCE, A.PURDIL, D.PAULSRUD,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.ASHBY
GRAPHICS C.J.URAN, D.OERMENGER
KP N.JONES, T.SWANSON, R.HOEPPNER, D.ALLEN, D.PERNELIUS, D.WILLS

RESIDENTIAL DEVELOPMENT (WILLIAMS) - ALTERNATIVE #6

RESIDENTIAL DEVELOPMENT PATTERNS IN THE RESERVOIR AREA WERE PREDICTED USING NATURAL SCIENCE DATA. SITE SELECTION IS BASED ON SOILS, VEGETATION, ROAD ACCESS, VIEWS OF WATER, AND SLOPE.

THIS MODEL IS A PRELIMINARY RUN TO TEST THE ASSUMPTIONS MADE ABOUT THE EMERGING PATTERNS DURING AND AFTER PROPOSED RESERVOIR CONSTRUCTION. THE ASSUMPTIONS MADE ARE THAT THE PREFERRED RESIDENTIAL SITES WILL HAVE A VIEW OF THE RESERVOIR POOL, GOOD ROAD ACCESS TO RECREATIONAL FACILITIES AND SHOPPING, DESIRABLE SOILS FOR FOUNDATIONS AND SEPTIC TANKS, MODERATE SLOPE, AND WOODED AREAS.

EACH CELL IN THE RESERVOIR SITE WAS GIVEN A SCORE ACCORDING TO ITS PROPENSITY FOR RESIDENTIAL DEVELOPMENT. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITION.

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 6-11-67.
GROUND SURVEY, 5-'72 THROUGH 6-'72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 10-20% OF MAXIMUM POSSIBLE SCORE

3 = 20-30% OF MAXIMUM POSSIBLE SCORE

4 = 30-40% OF MAXIMUM POSSIBLE SCORE

5 = 40-50% OF MAXIMUM POSSIBLE SCORE

6 = 50-60% OF MAXIMUM POSSIBLE SCORE

7 = 60-70% OF MAXIMUM POSSIBLE SCORE

8 = 70-80% OF MAXIMUM POSSIBLE SCORE

9 = 80-90% OF MAXIMUM POSSIBLE SCORE

10 = 90-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 450.90 MEAN = 230.01 ST. DEV. = 52.87

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	45.09	90.18	135.27	180.36	225.45	270.54	315.63	360.72	405.81
MAXIMUM	45.09	90.18	135.27	180.36	225.45	270.54	315.63	360.72	405.81	450.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
SYMBOLS												
FREQUENCY	0	0	0	156	1039	1903	2918	1619	687	85	51	0

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10044

VARIABLE CLASS # 14 IMPORTANCE FACTOR 4

[illegible]

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

[illegible]

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

[illegible]

VARIABLE CLASS # 1 IMPORTANCE FACTOR 6

[illegible]

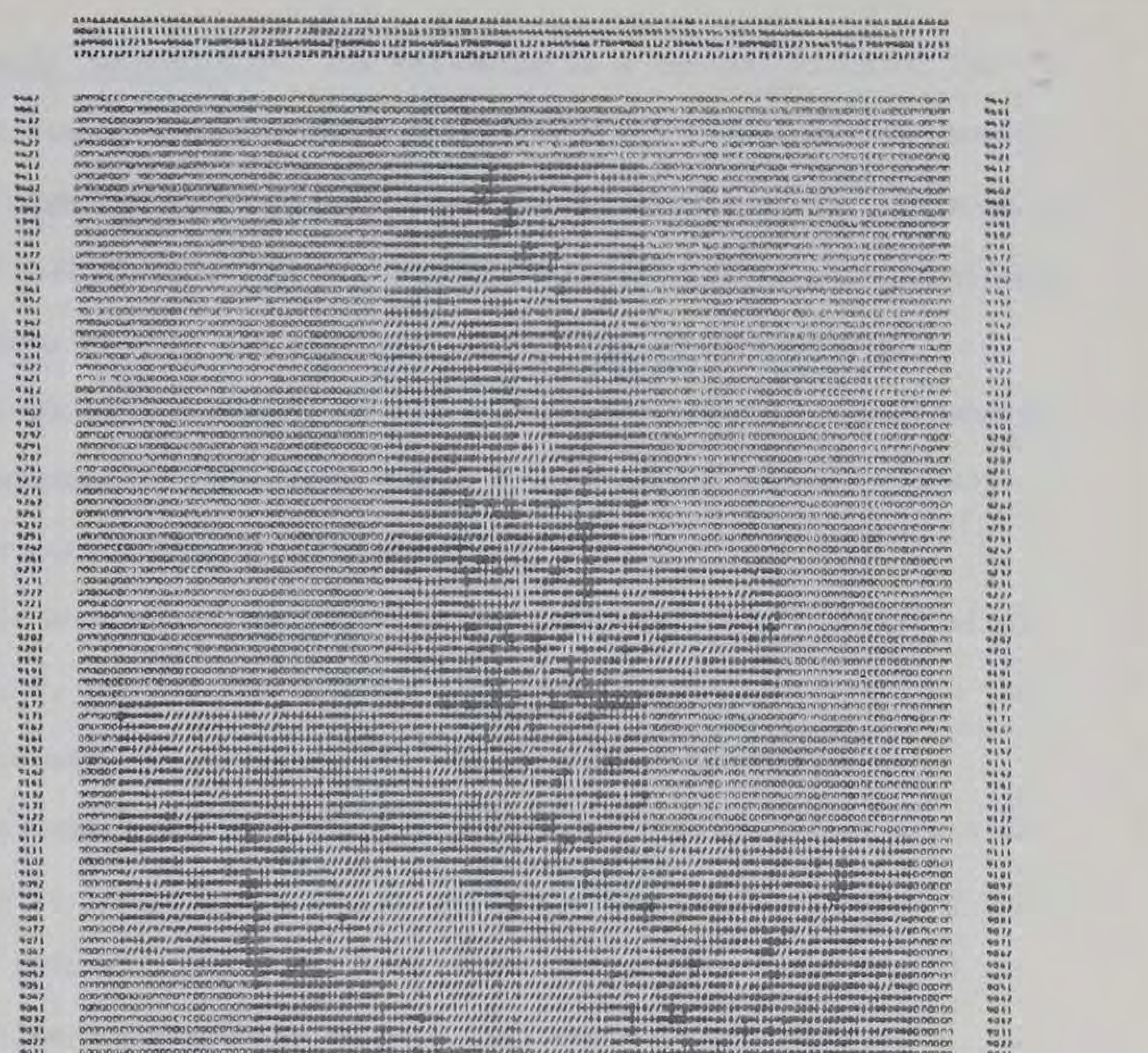


Fig. 1-1-98

Land planning methodology. The following is a demonstration of the use of the computer stored data and the suitability model technique for developing a land use plan for the proposed reservoir (Alternative #1). This is not meant to be a final plan because not all planning parameters were considered and some conflicts between the land uses shown have to be resolved.

Figure 1-1-99 is a composite of the suitability models for residential development, swimming beaches, boat ramps, picnic areas, and campgrounds. The results for Alternative #1 only are shown.

The symbols show where the major concentration(s) of attractive sites (gray levels 8, 9, and 10) for each land use are located in respect to the reservoir as proposed (Alternative #1) and the major highways.

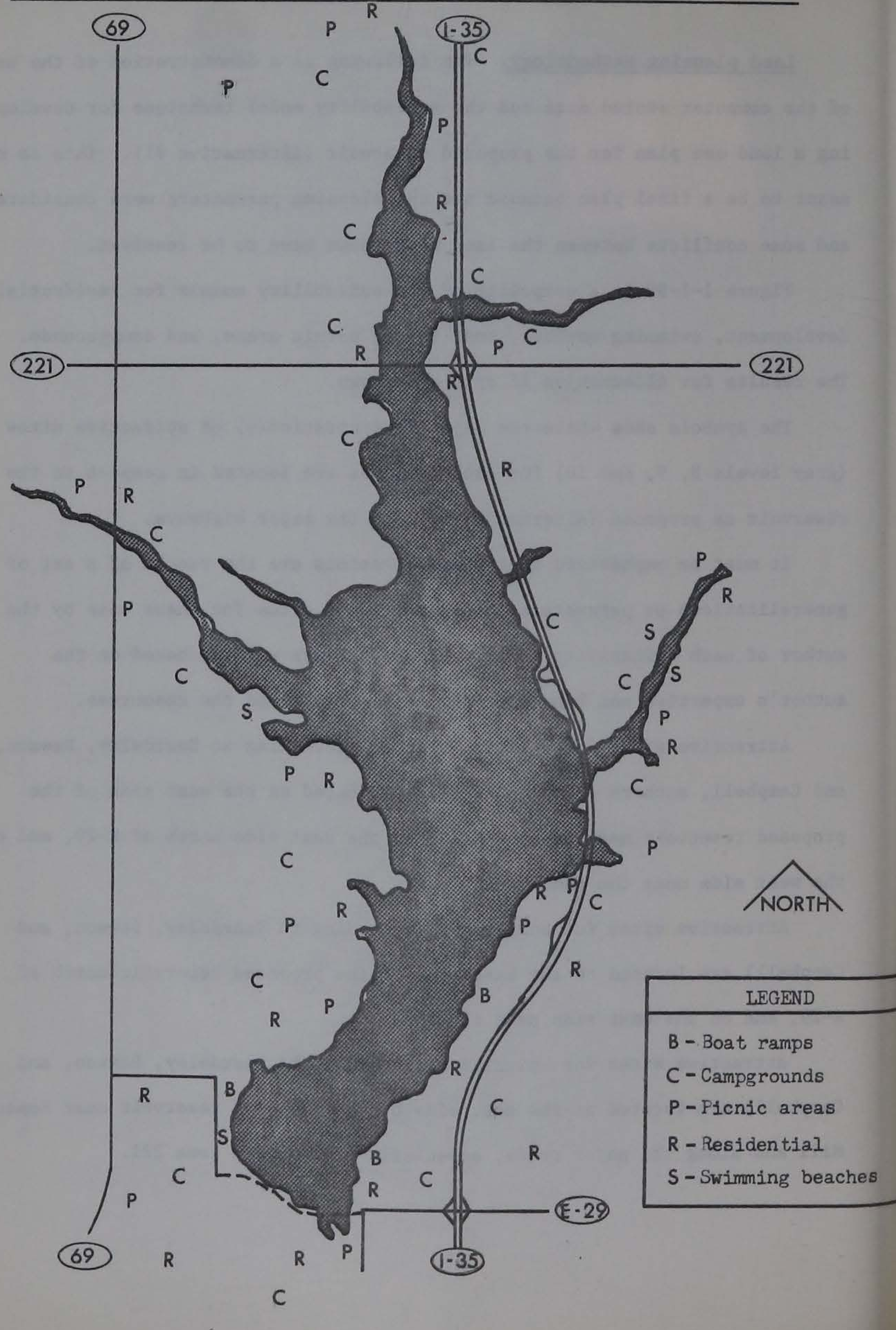
It must be emphasized that these locations are the result of a set of generalizations or parameters about attractive sites for these uses by the author of each suitability model. Each model was written based on the author's expertise and knowledge of each land use and the resources.

Attractive sites for swimming beaches (according to Beardsley, Dawson, and Campbell, authors of Appendix 3) are located on the east side of the proposed reservoir near Soper's Mill, on the east side north of E-29, and on the west side near the dam.

Attractive sites for boat ramps (according to Beardsley, Dawson, and Campbell) are located on the east side of the proposed reservoir north of E-29, and on the west side near the dam.

Attractive sites for picnicing (according to Beardsley, Dawson, and Campbell) are located on the east side of the proposed reservoir near Soper's Mill and along the major roads, especially U.S. 69 and Iowa 221.

Fig. 1-1-99 . Composite of attractiveness models



Attractive sites for campgrounds (according to Beardsley, Dawson, and Campbell) are located on the lower west side of the proposed reservoir, the east side north of E-29 but away from the reservoir, and on the east side near Long Dick Creek west of Interstate 35.

Attractive sites for residential development (according to Hultquist and Milligan, authors of Appendix 2, Chapter 10) are located on the west side of the proposed reservoir, the east side near Soper's Mill and Bear Creek, and on both sides near the Iowa 221 crossing.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.REDHOFF
DATA PREPARATION J.C.TAGGART, T.SMICK, A.PUEBL, D.FAHLANDER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.REMY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO N.JONES, C.SWANSON, A.HOEPPNER, D.ALLEN, B.PERNELIUS, D.PILLS

PICNIC AREAS

POTENTIAL PICNIC SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PICNIC AREAS WOULD INCLUDE TABLES, GRILLS, FIRE RINGS, TRASH CANS, WATER AND SANITARY FACILITIES, PARKING, SERVICE ROADS, AND ACCESS ROADS.

SITE SELECTION WAS BASED ON SOILS, SLOPE, VEGETATION, AND ROAD ACCESS. THE ASSUMPTIONS MADE WERE THAT PREFERRED PICNIC AREAS WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, CANOPY VEGETATION, AND ACCESS BY ROAD. EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PICNIC AREAS. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
LAND USE GROUND SURVEY, 6-12-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20% OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 360.90 MEAN = 198.96 ST. DEV. = 99.60

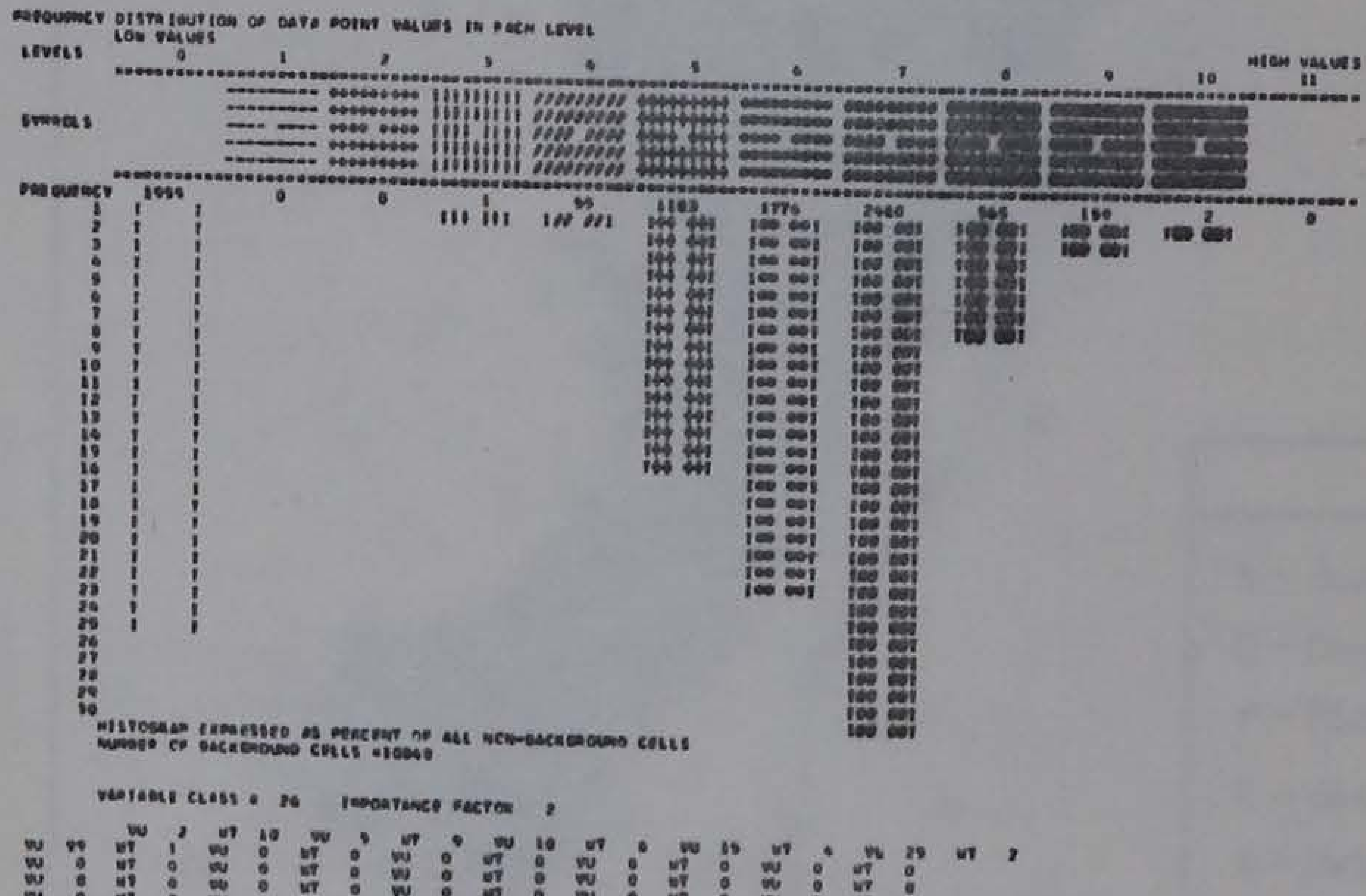
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81
MAXIMUM	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81	360.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

VU 2 WT 10 VU 5 WT 9 VU 10 WT 6 VU 15 WT 4 VU 25 WT 7
VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0
VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0
VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0
VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

VU 12 WT 6 VU 27 WT 1 VU 50 WT 7 VU 43 WT 3 VU 45 WT 5
VU 62 WT 4 VU 66 WT 7 VU 96 WT 5 VU 96 WT 7 VU 60 WT 9
VU 110 WT 5 VU 111 WT 2 VU 102 WT 4 VU 107 WT 2 VU 108 WT 7
VU 151 WT 4 VU 175 WT 5 VU 112 WT 4 VU 130 WT 9 VU 149 WT 0
VU 201 WT 9 VU 202 WT 5 VU 107 WT 4 VU 252 WT 9 VU 256 WT 1

VARIABLE CLASS # 10 IMPORTANCE FACTOR 3

VU 0 WT 1 VU5000 WT 3 VU5000 WT 5 VU5000 WT 7 VU5000 WT 9
VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0
VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0
VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0 VU 0 WT 0

MAP 15,SHEET 1,DATA SET 1

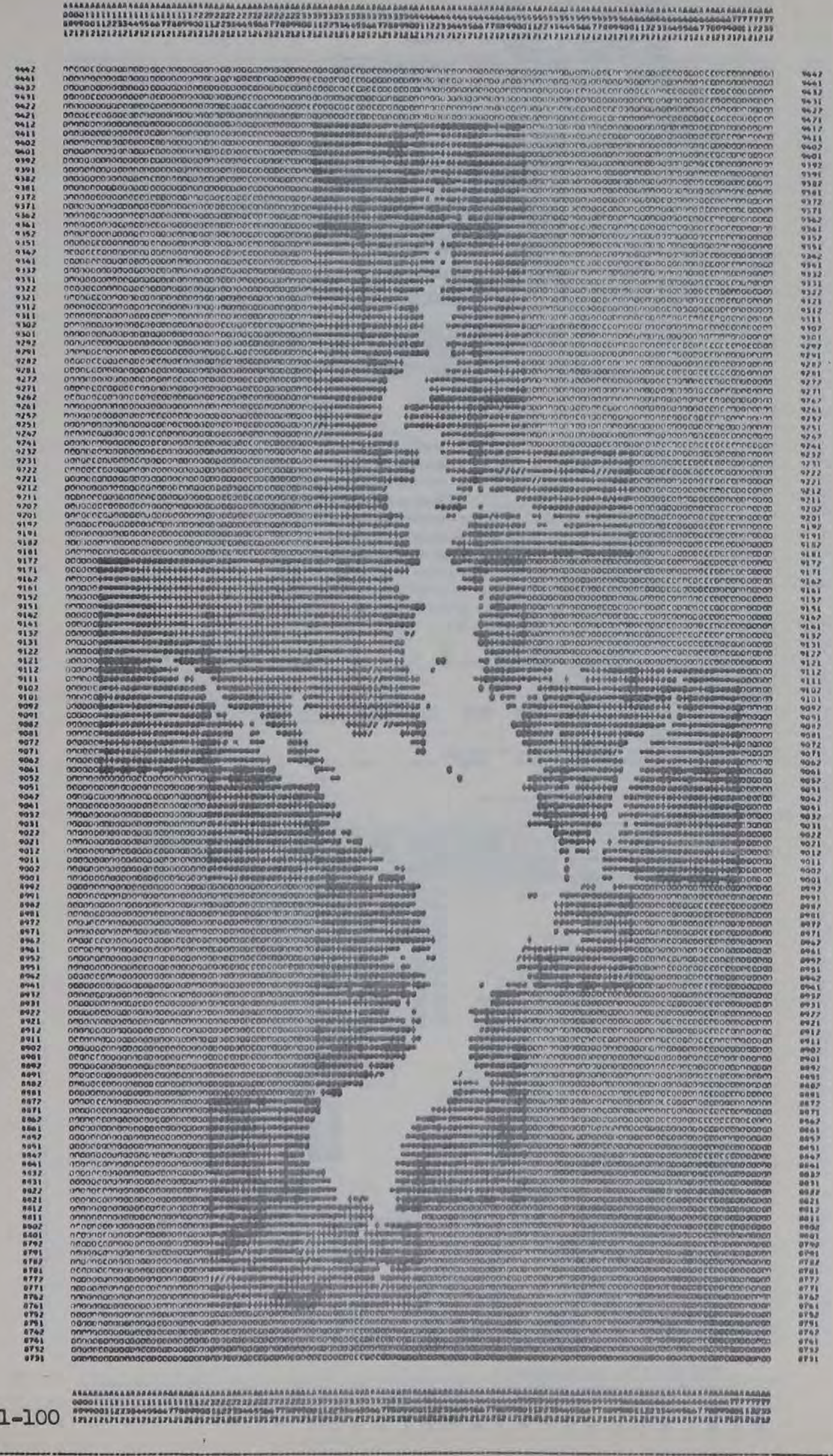


Fig. 1-1-100

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.BROBASCH
PROGRAMMER-ANALYST G.M.DRAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PURIL, D.FAULHABER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO S.JONES, K.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, O.MILLS

PICNIC AREAS

POTENTIAL PICNIC SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PICNIC AREAS WOULD INCLUDE TABLES, GRILLS, FIRE RINGS, TRASH CANS, WATER AND SANITARY FACILITIES, PARKING, SERVICE ROADS, AND ACCESS ROADS.

SITE SELECTION WAS BASED ON SOILS, SLOPE, VEGETATION, AND ROAD ACCESS. THE ASSUMPTIONS MADE WERE THAT PREPARED PICNIC AREAS WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, CANOPY VEGETATION, AND ACCESS BY ROAD. EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PICNIC AREAS. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1950.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 6-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20% OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 360.90 MEAN = 199.47 ST. DEV. = 99.37

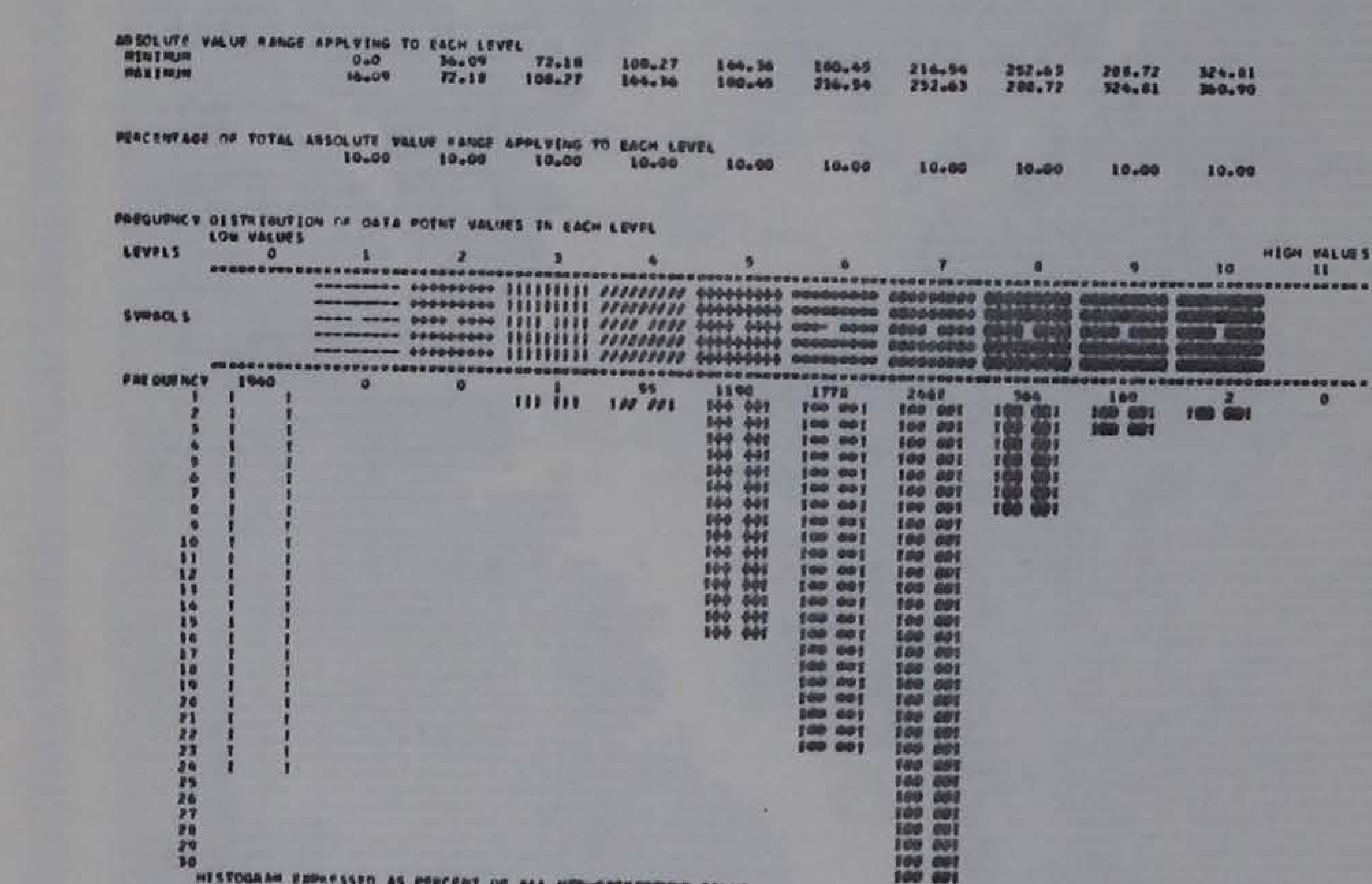
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81
MAXIMUM	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81	360.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

```
      VU   7  WT  10  VU   5  WT   9  VU  10  WT   6  VU  15  WT   4  VU  29  WT   2
VU  99  WT   1  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
```

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
      VU  12  WT   6  VU  27  WT   1  VU  38  WT   7  VU  43  WT   3  VU  49  WT   9
VU  40  WT   2  VU  49  WT   4  VU  56  WT   9  VU  58  WT   2  VU  60  WT   9
VU  62  WT   4  VU  66  WT   7  VU 102  WT   4  VU 107  WT   2  VU 108  WT   7
VU 110  WT   5  VU 111  WT   2  VU 112  WT   4  VU 120  WT   9  VU 149  WT   8
VU 151  WT   4  VU 175  WT   5  VU 187  WT   4  VU 252  WT   5  VU 256  WT   1
VU 301  WT   5  VU 302  WT   3  VU
```

VARIABLE CLASS # 14 IMPORTANCE FACTOR 3

```
      VU   0  WT   1  VU1000  WT   3  VU2000  WT   5  VU4000  WT   7  VU5000  WT   9
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU
```

VARIABLE CLASS # 25 IMPORTANCE FACTOR 4

MAP 14, SHEET 1, DATA SET 1

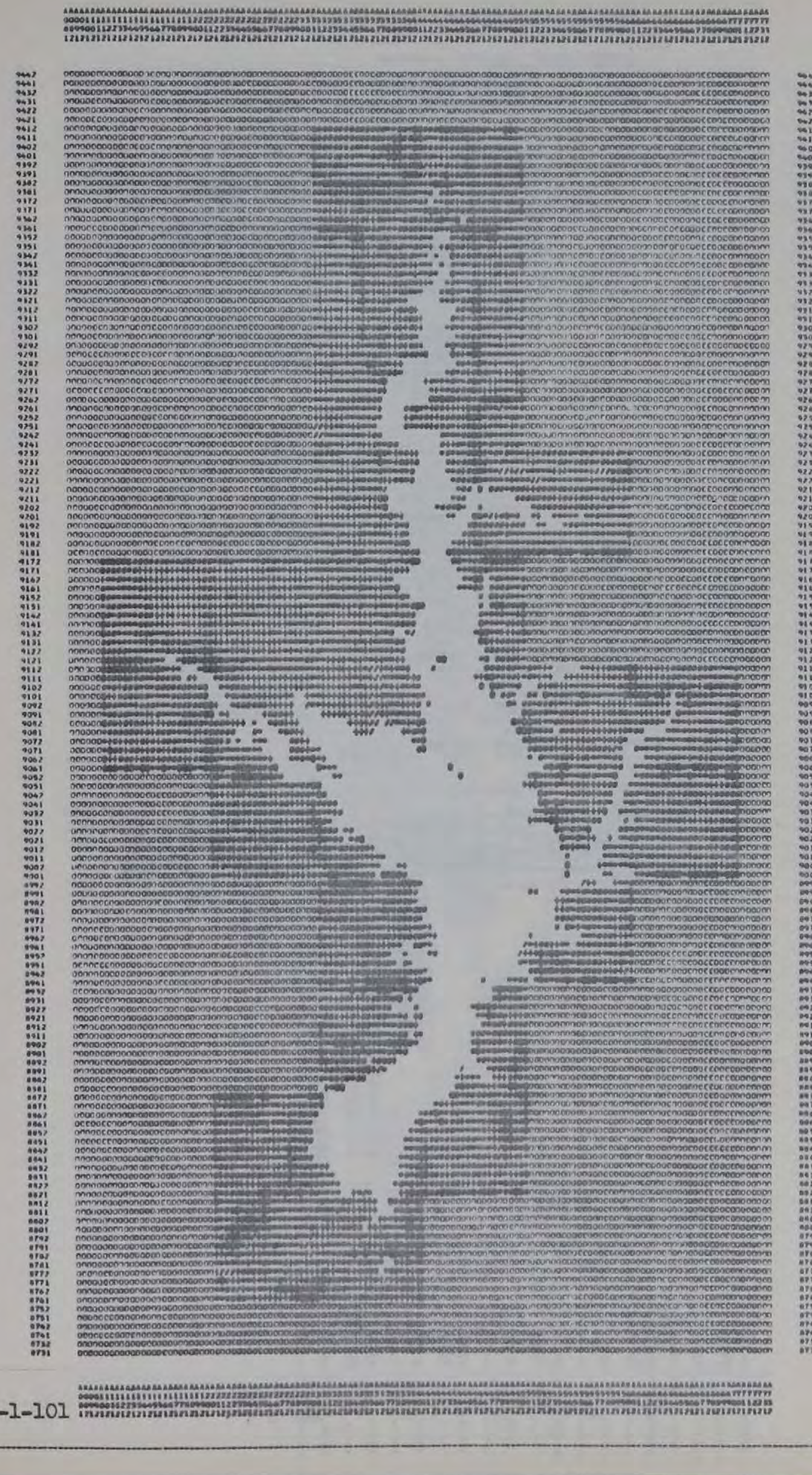


Fig. 1-1-101

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAULKNER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.BERNBERGER
KPO N.JONES, E.SWANSON, R.HOFFMAN, D.ALLEN, G.FORNELIUS, D.WELLS

PICNIC AREAS

POTENTIAL PICNIC SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PICNIC AREAS WOULD INCLUDE TABLES, GRILLS, FIRE RINGS, TRASH CANS, WATER AND SANITARY FACILITIES, PARKING, SERVICE ROADS, AND ACCESS ROADS.

SITE SELECTION WAS BASED ON SOILS, SLOPE, VEGETATION, AND ROAD ACCESS. THE ASSUMPTIONS MADE WERE THAT PREFERRED PICNIC AREAS WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, CANOPY VEGETATION, AND ACCESS BY ROAD. EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PICNIC AREAS. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 960.

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500,1952.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20% OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 360.90 MEAN = 196.71 ST. DEV. = 62.26

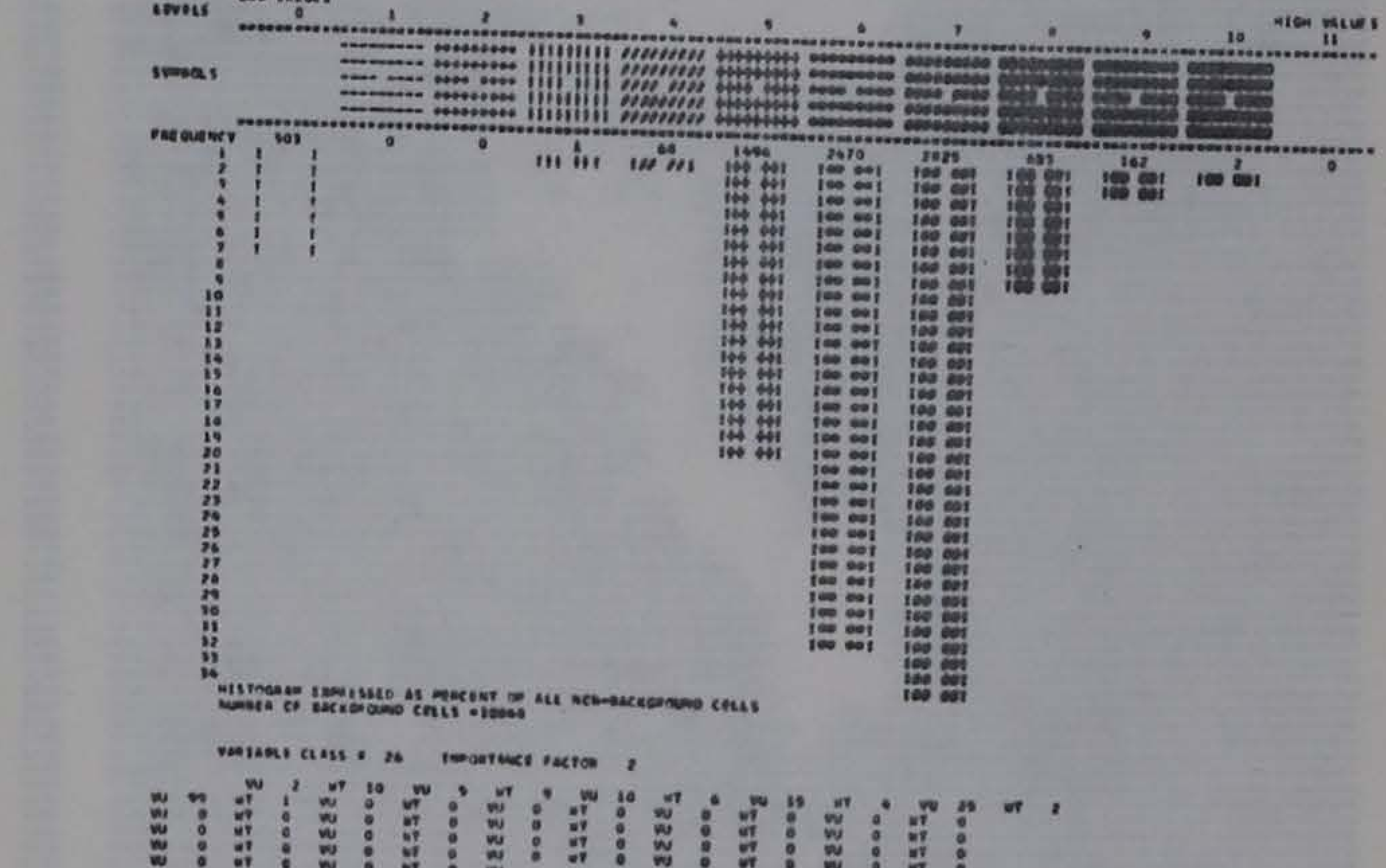
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81
MAXIMUM	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81	360.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10866

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

```
     VU   2  WT  10  VU   5  WT   9  VU  10  WT   6  VU  15  WT   4  VU  25  WT   2
VU  99  WT   1  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
```

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
     VU  12  WT   6  VU  77  WT   1  VU  30  WT   7  VU  40  WT   3  VL  45  WT   5
VU  48  WT   2  VU  49  WT   4  VU  50  WT   5  VU  56  WT   7  VU  60  WT   9
VU  62  WT   6  VU  69  WT   7  VU 102  WT   4  VU 107  WT   7  VU 100  WT   7
VU 110  WT   5  VU 111  WT   2  VU 112  WT   4  VU 120  WT   9  VU 140  WT   8
VU 151  WT   4  VU 175  WT   5  VU 187  WT   4  VU 292  WT   9  VU 296  WT   1
VU 303  WT   5  VU 302  WT   5  VU
```

VARIABLE CLASS # 18 IMPORTANCE FACTOR 3

```
     VU   0  WT   1  VU1000  WT   5  VU3000  WT   5  VU4000  WT   7  VU5000  WT   9
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0  VU   0  WT   0
```

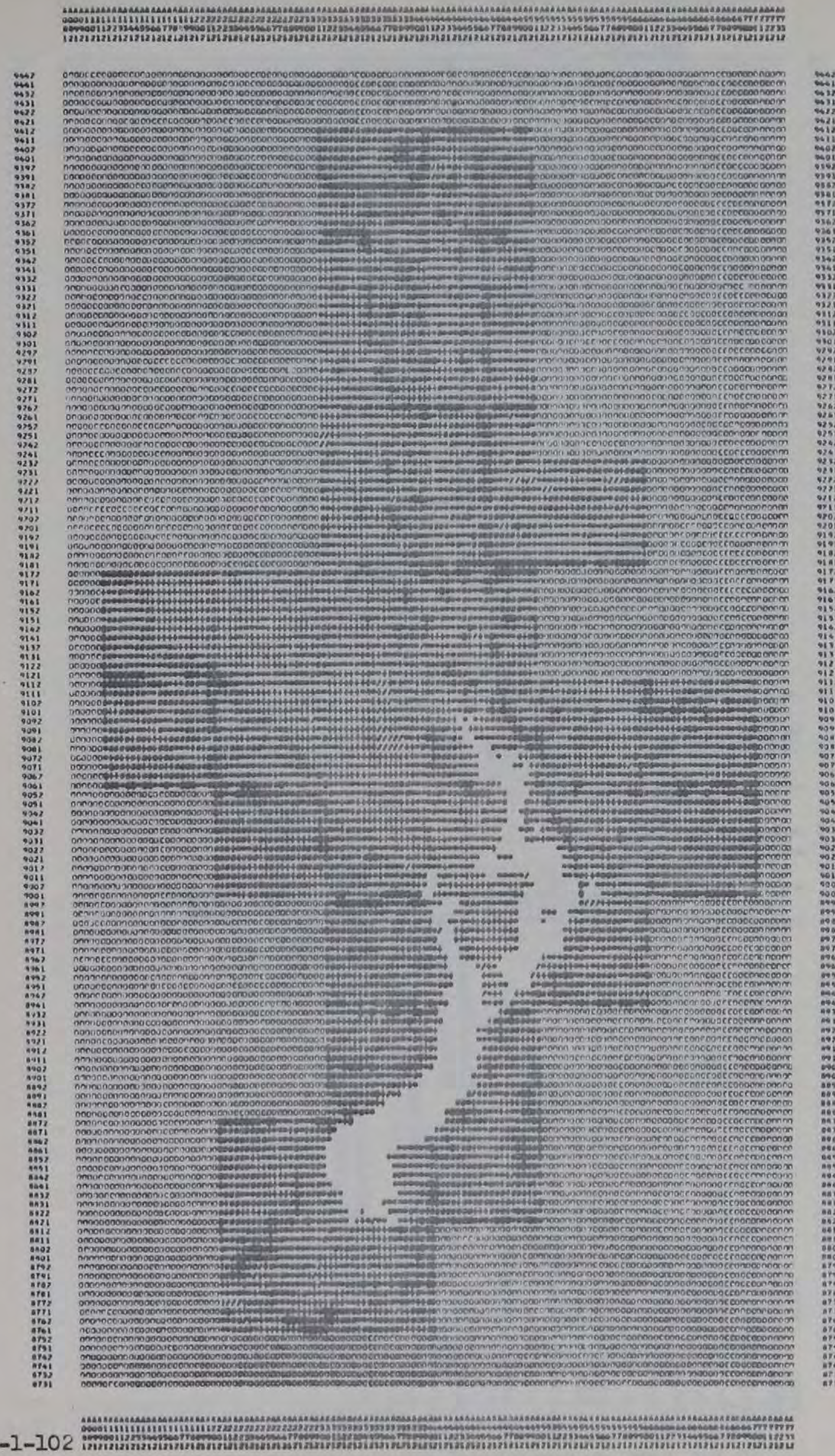


Fig. 1-1-102

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-206

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.J.ANDERSON
PROGRAMMER-ANALYST G.M.REMMERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PURDIL, D.FAHLBERGER, S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.HENRY
GRAPHICS C.J.IMAR, D.DEPRENGER
KPO N.JONES, F.SWANSON, K.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

PICNIC AREAS

POTENTIAL PICNIC SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PICNIC AREAS WOULD INCLUDE TABLES, GRILLS, FIRE RINGS, TRASH CANS, WATER AND SANITARY FACILITIES, PARKING, SERVICE ROADS, AND ACCESS ROADS.

SITE SELECTION WAS BASED ON SOILS, SLOPE, VEGETATION, AND ROAD ACCESS. THE ASSUMPTIONS MADE WERE THAT PREFERRED PICNIC AREAS WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, CANOPY VEGETATION, AND ACCESS BY ROAD. EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PICNIC AREAS. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE 66 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1920.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20% OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 360.90 MEAN = 175.29 ST. DEV. = 87.50

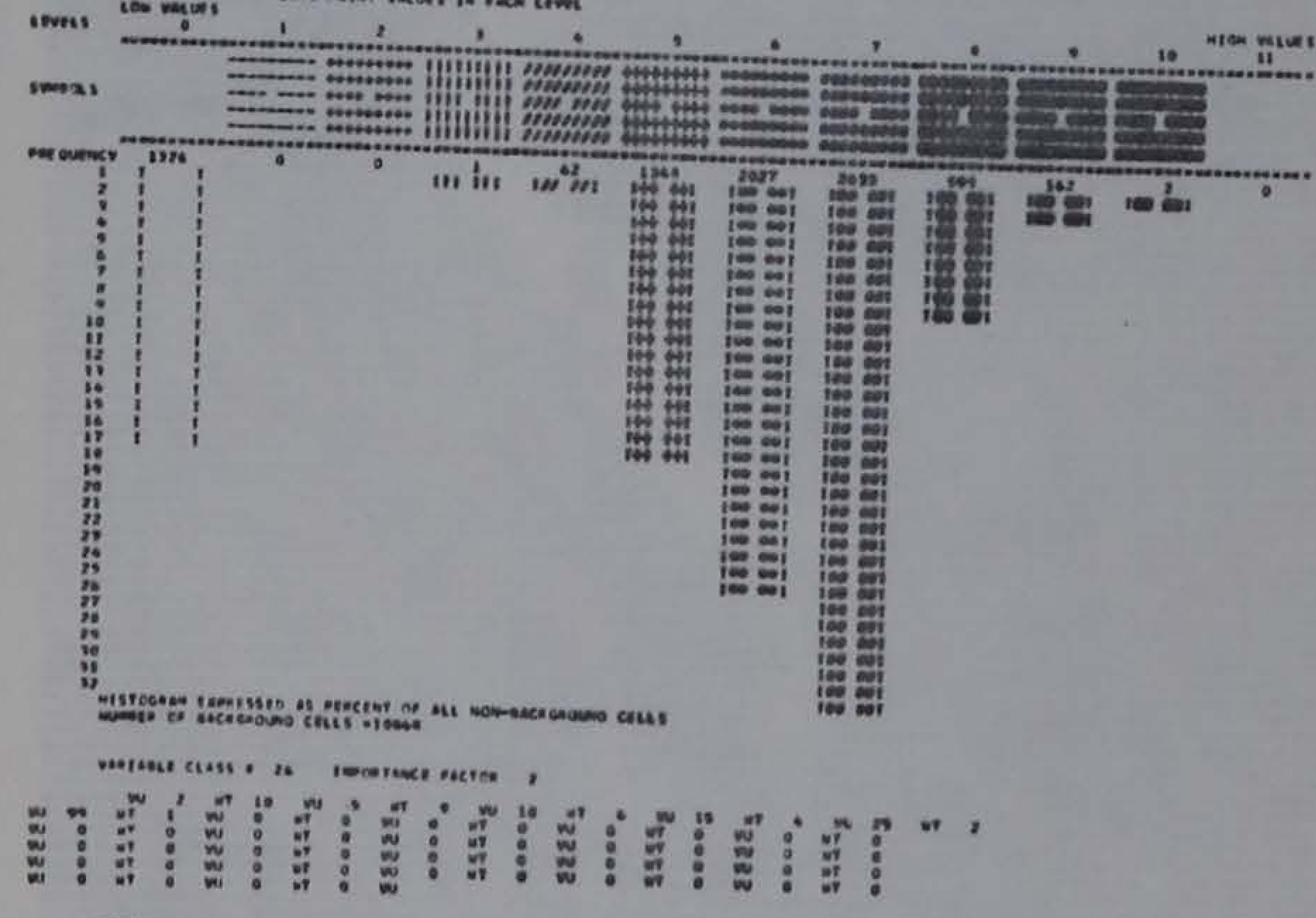
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81
MAXIMUM	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81	360.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10048

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

```
     VU  2   WT 10  VU  5   WT  0   VU 10   WT  6   VU 15   WT  4   VU 25   WT  2
VU 99   WT  1   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0
VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0
VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0
VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0
VU  0   WT  0   VU  0   WT  0   VU
```

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
     VU 12   WT  6   VU 27   WT  1   VU 30   WT  7   VU 43   WT  5   VU 49   WT  9
VU 40   WT  7   VU 48   WT  4   VU 55   WT  5   VU 56   WT  2   VU 60   WT  9
VU 62   WT  4   VU 65   WT  7   VU 102  WT  4   VU 107  WT  2   VU 100  WT  7
VU 110  WT  5   VU 111  WT  7   VU 112  WT  4   VU 150  WT  9   VU 169  WT  8
VU 191  WT  4   VU 175  WT  5   VU 187  WT  4   VU 252  WT  9   VU 250  WT  1
VU 301  WT  5   VU 302  WT  5   VU
```

VARIABLE CLASS # 16 IMPORTANCE FACTOR 3

```
     VU  0   WT  1   VU9000  WT  3   VU9000  WT  5   VU9000  WT  7   VU9000  WT  9
VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0
VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0
VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0
VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0   VU  0   WT  0
```

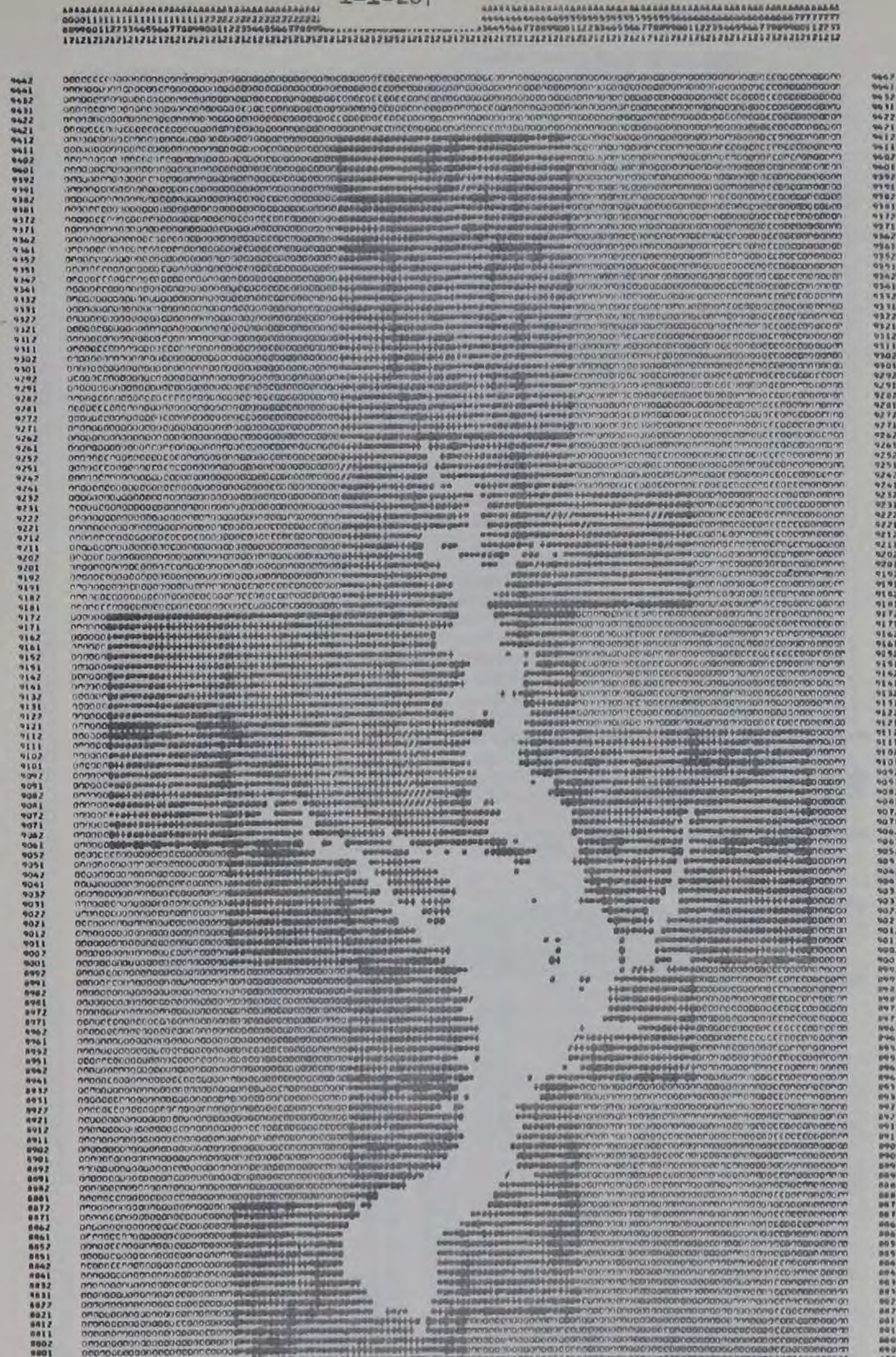


Fig. 1-1-103

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-208

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEVERSON, W.SCHUTTLER, D.HENRY
GRAPHICS C.J.URAN, D.DEPRENGER
KPC W.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.MILLS

PICNIC AREAS

POTENTIAL PICNIC SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PICNIC AREAS WOULD INCLUDE TABLES, GRILLS, FIRE RINGS, TRASH CANS, WATER AND SANITARY FACILITIES, PARKING, SERVICE ROADS, AND ACCESS ROADS.

SITE SELECTION WAS BASED ON SOILS, SLOPE, VEGETATION, AND ROAD ACCESS. THE ASSUMPTIONS MADE WERE THAT PREFERRED PICNIC AREAS WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, CANOPY VEGETATION, AND ACCESS BY ROAD. EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PICNIC AREAS. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE 05 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500,1912.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20% OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 360.90 MEAN = 207.64 ST. DEV. = 40.40

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81
MAXIMUM	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81	360.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
          LOW VALUES
LEVELS        0          1         2         3         4         5         6         7         8         9        10      HIGH VALUES
                                                                                                                              11
FREQUENCY    93          0         0         1        70      1919      2766      2909       657       161         2         0
    1   I     I                         III III   /// ///   +++ +++   100 001   100 001   100 001   100 001   100 001
    2   I     I                                             +++ +++   100 001   100 001   100 001   100 001
    3                                                       +++ +++   100 001   100 001   100 001
    4                                                       +++ +++   100 001   100 001   100 001
    5                                                       +++ +++   100 001   100 001   100 001
    6                                                       +++ +++   100 001   100 001   100 001
    7                                                       +++ +++   100 001   100 001   100 001
    8                                                       +++ +++   100 001   100 001   100 001
    9                                                       +++ +++   100 001   100 001   100 001
   10                                                       +++ +++   100 001   100 001
   11                                                       +++ +++   100 001   100 001
   12                                                       +++ +++   100 001   100 001
   13                                                       +++ +++   100 001   100 001
   14                                                       +++ +++   100 001   100 001
   15                                                       +++ +++   100 001   100 001
   16                                                       +++ +++   100 001   100 001
   17                                                       +++ +++   100 001   100 001
   18                                                       +++ +++   100 001   100 001
   19                                                       +++ +++   100 001   100 001
   20                                                                 100 001   100 001
   21                                                                 100 001   100 001
   22                                                                 100 001   100 001
   23                                                                 100 001   100 001
   24                                                                 100 001   100 001
   25                                                                 100 001   100 001
   26                                                                 100 001   100 001
   27                                                                 100 001   100 001
   28                                                                 100 001   100 001
   29                                                                 100 001   100 001
   30                                                                 100 001   100 001
   31                                                                 100 001   100 001
   32                                                                 100 001   100 001
   33                                                                 100 001   100 001
   34                                                                 100 001   100 001
   35                                                                           100 001
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

```
       VU   2   WT  10   VU   5   WT   9   VU  10   WT   6   VU  15   WT   4   VU  29   WT   2
VU  99   WT   1   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU
```

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
       VU  12   WT   6   VU  27   WT   3   VU  30   WT   7   VU  45   WT   3   VU  49   WT   5
VU  48   WT   2   VU  49   WT   4   VU  55   WT   5   VU  56   WT   2   VU  60   WT   9
VU  67   WT   4   VU  85   WT   7   VU 102   WT   4   VU 107   WT   2   VU 108   WT   7
VU 110   WT   5   VU 111   WT   2   VU 112   WT   4   VU 130   WT   9   VU 140   WT   0
VU 151   WT   4   VU 175   WT   5   VU 187   WT   4   VU 252   WT   5   VU 256   WT   1
VU 301   WT   5   VU 302   WT   3   VU
```

VARIABLE CLASS # 10 IMPORTANCE FACTOR 3

```
       VU   0   WT   1   VU1000   WT   3   VU5000   WT   5   VU5000   WT   7   VU5000   WT   9
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
```

MAP 1.SHEET 1.DATA SET 1

1-1-209

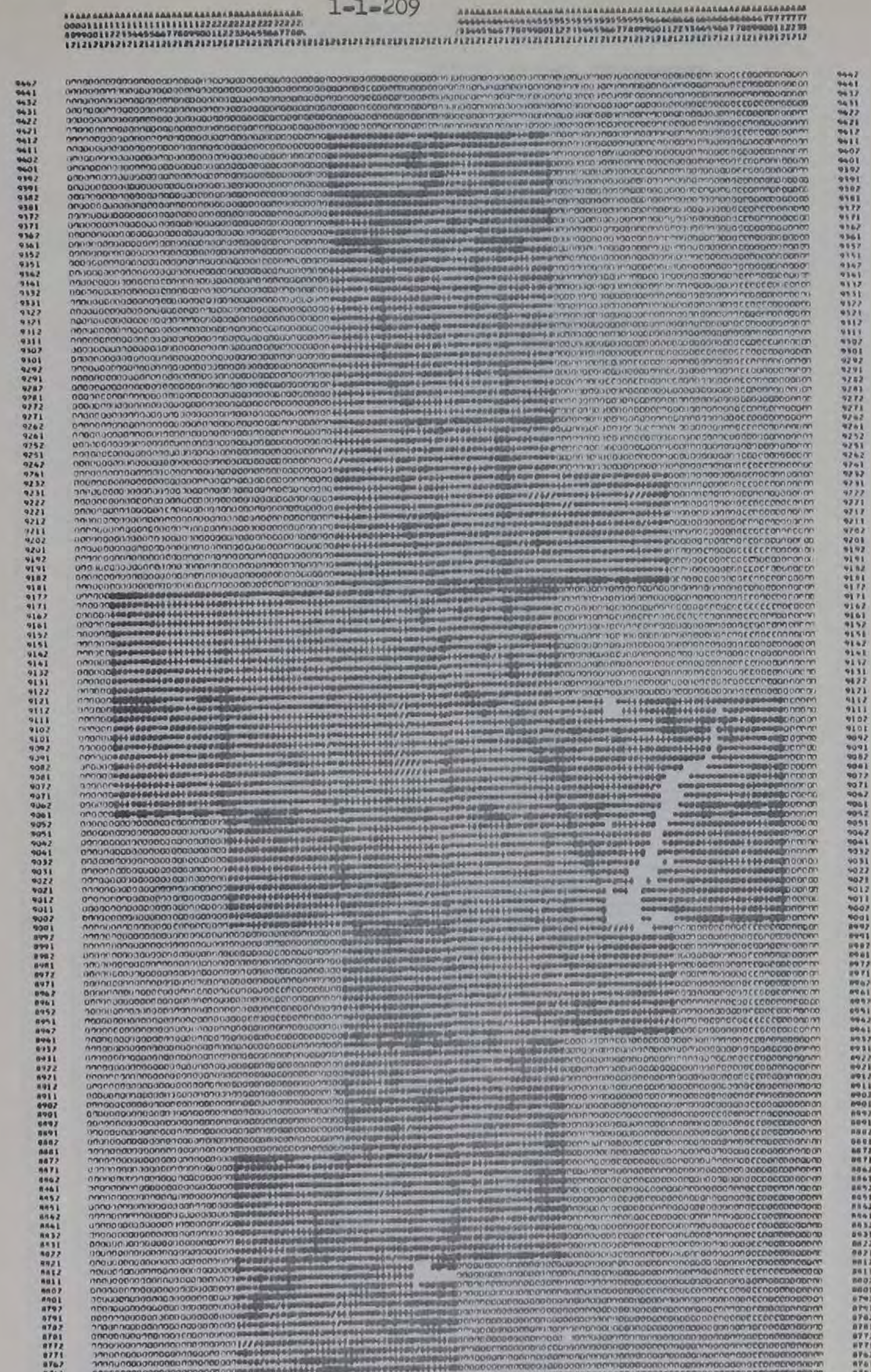


Fig. 1-1-104

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SMUCK, A.PUDIL, D.FASLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO M.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

PICNIC AREAS

POTENTIAL PICNIC SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PICNIC AREAS WOULD INCLUDE TABLES, GRILLS, FIRE RINGS, TRASH CANS, WATER AND SANITARY FACILITIES, PARKING, SERVICE ROADS, AND ACCESS ROADS.

SITE SELECTION WAS BASED ON SOILS, SLOPE, VEGETATION, AND ROAD ACCESS. THE ASSUMPTIONS MADE WERE THAT PREFERRED PICNIC AREAS WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, CANOPY VEGETATION, AND ACCESS BY ROAD. EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PICNIC AREAS. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS. ESSENTIALLY EXISTING CONDITIONS.

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1917.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20% OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 360.90 MEAN = 210.22 ST. DEV. = 33.09

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

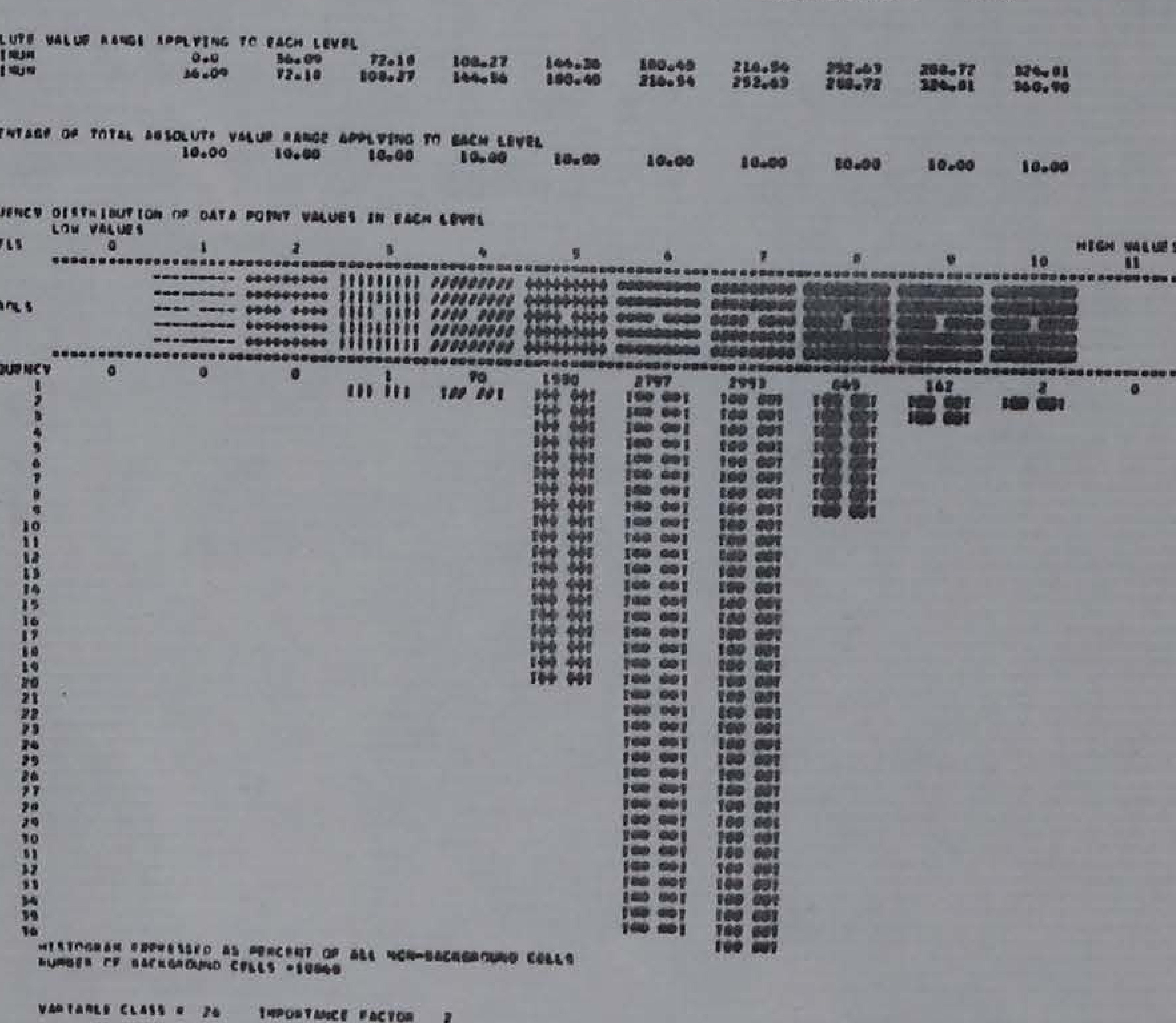
MINIMUM	0.0	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81
MAXIMUM	36.09	72.18	108.27	144.36	180.45	216.54	252.63	288.72	324.81	360.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	0	0	0	1	90	1590	2797	2993	649	162	2	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10060

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

```
        VU  7  WT 10  VU  5  WT  9  VU 10  WT  6  VU 15  WT  4  VU 25  WT  2
VU 99  WT  1  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0
VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0
VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0
VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0
VU  0  WT  0  VU  0  WT  0  VU
```

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
        VU 12  WT  6  VU 72  WT  1  VU 58  WT  7  VU 47  WT  3  VU 49  WT  5
VU 48  WT  7  VU 49  WT  4  VU 95  WT  5  VU 56  WT  2  VU 60  WT  9
VU 62  WT  4  VU 65  WT  7  VU 102  WT  6  VU 107  WT  2  VU 108  WT  7
VU 110  WT  5  VU 111  WT  2  VU 112  WT  4  VU 130  WT  9  VU 140  WT  0
VU 151  WT  4  VU 175  WT  5  VU 107  WT  4  VU 252  WT  5  VU 296  WT  1
VU 301  WT  5  VU 302  WT  3  VU
```

VARIABLE CLASS # 10 IMPORTANCE FACTOR 3

```
        VU  0  WT  1  VU3000  WT  3  VU3000  WT  5  VU9000  WT  7  VU9000  WT  9
VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0
VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0
VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0
VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0  VU  0  WT  0
VU  0  WT  0  VU  0  WT  0  VU
```

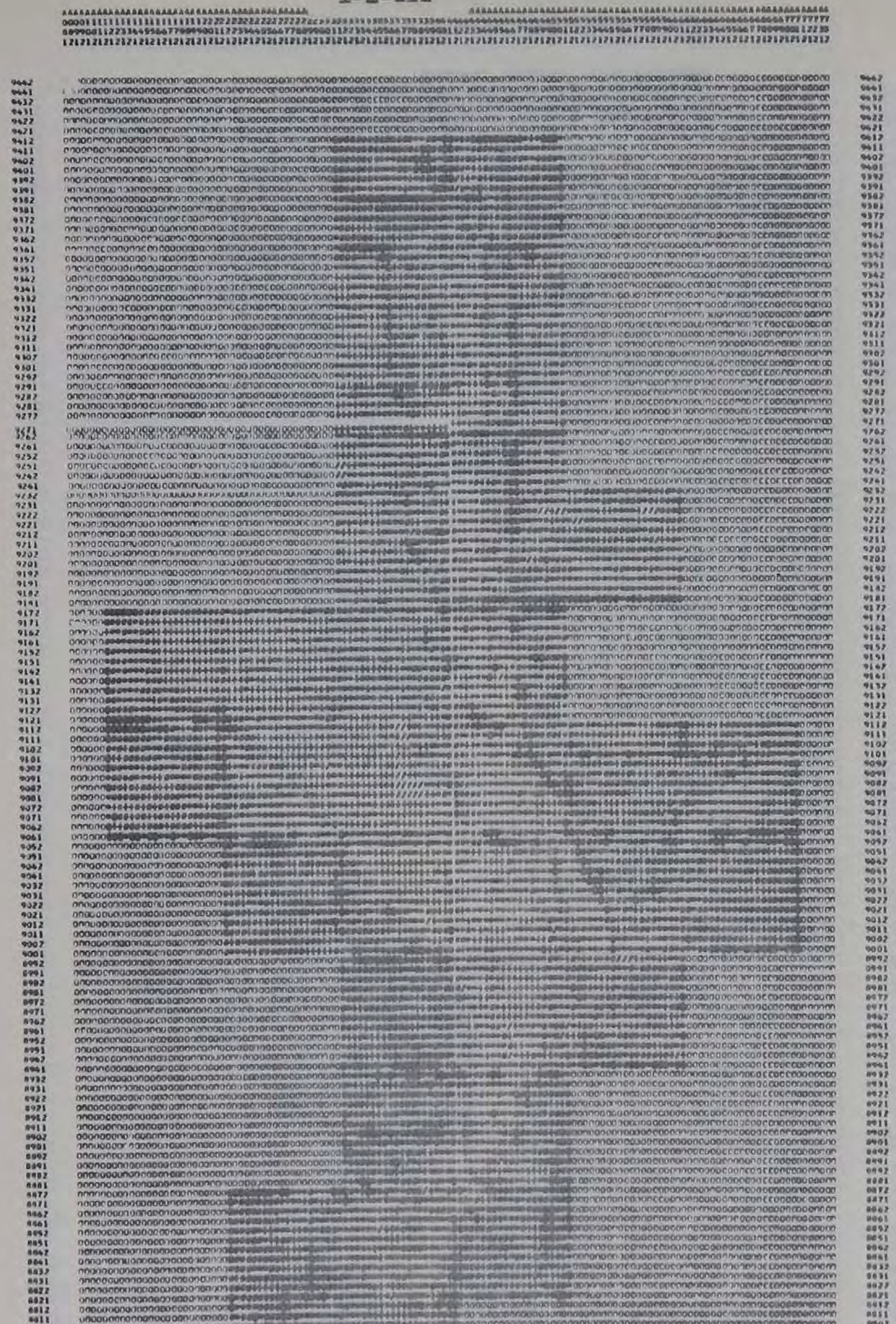


Fig. 1-1-105

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.N.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SMACK, A.PUDIL, D.PAULANDER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.OEPPRENDER
KPO N.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.PERNELIUS, D.PILLS

PUBLIC CAMPGROUNDS

POTENTIAL CAMPGROUND SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PUBLIC CAMPGROUNDS WOULD INCLUDE ROADS, PARKING, CAMP PADS, TENT SITES, WELLS, AND SEPTIC TANKS.

SITE SELECTION WAS BASED ON SOIL, SLOPE, ACCESS, VIEWS, AND VEGETATION. THE ASSUMPTIONS MADE WERE THAT PREFERRED CAMPGROUND SITES WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, GOOD ACCESS BY ROAD OR WATER, VIEWS OF WATER, AND VEGETATION CANOPY COVER.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PUBLIC CAMPGROUND SITES. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE
2 = 11-20% OF MAXIMUM POSSIBLE SCORE
3 = 21-30% OF MAXIMUM POSSIBLE SCORE
4 = 31-40% OF MAXIMUM POSSIBLE SCORE
5 = 41-50% OF MAXIMUM POSSIBLE SCORE
6 = 51-60% OF MAXIMUM POSSIBLE SCORE
7 = 61-70% OF MAXIMUM POSSIBLE SCORE
8 = 71-80% OF MAXIMUM POSSIBLE SCORE
9 = 81-90% OF MAXIMUM POSSIBLE SCORE
10 = 91-100% OF MAXIMUM POSSIBLE SCORE
11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 410.90 MEAN = 182.37 ST. DEV. = 115.01

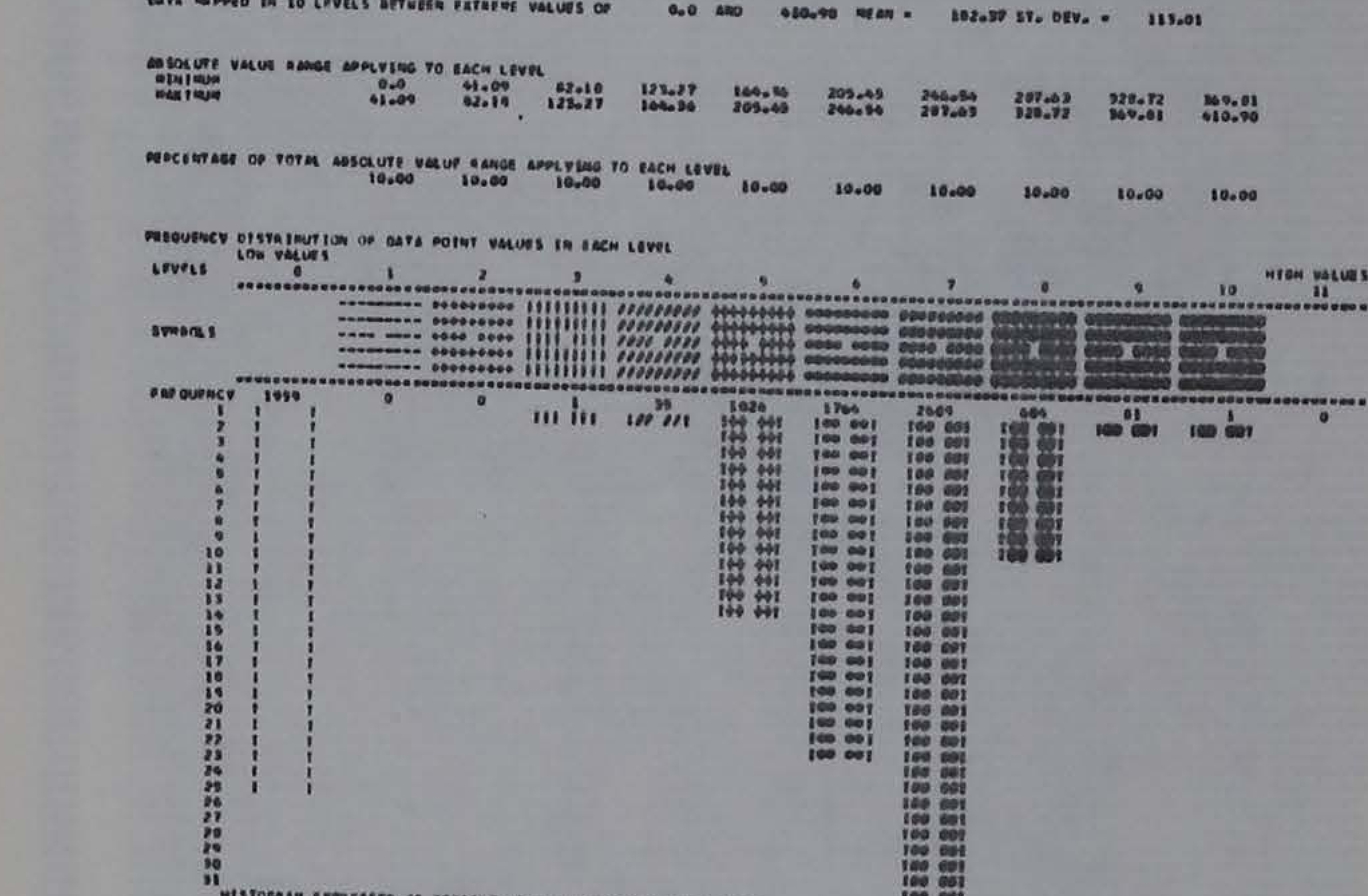
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81
MAXIMUM	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81	410.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10840

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
        VU  12  WT  6  VU  27  WT  1  VU  38  WT  7  VU  48  WT  3  VU  45  WT  5
VU  40  WT  2  VU  40  WT  4  VU  55  WT  5  VU  56  WT  2  VU  60  WT  9
VU  47  WT  4  VU  65  WT  7  VU 102  WT  4  VU 107  WT  2  VU 100  WT  7
VU 110  WT  9  VU 111  WT  7  VU 112  WT  6  VU 130  WT  9  VU 149  WT  8
VU 151  WT  4  VU 175  WT  6  VU 187  WT  4  VU 252  WT  5  VU 256  WT  1
VU 301  WT  5  VU 302  WT  3  VU
```

VARIABLE CLASS # 26 IMPORTANCE FACTOR 1

```
        VU   2  WT 10  VU   5  WT  9  VU  10  WT  6  VU  15  WT  4  VU  25  WT  2
VU  99  WT  1  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0
VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0
VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0
VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0
VU   0  WT  0  VU   0  WT  0  VU
```

VARIABLE CLASS # 14 IMPORTANCE FACTOR 6

```
        VU   1  WT  1  VU   2  WT  2  VU   3  WT  3  VU   4  WT  4  VU   5  WT 10
VU   6  WT  1  VU   7  WT  8  VU   6  WT  6  VU   0  WT  0  VU   0  WT  0
VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0
VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0
VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0
VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0  VU   0  WT  0
```

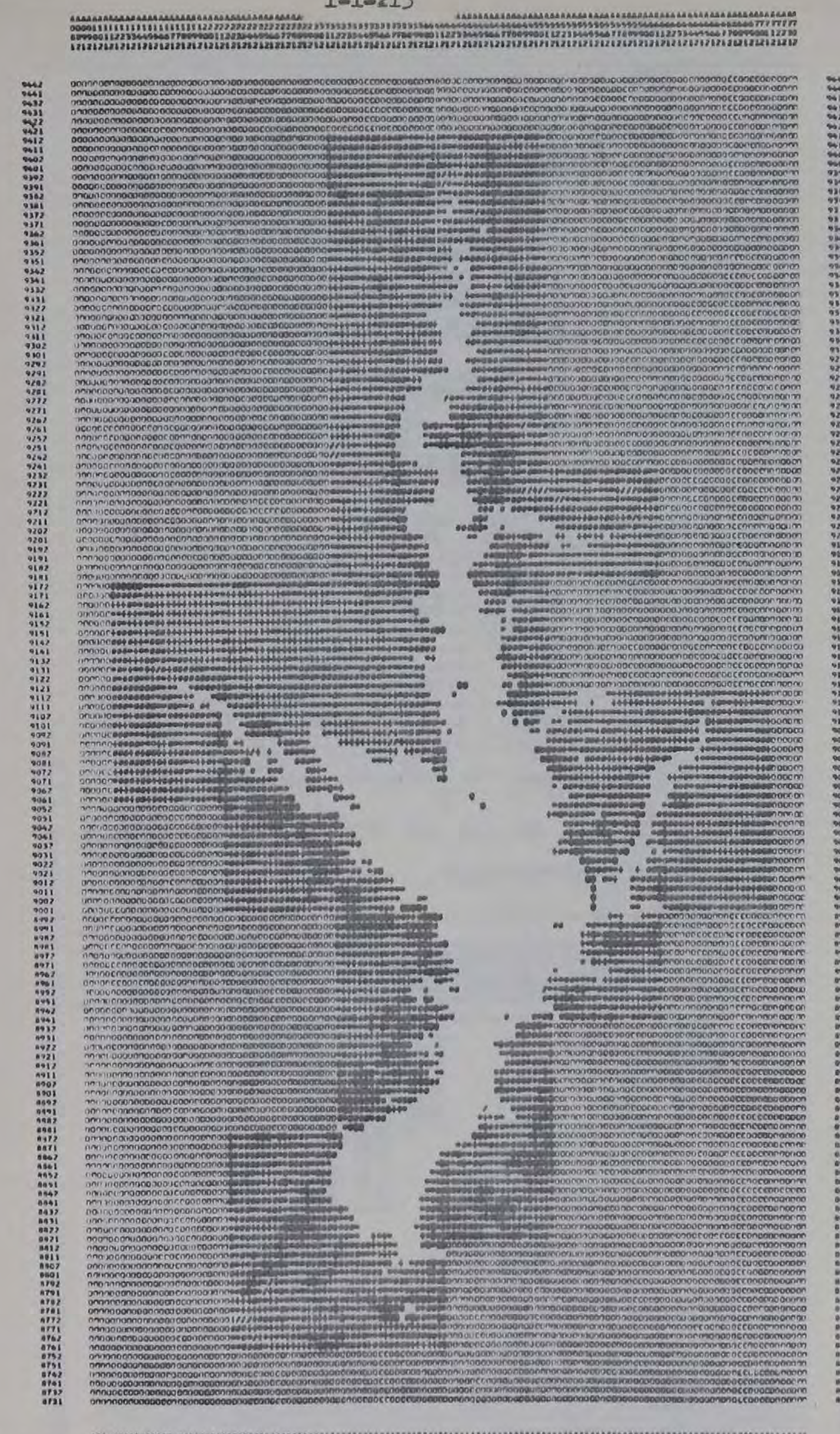


Fig. 1-1-106

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLINGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO M.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.WELLS

PUBLIC CAMPGROUNDS

POTENTIAL CAMPGROUND SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PUBLIC CAMPGROUNDS WOULD INCLUDE ROADS, PARKING, CAMP PADS, TENT SITES, WELLS, AND SEPTIC TANKS.

SITE SELECTION WAS BASED ON SOIL, SLOPE, ACCESS, VIEWS, AND VEGETATION. THE ASSUMPTIONS MADE WERE THAT PREFERRED CAMPGROUND SITES WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, GOOD ACCESS BY ROAD OR WATER, VIEWS OF WATER, AND VEGETATION CANOPY COVER.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PUBLIC CAMPGROUND SITES. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20 % OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 410.90 MEAN = 182.99 ST. DEV. = 112.60

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

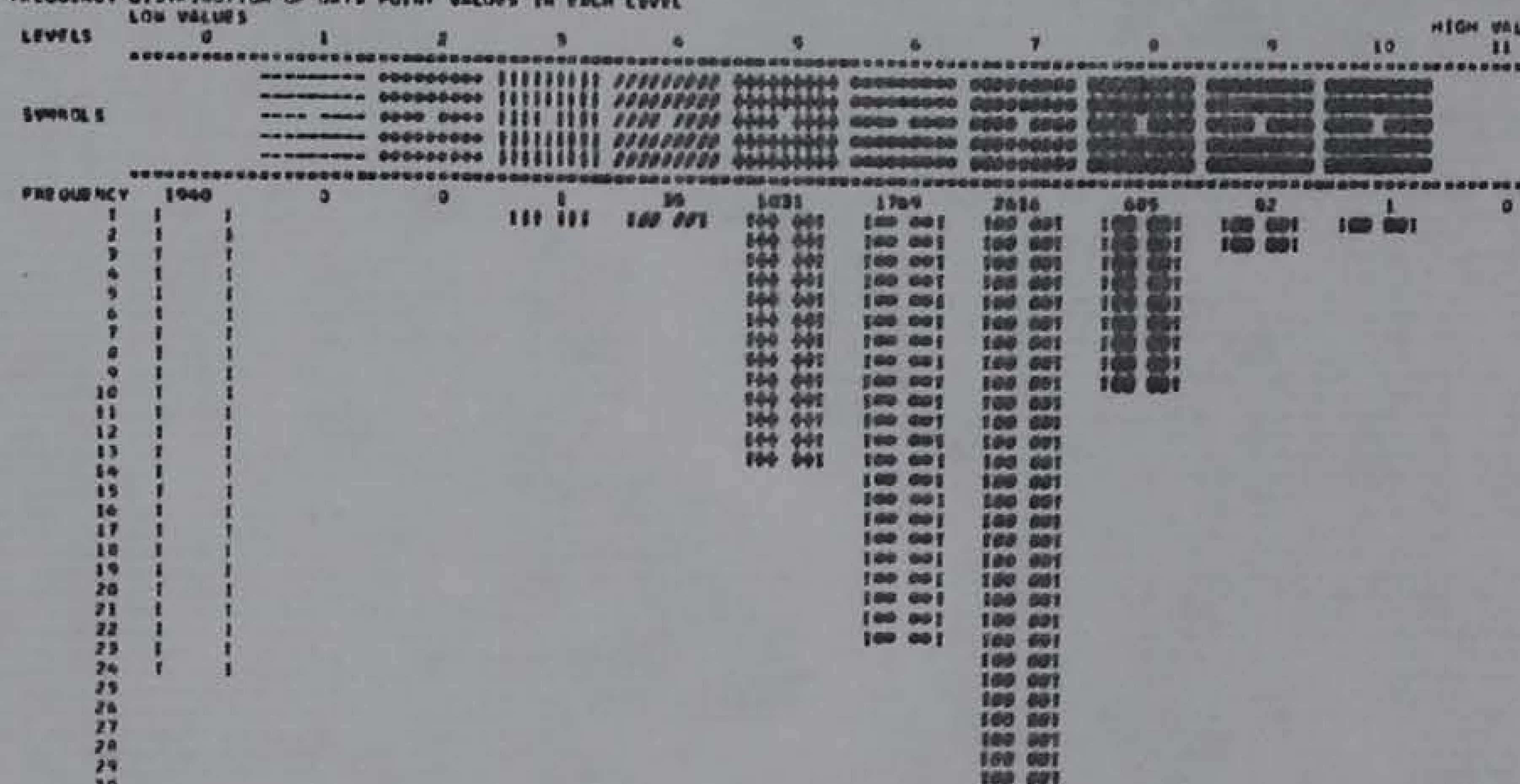
MINIMUM	0.0	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81
MAXIMUM	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81	410.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1940	3	0	1	35	1031	1709	2616	605	82	1	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10060

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
          VU  12    WT   6   VU  27   WT   1   VU  30   WT   7   VU  43   WT   3   VU  49   WT   9
VU  48    WT   2    VU  49   WT   4   VU  95   WT   5   VU  56   WT   2   VU  60   WT   9
VU  67    WT   4    VU  65   WT   7   VU 102   WT   4   VU 107   WT   2   VU 108   WT   7
VU 110    WT   5    VU 111   WT   7   VU 112   WT   4   VU 130   WT   9   VU 149   WT   8
VU 151    WT   4    VU 175   WT   5   VU 187   WT   4   VU 252   WT   5   VU 256   WT   1
VU 301    WT   5    VU 302   WT   3   VU
```

VARIABLE CLASS # 26 IMPORTANCE FACTOR 1

```
          VU   2    WT  10   VU   5   WT   9   VU  10   WT   6   VU  15   WT   4   VU  25   WT   2
VU  99    WT   1    VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0    WT   0    VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0    WT   0    VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0    WT   0    VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0    WT   0    VU   0   WT   0   VU
```

VARIABLE CLASS # 14 IMPORTANCE FACTOR 6

MAP 7, SHEET 1, DATA SET 1

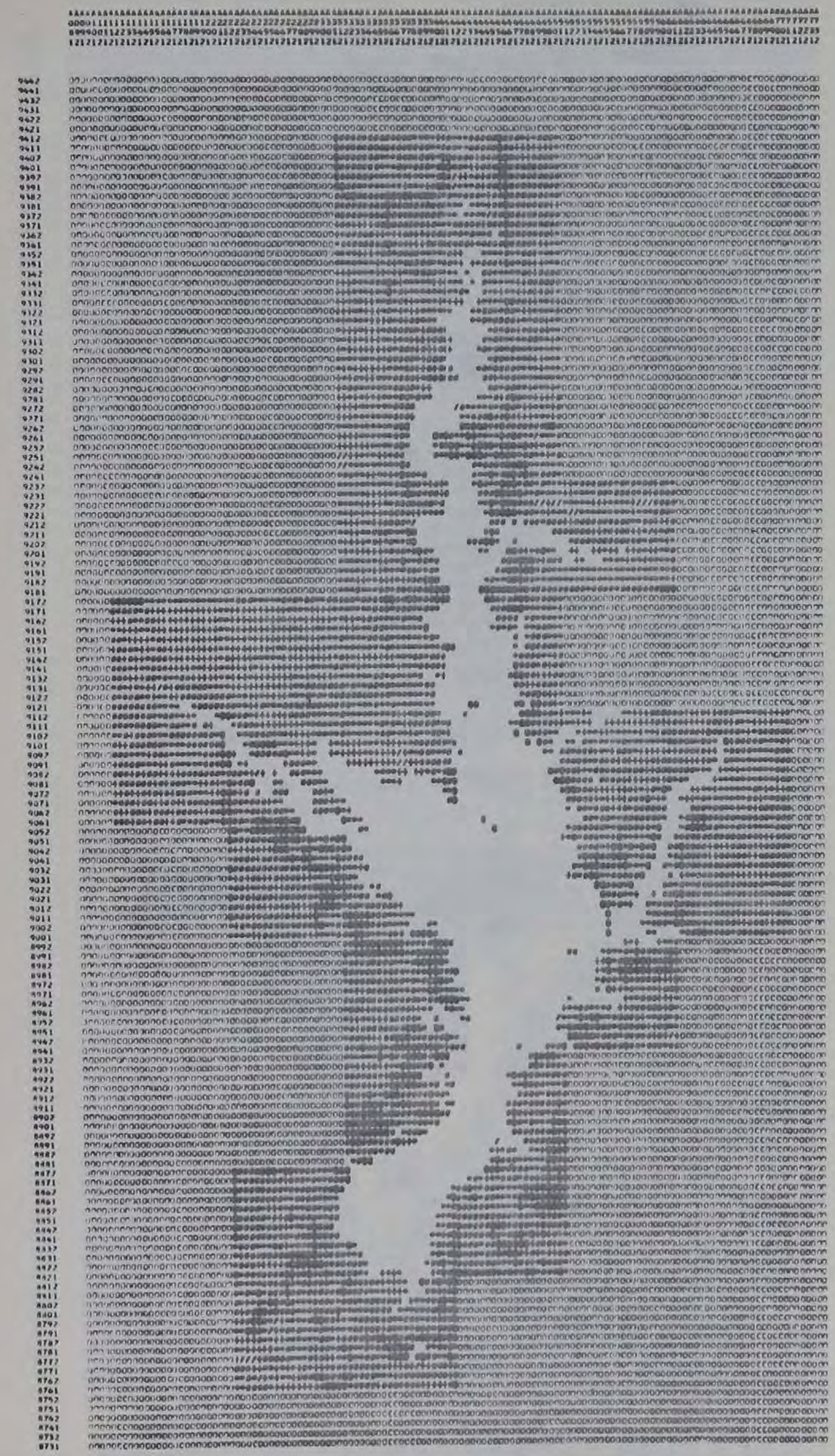


Fig. 1-1-107

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.STRATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.GRAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.PERLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.[illegible]
GRAPHICS C.J.[illegible], D.[illegible]
APO W.JONES, T.SHANSON, R.[illegible], D.ALLEN, D.[illegible], D.WELLS

PUBLIC CAMPGROUNDS

POTENTIAL CAMPGROUND SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PUBLIC CAMPGROUNDS WOULD INCLUDE ROADS, PARKING, CAMP PADS, TENT SITES, WELLS, AND SEPTIC TANKS.

SITE SELECTION WAS BASED ON SOIL, SLOPE, ACCESS, VIEWS, AND VEGETATION. THE ASSUMPTIONS MADE WERE THAT PREFERRED CAMPGROUND SITES WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, GOOD ACCESS BY ROAD OR WATER, VIEWS OF WATER, AND VEGETATION CANOPY COVER.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PUBLIC CAMPGROUND SITES. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 960.

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20 % OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 410.90 MEAN = 226.99 ST. DEV. = 70.24

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

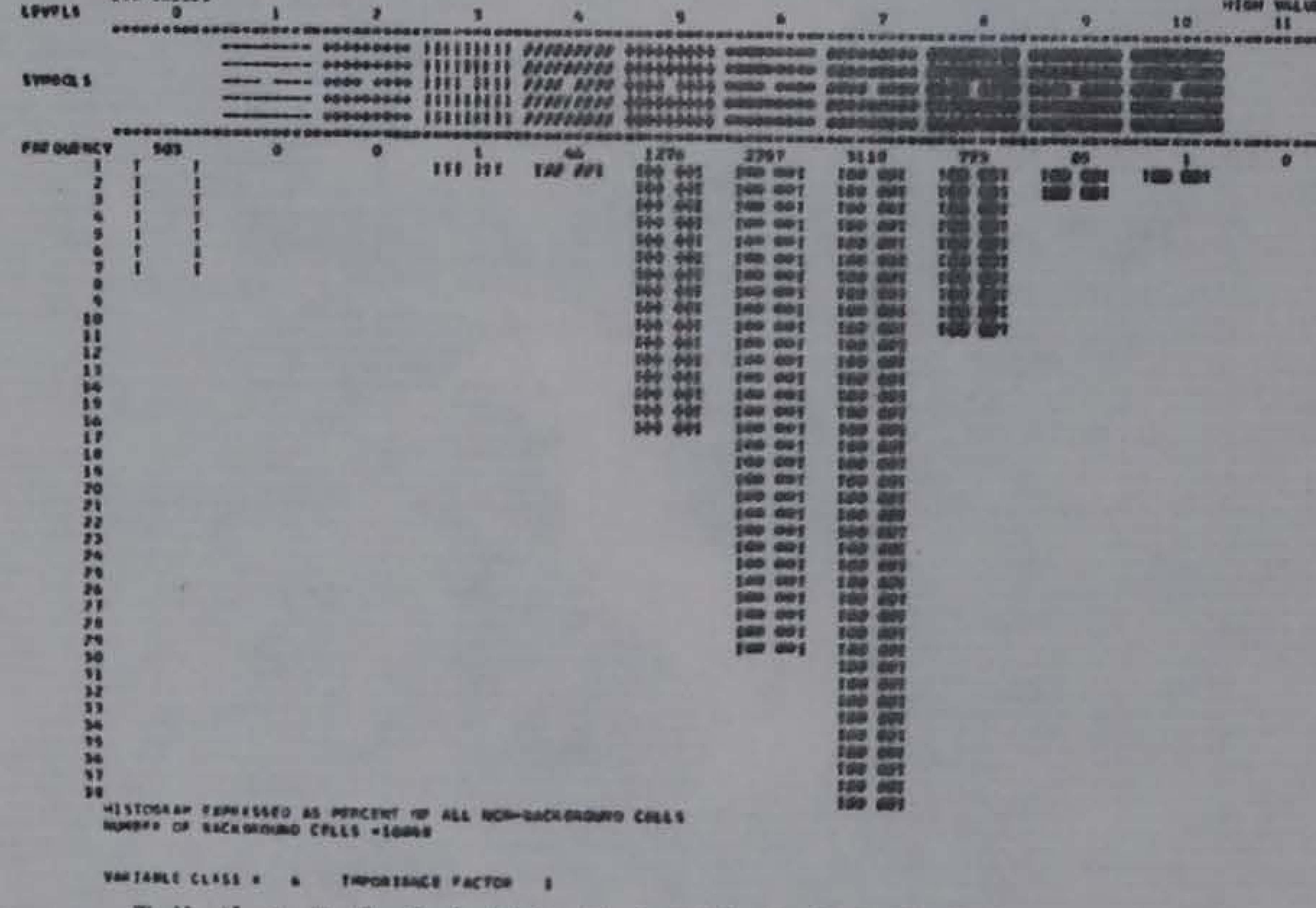
MINIMUM	0.0	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81
MAXIMUM	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81	410.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES											HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
FREQUENCY	503	0	0	1	46	1276	2797	3110	779	85	1	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10868

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
     VU  12   WT   4   VU  27   WT   1   VU  30   WT   2   VU  43   WT   7   VU  49   WT   5
VU  48   WT   2   VU  49   WT   4   VU  55   WT   5   VU  56   WT   2   VU  60   WT   9
VU  62   WT   4   VU  65   WT   7   VU 102   WT   4   VU 107   WT   2   VU 108   WT   7
VU 110   WT   5   VU 111   WT   2   VU 112   WT   4   VU 130   WT   9   VU 149   WT   9
VU 191   WT   4   VU 175   WT   5   VU 187   WT   4   VU 252   WT   5   VU 256   WT   1
VU 301   WT   9   VU 302   WT   5   VU
```

VARIABLE CLASS # 76 IMPORTANCE FACTOR 1

```
     VU   7   WT  10   VU   5   WT   9   VU  10   WT   6   VU  15   WT   4   VU  25   WT   2
VU  99   WT   1   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU
```

VARIABLE CLASS # 14 IMPORTANCE FACTOR 6

```
     VU   1   WT   1   VU   2   WT   2   VU   3   WT   3   VU   4   WT   4   VU   5   WT  10
VU   6   WT   1   VU   7   WT   4   VU   8   WT   6   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
```

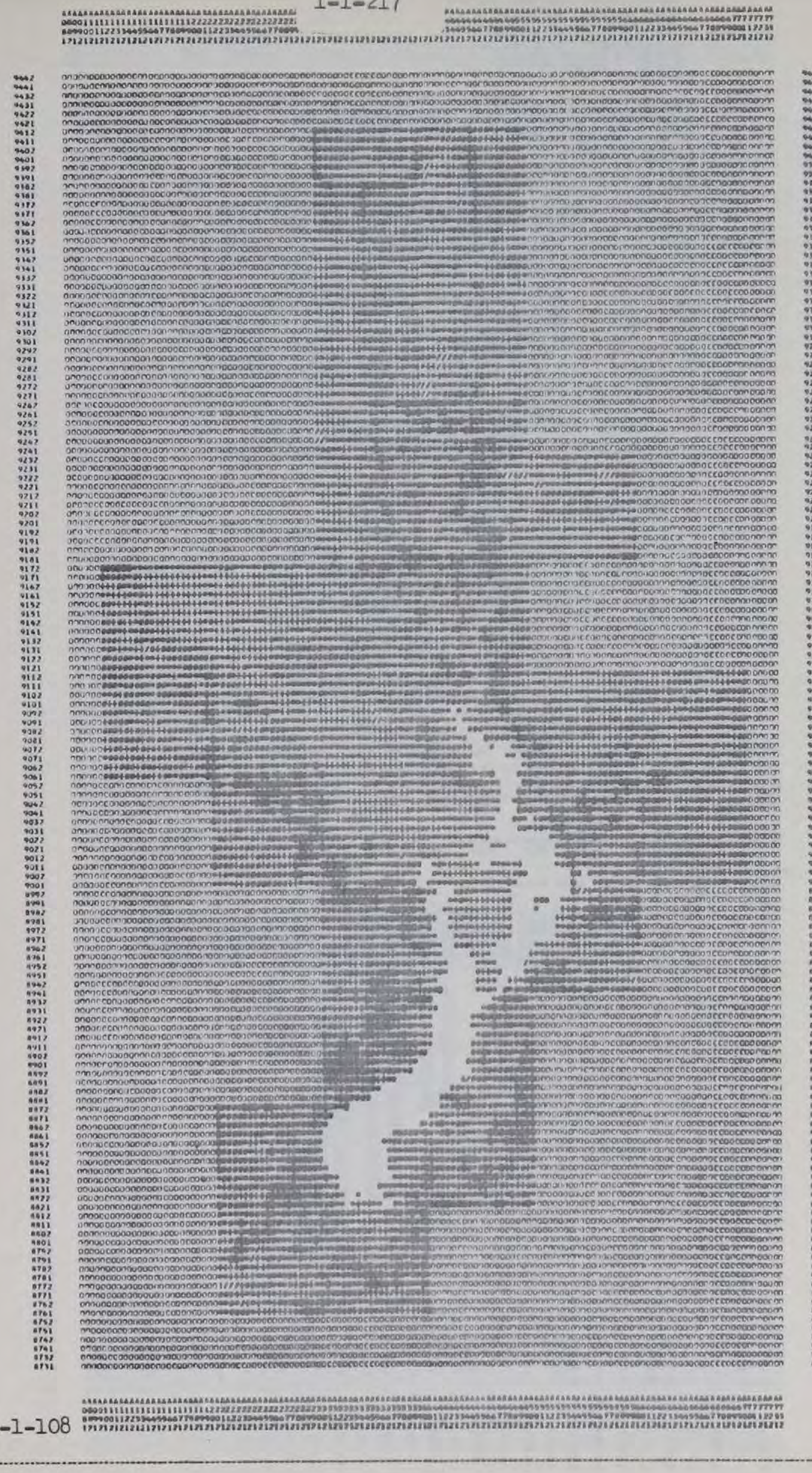


Fig. 1-1-108

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.GRAVERS
DATA PREPARATION J.C.TAGGART, T.SMUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.BRUNY
GRAPHICS C.J.UBAN, D.DEPRENGER

PUBLIC CAMPGROUNDS

POTENTIAL CAMPGROUND SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PUBLIC CAMPGROUNDS WOULD INCLUDE ROADS, PARKING, CAMP PADS, TENT SITES, WELLS, AND SEPTIC TANKS.

SITE SELECTION WAS BASED ON SOIL, SLOPE, ACCESS, VIEWS, AND VEGETATION. THE ASSUMPTIONS MADE WERE THAT PREFERRED CAMPGROUND SITES WOULD HAVE WELL DRAINED AND NON-EROSIVE SOILS, FLAT SLOPES, GOOD ACCESS BY ROAD OR WATER, VIEWS OF WATER, AND VEGETATION CANOPY COVER.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PUBLIC CAMPGROUND SITES. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE 04 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 960
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1912.
LAND USE GROUND SURVEY, 6-15-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20 % OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 410.90 MEAN = 201.33 ST. DEV. = 99.15

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

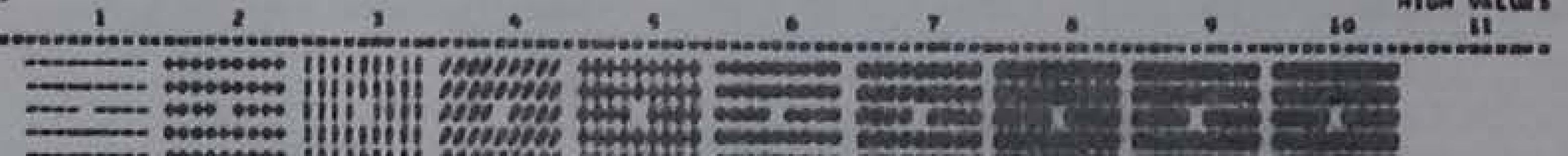
MINIMUM	0.0	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81
MAXIMUM	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81	410.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

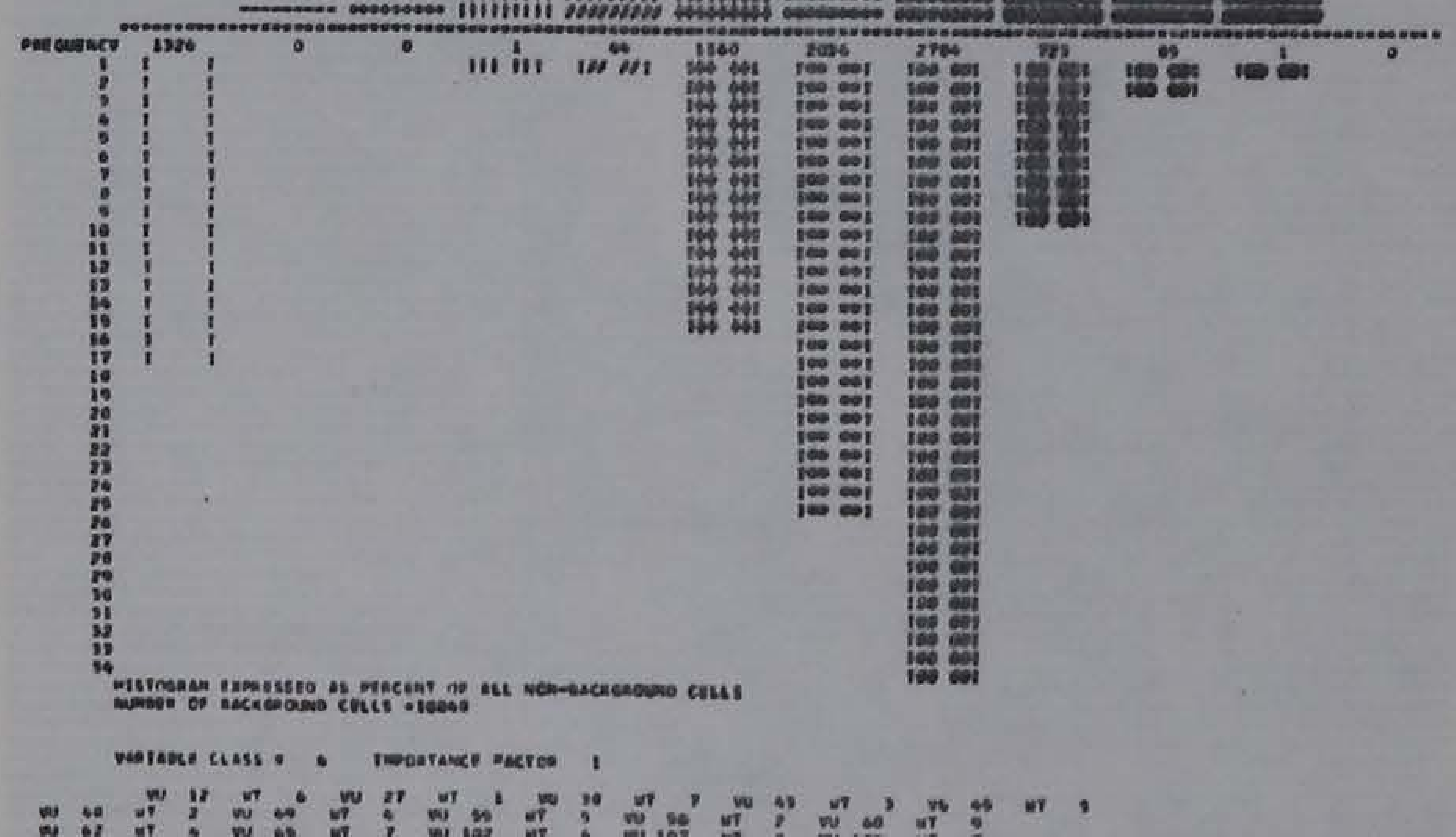
10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES										HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11

SYMBOLS


FREQUENCY	1326	0	0	1	64	1160	2036	2784	775	69	1	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10049

VARIABLE CLASS # 6 IMPORTANCE FACTOR 1

```
     VU  12   WT   6   VU  27   WT   1   VU  30   WT   7   VU  43   WT   3   VU  45   WT   5
VU  48   WT   2   VU  49   WT   6   VU  55   WT   5   VU  56   WT   7   VU  60   WT   9
VU  62   WT   4   VU  65   WT   7   VU 102   WT   4   VU 107   WT   2   VU 108   WT   7
VU 110   WT   5   VU 111   WT   2   VU 112   WT   4   VU 130   WT   9   VU 149   WT   8
VU 151   WT   4   VU 175   WT   5   VU 187   WT   4   VU 252   WT   9   VU 256   WT   1
VU 301   WT   5   VU 302   WT   3   VU
```

VARIABLE CLASS # 26 IMPORTANCE FACTOR 1

```
     VU   2   WT  10   VU   5   WT   9   VU  10   WT   6   VU  25   WT   4   VU  29   WT   2
VU  99   WT   1   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU
```

VARIABLE CLASS # 14 IMPORTANCE FACTOR 6

MAP 4.SHEET 1.DATA SET 1

Fig. 1-1-109

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS [illegible], P.F.ANDERSON
PROGRAMMER-ANALYST [illegible]
DATA PREPARATION [illegible]
GRAPHICS [illegible]
[illegible]

PUBLIC CAMPGROUNDS

POTENTIAL CAMPGROUND SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE PUBLIC CAMPGROUNDS WOULD INCLUDE ROADS, PARKING, CAMP PADS, TENT SITES, WELLS, AND SEPTIC TANKS.

SITE SELECTION WAS BASED ON SOIL, SLOPE, ACCESS, VIEWS, AND VEGETATION. THE ASSUMPTIONS MADE WERE THAT PREFERRED CAMPGROUND SITES WOULD HAVE WELL DRAINED AND NON-ERODIBLE SOILS, FLAT SLOPES, GOOD ACCESS BY ROAD OR WATER, VIEWS OF WATER, AND VEGETATION CANOPY COVER.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR PUBLIC CAMPGROUND SITES. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 974
B. [illegible] SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHY, SCALE 1:12,000, [illegible].
VEGETATION GROUND SURVEY, [illegible] THROUGH [illegible]-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 700', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1952.
LAND USE GROUND SURVEY, [illegible]-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20 % OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 410.90 MEAN = [illegible] ST. DEV. = [illegible]

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81
MAXIMUM	41.09	82.18	123.27	164.36	205.45	246.54	287.63	328.72	369.81	410.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	53	0	0	1	46	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	0

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS = [illegible]

VARIABLE CLASS = 6 IMPORTANCE FACTOR 1

[illegible]

VARIABLE CLASS = 26 IMPORTANCE FACTOR 1

[illegible]

MAP 5.SHEET 1.DATA SET 1

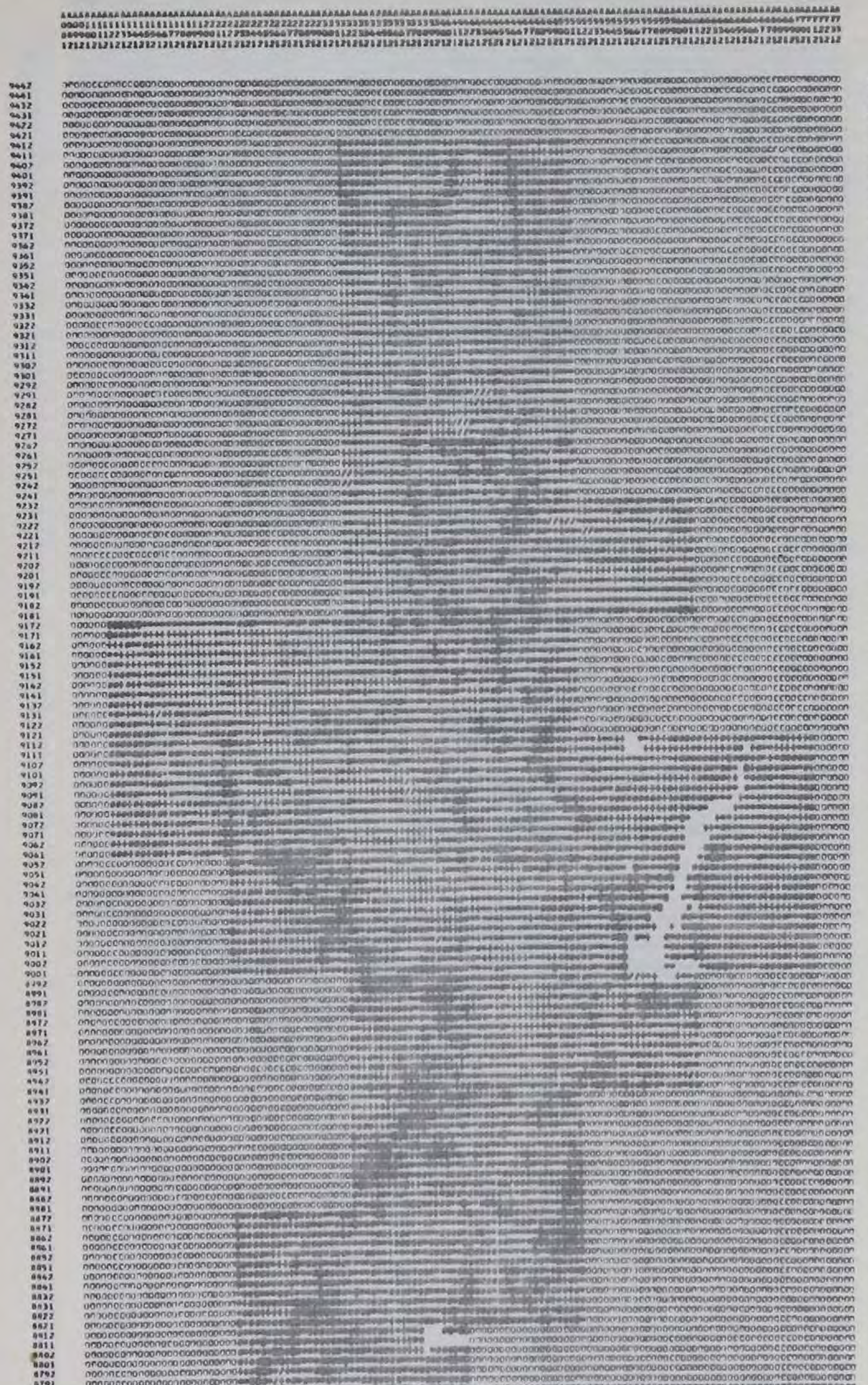
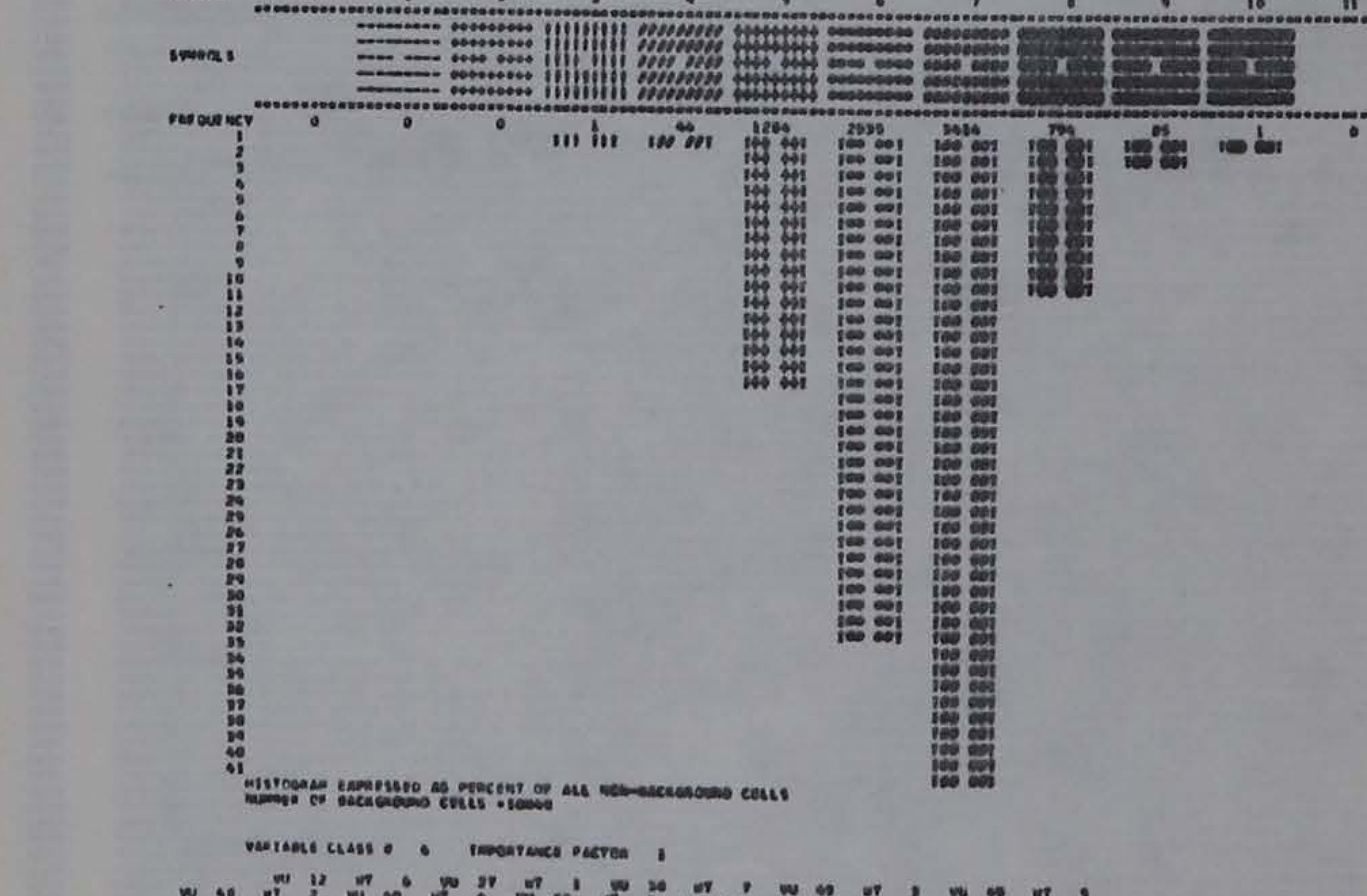


Fig. 1-1-110

```
ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS   J.R.SINATRA,  P.F.ANDERSON
PROGRAMMER-ANALYST  G.H.BERGERS
DATA PREPARATION   J.C.TAGGART,  T.SHUCK,  A.PUDIL,  D.PAULANGER,
                   S.CECIL,  D.SEYMOUR,  W.SCHUTTLER,  D.KENNY
GRAPHICS   C.J.URBAN,  D.DEPRENGER
KPN  H.JONES,  E.SWANSON,  R.HOEPPNER,  D.ALLEN,  D.PERNELIUS,  D.WILLS


            PUBLIC CAMPGROUNDS

            POTENTIAL CAMPGROUND SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL
            RESOURCE AND LAND USE DATA.  THE PUBLIC CAMPGROUNDS WOULD INCLUDE ROADS,
            PARKING, CAMP PADS, TENT SITES, WELLS, AND SEPTIC TANKS.

            SITE SELECTION WAS BASED ON SOIL, SLOPE, ACCESS, VIEWS, AND VEGETATION.  THE
            ASSUMPTIONS MADE WERE THAT PREFERRED CAMPGROUND SITES WOULD HAVE WELL DRAINED
            AND NON-EROSIVE SOILS, FLAT SLOPES, GOOD ACCESS BY ROAD OR WATER, VIEWS OF
            WATER, AND VEGETATION CANOPY COVER.

            EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE
            PROPENSITY FOR PUBLIC CAMPGROUND SITES.  THE LOWER SCORE INDICATES A MORE
            LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.


            ALTERNATIVE 06 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE,
            NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

            SOURCES:  STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1958.
                      CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
                      VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
                      CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
                      USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500,1912.
                      LAND USE GROUND SURVEY, 6-12-72.


                            LEGEND

                            0 = WATER

                            1 = 0-10% OF MAXIMUM POSSIBLE SCORE

                            2 = 11-20 % OF MAXIMUM POSSIBLE SCORE

                            3 = 21-30% OF MAXIMUM POSSIBLE SCORE

                            4 = 31-40% OF MAXIMUM POSSIBLE SCORE

                            5 = 41-50% OF MAXIMUM POSSIBLE SCORE

                            6 = 51-60% OF MAXIMUM POSSIBLE SCORE

                            7 = 61-70% OF MAXIMUM POSSIBLE SCORE

                            8 = 71-80% OF MAXIMUM POSSIBLE SCORE

                            9 = 81-90% OF MAXIMUM POSSIBLE SCORE

                            10 = 91-100% OF MAXIMUM POSSIBLE SCORE

                            11 =


DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF      0.0  AND    410.90  MEAN =    243.03 ST. DEV. =     35.77


ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
 MINIMUM             0.0      41.09     82.18    123.27    164.36    205.45    246.54    287.63    328.72    369.81
 MAXIMUM            41.09     82.18    123.27    164.36    205.45    246.54    287.63    328.72    369.81    410.90


PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
                    10.00     10.00     10.00     10.00     10.00     10.00     10.00     10.00     10.00     10.00


FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
```



```
            HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
            NUMBER OF BACKGROUND CELLS =10000

            VARIABLE CLASS #   6     IMPORTANCE FACTOR    1

               VU  12   WT   6   VU  27   WT   1   VU  30   WT   7   VU  49   WT   3   VU  65   WT   5
        VU  40   WT   2   VU  49   WT   6   VU  50   WT   5   VU  56   WT   2   VU  60   WT   9
        VU  67   WT   4   VU  69   WT   7   VU 102   WT   6   VU 107   WT   2   VU 108   WT   7
        VU 110   WT   5   VU 111   WT   2   VU 112   WT   6   VU 130   WT   9   VU 140   WT   8
        VU 151   WT   4   VU 175   WT   5   VU 187   WT   6   VU 252   WT   9   VU 256   WT   1
        VU 301   WT   9   VU 302   WT   3   VU

            VARIABLE CLASS #  26     IMPORTANCE FACTOR    1

               VU   2   WT  10   VU   5   WT   0   VU  10   WT   6   VU  15   WT   4   VU  25   WT   2
        VU  99   WT   1   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
        VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
        VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
        VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
        VU   0   WT   0   VU   0   WT   0   VU
```

MAP 4.SHEET 1.DATA SET 1

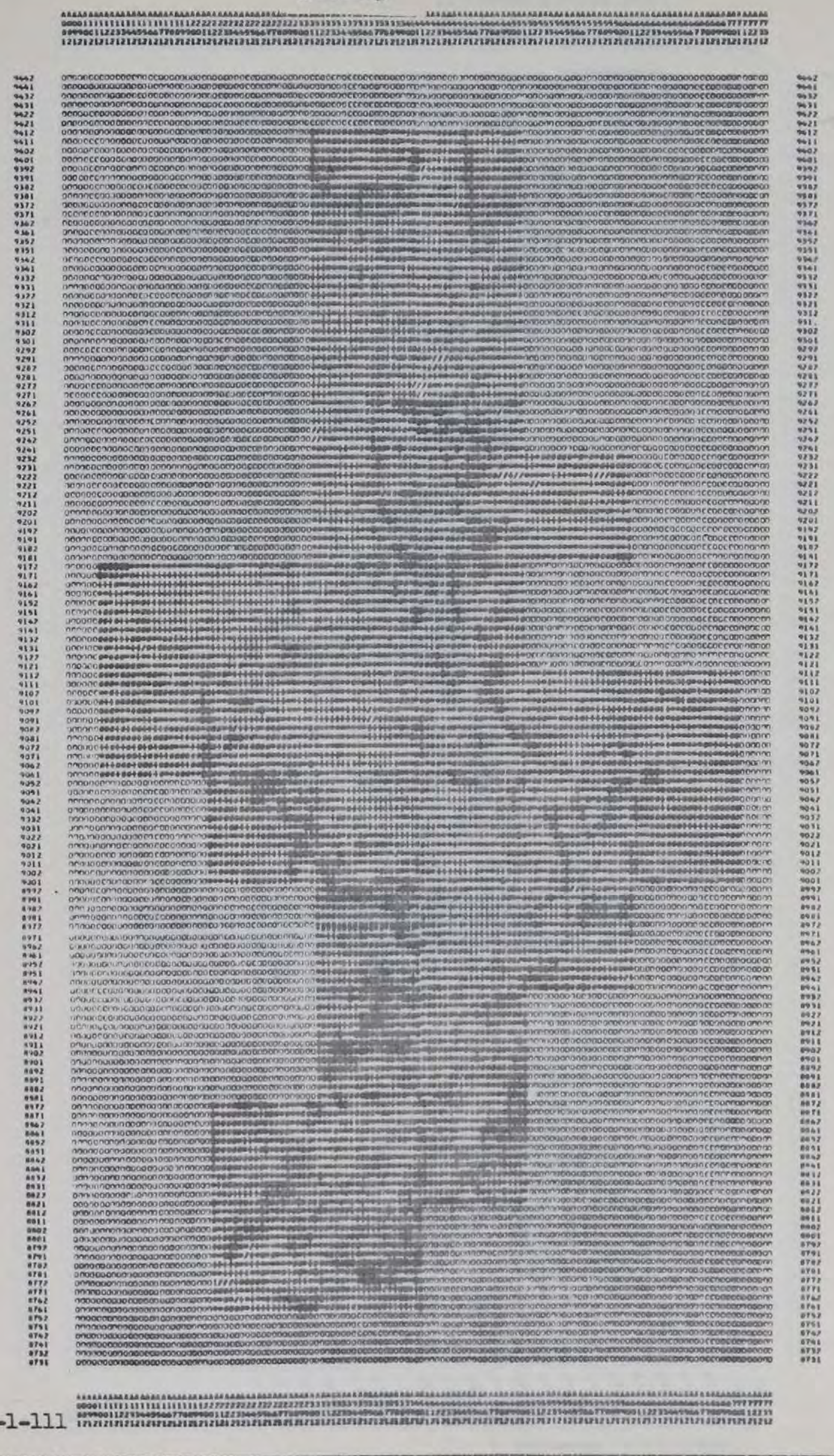


Fig. 1-1-111

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.P.BAUMESCH [illegible]
PROGRAMMER-ANALYST G.H.[illegible]
DATA PREPARATION J.C.TAGGART, T.SHUCK, [illegible], [illegible],
[illegible], [illegible], [illegible], [illegible]
GRAPHICS C.J.[illegible], J.[illegible]
KPC [illegible], T.SWANSON, [illegible], D.ALLEN, [illegible], D.MILLS

BOAT RAMPS

POTENTIAL BOAT RAMP SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE BOAT RAMP SITES WOULD INCLUDE FACILITIES FOR WATER ACCESS, PARKING FOR CARS AND BOAT TRAILERS, AND ROAD ACCESS.

SITE SELECTION WAS BASED ON SOIL, SLOPE ASPECT, SLOPE PERCENT, ROAD ACCESS, AND PROXIMITY TO WATER. THE ASSUMPTIONS MADE WERE THAT PREFERRED RAMP SITES WOULD HAVE NON ERODABLE SOILS, EAST FACING MODERATE SLOPES, ACCESS BY PAVED ROAD, AND BE ADJACENT TO THE FLUCTUATING RESERVOIR POOL.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR RAMP SITES. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 976
FLOOD POOL, ELEVATION 979
C. UAN SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1930.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 3-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500, 1952.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20% OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 510.90 MEAN = -4206.26 ST. DEV. = 2169.74

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	51.09	102.18	153.27	204.36	255.45	306.54	357.63	408.72	459.81
MAXIMUM	51.09	102.18	153.27	204.36	255.45	306.54	357.63	408.72	459.81	510.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	7160	0	0	0	19	91	730	397	230	19	0	0

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10046

VARIABLE CLASS # 27 IMPORTANCE FACTOR 1

```
   WU 942   WT-100   WU 956   WT 10   WU 965   WT 5   WU 975   WT 2   WL4004   WF-500
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
```

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

```
   WU  7   WT  5   WU  5   WT  0   WU 10   WT 10   WU 15   WT  8   WL 75   WT  6
WU 95  WT  2  WU 95  WT  1  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0  WU  0  WT  0
```

VARIABLE CLASS # 23 IMPORTANCE FACTOR 3

```
   WU  0   WT  0   WU  1   WT  0   WU  2   WT  1   WU  3   WT  0   WU  4   WT  2
WU  5  WT  5  WU  4  WT  3  WU  7  WT  6  WU  8  WT  9  WU  5  WT  6
[illegible]
```

VARIABLE CLASS # 6 IMPORTANCE FACTOR 2

```
[illegible]
```

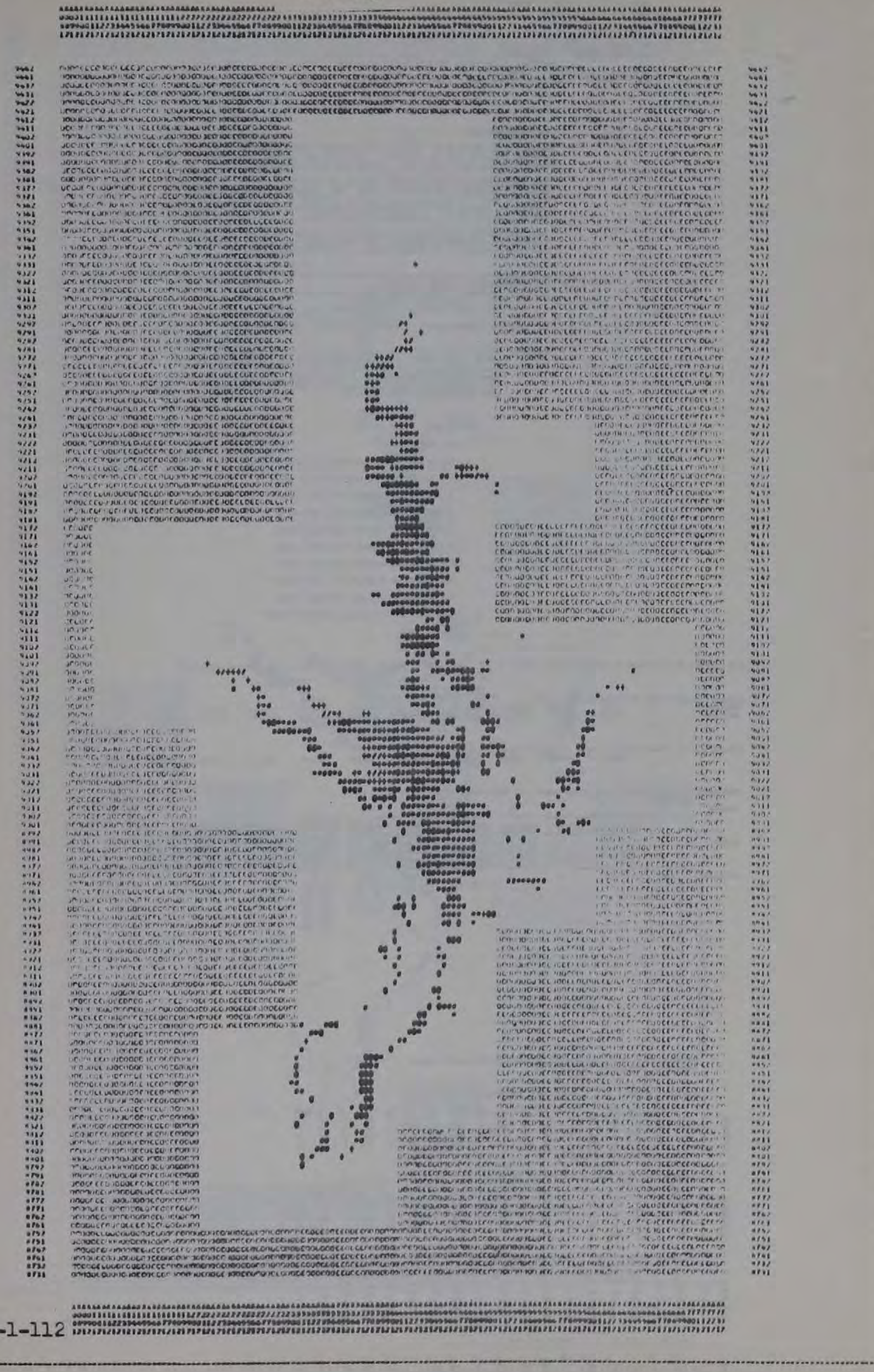


Fig. 1-1-112

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER--ANALYST G.H.BEAVERS
DATA PREPARATION J.L.TAGGART, T.SHUCK, A.PUCIL, C.FARLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.KERBY
GRAPHICS C.JOUBAN, D.CEPPENGER
RPC N.JONES, E.SWANSON, K.HOEPPNER, D.ALLEN, C.FERNELIUS, D.HILLS

SWIMMING BEACHES

POTENTIAL SWIMMING BEACH SITES IN THE RESERVOIR STUDY AREA WERE MAPPED USING NATURAL RESOURCE AND LAND USE DATA. THE SWIMMING BEACHES WOULD INCLUDE BEACH, BATHHOUSE, SANITARY FACILITIES, PARKING LOT AND CONCESSIONS.

SITE SELECTION WAS BASED ON SLOPE ASPECT, SLOPE PERCENT, SOILS, VEGETATION, PROXIMITY TO WATER, AND ACCESS BY ROAD. THE ASSUMPTIONS MADE WERE THAT PREFERRED BEACH SITES WOULD HAVE SOUTHERN EXPOSURE ON A MODERATE SLOPE, WELL DRAINED AND NON-ERODSIVE SOILS, NEARBY CANOPY VEGETATION, ACCESS BY PAVED ROAD, AND BE ADJACENT TO THE FLUCTUATING RESERVOIR POOL.

EACH CELL IN THE STUDY AREA WAS GIVEN A SCORE ACCORDING TO ITS RELATIVE PROPENSITY FOR SWIMMING BEACHES. THE LOWER SCORE INDICATES A MORE LIMITED, UNDESIRABLE SITE AND THE HIGHER SCORE, A MORE DESIRABLE SITE.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: STORY COUNTY SOILS MAP, USDA, SCALE 1" = 1 MILE, 1938.
CORPS OF ENGINEERS AERIAL PHOTOGRAPHS, SCALE 1:12,000, 4-11-67.
VEGETATION GROUND SURVEY, 5-72 THROUGH 6-72.
CORPS OF ENGINEERS TOPOGRAPHIC MAPS, SCALE 1" = 200', 1967.
USGS TOPOGRAPHIC AMES QUADRANGLE MAP, SCALE 1:62,500,1912.
LAND USE GROUND SURVEY, 6-13-72.

LEGEND

0 = WATER

1 = 0-10% OF MAXIMUM POSSIBLE SCORE

2 = 11-20 % OF MAXIMUM POSSIBLE SCORE

3 = 21-30% OF MAXIMUM POSSIBLE SCORE

4 = 31-40% OF MAXIMUM POSSIBLE SCORE

5 = 41-50% OF MAXIMUM POSSIBLE SCORE

6 = 51-60% OF MAXIMUM POSSIBLE SCORE

7 = 61-70% OF MAXIMUM POSSIBLE SCORE

8 = 71-80% OF MAXIMUM POSSIBLE SCORE

9 = 81-90% OF MAXIMUM POSSIBLE SCORE

10 = 91-100% OF MAXIMUM POSSIBLE SCORE

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 600.90 MEAN = -4150.42 ST. DEV. = 2169.27

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	60.09	120.18	180.27	240.36	300.45	360.54	420.63	480.72	540.81
MAXIMUM	60.09	120.18	180.27	240.36	300.45	360.54	420.63	480.72	540.81	600.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
           LOW VALUES                                                                                      HIGH VALUES
LEVELS        0         1         2         3         4         5         6         7         8         9        10        11
*************************************************************************************************************************
                    --------- ********* IIIIIIIII ///////// +++++++++ 000000000 000000000
                    --------- ********* IIIIIIIII ///////// +++++++++ 000000000 000000000
SYMBOLS             ---- ---- **** **** IIII IIII //// //// ++++ ++++ 0000 0000 0000 0000
                    --------- ********* IIIIIIIII ///////// +++++++++ 000000000 000000000
                    --------- ********* IIIIIIIII ///////// +++++++++ 000000000 000000000
*************************************************************************************************************************
FREQUENCY    7168        0         0         0         5        91       280       439       160        17         0         0
     1    I      I                                 /// ///   +++ +++I  100 001   100 001   100 001   100 001
     2    I      I                                           +++ +++I  100 001   100 001   100 001
     3    I      I                                                     100 001   100 001
     4    I      I                                                     100 001   100 001
     5    I      I                                                     100 001   100 001
     6    I      I                                                               100 001
    73    I      I                                                               100 001
    74    I      I
    75    I      I
    76    I      I
    77    I      I
    78    I      I
    79    I      I
    80    I      I
    81    I      I
    82    I      I
    83    I      I
    84    I      I
    85    I      I
    86    I      I
    87    I      I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10049

VARIABLE CLASS # 27 IMPORTANCE FACTOR 1

```
         VU 947   WT-100   VL 956   WT  10   VL 965   WT   9   VU 970   WT   2   VU9999   WT-300
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VL   0   WT   0   VU
```

VARIABLE CLASS # 26 IMPORTANCE FACTOR 2

```
         VU   2   WT   5   VU   5   WT   9   VU  10   WT  10   VU  15   WT   7   VL  25   WT   4
VU  35   WT   2   VU  99   WT   1   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU
```

VARIABLE CLASS # 28 IMPORTANCE FACTOR 2

```
         VU   1   WT   5   VU   2   WT   9   VU   3   WT   8   VU   4   WT   5   VL   5   WT  10
VU   6   WT   7   VU   7   WT   5   VU   8   WT   6   VU   9   WT   3   VU  10   WT   8
VU  11   WT   5   VU  12   WT   4   VU  14   WT   5   VU  15   WT   4   VU  16   WT   9
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0   VU   0   WT   0
VU   0   WT   0   VU   0   WT   0   VU
```

VARIABLE CLASS # 6 IMPORTANCE FACTOR 2

```
         VU  12   WT   6   VU  27   WT   1   VU  38   WT   7   VU  43   WT   3   VL  45   WT   5
VU  48   WT   2   VU  49   WT   4   VU  55   WT   5   VU  56   WT   2   VU  60   WT   5
VU  62   WT   4   VU  65   WT   7   VU 102   WT   4   VU 107   WT   2   VU 108   WT   7
VU 110   WT   5   VU 111   WT   2   VU 112   WT   4   VU 140   WT   9   VU 149   WT   8
VU 151   WT   4   VU 175   WT   5   VU 187   WT   4   VU 252   WT   5   VU 256   WT   1
```

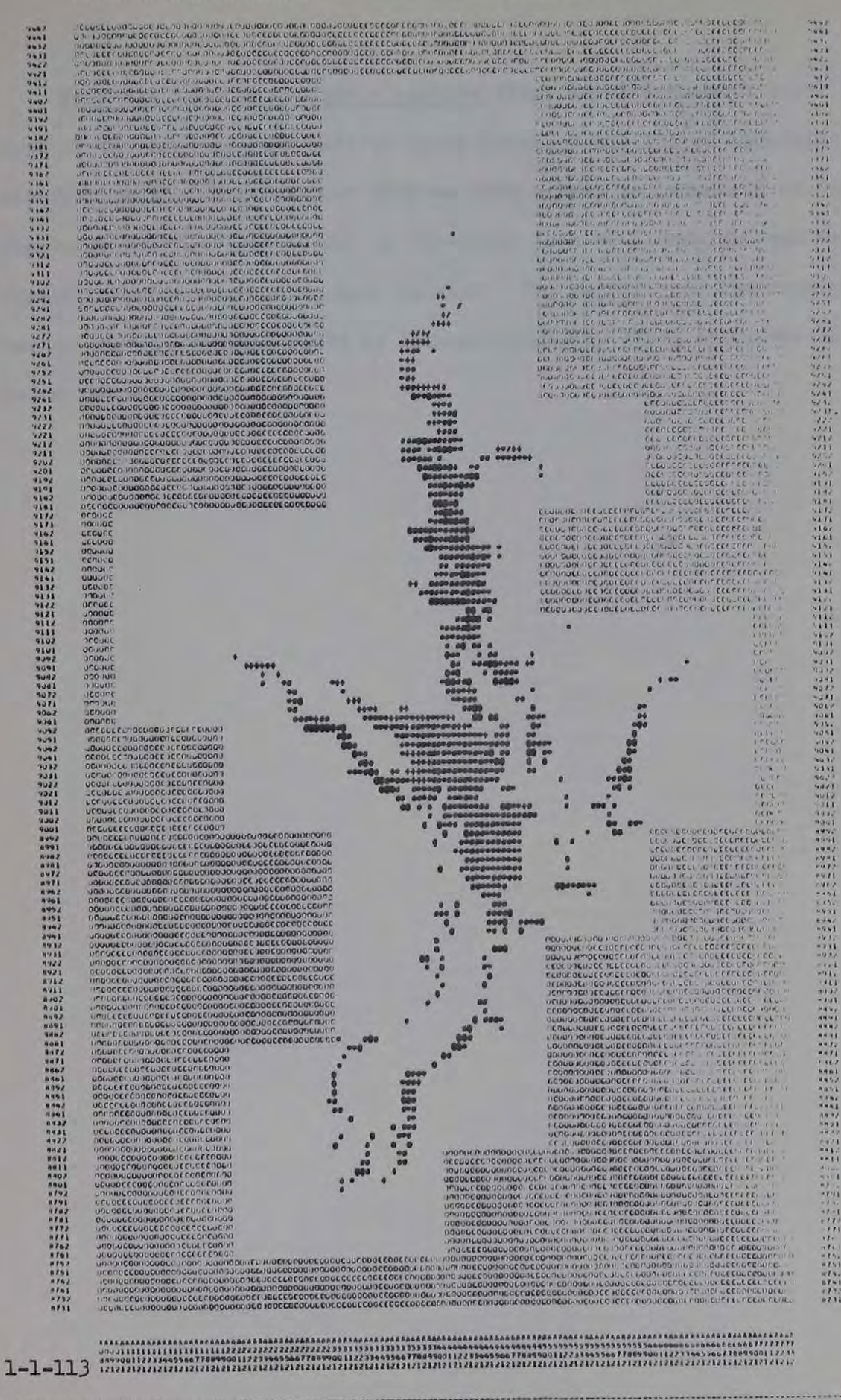


Fig. 1-1-113

Wildlife habitat quality - raccoon (Fig. 1-1-114 through 1-1-119). Much of the best raccoon habitat (gray levels 8 and 10) is inundated in Alternative #1. Over 61%, or 2240 of 3660 acres, is inundated at full pool. The large habitat loss is due to the large loss of floodplain and upland forest, considered good to fair habitat. The majority of the remaining better quality habitat would be located primarily along the river above and below the reservoir.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.P.ANDERSON
PROGRAMMER-ANALYST G.H.BRAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.PARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPPENGER
KPU N.JONES, C.SWANSON, R.HOEPPNER, D.ALLEN, D.CORNELIUS, D.HILLS

WILDLIFE HABITAT QUALITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDUSE) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

THE HABITAT QUALITY RANKING WAS DONE FOR EACH SPECIES IN EACH HABITAT TYPE PRIOR TO AND, THEREFORE, WITHOUT REGARD TO THE WILDLIFE CENSUS. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL K. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NON-EXISTANT HABITAT

3 =

4 = POOR QUALITY HABITAT

5 =

6 = FAIR QUALITY HABITAT

7=

8 = GOOD QUALITY HABITAT

9 =

10 = EXCELLENT QUALITY HABITAT

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.34 ST. DEV. = 5.91

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

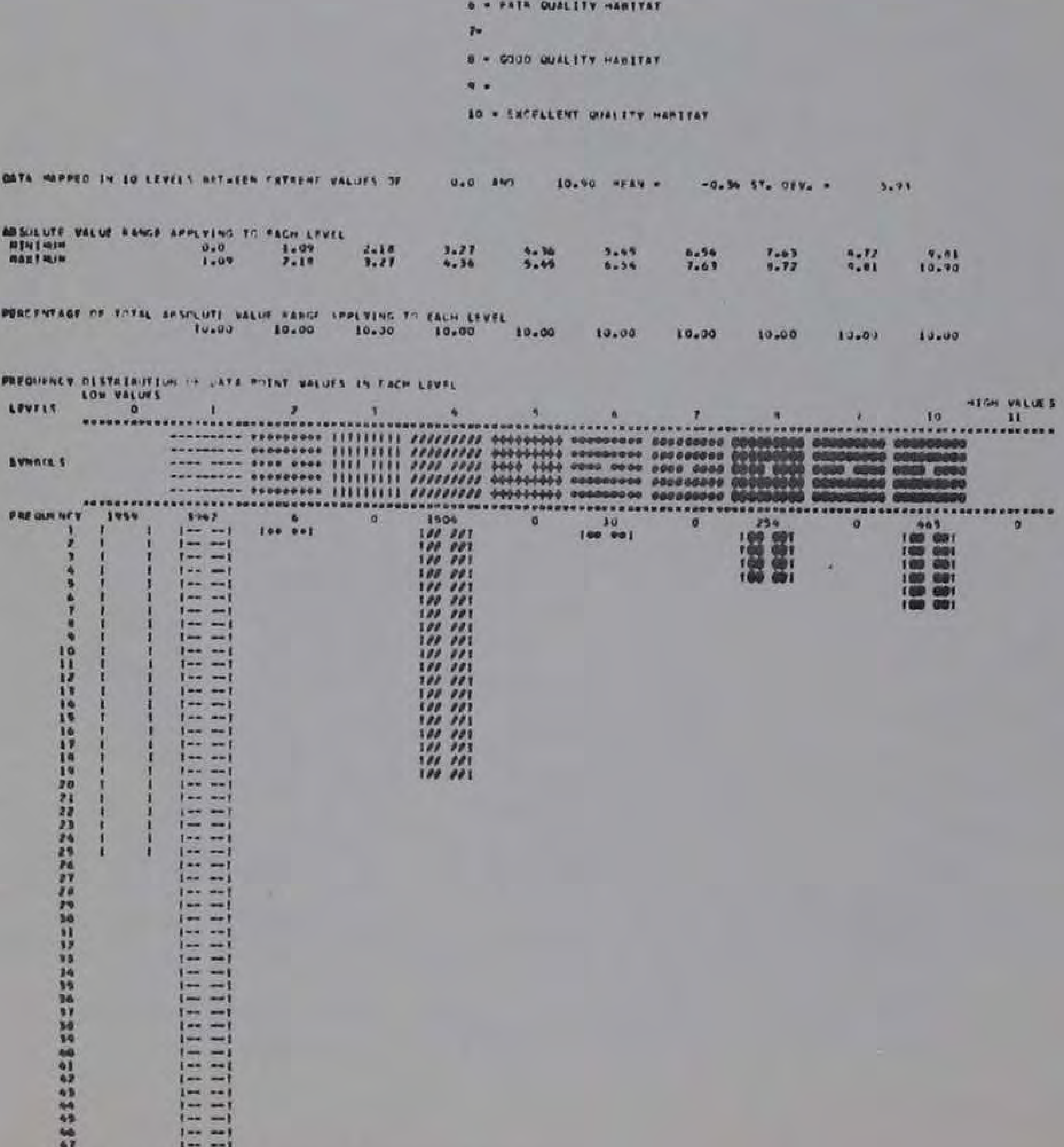
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	1959	5967	6	0	1504	0	30	0	254	0	465	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10860

VARIABLE CLASS # 28 IMPORTANCE FACTOR 10

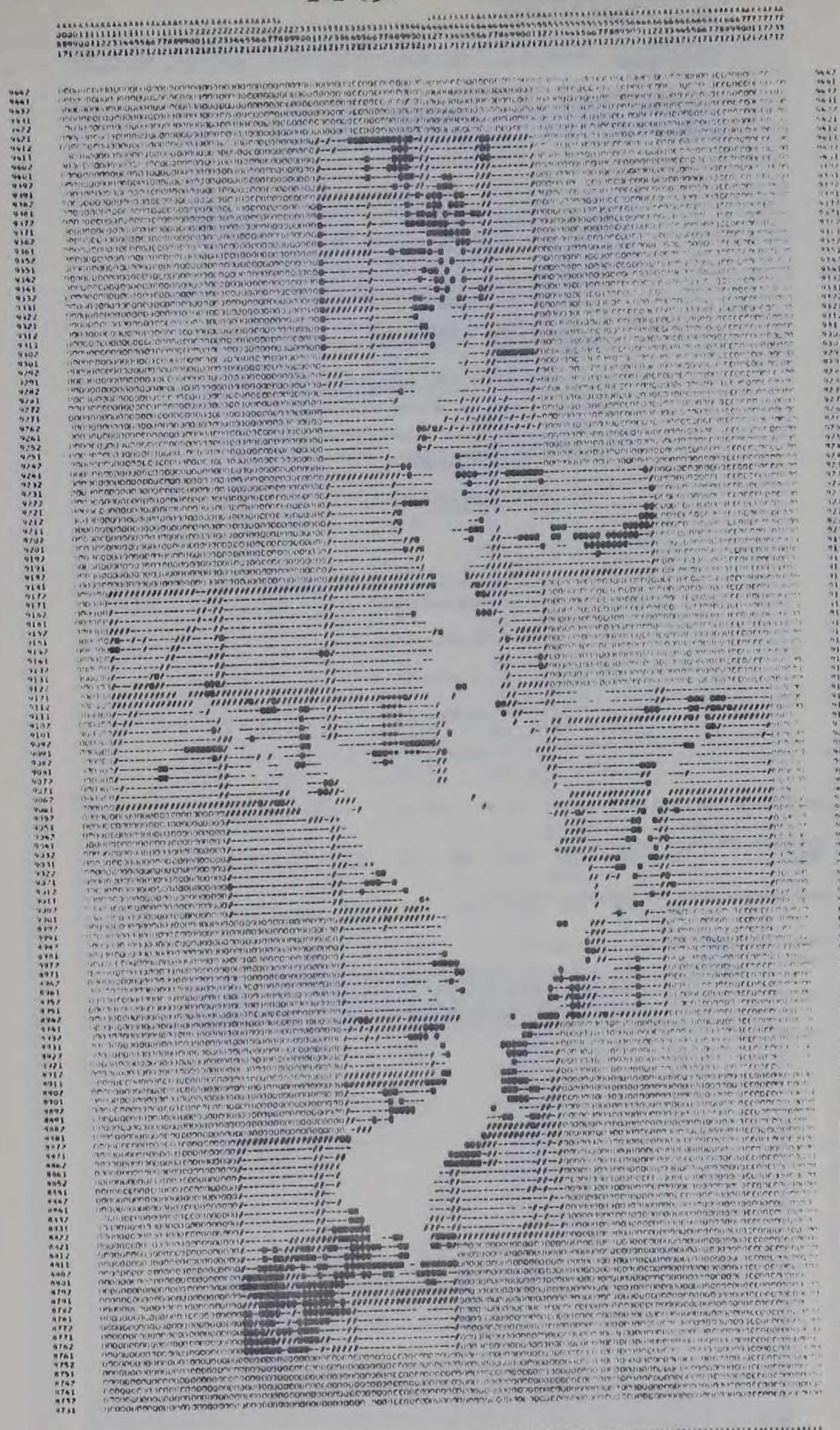


Fig. 1-1-114

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST D.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.PASLAWSKA,
 [illegible], D.SEYMOUR, W.SCHUTTLER, D.NEBRY
GRAPHICS C.JORDAN, D.DEPPENGER
KPU [illegible].JONES, C.SWANSON, R.HOPPNER, D.ALLEN, D.PERNELIUS, D.WELLS

WILDLIFE HABITAT QUALITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDERS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

THE HABITAT QUALITY RANKING WAS DONE FOR EACH SPECIES IN EACH HABITAT TYPE PRIOR TO AND, THEREFORE, WITHOUT REGARD TO THE WILDLIFE CENSUS. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 24, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL K. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE 02 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
 FLOOD POOL, ELEVATION 976

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NON-EXISTANT HABITAT

3 =

4 = POOR QUALITY HABITAT

5 =

6 = FAIR QUALITY HABITAT

7=

8 = GOOD QUALITY HABITAT

9 =

10 = EXCELLENT QUALITY HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.20 ST. DEV. = 5.92

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

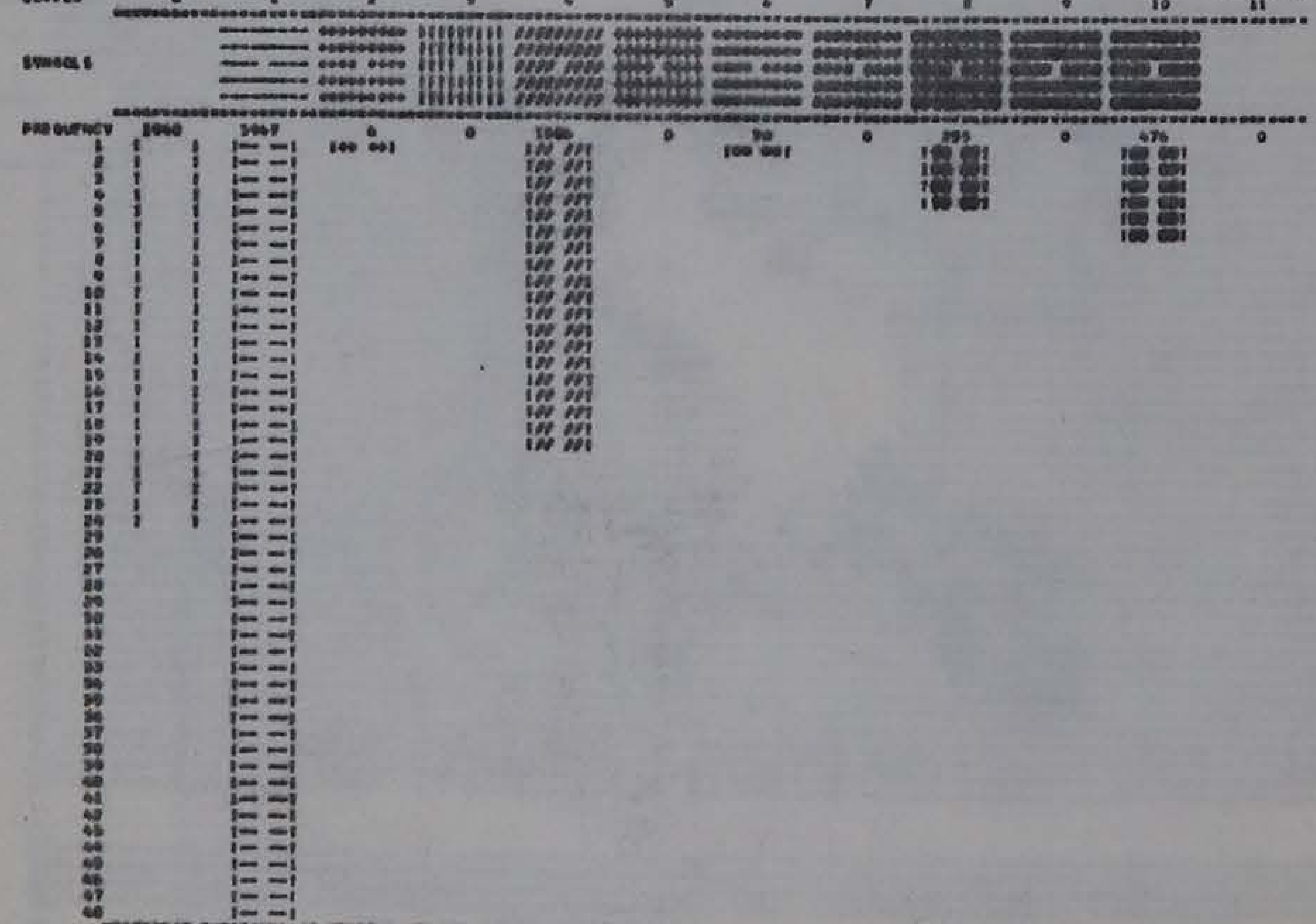
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1060	3067	6	0	1060	0	90	0	295	0	476	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

[illegible] WT 1 [illegible] WT 6 [illegible] WT 10 [illegible] WT 1 [illegible] WT 0

MAP 5.SHEET 1.DATA SET 1

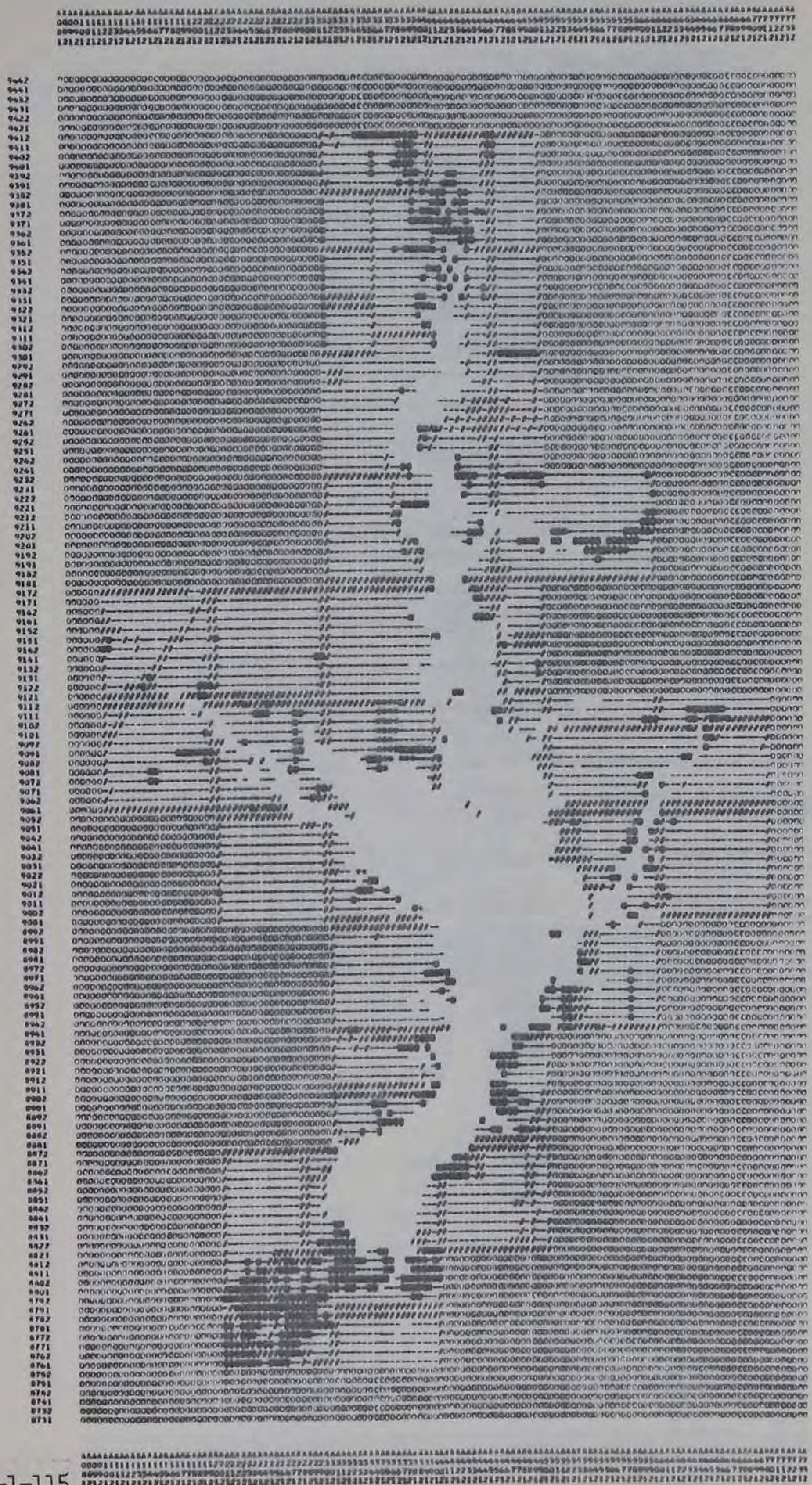


Fig. 1-1-115

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS   J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST   G.M.BEAVERS
DATA PREPARATION   J.C.TAGGART, T.SHICK, A.PUDIL, D.FALLANGER,
S.CECIL, D.SEYMOUR, W.SCHUYLER, D.GERNY
GRAPHICS   C.A.URBAN, D.DEPPRENGER
AND   M.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.WELLS

WILDLIFE HABITAT QUALITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

THE HABITAT QUALITY RANKING WAS DONE FOR EACH SPECIES IN EACH HABITAT TYPE PRIOR TO AND, THEREFORE, WITHOUT REGARD TO THE WILDLIFE CENSUS. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL R. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE 03 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 960.

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NON-EXISTANT HABITAT

3 =

4 = POOR QUALITY HABITAT

5 =

6 = FAIR QUALITY HABITAT

7 =

8 = GOOD QUALITY HABITAT

9 =

10 = EXCELLENT QUALITY HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.00 MEAN = 2.29 ST. DEV. = 4.28

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
          LOW VALUES                                                                              HIGH VALUES
LEVELS       0         1         2         3         4         5         6         7         8         9        10        11
          ****************************************************************************************************************
                   --------- 000000000 IIIIIIIII ///////// +++++++++ ========= 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
                   --------- 000000000 IIIIIIIII ///////// +++++++++ ========= 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
SYMBOLS            ---- ---- 0000 0000 IIII IIII //// //// ++++ ++++ ==== ==== 0000 0000 @@@@ @@@@ @@@@ @@@@ @@@@ @@@@
                   --------- 000000000 IIIIIIIII ///////// +++++++++ ========= 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
                   --------- 000000000 IIIIIIIII ///////// +++++++++ ========= 000000000 @@@@@@@@@ @@@@@@@@@ @@@@@@@@@
          ****************************************************************************************************************
FREQUENCY   503      4602        22         0      1761         0        40         0       497         0       735         0
    1    I   I    I-- --I   I00 00I             I// //I             I00 00I             I@@ @@I             I@@ @@I
    2    I   I    I-- --I                       I// //I                                 I@@ @@I             I@@ @@I
    3    I   I    I-- --I                       I// //I                                 I@@ @@I             I@@ @@I
    4    I   I    I-- --I                       I// //I                                 I@@ @@I             I@@ @@I
    5    I   I    I-- --I                       I// //I                                 I@@ @@I             I@@ @@I
    6    I   I    I-- --I                       I// //I                                 I@@ @@I             I@@ @@I
    7    I   I    I-- --I                       I// //I                                 I@@ @@I             I@@ @@I
    8             I-- --I                       I// //I                                                     I@@ @@I
    9             I-- --I                       I// //I                                                     I@@ @@I
   10             I-- --I                       I// //I                                                     I@@ @@I
   11             I-- --I                       I// //I
   12             I-- --I                       I// //I
   13             I-- --I                       I// //I
   14             I-- --I                       I// //I
   15             I-- --I                       I// //I
   16             I-- --I                       I// //I
   17             I-- --I                       I// //I
   18             I-- --I                       I// //I
   19             I-- --I                       I// //I
   20             I-- --I                       I// //I
   21             I-- --I                       I// //I
   22             I-- --I                       I// //I
   23             I-- --I
   24             I-- --I
   25             I-- --I
   26             I-- --I
   27             I-- --I
   28             I-- --I
   29             I-- --I
   30             I-- --I
   31             I-- --I
   32             I-- --I
   33             I-- --I
   34             I-- --I
   35             I-- --I
   36             I-- --I
   37             I-- --I
   38             I-- --I
   39             I-- --I
   40             I-- --I
   41             I-- --I
   42             I-- --I
   43             I-- --I
   44             I-- --I
   45             I-- --I
   46             I-- --I
   47             I-- --I
   48             I-- --I
   49             I-- --I
   50             I-- --I
   51             I-- --I
   52             I-- --I
   53             I-- --I
   54             I-- --I
   55             I-- --I
   56             I-- --I
     HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
     NUMBER OF BACKGROUND CELLS =10000
```

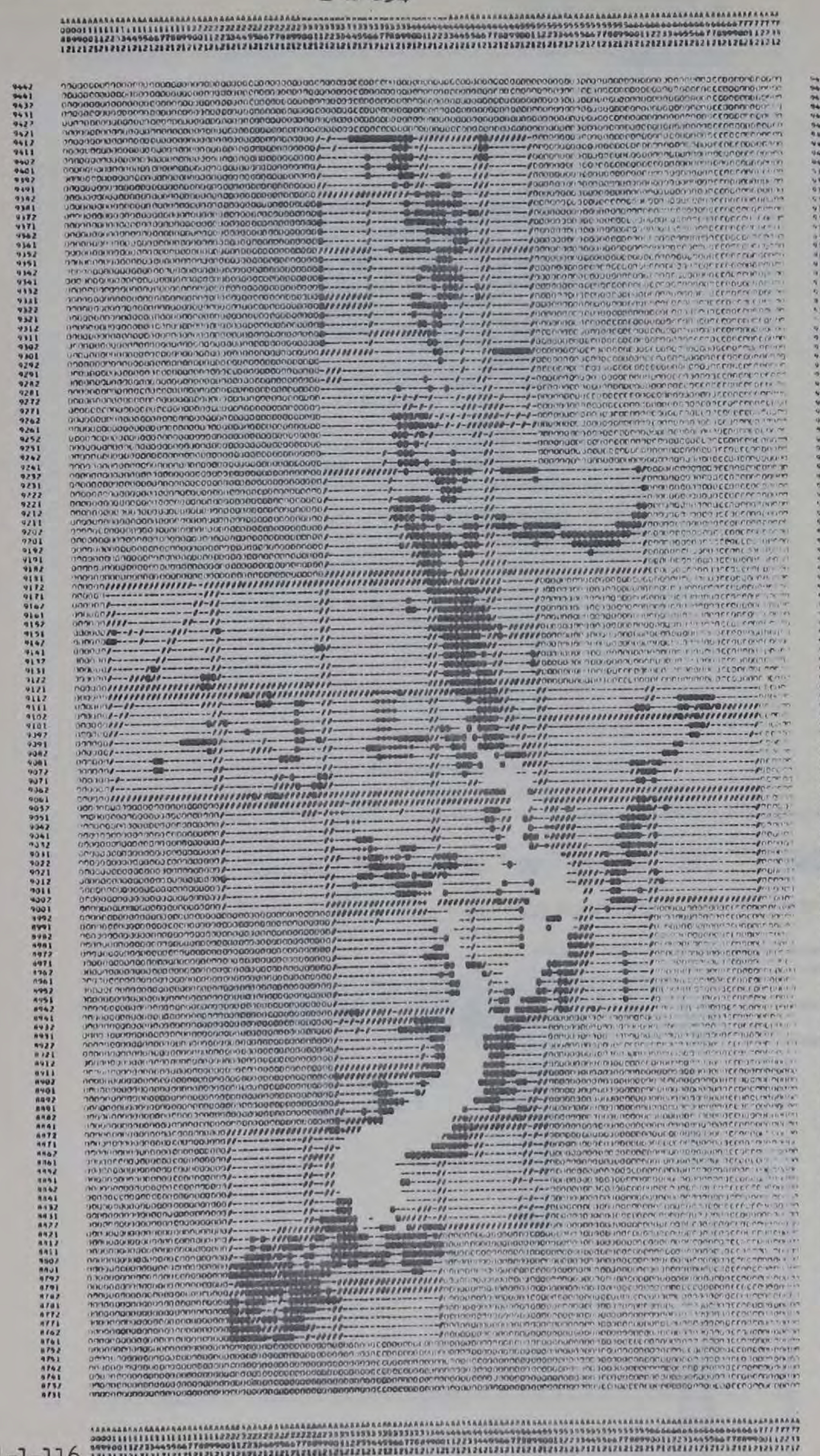


Fig. 1-1-116

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.PARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.JORDAN, D.DEPRENGER
KPO N.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.MILLS

WILDLIFE HABITAT QUALITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDERS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS COMPILATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

THE HABITAT QUALITY RANKING WAS DONE FOR EACH SPECIES IN EACH HABITAT TYPE PRIOR TO AND, THEREFORE, WITHOUT REGARD TO THE WILDLIFE CENSUS. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL R. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE 06 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 960
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NON-EXISTANT HABITAT

3 =

4 = POOR QUALITY HABITAT

5 =

6 = FAIR QUALITY HABITAT

7 =

8 = GOOD QUALITY HABITAT

9 =

10 = EXCELLENT QUALITY HABITAT

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.73 ST. DEV. = 5.39

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

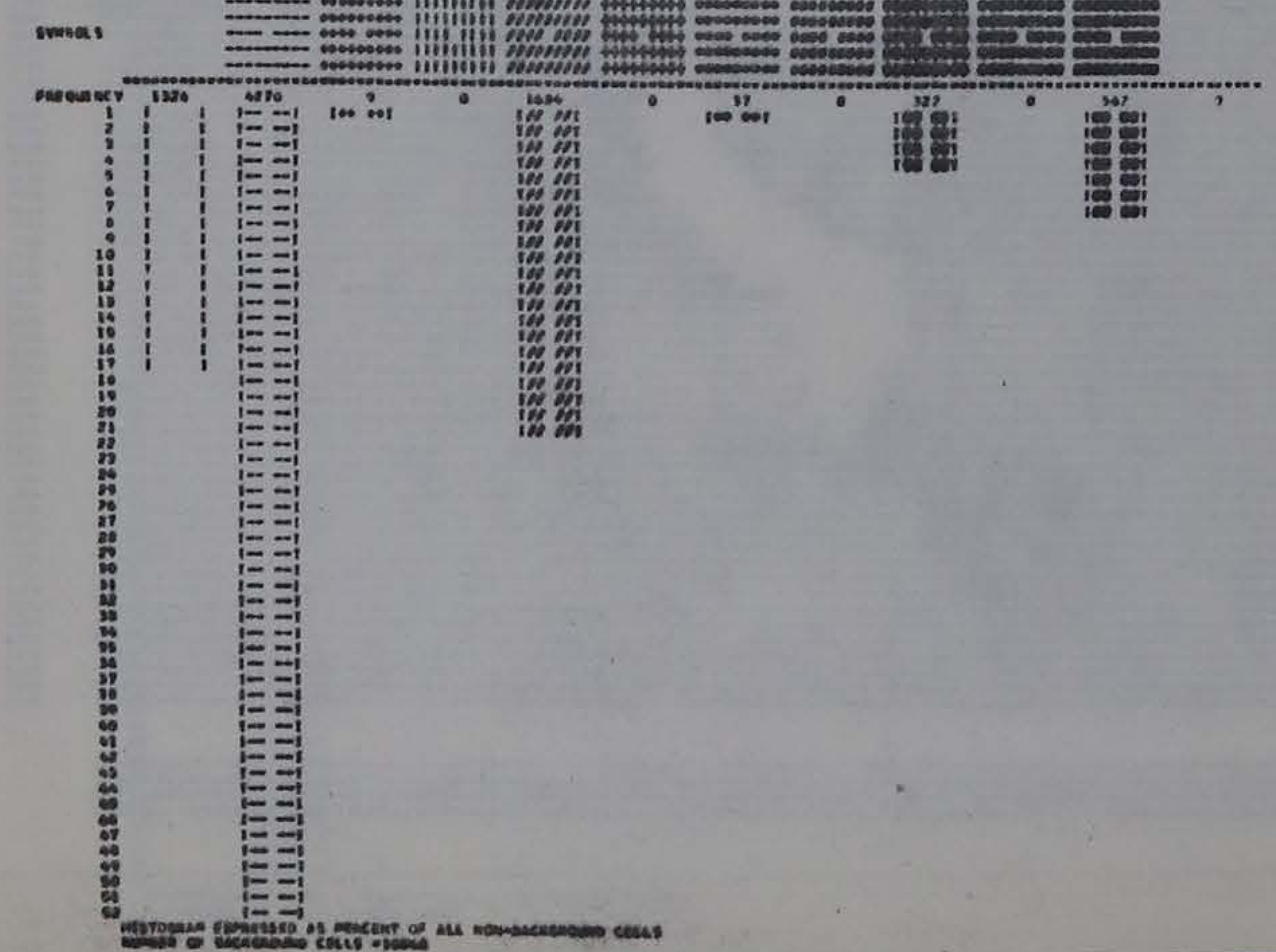
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES											HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
FREQUENCY	1326	4270	9	0	1604	0	57	0	327	0	567	7



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10068

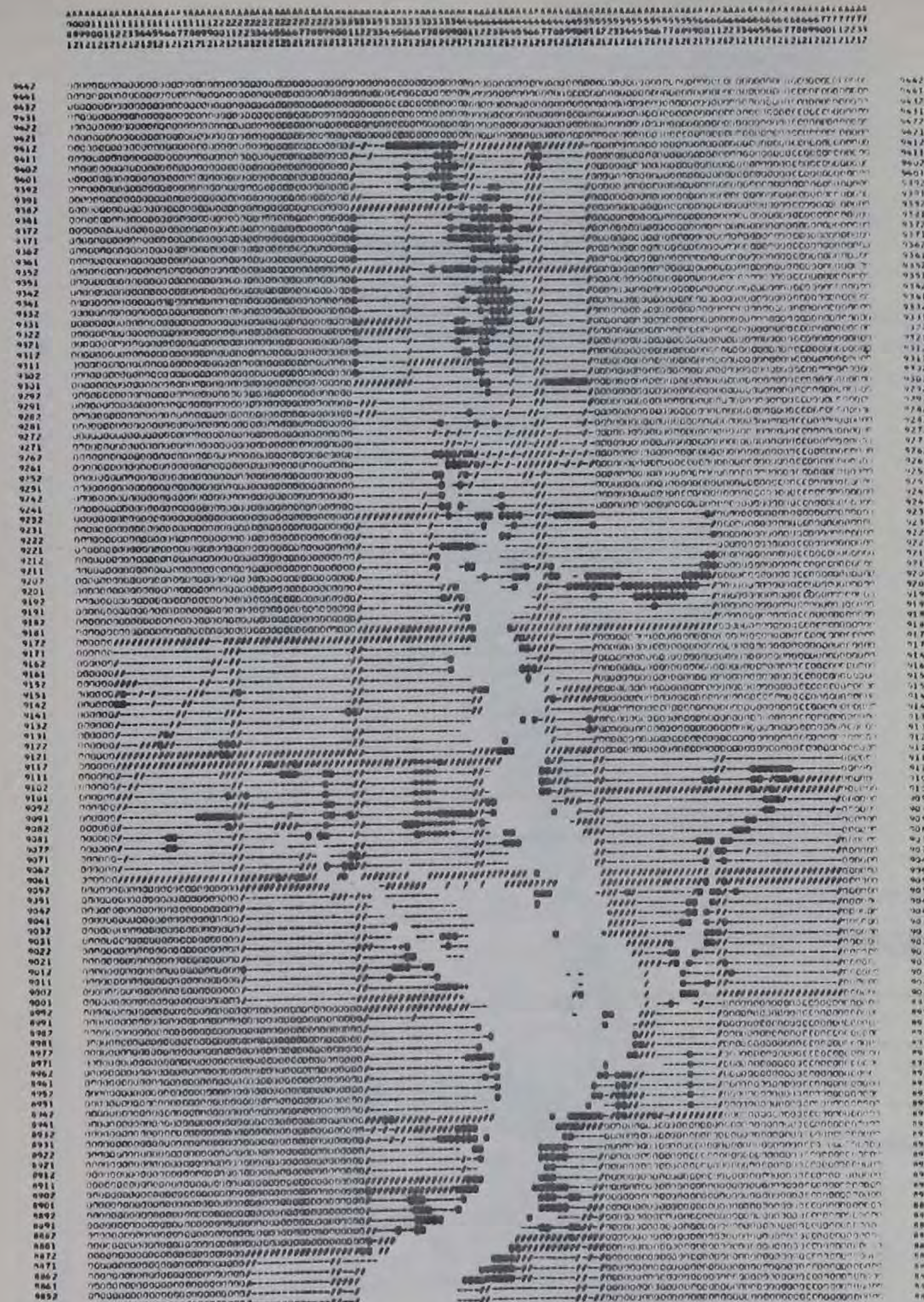


Fig. 1-1-117

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAHLANGER,
S.CECIL, D.SEYMOUR, A.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, J.DEPPRENGER
KP: J.JONES, F.SWANSON, A.HOPPNER, D.ALLEN, D.FERRELIUS, D.HILLS

WILDLIFE HABITAT QUALITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

THE HABITAT QUALITY RANKING WAS DONE FOR EACH SPECIES IN EACH HABITAT TYPE PRIOR TO AND, THEREFORE, WITHOUT REGARD TO THE WILDLIFE CENSUS. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL K. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NON-EXISTANT HABITAT

3 =

4 = POOR QUALITY HABITAT

5 =

6 = FAIR QUALITY HABITAT

7=

8 = GOOD QUALITY HABITAT

9 =

10 = EXCELLENT QUALITY HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 3.02 ST. DEV. = 3.36

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

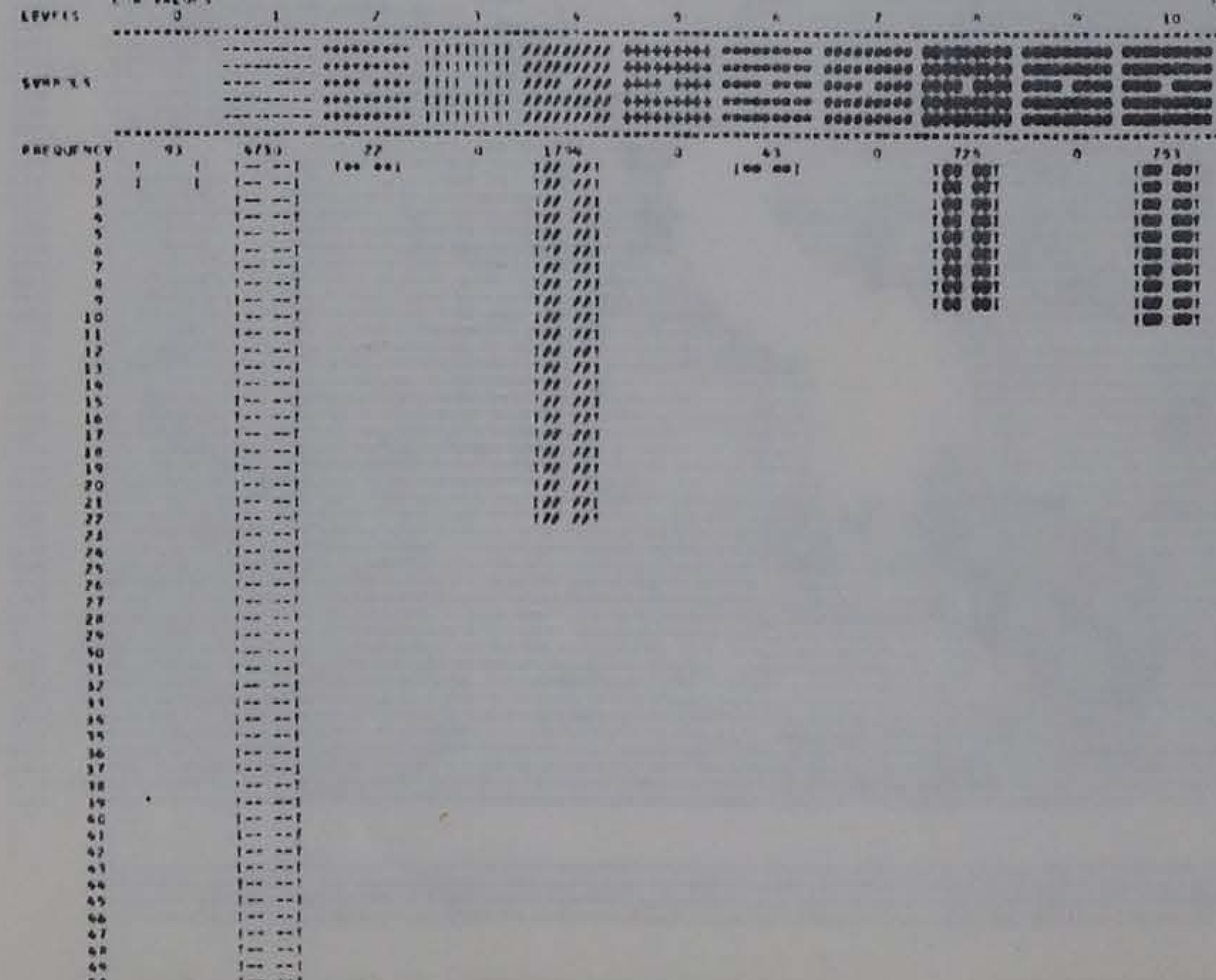
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
SYMBOLS												
FREQUENCY	93	4730	77	0	1796	0	43	0	775	0	751	0



MAP 2,SHEET 1,DATA SET 1

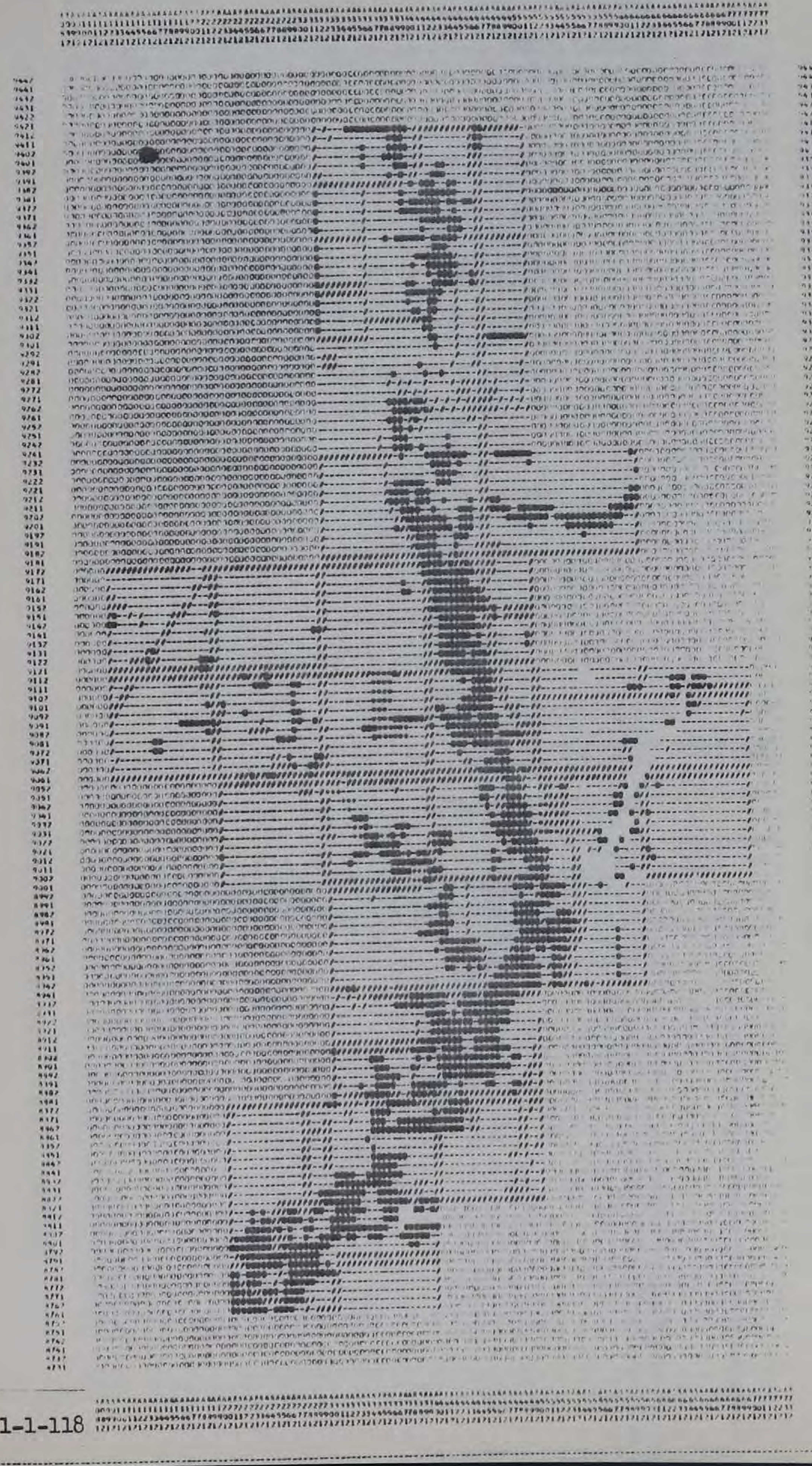


Fig. 1-1-118

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-239

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J. [illegible], P.F. ANDERSON
PROGRAMMER-ANALYST G.H. [illegible]
DATA PREPARATION A.C. TAGGART, T. SHUCK, [illegible], D. PALLANGER,
S. COCIL, D. SEYMOUR, W. SCHUTTLER, D. REMY
GRAPHICS C.J. [illegible], D. [illegible]
KPD N. JONES, E. SWANSON, [illegible], D. ALLEN, D. FEANELIUS, D. HILLS

WILDLIFE HABITAT QUALITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDUSES) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (OR USE) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE."

THE HABITAT QUALITY RANKING WAS DONE FOR EACH SPECIES IN EACH HABITAT TYPE PRIOR TO AND, THEREFORE, WITHOUT REGARD TO THE WILDLIFE CENSUS. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 1, 1972 THROUGH APRIL 20, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL A. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE 0A - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPROVEMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NON-EXISTANT HABITAT

3 =

4 = POOR QUALITY HABITAT

5 =

6 = FAIR QUALITY HABITAT

7 =

8 = GOOD QUALITY HABITAT

9 =

10 = EXCELLENT QUALITY HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 3.20 ST. DEV. = 3.10

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

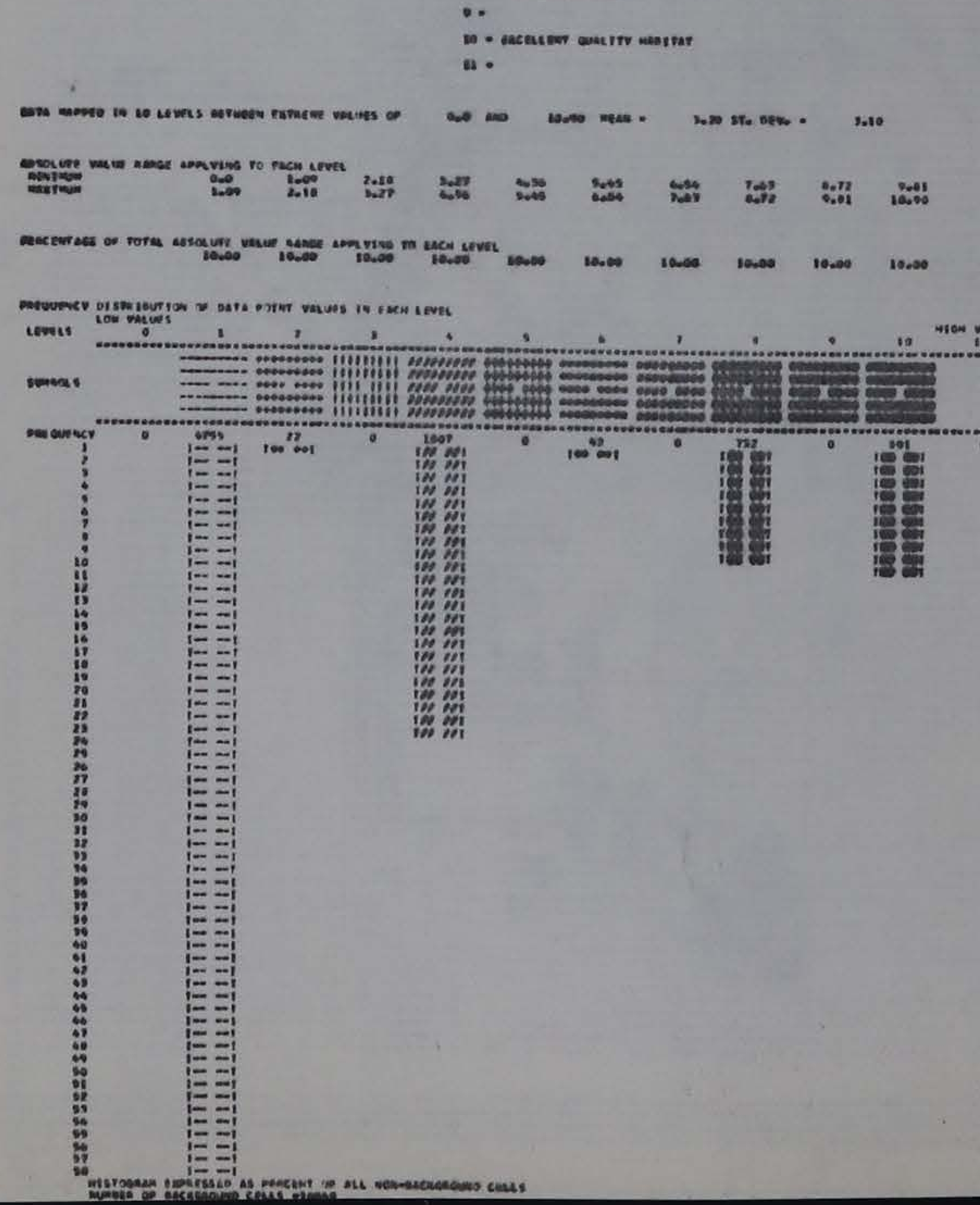
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	0	6955	77	0	1007	0	42	0	732	0	891	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =[illegible]

MAP 5,SHEET 1,DATA SET 1

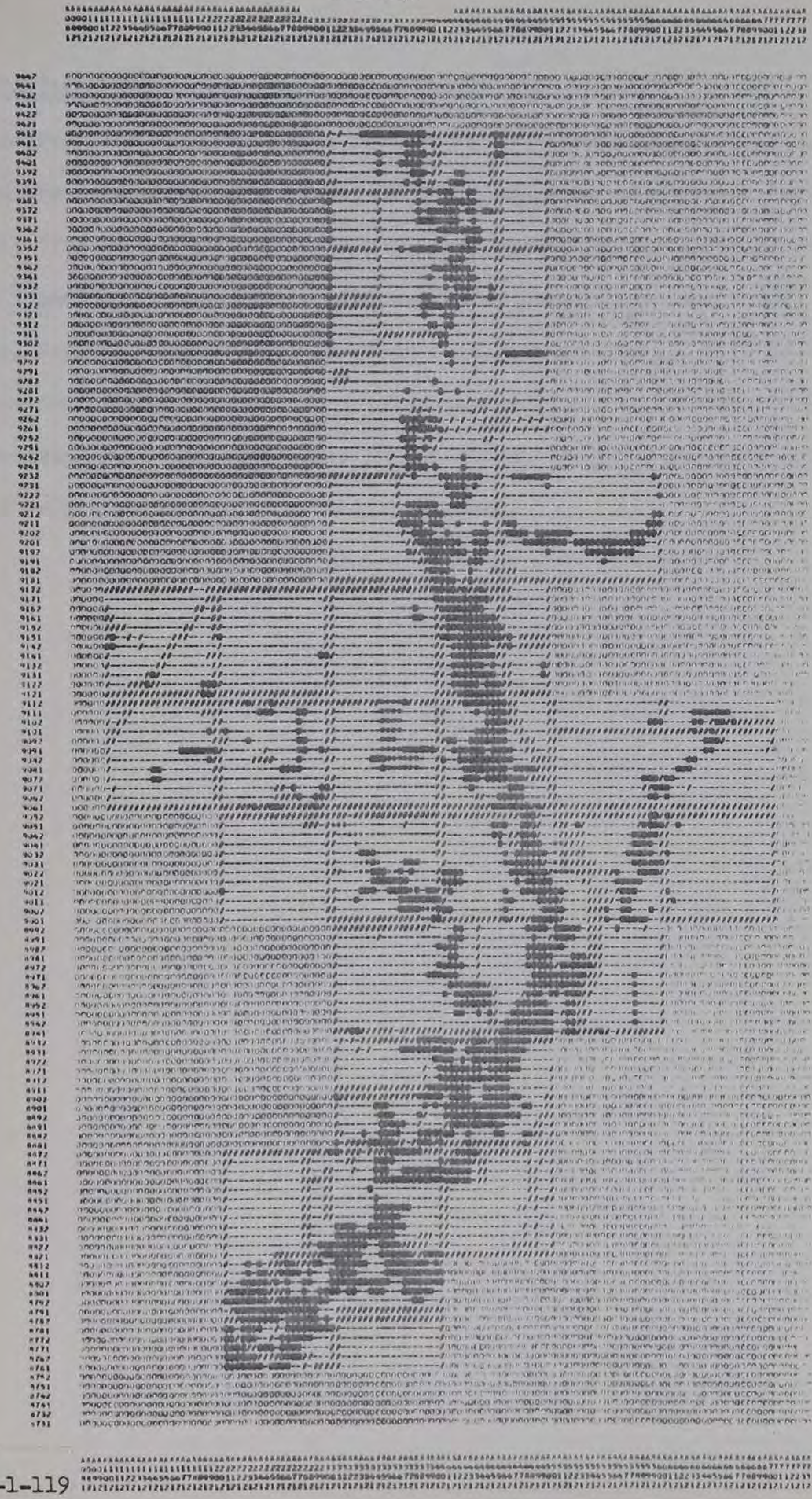


Fig. 1-1-119

Wildlife census data - raccoon (Fig. 1-1-120 through 1-1-125). Approximately 600 raccoons would be lost from the existing population of 1500 in the study area as a result of the inundation of the reservoir as proposed (Fig. 1-1-120). The greatest loss occurs in the habitats of gray levels 7 and 9 (532 raccoons). The remaining population (about 900) is, however, largely concentrated in these same habitat types. This is due to the fact that these habitat types (gray levels 7 and 9) form the bulk of the remaining habitat, especially in the stream valleys, and also contain a relatively high number of raccoons per acre.

ENVIRONMENTAL RESOURCE [illegible]
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-242

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS [illegible]
PROGRAMMER-ANALYST [illegible]
DATA PREPARATION [illegible]
GRAPHICS [illegible]
EPG [illegible]

WILDLIFE CENSUS DATA - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORMS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. WITHIN EACH OF THESE HABITAT TYPES A STUDY PLOT, VARYING IN SIZE FROM .3 TO 40 ACRES, WAS SELECTED WHICH WAS TYPICAL OF THAT HABITAT TYPE. A FIELD CENSUS WAS THEN CONDUCTED ON 60 WILDLIFE GROUPS OR SPECIES FOR EACH STUDY PLOT. FIGURES WERE RECORDED AS ACRES PER INDIVIDUAL. THIS NUMBER WAS THEN EXTRAPOLATED FROM THE STUDY AREA TO THE ENTIRE HABITAT TYPE. FOR EXAMPLE, IF THERE WERE 20 ACRES PER RACCOON IN A GIVEN STUDY PLOT, THERE WERE ASSUMED ALSO TO BE 20 ACRES PER RACCOON THROUGHOUT THE ENTIRE HABITAT TYPE IN WHICH THAT STUDY PLOT OCCURRED. FOR THIS REASON INFORMATION WAS ENTERED AND IS RETRIEVABLE ON THE BASIS OF THE HABITAT TYPES (VEGETATION/LANDFORMS) RATHER THAN A CELL BY CELL BASIS AND, THEREFORE, ALL CELLS OF A CERTAIN HABITAT TYPE WILL EXHIBIT THE SAME CENSUS FIGURE FOR A GIVEN WILDLIFE SPECIES. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 1, 1972 THROUGH APRIL 20, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL R. PETERSON, ASSISTANT PROFESSOR.

INFORMATION ON ANY OF THE 60 WILDLIFE SPECIES SAMPLED CAN BE DISPLAYED IN MAP FORM AND FOR PURPOSES OF DEMONSTRATION WE HAVE SELECTED THE RACCOON.

ALTERNATIVE 6A - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO 6B.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION [illegible]
FLOOD POOL, ELEVATION [illegible]
B. [illegible] CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION [illegible]
FLOOD POOL, ELEVATION [illegible]
C. [illegible] SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION [illegible]

SOURCES: VEGETATION/LANDFORMS,
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NO RACCOONS CENSUSED IN STUDY AREA - FENCE ROW, PRAIRIE

3 = 40 ACRES PER RACCOON - SHRUBS

4 = 20 ACRES PER RACCOON - [illegible] TO CULTIVATED

5 = 13 ACRES PER RACCOON - JUNIPER AND HONEY LOCUST

6 = 10 ACRES PER RACCOON - JUNIPER

7 = 8 ACRES PER RACCOON - [illegible] AND [illegible]

8 = 6 ACRES PER RACCOON - [illegible], ELM-ASH

9 = 4 ACRES PER RACCOON - [illegible] TO PASTURE, OAK-HICKORY, BOTTOMLAND

10 = .7 ACRES PER RACCOON - [illegible]

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = [illegible] STD. DEV. = [illegible]

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1999	3062	250	30	13	6	67	1407	37	450	36	0

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10046

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

[illegible]

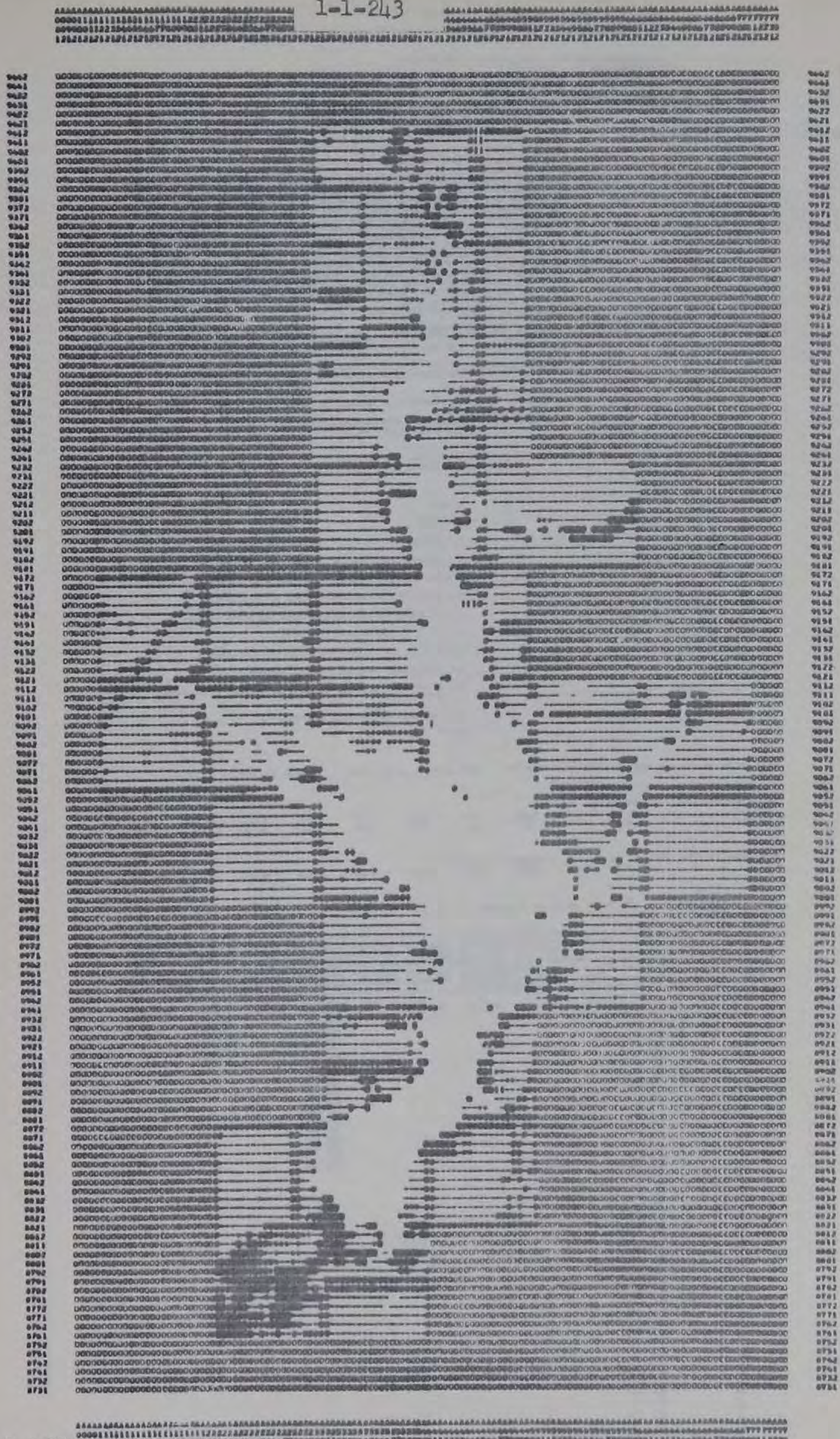


Fig. 1-1-120

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IO
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IO

1-1-244

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.STRATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BRAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, G.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KERNY
GRAPHICS C.J.UBAN, D.DEPHENGER
KPO N.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.PILLS

WILDLIFE CENSUS DATA - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDERS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. WITHIN EACH OF THESE HABITAT TYPES A STUDY PLOT, VARYING IN SIZE FROM .3 TO 40 ACRES, WAS SELECTED WHICH WAS TYPICAL OF THAT HABITAT TYPE. A FIELD CENSUS WAS THEN CONDUCTED ON 68 WILDLIFE GROUPS OR SPECIES FOR EACH STUDY PLOT. FIGURES WERE RECORDED AS ACRES PER INDIVIDUAL. THIS NUMBER WAS THEN EXTRAPOLATED FROM THE STUDY AREA TO THE ENTIRE HABITAT TYPE. FOR EXAMPLE, IF THERE WERE 20 ACRES PER RACCOON IN A GIVEN STUDY PLOT, THERE WERE ASSUMED ALSO TO BE 20 ACRES PER RACCOON THROUGHOUT THE ENTIRE HABITAT TYPE IN WHICH THAT STUDY PLOT OCCURED. FOR THIS REASON INFORMATION WAS ENTERED AND IS RETRIEVABLE ON THE BASIS OF THE HABITAT TYPES (VEGETATION/LANDERS) RATHER THAN A CELL BY CELL BASIS AND, THEREFORE, ALL CELLS OF A CERTAIN HABITAT TYPE WILL EXHIBIT THE SAME CENSUS FIGURE FOR A GIVEN WILDLIFE SPECIES. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL R. PETERSEN, ASSISTANT PROFESSOR.

INFORMATION ON ANY OF THE 68 WILDLIFE SPECIES SAMPLED CAN BE DISPLAYED IN MAP FORM AND FOR PURPOSES OF DEMONSTRATION WE HAVE SELECTED THE RACCOON.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
AMES RESERVOIR - CONSERVATION POOL, ELEVATION 930
FLOOD POOL, ELEVATION 976

SOURCES: VEGETATION/LANDERS.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NO RACCOONS CENSUSED IN STUDY AREA - FENCE ROW, PRAIRIE

3 = 40 ACRES PER RACCOON - SHRUBS

4 = 20 ACRES PER RACCOON - WOODED TO CULTIVATED

5 = 11 ACRES PER RACCOON - JUNIPER AND HONEY LOCUST

6 = 10 ACRES PER RACCOON - JUNIPER

7 = 8 ACRES PER RACCOON - DITCHES AND ROADSIDES

8 = 6 ACRES PER RACCOON - MARSH, ELM-ASH

9 = 4 ACRES PER RACCOON - WOODED TO PASTURE, OAK-HICKORY, BOTTOMLAND

10 = .7 ACRES PER RACCOON - WINDBREAKS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.03 ST. DEV. = 6.20

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

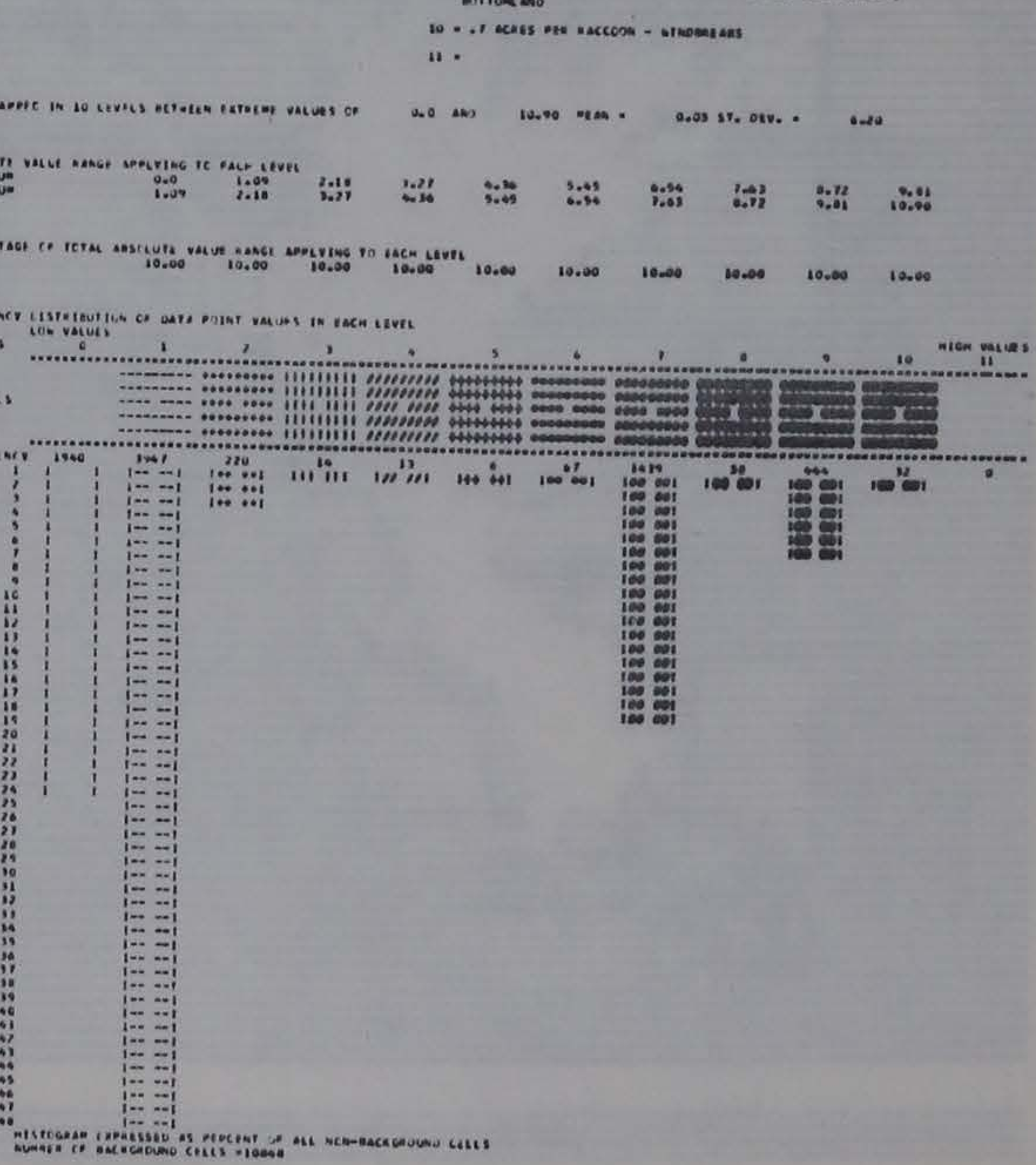
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1940	3947	220	16	13	6	67	1419	38	464	32	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10868

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

		VU4199	WT 1	VU4899	WT 2	VU4699	WT 8	VU6099	WT 1	VU6199	WT 4
VU6299	WT 9	VU6399	WT 1	VU6499	WT 2	VU6599	WT 7	VU6699	WT 10		
VU7099	WT 1	VU7199	WT 6	VU7299	WT 5	VU7399	WT 1	VU7499	WT 3		
VU9599	WT 1	VU9199	WT 9	VU9299	WT 8	VU9399	WT 1	VU9599	WT 9		

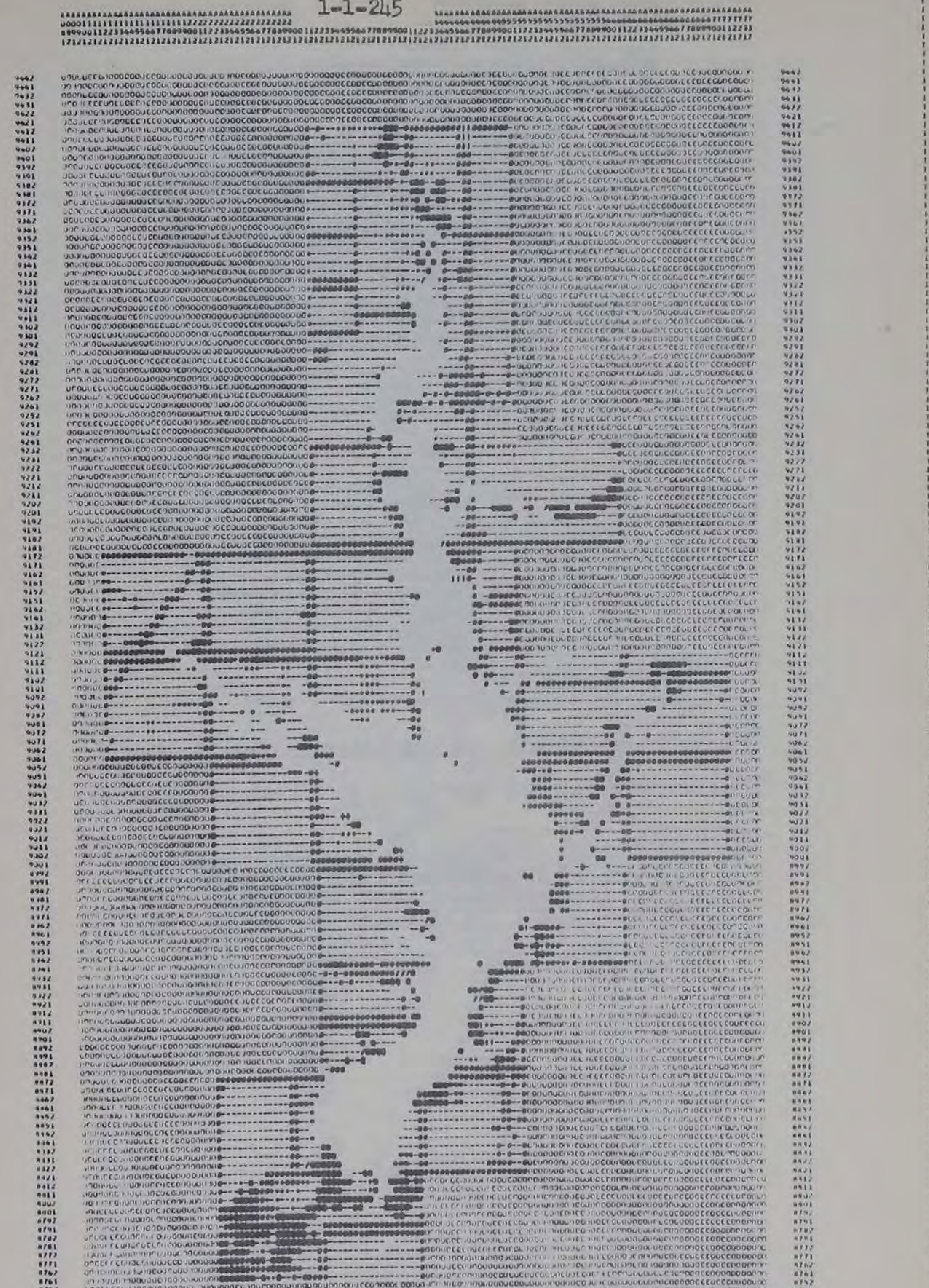


Fig. 1-1-121

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-246

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.GRAVERS
DATA PREPARATION J.C.TAGGART, T.SMUCK, A.PUDIL, D.PASLANGER,
S.CECIL, D.SEYMOUR, M.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPRENGER
RPC M.JONES, L.SWANSON, R.MCEPPHER, D.ALLEN, D.PERNELIUS, D.MILLS

WILDLIFE CENSUS DATA - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDERS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. WITHIN EACH OF THESE HABITAT TYPES A STUDY PLOT, VARYING IN SIZE FROM .5 TO 40 ACRES, WAS SELECTED WHICH WAS TYPICAL OF THAT HABITAT TYPE. A FIELD CENSUS WAS THEN CONDUCTED ON 60 WILDLIFE GROUPS OR SPECIES FOR EACH STUDY PLOT. FIGURES WERE RECORDED AS ACRES PER INDIVIDUAL. THIS NUMBER WAS THEN EXTRAPOLATED FROM THE STUDY AREA TO THE ENTIRE HABITAT TYPE. FOR EXAMPLE, IF THERE WERE 20 ACRES PER RACCOON IN A GIVEN STUDY PLOT, THERE WERE ASSUMED ALSO TO BE 20 ACRES PER RACCOON THROUGHOUT THE ENTIRE HABITAT TYPE IN WHICH THAT STUDY PLOT OCCURED. FOR THIS REASON INFORMATION WAS ENTERED AND IS RETRIEVABLE ON THE BASIS OF THE HABITAT TYPES (VEGETATION/LANDERS) RATHER THAN A CELL BY CELL BASIS AND, THEREFORE, ALL CELLS OF A CERTAIN HABITAT TYPE WILL EXHIBIT THE SAME CENSUS FIGURE FOR A GIVEN WILDLIFE SPECIES. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL R. PETERSEN, ASSISTANT PROFESSOR.

INFORMATION ON ANY OF THE 60 WILDLIFE SPECIES SAMPLED CAN BE DISPLAYED IN MAP FORM AND FOR PURPOSES OF DEMONSTRATION WE HAVE SELECTED THE RACCOON.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

SOURCES: VEGETATION/LANDERS.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NO RACCOONS CENSUSED IN STUDY AREA - FENCE ROW, PRAIRIE

3 = 40 ACRES PER RACCOON - SHRUBS

4 = 20 ACRES PER RACCOON - WOODED TO CULTIVATED

5 = 11 ACRES PER RACCOON - JUNIPER AND HONEY LOCUST

6 = 10 ACRES PER RACCOON - JUNIPER

7 = 8 ACRES PER RACCOON - DITCHES AND ROADSIDES

8 = 6 ACRES PER RACCOON - MARSH, ELM-ASH

9 = 4 ACRES PER RACCOON - WOODED TO PASTURE, OAK-HICKORY, BOTTOMLAND

10 = .7 ACRES PER RACCOON - STREAMBANKS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.58 ST. DEV. = 4.47

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

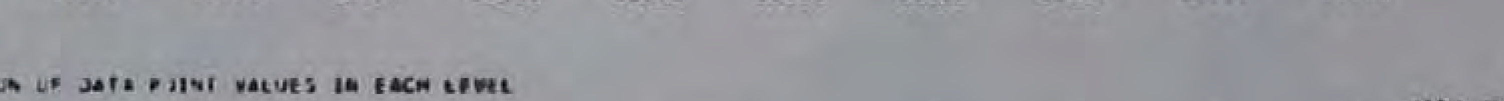
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

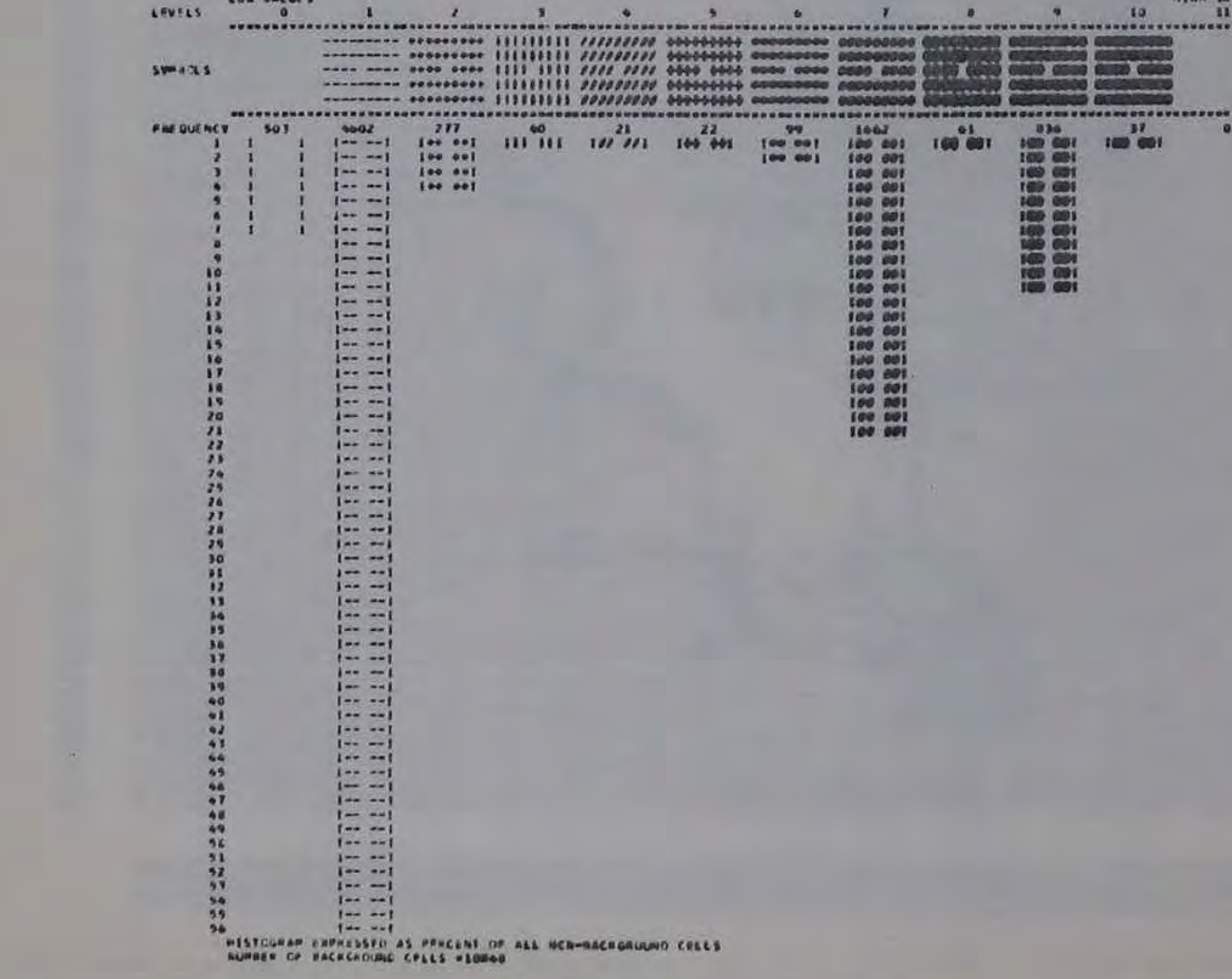
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES											HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
SYMBOLS												
FREQUENCY	503	4602	277	60	21	22	99	1662	61	836	37	0





HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10840

VARIABLE CLASS # 78 IMPORTANCE FACTOR 10

1-1-247

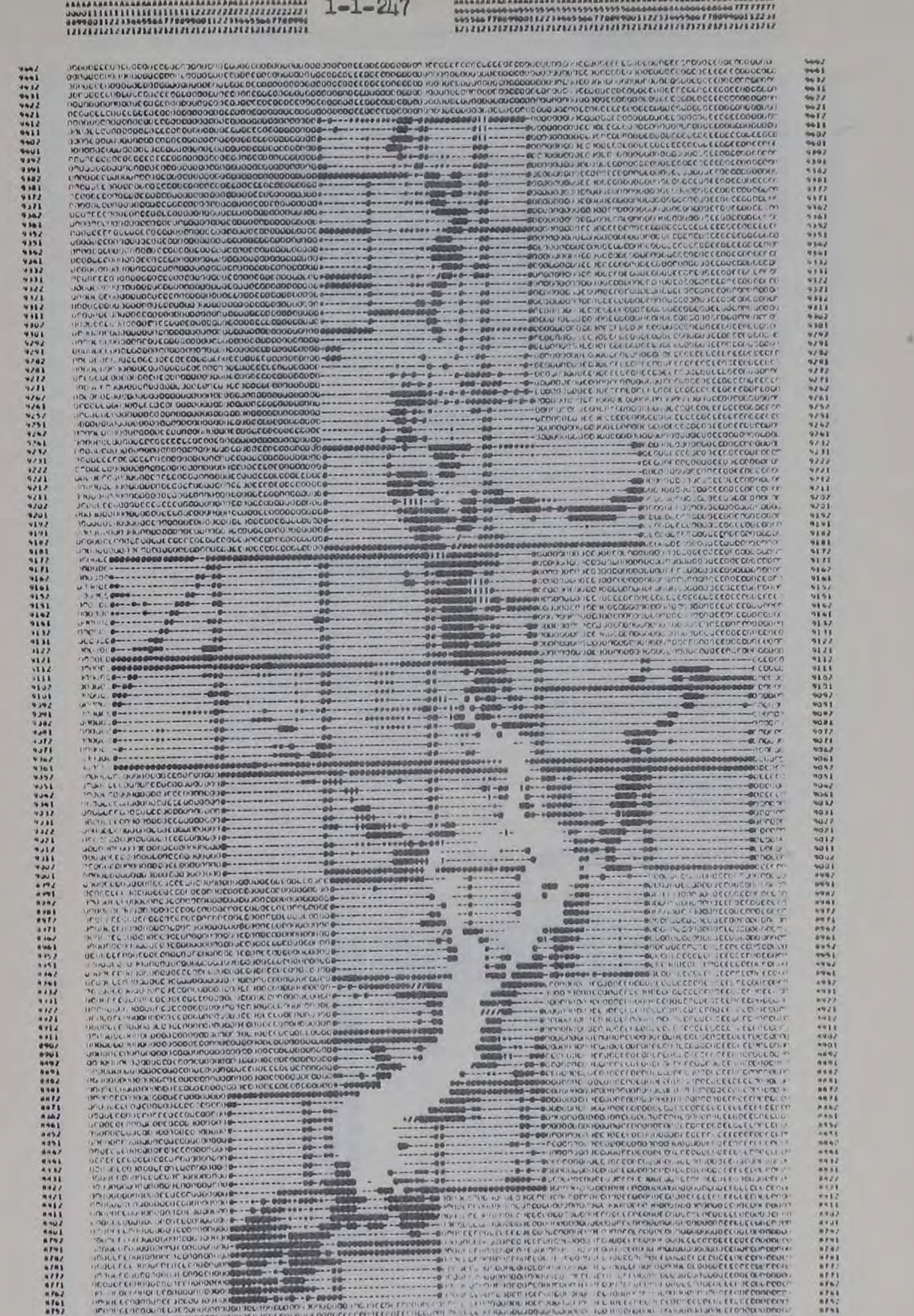


Fig. 1-1-122

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-248

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.REEVES
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS L.J.UBAN, D.DEPRENGER
KPC V.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.PERNELIUS, D.HILLS

WILDLIFE CENSUS DATA - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. WITHIN EACH OF THESE HABITAT TYPES A STUDY PLOT, VARYING IN SIZE FROM .5 TO 40 ACRES, WAS SELECTED WHICH WAS TYPICAL OF THAT HABITAT TYPE. A FIELD CENSUS WAS THEN CONDUCTED ON 60 WILDLIFE GROUPS OR SPECIES FOR EACH STUDY PLOT. FIGURES WERE RECORDED AS ACRES PER INDIVIDUAL. THIS NUMBER WAS THEN EXTRAPOLATED FROM THE STUDY AREA TO THE ENTIRE HABITAT TYPE. FOR EXAMPLE, IF THERE WERE 20 ACRES PER RACCOON IN A GIVEN STUDY PLOT, THERE WERE ASSUMED ALSO TO BE 20 ACRES PER RACCOON THROUGHOUT THE ENTIRE HABITAT TYPE IN WHICH THAT STUDY PLOT OCCURED. FOR THIS REASON INFORMATION WAS ENTERED AND IS RETRIEVABLE ON THE BASIS OF THE HABITAT TYPES (VEGETATION/LANDFORS) RATHER THAN A CELL BY CELL BASIS AND, THEREFORE, ALL CELLS OF A CERTAIN HABITAT TYPE WILL EXHIBIT THE SAME CENSUS FIGURE FOR A GIVEN WILDLIFE SPECIES. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL W. PETERSEN, ASSISTANT PROFESSOR.

INFORMATION ON ANY OF THE 60 WILDLIFE SPECIES SAMPLED CAN BE DISPLAYED IN MAP FORM AND FOR PURPOSES OF DEMONSTRATION WE HAVE SELECTED THE RACCOON.

ALTERNATIVE #4 - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 960
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: VEGETATION/LANDFORS.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NO RACCOONS CENSUSED IN STUDY AREA - FENCE ROW, PRAIRIE

3 = 40 ACRES PER RACCOON - SHRUBS

4 = 20 ACRES PER RACCOON - WOODED TO CULTIVATED

5 = 11 ACRES PER RACCOON - JUNIPER AND HONEY LOCUST

6 = 10 ACRES PER RACCOON - JUNIPER

7 = 8 ACRES PER RACCOON - DITCHES AND ROADSIDES

8 = 6 ACRES PER RACCOON - MARSH, ELM-ASH
9 = 4 ACRES PER RACCOON - WOODED TO PASTURE, OAK-HICKORY, BOTTOMLAND
10 = .7 ACRES PER RACCOON - WINDBREAKS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 1.08 ST. DEV. = 5.65

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

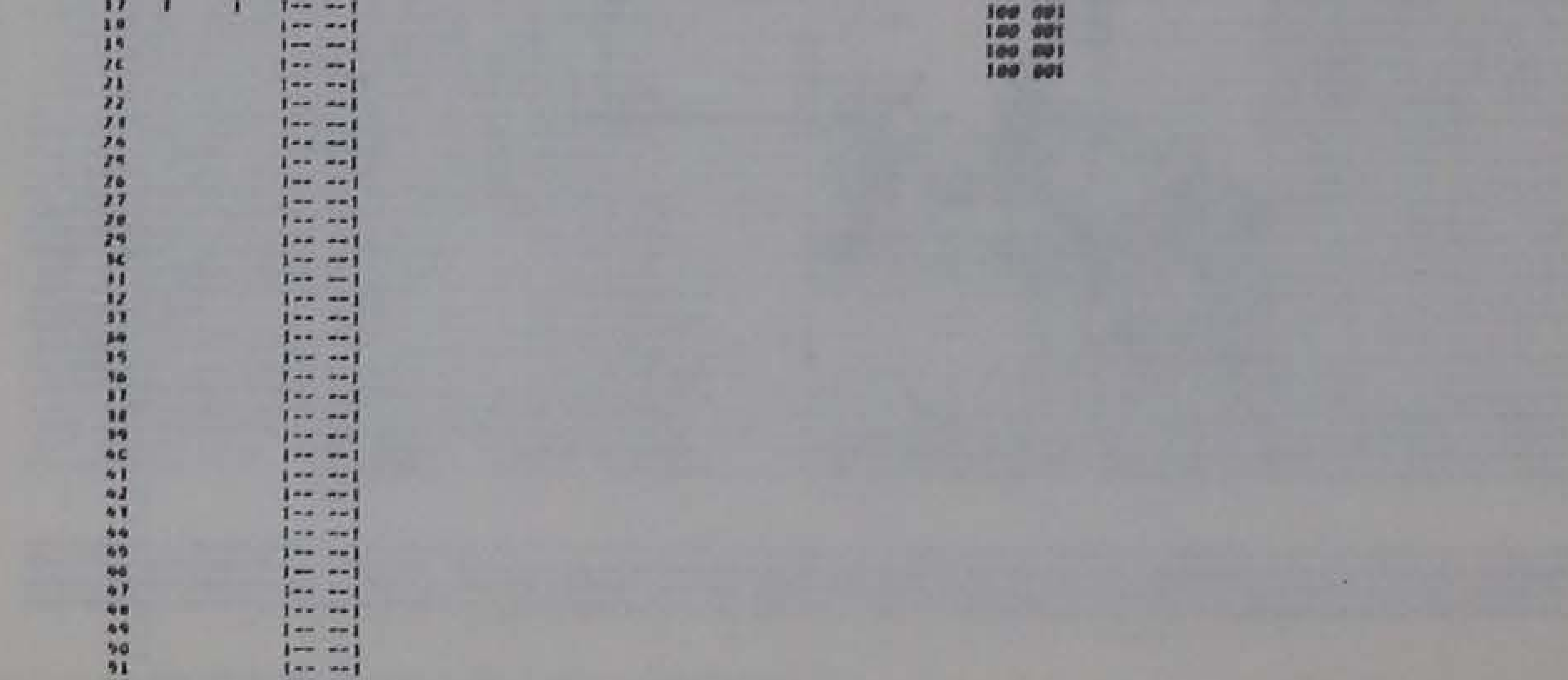
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	1326	4270	266	56	14	9	83	1551	47	570	11	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10840

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

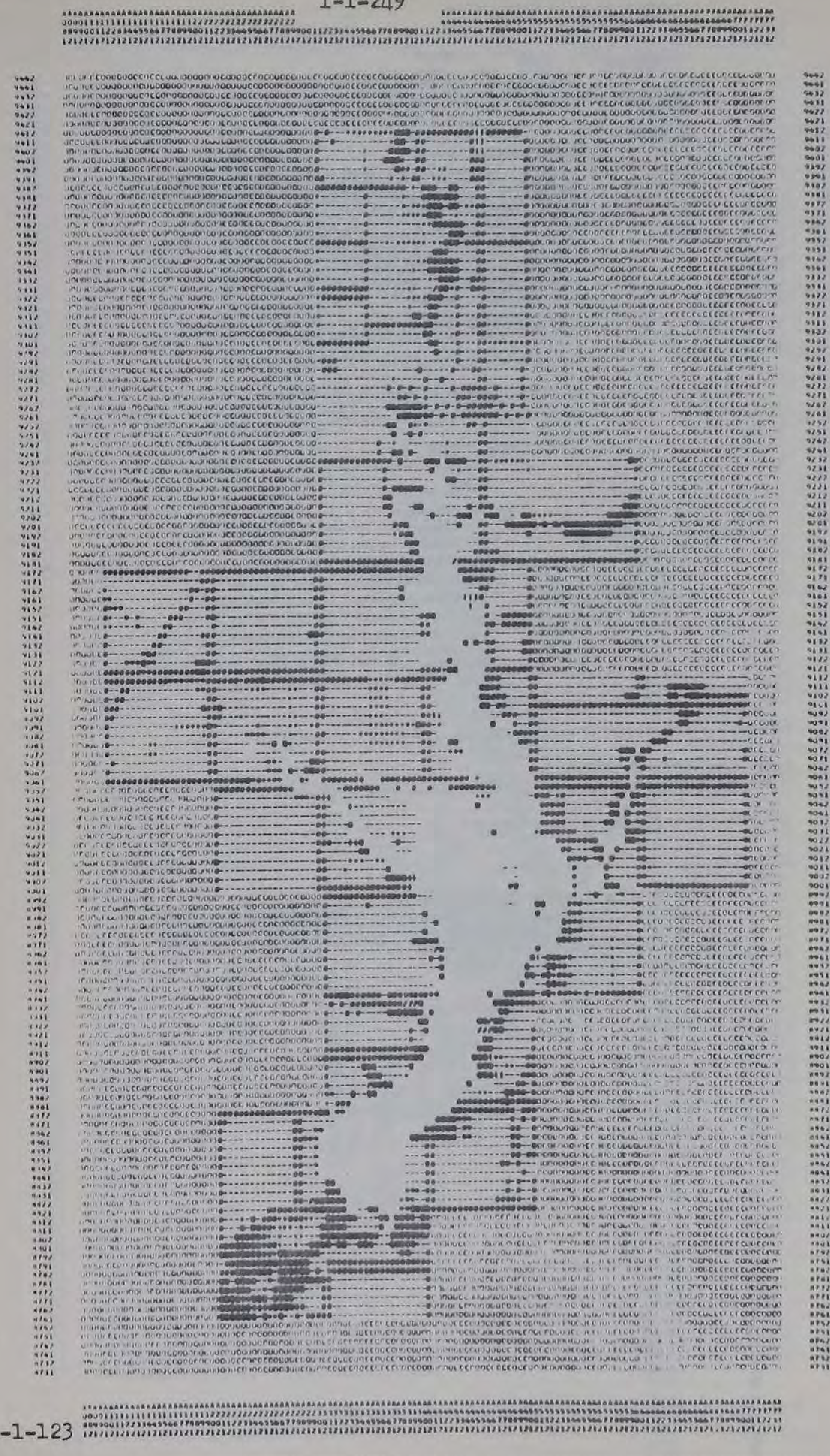


Fig. 1-1-123

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-250

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.SINATRA, P.J.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, H.SCHUTTLER, D.KEARNY
GRAPHICS C.J.JURAN, D.DEPRENGER
KPO M.JONES, L.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.PILLS

WILDLIFE CENSUS DATA - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDERS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. WITHIN EACH OF THESE HABITAT TYPES A STUDY PLOT, VARYING IN SIZE FROM .3 TO 40 ACRES, WAS SELECTED WHICH WAS TYPICAL OF THAT HABITAT TYPE. A FIELD CENSUS WAS THEN CONDUCTED ON 68 WILDLIFE GROUPS OR SPECIES FOR EACH STUDY PLOT. FIGURES WERE RECORDED AS ACRES PER INDIVIDUAL. THIS NUMBER WAS THEN EXTRAPOLATED FROM THE STUDY AREA TO THE ENTIRE HABITAT TYPE. FOR EXAMPLE, IF THERE WERE 20 ACRES PER RACCOON IN A GIVEN STUDY PLOT, THERE WERE ASSUMED ALSO TO BE 20 ACRES PER RACCOON THROUGHOUT THE ENTIRE HABITAT TYPE IN WHICH THAT STUDY PLOT OCCURED. FOR THIS REASON INFORMATION WAS ENTERED AND IS RETRIEVABLE ON THE BASES OF THE HABITAT TYPES (VEGETATION/LANDERS) RATHER THAN A CELL BY CELL BASES AND, THEREFORE, ALL CELLS OF A CERTAIN HABITAT TYPE WILL EXHIBIT THE SAME CENSUS FIGURE FOR A GIVEN WILDLIFE SPECIES. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL K. PETERSEN, ASSISTANT PROFESSOR.

INFORMATION ON ANY OF THE 68 WILDLIFE SPECIES SAMPLED CAN BE DISPLAYED IN MAP FORM AND FOR PURPOSES OF DEMONSTRATION WE HAVE SELECTED THE RACCOON.

ALTERNATIVE 05 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: VEGETATION/LANDERS.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NO RACCOONS CENSUSED IN STUDY AREA - FENCE ROW, PRAIRIE

3 = 40 ACRES PER RACCOON - SHRUBS

4 = 20 ACRES PER RACCOON - WOODED TO CULTIVATED

5 = 11 ACRES PER RACCOON - JUNIPER AND HONEY LOCUST

6 = 10 ACRES PER RACCOON - JUNIPER

7 = 8 ACRES PER RACCOON - DITCHES AND ROADSIDES

8 = 6 ACRES PER RACCOON - MARSH, ELM-ASH
9 = 4 ACRES PER RACCOON - WOODED TO PASTURE, OAK-HICKORY, BOTTOMLAND
10 = .7 ACRES PER RACCOON - WINDBREAKS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 3.30 ST. DEV. = 3.56

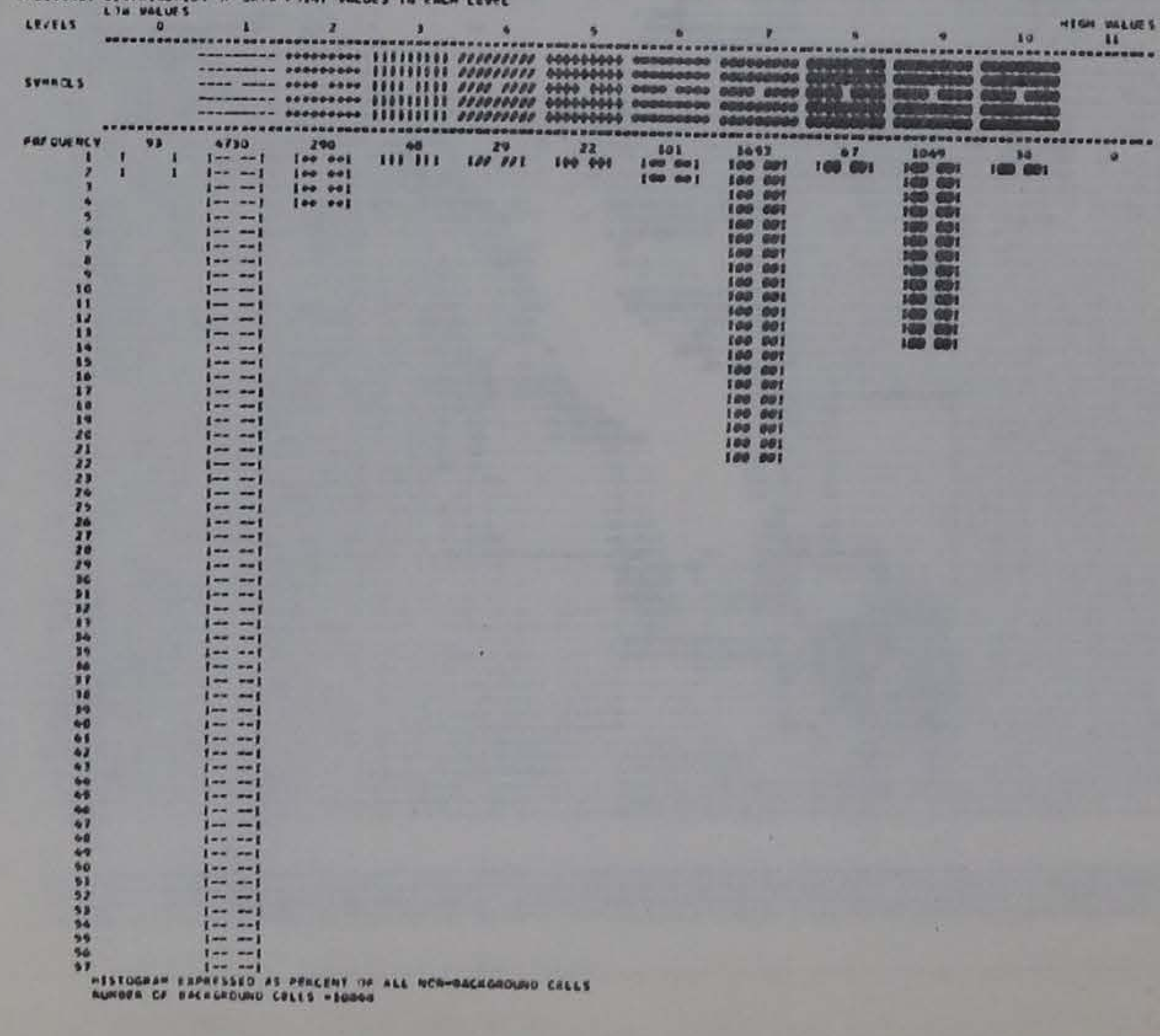
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10000

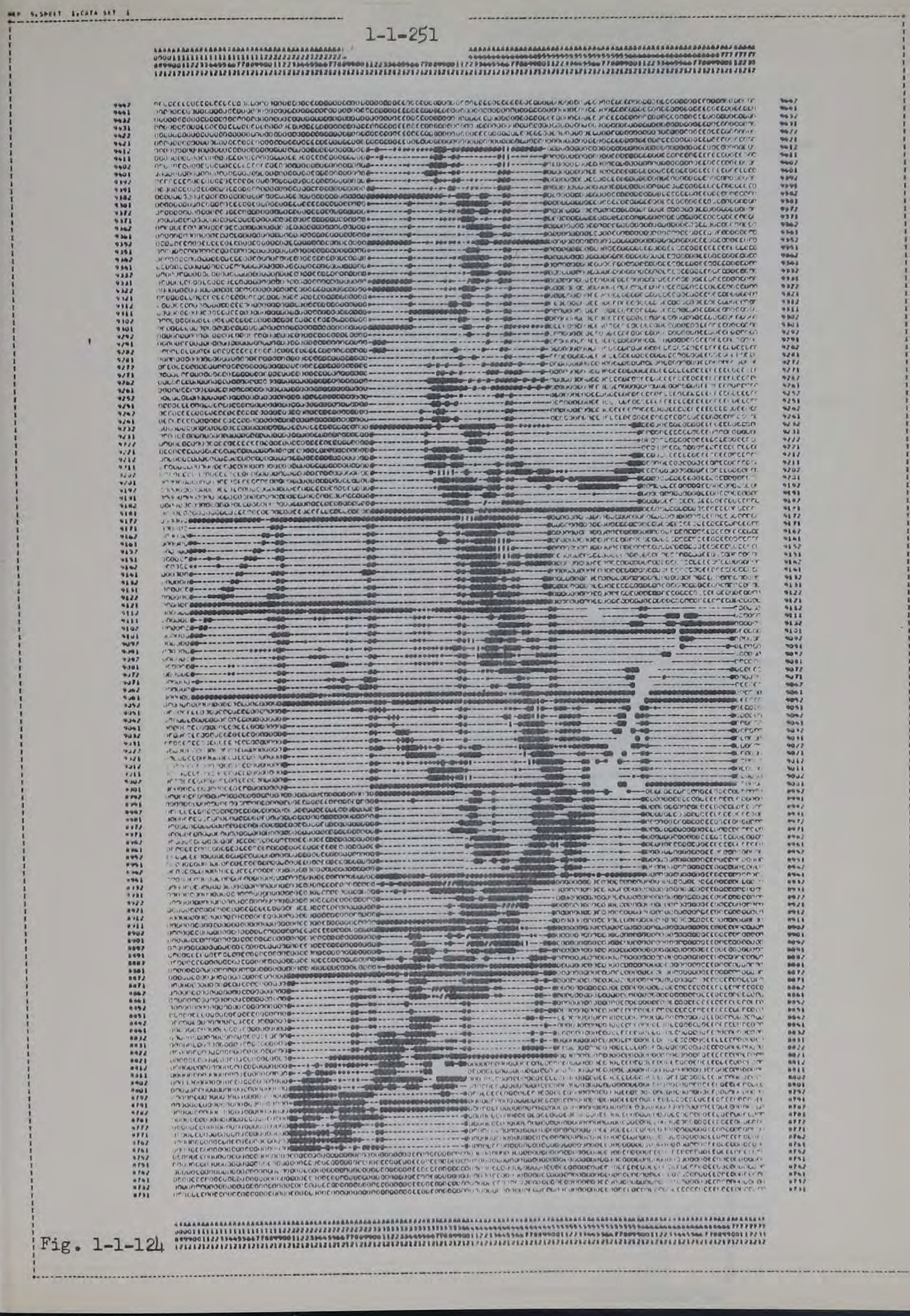


Fig. 1-1-124

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-252

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.L.TAGGART, T.SHUCK, A.MUDGE, D.FAHLANDER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.JURAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, K.HOEPPNER, D.ALLEN, D.PERNELIUS, D.MILLS

WILDLIFE CENSUS DATA - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. WITHIN EACH OF THESE HABITAT TYPES A STUDY PLOT, VARYING IN SIZE FROM .5 TO 40 ACRES, WAS SELECTED WHICH WAS TYPICAL OF THAT HABITAT TYPE. A FIELD CENSUS WAS THEN CONDUCTED ON 60 WILDLIFE GROUPS OR SPECIES FOR EACH STUDY PLOT. FIGURES WERE RECORDED AS ACRES PER INDIVIDUAL. THIS NUMBER WAS THEN EXTRAPOLATED FROM THE STUDY AREA TO THE ENTIRE HABITAT TYPE. FOR EXAMPLE, IF THERE WERE 20 ACRES PER RACCOON IN A GIVEN STUDY PLOT, THERE WERE ASSUMED ALSO TO BE 20 ACRES PER RACCOON THROUGHOUT THE ENTIRE HABITAT TYPE IN WHICH THAT STUDY PLOT OCCURRED. FOR THIS REASON INFORMATION WAS ENTERED AND IS RETRIEVABLE ON THE BASIS OF THE HABITAT TYPES (VEGETATION/LANDFORS) RATHER THAN A CELL BY CELL BASIS AND, THEREFORE, ALL CELLS OF A CERTAIN HABITAT TYPE WILL EXHIBIT THE SAME CENSUS FIGURE FOR A GIVEN WILDLIFE SPECIES. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3, 1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. RICHARD A. PETERSEN, ASSISTANT PROFESSOR.

INFORMATION ON ANY OF THE 60 WILDLIFE SPECIES SAMPLED CAN BE DISPLAYED IN MAP FORM AND FOR PURPOSES OF DEMONSTRATION WE HAVE SELECTED THE RACCOON.

ALTERNATIVE 6G - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCES: VEGETATION/LANDFORS.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 = NO RACCOONS CENSUSED IN STUDY AREA - FENCE ROW, PRAIRIE

3 = 40 ACRES PER RACCOON - SHRUBS

4 = 20 ACRES PER RACCOON - WOODED TO CULTIVATED

5 = 11 ACRES PER RACCOON - JUNIPER AND HONEY LOCUST

6 = 10 ACRES PER RACCOON - JUNIPER

7 = 8 ACRES PER RACCOON - DITCHES AND ROADSIDES

8 = 6 ACRES PER RACCOON - MARSH, ELM-ASH

9 = 4 ACRES PER RACCOON - WOODED TO PASTURE, OAK-HICKORY, BOTTOMLAND

10 = .7 ACRES PER RACCOON - WINDBREAKS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 3.56 ST. DEV. = 3.29

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

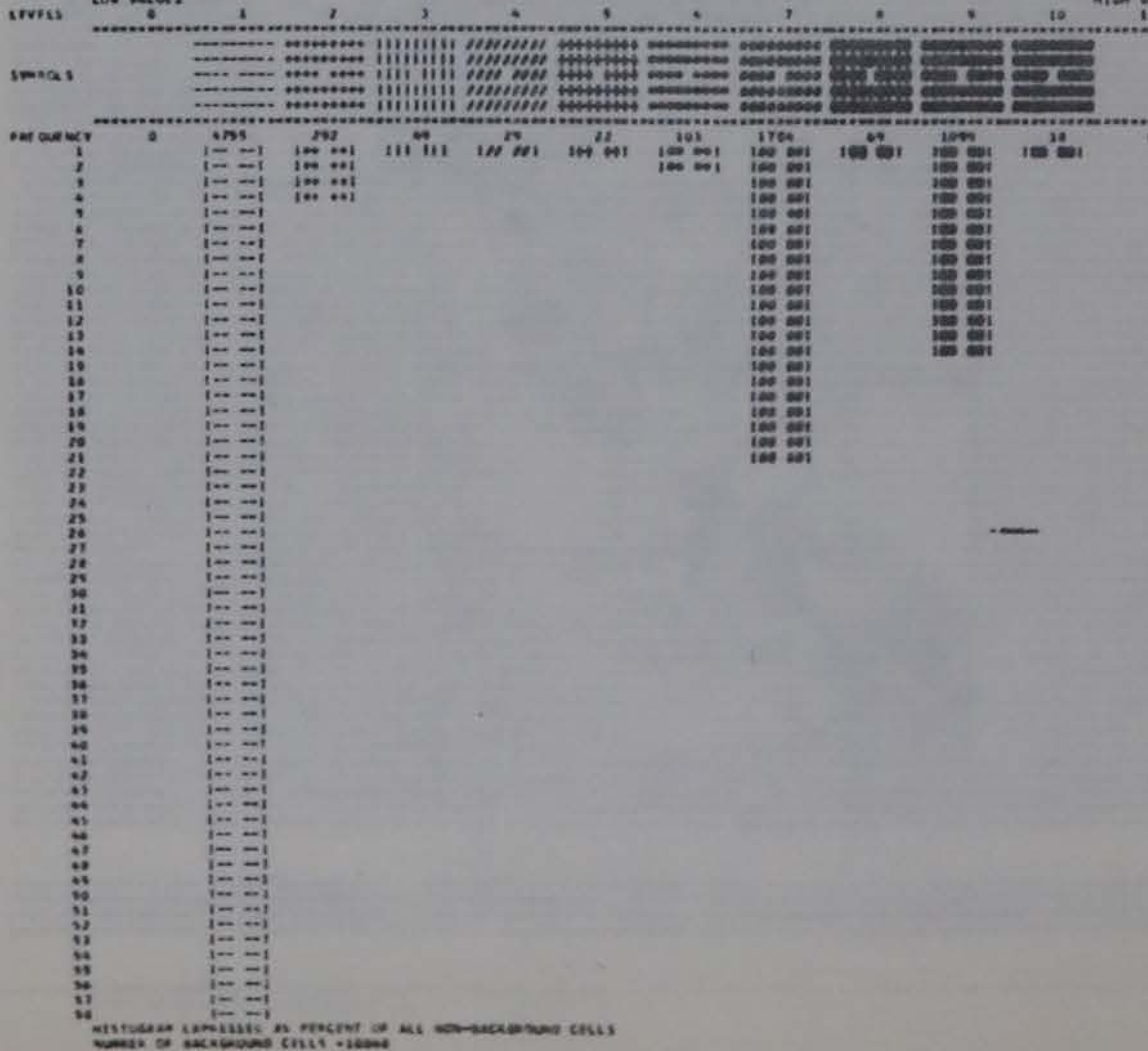
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
FREQUENCY	0	4755	292	44	29	22	103	1706	69	1099	18	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10048

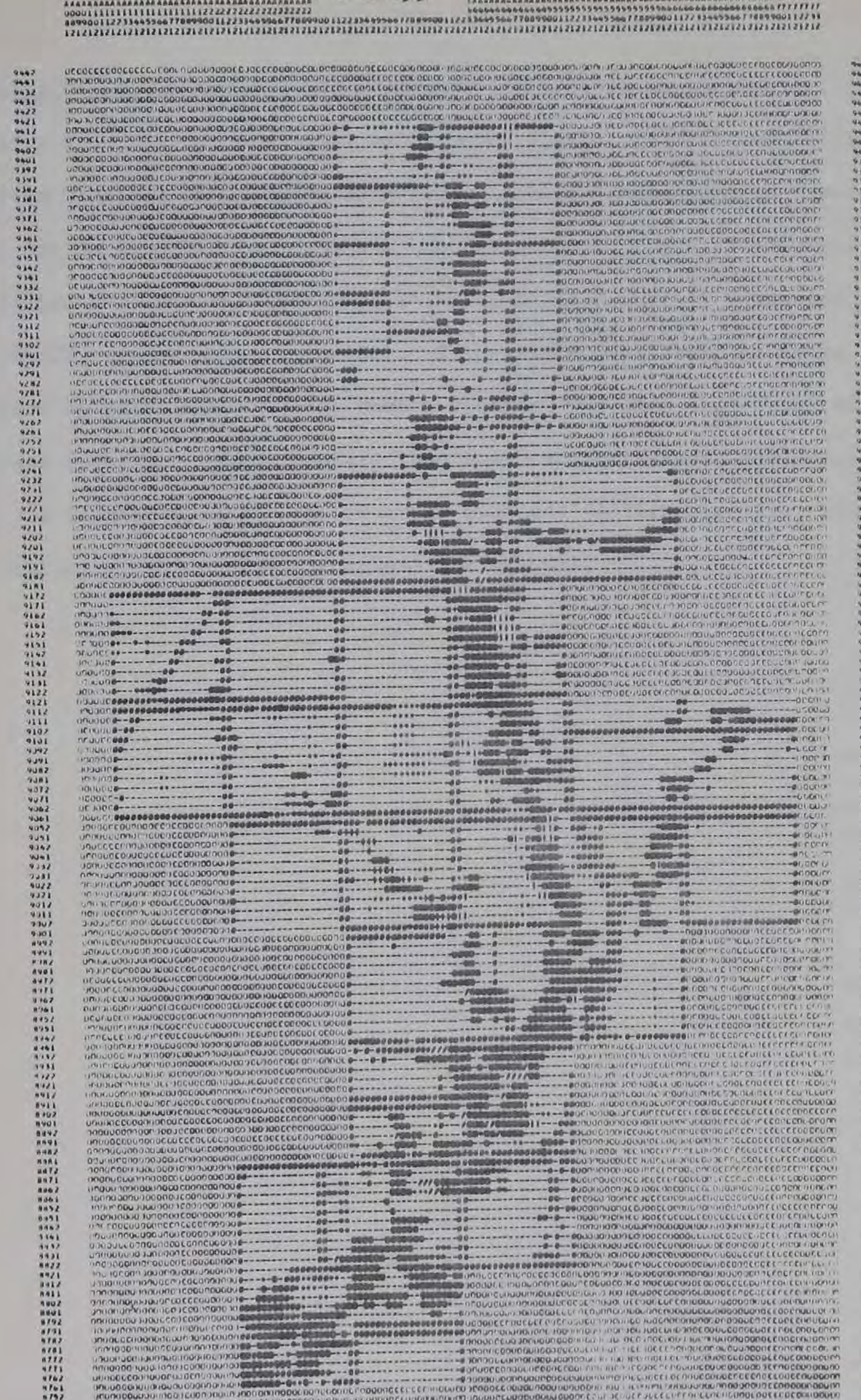


Fig. 1-1-125

Wildlife population density - raccoon (Fig. 1-1-126 through 1-1-131). The majority of the raccoon loss, as shown by Figures 1-1-126 and 1-1-131, comes from habitats where there were fewer raccoons censused than expected. That is not to say that the wildlife habitat areas lost are of poor quality or contained few raccoons (see Fig. 1-1-114, Habitat quality - raccoon and Fig. 1-1-120, Census data - raccoon). This simply means that in these areas (indicated by gray level #5) the number recorded was less than expected.

Areas showing a higher density than expected (gray level #10) were almost 75% inundated by the reservoir as proposed (Alternative #1), but their initial total acreage (58 acres) was minimal.

```
ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA
```

1-1-255

```
PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS   J.D.SINATRA,  P.F.ANDERSON
PROGRAMMER-ANALYST  G.M.[illegible]
DATA PREPARATION   J.C.TAGGART,  T.[illegible],  A.[illegible],  [illegible],
                   S.[illegible],  [illegible],  W.SCHUTTLER,  [illegible]
GRAPHICS   [illegible],  [illegible]
AND  [illegible],  T.SWANSON,  [illegible],  [illegible],  [illegible],  [illegible]


WILDLIFE POPULATION DENSITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORM) WERE SAMPLED
FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED
RESERVOIR AREA. A POPULATION DENSITY FIGURE WAS ASSIGNED TO EACH WILDLIFE
SPECIES IN EACH HABITAT ON THE BASIS OF  1) THE EXISTING POPULATION LEVELS (THE
CENSUS DATA), 2) THE HABITAT QUALITY CLASSIFICATION AND 3) AVAILABLE INFORMATION
IN THE LITERATURE.  ESSENTIALLY, THE POPULATION DENSITY FIGURE REFLECTS THE
NUMBER OF INDIVIDUALS (OF A GIVEN SPECIES) CENSUSED AS COMPARED WITH THE NUMBER
EXPECTED IN THAT HABITAT.  VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL
TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3,1972 THROUGH APRIL 28, 1972 BY THE
SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY
UNDER THE DIRECTION OF DR. MICHAEL K. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.


ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO
SUBIMPOUNDMENTS - DESIGN MEMO #1.
A.  AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
                     FLOOD POOL, ELEVATION 976
B.  BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
                                FLOOD POOL, ELEVATION 979
C.  DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000


SOURCE:  FIELD STUDY, SPRING 1972.
         VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND
         THROUGH A STUDENT LITERATURE REVIEW.


                  LEGEND

                  0 = WATER

                  1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

                  2 =

                  3 =

                  4 =

                  5 = POPULATION LOWER THAN EXPECTED FOR THAT HABITAT

                  6 =

                  7 =

                  8 = POPULATION OPTIMUM FOR THAT HABITAT

                  9 =

                  10 = POPULATION HIGHER THAN EXPECTED FOR THAT HABITAT

                  11 =


DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF     0.0  AND     10.90  MEAN =     -0.90 ST. DEV. =     7.62


ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
 MINIMUM          0.0     1.09     2.18     3.27     4.36     5.45     6.54     7.63     8.72     9.81
 MAXIMUM          1.09    2.18     3.27     4.36     5.45     6.54     7.63     8.72     9.81    10.90


PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
                 10.00   10.00    10.00    10.00    10.00    10.00    10.00    10.00    10.00    10.00


FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
          LOW VALUES                                                                                  HIGH VALUES
LEVELS        0         1         2         3         4         5         6         7         8         9        10        11
          ***********************************************************************************************************

SYMBOLS

          ***********************************************************************************************************
FREQUENCY   1996      5963        0         0         0       2177        0         0        76         0         6         0
      1  I     I  I-- --I                            100 00I                      100 00I              100 00I
      2  I     I  I-- --I                            100 00I
      3  I     I  I-- --I                            100 00I
      4  I     I  I-- --I                            100 00I
      5  I     I  I-- --I                            100 00I
      6  I     I  I-- --I                            100 00I
      7  I     I  I-- --I                            100 00I
     23  I     I  I-- --I                            100 00I
     24  I     I  I-- --I                            100 00I
     25  I     I  I-- --I                            100 00I
     26           I-- --I                            100 00I
     27           I-- --I                            100 00I
     28           I-- --I
     29           I-- --I
     30           I-- --I
     31           I-- --I
     32           I-- --I
     33           I-- --I
     34           I-- --I
     35           I-- --I
     36           I-- --I
     37           I-- --I
     38           I-- --I
     39           I-- --I
     40           I-- --I
     41           I-- --I
     42           I-- --I
     43           I-- --I
     44           I-- --I
     45           I-- --I
     46           I-- --I
     47           I-- --I
     48           I-- --I
   HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
   NUMBER OF BACKGROUND CELLS =10848

      VARIABLE CLASS #  23    IMPORTANCE FACTOR  10

            [illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  8  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  8  [illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  5  [illegible]  WT  5
[illegible]  WT  1  [illegible]  WT  8  [illegible]  WT 10  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  5  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  1  VU

      VARIABLE CLASS #  24    IMPORTANCE FACTOR  10

            [illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  8  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  8  [illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  5  [illegible]  WT  5
[illegible]  WT  1  [illegible]  WT  8  [illegible]  WT 10  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  5  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  1  VU

      VARIABLE CLASS #  25    IMPORTANCE FACTOR  10

            [illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  8  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  8  [illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  5  [illegible]  WT  5
[illegible]  WT  1  [illegible]  WT  8  [illegible]  WT 10  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  1  [illegible]  WT  5  [illegible]  WT  5  [illegible]  WT  1  [illegible]  WT  5
[illegible]  WT  1  VU
```

MAP 14.SHEET 1.DATA SET 1

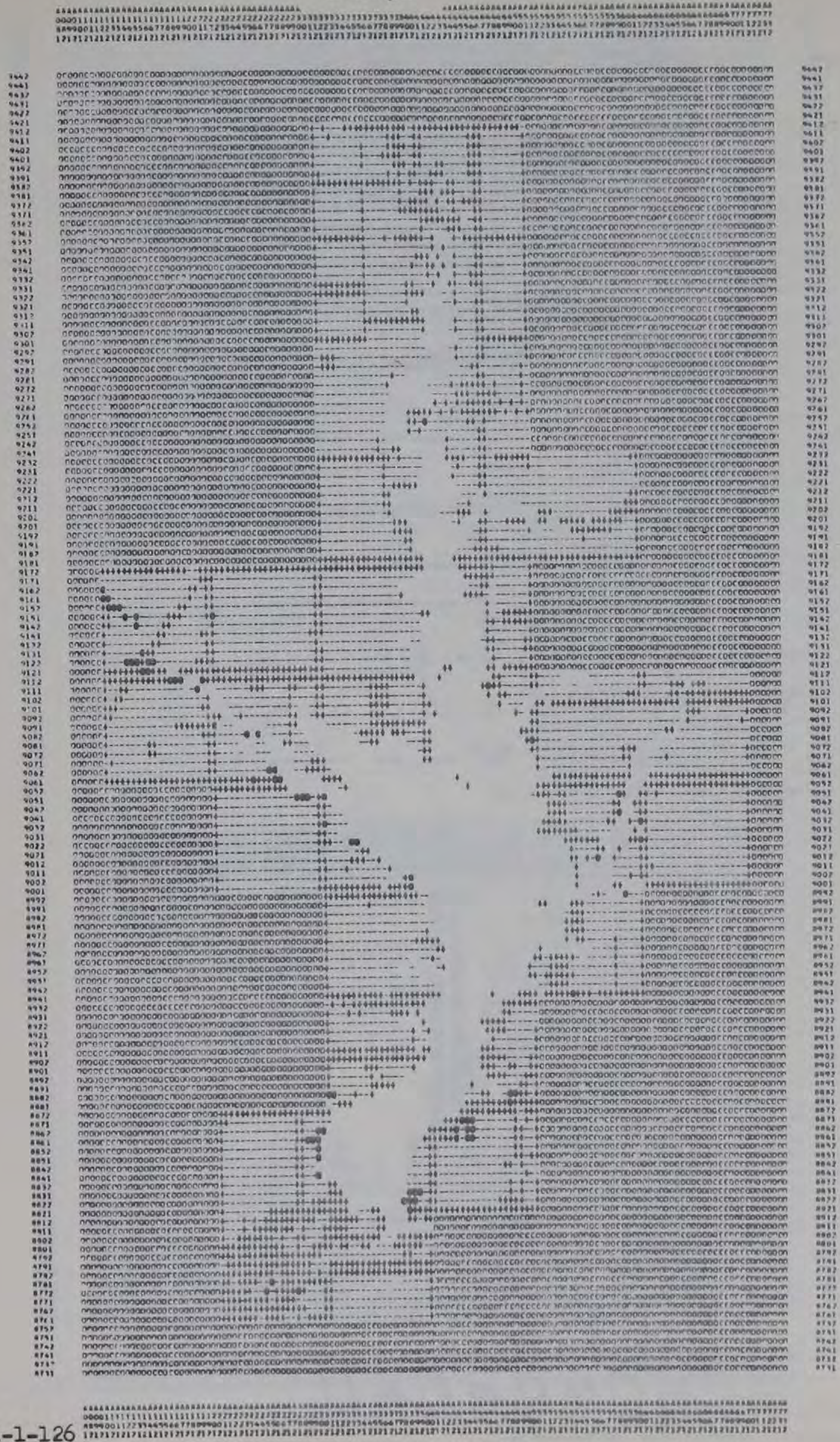


Fig. 1-1-126

1-1-257

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.PEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, C.FAXLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URBAN, C.OPPRENGER
KPC N.JONES, E.SWANSON, R.HCEPPNER, D.ALLEN, D.KERNELIUS, D.HILLS

WILDLIFE POPULATION DENSITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDERS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A POPULATION DENSITY FIGURE WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT ON THE BASIS OF 1) THE EXISTING POPULATION LEVELS (THE CENSUS DATA), 2) THE HABITAT QUALITY CLASSIFICATION AND 3) AVAILABLE INFORMATION IN THE LITERATURE. ESSENTIALLY, THE POPULATION DENSITY FIGURE REFLECTS THE NUMBER OF INDIVIDUALS (OF A GIVEN SPECIES) CENSUSED AS COMPARED WITH THE NUMBER EXPECTED IN THAT HABITAT. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3,1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL R. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE #2 - AMES RESERVOIR AS PLANNED BY THE CORPS OF ENGINEERS, BUT WITH NO SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976

SOURCE: FIELD STUDY, SPRING 1972.
VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 =

5 = POPULATION LOWER THAN EXPECTED FOR THAT HABITAT

6 =

7 =

8 = POPULATION OPTIMUM FOR THAT HABITAT

9 =

10 = POPULATION HIGHER THAN EXPECTED FOR THAT HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.47 ST. DEV. = 5.61

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

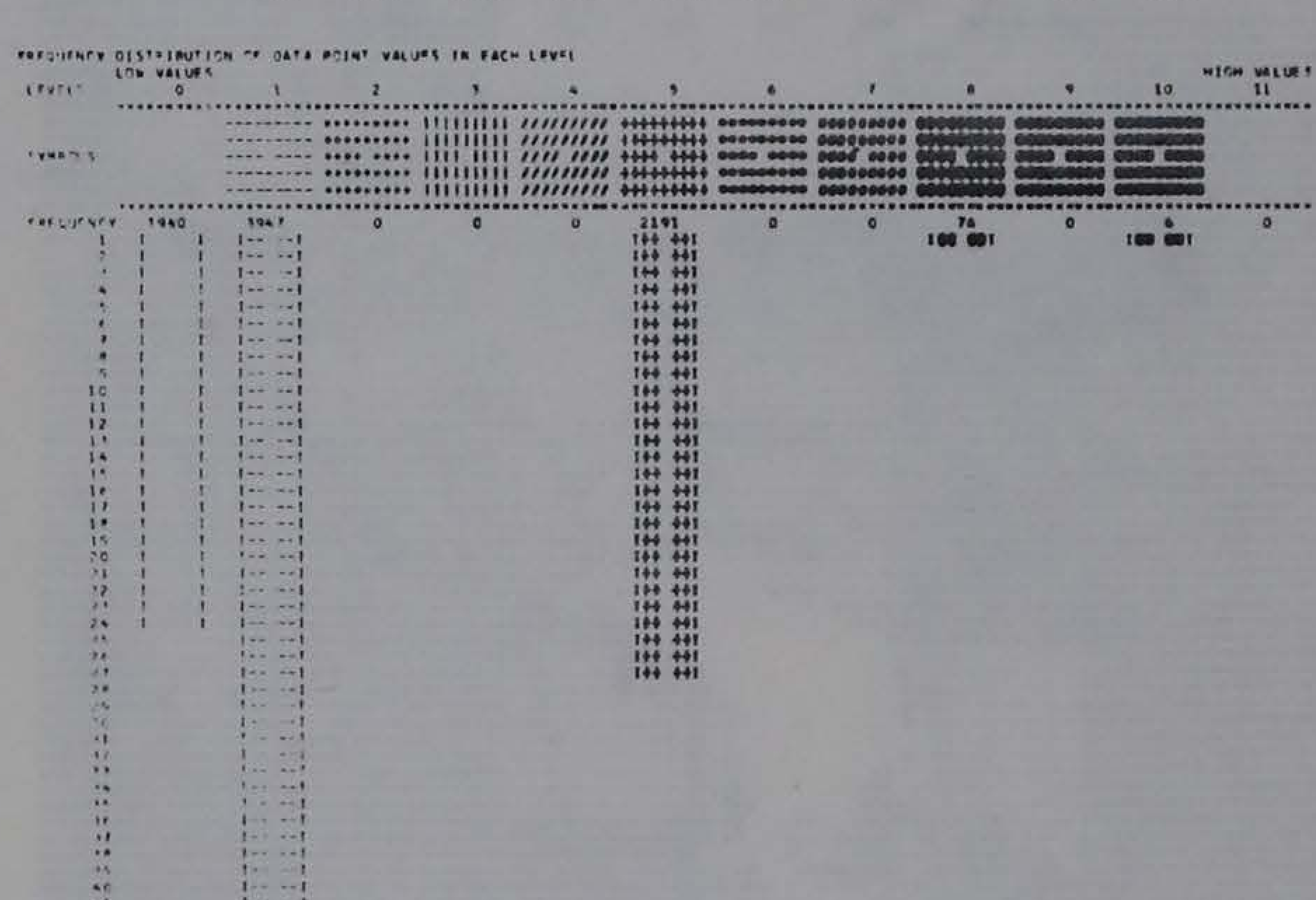
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES										HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
SYMBOLS												
FREQUENCY	1940	3947	0	0	0	2191	0	0	76	0	6	0



HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10868

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

```
         VU4199  WT  1  VU4399  WT  5  VU4499  WT  8  VU6099  WT  1  VU6199  WT  5
[illegible] WT  8  VU6199  WT  1  VU6499  WT  5  VU6599  WT  5  VU6699  WT  5
[illegible] WT  1  VU7199  WT  8  VU7299  WT 10  VU7399  WT  1  VU7499  WT  5
[illegible] WT  1  [illegible] WT  5  VU8799  WT  5  VU9399  WT  1  VU9599  WT  5
[illegible] WT  1  [illegible]
```

VARIABLE CLASS # 24 IMPORTANCE FACTOR 10

```
         VU4199  WT  1  VU4399  WT  5  VU4499  WT  8  VU6099  WT  1  VU6199  WT  5
[illegible] WT  8  VU6199  WT  1  VU6499  WT  5  VU6599  WT  5  VU6699  WT  5
[illegible] WT  1  VU7199  WT  8  VU7299  WT 10  VU7399  WT  1  VU7499  WT  5
[illegible] WT  1  [illegible] WT  5  VU9299  WT  5  VU9399  WT  1  VU9599  WT  5
[illegible] WT  1  [illegible]
```

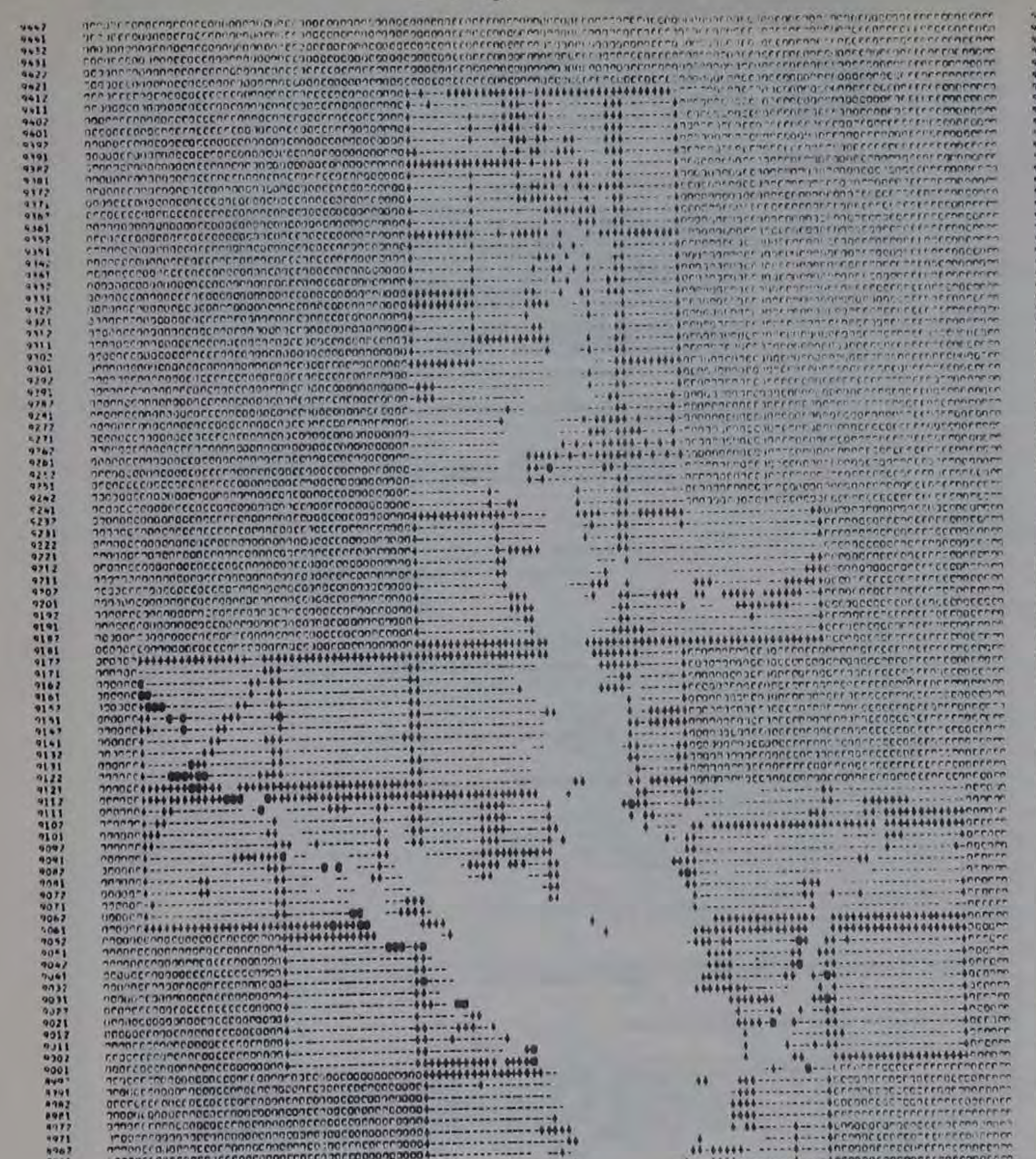


Fig. 1-1-127

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.D.STRATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.REAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUDIL, C.FAHLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, R.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

WILDLIFE POPULATION DENSITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORMS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A POPULATION DENSITY FIGURE WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT ON THE BASIS OF 1) THE EXISTING POPULATION LEVELS (THE CENSUS DATA), 2) THE HABITAT QUALITY CLASSIFICATION AND 3) AVAILABLE INFORMATION IN THE LITERATURE. ESSENTIALLY, THE POPULATION DENSITY FIGURE REFLECTS THE NUMBER OF INDIVIDUALS (OF A GIVEN SPECIES) CENSUSED AS COMPARED WITH THE NUMBER EXPECTED IN THAT HABITAT. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3,1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL R. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE #3 - AMES RESERVOIR, MINIMUM CONSERVATION POOL FOR RECREATION ONLY, ELEVATION 940.

SOURCE: FIELD STUDY, SPRING 1972.
VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 =

5 = POPULATION LOWER THAN EXPECTED FOR THAT HABITAT

6 =

7 =

8 = POPULATION OPTIMUM FOR THAT HABITAT

9 =

10 = POPULATION HIGHER THAN EXPECTED FOR THAT HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 1.87 ST. DEV. = 2.65

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
SYMBOLS		---- ----	++++ ++++	IIII IIII	//// ////	++++ ++++	●●●● ●●●●	●●●● ●●●●	■■■■ ■■■■	■■■■ ■■■■	■■■■ ■■■■	
FREQUENCY	507	4402	0	0	0	2920	0	0	113	0	22	0

```
 1   I   I   I-- --I                    I+I +I            I■ ■I      I■ ■I
 2   I   I   I-- --I                    I+I +I            I■ ■I
 3   I   I   I-- --I                    I+I +I            I■ ■I
 4   I   I   I-- --I                    I+I +I
 5   I   I   I-- --I                    I+I +I
 6   I   I   I-- --I                    I+I +I
 7   I   I   I-- --I                    I+I +I
 8           I-- --I                    I+I +I
 9           I-- --I                    I+I +I
10           I-- --I                    I+I +I
11           I-- --I                    I+I +I
12           I-- --I                    I+I +I
13           I-- --I                    I+I +I
14           I-- --I                    I+I +I
15           I-- --I                    I+I +I
16           I-- --I                    I+I +I
17           I-- --I                    I+I +I
18           I-- --I                    I+I +I
19           I-- --I                    I+I +I
20           I-- --I                    I+I +I
21           I-- --I                    I+I +I
22           I-- --I                    I+I +I
23           I-- --I                    I+I +I
24           I-- --I                    I+I +I
25           I-- --I                    I+I +I
26           I-- --I                    I+I +I
27           I-- --I                    I+I +I
28           I-- --I                    I+I +I
29           I-- --I                    I+I +I
30           I-- --I                    I+I +I
31           I-- --I                    I+I +I
32           I-- --I                    I+I +I
33           I-- --I                    I+I +I
34           I-- --I                    I+I +I
35           I-- --I                    I+I +I
36           I-- --I                    I+I +I
37           I-- --I
38           I-- --I
39           I-- --I
40           I-- --I
41           I-- --I
42           I-- --I
43           I-- --I
44           I-- --I
45           I-- --I
46           I-- --I
47           I-- --I
48           I-- --I
49           I-- --I
50           I-- --I
51           I-- --I
52           I-- --I
53           I-- --I
54           I-- --I
55           I-- --I
56           I-- --I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

```
         VU4199  WT  1   VU4999  WT  5   VU6099  WT  8   VU6099  WT  1   VU6199  WT  5
VU6299  WT  8   VU6399  WT  1   VU6499  WT  5   VU6599  WT  5   VU6699  WT  5
VU7099  WT  1   VU7199  WT  8   VU7299  WT 10   VU7399  WT  1   VU7499  WT  5
VU9099  WT  1   VU9199  WT  5   VU9299  WT  5   VU9999  WT  1   VU9599  WT  5
VU9999  WT  1   VU
```

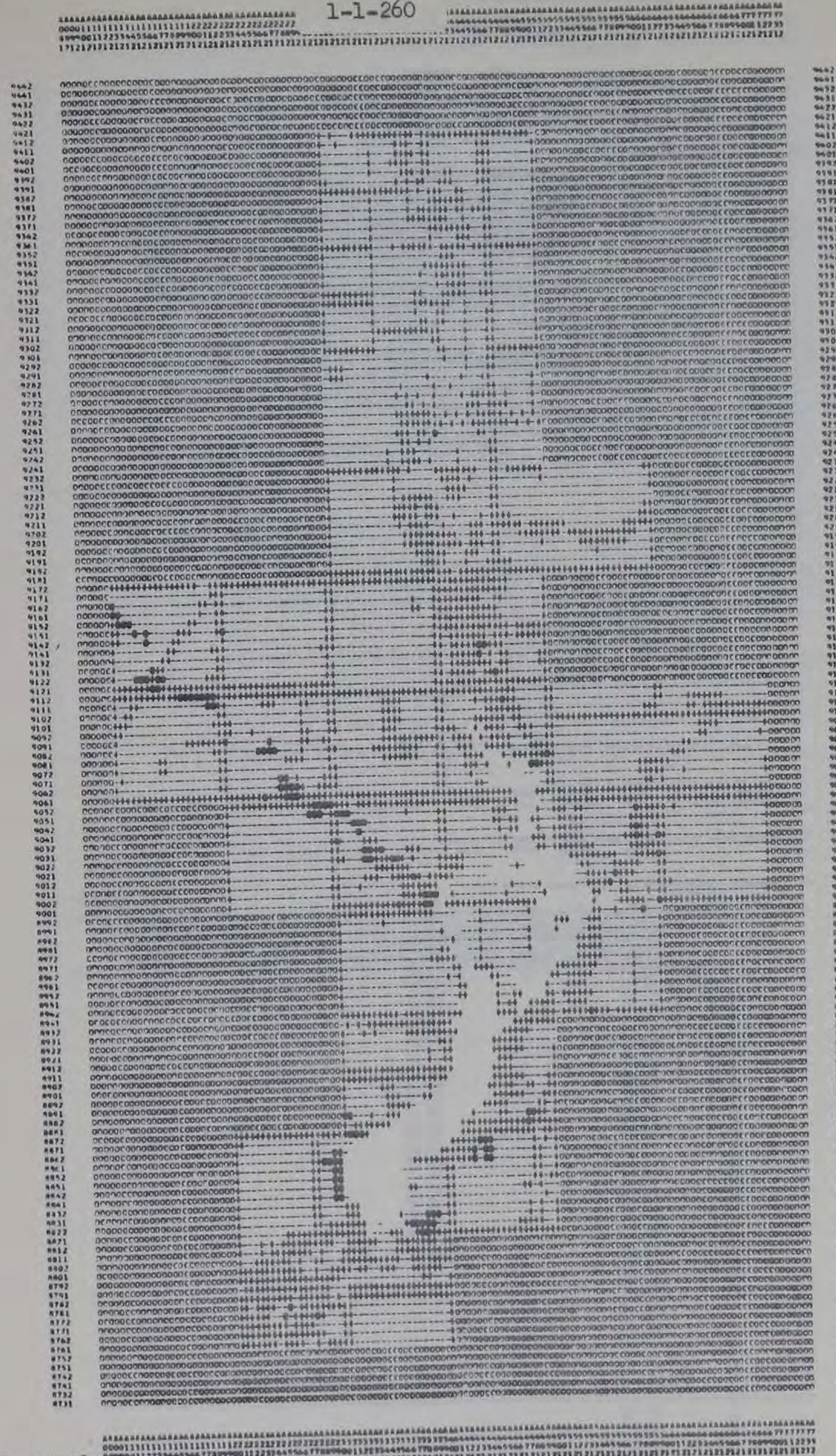


Fig. 1-1-128

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOW
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOW

1-1-261

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, B.PUDIL, D.FARLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.HENRY
GRAPHICS C.J.URBAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, R.MCEPPNER, D.ALLEN, D.PERNELIUS, D.MILLS

WILDLIFE POPULATION DENSITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDERS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A POPULATION DENSITY FIGURE WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT ON THE BASIS OF 1) THE EXISTING POPULATION LEVELS (THE CENSUS DATA), 2) THE HABITAT QUALITY CLASSIFICATION AND 3) AVAILABLE INFORMATION IN THE LITERATURE. ESSENTIALLY, THE POPULATION DENSITY FIGURE REFLECTS THE NUMBER OF INDIVIDUALS (OF A GIVEN SPECIES) CENSUSED AS COMPARED WITH THE NUMBER EXPECTED IN THAT HABITAT. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 3,1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL K. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE 4A - MINIMUM CONSERVATION POOL, LIMITED FLOOD CONTROL STORAGE OF 3.6 INCHES AND SUBIMPOUNDMENTS.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 940
FLOOD POOL, ELEVATION 965
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCE: FIELD STUDY, SPRING 1972.
VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 =

5 = POPULATION LOWER THAN EXPECTED FOR THAT HABITAT

6 =

7 =

8 = POPULATION OPTIMUM FOR THAT HABITAT

9 =

10 = POPULATION HIGHER THAN EXPECTED FOR THAT HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.91 ST. DEV. = 4.99

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
          LOW VALUES                                                                          HIGH VALUES
LEVELS        0         1         2         3         4         5         6         7         8         9        10        11
          ****************************************************************************************************************
SYMBOLS
          ****************************************************************************************************************
FREQUENCY   1926      4270        0         0         0       2462        0         0        93         0         9         0
     1    I    I    I-- --I                               I$$ $$I                       I## ##I             I## ##I
     2    I    I    I-- --I                               I$$ $$I                       I## ##I
     3    I    I    I-- --I                               I$$ $$I
     4    I    I    I-- --I                               I$$ $$I
     5    I    I    I-- --I                               I$$ $$I
     6    I    I    I-- --I                               I$$ $$I
     7    I    I    I-- --I                               I$$ $$I
     8    I    I    I-- --I                               I$$ $$I
     9    I    I    I-- --I                               I$$ $$I
    10    I    I    I-- --I                               I$$ $$I
    11    I    I    I-- --I                               I$$ $$I
    12    I    I    I-- --I                               I$$ $$I
    13    I    I    I-- --I                               I$$ $$I
    14    I    I    I-- --I                               I$$ $$I
    15    I    I    I-- --I                               I$$ $$I
    16    I    I    I-- --I                               I$$ $$I
    17    I    I    I-- --I                               I$$ $$I
    18              I-- --I                               I$$ $$I
    19              I-- --I                               I$$ $$I
    20              I-- --I                               I$$ $$I
    21              I-- --I                               I$$ $$I
    22              I-- --I                               I$$ $$I
    23              I-- --I                               I$$ $$I
    24              I-- --I                               I$$ $$I
    25              I-- --I                               I$$ $$I
    26              I-- --I                               I$$ $$I
    27              I-- --I                               I$$ $$I
    28              I-- --I                               I$$ $$I
    29              I-- --I                               I$$ $$I
    30              I-- --I                               I$$ $$I
    31              I-- --I                               I$$ $$I
    32              I-- --I
    33              I-- --I
    34              I-- --I
    35              I-- --I
    36              I-- --I
    37              I-- --I
    38              I-- --I
    39              I-- --I
    40              I-- --I
    41              I-- --I
    42              I-- --I
    43              I-- --I
    44              I-- --I
    45              I-- --I
    46              I-- --I
    47              I-- --I
    48              I-- --I
    49              I-- --I
    50              I-- --I
    51              I-- --I
    52              I-- --I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10640

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

	VU4199	WT	1	VU4599	WT	5	VU6499	WT	8	VU8099	WT	1	VU6199	WT 5
VU6299	WT	8	VU6599	WT	1	VU6499	WT	5	VU6999	WT	5	VU6699	WT	5
VU7099	WT	1	VU7199	WT	8	VU7299	WT	10	VU7399	WT	1	VU7499	WT	5
VU9099	WT	1	VU9199	WT	5	VU9299	WT	5	VU9399	WT	1	VU9599	WT	5

MAP 17,SHEET 1,DATA SET 1

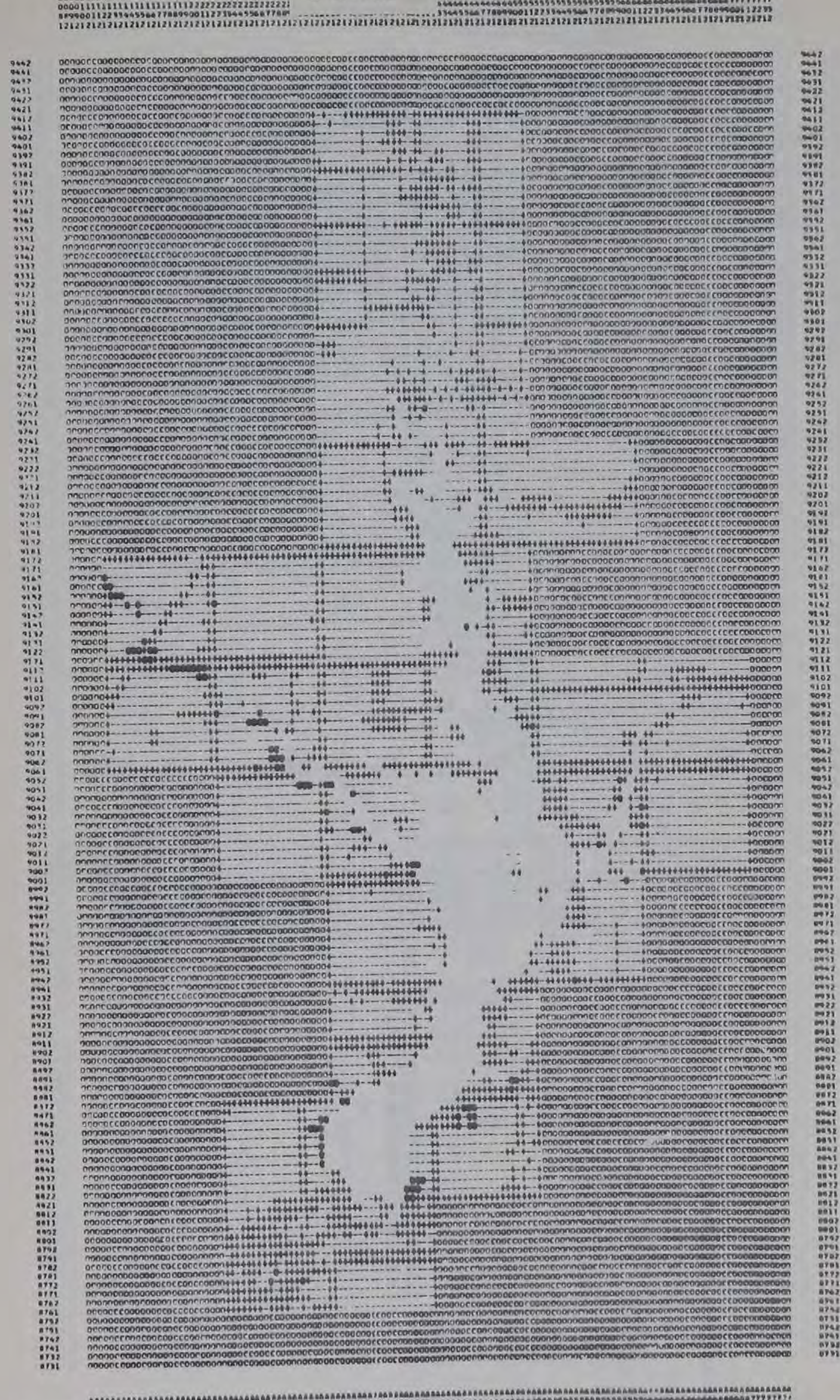


Fig. 1-1-129

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IO
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAHLANGER,
S.CECIL, C.SEYMOUR, M.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.OFFRENGER
KPT N.JONES, F.SWANSON, R.MCERPRACK, D.ALLEN, D.FERNELIUS, D.HILLS

WILDLIFE POPULATION DENSITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A POPULATION DENSITY FIGURE WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT ON THE BASIS OF 1) THE EXISTING POPULATION LEVELS (THE CENSUS DATA), 2) THE HABITAT QUALITY CLASSIFICATION AND 3) AVAILABLE INFORMATION IN THE LITERATURE. ESSENTIALLY, THE POPULATION DENSITY FIGURE REFLECTS THE NUMBER OF INDIVIDUALS (OF A GIVEN SPECIES) CENSUSED AS COMPARED WITH THE NUMBER EXPECTED IN THAT HABITAT. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 9,1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL K. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE #5 - TRIBUTARY RECREATION LAKE DEVELOPMENT ONLY.
A. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
B. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: FIELD STUDY, SPRING 1972.
VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 =

5 = POPULATION LOWER THAN EXPECTED FOR THAT HABITAT

6 =

7 =

8 = POPULATION OPTIMUM FOR THAT HABITAT

9 =

10 = POPULATION HIGHER THAN EXPECTED FOR THAT HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.57 ST. DEV. = 2.47

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
             LOW VALUES                                                                              HIGH VALUES
LEVELS          0       1        2        3        4        5        6        7        8        9        10        11
**********************************************************************************************************************
                    ---------  *********  IIIIIIIII  /////////  +++++++++  ooooooooo  000000000  @@@@@@@@@  @@@@@@@@@  @@@@@@@@@
                    ---------  *********  IIIIIIIII  /////////  +++++++++  ooooooooo  000000000  @@@@@@@@@  @@@@@@@@@  @@@@@@@@@
SYMBOLS             ---- ----  **** ****  IIII IIII  //// ////  ++++ ++++  oooo oooo  0000 0000  @@@@ @@@@  @@@@ @@@@  @@@@ @@@@
                    ---------  *********  IIIIIIIII  /////////  +++++++++  ooooooooo  000000000  @@@@@@@@@  @@@@@@@@@  @@@@@@@@@
                    ---------  *********  IIIIIIIII  /////////  +++++++++  ooooooooo  000000000  @@@@@@@@@  @@@@@@@@@  @@@@@@@@@
**********************************************************************************************************************
FREQUENCY      57     4730       0        0        0      3301       0        0      114        0        77         0
      1      I  I   I-- --I                           I++ ++I                    I00 00I             I00 00I
      2      '  I   I-- --I                           I++ ++I                    I00 00I
      3             I-- --I                           I++ ++I
      4             I-- --I                           I++ ++I
      5             I-- --I                           I++ ++I
      6             I-- --I                           I++ ++I
      7             I-- --I                           I++ ++I
      8             I-- --I                           I++ ++I
      9             I-- --I                           I++ ++I
     10             I-- --I                           I++ ++I
     11             I-- --I                           I++ ++I
     12             I-- --I                           I++ ++I
     13             I-- --I                           I++ ++I
     14             I-- --I                           I++ ++I
     15             I-- --I                           I++ ++I
     16             I-- --I                           I++ ++I
     17             I-- --I                           I++ ++I
     18             I-- --I                           I++ ++I
     19             I-- --I                           I++ ++I
     20             I-- --I                           I++ ++I
     21             I-- --I                           I++ ++I
     22             I-- --I                           I++ ++I
     23             I-- --I                           I++ ++I
     24             I-- --I                           I++ ++I
     25             I-- --I                           I++ ++I
     26             I-- --I                           I++ ++I
     27             I-- --I                           I++ ++I
     28             I-- --I                           I++ ++I
     29             I-- --I                           I++ ++I
     30             I-- --I                           I++ ++I
     31             I-- --I                           I++ ++I
     32             I-- --I                           I++ ++I
     33             I-- --I                           I++ ++I
     34             I-- --I                           I++ ++I
     35             I-- --I                           I++ ++I
     36             I-- --I                           I++ ++I
     37             I-- --I                           I++ ++I
     38             I-- --I                           I++ ++I
     39             I-- --I                           I++ ++I
     40             I-- --I                           I++ ++I
     41             I-- --I
     42             I-- --I
     43             I-- --I
     44             I-- --I
     45             I-- --I
     46             I-- --I
     47             I-- --I
     48             I-- --I
     49             I-- --I
     50             I-- --I
     51             I-- --I
     52             I-- --I
     53             I-- --I
     54             I-- --I
     55             I-- --I
     56             I-- --I
     57             I-- --I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10844

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

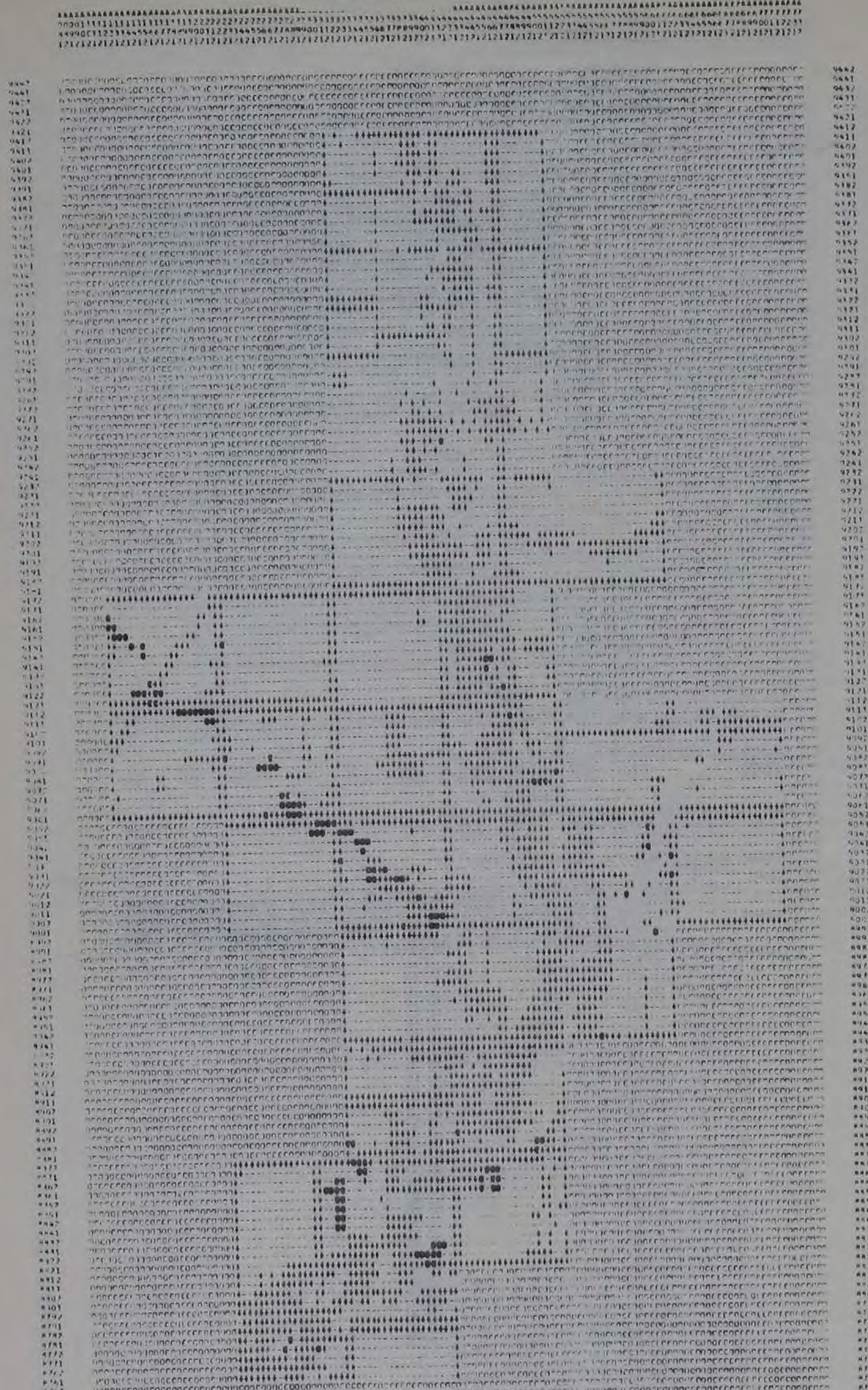


Fig. 1-1-130

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-265

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAXLANGER,
S.CECIL, D.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.UBAN, D.DEPRENGER
KPC N.JONES, F.SWANSON, R.HOEPPNER, D.ALLEN, C.FERNELIUS, D.HILLS

WILDLIFE POPULATION DENSITY - RACCOON

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORMS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A POPULATION DENSITY FIGURE WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT ON THE BASIS OF 1) THE EXISTING POPULATION LEVELS (THE CENSUS DATA), 2) THE HABITAT QUALITY CLASSIFICATION AND 3) AVAILABLE INFORMATION IN THE LITERATURE. ESSENTIALLY, THE POPULATION DENSITY FIGURE REFLECTS THE NUMBER OF INDIVIDUALS (OF A GIVEN SPECIES) CENSUSED AS COMPARED WITH THE NUMBER EXPECTED IN THAT HABITAT. VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

THE FIELD WORK WAS CONDUCTED FROM APRIL 7,1972 THROUGH APRIL 28, 1972 BY THE SPRING QUARTER WILDLIFE MANAGEMENT TECHNIQUES CLASS AT IOWA STATE UNIVERSITY UNDER THE DIRECTION OF DR. MICHAEL K. PETERSEN, ASSISTANT PROFESSOR.

FOR PURPOSES OF DEMONSTRATION THE RACCOON IS USED HERE.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCE: FIELD STUDY, SPRING 1972.
VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 =

5 = POPULATION LOWER THAN EXPECTED FOR THAT HABITAT

6 =

7 =

8 = POPULATION OPTIMUM FOR THAT HABITAT

9 =

10 = POPULATION HIGHER THAN EXPECTED FOR THAT HABITAT

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.73 ST. DEV. = 2.08

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

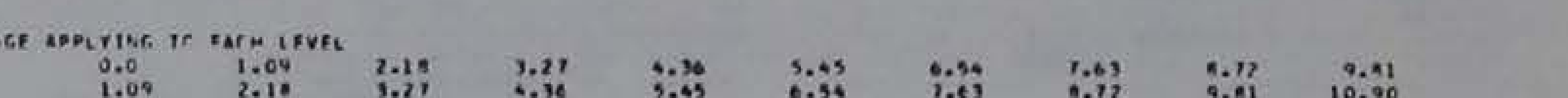
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

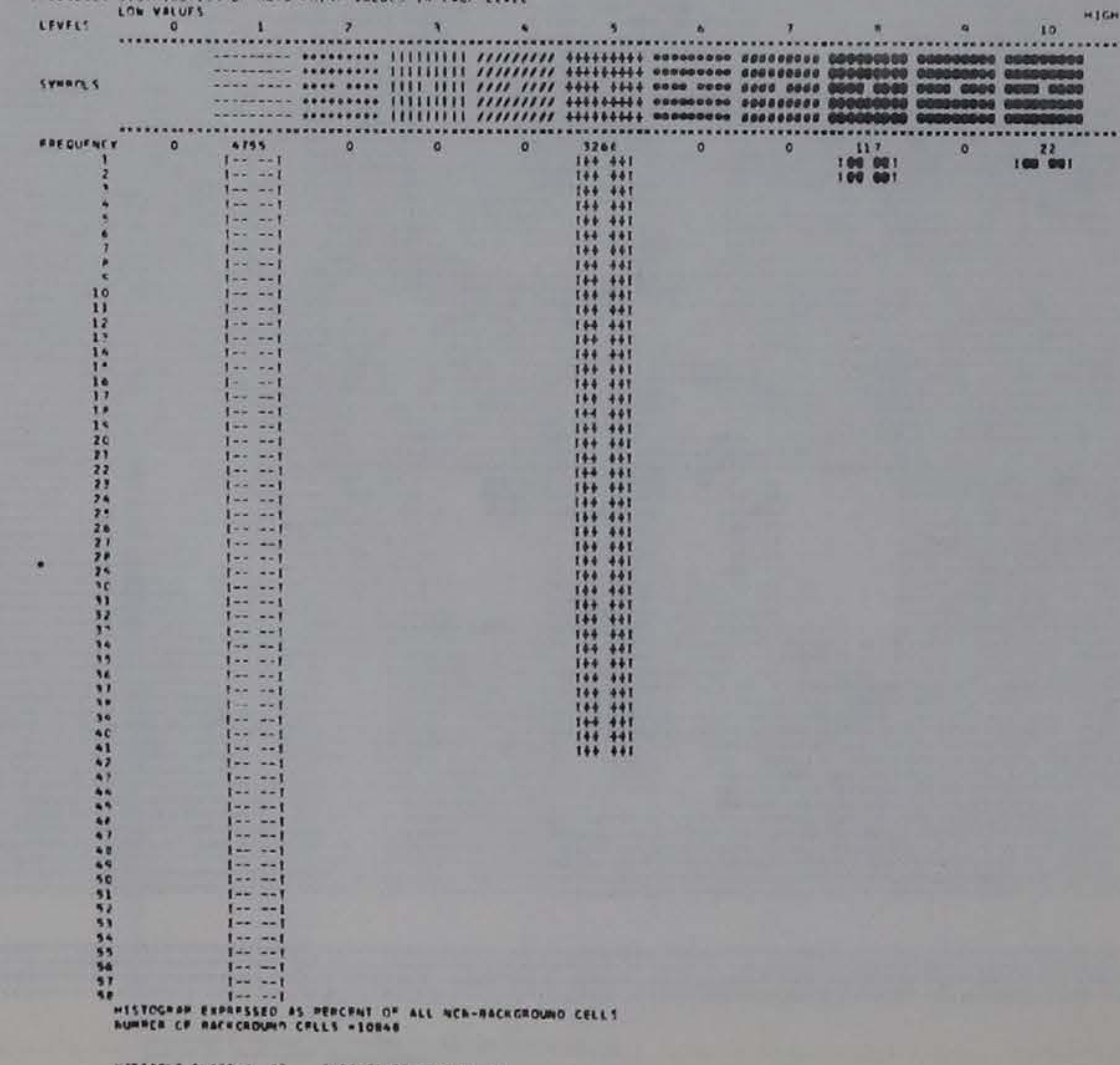
PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	LOW VALUES 0	1	2	3	4	5	6	7	8	9	10	HIGH VALUES 11
SYMBOLS												
FREQUENCY	0	4755	0	0	0	3266	0	0	117	0	22	0





HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10848

VARIABLE CLASS # 23 IMPORTANCE FACTOR 10

			VU4199	WT	1	VU4399	WT	5	VU4499	WT	8	VU6099	WT 1 VUF199 WT 5
VU6299	WT	8	VU6399	WT	1	VU6499	WT	5	VU6599	WT	5	VU6699	WT 5
VU7099	WT	1	VU7199	WT	8	VU7299	WT	10	VU7399	WT	1	VU7499	WT 5
[illegible]	WT	1	[illegible]	WT	[illegible]	[illegible]	WT	[illegible]	[illegible]	WT	[illegible]	[illegible]	WT [illegible]

1-1-266

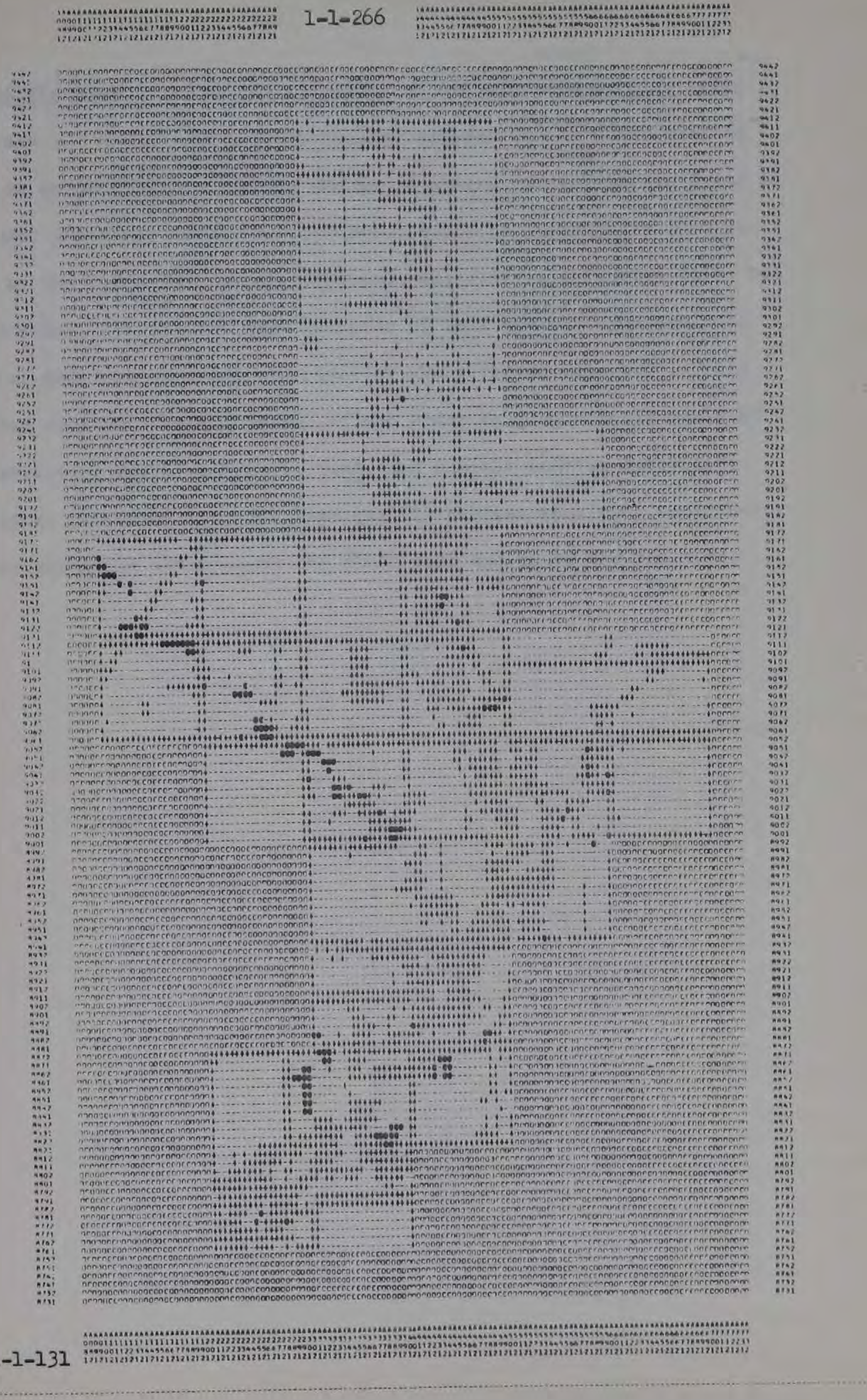


Fig. 1-1-131

Wildlife habitat quality - composite of all wildlife species (Fig. 1-1-132 and 1-1-133). The highest quality habitat in the study area is located on or near the floodplain and is indicated by gray levels 8 and 10. Of the 3660 acres now existing, 1970 acres would be perminantly lost or changed by the flood pool of the proposed reservoir (Alternative #1). But more important, the present wide corridor of this habitat type would be severed at many places along the river by the proposed reservoir. This would mean that the "travel lanes" of the wider ranging animals would be cut, restricting their migratory, food, and shelter seeking activities. The greatest percentage of this high quality habitat remaining would occur primarily along the river above the flood pool and below the dam site.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-268

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS   J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION   J.C.TAGGART, T.SHUCK, A.PUCIL, D.PARLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS   C.J.UBAN, O.DEPRENGER
KPC N.JONES, B.SWANSON, R.POEPPNER, D.ALLEN, C.FERNELIUS, D.HILLS

WILDLIFE HABITAT QUALITY - COMPOSITE OF ALL WILDLIFE SPECIES

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORMS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

FOR THIS MAP, THE AVERAGE HABITAT QUALITY OF ALL WILDLIFE SPECIES WITHIN EACH HABITAT TYPE WAS DETERMINED. IN THIS WAY EASY COMPARISON CAN BE MADE BETWEEN THE VARIOUS HABITAT TYPES TO SEE WHERE THE BEST QUALITY WILDLIFE HABITAT LIES WITHIN THE RESERVOIR AREA. THE AVERAGES WERE FIGURED MATHEMATICALLY BY ASSIGNING VALUES OF ONE TO FIVE FOR HABITATS DESIGNATED EXCELLENT, GOOD, FAIR, POOR, AND NON-EXISTANT RESPECTIVELY. THE AVERAGE VALUES TENDED TO BE NEAR THE MIDDLE OF THE RANGE AND, THEREFORE, A FINER BREAKDOWN WAS NEEDED TO SEPARATE THEM. THE VALUE CATEGORIES FOR THIS REASON WERE REDUCED TO A .5 RANGE. FOR EXAMPLE ALL HABITAT AVERAGES WHICH FELL BETWEEN THE VALUES OF 3.0 AND 3.5 WERE PLACED IN THE SAME CATEGORY; ANY FINER BREAKDOWN WOULD BE MEANINGLESS.

VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

ALTERNATIOVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 = FAIR TO POOR HABITAT (3.5-4.0) - PRAIRIE, JUNIPER, JUNIPER-HONEYLOCUST

5 =

6 = FAIR HABITAT (3.0-3.5) - DITCHES AND ROADSIDES, WINDBREAKS, MARSH, SHRUBS, ELM-ASH

7 =

8 = GOOD TO FAIR HABITAT (2.5-3.0) - WOODED TO CULTIVATED, WOODED TO PASTURE, OAK-HICKORY, FLOODPLAIN FOREST

9 =

10 = GOOD HABITAT (2.0-2.5) - FENCE ROWS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.08 ST. DEV. = 4.10

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
          LOW VALUES                                                                     HIGH VALUES
LEVELS      0        1        2        3        4        5        6        7        8        9        10       11
***************************************************************************************************************
                 -------- ******** IIIIIIII //////// ++++++++ 00000000 00000000 00000000 00000000 00000000
                 -------- ******** IIIIIIII //////// ++++++++ 00000000 00000000 00000000 00000000 00000000
SYMBOLS          -------- ******** IIIIIIII //////// ++++++++ 00000000 00000000 00000000 00000000 00000000
                 -------- ******** IIIIIIII //////// ++++++++ 00000000 00000000 00000000 00000000 00000000
                 -------- ******** IIIIIIII //////// ++++++++ 00000000 00000000 00000000 00000000 00000000
***************************************************************************************************************
FREQUENCY  1959     1942     0        0        103      0        1520     C        446      0        190      0
      1    I   I    I----I                     I/////I           I0000I            I0000I            I0000I
      2    I   I    I----I                     I/////I           I0000I            I0000I            I0000I
      3    I   I    I----I                                       I0000I            I0000I            I0000I
      4    I   I    I----I                                       I0000I            I0000I
      5    I   I    I----I                                       I0000I            I0000I
      6    I   I    I----I                                       I0000I            I0000I
      7    I   I    I----I                                       I0000I
      8    I   I    I----I                                       I0000I
      9    I   I    I----I                                       I0000I
     10    I   I    I----I                                       I0000I
     11    I   I    I----I                                       I0000I
     12    I   I    I----I                                       I0000I
     13    I   I    I----I                                       I0000I
     14    I   I    I----I                                       I0000I
     15    I   I    I----I                                       I0000I
     16    I   I    I----I                                       I0000I
     17    I   I    I----I                                       I0000I
     18    I   I    I----I                                       I0000I
     19    I   I    I----I                                       I0000I
     20    I   I    I----I
     21    I   I    I----I
     22    I   I    I----I
     23    I   I    I----I
     24    I   I    I----I
     25    I   I    I----I
     26             I----I
     27             I----I
     28             I----I
     29             I----I
     30             I----I
     31             I----I
     32             I----I
     33             I----I
     34             I----I
     35             I----I
     36             I----I
     37             I----I
     38             I----I
     39             I----I
     40             I----I
     41             I----I
     42             I----I
     43             I----I
     44             I----I
     45             I----I
     46             I----I
     47             I----I
     48             I----I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

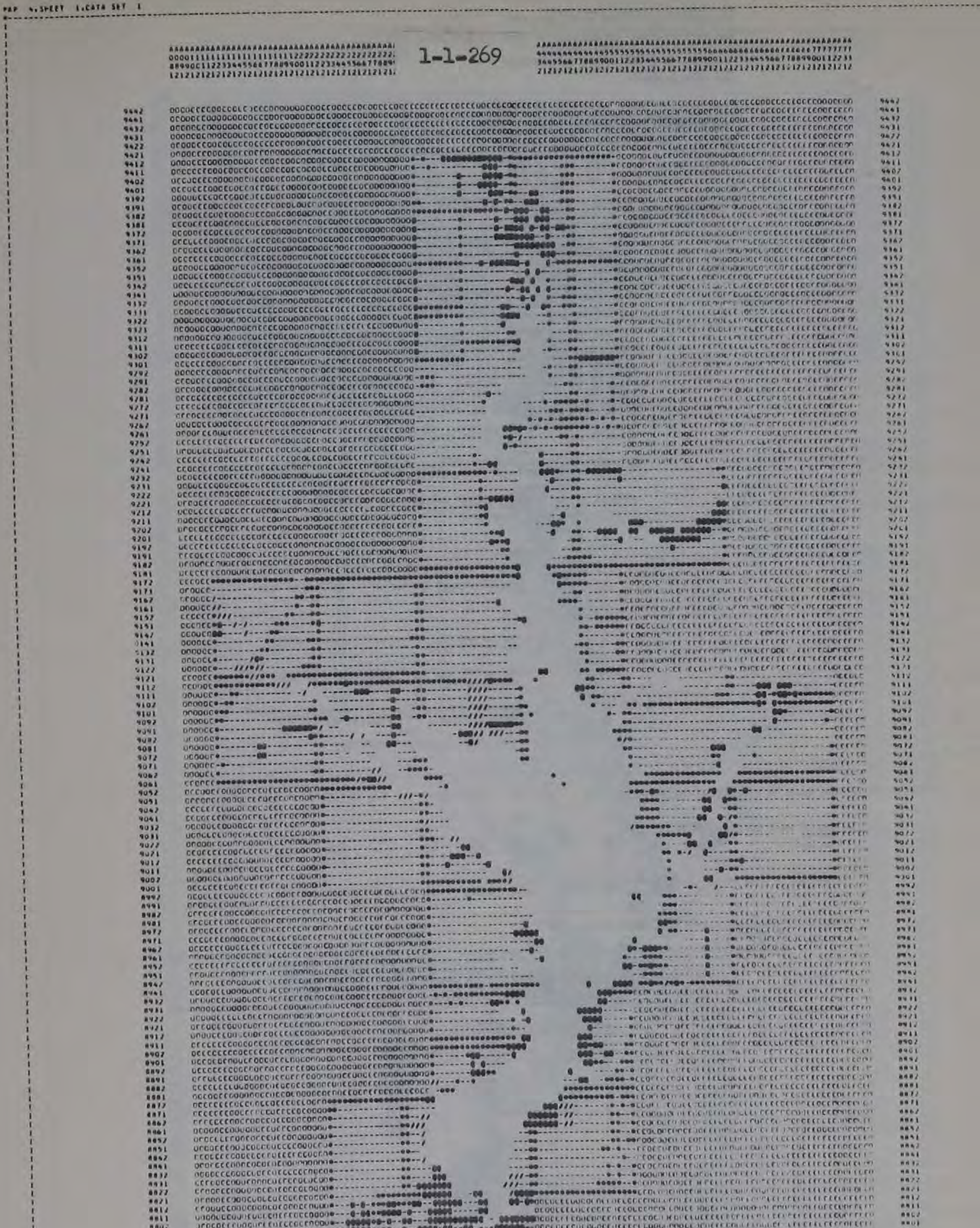


Fig. 1-1-132

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-270

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAHLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, C.KENNY
GRAPHICS C.J.URAN, D.GEPRENGER
KPC N.JONES, E.SWANSON, R.MCEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

WILDLIFE HABITAT QUALITY - COMPOSITE OF ALL WILDLIFE SPECIES

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDFORMS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

FOR THIS MAP, THE AVERAGE HABITAT QUALITY OF ALL WILDLIFE SPECIES WITHIN EACH HABITAT TYPE WAS DETERMINED. IN THIS WAY EASY COMPARISON CAN BE MADE BETWEEN THE VARIOUS HABITAT TYPES TO SEE WHERE THE BEST QUALITY WILDLIFE HABITAT LIES WITHIN THE RESERVOIR AREA. THE AVERAGES WERE FIGURED MATHEMATICALLY BY ASSIGNING VALUES OF ONE TO FIVE FOR HABITATS DESIGNATED EXCELLENT, GOOD, FAIR, POOR, AND NON-EXISTANT RESPECTIVELY. THE AVERAGE VALUES TENDED TO BE NEAR THE MIDDLE OF THE RANGE AND, THEREFORE, A FINER BREAKDOWN WAS NEEDED TO SEPERATE THEM. THE VALUE CATERGORIES FOR THIS REASON WERE REDUCED TO A .5 RANGE. FOR EXAMPLE ALL HABITAT AVERAGES WHICH FELL BETWEEN THE VALUES OF 3.0 AND 3.5 WERE PLACED IN THE SAME CATEGORY; ANY FINER BREAKDOWN WOULD BE MEANINGLESS.

VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

ALTERNATIVE 86 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 = FAIR TO POOR HABITAT (3.5-4.0) - PRAIRIE, JUNIPER, JUNIPER-HONEYLOCUST

5 =

6 = FAIR HABITAT (3.0-3.5) - DITCHES AND ROADSIDES, WINDBREAKS, MARSH, SHRUBS, ELM-ASH

7 =

8 = GOOD TO FAIR HABITAT (2.5-3.0) - WOODED TO CULTIVATED, WOODED TO PASTURE, OAK-HICKORY, FLOODPLAIN FOREST

9 =

10 = GOOD HABITAT (2.0-2.5) - FENCE ROWS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 3.44 ST. DEV. = 3.03

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
          LOW VALUES                                                                              HIGH VALUES
LEVELS        0        1        2        3        4        5        6        7        8        9       10       11
**************************************************************************************************************
                   -------- ******** IIIIIIII //////// ++++++++ oooooooo 00000000 ######## ######## ########
                   -------- ******** IIIIIIII //////// ++++++++ oooooooo 00000000 ######## ######## ########
SYMBOLS            -------- ******** IIIIIIII //////// ++++++++ oooooooo 00000000 ######## ######## ########
                   -------- ******** IIIIIIII //////// ++++++++ oooooooo 00000000 ######## ######## ########
                   -------- ******** IIIIIIII //////// ++++++++ oooooooo 00000000 ######## ######## ########
**************************************************************************************************************
FREQUENCY     0     4759        0        0      168        0     1860        0     1120        0      249        0
         1          I----I                     I////I            IooooI            I####I            I####I
         2          I----I                     I////I            IooooI            I####I            I####I
         3          I----I                     I////I            IooooI            I####I            I####I
         4          I----I                                       IooooI            I####I            I####I
         5          I----I                                       IooooI            I####I
         6          I----I                                       IooooI            I####I
         7          I----I                                       IooooI            I####I
         8          I----I                                       IooooI            I####I
         9          I----I                                       IooooI            I####I
        10          I----I                                       IooooI            I####I
        11          I----I                                       IooooI            I####I
        12          I----I                                       IooooI            I####I
        13          I----I                                       IooooI            I####I
        14          I----I                                       IooooI            I####I
        15          I----I                                       IooooI
        16          I----I                                       IooooI
        17          I----I                                       IooooI
        18          I----I                                       IooooI
        19          I----I                                       IooooI
        20          I----I                                       IooooI
        21          I----I                                       IooooI
        22          I----I                                       IooooI
        23          I----I                                       IooooI
        24          I----I
        25          I----I
        26          I----I
        27          I----I
        28          I----I
        29          I----I
        30          I----I
        31          I----I
        32          I----I
        33          I----I
        34          I----I
        35          I----I
        36          I----I
        37          I----I
        38          I----I
        39          I----I
        40          I----I
        41          I----I
        42          I----I
        43          I----I
        44          I----I
        45          I----I
        46          I----I
        47          I----I
        48          I----I
        49          I----I
        50          I----I
        51          I----I
        52          I----I
        53          I----I
        54          I----I
        55          I----I
        56          I----I
```

1-1-271

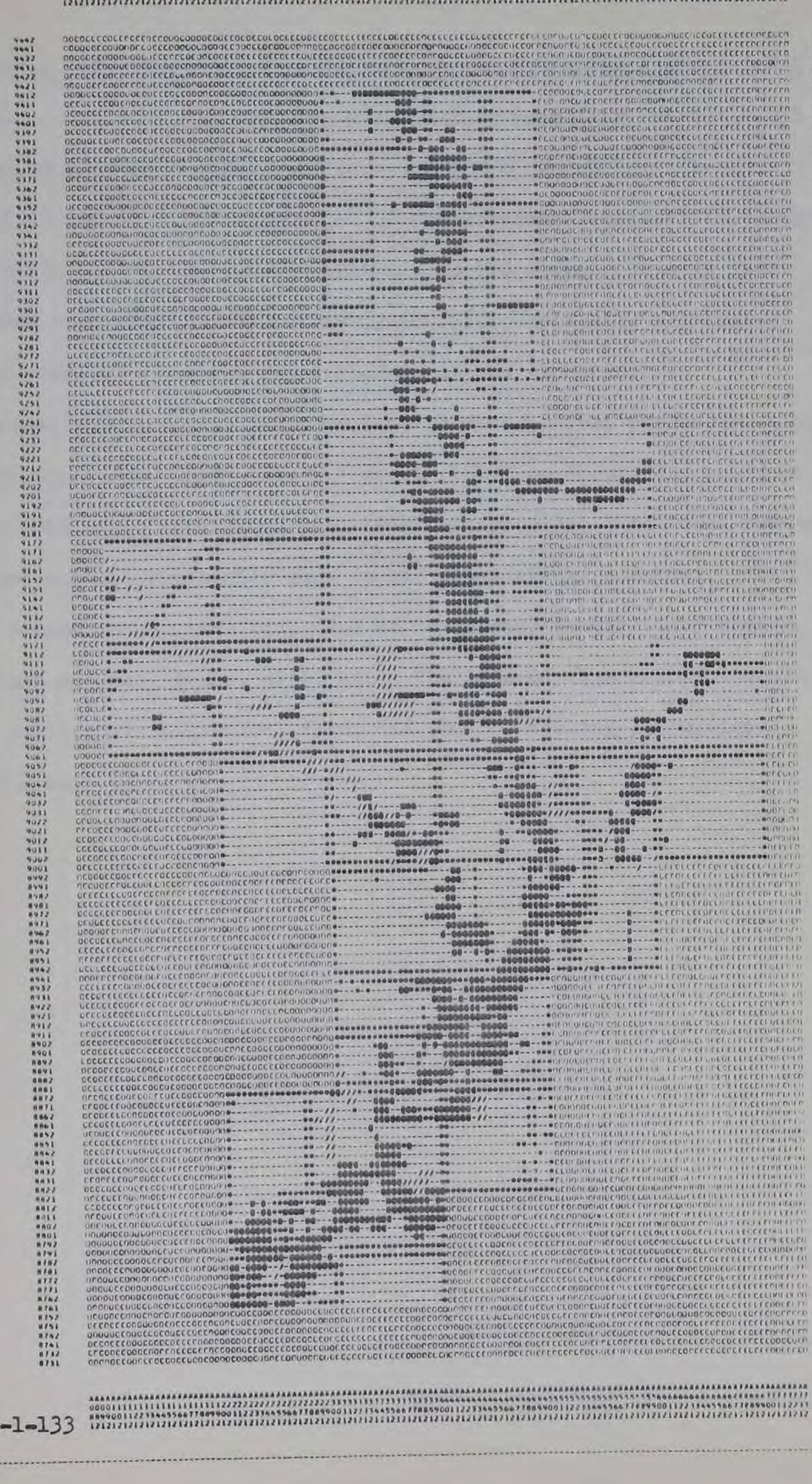


Fig. 1-1-133

<u>Wildlife habitat quality - composite of all mammalian species</u> (Fig. 1-1-134 and 1-1-135). The existing high quality mammalian habitat (1155 acres) occurs primarily along the river and creeks which is indicated by gray levels 8 and 10. The flood pool of the proposed reservoir (Alternative #1) would reduce the amount remaining to 950 acres. This is important in that this habitat, after inundation, is essentially eliminated between the dam site and the upper reaches of the flood pool.

From the 6900 acres of fair and fair to poor habitat presently existing in the study area (gray levels 4 and 6) 1840, or about 27%, would be lost by inundation of the flood pool (Alternative #1). This loss, however would leave several noticeable gaps in the vegetational corridor. This corridor serves as a travel lane (due to its cover) to the wider ranging mammals such as deer, foxes, mink, etc. The loss of this corridor would severely limit their migration, food, and shelter-seeking activities in the study area.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.W.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.PARLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.URAN, D.DEPPEAGER
RPC N.JONES, E.SWANSON, R.HEPPNER, D.ALLEN, C.PERNELLIS, D.HILLS

WILDLIFE HABITAT QUALITY - COMPOSITE OF ALL MAMMALIAN SPECIES

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDUSE) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

FOR THIS MAP, THE AVERAGE HABITAT QUALITY OF ALL MAMMALIAN SPECIES WITHIN EACH HABITAT TYPE WAS DETERMINED. IN THIS WAY EASY COMPARISON CAN BE MADE BETWEEN THE VARIOUS HABITAT TYPES TO SEE WHERE THE BEST QUALITY MAMMALIAN HABITAT LIES WITHIN THE RESERVOIR AREA. THE AVERAGES WERE FIGURED MATHEMATICALLY BY ASSIGNING VALUES OF ONE TO FIVE FOR HABITATS DESIGNATED EXCELLENT, GOOD, FAIR, POOR, AND NON-EXISTANT RESPECTIVELY. THE AVERAGE VALUES TENDED TO BE NEAR THE MIDDLE OF THE RANGE AND, THEREFORE, A FINER BREAKDOWN WAS NEEDED TO SEPERATE THEM. THE VALUE CATERGORIES FOR THIS REASON WERE REDUCED TO A .5 RANGE. FOR EXAMPLE ALL HABITAT AVERAGES WHICH FELL BETWEEN THE VALUES OF 3.0 AND 3.5 WERE PLACED IN THE SAME CATEGORY; ANY FINER BREAKDOWN WOULD BE MEANINGLESS.

VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 = FAIR TO POOR HABITAT (3.5-4.0) - JUNIPER, PRAIRIE, WINDBREAKS, JUNIPER-HONEYLOCUST, MARSH, DITCHES AND ROADSIDES.

5 =

6 = FAIR HABITAT (3.0-3.5) - SHRUB, OAK-HICKORY, ELM-ASH, WOODED TO CULTIVATED.

7 =

8 = GOOD TO FAIR HABITAT (2.5-3.0) - FLOODPLAIN FOREST, WOODED TO PASTURE.

9 =

10 = GOOD HABITAT (2.0-2.5) - FENCE ROWS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = -0.51 ST. DEV. = 1.45

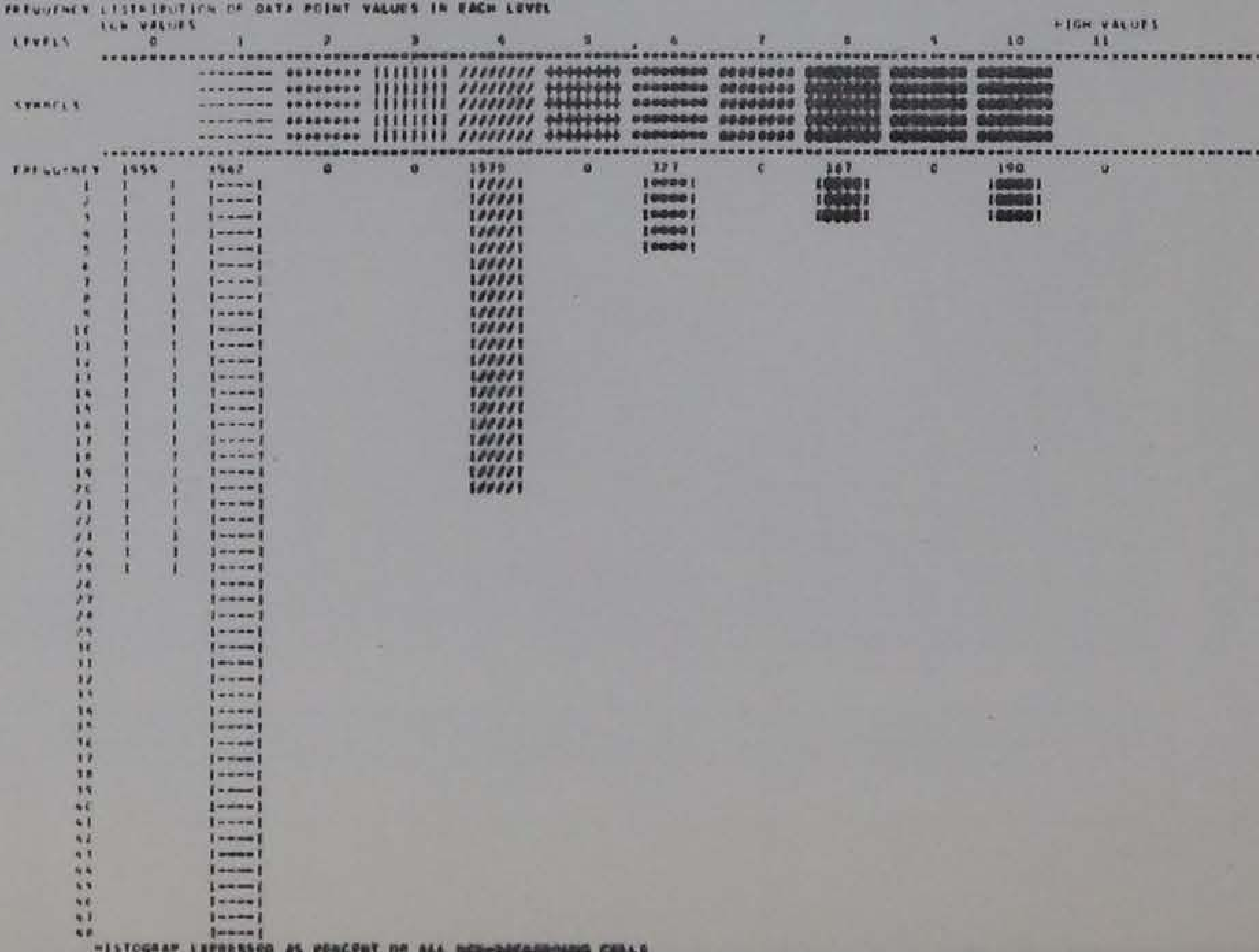
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL



LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
FREQUENCY	1555	1562	0	0	1575	0	327	0	107	0	190	0

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS

MAP 1,SHEET 1,DATA SET 1

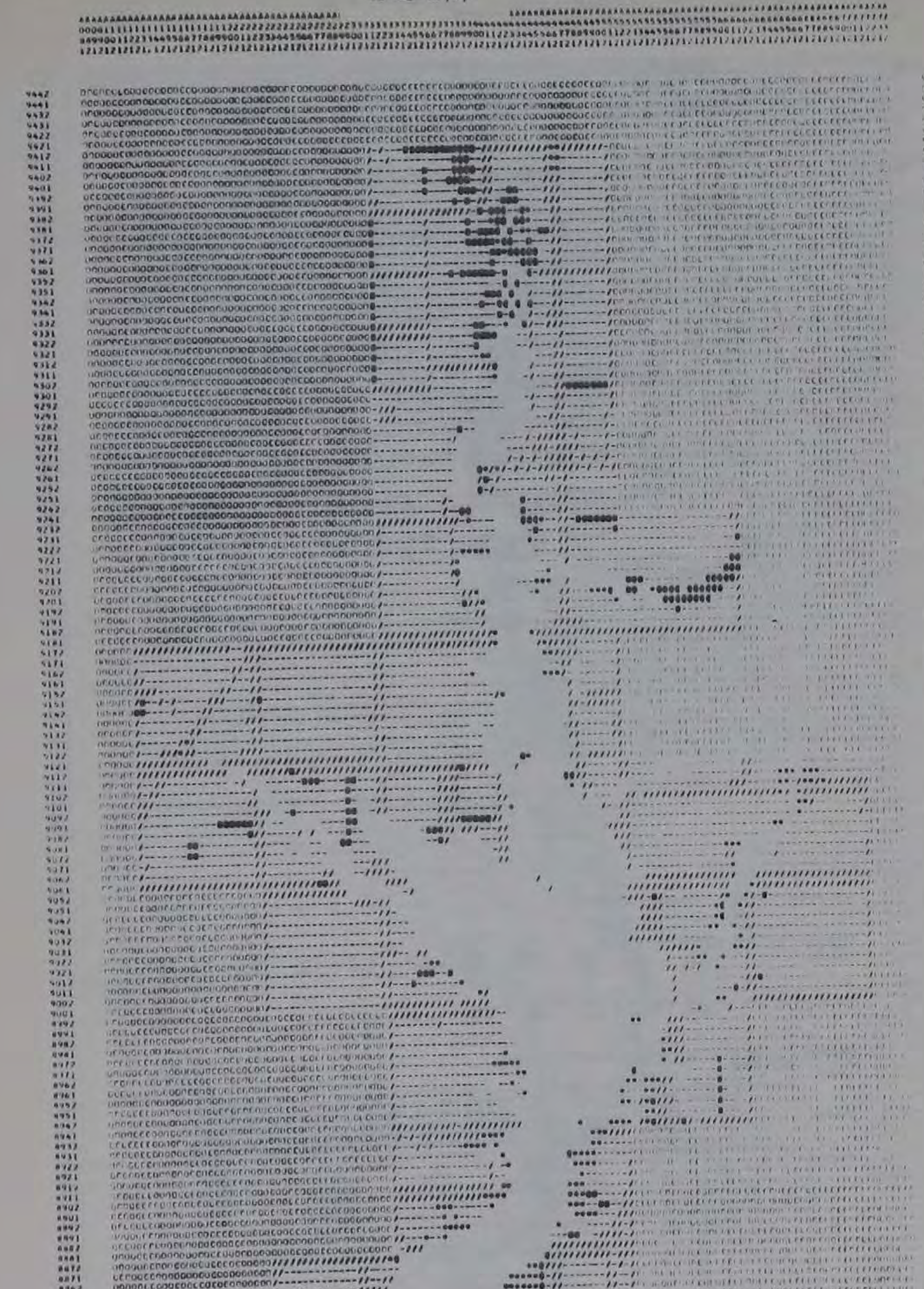


Fig. 1-1-134

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

1-1-275

PREPARED BY IOWA LAND USE ANALYSIS LABORATO
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.R.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAXLANGER, S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.UBAN, D.DEPRENGER
KPC N.JONES, B.SWANSON, R.MCEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

WILDLIFE HABITAT QUALITY - COMPOSITE OF ALL MAMMALIAN SPECIES

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDUSE) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

FOR THIS MAP, THE AVERAGE HABITAT QUALITY OF ALL MAMMALIAN SPECIES WITHIN EACH HABITAT TYPE WAS DETERMINED. IN THIS WAY EASY COMPARISON CAN BE MADE BETWEEN THE VARIOUS HABITAT TYPES TO SEE WHERE THE BEST QUALITY MAMMALIAN HABITAT LIES WITHIN THE RESERVOIR AREA. THE AVERAGES WERE FIGURED MATHEMATICALLY BY ASSIGNING VALUES OF ONE TO FIVE FOR HABITATS DESIGNATED EXCELLENT, GOOD, FAIR, POOR, AND NON-EXISTANT RESPECTIVELY. THE AVERAGE VALUES TENDED TO BE NEAR THE MIDDLE OF THE RANGE AND, THEREFORE, A FINER BREAKDOWN WAS NEEDED TO SEPERATE THEM. THE VALUE CATEGORIES FOR THIS REASON WERE REDUCED TO A .5 RANGE. FOR EXAMPLE ALL HABITAT AVERAGES WHICH FELL BETWEEN THE VALUES OF 3.0 AND 3.5 WERE PLACED IN THE SAME CATEGORY; ANY FINER BREAKDOWN WOULD BE MEANINGLESS.

VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS, ESSENTIALLY EXISTING CONDITIONS.

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 =

4 = FAIR TO POOR HABITAT (3.5-4.0) - JUNIPER, PRAIRIE, WINDBREAKS, JUNIPER-HONEYLOCUST, MARSH, DITCHES AND ROADSIDES.

5 =

6 = FAIR HABITAT (3.0-3.5) - SHRUB, OAK-HICKORY, ELM-ASH, WOODED TO CULTIVATED.

7 =

8 = GOOD TO FAIR HABITAT (2.5-3.0) - FLOODPLAIN FOREST, WOODED TO PASTURE.

9 =

10 = GOOD HABITAT (2.0-2.5) - FENCE ROWS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 2.88 ST. DEV. = 2.55

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

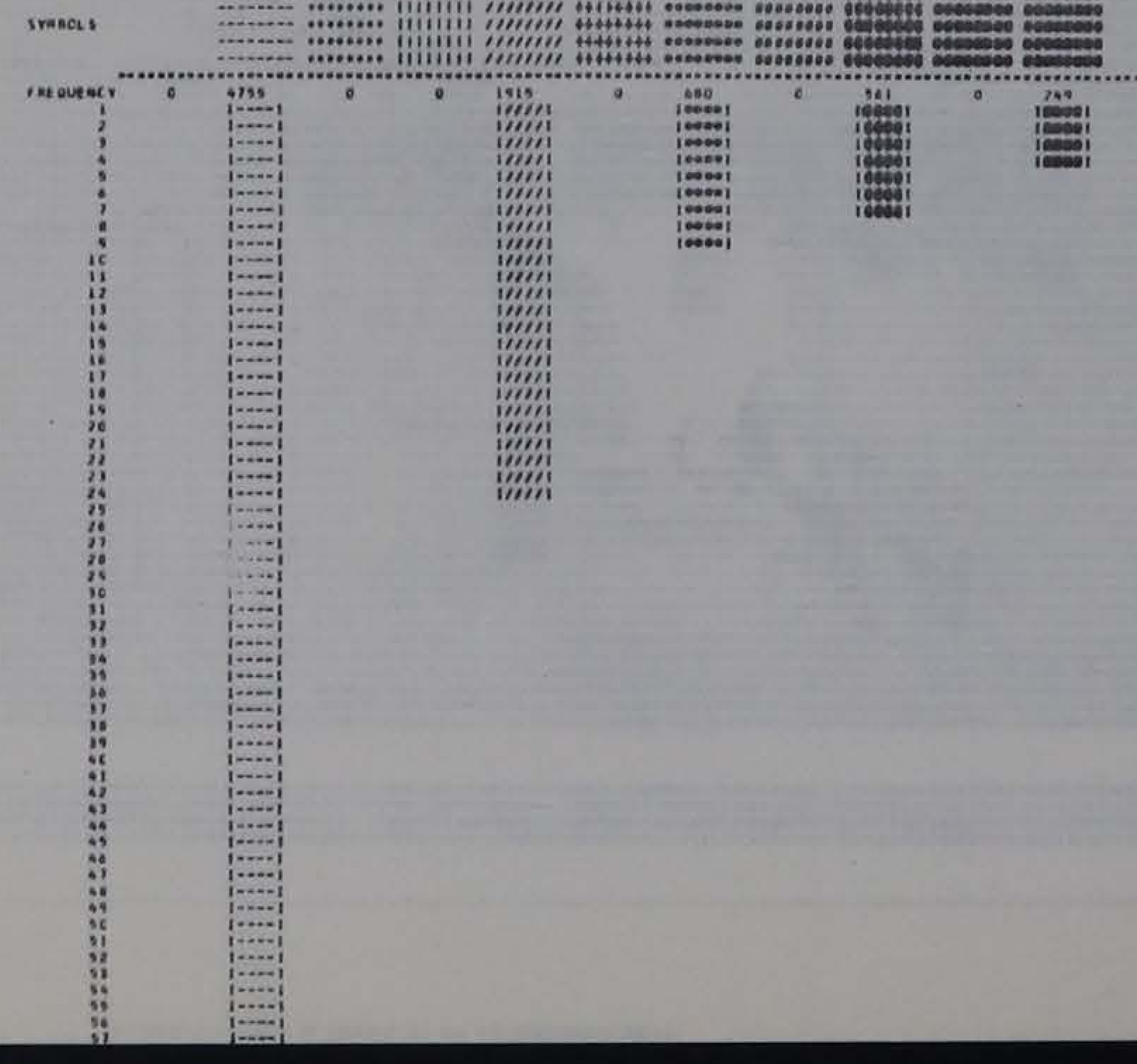
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	LOW VALUES										HIGH VALUES
LEVELS	0	1	2	3	4	5	6	7	8	9	10	11
SYMBOLS											
FREQUENCY	0	4755	0	0	1915	0	680	0	561	0	249	0



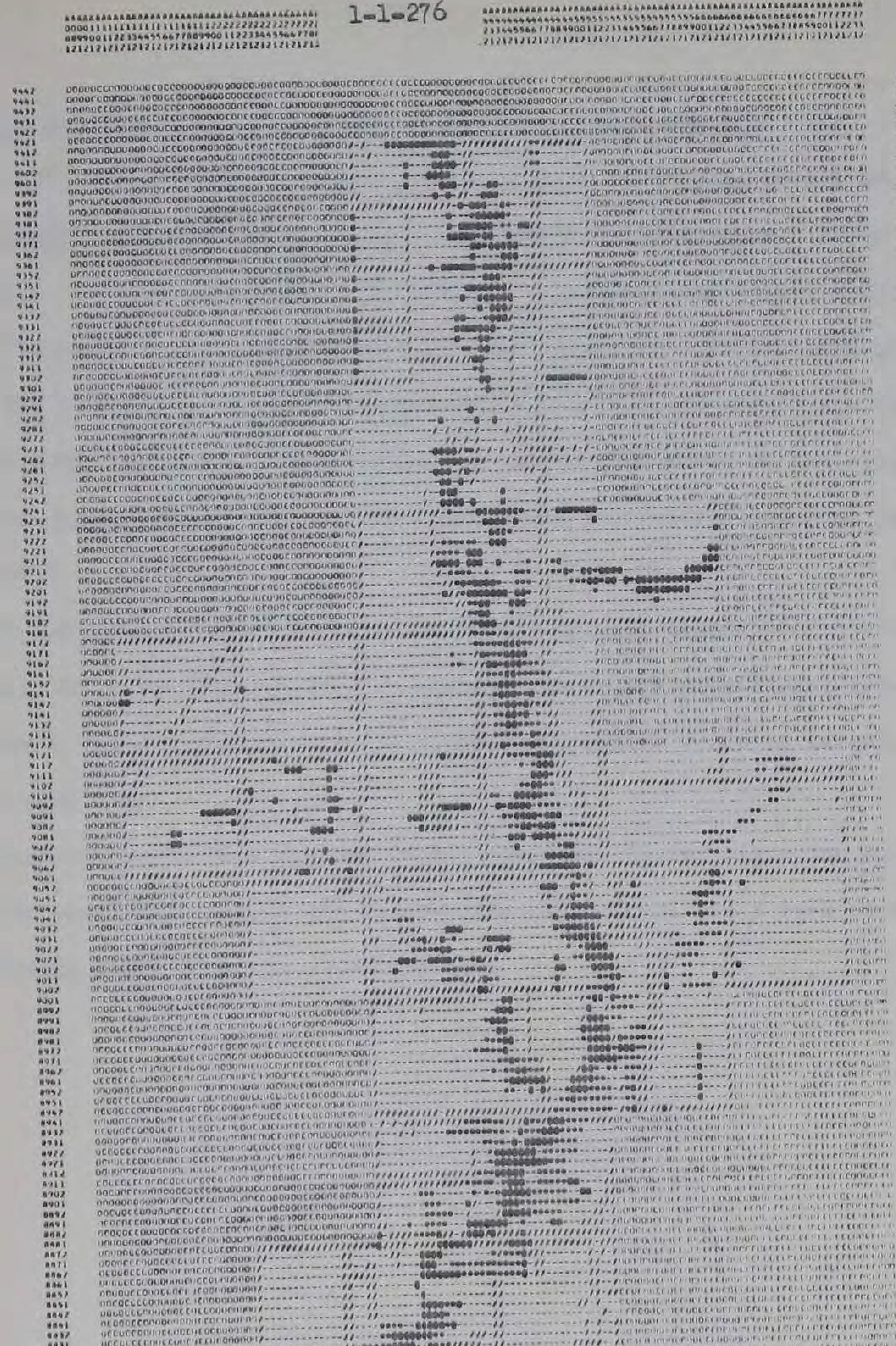


Fig. 1-1-135

Wildlife habitat quality - composite of all bird species (Fig. 1-1-136 and 1-1-137). The majority of the better bird habitat (gray levels 9 and 10) is associated with the floodplain and comprises 3830 acres. After inundation by the flood pool of the proposed reservoir (Alternative #1) about 1780 acres of this good habitat would remain, or a little less than half. The lower quality habitat types (gray levels 3, 5, and 8) are not as severely affected as the better habitats. About 4230 acres of the original 5220 acres would remain after inundation by the reservoir flood pool (elevation 976).

The remaining habitat types would be fairly well distributed throughout the study area (Fig. 1-1-136). However, there are significant gaps in the natural vegetation along the flood pool edge which would be largely void of bird life.

Waterfowl would be attracted to the reservoir during migration but would not nest there due to the fluctuating water level and a lack of suitable nesting cover near the lake margins.

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOWA
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOWA

PREPARED BY IOWA LAND USE ANALYSIS LABORATORY
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSCH
PROGRAMMER-ANALYST G.M.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FAXLANGER,
S.CECIL, C.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.UBAN, D.DEPRENGER
KPC N.JONES, E.SWANSON, A.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

WILDLIFE HABITAT QUALITY - COMPOSITE OF ALL BIRD SPECIES

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDUSE) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

FOR THIS MAP, THE AVERAGE HABITAT QUALITY OF ALL BIRD SPECIES WITHIN EACH HABITAT TYPE WAS DETERMINED. IN THIS WAY EASY COMPARISON CAN BE MADE BETWEEN THE VARIOUS HABITAT TYPES TO SEE WHERE THE BEST QUALITY BIRD HABITAT LIES WITHIN THE RESERVOIR AREA. THE AVERAGES WERE FIGURED MATHEMATICALLY BY ASSIGNING VALUES OF ONE TO FIVE FOR HABITATS DESIGNATED EXCELLENT, GOOD, FAIR, POOR, AND NON-EXISTANT RESPECTIVELY. THE AVERAGE VALUES TENDED TO BE NEAR THE MIDDLE OF THE RANGE AND, THEREFORE, A FINER BREAKDOWN WAS NEEDED TO SEPERATE THEM. THE VALUE CATERGORIES FOR THIS REASON WERE REDUCED TO A .5 RANGE. FOR EXAMPLE ALL HABITAT AVERAGES WHICH FELL BETWEEN THE VALUES OF 3.0 AND 3.5 WERE PLACED IN THE SAME CATEGORY; ANY FINER BREAKDOWN WOULD BE MEANINGLESS.

VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

ALTERNATIVE #1 - AMES RESERVOIR, AS PLANNED BY THE CORPS OF ENGINEERS, WITH TWO SUBIMPOUNDMENTS - DESIGN MEMO #1.
A. AMES RESERVOIR - CONSERVATION POOL, ELEVATION 950
FLOOD POOL, ELEVATION 976
B. BEAR CREEK SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 970
FLOOD POOL, ELEVATION 979
C. DAM SITE SUBIMPOUNDMENT - CONSERVATION POOL, ELEVATION 1000

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 = POOR TO NON-EXISTANT HABITAT (4.5-5.0) - PRAIRIE

4 = POOR HABITAT (4.0-4.5) - ACRE

5 = FAIR TO POOR HABITAT (3.5-4.0) - JUNIPER, JUNIPER-HONEY LOCUST

6 =

7 =

8 = FAIR HABITAT (3.0-3.5) - MARSH, DITCHES AND ROADSIDES, SHRUB, WINDBREAKS.

9 = GOOD TO FAIR HABITAT (2.5-3.0) - WOODED TO PASTURE, ELM-ASH, WOODED TO CULTIVATIC, OAK-HICKORY, FLOODPLAIN FOREST

10 = GOOD HABITAT (2.0-2.5) - FENCE ROWS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 0.36 ST. DEV. = 6.59

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

```
          LOW VALUES                                                             HIGH VALUES
LEVELS       0        1        2        3        4        5        6        7        8        9       10       11
          ***************************************************************************************************
                  -------- ++++++++ IIIIIIII //////// ######## 00000000 00000000 ######## ######## ########
                  -------- ++++++++ IIIIIIII //////// ######## 00000000 00000000 ######## ######## ########
SYMBOLS           -------- ++++++++ IIIIIIII //////// ######## 00000000 00000000 ######## ######## ########
                  -------- ++++++++ IIIIIIII //////// ######## 00000000 00000000 ######## ######## ########
                  -------- ++++++++ IIIIIIII //////// ######## 00000000 00000000 ######## ######## ########
          ***************************************************************************************************
FREQUENCY  1999     3942       0       30        0       75        0        C     1406      480      190        0
    1     I  I    I----I         IIIIII         I0000I                I0000I    I0000I    I0000I
    2     I  I    I----I                                              I0000I    I0000I    I0000I
    3     I  I    I----I                                              I0000I    I0000I    I0000I
    4     I  I    I----I                                              I0000I    I0000I
    5     I  I    I----I                                              I0000I    I0000I
    6     I  I    I----I                                              I0000I    I0000I
    7     I  I    I----I                                              I0000I
    8     I  I    I----I                                              I0000I
    9     I  I    I----I                                              I0000I
   10     I  I    I----I                                              I0000I
   11     I  I    I----I                                              I0000I
   12     I  I    I----I                                              I0000I
   13     I  I    I----I                                              I0000I
   14     I  I    I----I                                              I0000I
   15     I  I    I----I                                              I0000I
   16     I  I    I----I                                              I0000I
   17     I  I    I----I                                              I0000I
   18     I  I    I----I                                              I0000I
   19     I  I    I----I                                              I0000I
   20     I  I    I----I
   21     I  I    I----I
   22     I  I    I----I
   23     I  I    I----I
   24     I  I    I----I
   25     I  I    I----I
   26             I----I
   27             I----I
   28             I----I
   29             I----I
   30             I----I
   31             I----I
   32             I----I
   33             I----I
   34             I----I
   35             I----I
   36             I----I
   37             I----I
   38             I----I
   39             I----I
   40             I----I
   41             I----I
   42             I----I
   43             I----I
   44             I----I
   45             I----I
   46             I----I
   47             I----I
   48             I----I
```

HISTOGRAM EXPRESSED AS PERCENT OF ALL NON-BACKGROUND CELLS
NUMBER OF BACKGROUND CELLS =10040

VARIABLE CLASS 6 23 IMPORTANCE FACTOR 10

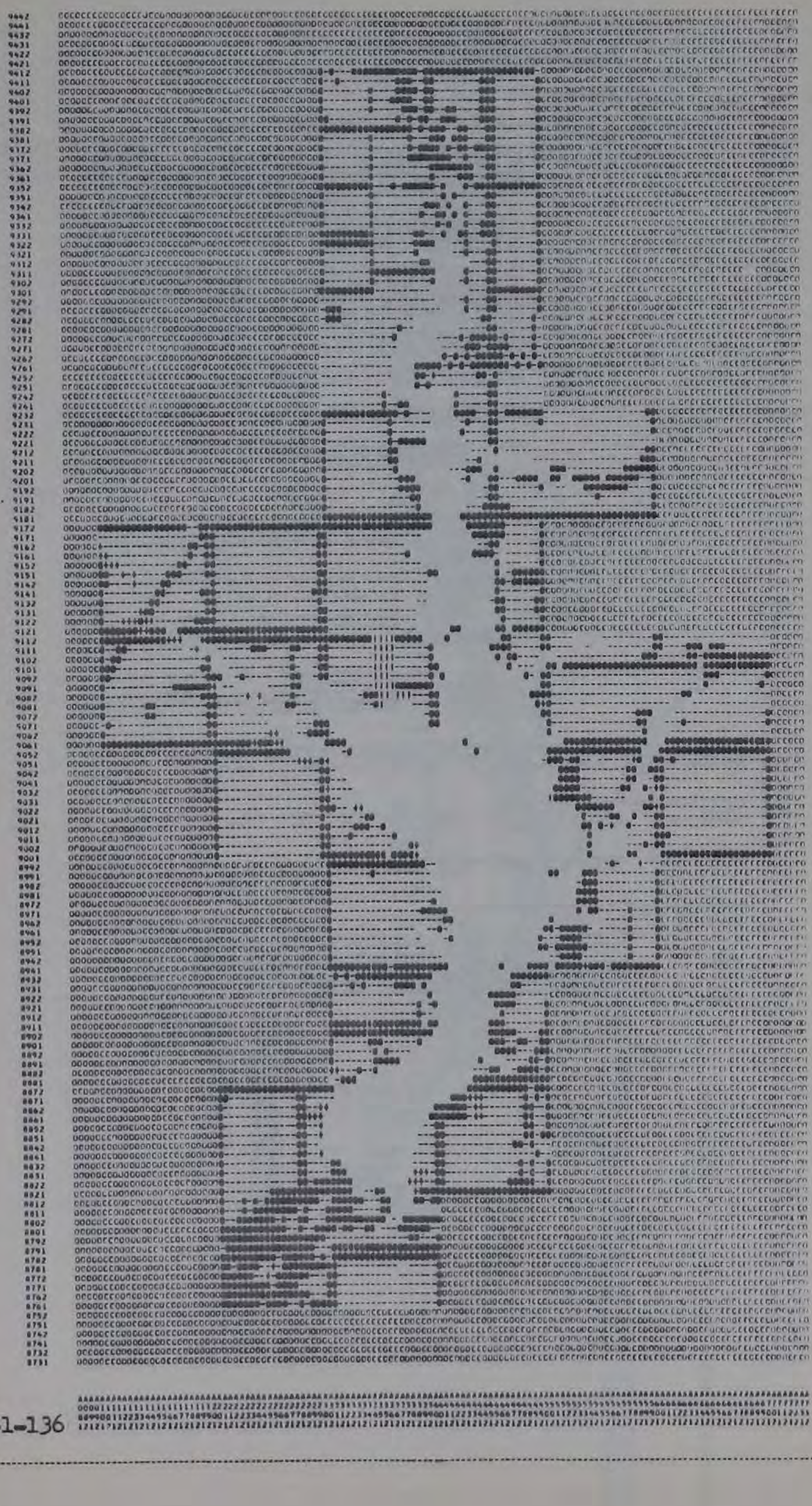


Fig. 1-1-136

ENVIRONMENTAL RESOURCES REVIEW STUDY
AMES RESERVOIR SITE, SKUNK RIVER, AMES, IOW
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
IOWA STATE UNIVERSITY AND UNIVERSITY OF IOW

PREPARED BY IOWA LAND USE ANALYSIS LABORATO
DEPARTMENT OF LANDSCAPE ARCHITECTURE
IOWA STATE UNIVERSITY

COORDINATORS-ANALYSTS J.B.SINATRA, P.F.ANDERSON
PROGRAMMER-ANALYST G.H.BEAVERS
DATA PREPARATION J.C.TAGGART, T.SHUCK, A.PUCIL, D.FARLANGER,
S.CECIL, O.SEYMOUR, W.SCHUTTLER, D.KENNY
GRAPHICS C.J.UBAN, D.DEPRENGER
KPO N.JONES, E.SWANSON, A.HOEPPNER, D.ALLEN, D.FERNELIUS, D.HILLS

WILDLIFE HABITAT QUALITY - COMPOSITE OF ALL BIRD SPECIES

THIRTEEN DIFFERENT VEGETATIONAL TYPES (BASED ON VEGETATION/LANDEPS) WERE SAMPLED FOR WILDLIFE, AND REPRESENT ALL MAJOR WILDLIFE HABITAT TYPES IN THE PROPOSED RESERVOIR AREA. A HABITAT QUALITY RATING WAS ASSIGNED TO EACH WILDLIFE SPECIES IN EACH HABITAT TYPE. THE RANKING WAS ASSIGNED FROM THE COMPARISON OF COVER DENSITY, INTERSPERSION, FOOD AVAILABILITY, DEN OR SHELTER SITES, HUMAN INFLUENCES, ETC. OF EACH HABITAT TYPE (FROM THE ON SITE FIELD STUDY) AGAINST THE PREFERRED OR OPTIMUM FOR THAT SPECIES OF WILDLIFE (DETERMINED FROM A LITERATURE SEARCH). THIS CORRELATION TO DETERMINE HABITAT QUALITY WAS NOT MATHEMATICAL OR ACCORDING TO STANDARDIZED METHOD AS NO SUCH METHOD IS KNOWN (BY US) TO EXIST BUT WAS RATHER DONE BY PROFESSIONAL JUDGEMENT BASED ON EXPERIENCE AND INFORMATION IN THE LITERATURE.

FOR THIS MAP, THE AVERAGE HABITAT QUALITY OF ALL BIRD SPECIES WITHIN EACH HABITAT TYPE WAS DETERMINED. IN THIS WAY EASY COMPARISON CAN BE MADE BETWEEN THE VARIOUS HABITAT TYPES TO SEE WHERE THE BEST QUALITY BIRD HABITAT LIES WITHIN THE RESERVOIR AREA. THE AVERAGES WERE FIGURED MATHEMATICALLY BY ASSIGNING VALUES OF ONE TO FIVE FOR HABITATS DESIGNATED EXCELLENT, GOOD, FAIR, POOR, AND NON-EXISTANT RESPECTIVELY. THE AVERAGE VALUES TENDED TO BE NEAR THE MIDDLE OF THE RANGE AND, THEREFORE, A FINER BREAKDOWN WAS NEEDED TO SEPERATE THEM. THE VALUE CATEGORIES FOR THIS REASON WERE REDUCED TO A .5 RANGE. FOR EXAMPLE ALL HABITAT AVERAGES WHICH FELL BETWEEN THE VALUES OF 3.0 AND 3.5 WERE PLACED IN THE SAME CATEGORY; ANY FINER BREAKDOWN WOULD BE MEANINGLESS.

VEGETATIONAL TYPES NOT SAMPLED WERE EITHER TOO SMALL TO BE OF SIGNIFICANCE OR HAD NO RELATION TO WILDLIFE DISTRIBUTION AND ABUNDANCE.

ALTERNATIVE #6 - RECREATION AND OPEN SPACE USE, SCENIC RIVER IN NATURAL STATE, NO IMPOUNDMENTS. ESSENTIALLY EXISTING CONDITIONS.

SOURCES: VARIOUS BOOKS, SCIENTIFIC JOURNALS AND OTHER PUBLICATIONS FOUND
THROUGH A STUDENT LITERATURE REVIEW.
FIELD STUDY, SPRING 1972.

LEGEND

0 = WATER

1 = VEGETATION TYPES NOT INCLUDED IN THE WILDLIFE STUDY

2 =

3 = POOR TO NON-EXISTANT HABITAT (4.5-5.0) - PRAIRIE

4 = POOR HABITAT (4.0-4.5) - NONE

5 = FAIR TO POOR HABITAT (3.5-4.0) - JUNIPER, JUNIPER-HONEY LOCUST

6 =

7 =

8 = FAIR HABITAT (3.0-3.5) - MARSH, DITCHES AND ROADSIDES, SHRUB, WINDBREAKS.

9 = GOOD TO FAIR HABITAT (2.5-3.0) - WOODED TO PASTURE, ELM-ASH, WOODED TO CULTIVATED, OAK-HICKORY, FLOODPLAIN FOREST

10 = GOOD HABITAT (2.0-2.5) - FENCE ROWS

11 =

DATA MAPPED IN 10 LEVELS BETWEEN EXTREME VALUES OF 0.0 AND 10.90 MEAN = 4.06 ST. DEV. = 3.60

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

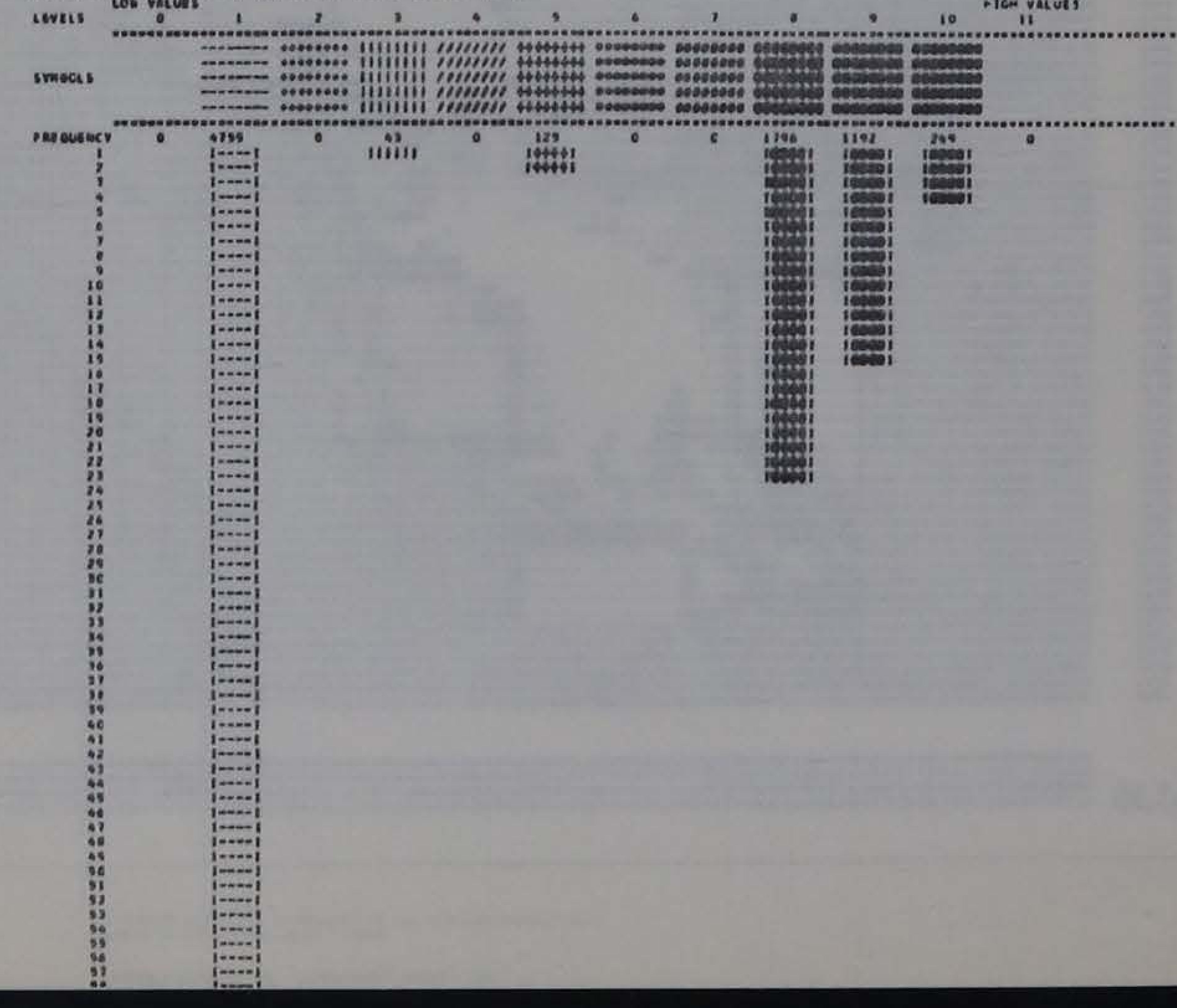
MINIMUM	0.0	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81
MAXIMUM	1.09	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.90

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVELS	0 (LOW VALUES)	1	2	3	4	5	6	7	8	9	10	11 (HIGH VALUES)
FREQUENCY	0	4799	0	43	0	129	0	0	1796	1192	249	0



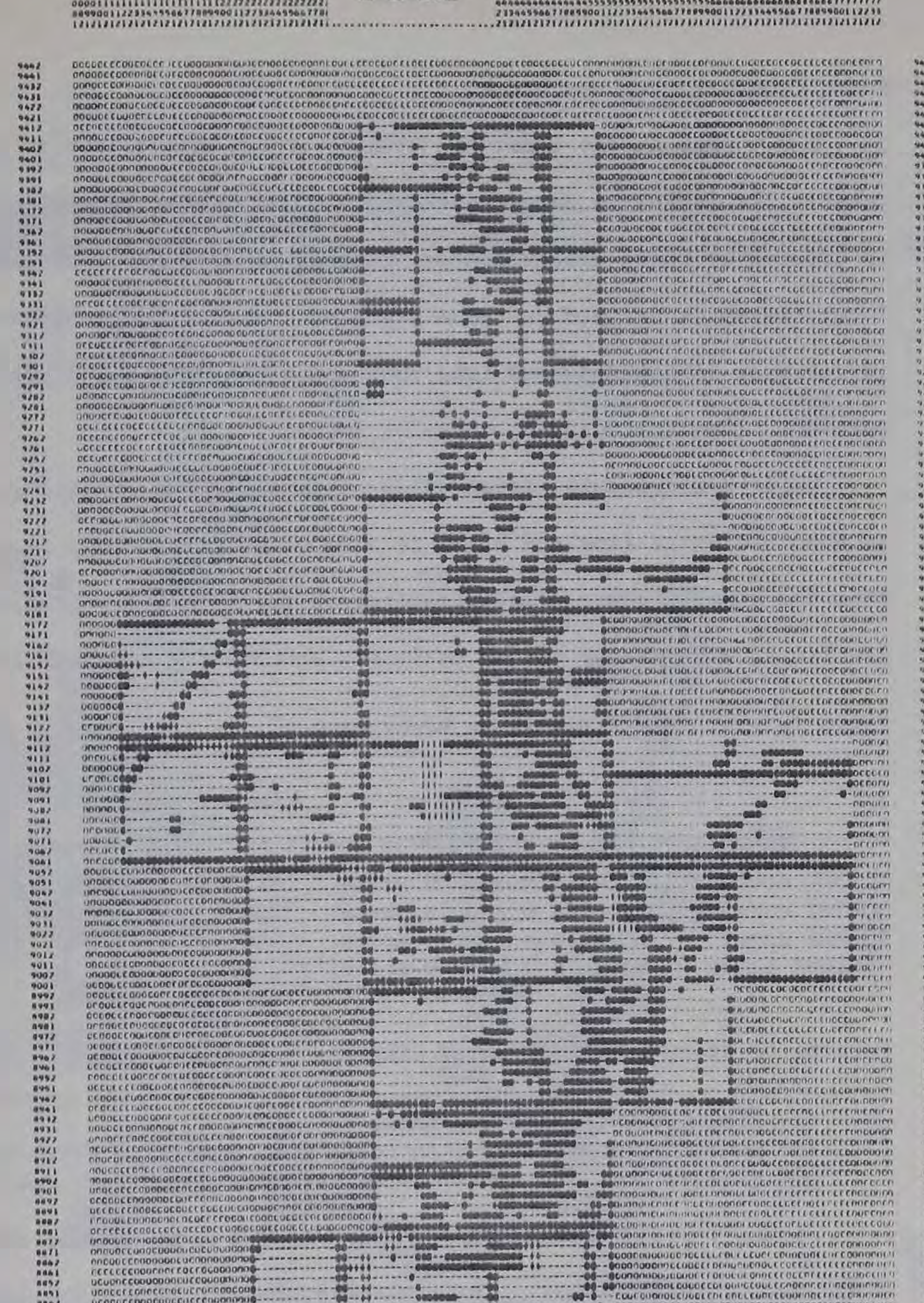


Fig. 1-1-137

Story County Timber Resources

The timber in the reservoir area is an important part of the county total. Table 1-1-14 shows that approximately three percent of Story County is covered by rural timber and one quarter of that is in the study area. Rural timber is defined as those areas of overstory vegetation which are 16 acres or larger and have less than eight dwelling units per quarter section. (See footnote (b) on table 1-1-14.)

While a reasonable median value is given in the following eleven tables, an absolute range (low and high) is also given. The range is calculated from the general cover classifications (e.g. 10 to 30%, using 10% for the low limit, 20% for the median estimate, and 30% for the high limit).

Table 1-1-14. Rural Timber in Story County[a].

	Low	Median	High
10-30% cover - 213 cells[b] = 34,100 acres	3410 ac	6820 ac	10,230 ac
30-50% cover - 50 cells = 8,000 acres	2400	3200	4,000
50-70% cover - 7 cells = 1,120 acres	560	670	780
70-100% cover - 0 cells = 0 acres	0	0	0
	6370	10,690	15,010
Percent of Story County in rural timber -	1.73%	2.90%	4.07%

(a) from Story County data bank.
(b) number of quarter section cells (160 acres) in Story County with greater than 10% timber cover and less than eight dwelling units.

Figure 1-1-138 is a graphic display of the location and density of Story County rural timber. The darkest symbols indicate the urban areas and are omitted from the county total. Notice that the timber is generally associated with the stream valleys in the county, especially the Skunk River, Squaw Creek, East Indian Creek, West Indian Creek, Keigley Creek, Bear Creek, and Long Dick Creek.

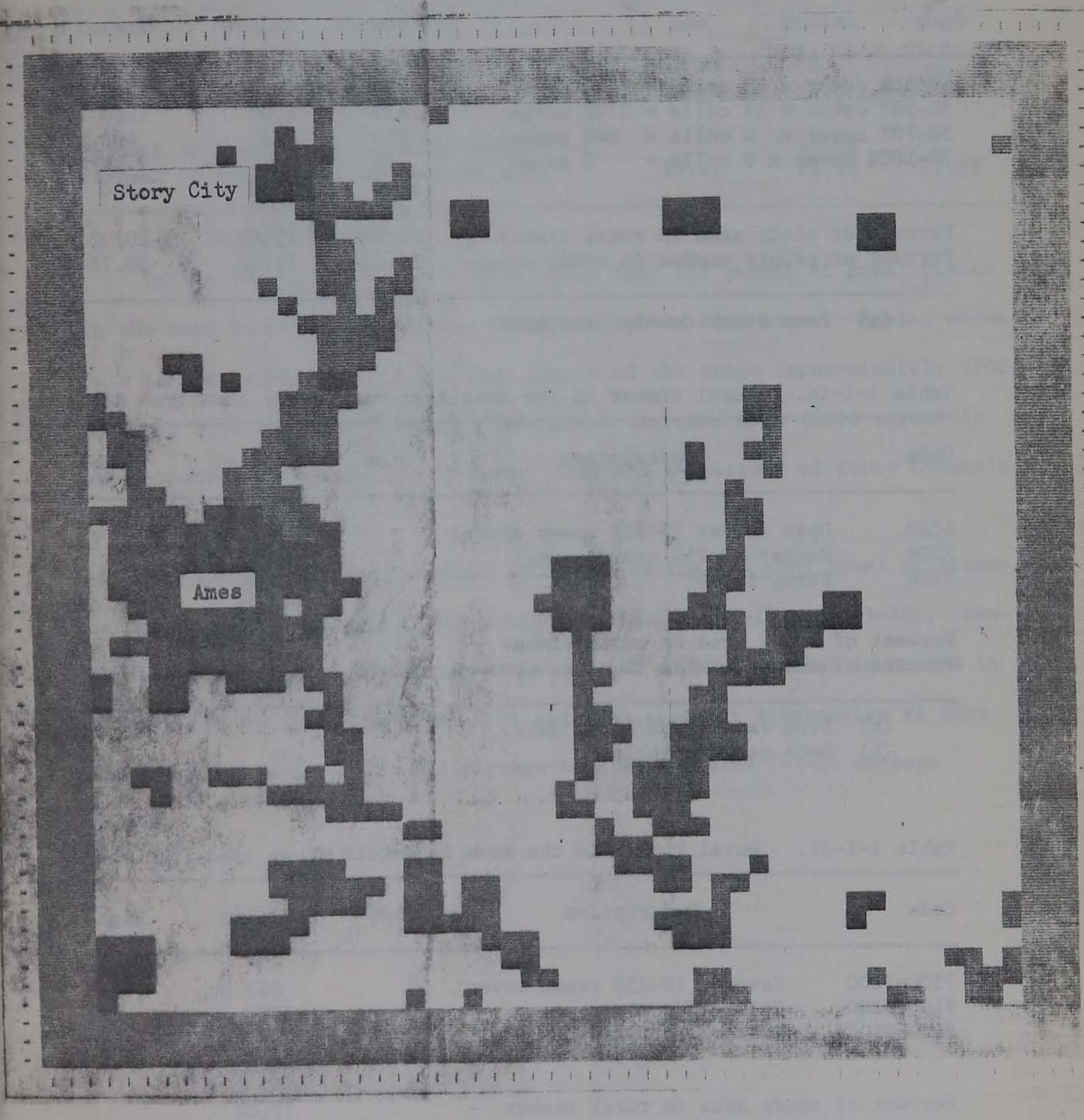


Fig. 1-1-138. Story County timber resources.

Table 1-1-15. Rural timber in the Ames Reservoir study area (run #1)[a].

	Low	Median	High
10-30% cover x 33 cells = 5280 acres	530 ac	1060 ac	1580 ac
30-50% cover x 17 cells = 2720 acres	820	1090	1360
50-70% cover x 4 cells = 640 acres	320	380	450
70-100% cover x 0 cells = 0 acres	0	0	0
	1670	2530	3390
Percent of study area in rural timber -	7.7%	11.6%	20.0%
Percent of county timber in study area -	16.9%	23.6%	39.7%

(a) from Story County data bank.

Table 1-1-16. Rural timber in the Ames Reservoir study area (run #2)[a].

Code	Description	Low[b]	Median	High[b]
6000	Open forest (5-25% crown cover)		923 ac	
7000	Forest (> 25% crown cover)		1438	
7600	Strip forest		106	
			2467	
Percent of study area in rural timber -			11.4%	
Percent of county timber in study area -		15.8%	22.2%	37.2%

(a) From Vegetation/Pudil data.
(b) Data not available.

Table 1-1-17. Rural timber in the Ames Reservoir study area (run #3)[a].

Code	Description	Low[b]	Median	High
7500-7600	Savanna (5-25% crown cover)		583 ac	
9100-9300	Upland forest		1088	
9400-9500	Bottomland forest		929	
			2600	
Percent of study area in rural timber -			12.0%	
Percent of county timber in study area -		17.3%	24.3%	40.8%

(a) From Vegetation/Landers data.
(b) Data not available.

Table 1-1-18 Rural timber in the Ames Reservoir study area (Run #4)[a].

Code	Description	Low	Median	High
9200	Non-commercial forest		2470 ac	
Percent of study area in rural timber -			11.4%	
Percent of county timber in study area -		15.8%	22.2%	37.2%

(a) From land use data.

Tables 1-1-15 through 1-1-18 indicate that the amount of rural timber in the Ames Reservoir study area is approximately 2500 acres. Again, where data is available, the low and high limits of the range (approximately 1700 acres to 3400 acres) are given. The median timbered area (2500 acres) is approximately 12 percent of the study area and 24 percent of Story County's total timber (by area).

The maximum amount of timber inundated by the 976 pool level of Alternative #1 is approximately 1600 acres (see Tables 1-1-19 and 1-1-20). Comparable totals for other alternatives are 585 acres of timber inundated in Alternative #3 (pool elevation 940) and 1280 acres in Alternative #4 (maximum pool elevation 965). See acreage totals in Tables 1-1-21 through 1-1-24.

Table 1-1-19. Rural timber loss - Alternate #1 (Run #1)[a].

Code	Description	Low	Median	High
6000	Open forest (5-25% crown cover)	502 ac	573 ac	648 ac
7000	Forest (>25% crown cover)	818	994	1137
7600	Strip forest	26	45	72
		1346	1612	1857
Percent timber loss in study area -		51.8%	63.7%	75.4%
Percent timber loss in county -		9.0%	15.1%	29.2%

(a) From vegetation/Pudil data. Full pool elevation 976 is used.

Table 1-1-20. Rural timber loss - Alternative #1 (Run #2)[a].

Code	Description	Low	Median	High
7500-7600	Savanna (5-25% crown cover)	267 ac	322 ac	377 ac
9100-9300	Upland forest	449	608	754
9400-9500	Bottomland forest	628	685	740
		1344	1615	1871
Percent timber loss in study area -		51.8%	64.1%	74.0%
Percent timber loss in county -		9.0%	15.1%	29.4%

(a) From vegetation/Landers data. Full pool elevation 976 is used.

Table 1-1-21. Rural timber loss - Alternative #3 (Run #1)[a].

Code	Description	Low	Median	High
6000	Open forest (5-25% crown cover)	218 ac	291 ac	361 ac
7000	Forest (>25% crown cover)	235	320	436
7600	Strip forest	1	4	5
		454	575	802
Percent timber loss in study area -		18.4	23.3	32.5
Percent timber loss in county -		4.2	5.4	7.5

(a) From vegetation/Pudil data. Pool elevation 940 is used.

Table 1-1-22. Rural timber loss - Alternative #3 (Run #2).[a]

Code	Description	Low	Median	High
7500-7600	Savanna (5-25% crown cover)	80 ac	91 ac	139 ac
9100-9300	Upland forest	63	135	231
9400-9500	Bottomland forest	300	369	436
		443	595	806
Percent timber loss in study area -		17.9	24.1	32.7
Percent timber loss in county -		4.1	4.4	7.5

(a) From vegetation/Landers data. Pool elevatinn 940 is used.

Table 1-1-23 Rural timber loss - Alternative #4 (Run #1)[a].

Code	Description	Low	Median	High
6000	Open forest (5-25% crown cover)	411 ac	489 ac	563 ac
7000	Forest (> 25% crown cover)	609	770	926
7600	Strip forest	9	23	41
		1029	1282	1530
Percent timber loss in study area -		41.7	52.0	62.0
Percent timber loss in county -		9.6	11.9	14.3

(a) From Vegetation/Pudil data. Pool elevation 965 is used.

Table 1-1-24 Rural timber loss - Alternative #4 (Run #2)[a].

Code	Description	Low	Median	High
7500-7600	Savanna (5-25% crown cover)	194 ac	241 ac	294 ac
9100-9300	Upland forest	316	454	614
9400-9500	Bottomland forest	527	587	629
		1037	1282	1537
Percent timber loss in study area -		42.0	52.0	62.3
Percent timber loss in county -		9.7	11.9	14.3

(a) From Vegetation/Landers data. Pool elevation 965 is used.

The acres of timber inundated for pool elevations 976, 965, and 940 (from Tables 1-1-19 through 1-1-24) are plotted on Figure 1-1-139. After a smooth curve was drawn, Table 1-1-25 was constructed to show the total amount of timber inundated at each pool elevation. Notice that the smaller amount of timber at higher elevations (upland) causes the upper curve in Figure 1-1-139 to flatten out. In terms of timber loss, Alternatives #6, #5, and #3 are preferred.

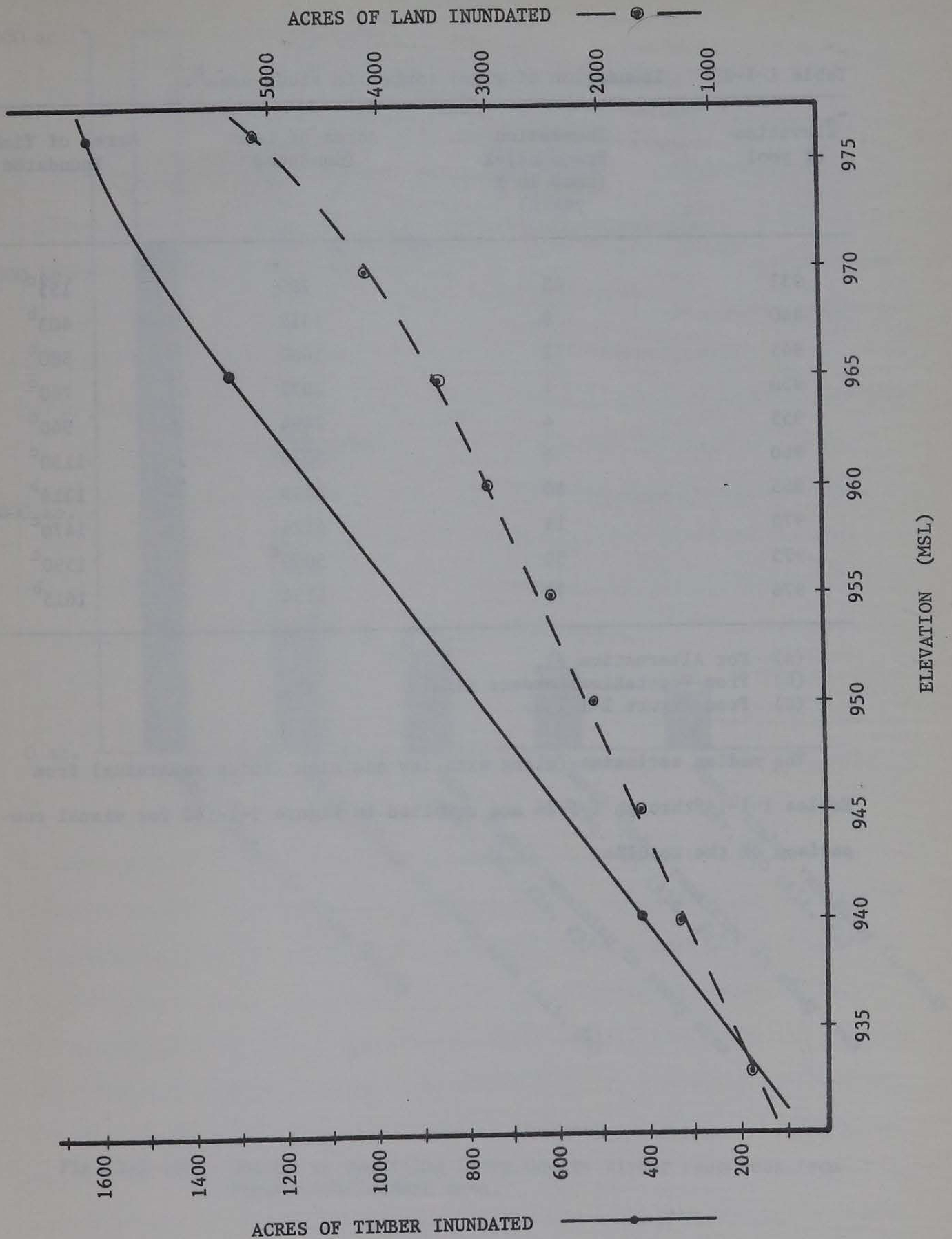


Fig. 1-1-139. Acres of timber and land inundated.

Table 1-1-25 Inundation of rural timber in study area[a].

Elevation of pool	Inundation Frequency=X (once in X years)	Acres of Land Inundated	Acres of Timber Inundated
933	45	769	155[c]
940	9	1312	403[b]
945	2	1660	580[c]
950	1	2077	760[c]
955	4	2494	940[c]
960	6	3028	1130[c]
965	10	3499	1318[b]
970	19	4124	1470[c]
975	50	5050[c]	1590[c]
976	70	5134	1615[b]

(a) For Alternative #1.
(b) From Vegetation/Landers data.
(c) From Figure 1-1-139.

The median estimates (along with low and high limits remaining) from Tables 1-1-14 through 1-1-24 are compiled in Figure 1-1-140 for visual comparison of the results.

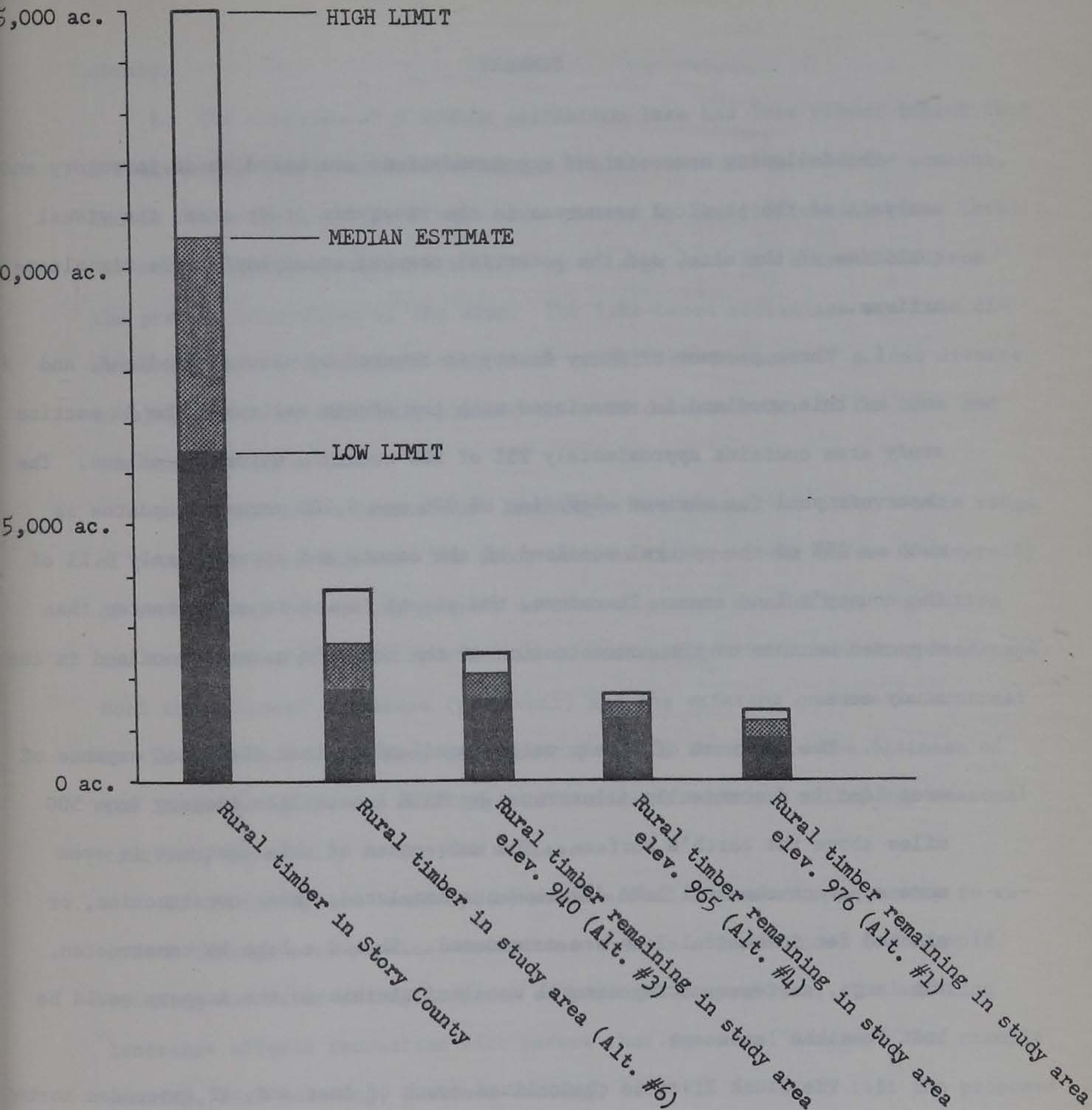


Fig. 1-1-140. Change in remaining Story County timber resources from Vegetation/Landers data.

SUMMARY

The following comments and recommendations are based on an inventory and analysis of the physical resources in the reservoir study area, the visual qualities of the site, and the potential changes accompanying the six alternatives.

1. Three percent of Story County is covered by natural woodland, and most of this woodland is associated with the stream valleys. The 34 section study area contains approximately 25% of the county's natural woodland. The reservoir pool (at maximum elevation of 976 and 5,100 acres) inundates as much as 15% of the natural woodland of the county and approximately 1.2% of the county's land area. Therefore, the visual impact is much greater than expected because of the concentration of the county's natural woodland in the study area.

2. The contrast of stream valley woodland against the broad expanse of crop land is dramatically illustrated by ERTS A satellite imagery from 500 miles above the earth's surface. The uniqueness of this contrast is even more apparent when all lake developments completed, under construction, or planned for in central Iowa are considered. Should a lake be constructed, the large, self-generating natural woodland visible in the imagery would be lost from the landscape.

3. The Skunk River is channelized south of Ames and, if impounded north of Ames, approximately 15% of the river's distance through the county would be left in a natural meandering state. This natural portion of the river passes through the Ames community. Therefore, the river would be a managed river; impounded, urbanized, and channelized. The natural scenes, without evident modification either on or nearby the river, would be few within the

county.

4. The creation of a stable recreation lake has less visual impact than a fluctuating reservoir because of its smaller size, less woodland removal, and no "bathtub ring" (pool edge area created by the fluctuating water level). The recreation opportunities offered by a large lake are a trade-off from the present activities of the site. The lake-based activities are less diverse and more concentrated than river activities (because of a less diverse site) and must be carefully planned to avoid deterioration of the site and the surrounding area.

5. Significant recreation landscapes are those that offer a wide range of potential experiences. The study area of the reservoir offers a diversity of experiences due to topographic variation, stream meandering, vegetation and its associated wildlife which is in contrast to the surrounding landscape. Both the proposed landscape (reservoir) and the existing one are in contrast to the farmscape. The proposed landscape would accentuate the flatness of the landscape while the existing timber creates vertical relief and seasonal contrast, especially during the winter.

6. The proposed landscape(s) would afford a greater opportunity to recreate through more physical activities than is afforded now; for example, swimming and water skiing as forms of personal competition. The existing landscape affords recreation with nature that involves "finding"; for example hunting, bird watching, mushroom hunting, etc. It is likely that the proposed landscape(s) while serving more people, would provide a less diverse range of experiences.

7. The existing reservoir site is visually changing. Gravel and limestone extraction continues to spread while some areas of timber are being cleared and others are dying from Dutch elm disease. Residential development

is impinging on the site at the southwest portion of the study area along Arrasmith Road.

8. Presently one lives with the land within the county in the following ways:

a. large town (Ames)
b. small towns
c. rural setting (farmstead or housing along timber and valleys)

The reservoir wauld offer one additional choice: homes in close proximity to large lake.

9. The proposed lake would become a public landscape due to the existin scenic overlook, rest stop areas of Interstate 35 and large take line near E-29 (a potential camping area). This cluster of identification points along I-35 would give the lake high visibility and with that, high public use.

10. With inundation, views from the west to east across the lake would be focused on Interstate 35 (due to tree removal and elevation); and associated with this, increased noise which is presently partially absorbed by the timber. Heavy evergreen planting parallel to the interstate on the knolls (west side) could be aesthetically pleasing from the lake, highlight views from the interstate, absorb noise, and form a backdrop for the lake whe viewed from the west.

11. On the basis of the report and the above comments, either Alternati #3 (stable recreation lake) or Alternative #6 (open space) is acceptable from a visual/aesthetic standpoint. But more important, whether the decision is for open space development of lake development, careful planning and management of the site must be provided. A well integrated and executed plan for the area is highly desireable because of the future recreation and

development pressures on our open space in the state.

12. Opportunities for visual/aesthetic control of the site exist, including fee title purchase and surface easement. These should be investigated for use in the area regardless of the decision made. Surface easements provide rights to the user while individual stewardship of the land is maintained. These opportunities are explored in additional detail in Appendix 3, Recreation and Open Space use, to which the reader is referred.

Acknowlegedgements

The authors gratefully acknowledge the cooperation and encouragement of Dr. Daniel J. Zaffarano, Vice President for Research and Dean of the Graduate College, principal investigator Merwin D. Dougal, category co-leaders Roger Q. Landers and Lyle V. A. Sendlein, and department head Thomas A. Barton.

Members of Category I were particularly helpful in making their data available and guiding our use of it. They include Dr. George W. Thomson, Steven D. Cecil, Anet Groneman, Dr. Roger W. Bachmann, Craig Olsen, Dr. Michael K. Petersen, Dr. David M. Gradwohl, and Nancy M. Osborn.

Special help was recieved from those who requested specific output from the data bank: David D. Faxlanger, John Hultquist, John Milligan, Dr. Wendell Beardsley, Gene Campbell, and Jeff Dawson.

We also thank the Iowa Conservation Commission for the use of their aircraft from which many of the aerial photographs useful in this study were taken.

The staff of the Land Use Analysis Laboratory and associated investigators provided assistance to this study through their time, data, ideas, and criticisms. They are Dr. Robert Palmquist, Dr. Thomas Fenton, Gary L. Hightshoe, Timothy L. Shuck, Charles B. Freeman, Allen W. Pudil, Kenneth Seymour, Nick VanDriel, Daryl J. DePrenger, and also C. John Uban, who contributed much to the study through his graphic talents.

REFERENCES

Ditton, Robert B., and Thomas L. Goodale, Environmental Impact Analysis, University of Wisconsin Sea Grant Publication Office, Madison, Wisconsin, 1972.

Honey Hill: A Systems Analysis for Planning the Multiple Use of Controlled Water Areas, Department of Landscape Architecture, Graduate School of Design, Harvard University, for US Army Engineer Institute for Water Resources, October, 1971.

Laboratory for Computer Graphics and Spatial Analysis, Computer Inventory and Analysis, Harvard University, supplements from 1966-1969, and 1970.

Landscape, Inc., Public Land Policy and the Environment: Part III, Environmental Quality and the Public Lands; A General System for Environmental Resource Analysis, for the Public Land Law Review Commission, Madison, Wisconsin, December, 1970.

Larimer, O.V., Drainage Areas of Iowa Streams, USGS Water Resources Division and the Iowa State Highway Commission, December, 1957.

Lewis, Philip H., Jr., Upper Mississippi River Comprehensive Basin Study, U.S. Department of the Interior, National Park Service, Northeast Region, 1969.

McHarg, Ian, A Comprehensive Highway Route Selection Method, 1967.

McHarg, Ian, Design With Nature, Natural History Press, Garden City, New York, 1969.

Open Space and Recreation, Central Iowa Regional Planning Commisssion, (CIRPC).

Plat Book of Hamilton County, Iowa, 1971, R.C. Booth Enterprises.

Revell, Robert, Timber Inventory of the Proposed Skunk River Reservoir Area, Landscape Architecture 411, Iowa State University, Spring, 1972.

Sinatra, James B., et al, Establishment of a Resource Data Matrix for Iowa, Land Use Analysis Laboratory, Iowa State University, 1972.

Sinton, David, and D. Belcher, et al, New York State Natural Resources Inventory, Office of Planning Coordination, The State of New York, 1968.

Soil Conservation Service, Soil Survey Information and Interpretation, USDA, February 1969.

Steinitz, Carl and Peter Rogers, A Systems Analysis Model of Urbanization and Change, MIT Report No. 20, 1970.

Story County Farm Plat Book, Hawkeye Farm Plat Book Co, Cedar Rapids, Iowa, 1971.

Tryon, Robert C, and Daniel E. Bailey, Cluster Analysis, McGraw Hill, New York 1970.

US. Army Corps of Engineers, Rock Island District, General Design Memorandum #1, Ames Reservoir, Skunk River, Iowa, 30 September, 1968.

US. Department of Transportation, Standard Land Use Coding Manual, Bureau of Public Roads, Washington, DC, 1965.

Way, Douglas, Air Photo Interpretation for Land Planning, 1968.

APPENDA

APPENDUM 1-1-1

Weighting Schemes and Site Selection Forms

IOWA LAND USE ANALYSIS LABORATORY

Land Use FLAT SLOPES
Study Area SRR
Cell Size 2.66
Special Option
Alternative 1
Model
No. of Variables Used 2
Max. No. of Weighted Variable Units 3

Date
Your Name(s)

26/10	0005/0004	0100/-20	0000/0000
27/10	932/-20	976/011	1200/-20

1-1-301

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use ELEVATION
Study Area SRR
Cell Size 2.66
Special Option ______
No. of Variables Used 1
Max. No. of Weighted Variable Units 10
Alternative 1-6
Model ______
Date 12 OCT. '72
Your Name(s) PAUL F. ANDERSON

0001 / 10	900 / 1	920 / 2	940 / 3	960 / 4	980 / 5	1020 / 6	1040 / 7	1060 / 8	1080 / 9

1-1-302

IOWA LAND USE ANALYSIS LABORATORY

Land Use FLAT SLOPE
Study Area SRR
Cell Size 2,66
Special Option
Max. No. of Weighted Variable Units 3

Alternative 6
Model
No. of Variables Used 2

Date
Your Name(s)

26/10	5/5	100/-10	0000/000
27/10	932/-10	976/000	1200/-10

1-1-303

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use SURFICIAL WATER
Study Area SR2
Cell Size 2.66
Special Option ______
Max. No. of Weighted Variable Units 4

Alternative 1-6
Model ______
No. of Variables Used 1

Date 16 OCT '72
Your Name(s) PAUL F. ANDERSON

0007 / 10	0000 / 10	0001 / 0	0002 / 2	0009 / 1

1-1-304

IOWA LAND USE ANALYSIS LABORATORY

Land Use POOL LEVELS
Study Area SRR
Cell Size 2.66
Special Option
Alternative 2
Model
No. of Variables Used 1
Max. No. of Weighted Variable Units 10
Date
Your Name(s)

26/10	932/-20	940/0011	945/012	950/014	955/015	960/16	965/17	970/19	976/20	1200/-20

1-1-305

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use RESTRICTED SOIL TYPES
Study Area LRR
Cell Size 2.66
Special Option
Max. No. of Weighted Variable Units 21

Alternative 1-6
Model
No. of Variables Used 1

Date 16 OCT '72
Your Name(s) PAUL F. ANDERSON

0006/10	0020/1	0021/5	0026/1	0027/5	0047/1	0048/5	0106/1	0107/5	0150/1	0151/10	0186/1	0187/10	0233/1	0234/10	0251/1	0252/10	0255/1	0256/5
	0300/1	0301/10	0302/1															

1-1-306

IOWA LAND USE ANALYSIS LABORATORY

Land Use PRIME AGRICULTURAL SOILS
Date 10 NOV '72
Study Area SRR
Alternative 1,3,4,6
Your Name(s) DAVID FAXLANGER
Cell Size 2.66
Model
Special Option
No. of Variables Used 1
Max. No. of Weighted Variable Units 24

0006	0012	0021	0027	0038	0043	0045	0048	0049	0055	0056	0062	0065	0102	0107	0108	0110	0138	0149
10	10	1	10	7	10	8	10	9	10	6	9	7	1	10	6	7	9	8
	0151	0175	0187	0203	0234	0302												
	1	4	1	3	1	5												

1-1-307

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use VEGETATION/LANDERS
Study Area SRR
Cell Size 2.66
Special Option ____ No. of Variables Used 1
Max. No. of Weighted Variable Units 13

Alternative 1-6
Model ____

Date 11 OCT '72
Your Name(s) PAUL F. ANDERSON

0021/10	2999/1	3999/2	4099/1	4199/3	4999/4	5999/5	6999/6	7499/7	7699/8	8999/1	9399/9	9599/10	9999/1				

1-1-308

IOWA LAND USE ANALYSIS LABORATORY

Land Use VEGETATION/FUDIL
Study Area SRR
Cell Size 2.66
Special Option
Alternative 1-6
Model
No. of Variables Used 1
Max. No. of Weighted Variable Units 15

Date 16 OCT '72
Your Name(s) PAUL F. ANDERSON

Cell	2099	2199	2299	2399	2499	2599	2699	4299	4399	4499	5999	6099	6999	7599	7699
0011 / 10	1	5	1	2	3	1	4	1	7	9	1	8	1	10	6

1-1-309

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use URBAN/RURAL VEGETATION/RUDIL
Study Area SR[illegible]
Cell Size 2.66
Special Option ____
Max. No. of Weighted Variable Units 17

Alternative 1,3,4,6
Model ____
No. of Variables Used 1

Date 17 OCT '72
Your Name(s) PAUL F. ANDERSON
ALLEN RUDIL

0011/10																	
0999/1	1999/2	2099/1	2199/6	3099/1	3199/4	4099/1	4199/5	4299/3	4399/7	4499/9	5999/1	6099/7	6999/1	7599/10	7699/8	9999/1	

1-1-310

Land Use HABITAT VEGETATION/FUDIL
Study Area SR?
Cell Size 2.66
Special Option
Alternative 1,3,4,6
Model
No. of Variables Used 1
Max. No. of Weighted Variable Units 17
Date 17 OCT '72
Your Name(s) PAUL F. ANDERSON
ALLEN FUDIL

0011 / 10	0499 / 1	0599 / 3	0699 / 1	0799 / 2	2099 / 1	2199 / 6	2299 / 7	2399 / 5	2699 / 1	2799 / 4	4399 / 1	4499 / 9	5999 / 1	6099 / 8	6999 / 1	7699 / 10	9999 / 1

1-1-311

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use: ARCHAEOLOGICAL SITES

Study Area: SRR

Cell Size: 2.66

Special Option: ______

Alternative: 1-6

Model: ______

No. of Variables Used: 1

Max. No. of Weighted Variable Units: 2

Date: 16 OCT '72

Your Name(s): PAUL F. ANDERSON

0013 / 1C	0000 / 1	9999 / 10

1-1-312

Land Use SOILS FOR RESIDENTIAL SITES (FAXLANGER) Date 24 OCT '72

Study Area SRR Alternative 1,6 Your Name(s) DAVID FAXLANGER

Cell Size 2.66 Model

Special Option No. of Variables Used 1

Max. No. of Weighted Variable Units 25

0006 / 10	0012 / 5	0027 / 1	0038 / 8	0043 / 4	0045 / 7	0049 / 2	0055 / 6	0056 / 1	0060 / 9	0062 / 4	0065 / 6	0102 / 3	0107 / 2	0110 / 7	0111 / 2	0112 / 3	0149 / 9	0175 / 6
	0187 / 4	0203 / 6	0234 / 5	0252 / 7	0256 / 1	0301 / 6	0302 / 2											

1-1-313

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use RESIDENTIAL DEVELOPMENT
Study Area SRR
Cell Size 2.66
Special Option ______
Alternative 1.6
Model ______
No. of Variables Used 6
Max. No. of Weighted Variable Units 30

Date 19 OCT '72
Your Name(s) JOHN LILLIGAN (U of I)
PAUL F. ANDERSON

Variable / Weight																		
0018 / 4	0000 / 1	1000 / 3	2000 / 5	3000 / 7	4000 / 9	5000 / 10												
0006 / 1	0012 / 5	0027 / 1	0038 / 8	0043 / 4	0045 / 7	0049 / 2	0055 / 6	0056 / 1	0060 / 9	0062 / 4	0065 / 6	0102 / 3	0107 / 2	0110 / 9	0111 / 2	0112 / 3	0149 / 9	0175 / 6
0006 / 1	0187 / 4	0203 / 6	0234 / 5	0252 / 7	0256 / 1	0301 / 6	0302 / 2											
0001-0005 / 2	0-2% / 7	3-5% / 8	6-10% / 10	11-15% / 9	16-25% / 6	26-35% / 4	36-50% / 2	>50% / 1										
0001 / 6	0976 / 1	0983 / 2	0990 / 10	1000 / 9	1010 / 8	1020 / 7	1030 / 6	1040 / 5	1050 / 4	1080 / 3								
0023 / 2	1099 / 1	1299 / 2	1399 / 6	1499 / 3	2099 / 1	2199 / 3	2399 / 7	2999 / 5	3999 / 4	4399 / 3	4999 / 2	5099 / 6	5199 / 2	6399 / 7	5399 / 2	5499 / 4	5599 / 8	5699 / 1
0023 / 2	5799 / 3	5999 / 4	6099 / 8	6399 / 7	6499 / 5	6599 / 3	6999 / 4	7099 / 10	7199 / 7	7399 / 3	7499 / 5	7599 / 9						
0023 / 2 cont.	7599 / 0	7999 / 7	8099 / 4	8199 / 5	8299 / 3	8399 / 5	8499 / 9	8999 / 7	9099 / 8	9199 / 10	9299 / 9	9399 / 10	9499 / 8	9599 / 7	9999 / 5			
0014 / 6	0001 / 2	0002 / 4	0003 / 6	0004 / 8	0005 / 10	0006 / 1	0007 / 1	0008 / 1										

1-1-314

Land Use PICNIC AREAS
Study Area SRR
Cell Size 2.66
Special Option ____
Max. No. of Weighted Variable Units 27

Alternative 1-6
Model ____
No. of Variables Used 4

Date 31 OCT '72
Your Name(s) DAWSON
CAMPBELL

0026 / 2						
Value	29	59	109	159	259	29
Weight	10	9	6	4	2	1

0006 / 1																		
Value	0012	0027	0038	0043	0045	0048	0049	0055	0056	0060	0062	0065	0102	0107	0108	0110	0111	0112
Weight	6	1	7	3	5	2	4	5	2	9	4	7	4	3	7	5	2	4
Value	0138	0149	0151	0175	9187	9252	0256	0301	0302									
Weight	9	8	4	5	4	5	1	5	3									

0018 / 3					
Value	0000	1000	3000	4000	5000
Weight	1	3	5	7	9

0023 / 2															
Value	1999	2999	3999	4099	4199	4999	5999	6999	7099	7499	7999	8999	9099	9399	9999
Weight	1	3	5	7	5	2	4	5	7	6	8	4	9	10	8

1-1-315

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use: PUBLIC CAMP GROUNDS
Study Area: SRP
Cell Size: 2.66
Special Option:
Alternative: 1-6
Model:
No. of Variables Used: 5
Max. No. of Weighted Variable Units: 27

Date: 31 OCT '72
Your Name(s): DAWSON
CAMPBELL

0006 / 1	0012 / 6	0027 / 1	0038 / 7	0043 / 3	0045 / 5	0048 / 2	0049 / 4	0055 / 5	0056 / 2	0060 / 9	0062 / 4	0065 / 7	0102 / 4	0107 / 2	0108 / 7	0100 / 5	0111 / 2	0112 / 4
	0112 / 4	0138 / 9	0149 / 8	0151 / 4	0175 / 5	0187 / 4	9252 / 5	0256 / 1	0301 / 5	0302 / 3								

0026 / 1	2 / 10	5 / 9	10 / 6	15 / 4	25 / 2	99 / 1

0014 / 6	0001 / 1	0002 / 2	0003 / 3	0004 / 4	0005 / 10	0006 / 1	0007 / 8	0008 / 6

0018 / 4	0000 / 1	1000 / 3	3000 / 5	4000 / 7	5000 / 9

0023 / 2	1999 / 1	2999 / 3	3999 / 5	4099 / 7	4199 / 5	4999 / 2	5999 / 4	6999 / 5	7099 / 7	7499 / 6	7999 / 8	8999 / 4	9099 / 9	9399 / 10	9999 / 8

1-1-316

Land Use BOAT RAMPS

Study Area [illegible]

Cell Size 2.66

Special Option

Alternative 1

Model

No. of Variables Used 6

Max. No. of Weighted Variable Units 30

Date 31 OCT '72

Your Name(s) DAWSON

CAMPBELL

0027 / 1	942 / -200	958 / 10	965 / 9	990 / 2	999 / -200		
0026 / 2	2 / 6	5 / 8	10 / 10	15 / 8	25 / 4	35 / 2	99 / 1

0028 / 3	0001 / 6	0002 / 1	0003 / 8	0004 / 2	0005 / 5	0006 / 3	0007 / 6	0008 / 9	0009 / 4	0010 / 8	0011 / 2	0012 / 10	0014 / 6	0015 / 10	0016 / 1

0006 / 2	0012 / 6	0021 / 1	0027 / 2	0038 / 9	0043 / 5	0045 / 9	0048 / 2	0049 / 3	0055 / 7	0056 / 2	0060 / 9	0062 / 4	0065 / 7	0102 / 4	0107 / 3	0108 / 7	0110 / 8
	0111 / 3	0112 / 3	0138 / 9	0149 / 10	0151 / 6	0175 / 7	0187 / 5	0203 / 7	0234 / 6	0252 / 7	0256 / 1	0301 / 7	0302 / 3				

0018 / 6	0000 / 1	1000 / 3	3000 / 5	4000 / 7	5000 / 9
0014 / 1	0005 / -200	0006 / 7	0007 / 10	0008 / 9	

1-1-317

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use SWIMMING BEACH
Study Area SRR
Cell Size 2.66
Special Option ____
Max. No. of Weighted Variable Units 27

Alternative 1
Model ____
No. of Variables Used 7

Date 31 OCT '72
Your Name(s) DAWSON
CAMPBELL

0027 / 1

925	976	983	1000	9999
-200	10	9	2	-200

0026 / 2

2%	5%	10%	15%	25%	35%	99
5	9	10	7	4	2	1

0028 / 2

0001	0002	0003	0004	0005	0006	0007	0008	0009	0010	0011	0012	0014	0015	0016
5	9	8	5	10	7	5	6	3	8	5	4	5	4	9

0006 / 2

0012	0027	9938	0043	0045	0048	0049	0055	0056	0060	0062	0065	0102	0107	0108	0110	0111	0112
6	1	7	3	5	2	4	5	2	9	4	7	4	2	7	5	2	4
0138	0149	0151	0175	0187	0252	0256	0391	0302									
9	8	4	5	4	5	1	5	3									

0018 / 3

0000	1000	3000	4000	5000
1	3	5	7	9

0023 / 3

1999	2999	3999	4099	4199	4999	5999	6999	7099	7499	7999	8999	9099	9300	9999
1	3	5	7	5	3	4	5	7	6	[illegible]	4	9	10	8

0014 / 1

0005	0006	0007	0008
-200	7	10	9

1-1-318

Land Use WILDLIFE HABITAT QUALITY - RACCOON
Study Area SRR
Cell Size 2.66
Special Option
Max. No. of Weighted Variable Units 21

Alternative 1-6
Model
No. of Variables Used 1

Date 24 OCT '72
Your Name(s) J. CRAIG TAGGART

0023/10																	
4199/1	4399/6	4499/10	6099/1	6199/8	6299/10	6399/1	6499/10	6599/4	6699/8	7099/1	7199/4	7299/3	7399/1	7499/8	9099/1	9199/10	9299/8
9399/1	9599/8	9999/1															

1-1-319

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use WILDLIFE CENSUS FIGURE - RACCOON
Study Area SRR
Cell Size 2.66
Special Option
Alternative 1-6
Model
No. of Variables Used 1
Max. No. of Weighted Variable Units 21
Date 27 OCT 1972
Your Name(s) J. CRAIG TAGGART

0023 / 10	4199 / 1	4399 / 2	4499 / 8	6099 / 1	6199 / 4	6299 / 9	6399 / 1	6499 / 2	6599 / 7	6699 / 10	7099 / 1	7199 / 6	7299 / 5	7399 / 1	7499 / 3	9099 / 1	9199 / 9	9299 / 8
	9399 / 1	9599 / 9	2999 / 1															

1-1-320

Land Use WILDLIFE POPULATION DENSITY - RACCOON
Study Area SRP
Cell Size 2.66
Special Option
Max. No. of Weighted Variable Units 21

Alternative 1-6
Model
No. of Variables Used 1

Date 27 OCT '72
Your Name(s) J. CRAIG TAGGART

0023/10	4199/1	4399/5	4499/8	6099/1	6199/5	6299/8	6399/1	6499/5	6599/5	6699/5	7099/1	7199/8	7299/10	7399/1	7499/5	9099/1	9199/5	9299/5
	9399/1	9599/5	9999/1															

1-1-321

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Page __ of __

Land Use HABITAT QUALITY - COMPOSITE; ALL WILDLIFE SPP. Date 12-7-72
Study Area SRR Alternative 1.6 Your Name(s) J.C. TAGGART
Cell Size 2.66 Model
Special Option No. of Variables Used 1
Max. No. of Weighted Variable Units 18

23/10	4199/1	4399/4	4499/6	6099/1	6299/8	6399/1	6499/10	6699/6	7099/1	7299/4	7399/1	7499/6	9099/1	9199/8	9299/6	9399/1	9599/8	9799/1

1-1-322

Land Use HABITAT QUALITY - COMPOSITE OF MAMMALIAN SPP. Date 12-14-72
Study Area SRR Alternative 1,6 Your Name(s) J.C. TAGGART
Cell Size 2.66 Model
Special Option No. of Variables Used 1
Max. No. of Weighted Variable Units 17

23/10	4199/1	4499/4	6099/1	6199/6	6299/8	6399/1	6499/10	6699/4	7099/1	7299/4	7399/1	7499/6	9099/1	9299/6	9399/1	9599/8	9799/1

1-1-323

SITE SELECTION FORM
IOWA LAND USE ANALYSIS LABORATORY

Land Use HABITAT QUALITY - COMPOSITE OF BIRD SPP. Date 12-14-72
Study Area SRR Alternative 1,6 Your Name(s) J.C. TAGGART
Cell Size 2.66 Model
Special Option No. of Variables Used 1
Max. No. of Weighted Variable Units 17

23/10	4199/1	4399/3	4499/8	6099/1	6299/9	6399/1	6499/10	6699/8	7099/1	7299/5	7399/1	7499/8	9099/1	9299/9	9399/1	9599/9	9799/1	

1-1-324

APPENDUM 1-1-2

Skunk River Reservoir Data File

ELEVATION - CENTER OF CELL Variable Class No. 0001
ELEVATION - CENTER OF 3RD (SW) QUADRANT Variable Class No. 0002
ELEVATION - CENTER OF 4TH (SE) QUADRANT Variable Class No. 0003
ELEVATION - CENTER OF 2ND (NW) QUADRANT Variable Class No. 0004
ELEVATION - CENTER OF 1ST (NE) QUADRANT Variable Class No. 0005

Note: All elevations are direct elevations above the mean sea level, The low elevation coded was 0889 feet; the high elevation coded was 1082 feet.

Sources for all elevation maps:
Corps of Engineers Topographic Maps, scale 1"= 200', 1967
USGS Topographic Ames Quadrangle Map, Scale 1:62,500, 1912

SOILS/OLD SURVEY Variable Class No. 0006

0012 Bremer loam
0021 Peat
0027 Wabash silty clay
0038 Buckner loam
0043 Bremer silty clay loam
0045 Buckner fine sandy loam
0048 Wabash silty clay loam
0049 Wabash loam
0055 Webster loam
0056 Webster clay loam
0060 Waukesha loam
0062 Wabash fine sandy loam
0065 Lindley loam
0102 Sarpy fine sandy loam
0107 Webster silty clay loam
0108 O'Neill loam
0110 O'Neill fine sandy loam
0111 Lamoure silty clay loam
0112 Lamoure loam
0138 Clarion loam
0149 Clarion fine sandy loam
0151 Clarion loam, steep phase
0175 Dickinson fine sandy loam
0187 Lindley loam, steep phase
0203 Thurman loamy fine sand
0234 Clarion fine sandy loam, steep phase
0252 Clarion loam, eroded phase
0256 Muck
0301 Clarion fine sandy loam, eroded phase
0302 Ames fine sandy loam

Source: Story County Soils Map, USDA, Scale 1"= 1 mile, 1938

SURFICIAL WATER   Variable Class No. 0007

0000	None
0001	Ponded water
0002	Intermittent streams
0003	1st order streams
0004	2nd order streams
0005	3rd order streams
0006	4th order streams
0007	5th order streams
0008	6th order streams
0009	7th order streams

Source: Corps of Engineers Aerial Photographs, Scale 1:12,000, 4-11-67
Story County Soils Map. USDA, Scale 1"=1 mile, 1938

TOWNSHIP AND RANGE   Variable Class No. 0008

8423	Milford Township, Story County
8424	Franklin Township, Story County
8523	Howard Township, Story County
8524	LaFayette Township, Story County
8623	Scott Township, Hamilton County
8624	Ellsworth Township, Hamilton County

Source: Story County Farm Plat Book, 1971

SECTION NUMBER   Variable Class No. 0009

0001	Section 1
to	to
0036	Section 36

Source: Story County Farm Plat Book, 1971

OWNERSHIP AND PARCEL SIZE   Variable Class No. 0010

0000	1 - 40 acres
0001	41 - 80 acres
0002	81 - 120 acres
0003	121 - 160 acres
0004	161 - 200 acres
0005	201 - 240 acres
0006	241 - 280 acres
0007	281 - 320 acres
0008	321 - 360 acres
0009	361 - 400 acres
0010	401 - 440 acres
0011	441 - 480 acres
0012	481 - 520 acres
0013	521 - 560 acres

0014 561 - 600 acres
0015 601 - 640 acres

Source: Story County Farm Plat Book, 1971

VEGETATION/PUDIL, PRIMARY Variable Class No. 0011

00-- OTHER
01-- Wet prairie
02-- Dry prairie
03-- Bog, marsh
04-- Seeps, springs, fens
05-- Ponds, reservoirs
06-- Quarries
07-- Potholes, etc.
08-- Rock outcrops
09-- Sand
10-- AGRICULTURAL
11-- Cultivated
12-- Pasture
13-- Soil bank
20-- EDGE
21-- Stringer, drainage ditch, etc.
22-- Fence row
23-- Roadside, ditches
24-- Second growth, pastured areas
25-- . . .
26-- Scattered trees (not in abundance to indicate open forest)
27-- Railroad right-of-way
30-- RURAL
31-- Farmstead
32-- Windbreak
33-- Woodlot
34-- Cemetery
40-- URBAN
41-- Residential, street, yard, school
42-- Open field (playground, golf course)
43-- Scattered, wooded (open)
44-- Wooded
45-- Unique plantings
46-- Hard surface
47-- Commercial
50-- COMMERCIAL PLANTINGS
51-- Nursery
52-- Tree farm
53-- Orchard
54-- Truck farm
60-- OPEN FOREST (5-25% crown cover)
70-- FOREST
71-- Upland forest (oak - hickory)

72-- Upland forest (elm - ash)
73-- Upland forest (maple - linden)
74-- Floodplain forest
75-- Boreal forest relic
76-- Strip forest

-- percentage of cell coverage of each variable unit was coded here as two digits

Source:. Corps of Engineers Aerial Photographs, Scale 1:12,000, 4-11-67
ASCS Story County Aerial Photographs, Scale 1:20,000, 9-1-65

VEGETATION/PUDIL, SECONDARY Variable Class No. 0012

Variable unit list and sources are identical to those for VEGETATION/PUDIL, PRIMARY Variable Class No. 0011.

ARCHAEOLOGICAL SITES Variable Class No. 0013

0000 No archaeological site in cell

CULTURAL AFFILIATION
1--- Paleo Indian or Big Game Hunting Tradition
2--- Paleo Indian Tradition or Archaic Tradition
3--- Archaic Tradition
4--- Archaic Tradition or Woodland Tradition
5--- Woodland Tradition
6--- Woodland Tradition or Late Prehistoric Traditions
7--- Late Prehistoric Traditions (i.e. Mississippian Tradition, Plains Village, etc.)
8--- Prehistoric, undetermined
9--- Historic, Native American
0--- Historic, Euro-American

SITE TYPE
-1-- Domestic settlement - camp or village
-2-- Domestic settlement - farm or homestead
-3-- Mortuary - burial mound
-4-- Mortuary - cemetery
-5-- Animal kill, drive, or butchering site
-6-- Quarry or collecting station
-7-- Industrial site (i.e. kiln, mill, etc.)
-8-- Other

NATURE OF EVIDENCE
--10 Stone artifacts and debitage
--20 Ceramics, stone artifacts and debitage
--30 Ceramics and/or metal and/or glass
--40 Structures or structural remains (i.e. buildings or foundations, fortifications, graves, mounds, etc.)
--50 Structures or structural remains and other associated artifacts (i.e. domestic or industrial debris, grave stones, etc.)

--60 Faunal remains and associated artifacts

Source: Summary of Archaeological Sites in the Ames Reservoir Area by David M. Gradwohl and Nancy M. Osborn, Dept. of Sociology and Anthropology, Iowa State University, August, 1972

PROXIMITY TO TAKE LINE Variable Class No. 0014

0001 Outside purchase and easement areas, 1 mile from purchase boundary
0002 Outside purchase and easement areas, 3/4 to 1 mile from purchase boundary
0003 Outside purchase and easement areas, 1/2 to 3/4 mile from purchase boundary
0004 Outside purchase and easement areas, 1/4 to 1/2 mile from purchase boundary
0006 Flowage easement area
0007 Fee simple purchase area, 0 to 1/4 mile from purchase boundary
0008 Fee simple purchase area, 1/4 to 1 mile from purchase boundary.

Source: Corps of Engineers Topographic Map, Scale 1"=200', 1967
USGS Topographic Ames Quadrangle Map. Scale 1:62,500, 1917
Story County Farm Plat Book, 1967

COLUMN NUMBER Variable Class No. 0015

ROW NUMBER Variable Class No. 0016

ROAD CLASSIFICATION AND HIGHWAY ORIENTATION Variable Class No. 0017

00-- No road in cell
10-- Private/area service (municipal and rural)
20-- Municipal collector
30-- Municipal arterial
40-- Trunk collector
50-- Trunk
60-- Arterial connector
70-- Arterial
80-- Freeway/expressway
90-- Access point to freeway/expressway

--00 No road in cell
--01 North
--02 East
--03 North - East
--04 South
--05 North - South
--06 South - East

--07 North - East - South
--08 West
--09 North - West
--10 East - West
--11 North - East - West
--12 South - West
--13 North - South - West
--14 South - East - West
--15 North - East - South - West
--16 North - East - South - West (no access)

Source: General Highway and Transportation Map, Story County, Iowa Highway Commission, Scale 1"= 1 mile, 1970

ROAD SURFACE TYPE Variable Class No. 0018

0000 No road type
1000 Unimproved roadway
2000 Graded - no surface
3000 Gravel surface
4000 Bituminous surface
5000 Paved - asphaltic or Portland Cement concrete

Source: General Highway and Transportation Map, Story County, Iowa Highway Commission, Scale 1"= 1 mile, 1970

AVERAGE DAILY TRAVEL Variable Class No. 0019

0001 No information available
---- Direct number of vehicles per day
9999 Over 10,000 vehicles per day

Source: Motor Vehicle Traffic Flow Map, Story County, Iowa Highway Commission, Scale 1/2" =1 mile, 1967

LAND USE CLASSIFICATION/PRIMARY Variable Class No. 0020

1000 RESIDENTIAL
1111 Single family
1112 Farm dwelling
1120 Two family
1130 Multi-family
1210 Rooming and boarding houses
1220 Membership lodgings (fraternity, sorority, etc.)
1230 Residence halls and dormitories
1240 Retirement homes
1242 County homes
1250 Religious quarters
1300 Residential hotels
1400 Mobile home parks
1500 Transient lodgings
1510 Hotels and motels
1900 Residence not elsewhere classified

2000 MANUFACTURING
2100 Food and kindred products
2200 Textile mill products
2300 Apparel (finished fabric and leather products)
2400 Lumber and wood products (except furniture)
2500 Furniture and fixtures
2600 Paper and allied products
2700 Printing, publishing, etc.
2800 Chemicals, etc.
2900 Petroleum refining, etc.
3100 Rubber and miscellaneous plastic products
3200 Stone, clay, and glass products
3262 Concrete manufacturing products
3263 Ready mix concrete
3300 Primary metal industries
3400 Fabricated metal products
3500 Professional, scientific, and controlling instruments
3900 Miscellaneous
4000 TRANSPORTATION, COMMUNICATION, UTILITIES
4100 Railroad, rapid transit
4210 Bus transportation
4220 Motor freight transportation
4300 Aircraft transportation
4350 Airport clear zone
4400 Marine craft transportation
4500 Highway and street row
4600 Auto parking
4710 Telephone communication
4720 Telegraph communication
4730 Radio communication
4740 Television communication
4742 Television relay
4750 Combination radio and Television communication
4810 Electric utility
4820 Gas
4824 Gas pressure centrol station
4830 Water and irrigation utilities
4833 Water storage
4840 Sewage disposal
4850 Solid waste disposal
4900 Miscellaneous
5000 TRADE
5100 Wholesale
5152 Grain elevator
5156 Wholesale livestock
5200 Retail - building materials, hardware, farm equipment
5211 Lumber yard
5252 Retail farm equipment

5300	Retail - general
5350	Shopping center
5400	Retail - food
5500	Retail - automotive, marine, aircraft
5530	Gas station
5550	Mobile home sales
5555	Auto salvage yard
5600	Retail - apparel
5700	Retail - furniture and home furnishings
5800	Retail - eating and drinking
5900	Miscellaneous
6000	SERVICES
6100	Finance, insurance, and real estate
6200	Personal services
6230	Beauty shop/barber shop
6241	Funeral home
6242	Cemetery
6300	Business services
6391	Research facility
6400	Repair services
6500	Professional services
6513	Hospital
6517	Medical services
6600	Contract construction services
6620	Well drilling services
6700	Government services
6730	Post office
6811	Educational - nursery and primary
6813	Educational - secondary
6820	Educational - university, college, schools, etc.
6830	Educational - special training
6900	Miscellaneous
6911	Church, synagog, temple
7000	CULTURAL, ENTERTAINMENT, AND RECREATION
7100	Cultural activities and nature exhibit
7210	Entertainment assembly
7213	Drive-in movie
7220	Sports assembly
7230	Other public assembly
7300	Amusements
7400	Recreation
7412	Golf course
7420	Playground and athletic area
7432	Swimming pool
7500	Resorts and group camps
7520	Group or organized camps
7600	Parks
7900	Miscellaneous
8000	RESOURCE PRODUCTION AND EXTRACTION
8110	Grain crop agriculture
8120	Pasture

8130 Feedlot
8140 Poultry
8150 Farm buildings
8190 Miscellaneous agriculture
8210 Agricultural processing
8220 Animal husbandry services
8300 Forestry
8400 Fishing and related activities
8500 Mining and related activities
8900 Miscellaneous
9000 UNDEVELOPED LAND AND WATER AREAS
9100 Undeveloped and unused land
9200 Non-commercial forest
9300 Water areas
9900 Miscellaneous

Source: Corps of Engineers Aerial Photographs, Scale 1:12,000, 4-11-67
Ground surveys, 6-13-72

Note: Classifications adapted from Standard Land Use Coding Manual, Department of Transportation, Bureau of Public Roads, January, 1965

LAND USE CLASSIFICATION/SECONDARY Variable Class No. 0021

Variable unit list and sources are identical to those for LAND USE CLASSIFICATION/PRIMARY Variable Class No. 0020

LAND USE CLASSIFICATION/TERTIARY Variable Class No. 0022

Variable unit list and sources are identical to those for LAND USE CLASSIFICATION/PRIMARY Variable Class No. 0020

VEGETATION/LANDERS, PRIMARY Variable Class No. 0023

1000 STRUCTURES
1100 Farm buildings and yard
1200 Urban dwellings and yard
1300 Bridges
1400 Roadways
1500 Industry
1600 . . .
2000 URBAN
2100 Golf courses and open playgrounds
2200 Wooded parks
2300 Green belt
2400 Cemetery
2500 . . .
3000 CULTIVATED
3100 Row crops
3200 Small grain

3300 Hay
3400 Fallow and soil bank
3500 Truck gardens
3600 . . .
4000 NON-FORESTED (5% crown cover)
4100 Pasture - bluegrass and other perennial grasses
4200 Dry prairie relics - usually steep slopes or deep sand
4300 Mesic prairie relics - mod. wet areas with tall grass species
4400 Marsh - shallow water areas dominated by grasslike species
4500 Prairie potholes - small, poorly drained areas
4600 . . .
5000 UNIQUE
5100 Quarry
5200 Cliffs and rock outcrops
5300 Open bogs
5400 Ponds and reservoirs
5500 Seeps, springs, and fens
5600 Coal spoils
5700 Prairie plantings
5800 Quarry spoils - pioneer species
5900 . . .
6000 EDGE - narrow units of abruptly changing canopy heights
6100 Wooded to cultivated
6200 Wooded to pasture
6300 Stringers - riparian growth
6400 Fence rows - hedges, shrubby fences, rank herbaceous growth
6500 Ditches and roadsides
6600 Windbreaks
6700 . . .
7000 WOODED PASTURE (Savanna - 5-25% crown cover)
7100 Juniper - obvious abundance in area
7200 Juniper - honey locust combination in area
7300 Honey locust - obvious abundance in area
7400 Shrubs - sumac, multiflora rose, crabapple
7500 Scattered large trees - little woody understory
7600 Scattered large trees - mixed woody understory
7700 . . .
8000 TREE PLANTINGS
8100 Conifer timber
8200 Christmas tree
8300 Orchard
8400 Hardwood, including walnut timber
8500 Mixed farmlot planting
8600 . . .

9000 FOREST (25% crown cover)
9100 Upland forest - oak-hickory dominance
9200 Upland forest - elm-ash dominance
9300 Upland forest - maple-basswood dominance
9400 Bottomland forest - mixed floodplain forest, scant understory
9500 Bottomland forest - mixed floodplain forest, woody understory
9600 Boreal relic forest - white pine, balsam fir, yew understory
9700 . . .

Source: Corps of Engineers Aerial Photographs, Scale 1:12,000, 4-11-67
Ground survey, 3-72 through 6-72

VEGETATION/LANDERS, SECONDARY Variable Class No. 0024

Variable unit list and sources are identical to those for VEGETATION/LANDERS, PRIMARY Variable Class No. 0023.

VEGETATION/LANDERS, TERTIARY Variable Class No. 0025

Variable unit list and sources are identical to those for VEGETATION/LANDERS, PRIMARY Variable Class No. 0023.

APPENDUM 1-1-3

Ames Lake Coordinate System

The following information was printed and distributed in the early stages of the study as a coding handbook for use by the participants of the Ames Reservoir Environmental Study. Much of the information, especially in the latter sections ("Story County Data System" and "Use of the Coordinate System"), have been updated and are included in the main body of this chapter, pages 1-1-177 through 1-1-186.

1-1-338

AMES LAKE COORDINATE SYSTEM

Category 1
Reservoir Site and Stream Study
Water Resources Research Institute
Iowa State University
April 5, 1972

TABLE OF CONTENTS

PURPOSE OF THIS HANDBOOK

This handbook is designed to aid those gathering, analyzing, and presenting information and data on the proposed site of the Skunk Reservoir. A universal system is needed to coordinate the research effort between study areas and categories.

An x,y coordinate system over the area provides a spatial description of the land in and around the reservoir site. Reference to a particular tract of land will be simplified by using a numerical designation.

In Category I (Reservoir Site and Stream Study), natural science data will be quantified and stored in computer form to later be analyzed, manipulated, and displayed. Each piece of data will be accompanied by its x,y coordinates so it can be presented in map form.

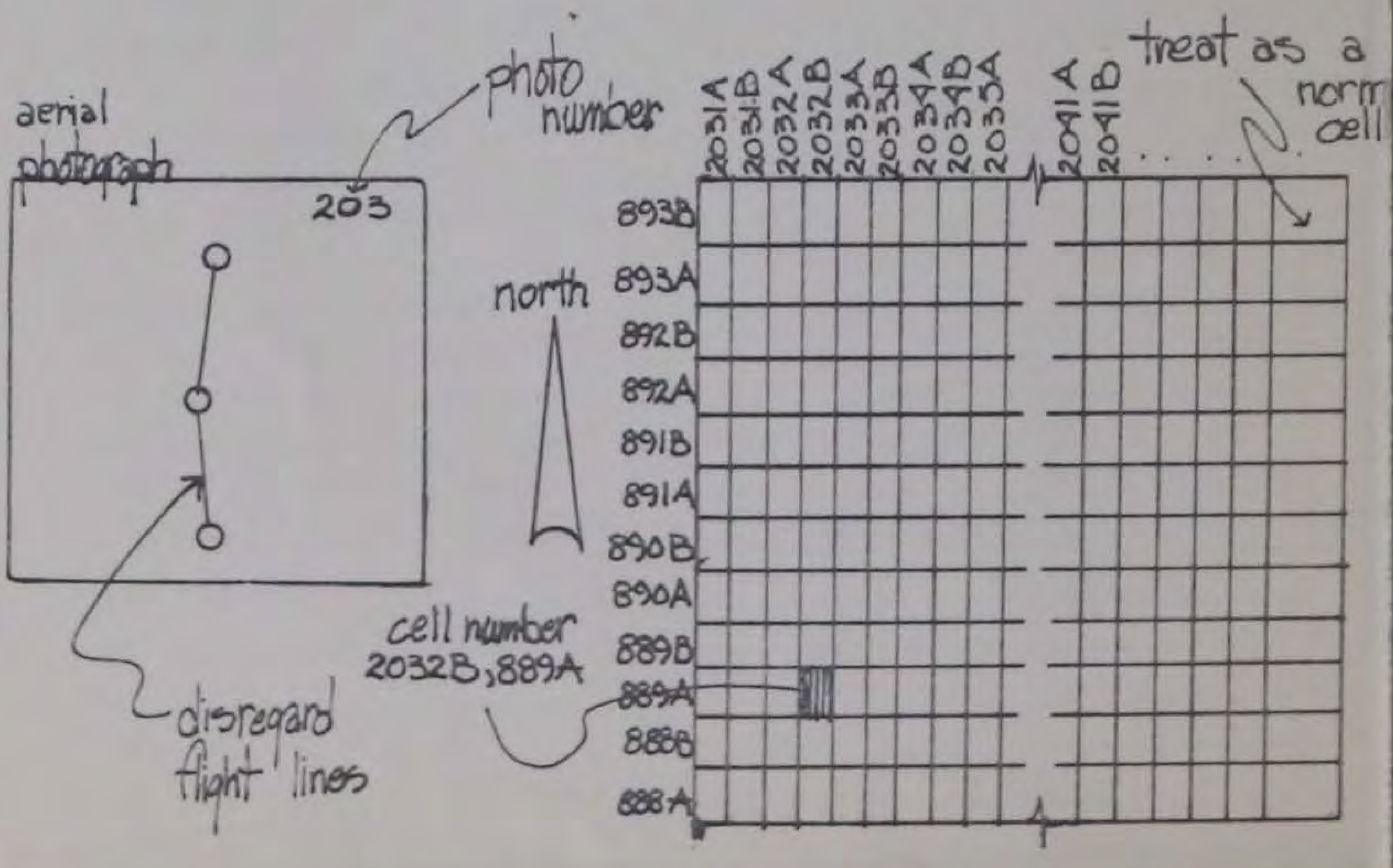
An example of this system (for an entire county) appears in Appendix 1.

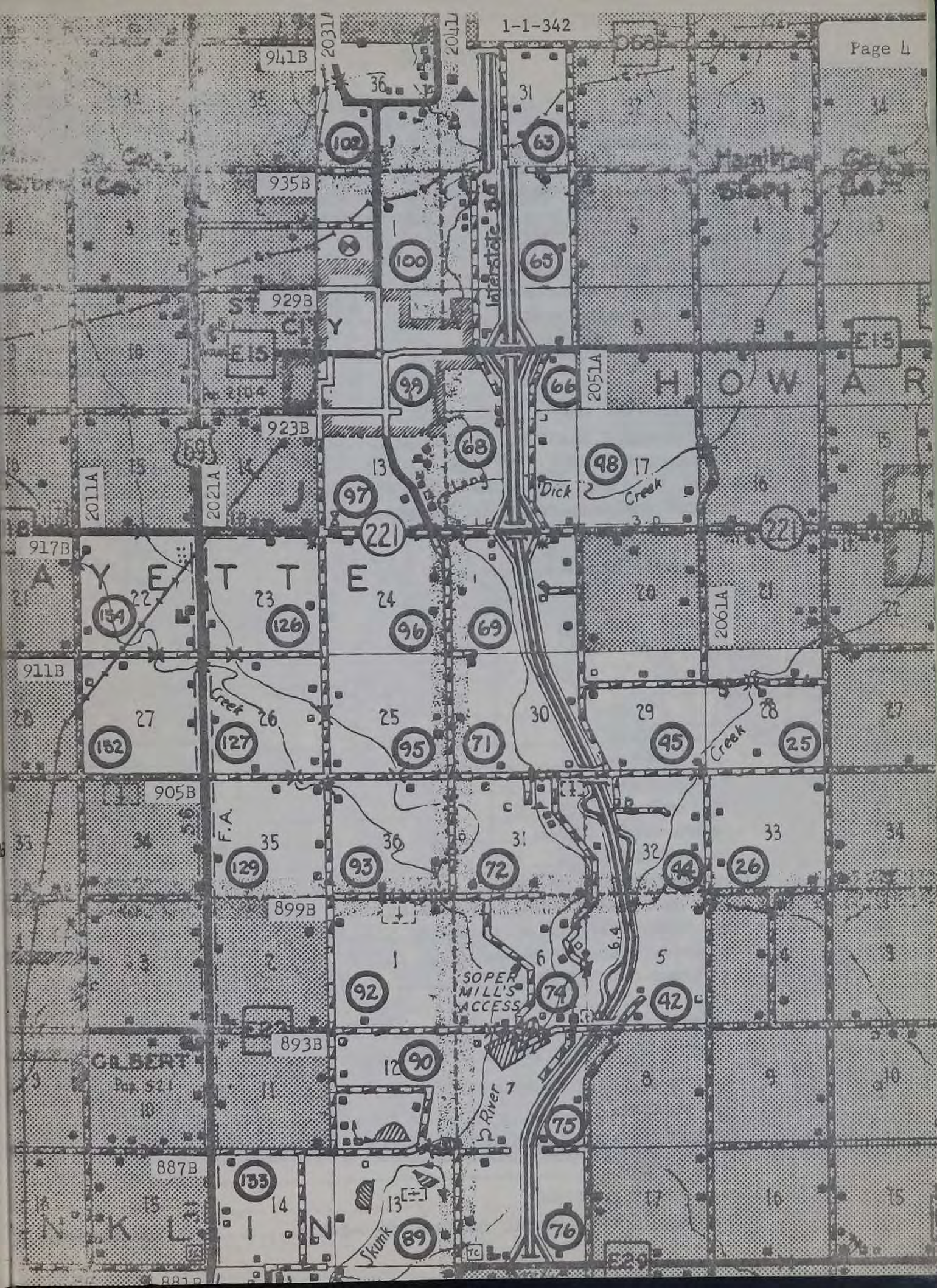
USING THIS HANDBOOK

The study area used by Category I is approximately 34 square miles or 22,000 acres. It includes all land greater than $\frac{1}{2}$ mile but less than 1 mile from the maximum flood pool. The boundary of the study area follows the section line roads. This study area was chosen because it considers all land which could potentially be inundated or developed along with the reservoir.

Each of the following aerial photographs shows one section of land (640 acres) with its x,y coordinate grid superimposed. The grid cells are rectangular to more accurately reflect the printout character used in graphic computer display of the data collected. Each cell is approximately 2.66 acres and measures 264 feet by 440 feet. This cell size was chosen because most recreation and physical facilities to be considered would correspond to this scale of information. Also, this cell size is a subdivision of the cell size used for the Story County coordinate system (see Appendix 1).

The scale of the aerial photographs is approximately 1:12,000 or 1 inch equals 1,000 feet. Each photo is marked with the county, township, section number, and photo number of the section. Because of the irregular size of some of the sections in the study area, some of the cells are larger than normal. Treat each large cell as a single cell, equal to the normal cell. Please disregard the inked circles and connecting lines (flight lines). The original photos are available for inspection in stereo coverage.




941B
2031A
2041A
935B
929B
ST CITY
E15
Interstate 35
Hamilton Co.
Story Co.
H O W A R
2051A
923B
69
2011A
2021A
221
Dick Creek
917B
A Y E T T E
2061A
911B
Creek
Creek
905B
F.A.
899B
SOPER MILL'S ACCESS
893B
GILBERT
Pop. 521
River
887B
Skunk
E29

LEGEND

	IN USE	NOT IN USE
FARM UNIT		
DWELLING OTHER THAN FARM		
ROWS OR GROUPS OF DWELLINGS	5	5
STORE OR SMALL BUSINESS ESTABLISHMENT		
CHURCH OR OTHER RELIGIOUS INSTITUTION		
SCHOOL OR OTHER EDUCATIONAL INSTITUTION		
CEMETERY		

UNIMPROVED ROAD (RURAL)

GRADED AND DRAINED ROAD

METAL SURFACED ROAD

BITUMINOUS SURFACED ROAD

PAVED ROAD

UNITED STATES HIGHWAY 20

STATE HIGHWAY SYSTEM 60

COUNTY TRUNK SYSTEM

FEDERAL AID HIGHWAY SYSTEM F.A.

POINTS BETWEEN WHICH DISTANCES ARE MEASURED 3.0

AIRFIELD FOR COMMERCIAL OR GENERAL PUBLIC USE

LEGAL ROAD NOT OPEN TO TRAFFIC

GRAVEL PIT

STATE PARK-RECREATION AREA

BOOSTER STATION TEL

COUNTY PARK C.P.

LANDING AREA OR STRIP

LEGEND

COUNTY LINE

CIVIL TOWNSHIP

CORPORATION LINE

SECTION LINE

INTERMITTENT STREAM

NARROW STREAM

HIGHWAY BRIDGE SMALL

RAILROAD SINGLE OPERATING COMPANY

RAILROAD STATION

RAILROAD BELOW OVERHEAD

RAILROAD OVER SUBWAY

PIPE LINE Oil

CENTER OF CITIES

CENTER OF COUNTY SEAT

RAILROAD GRADE CROSSING

LAKE OR POND

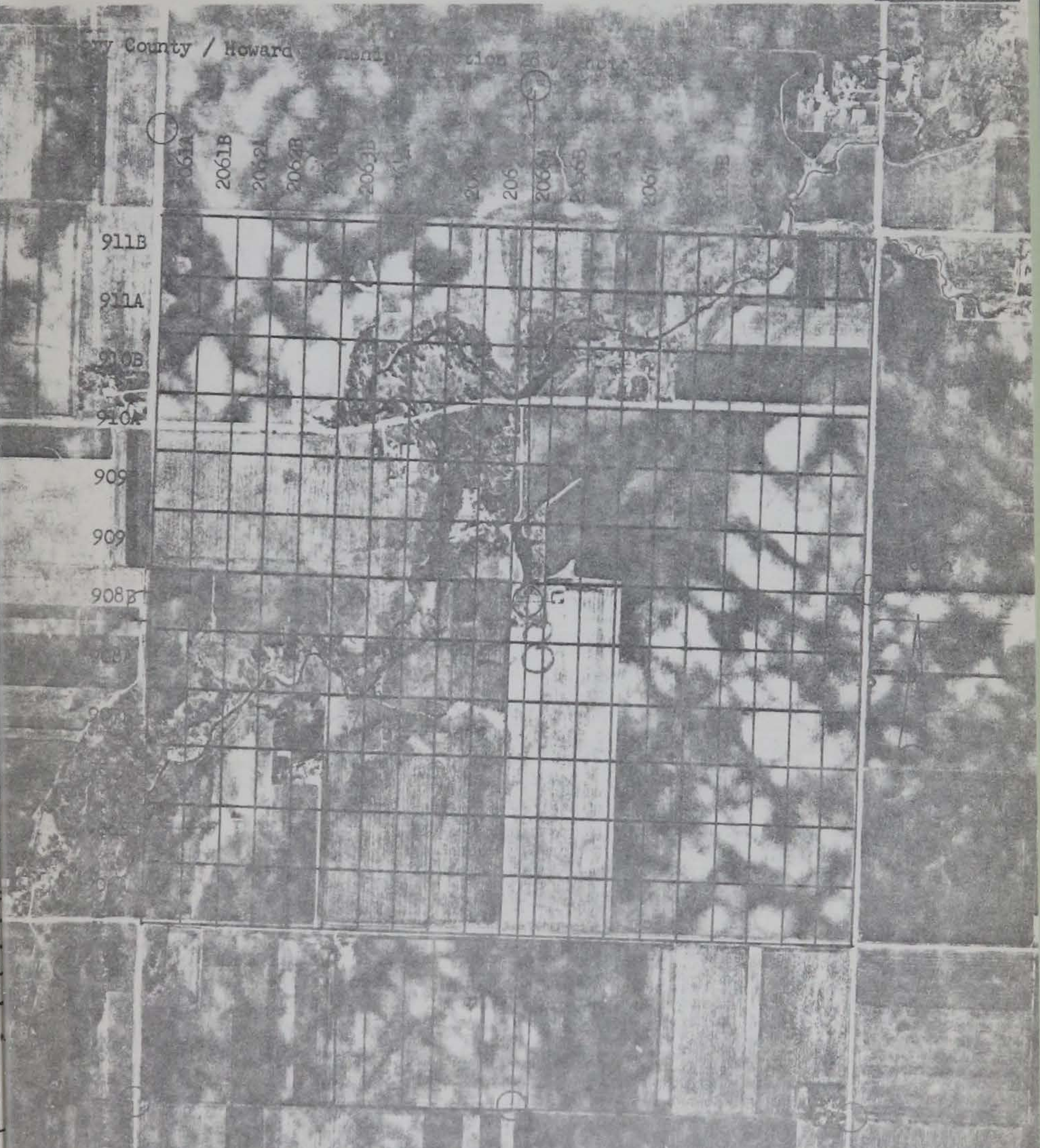
DELIMITING AREA (GENERALIZED)

WIDE STREAM

RAILROAD ELECTRIC

HIGHWAY WITH PARTIAL CONTROL OF ACCESS

4-11-67



The additional 33 aerial photographs of the study area were included in the handbook, "Ames Lake Coordinate System," but are not reproduced here as they are similar to page 1-1-344. Additional material contained in this handbook explains the Story County Data System developed and implemented by the Land Use Analysis Laboratory at Iowa State University. This material can be obtained by contacting:

James B. Sinatra
Associate Professor
Dept. of Lanscape Architecture
Iowa State University
Ames, Iowa 50010