

ENVIRONMENTAL SITE ASSESSMENT

DEVELOPMENT LAND

CASA GRANDE, ARIZONA AREA

Prepared For:

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CASA GRANDE, ARIZONA

OCTOBER 1994



ENVIRONMENTAL SITE ASSESSMENTS
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E N V I R O N M E N T A L S I T E A S S E S S M E N T S

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October 7, 1994

Mr. Harlyn L. Griffiths
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Subject: Phase I, Environmental Site Assessment
Development land near Central Arizona
College, Casa Grande, Arizona Area.

Good Morning:

Environmental Site Assessments is pleased to submit this report of our Phase I environmental site assessment for the subject site.

Our scope of services, a discussion of the information we obtained, and our conclusions are discussed in the body of the report and are summarized in the Executive Summary, Section 1.0, in the front of the report. The Appendix contains a list of information sources, selected project photographs, qualifications of the project engineer, and a glossary of terms.

We appreciate the opportunity to serve you on this project. If you have any questions concerning our findings and conclusions, please do not hesitate to contact us.

Very truly yours,

Environmental Site Assessments

Jim Powell
Project Engineer

/lp

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1.0 EXECUTIVE SUMMARY

Environmental Site Assessments has completed a Phase I Environmental Site Assessment of the development land property located at Sections 29 and 30, Township 5 South, Range 7 East of the Gila and Salt River Base and Meridian, Pinal County, Arizona. The purpose of this assessment was to identify obvious and reasonably likely existing and potential sources of contamination either on-site or off-site within a one mile radius of the property that could be associated with the property.

Based on our observations and the information we obtained during the course of our assessment, we have concluded that:

- We did **not** obtain information that demonstrated that prior or current **site** uses had caused significant contamination of the site.
- We did **not** obtain information which demonstrated that **off-site** sources had caused contamination of the site.
- Section 9.0, lists areas of environmental concern identified during this Phase I Site Assessment.
- Our recommendations for the subject site are given in Section 10.0.

No additional environmental assessment services are recommended for the site at this time.

2.0 INTRODUCTION

Environmental Site Assessments has conducted a Phase I Environmental Assessment of the development land property located at Sections 29 and 30, Township 5 South, Range 7 East of the Gila and Salt River Base and Meridian, Pinal County, Arizona.

2.1 PURPOSE

The purpose of this Phase I Environmental Assessment was to identify obvious existing and potential environmental concerns, on-site and off-site, that could be associated with the property. It was not the purpose of this study to characterize the presence, degree, or extent of contamination, if any, at the site. This would require drilling, sampling, and laboratory analysis, and these activities are beyond the scope of a Phase I Assessment.

2.2 SCOPE OF WORK

A Phase I Environmental Site Assessment is a process by which environmental concerns are identified on a parcel of real property. The American Society for Testing Materials (ASTM) specification E-1527 was used as the general guide for conducting this assessment. Additional issues beyond the scope of the ASTM specification E-1527 were also addressed in this report including asbestos, radon, and other issues that were deemed appropriate by the party requesting the assessment or by the environmental professional conducting the research.

The following services were performed for the assessment:

- A review of project information provided by the client.
- A review of readily available aerial photographs, maps, street directories, and other sources to evaluate past land use.
- A review of published topographic maps to evaluate surface drainage characteristics in the area.
- A review of hydrologic maps and records to evaluate groundwater conditions in the area.

- A review of soil maps and records to evaluate site drainage and contaminant migration characteristics in the area.
- A review of the environmental records noted in this report as published by local, state, and federal regulatory agencies to determine if the subject site or nearby property is listed as having a past or present record of actual or potential environmental concern.
- A site reconnaissance of the subject site. The site reconnaissance included a visual survey of the property for indications of past or present activities which have or could have contaminated the subject site.
- A vehicular area reconnaissance of the surrounding one mile radius area to assist in evaluating if adjacent land use(s) may have had an environmental impact on the subject site.
- Interviews with reasonably available individuals knowledgeable about the subject property, adjacent properties, and environmental factors in the area.
- A limited walk-through visual survey for asbestos-containing materials in the accessible interior of the on-site structures. The purpose was to identify suspect ACMs and to note if any were in a friable condition. This survey was not sufficient to estimate the quantity of the ACMs or the potential remediation cost.
- A limited radon survey to note whether the property was located in an area with a known propensity for radon exposure.
- An evaluation of the information we obtained.
- Preparation of this report which contains the information obtained from our research.

Our scope of services did not include:

- Sociological, biological or other evaluations normally associated with "environmental impact statements" or "special resource surveys."

2.3 REPORT FORMAT

This report is based generally on the recommendations of ASTM specification E-1527. However, the report also includes additional information, maps, and topics to make the report more user friendly and to address concerns often expressed by clients that are not addressed by the ASTM specification.

2.4 LIMITATIONS

This report was prepared for the client, and others named on the cover page of the report, to be used in their evaluation of the subject property. The contents should not be relied upon by any party other than the aforementioned without the express written consent of Environmental Site Assessments.

The information is relevant to the dates of our site work and should not be relied on to represent conditions at later dates.

The opinions expressed herein are based on information obtained during our investigation and on our experience. If additional information becomes available, we request the opportunity to review the information and modify our opinions, if necessary.

Our services have been provided using that degree of care and skill ordinarily exercised, under similar circumstances, by environmental consultants practicing in this or similar localities. Environmental site assessments involve the application of diverse, inexact sciences. The investigative data commonly contain large uncertainties, and the behavior of contaminants in subsurface materials is poorly understood and frequently proves to be unpredictable. In view of the uncertainties and the limited time/budget constraints normally associated with this type of investigation, the liability of the consultant is limited to the amount of compensation paid for this report. No warranty, expressed or implied, is made as to the professional opinions presented in this report.

Environmental Site Assessments is not responsible for the conclusions, opinions, or recommendations made by others based on this information.

American Society for Testing Materials specification E-1527, Section 4.0, notes the following limiting concepts inherent in the use of Phase I Site Assessments that should be understood by those who use Phase I reports: (1) No environmental site assessment can wholly eliminate uncertainty regarding the potential for environmental conditions in connection with a property. (2) Appropriate inquiry does not mean an exhaustive assessment and a clean property. There is a point at which the cost of information obtained or the time required to gather it outweighs the usefulness of the information. One of the purposes of ASTM specification E-1527 is to identify a balance between competing goals of limiting cost and time demands and the reduction of uncertainty about unknown conditions resulting from additional information.

2.5 CLIENT RESPONSIBILITIES

American Society for Testing Materials specification E-1527, Section 5.0 details the following user responsibilities for using Phase I reports:

- If those who use Phase I reports feel that the nature or history of the property is such that environmental liens could be filed against the property (i.e. a protracted involvement with regulatory agencies), the user should engage a title company or a title professional to check reasonably ascertainable recorded land title records for environmental liens currently recorded against the property. Any liens so identified should be reported to the environmental professional who conducted the Phase I Assessment.
- If the user is aware of any specialized knowledge or experience that is material to identifying the environmental concerns on the site, it is the user's responsibility to communicate that information to the environmental professional before the site reconnaissance occurs.
- If the user has actual knowledge that the purchase price of the site is significantly less than the purchase price of comparable properties, the user should try to identify an explanation for the lower price and to make a written record of such explanation. In such cases, the user should consider environmental concerns as a possible explanation for the adjustment in the purchase price of the property.

3.0 PROJECT INFORMATION

3.1 INFORMATION SOURCE

We obtained information on this project from Mr. Harlyn Griffiths of Casa Grande, Arizona, and from information developed by our research.

3.2 SITE DESCRIPTION

The site was an irregular shaped parcel located approximately three miles northeast of Casa Grande, Arizona. The exact site location is shown on Figures 1, 2, and 3. Figure 3 is an April 6, 1985 aerial photograph which shows the site approximately as it appeared at the time of our visit to the site in October of 1994.

There were no buildings on the site. The site was all desert land covered by mature desert vegetation.

3.3 PHOTOGRAPH RECORD

Pictures of the site, as it appeared at the time this report was prepared, are located in the Site Photographs section in the Appendix. A Site Photographs Key is located in front of the photographs to show the approximate location of each photograph.

3.4 HISTORICAL OVERVIEW

Based on our review of aerial photographs covering the period from 1963 to 1990, the site was desert land during this period of time. The general area of the site in 1963 was desert land. By 1971 the Central Arizona College was in place on the east site of the subject site, and by 1978 several single family home subdivisions were located along the south and west borders of the site. More information on the site history is provided in Section 6.0, Historical Review.

3.5 UTILITIES

The following utilities were reported to be available in the general area of the subject site:

- Water City of Casa Grande
- Electricity.....Arizona Public Service

3.6 U.S. GOVERNMENT SURVEY LOCATION

A review of our maps indicated that the site was located in Sections 29, and 30, Township 5 South, Range 7 East, of the Gila and Salt River Base and Meridian, Pinal County, Arizona.

3.7 MAPS and AERIAL PHOTOGRAPH

The maps and aerial photograph described below are provided to make this report more user friendly, and they appear following this section of the report.

Figure 1 - Vicinity Map: This map shows the location of the subject site in the Casa Grande, Arizona area.

Figure 2 - Study Area Map: This map shows the geographical area covered by our research for this project. The general study area covered properties within a one mile radius of the subject site. The regulatory lists identified in Section 8.0 were examined for the approximate minimum search distance from the subject site, as indicated for each list in that section, as recommended by American Society for Testing Materials specification E-1527.

Figure 3 - Aerial Photograph: This April 6, 1985 aerial photograph shows the immediate area of the site. The approximate border of the site for the purposes of this investigation is shown in yellow. Six aerial photographs were reviewed to evaluate land use on the site. The most important information obtained from this review is described in Section 6.0, Historical Review.

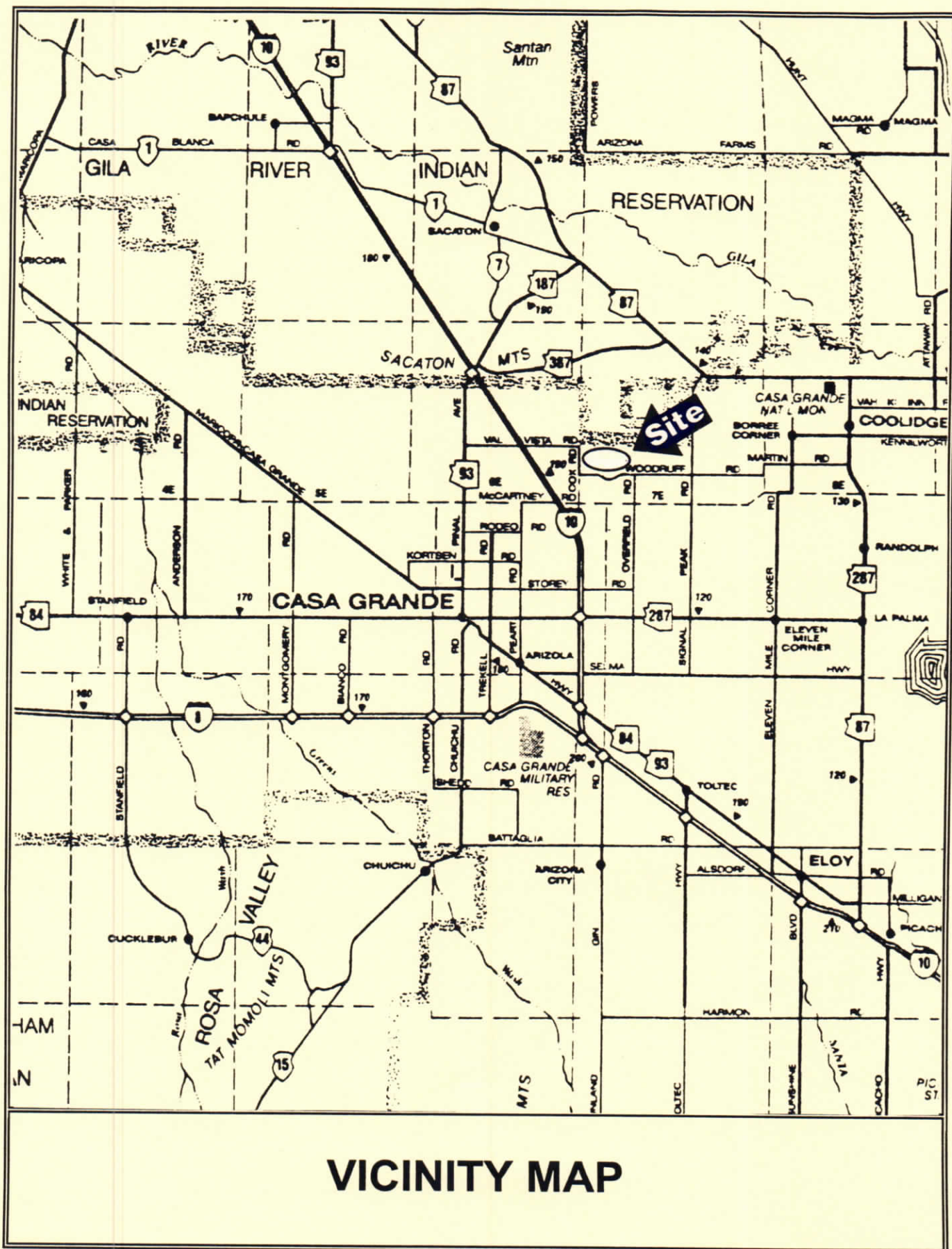


FIGURE - 1

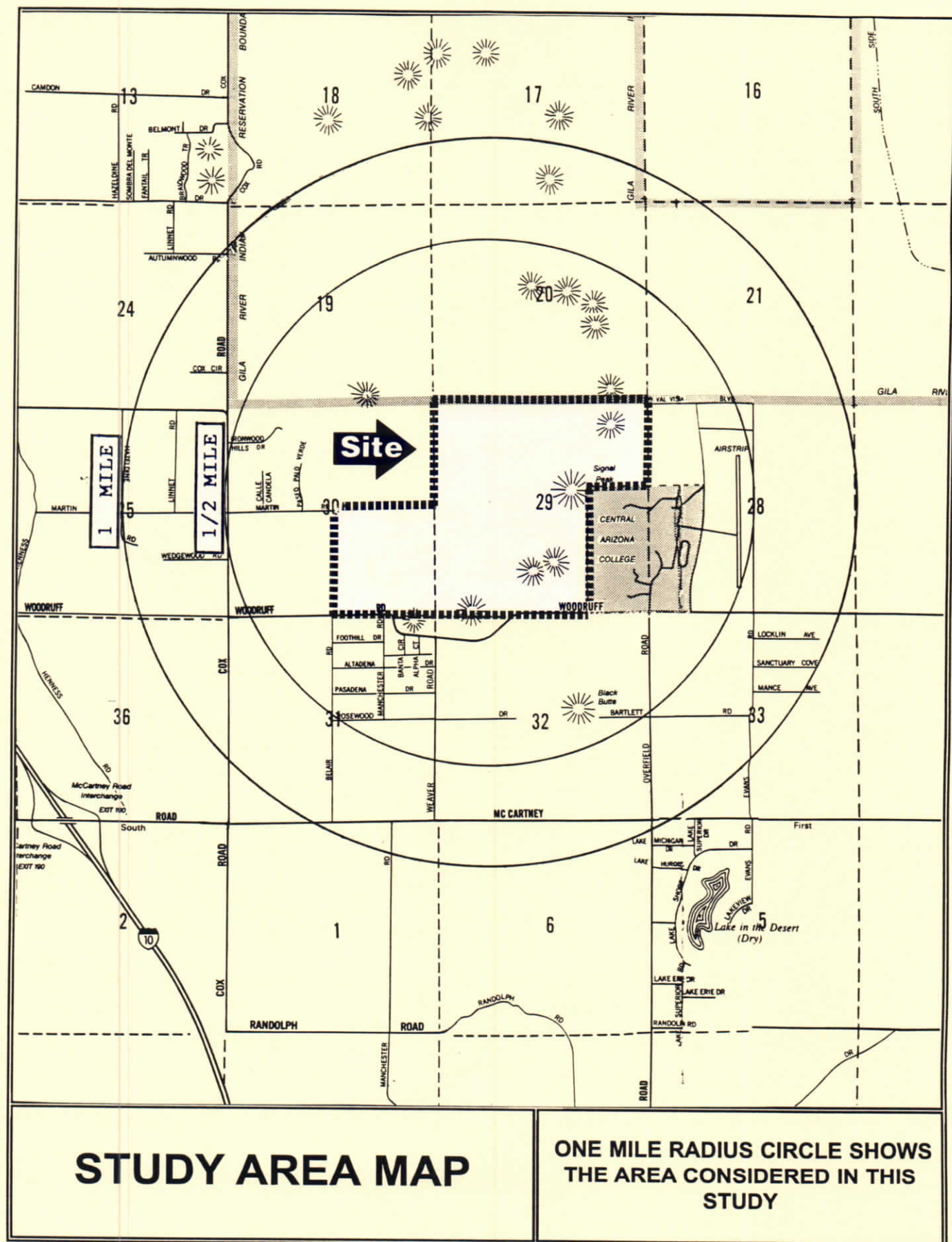


FIGURE - 2

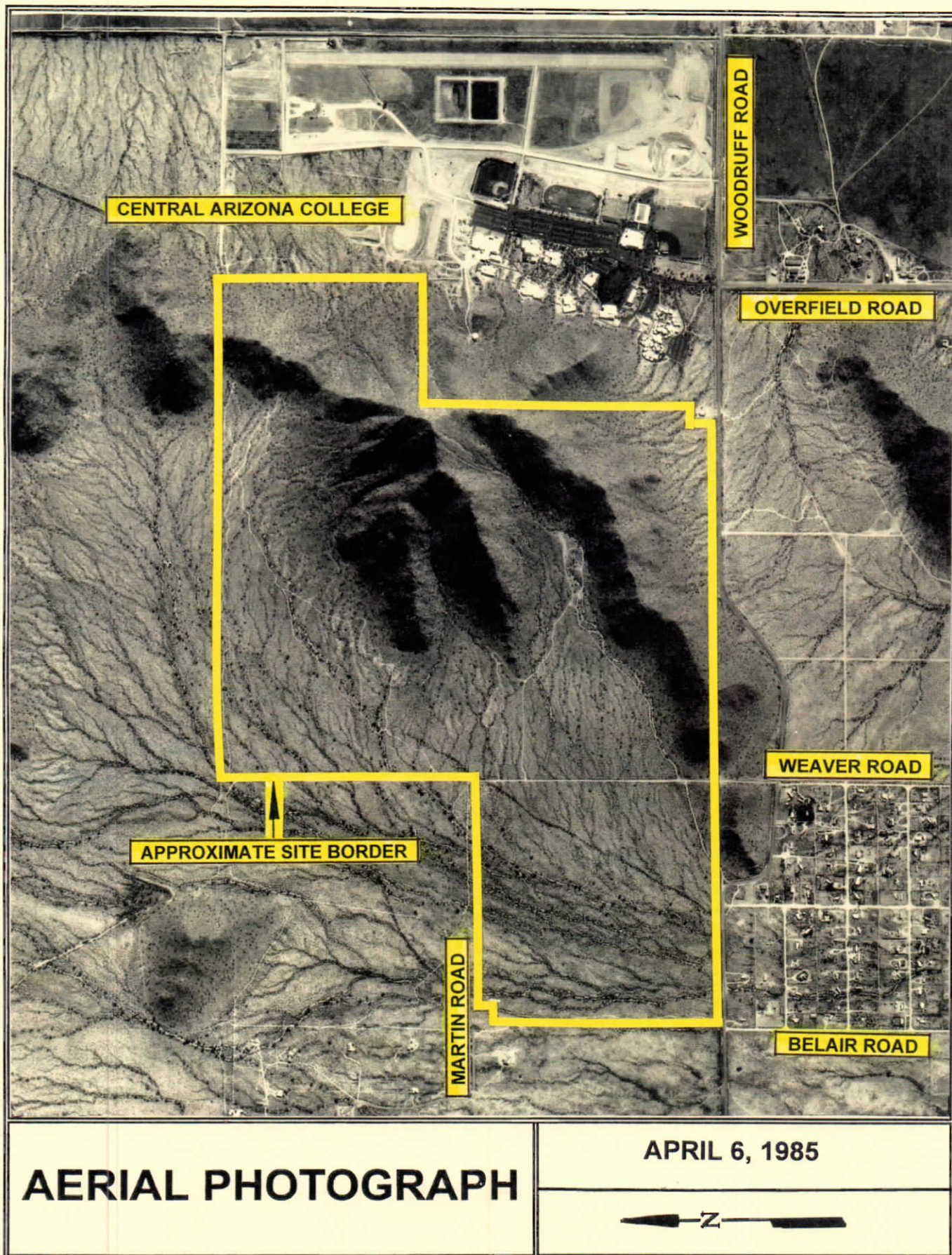


FIGURE - 3

4.0 RECONNAISSANCE

Mr. Jim Powell, an engineer from our office, conducted the site and area reconnaissance on October 1, 1994.

The site was not staked, and we did not have a boundary survey of the site. However, the site was partially fenced, bounded by several streets, and we did have a sufficient understanding of the approximate borders of the site for the purposes of our research. Those using this report are cautioned not to use the maps, pictures, or verbal descriptions in this report to determine the borders of the site. Our references to the borders of the site are only the approximate borders of the site.

4.1 SITE RECONNAISSANCE

The site reconnaissance was performed to determine if there were obvious indications of present or past activities which have, or could have, contaminated the subject site. The site reconnaissance was conducted on foot and by automobile.

4.1.1 Current Use of the Property

There were no buildings on the site. The site was desert land that had not been developed. However, several single family home subdivisions and the Central Arizona College were located adjacent to the site.

4.1.2 Past Use of the Property

Our research indicated that the site has probably always been desert land. From our observations on the site, we did not detect any indication that past use of the property would be likely to raise environmental concerns. We found no indication that the past use of the property involved the use, treatment, storage, disposal, or generation of any significant quantities of hazardous substances or petroleum products.

4.1.3 Observations

During the course of the site reconnaissance, the following observations were noted:

- No electrical transformers were observed on the site.

- The vegetation on the site consisted of wild grass, brush, cactus, and desert trees. Typical vegetation on the site is shown in Photographs (1-22). Our engineer did not observe stressed vegetation that would suggest possible contamination of the site.
- The soil on the site appeared to be relatively uniform in color and free of discoloration.
- No dry wells were observed on the site.
- No cracking or depressed areas, suggestive of buried tanks, were observed on the site.
- No trash dumpsters or drums were observed on the site.
- Only minor debris was observed on the site. There were several small areas on the site where wildcat dumping had occurred. The dumping did not appear to have occurred recently. One of the wildcat dumping areas is shown in Photograph (18).

4.2 AREA RECONNAISSANCE

The area reconnaissance was performed to assist in evaluating if adjacent land uses have, or could have, contaminated the subject site. The area reconnaissance was conducted by touring the area of the site by automobile on selected roads up to approximately one mile from the site.

4.2.1 Adjoining Properties

North of Site: The north border of the site was adjacent to desert land. The area north of the site is shown in Photograph (19).

South of Site: The south border of the site was adjacent to desert land and a single family home subdivision. An area south of the site is shown in Photograph (20).

East of Site: The east border of the site was adjacent to the campus of Central Arizona College. The area east of the site is shown in Photograph (21).

West of Site: The west border of the site was adjacent to both desert land and a single family home subdivision. The area west of the site is shown in Photograph (22).

4.2.2 Neighborhood Properties

Land use within a one mile radius of the site consisted of a mixture of desert land, several single family home subdivisions, and the campus of Central Arizona College.

From a surface migration perspective for possible environmental contamination from properties in the general area of the site, the subject site was not shielded by surface improvements; however properties upgradient from the site were not developed and did not pose a threat of contamination for the site. Without a detailed topographic survey of the area, the extent of the runoff contribution of the tributary areas was unknown.

From a contaminated groundwater perspective, the regulatory agency records listed in Section 8.0 of this report did not list the subject site address as a possible source of groundwater contamination.

4.3 INTERVIEWS

We interviewed Mr. Harlyn Griffiths of Casa Grande, Arizona.

Mr. Griffiths said he was not aware of any problems on the site that would be environmental concerns.

5.0 HYDROGEOLOGY OF SITE AREA

A consideration of surface and subsurface drainage, geology, soil characteristics, and meteorological factors are helpful in understanding the direction contaminants, if present, could be transported to, and throughout, the site.

5.1 SURFACE GRADIENTS AND SURFACE WATER

We reviewed a topographic map published by the United States Geological Survey (USGS) to determine the nominal ground surface elevation and general ground surface gradient in the area of the site. The map indicated that the site was at an approximate elevation of 1480 near the northeast corner of the site to 2280 feet mean sea level at the top of Signal Peak. The natural topography of the area slopes down in all directions away from the mountains running through the site, and in the west side of the site, in the southeast quarter of Section 30, the slope of the general area is to the south.

Our review of the topographic and street maps indicates that some of the natural flow of surface water in the area of the site would be intercepted or diverted along the following surface features:

- Natural surface features such as dry washes on the site.

The potential for significant quantities of surface water to reach the site, from areas that are up surface gradient from the site, could not be determined from available information. Without a detailed topographic survey, the extent of the runoff contribution from adjacent areas was unknown.

5.2 GROUNDWATER

We reviewed information published by the Arizona Department of Water Resources (ADWR) to obtain information regarding groundwater conditions in the vicinity of the site. This information indicates that regionally, the site was located in the Lower Santa Cruz Area which includes about 5,400 square miles in south-central Arizona.

The main water-bearing unit consists principally unconsolidated alluvial deposits. In the extensively developed part of the area the alluvial deposits have been divided into four units--the upper sand and gravel unit, the silt and clay unit, the lower sand and gravel unit, and the local gravel unit. The upper and lower sand and gravel units are the main sources of groundwater. The upper sand and gravel unit is at the land surface in most of the area and is from less than 50 to

about 600 feet thick. The silt and clay unit is from 100 to about 600 feet below the land surface and is from 0 to about 2,000 feet thick. The lower sand and gravel unit is a mixture of sand, gravel, and clay, which is more cemented than the upper unit. The unit is from 300 to 1,100 feet below the land surface in the western part of the area and from 300 to nearly 2,000 feet below the land surface in the eastern part of the area, and it is from 0 to 500 feet thick.

Groundwater may occur under confined conditions in the lower unit were overlain by the silt and clay unit. Where the silt and clay unit is not present, it is difficult to differentiate between the upper and lower sand and gravel units. The local gravel unit is from 0 to nearly 1,000 feet thick.

Arizona Department of Water Resources publications indicate that groundwater in the area of the site occurred on the order of approximately 175 feet below the ground surface in the area west of the mountains in a well northwest of the site in 1988-89 in the upper main water zone and approximately 345 feet in the lower main water zone west of the mountains.

Regional groundwater elevations and groundwater contours, which were determined from 1985 ADWR data, are shown on Figure 5. These groundwater contours suggest that the regional groundwater flow direction in the general area of the site in the upper main water zone was undetermined and to the east in the lower main water zone.

Figures 4 and 5 show surface water and groundwater flow maps for the area of the site.

5.3 SOIL SURVEY

Soil is the product of soil-forming processes acting on material deposited or accumulated by geologic forces over relatively long periods of time. The characteristics of a particular soil at any given point in time are determined by mineralogical composition, climate, plant and animal life, lay of the land, and the length of time these forces have acted on the material. Because there are many variables in this soil formation process, a variety of soil types can be created even in a relatively small area. For example, there are over three dozen soil types described in the eastern Maricopa and northern Pinal Counties area.

A Soils Map, Figure 6, for the area of the subject site indicates that the site probably has Denure very gravelly sandy loam and Denure sandy loam soil in the larger flat areas west of the mountains on the site (15" and "16" on the Soils Map).

Denure series soils consist of deep, somewhat excessively drained soil on fan terraces. These soils formed in mixed alluvial material derived from a wide mixture of rocks. Slopes range from 1 to 8 percent. Elevations are 1,140 to 2,000 feet. In a representative profile the surface layer is light brown sandy loam about 2 to 8 inches thick. The next 46 to 52 inches is light brown sandy loam and fine sandy loam. Below this to a depth of 60 inches or more is reddish brown sandy clay loam.

The probable soil type is presented for the evaluation of environmental concerns and not to be used as the basis for structural engineering decision which would require field soil tests.

5.4 METEOROLOGICAL

The site is within the Sonoran Desert Climatic Region which is characterized by hot summers and mild winters. Yearly precipitation averages 7 to 8 inches, and there are two distinct precipitation and storm periods in the year. During the summer, usually July and August, the area is influenced by tropical air from the Gulf of Mexico which frequently results in thunderstorms. These storms can be intense, but they are usually of short duration and are widely scattered. Heavier late summer rains result from tropical storms originating off the west coast of Mexico. During the winter, precipitation is associated with storms originating in the northern Pacific Ocean which move eastward across the continent after intensifying off the West Coast. As a result of this storm activity, prevailing winds are from the west and south.

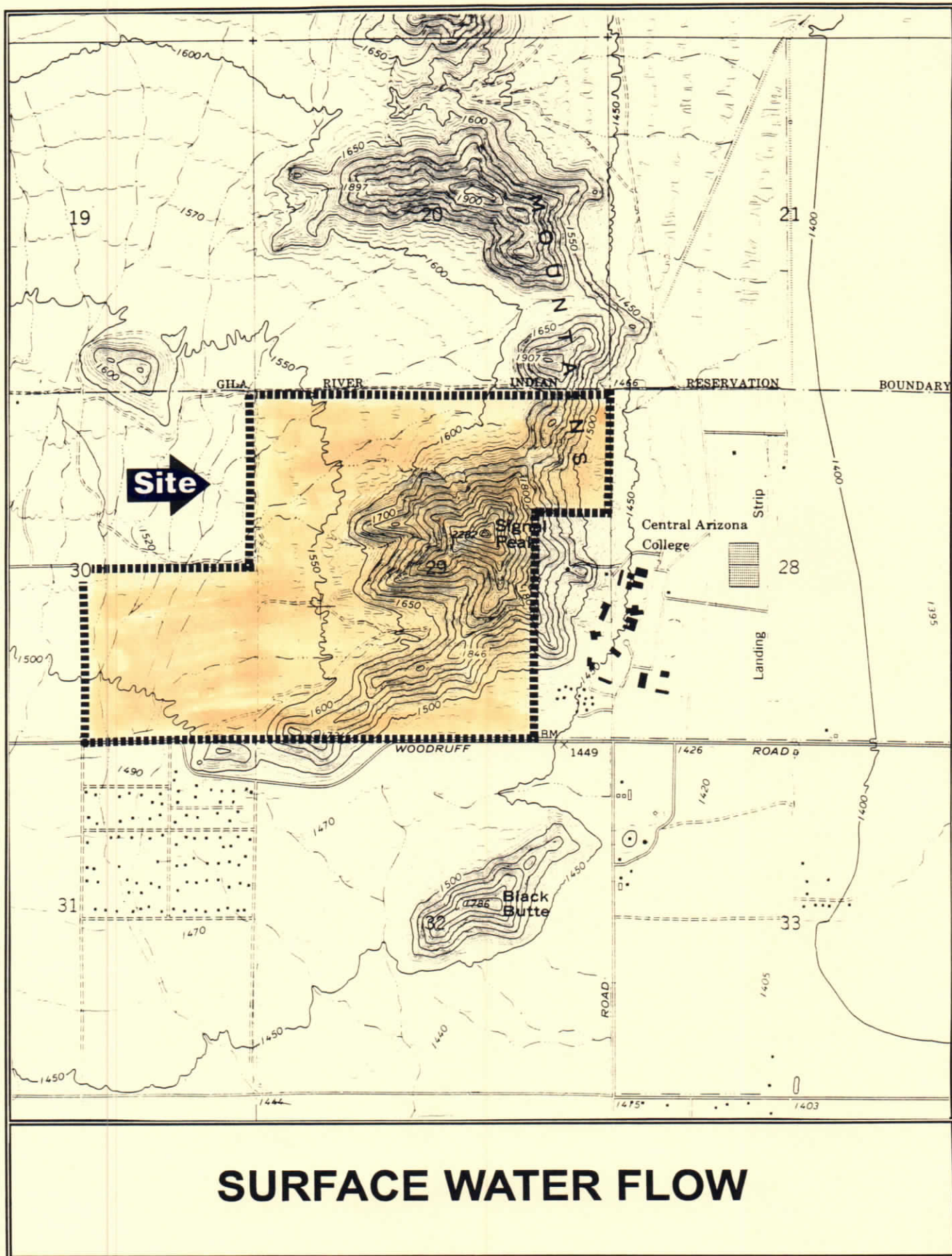


FIGURE - 4

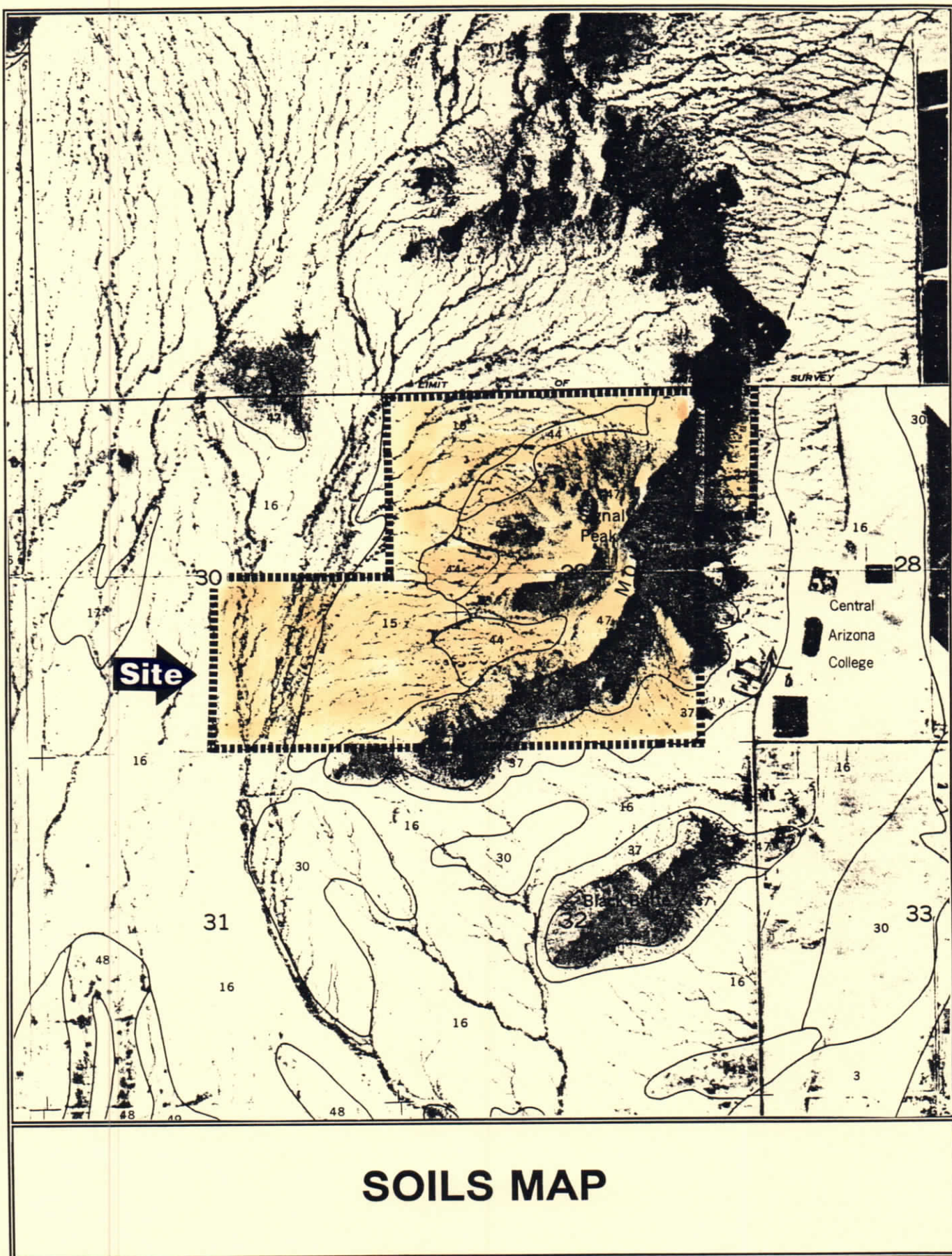


FIGURE - 6

6.0 HISTORICAL REVIEW

Environmental Site Assessments reviewed the historical information sources listed in this section of the report to evaluate historical land use on, and in the vicinity of, the site. These records indicated a relatively simple and consistent land use history for the subject site.

6.1 AERIAL PHOTOGRAPH REVIEW

We reviewed a total of six aerial photographs of the area of the site from three different sources covering the period from 1963 to 1990. The sources and dates of these aerial photographs are listed in the Information Sources section of the Appendix.

In summary: A review of aerial photographs covering the period from 1963 to 1990 revealed that the site was desert land during that period of time. The general area around the site was also desert in 1963. The Central Arizona College on the east side of the site was in place in a 1971 aerial photograph, and by the time of a 1978 aerial photograph single family home subdivisions were in place on the west and south sides of the site.

6.2 U. S. GEOLOGICAL SURVEY MAP REVIEW

A U.S. Geological Survey Map of the area of the site was produced from aerial photographs taken in 1963. Color-coded revisions were shown on the map for an aerial photograph taken in 1978. Both the 1963 and 1978 photographs indicated that there were no buildings on the site. By 1978 the buildings east of the site on the campus of Central Arizona College had been built, and the single family home subdivisions on the south and west sides of the site were in place. This map is shown as Figure 4 in this report.

6.3 U.S.D.A. SOIL CONSERVATION SERVICE MAP REVIEW

A soils map for the area of the site was produced from a 1971 aerial photograph. This photograph shows the site to be desert land. No buildings appeared on the site on this map, but the buildings of Central Arizona College were in place. This map is shown as Figure 6 in this report.

6.4 CITY STREET DIRECTORY REVIEW

Street directories were not available for the area of the site.

6.5 INTERVIEWS

We interviewed Mr. Harlyn Griffiths of Casa Grande, Arizona. Mr. Griffiths stated he was not aware of any problems with the building or past activities at the site that could be expressed as an environmental concern.

7.0 LIMITED WALK-THROUGH SURVEY FOR ASBESTOS

7.1 PURPOSE

The purpose of a limited walk-through survey for asbestos was to identify the major categories of suspect asbestos-containing materials (ACM) in buildings on the site. Determination of the specific quantity and location of all ACM in buildings on the site was beyond the scope of this report.

7.2 ASBESTOS USE & RISKS

Historically asbestos has been a common ingredient in building materials, and it has been found in hundreds of routinely used building materials. Although health risks have been associated with inhaled asbestos fibers, asbestos is not considered harmful if the fibers are tightly bound in the building material. Relatively new buildings are likely to have fewer asbestos containing materials than older buildings.

7.3 FOCUS OF THIS SURVEY

The primary focus of the asbestos survey was to locate obvious suspect thermal, acoustical, aesthetic, or fireproofing treatments which may contain friable asbestos materials. "Friable materials" are those which can be crushed by hand pressure thereby releasing harmful fibers into the air. The condition assessment focused on friability, evidence of deterioration, physical damage, water damage, proximity to an air stream, accessibility, and age of the building.

7.4 BUILDINGS ON THE SITE

There were no buildings on the site in which to conduct an asbestos survey.

8.0 REGULATORY STATUS REVIEW

Environmental Site Assessments conducted a review of available environmental records published by local, state, and federal regulatory agencies to determine if the subject site, or nearby property, was listed as having a past or present record of actual or potential environmental impact, or was under investigation by one or more of the agencies. Our review of the following lists or records indicated the following site status:

National Priorities List (NPL)

The Comprehensive Environmental Response and Compensation Liability Act (CERCLA) established the National Priorities List (NPL) of federal "superfund" sites. These are contaminated sites that have been assigned a high ranking, in terms of potential public health effects by the EPA.

THE SITE WAS NOT LOCATED IN A
FEDERAL SUPERFUND SITE.

No NPL sites were listed within one mile of the subject site.

Arizona Water Quality Assurance Revolving Fund (WQARF)

The State of Arizona has established the WQARF (state superfund) to remedy sites which may have an actual or potential impact upon Arizona's waters when contaminated by hazardous substances. These are sites that have been assigned a high ranking, in terms of potential public health effects, by the Arizona Department of Environmental Quality (ADEQ), but which do not appear on the Federal NPL.

THE SITE WAS NOT LOCATED WITHIN
A WQARF STUDY AREA.

No WQARF study areas were listed within one mile of the subject site.

CERCLA Information & Data Systems

The list consists of sites and facilities subject to investigation under the Federal CERCLA programs and state environmental programs.

THE SITE WAS NOT LISTED ON THE
CERCLA LIST.

No CERCLA sites were listed within one-half mile of the subject site.

EPA Resource Conservation & Recovery Act (RCRA) Database

This database includes facilities involved in the generation, transport, treatment, storage or disposal hazardous wastes.

THE SITE WAS NOT LISTED ON THE RCRA
DATABASE.

One RCRA Database site was listed within one mile of the subject site. See comments in Section 9.0.

RCRA Compliance Log

The RCRA Compliance Log lists facilities that are or have been, under investigation for non-compliance with RCRA regulations.

THE SITE WAS NOT LISTED ON THE RCRA
COMPLIANCE LOG.

No RCRA Compliance Log sites were listed within one mile of the subject site.

Registered Landfills

A listing of permitted active solid waste landfills and closed solid waste landfills is maintained by the ADEQ. The list of closed solid waste landfills and dumps is not necessarily complete. Older dumping areas may not be known. Neither list catalogs "wildcat" dumping areas.

THE SITE WAS NOT LISTED ON THE
LANDFILLS LIST.

No landfill sites were listed within one-half mile of the subject site.

Registered Underground Storage Tanks (RUST)

Owners of underground tanks storing petroleum products or other regulated substances are required to register such facilities with the Department of Environmental Quality.

THE SITE WAS NOT LISTED ON THE
RUST LIST.

One RUST sites was listed for properties adjoining the subject site. This was the Central Arizona College.

Leaking Underground Storage Tanks (LUST)

Owners of underground storage tanks are required to report to ADEQ releases from underground tanks and the remedial actions taken.

THE SITE WAS NOT LISTED ON THE
LUST LIST.

One LUST site was listed within one-half mile of the subject site. See comments in Section 9.0.

Drywells

Drywells are designed and installed to collect storm water runoff and convey it to an underground aquifer or to be absorbed by the soil. Drywells must be registered with the ADEQ, and they are not to be used for the disposal of hazardous wastes or regulated substances.

THE SITE WAS NOT LISTED ON THE
DRYWELL LIST.

No drywells were listed for properties adjoining the subject site.

Radon

Radon is a heavy, colorless, odorless, radioactive gas that is formed by the disintegration of radium. Radon occurs naturally in geologic formations containing uranium, granite, shale, phosphate or pitchblende. At present, there are no federal regulations concerning naturally occurring radon, with the exception of regulations of toxic air emissions from uranium mines. However, the U. S. Environmental Protection Agency (EPA) has set maximum action levels for radon. At present, the action level is 4 picocuries per liter of air.

The Arizona Radiation Regulatory Agency, in cooperation with the EPA, initiated a program to measure radon concentrations in homes. A survey was conducted in 1987-88 and the results were published by zip code. Based on the published results of this survey, the subject site does not appear to be located in an area with known propensity for radon exposure and accumulation.

9.0 ENVIRONMENTAL CONCERNS

The following areas of environmental concern were identified during this Phase I Environmental Site Assessment:

- One RCRA Database site was listed within one mile of the subject site. This was not a large quantity generator of hazardous waste. We did not in our research or observations find information that indicated that the listed RCRA Database facility had impacted the subject site. This was the Central Arizona College facility located just east of the site.
- One leaking underground storage tank (LUST) site was listed within one-half mile of the subject site. Our review of the LUST file on this site at the Central Arizona College did not provide information that would suggest that the subject site would be impacted by this LUST site.

10.0 RECOMMENDATIONS

Based on the information we have obtained to date, it is our opinion that there is little likelihood that the subject site's soil or groundwater has significant contamination as a result of the activities that have occurred on the site.

No additional environmental assessment services are recommended for the site at this time.

INFORMATION SOURCES

INFORMATION SOURCES

Information presented in this report is based partially upon the following sources:

Project Information

- * Briefing by Mr. Harlyn Griffiths, Casa Grande, Arizona.

Aerial Photographs

- * Landiscor 1985, 1986, 1990.
- * USDA, Soil Conservation Service 1971.
- * USGS, 1963, 1978.

Maps

- * Pinal County Map.
- * Zip Code Maps, 1983, 1992.
- * United States Geological Survey Topographic Map, Casa Grande East Quadrangle, 7.5 minute series.
- * State of Arizona Department of Water Resources Maps Showing Groundwater Conditions in the Eloy and Maricopa-Stanfield Sub-Basins of the Pinal Active Management Area, 1989.

Regulatory Lists

- * U.S. Environmental Protection Agency, National Priorities List (NPL).
- * Arizona Water Quality Assurance Revolving Fund (WQARF) Sites.
- * Arizona CERCLA Information and Data System (ACIDS) Sites.
- * Resource Conservation Recovery Act (RCRA) Data Base.
- * RCRA Compliance Log.
- * Arizona Underground Storage Tanks (RUST).
- * Arizona Leaking Underground Storage Tanks (LUST).
- * Registered Arizona Dry Wells.
- * Arizona Department of Environmental Quality, Arizona Directory of Closed Solid Waste Landfills and Closed Solid Waste Dumps.
- * Arizona Department of Environmental Quality, Arizona Directory of Public Municipal Solid Waste Landfills and Rubbish Landfills.

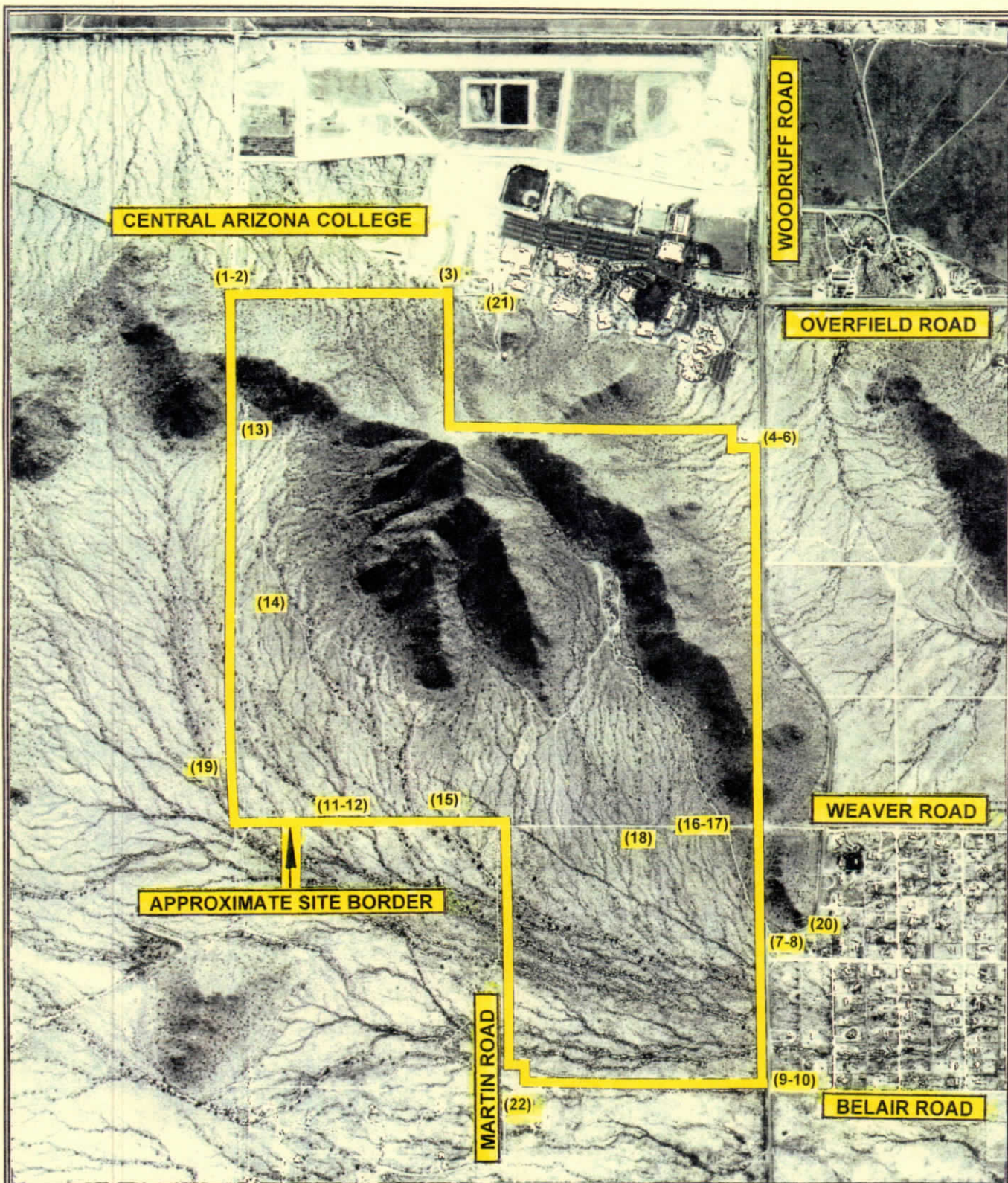
References

- * Soil Survey of Pinal County Area, Western Part, USDA Soil Conservation Service & Arizona Agricultural Experiment Station.
- * State of Arizona Department of Water Resources Hydrologic Map Series Report.
- * Proceedings of the Arizona Hydrological Society Second Annual Symposium, 1989.
- * Groundwater Hydrology, U.S. Water Conservation Laboratory Agricultural Research Service, USDA.
- * Laney, R.L., Hahn, M.E., 1986, Hydrology of the Eastern Part of the Salt River Valley Area, Maricopa & Pinal Counties, Arizona. USGS Water Resources Investigation Report 86-4147.
- * Arizona Radiation Regulatory Agency survey reports, Phoenix, Arizona.
- * ADEQ Groundwater Quality Database.
- * ADEQ Office of Air Quality Annual Report.

Personal Communications

- * Rick Herther, Hydrogeologist, Arizona Department of Water Resources, Phoenix, Arizona.
- * Richard Jenkins, WQARF Section, ADEQ, Phoenix, Arizona.
- * Hilda Duran, CERCLA Section, ADEQ, Phoenix, Arizona.
- * Bee Shreve, RCRA Compliance Unit, ADEQ, Phoenix, Arizona.
- * Steve Calaway, Unit Manager, Groundwater Quality, ADEQ, Phoenix, Arizona.
- * Dave Monfroe, Groundwater Quality Database Manager, ADEQ, Phoenix, Arizona.
- * Joe Gibbs, Office of Air Quality, ADEQ, Phoenix, Az.
- * Basic Data Section, Arizona Department of Water Resources, Phoenix, Arizona.

SITE PHOTOGRAPHS



SITE PHOTOGRAPHS KEY

YELLOW HIGH LIGHTED
NUMBERS GIVE PHOTOGRAPH
LOCATIONS.



(1) LOOKING WEST ALONG NORTH BORDER OF NORTHEAST CORNER OF SITE.
(SEE SITE PHOTO KEY)



(2) LOOKING SOUTH ALONG EAST BORDER OF SITE FROM NORTHEAST
CORNER OF SITE. (SEE SITE PHOTO KEY)



(3) LOOKING WEST FROM CORNER OF SITE ALONG EAST BORDER.
(SEE SITE PHOTO KEY)



(4) OFF-SITE BUILDING AT SOUTHEAST CORNER OF SITE.
(SEE SITE PHOTO KEY)



(5) LOOKING NORTHWEST ACROSS SITE FROM NEAR SOUTHEAST CORNER OF SITE. (SEE SITE PHOTO KEY)



(6) LOOKING WEST ALONG WOODRUFF ROAD AND SOUTH BORDER OF SITE FROM SOUTHEAST CORNER OF SITE. (SEE SITE PHOTO KEY)



(7) LOOKING NORTHWEST ACROSS SECTION 30 FROM SOUTH BORDER OF SITE. (SEE SITE PHOTO KEY)



(8) LOOKING WEST ALONG WOODRUFF ROAD FROM SOUTH BORDER OF SITE. (SEE SITE PHOTO KEY)



(9) LOOKING NORTH ALONG BELAIR ROAD ALIGNMENT FROM SOUTHWEST CORNER OF SITE. (SEE SITE PHOTO KEY)



(10) LOOKING NORTHEAST ACROSS SITE FROM NEAR SOUTHWEST CORNER OF SITE. (SEE SITE PHOTO KEY)



(11) LOOKING SOUTH ALONG WEAVER ROAD ALIGNMENT FROM NEAR NORTHWEST CORNER OF SECTION 29. (SEE SITE PHOTO KEY)



(12) LOOKING SOUTHEAST ACROSS SITE FROM NORTHWEST CORNER OF SECTION 29. (SEE SITE PHOTO KEY)



(13) LOOKING SOUTHWEST ACROSS SECTION 29 FROM NEAR NORTHEAST CORNER OF SITE, WEST OF MOUNTAINS. (SEE SITE PHOTO KEY)



(14) LOOKING SOUTHEAST AT MOUNTAINS FROM NEAR NORTH BORDER OF SECTION 29. (SEE SITE PHOTO KEY)



(15) LOOKING EAST AT MOUNTAINS FROM WEAVER ROAD ALIGNMENT.
(SEE SITE PHOTO KEY)



(16) LOOKING NORTH ALONG WEAVER ROAD ALIGNMENT FROM NEAR
CORNERS OF SECTIONS 29 & 30. (SEE SITE PHOTO KEY)



(17) LOOKING NORTHWEST ACROSS SITE FROM CORNERS OF
SECTIONS 29 & 30. (SEE SITE PHOTO KEY)



(18) TYPICAL VIEW OF MINOR WILDCAT DUMPING ON SITE.
(SEE SITE PHOTO KEY)



(19) LAND NORTH OF SUBJECT SITE IN SECTION 29.
(SEE SITE PHOTO KEY)



(20) SUBDIVISION SOUTH OF SUBJECT SITE ALONG WOODRUFF ROAD.
(SEE SITE PHOTO KEY)



(21) CENTRAL ARIZONA COLLEGE PROPERTY ALONG EAST BORDER OF
SUBJECT SITE. (SEE SITE PHOTO KEY)



(22) SUBDIVISION WEST OF SITE IN SECTION 30.
(SEE SITE PHOTO KEY)

**QUALIFICATIONS
OF
PROJECT ENGINEER**

QUALIFICATIONS OF PROJECT ENGINEER

Jim Powell

- B.S. Metallurgical Engineering, University of Arizona.
- MBA, Utah State University.
- Engineer for Bethlehem Steel Corporation, Bethlehem, Pennsylvania.
- Asbestos Products Engineer for Johns-Manville, Long Beach, California.
- For the past 23 years Mr. Powell has owned and operated a business and engineering consulting company, a construction company, and a real estate company specializing in commercial and agricultural property. He has a broad range of experience in real estate, agricultural, construction, mining, and manufacturing industries.
- For the past 15 years Mr. Powell has been involved with real property investigations and evaluations. During that time he has inspected hundreds of commercial, industrial, and agricultural properties.
- He is a graduate of various environmental investigation courses given by the Hazardous Materials Institute in association with Northwestern University Technological Institutes Environmental & Geotechnical Program. These courses provide state of the art training and instruction vital to environmental investigations including: hazardous materials identification, legal and insurance issues, health effects, personal and public protection, historical data research, building and geophysical site inspection techniques for hazardous substances, risk/hazard assessment, abatement/remediation options, and other issues vital to performing environmental investigations.
- Member of the Environmental & Natural Resources Law Section of the State Bar of Arizona.
- Member of the Association of Ground Water Scientists and Engineers.
- Member of the American Chemical Society.
- Member of the Arizona Hydrological Society.
- Member of the HAZWaste Society.

- U.S. Environmental Protection Agency AHERA Certified Building Inspector.
- Consultant to Environmental Property Inspection Associates, Benton Engineering, American Engineering, Maxim Engineers, and other consulting engineering firms.

A PARTIAL LIST OF CLIENTS

Environmental site assessment reports prepared by Mr. Powell have been used by many **banks** such as:

- Valley Bank
- Security Pacific Bank
- Citibank
- First Interstate Bank
- Zions Bank
- Community Bank
- First National Bank of Arizona
- American National Bank
- Key Bank, and many other banks.

National clients who have used reports by Mr. Powell include:

- Federal Deposit Insurance Corporation (FDIC)
- Kmart Corporation
- Allstate Insurance Company
- Principal Mutual Life Insurance Company
- Century Life Insurance Company ,
and many other national companies and agencies.

Mr. Powell has also prepared environmental site assessment reports for numerous **commercial real estate companies, investors, developers**, as well as **school districts** and other government agencies.

Clients repeatedly comment that these reports are among **best quality** and the **most detailed** of the reports they have seen.

GLOSSARY OF TERMS

GLOSSARY OF TERMS

AAL

Arizona Action Level

ACIDS

Arizona Cercla Information and Data System

ACM

Any material or product which contains more than one percent asbestos.

ADEQ

Arizona Department of Environmental Quality

AERIAL PHOTOGRAPH

An aerial view of the site typically a photograph taken from an airplane.

AREA

The geographical domain surrounding and including the Site which is physically reconnoitered and studied by Consultant as necessary to determine whether off-site environmental conditions exist that are relevant to the site.

ASSESSMENT

A study conducted to identify sources of contamination at a particular property.

CALICHE

Soil or alluvium that has been cemented into a rock-like condition by chemical precipitates. The most common cementing material is calcium carbonate.

GLOSSARY OF TERMS

(CONTINUED)

CERCLA

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund: Amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA).

CHAIN-OF-TITLE

A record of the ownership or title rights to a piece of property.

CLAY

A fine-grained, naturally-occurring mineral formed by the degradation of various rocks and minerals. Clay particles are not visible to the naked eye. Clay tends to have low hydraulic conductivity and transmissivity.

COBBLES

A rock fragment with a diameter between approximately 3 and 12 inches.

CONTAMINATION

The degradation of natural resources including land, air and water quality as a result of human activities. There is no implication of any specific limits, since the degree of permissible contamination depends upon the intended end use, or uses, of the natural resource.

DEEP WELLS

Large diameter wells designed to rapidly extract large volumes of water. Pumps are submersed and well depth is limited only by the lift provided by the pump. The wells can pump at rates ranging from ten to several thousand gallons per minute. The types of pumps available for such wells are manifold and are selected on the basis of well design and the required pumping rate.

GLOSSARY OF TERMS

(CONTINUED)

DOWNGRAIENT

Used to describe the direction of decreasing hydraulic gradient.

DRAINAGE BASIN

The land area from which surface runoff drains into a stream channel or system of channels, or to a lake, reservoir, or other body of water.

DRY WELLS

Large diameter wells, typically filled with gravel or other porous material, designed to convey surface water into the underlying subsoils.

EPA

Environmental Protection Agency

EVAPORATION

The process of a substance in liquid phase changing to a gaseous phase. Evaporation may occur at ambient temperature and pressure or may be accelerated by increasing the temperature of the liquid and decreasing the pressure over the liquid.

EVAPOTRANSPIRATION

A term applied to that portion of the precipitation returned to the atmosphere through both direct evaporation and by transpiration of vegetation.

FLOODPLAIN

The surface or strip of relatively smooth land adjacent to a river channel, constructed by the present river and covered with water when the river overflows its banks. It is built of alluvium carried by the river during floods and deposited in the sluggish water beyond the influence of the swiftest current.

GLOSSARY OF TERMS

(CONTINUED)

FRIABLE

When referring to material in a building, means that the material, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure. Includes previously non-friable material after such previously non-friable material becomes damaged to the extent that, when dry, it may be crumbled, pulverized, or reduced to powder by hand pressure.

GRAVEL

In general, a rock fragment with a diameter between approximately one quarter inch and 3 inches.

GROUND WATER

That part of the subsurface water which is in the zone of saturation, commonly called phreatic water.

GROUND WATER GRADIENT

The slope of the ground water surface measured in units of total head per unit of distance. Ground water flows down gradient.

GROUND WATER LEVEL

The level of the ground water surface as measured from a reference datum commonly mean sea level.

GROUND WATER FLOW

The movement of water through openings in soil and rock in the saturated zone in response to differences in hydraulic head, temperature, or chemical concentration.

GLOSSARY OF TERMS

(CONTINUED)

HAZARDOUS SUBSTANCES

"Hazardous substances", hazardous materials", or "toxic substances" in the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA") as amended by the Superfund Amendments and Reauthorization Act of 1986 (PL 99-499); the Hazardous Materials Transportation Act, 49 U.S.C. Section 1801, et seq.; the Toxic Substance Control Act, 15 U.S.C. Section 2601, et seq.; the Resource Conservation and Recovery Act, as amended, 42 U.S.C. Section 6901, et seq.; and the Arizona Environmental Quality Act, Title 49, Arizona Revised Statutes; and in the rules or regulations adopted and guidelines promulgated pursuant to said laws.

HOMOGENEOUS AREA

An area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture.

HYDRAULIC GRADIENT

The rate of change in total head per unit of distance of flow in a given direction.

HYDROGEOLOGY

The study of interrelationships between ground water and geologic materials and processes.

IN-SITU

An application performed "in place" without removing the material of concern.

INTERBEDDED

Literally "between two layers". A geologic unit of soil or rock that occurs between two or more other layers is referred to as interbedded.

GLOSSARY OF TERMS

(CONTINUED)

LANDEILL

A natural or manmade land form which is filled or covered with waste materials.

LOWER CONGLOMERATE

The oldest alluvial sediments found underlying the site. This unit is comprised of a variably cemented conglomerate of igneous, metamorphic, and volcanic rock fragments.

LUST

Leaking Underground Storage Tanks

MIDDLE FINE-GRAINED UNIT

The alluvial sediments overlying the Lower Conglomerate unit. This unit is generally comprised of interbedded clays, silts, sands, evaporites, and minor amounts of gravel.

MISCELLANEOUS MATERIAL

When referring to suspect asbestos-containing material, means building material or structural components, structure members or fixtures, such as floor and ceiling tiles, and does not include surfacing material or thermal system insulation.

NPL

National Priorities List: A list of sites identified for remediation under CERCLA.

PCB

Polychlorinated Biphenyl

GLOSSARY OF TERMS

(CONTINUED)

PERMEABILITY

The property or capacity of a porous rock, sediment, or soil for transmitting a fluid; it is a measure of the relative ease of fluid flow under pressure gradients. Hydraulic conductivity is proportional to permeability. Permeability is measured in units of area.

RCRA

Resource Conservation and Recovery Act. This database includes facilities involved in the generation, transport, treatment, storage or disposal of hazardous wastes.

RECENT ALLUVIUM

An alluvial unit found in the vicinity of the Salt River channel. This unit is comprised of gravel, cobbles, and boulders that were deposited along the modern channels of the Salt River.

REGION

The geographical domain surrounding and including the area which has produced or may potentially produce an environmental condition affecting the site.

RUNOFF

That part of precipitation flowing to surface streams.

RUST

Registered Underground Storage Tanks. All owners of underground tanks storing "regulated substances" are required to register such facilities with the state. Most of the registered tanks are used for storage of petroleum fuels. Owners of underground storage tanks are also required to report any releases from underground tanks to the state and report on remedial actions taken.

GLOSSARY OF TERMS

(CONTINUED)

SAND

A granular, naturally-occurring material visible to the naked eye. For engineering purposes, sand is classified as material having particle sizes ranging from 0.21 inches to 0.003 inches. Sand generally results from natural disintegration and abrasion of rock or processing of completely friable sandstone.

SATURATED ZONE

The area underground in which all available voids are filled with water.

SILT

A granular material not visible to the naked eye resulting from the disintegration of rock, with grains smaller than 0.003 inches.

SUPERFUND

A general term describing trust funds or other funds made available by a state or federal government typically for clean-up of contaminated sites.

SURFACING MATERIAL

When referring to suspect asbestos-containing material, means material that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings, and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

SURVEY

An ALTA/ACSM boundary and topographical survey of the site by a registered land surveyor licensed to do business in Arizona and prepared in accordance with the "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Survey" jointly established and adopted by the American Land Title Association and the American Congress on Surveying and Mapping in 1986.

GLOSSARY OF TERMS

(CONTINUED)

TCE

Trichloroethylene

THERMAL SYSTEM INSULATION

When referring to suspect asbestos-containing material, means material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain, or water condensation, or for other purposes.

UNSATURATED ZONE

An underground area containing water in the gas phase under atmospheric pressure, water temporarily or permanently under less than atmospheric pressure, and air or other gases.

UPGRADIENT

Used to describe the direction of movement of increasing hydraulic gradient.

U.S.G.S.

United States Geologic Survey

VADOSE ZONE

The zone containing water under pressure less than that of the atmosphere, including soil water, intermediate vadose water, and capillary water. This zone is limited above by the land surface and below by the surface of the zone of saturation, that is, the water table.

VOLATILE ORGANIC COMPOUND

Any organic compound that evaporates under normal temperature and pressure conditions.

GLOSSARY OF TERMS

(CONTINUED)

WATER TABLE

The surface between the vadose zone and the ground water; that surface of a body of unconfined ground water at which the pressure is equal to that of the atmosphere.

WOARF

Water Quality Assurance Revolving Fund also known as State Superfund.