CASE L-00000D-02-0120

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ORIGINAL

NORTH VALLEY

230KV FACILITY SITING PROJECT

NORTH VALLEY
230KV FACILITY SITING PROJECT

Arizona Corporation Commission

Arizona Power Plant and Transmission Line Siting Committee

APS

HEARING EXHIBITS FOR AN APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

NOVEMBER 2002

11-19-02

14

TABLE OF CONTENTS

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TAB 1 TESTIMONY SLIDES

TAB 2 PHOTO POINT LOCATION MAP AND SLIDES

TAB 3 FORM OF CEC

TAB 4 SUPPLEMENTAL LETTERS

TAB 5 ARIZONA GAME AND FISH DEPARTMENT LETTER

TAB 6 ARIZONA STATE HISTORIC PRESERVATION OFFICE LETTER

TAB 7 ROUTE TOUR MAP AND ITINERARY

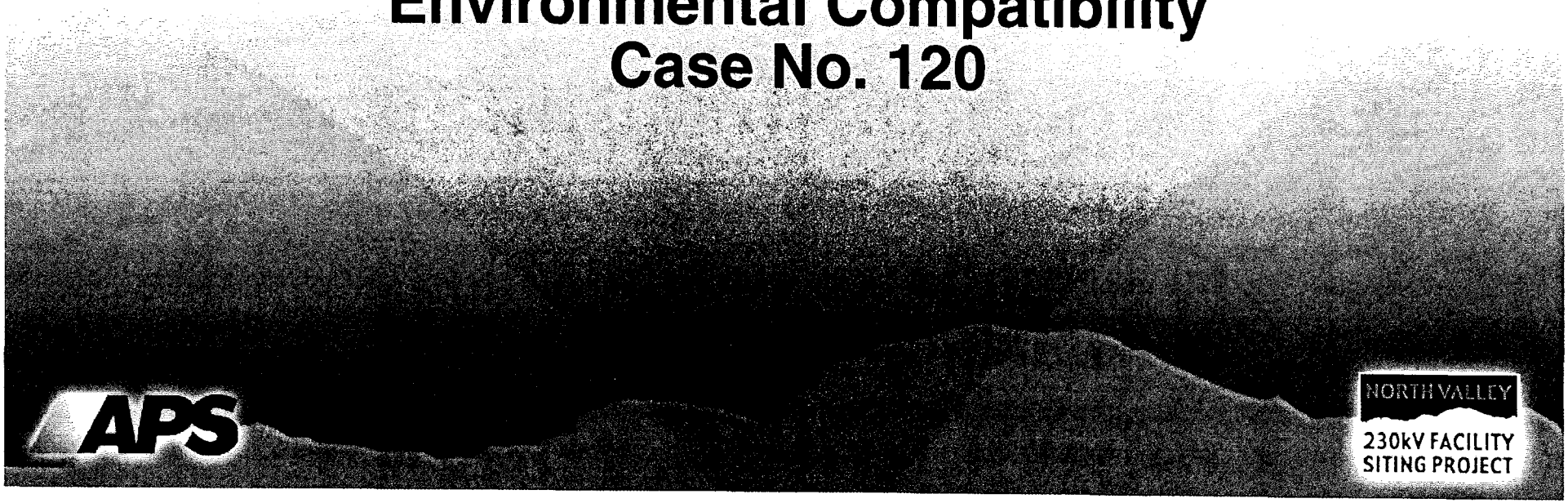
TAB 8 NOISE STUDY REPORT

TAB 9 A CULTURAL RESOURCE SURVEY FOR THE NORTH VALLEY 230kV TRANSMISSION LINE PROJECT, MARICOPA COUNTY, ARIZONA

1

North Valley 230kV Facility Siting Project

Application for a Certificate of Environmental Compatibility Case No. 120



Case Overview

- Project Summary
  - Proposed Route is 31 miles of double-circuit 230kV transmission lines
    - Parallels existing and proposed linear features for majority of the route
    - Incorporated into Phoenix and Peoria general plans
  - Two proposed 230/69kV substations
    - Incorporated into Phoenix general plan
  - Interconnects existing Westwing, Raceway and Pinnacle Peak substations
  - Allows APS to meet electrical needs of North Valley
  - Four alternate routes
  - Proposed route is environmentally compatible
- Proposed Form of CEC

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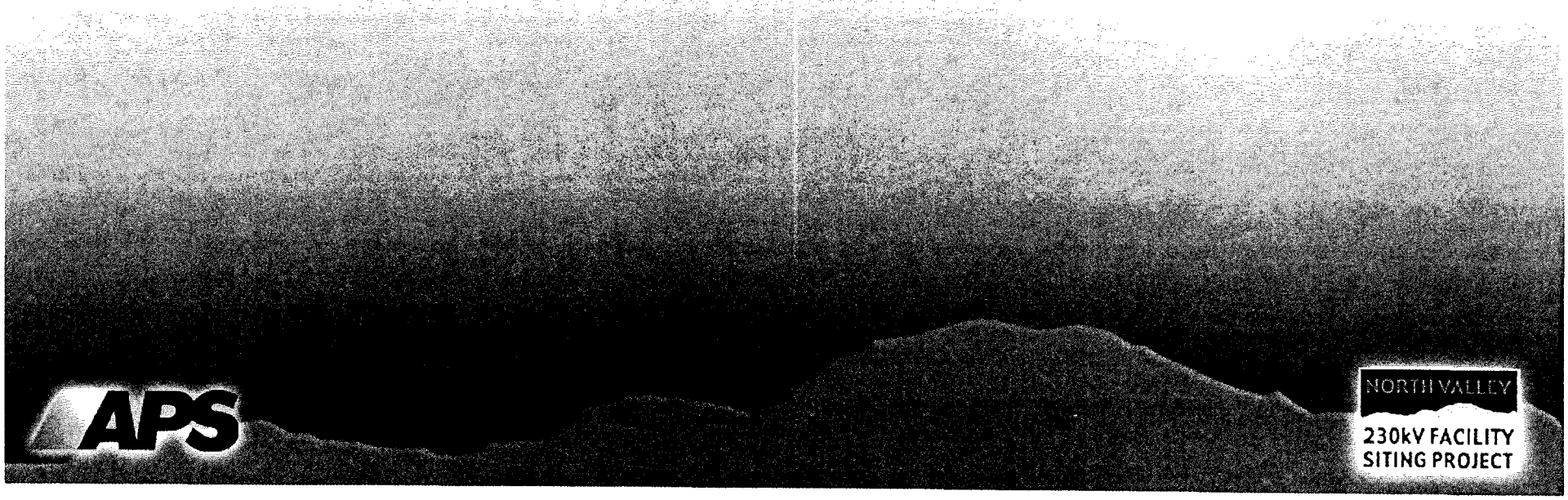
NORTH VALLEY
230kV FACILITY SITING PROJECT

Case Overview

- Notice of Hearing
  - Published Notice of Hearing in five area newspapers, including the Arizona Republic
- Primary Hearing Exhibits
  - CEC Application (A-1)
  - Hearing Exhibit Notebook (A-2)



Case Overview

- Witnesses – Direct Case
  - Rex Stulting, APS – APS Transmission Planning
  - Stan Sierra, APS – Project Purpose and Need
  - Mike DeWitt, APS – Project Manager
  - Paul Trenter, EPG – Environmental Studies
  - Dr. Linwood Smith, EPG – Biological Studies
  - Dr. Glenn Darrington, EPG – Cultural Studies

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NORTH VALLEY
230kV FACILITY
SITING PROJECT

Transmission System Overview

Rex Stulting

Arizona Public Service Company

Transmission Planning

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NORTH VALLEY

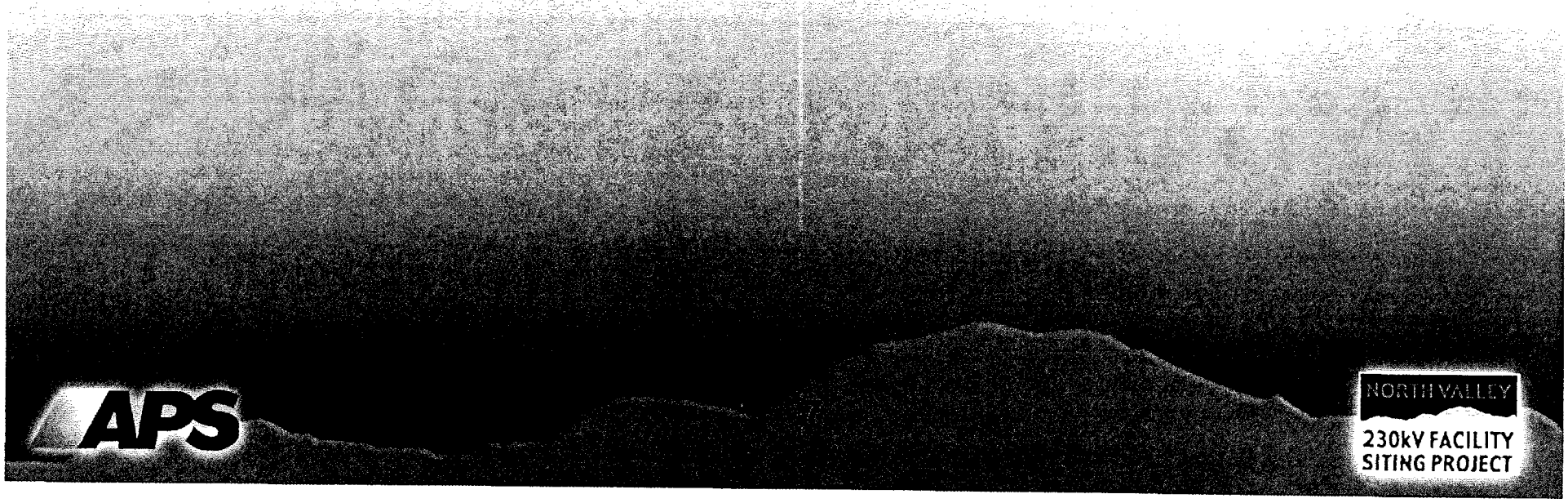
230kV FACILITY SITING PROJECT

Witness Background

- BSEE, New Mexico State University
- MSEE, New Mexico State University
- APS Transmission Planning Manager
- Professional Background
  - 25 years of experience in electric utility industry
  - Registered Professional Engineer, Arizona
  - Chair of WATS committee since 1996
  - APS representative on CATS

Outline of Testimony

- Transmission Planning Overview
- Extra-High Voltage (EHV) System Planning
- High Voltage (HV) System Planning
- APS 10-Year Plan
- Other Transmission Plans in Area



Transmission Planning Overview

- Purposes of Integrated Transmission System:
  - Deliver electric power to customers
  - Provide flexibility for changing system conditions
  - Allow generation reserve sharing and energy exchanges
- Objective of Transmission System Planning is:
  - To provide an acceptable level of service
  - At reasonable cost
  - Considering both normal and single contingency operating conditions
- APS follows the Western Electricity Coordinating Council's (WECC) Regional Planning Reliability Criteria

Transmission Planning Overview

- Planning methodologies, assumptions, and guidelines are used as the basis for developing future transmission plans
- In general, an adequately planned system will:
  - Provide acceptable level of service for normal and single contingency (N-1) operating conditions
  - Not result in loss of load for N-1 contingency
  - Not result in cascading, overloaded equipment, or unacceptable voltage conditions for N-1 contingency
  - Work in compliment with local generation in load constrained areas
- Dynamic and evolving process

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EHV System Planning

- System planning for the EHV System looks at:
  - Need for regional interconnections
  - Interconnection of generation to system
  - Need for import capability into load centers
- EHV System (345kV+) primarily aimed at connecting load centers to generation sources
  - Four Corners in New Mexico to Valley
  - Palo Verde to the Valley, Yuma, California
- EHV System is the basis for the major import points in the Valley
  - Westwing, Pinnacle Peak, Kyrene, Pudd

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HV System Planning

- System Planning for the HV System involves:
  - Evaluation of long-range 230kV system requirements
  - Consideration of Long-Range Substation Development Master Plan for Metro Phoenix
  - Preparation of detailed 230kV facilities studies to develop 10-Year Plan requirements
  - Consideration of both load growth patterns and system changes such as siting constraints, joint planning, etc.
- HV System (230kV and 115kV) primarily aimed at serving load
  - Bridges the EHV and the distribution system

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230kV FACILITY SITING PROJECT

Overview of APS 10-Year Plan

- EHV Projects
  - Southeast Valley Project
  - Palo Verde to Table Mesa
- HV Projects
  - Flagstaff to Winona Project
  - Gila Bend to Yuma Project
  - Cholla to Snowflake Project
  - West Valley North Project
  - West Valley South Project
  - North Valley Project

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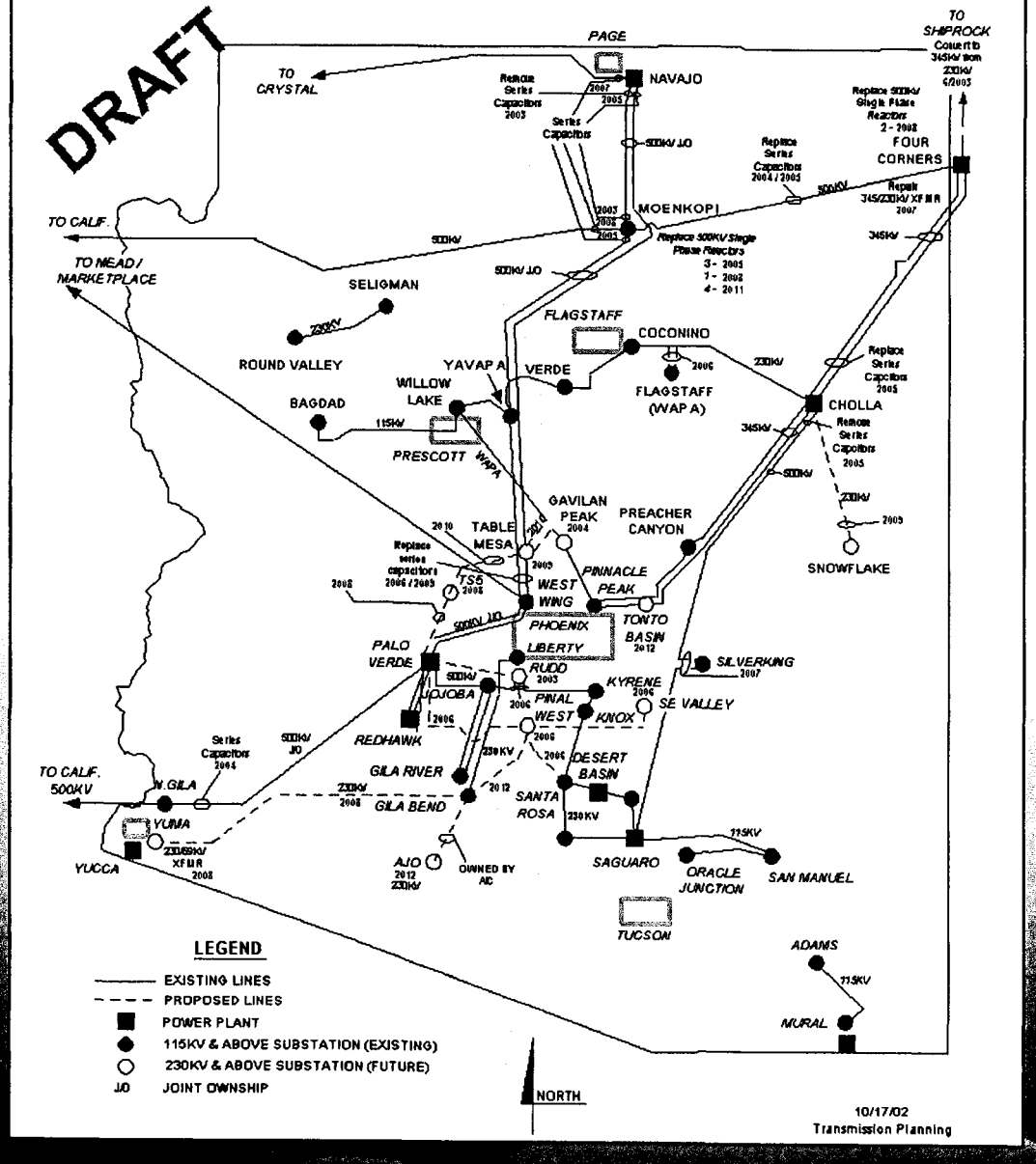
230kV FACILITY
SITING PROJECT

APS EHV & OUTER DIVISION 115/230 KV TRANSMISSION PLANS 2003 - 2012



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Other Transmission Plans in Area

- Salt River Project
  - Southeast Valley Project
  - Westwing to Pinnacle Peak 230kV
  - Pinnacle Peak to Brandow 230kV
- Western Area Power Administration
  - No current plans in the area

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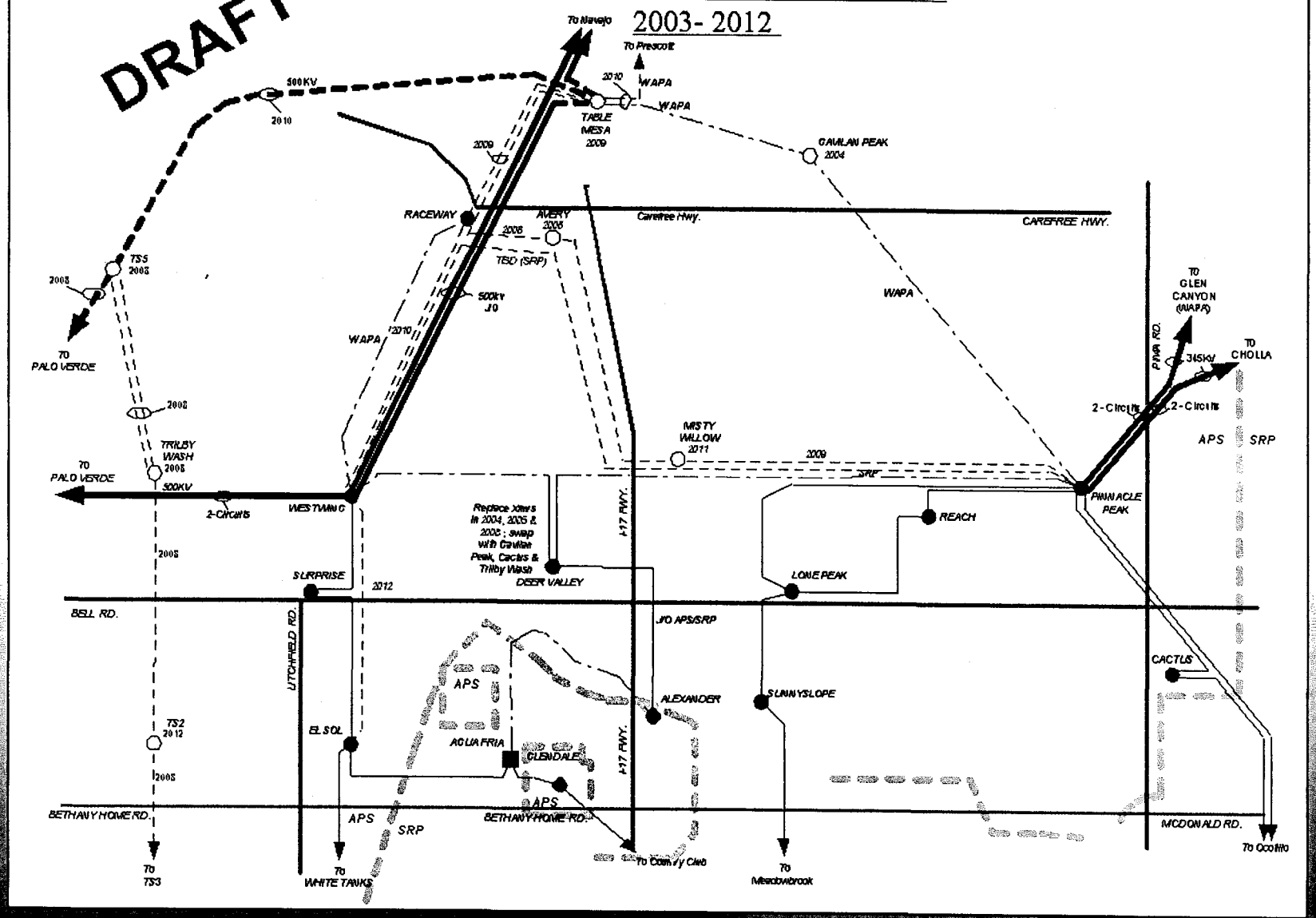
NORTHERN PHOENIX METROPOLITAN AREA
230KV TRANSMISSION PLANS
2003- 2012



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230kV FACILITY SITING PROJECT

SOUTHERN PHOENIX METROPOLITAN AREA
230KV TRANSMISSION PLANS
2003- 2012

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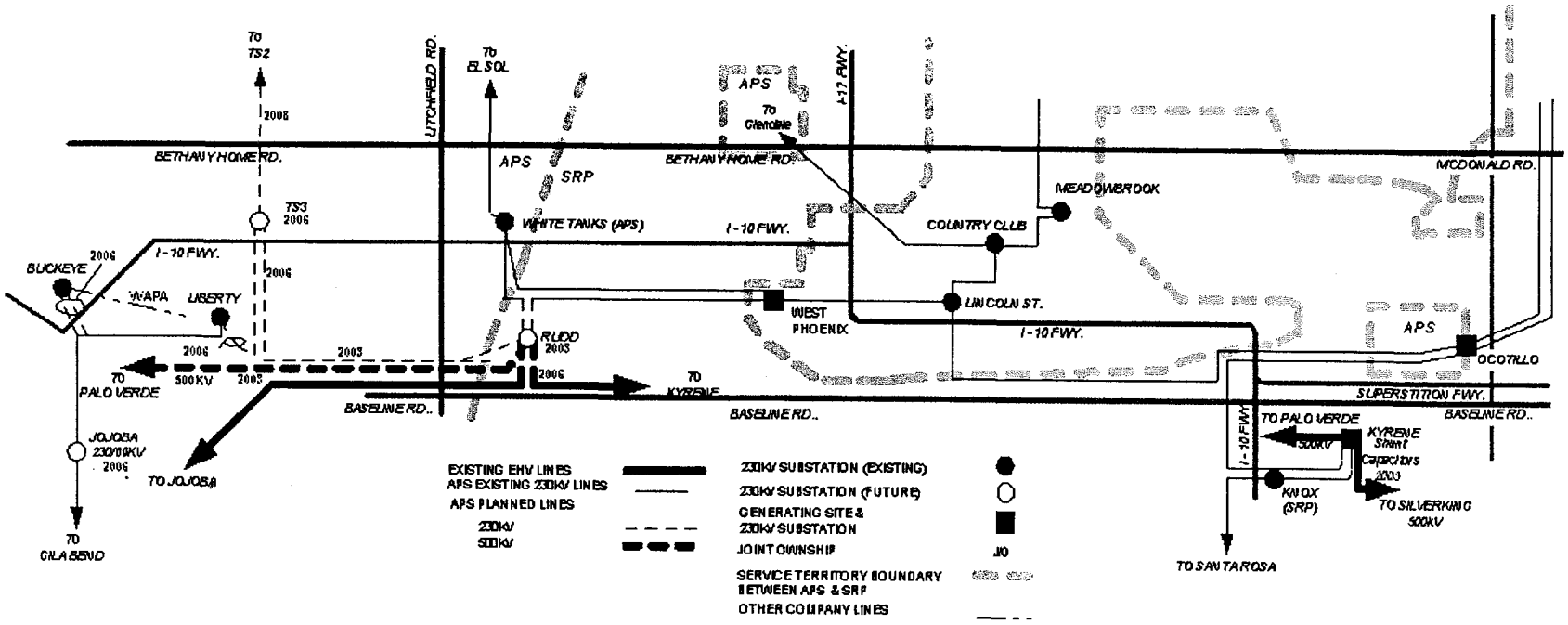

11/13/02
Transmission Planning

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NORTH VALLEY
230kV FACILITY SITING PROJECT

Project Need

Stan Sierra
Arizona Public Service Company
Transmission and Distribution
Asset Manager

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NORTH VALLEY
230kV FACILITY
SITING PROJECT

Witness Background

- BSEE, New Mexico State University
- APS Transmission and Distribution Asset Manager
  - Responsible for 12kV and 69kV systems planning
- Professional Background
  - 29 years of experience in electric utility industry
  - Registered Professional Engineer, Arizona

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230kV FACILITY SITING PROJECT

Power Demand Forecasting

- Electrical Power Demand Forecast Methodology
  - Existing and future land use plans
  - General plans and zoning for applicable state, county, and local jurisdictions
  - Information provided by land developers (Anthem, Tramonto, USAA, Lakeland Village, White Peak Ranch)
  - Land use data converted to electric demand load densities
  - Electrical load demand forecast developed for an area

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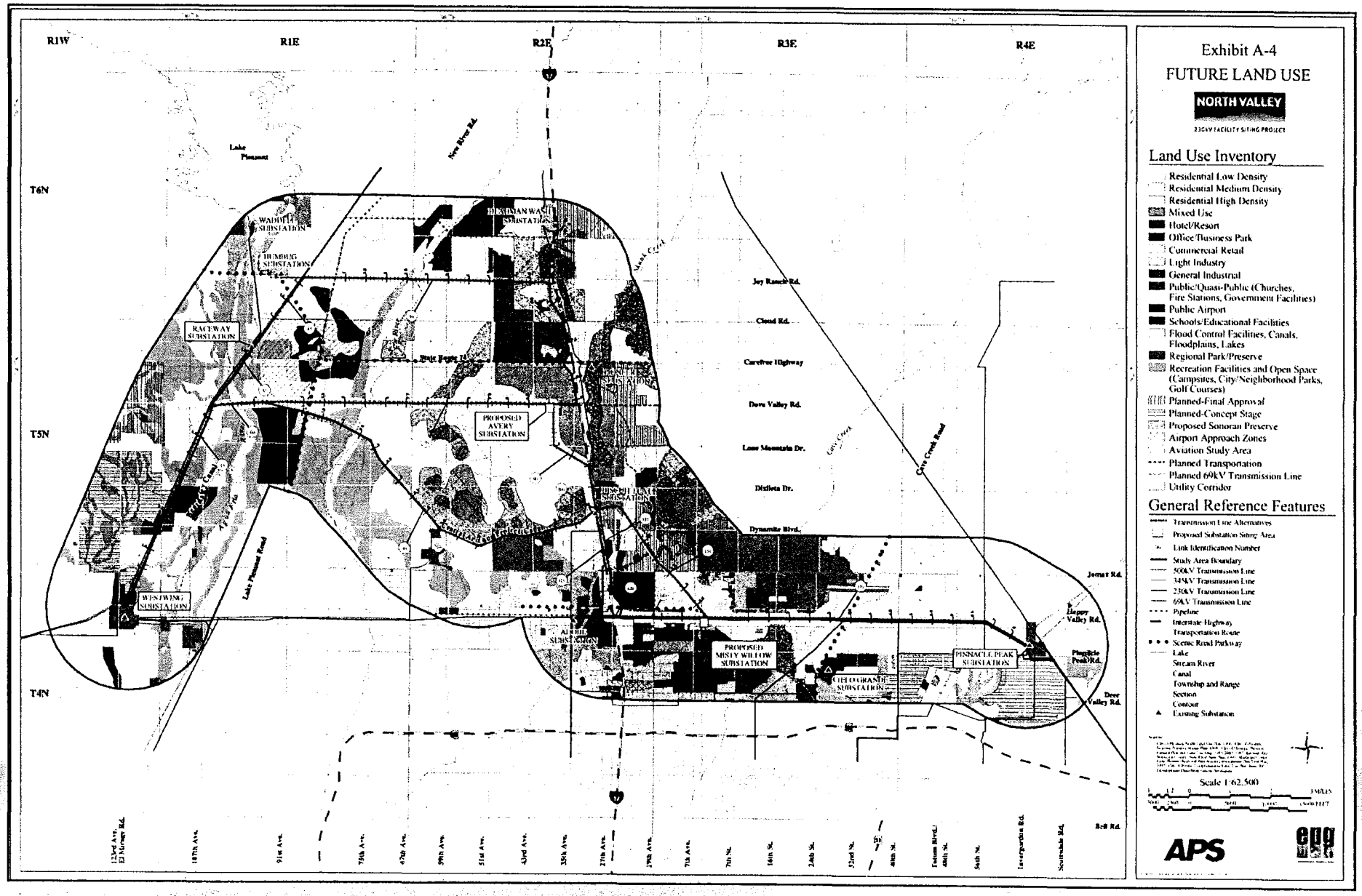

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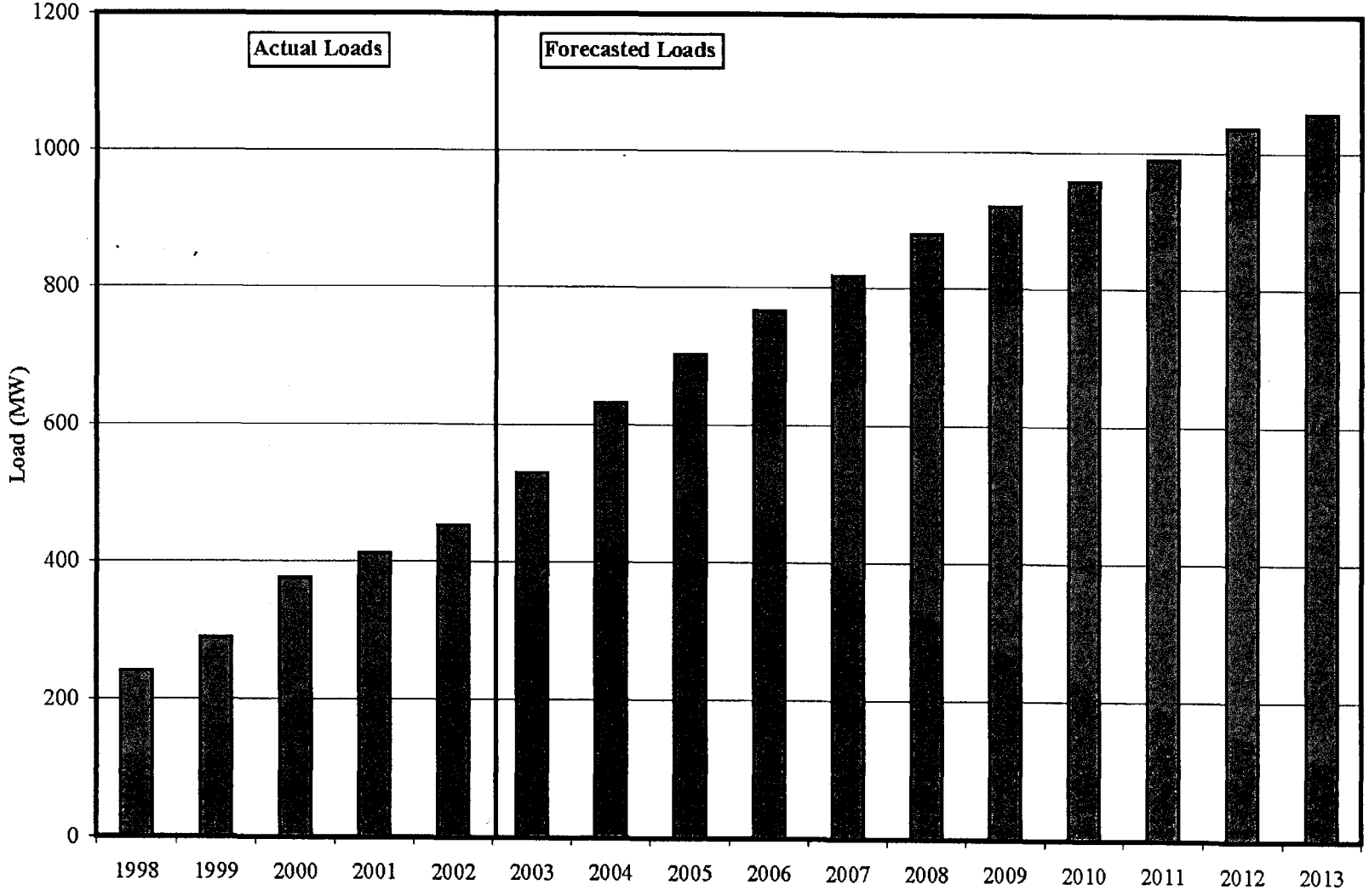
North Valley Area Loads



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230kV FACILITY
SITING PROJECT

North Valley
Project Area Detail
October 1999

Route Alternative

Substation

Source:
Imagery from Landiscor Aerial Information. October 1999.

0 0.25 0.5 1 Miles

0 250 500 1,000 1,500 Meters

APS

m:/projects/aps/ncp/ceo/mxds/project_detail.mxd October 30, 2002

APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

North Valley
Project Area Detail
June 2001

Route Alternative

Substation

Source:
Imagery from Landiscor Aerial Information, June 2001.

0 0.25 0.5 1 Miles

0 250 500 1,000 1,500 Meters

APS

m:/projects/aps/ncp/cec/mxds/project_detail.mxd October 30, 2002

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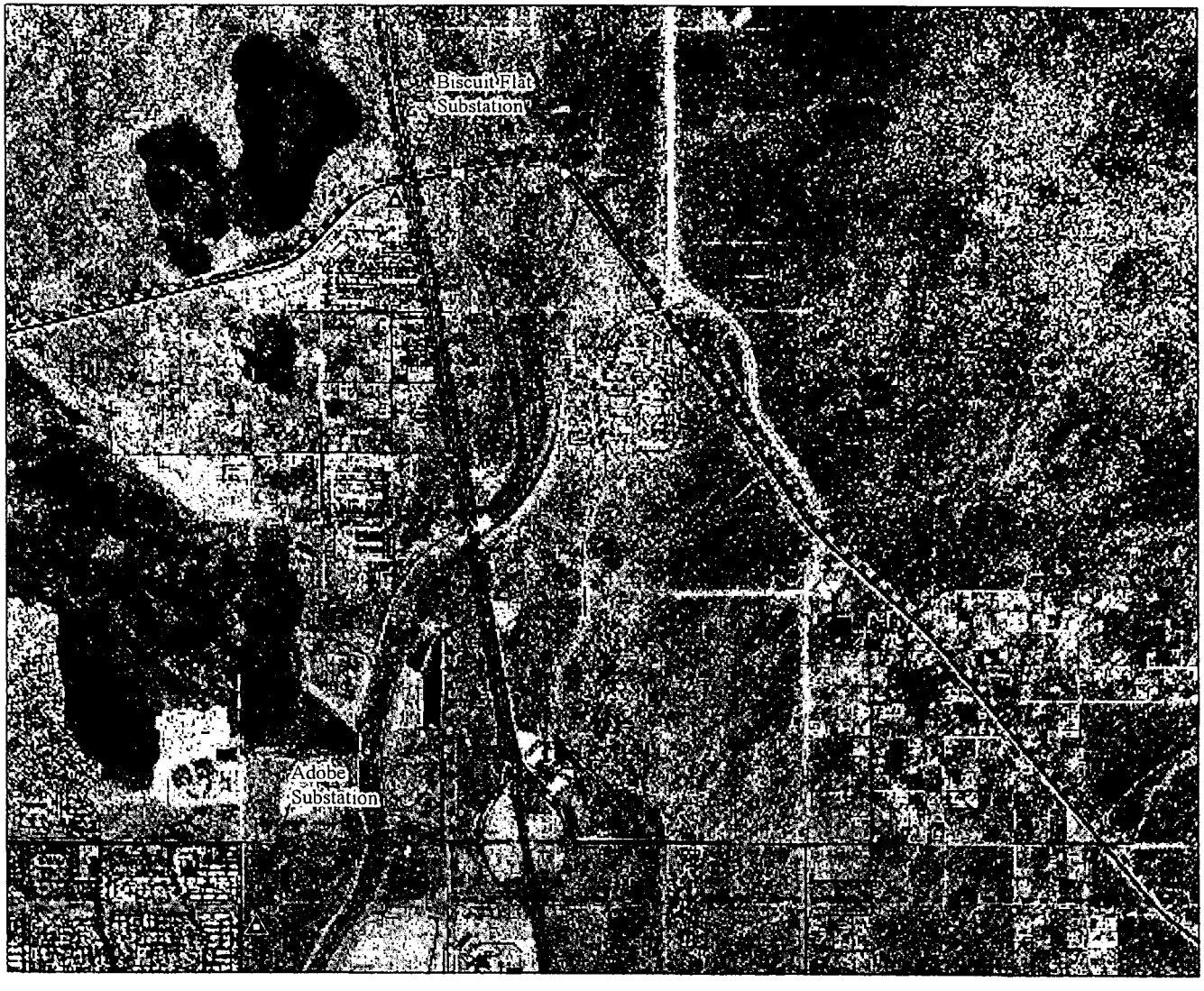

North Valley
Project Area Detail
June 2002

Route Alternative

Substation

N

Source:
Imagery from Landiscor Aerial Information. June 2002.

0 0.25 0.5 1 Miles

0 250 500 1,000 1,500 Meters

APS

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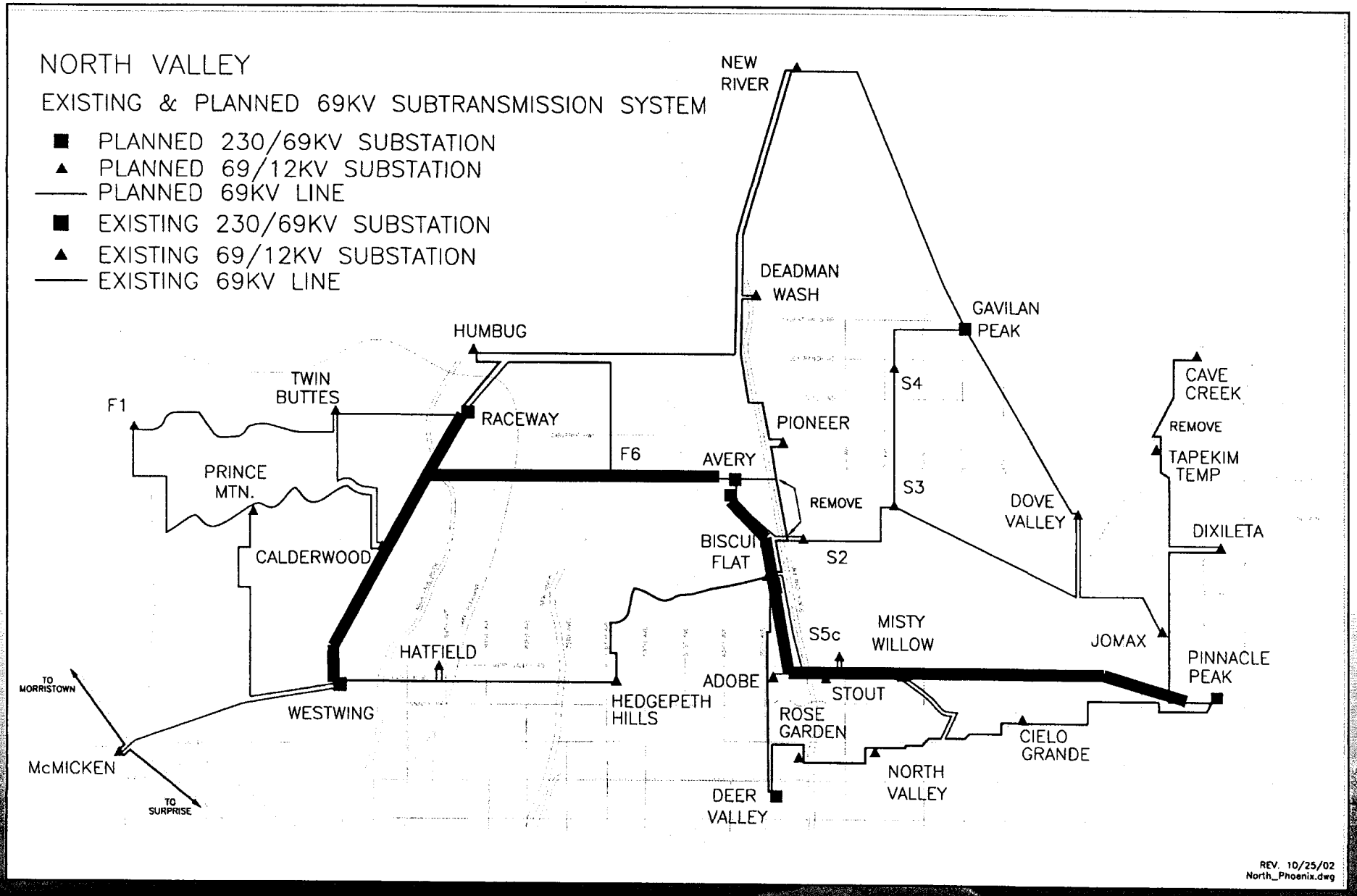

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NORTH VALLEY
230kV FACILITY SITING PROJECT

Project Need and Benefits

- Project ties together the existing and planned HV transmission system and 230/69kV substations
- Project allows APS to meet its legal obligation to serve customers in the North Valley
- Provides increased customer reliability in a rapidly developing area
- Provides increased HV system reliability

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NORTH VALLEY
230kV FACILITY
SITING PROJECT

Project Description

Mike DeWitt

Arizona Public Service Company

Transmission and Facility Siting Department

Project Manager

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NORTH VALLEY

230kV FACILITY SITING PROJECT

Witness Background

- BS, Civil Engineering, Purdue University
- Project Manager for North Valley Facility Siting Project
- Professional Background
  - 21 years of experience in electric utility industry
  - 16 years of experience with APS
    - Senior Engineer
    - Substation Construction Project Engineer and Construction Coordinator
    - Project Engineer for Fossil and Nuclear betterment

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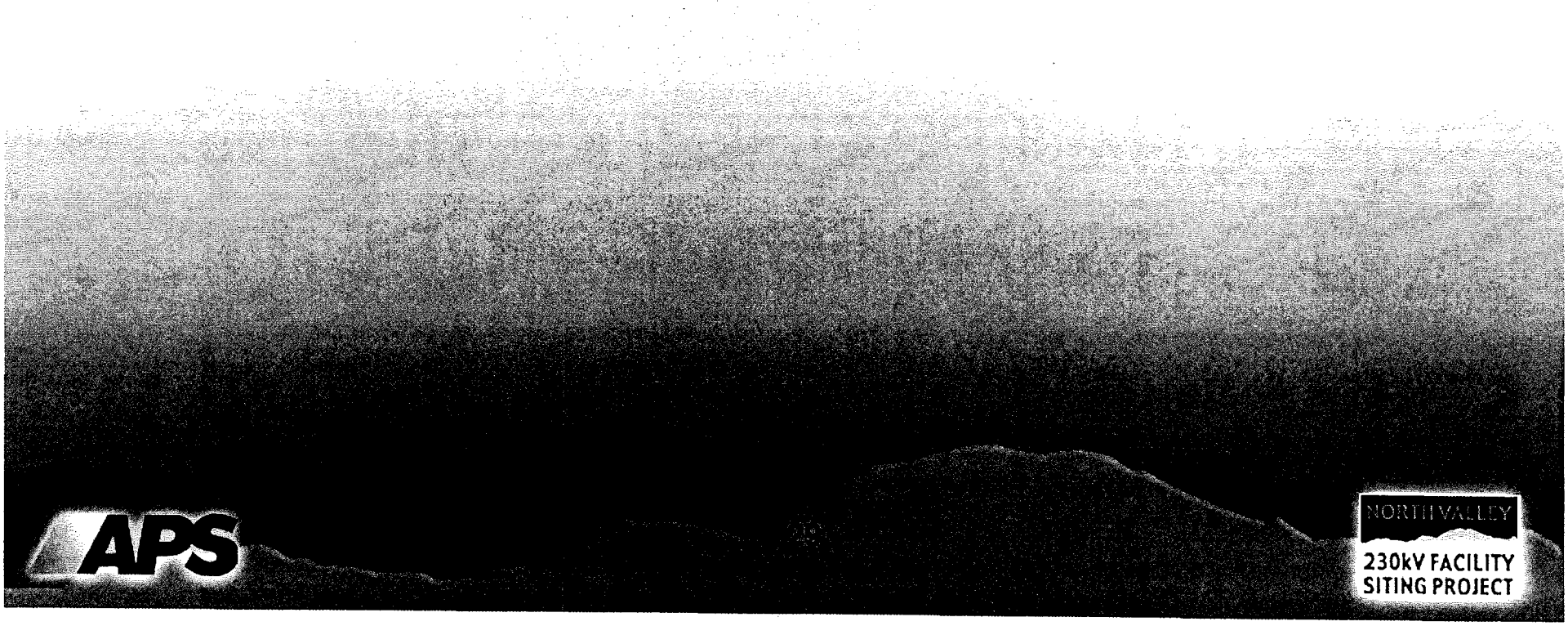
230kV FACILITY SITING PROJECT

CEC Application

- Responsible for the preparation and contents of the CEC Application
- Corrections and additions



Outline of Testimony

- General Project Description
- Proposed Route
- Proposed Substations
- Overview of Alternative Routes (Technical)
- Structures
- Right-of-Way/Corridors
- CEC Timeframe
- Community and Public Involvement

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NORTH VALLEY
230kV FACILITY
SITING PROJECT

General Project Description

- 31 miles of double-circuit 230kV transmission line
- New substation interconnections
  - Avery
  - Misty Willow
- Existing substation interconnections
  - Westwing
  - Raceway
  - Pinnacle Peak

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NORTH VALLEY
230kV FACILITY SITING PROJECT

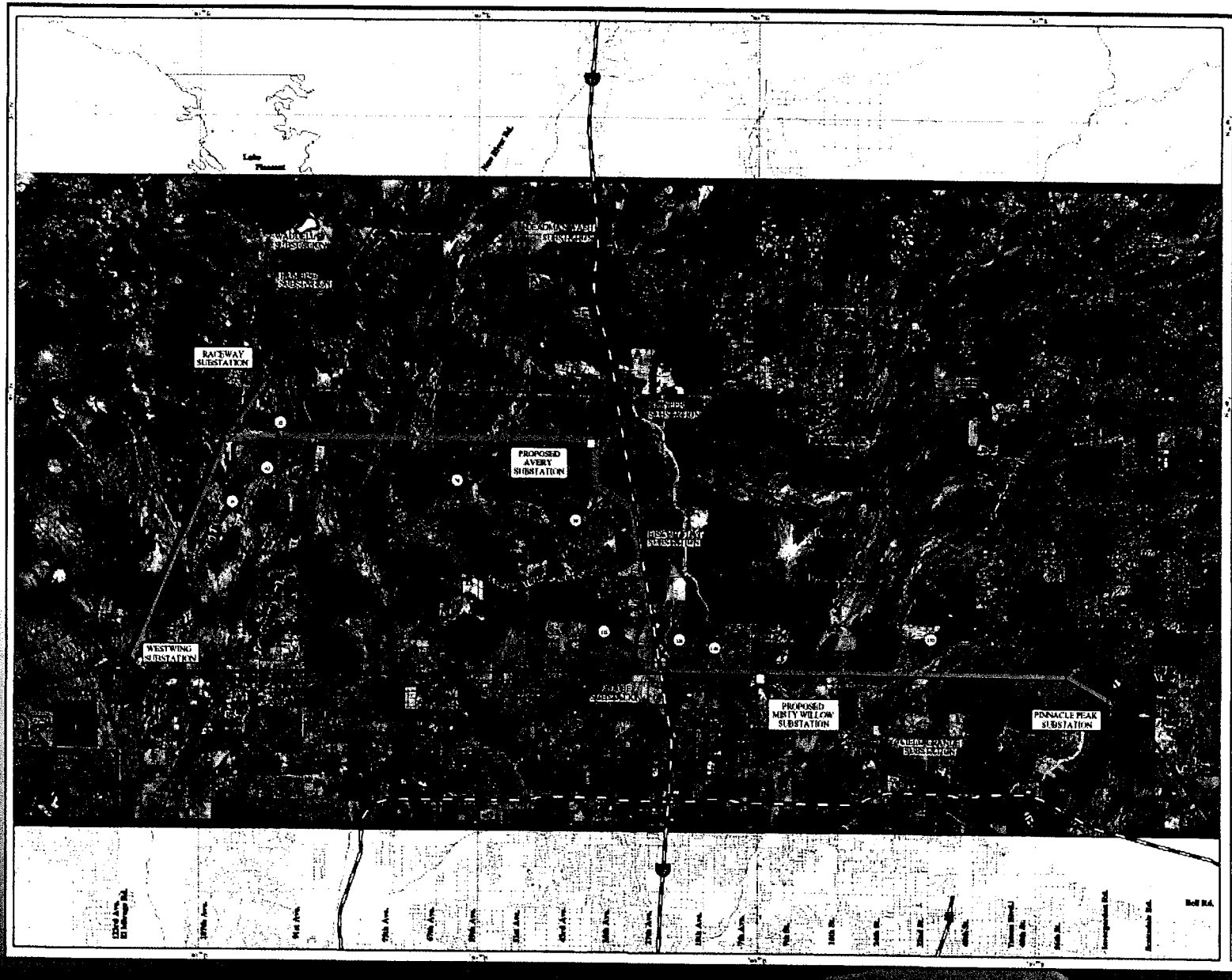

Figure 1
PROPOSED ROUTE

NORTH VALLEY
230kV FACILITY SITING PROJECT

- Proposed Route Links: 15, 35, 60, 70, 90, 115, 120, 140, 170
- Proposed Substation Siting Area
- Link Identification Number
- Link Node

General Reference Features

- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 69kV Transmission Line
- Interstate/Highway
- Transportation Route
- Lake
- Stream
- Canal
- ▲ / ■ Existing Substation

Sources
Landsat Aerial Information, June 2001
Arizona State Land Department and Arizona Land Resources Information System, June 1995

Scale 1:62,500

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NORTH VALLEY
230kV FACILITY SITING PROJECT

Proposed Route

- Parallels existing linear features
  - EHV transmission line corridors (17.5 miles)
  - Interstate 17 with existing and/or planned 69kV transmission line (2.5 miles)
  - Also parallels planned 69kV transmission line (11.2 miles)
- Maximum corridor width of 1,000 to 2,000 feet to accommodate site-specific mitigation and engineering
- Maximum right-of-way width of 150 feet

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NORTH VALLEY
230kV FACILITY
SITING PROJECT

Estimated Cost and Construction Schedule

- Project cost for proposed route
  - Approximately $71,000,000
- Construction schedule
  - Begin right-of-way acquisition 2003
  - Complete right-of-way acquisition 2005
  - Begin transmission line construction 2006
  - Begin substation construction 2007
  - Construction completed and commercial operation [illegible] 2008 and 2011

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NORTH VALLEY
230kV FACILITY SITING PROJECT

Substations

- Two new substations
  - 10-acre site with block wall and steel gate
- Design and landscaping
  - Wall design and color to match surrounding developments
  - Density and plant type in accordance with established city building permit requirements

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230kV FACILITY
SITING PROJECT

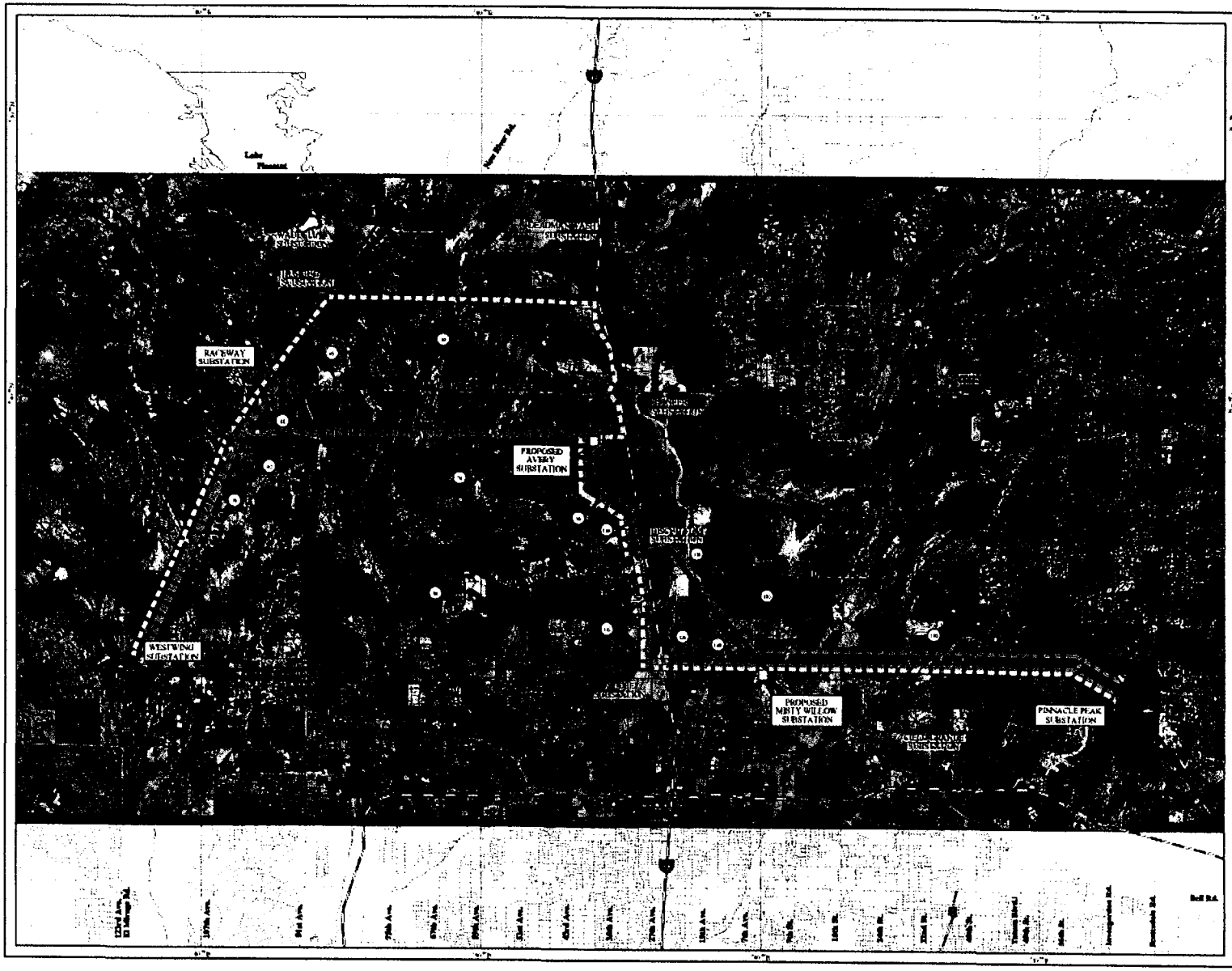

Exhibit A-5

PROPOSED AND ALTERNATIVE ROUTES

NORTH VALLEY

230kV FACILITY SITING PROJECT

Alternatives

- Proposed Route
  Links: 15, 35, 60, 70, 90, 115, 120, 140, 170
- Alternative Route #1
  Links: 15, 35, 60, 70, 90, 100, 110, 140, 170
- Alternative Route #2
  Links: 15, 35, 60, 70, 90, 100, 150, 170
- Alternative Route #3
  Links: 15, 35, 45, 50, 90, 115, 120, 140, 170
- Alternative Route #4
  Links: 15, 35, 60, 80, 90, 100, 150, 170
- Proposed Substation Siting Area
- Link Identification Number
- Link Node

General Reference Features

- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 69kV Transmission Line
- Interstate/Highway
- Transportation Route
- Lake
- Stream
- Canal
- Existing Substation

Scale 1:62,500

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NORTH VALLEY

230kV FACILITY SITING PROJECT

Alternative Route Overview

- Alternative #1 (31.2 miles, $71 million)
  - Does not allow for 69kV consolidation along I-17
- Alternative #2 (30.2 miles, $69 million)
  - Requires more turning structures
  - Construction constraints
  - Greater environmental impacts
- Alternative #3 (34.9 miles, $76 million)
  - Longer route without corresponding system benefits
  - Greater environmental impacts
- Alternative #4 (32.8 miles, $75 million)
  - Construction constraints
  - Longer route without corresponding system benefits

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NORTH VALLEY
230kV FACILITY SITING PROJECT

230kV Structures

- Monopole
  - Typical height
  - Typical span
  - 69kV consolidation
- Lattice tower
  - Typical height
  - Typical span
- Line Crossing Structures
- Material
  - Non-specular conductor

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NORTH VALLEY
230kV FACILITY
SITING PROJECT

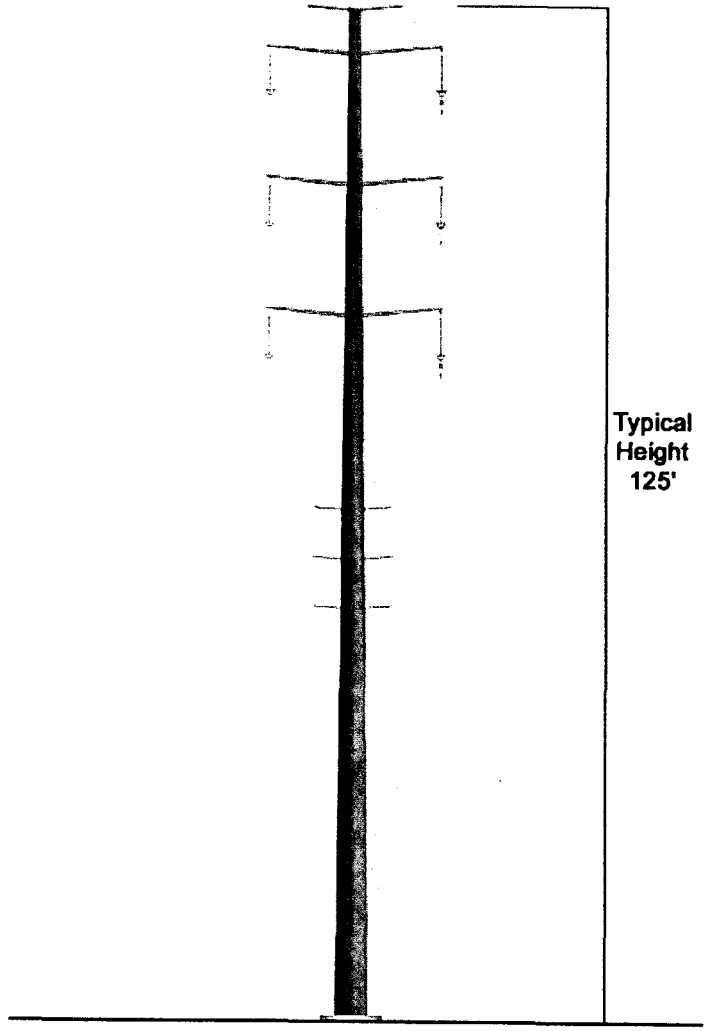

EXHIBIT G-2

Typical 230kV Double-Circuit Tangent Steel Pole with Double-Circuit 69kV Underbuild

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NORTH VALLEY
230kV FACILITY
SITING PROJECT

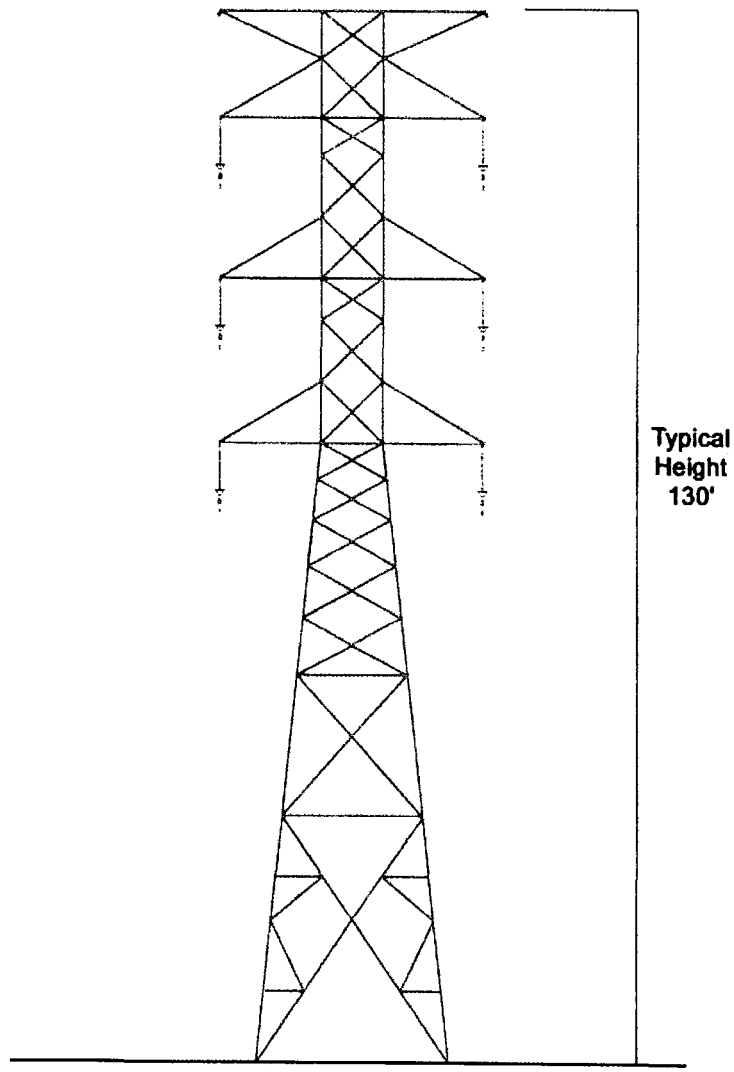

EXHIBIT G-3

Typical 230kV Double-Circuit Tangent Steel Lattice Structure

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NORTH VALLEY

230kV FACILITY
SITING PROJECT

CEC Timeframe

- Request 10-Year Term
  - Accommodates project in-service dates between 2008 and 2011
- Rapid development in the North Valley area
  - Need to precede growth
  - Allow for integration with future development
- Project is included in the General Plans of:
  - City of Phoenix
  - City of Peoria

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NORTH VALLEY
230kV FACILITY SITING PROJECT

Right-of-Way/Corridors

- Right-of-Way
  - Arizona State Land Department
  - Private Land Acquisition
  - ADOT I-17 Corridor
- Existing Corridors
  - Westwing - New Waddell Corridor
    - APS
    - WAPA
  - Happy Valley Corridor
    - SRP
    - WAPA circuit

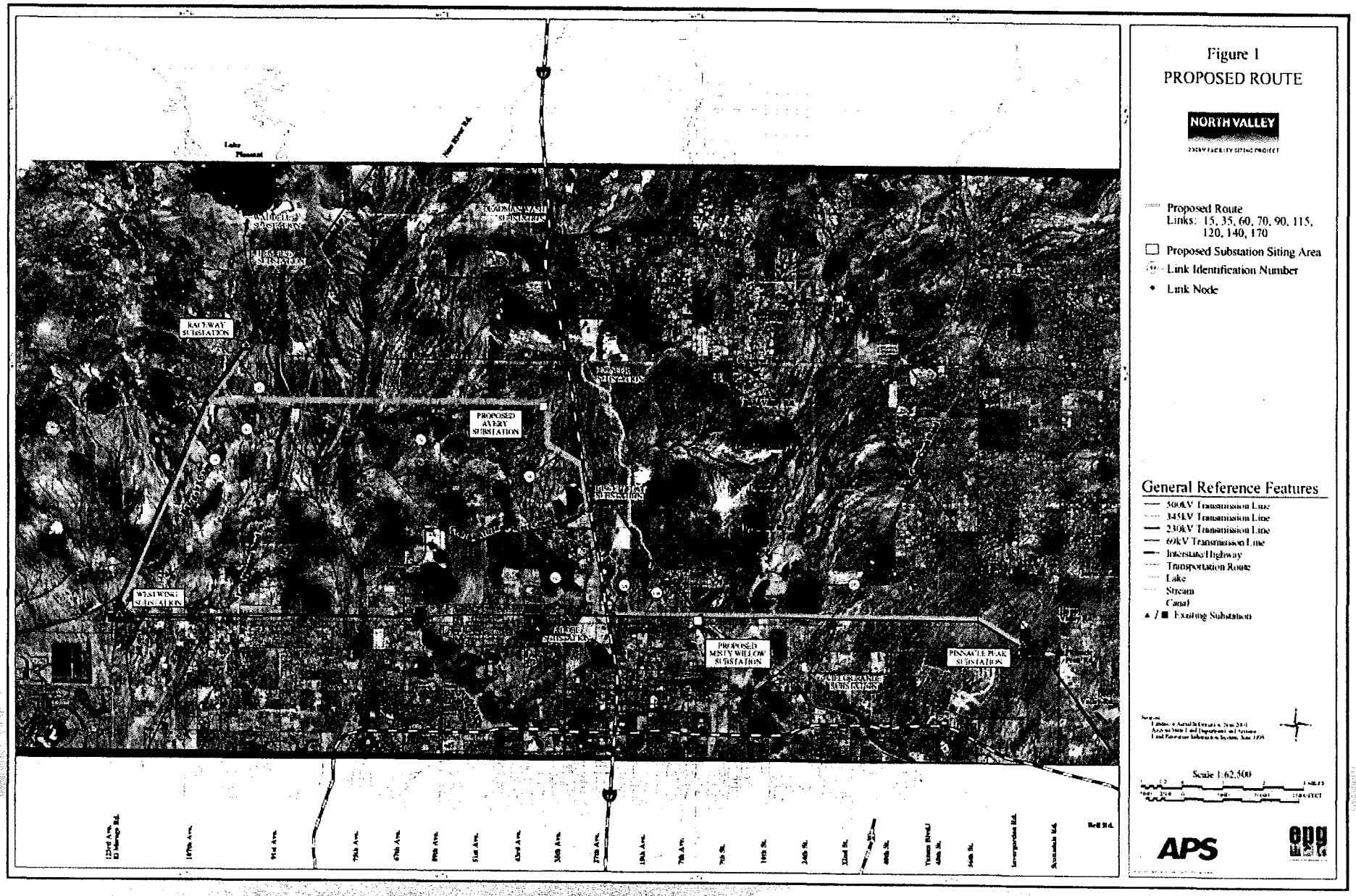
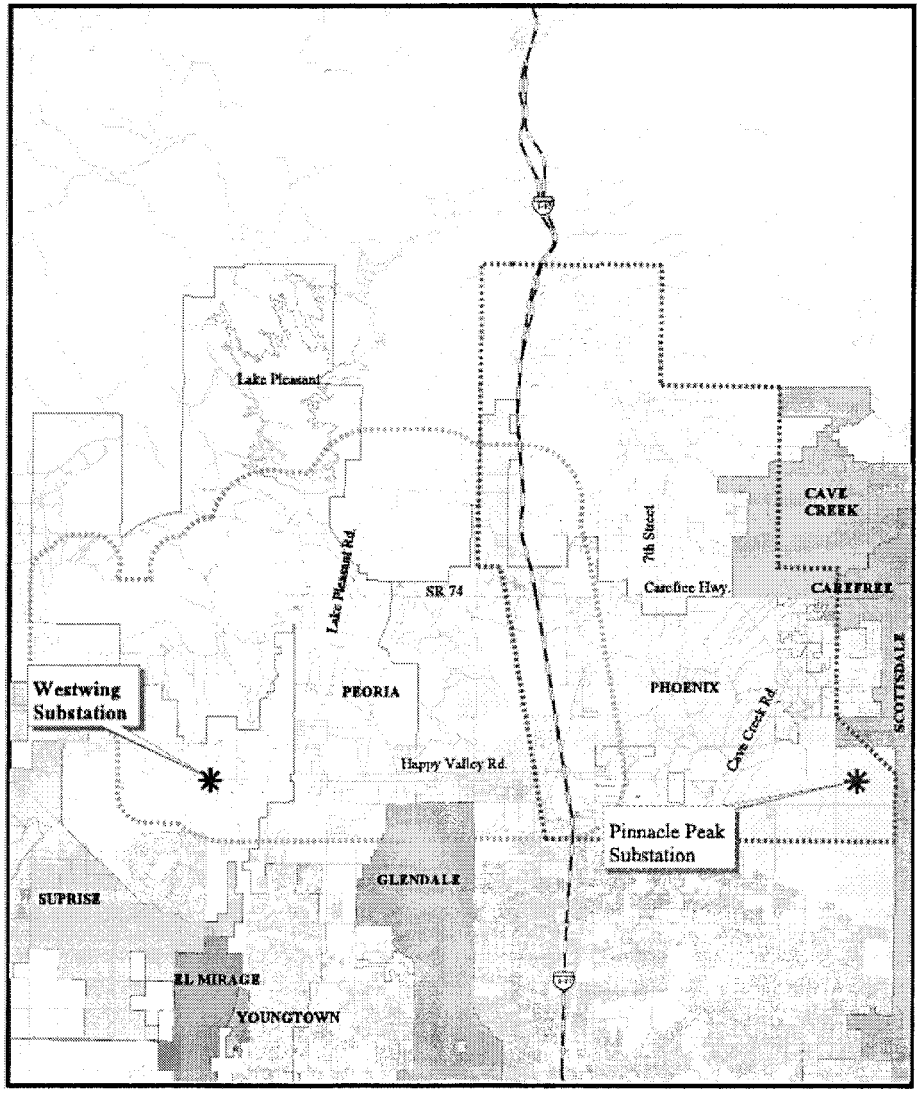


Figure 1
PROPOSED ROUTE

NORTH VALLEY
230kV FACILITY SITING PROJECT

Facility Siting Projects

- Northwest Siting Study
- North Central Siting Study
- North Valley Facility Siting Study



Legend

Northwest Valley Project Study Area Boundary

North Central Project Study Area Boundary

N W E S

2 0 2 4 Miles

Figure 2
Facility Siting Projects

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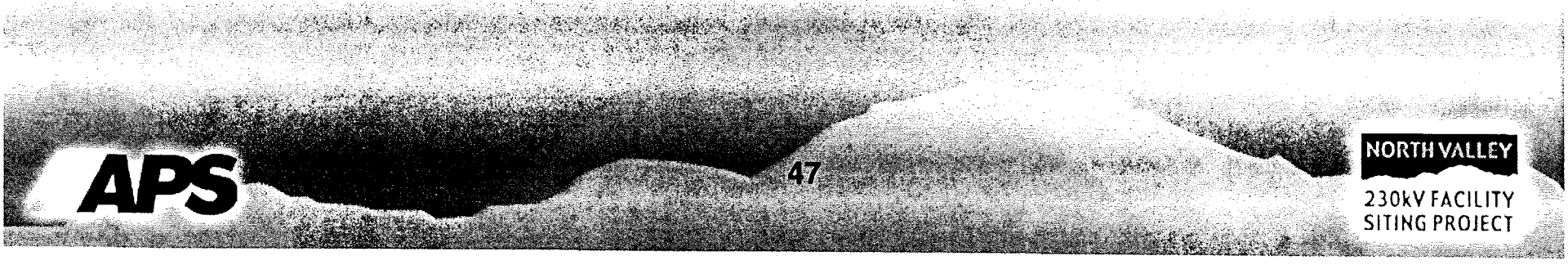
NORTH VALLEY
230kV FACILITY SITING PROJECT

Northwest Siting Study

- Community Working Group
- 7 Open Houses
- 6 Newsletters Sent to 50,000 People
- Website
- Telephone Information Line
- Newspaper Articles

North Central Siting Study

- Community Working Group
- 6 Open Houses
- 4 Newsletters Sent to 23,000 People
- Website
- Telephone Information Line
- Newspaper Articles



North Valley Facility Siting Project

- Jurisdictional Briefings
  - City of Phoenix
  - City of Peoria
  - Arizona State Land Department
  - Arizona Department of Transportation
  - Maricopa County
- NW and NC Community Working Group Update
- Newsletter sent to 67,000 people
- Website (http://siting.apsc.com)
- Telephone Information Line

Community Involvement Summary

- Acceptance of the Proposed Route from both Community Working Groups
- City of Phoenix and City of Peoria support the Proposed Route and have included within the cities general plans
- Arizona State Land Department (ASLD) supports the Proposed Route

Applicant's Evaluation of Alternative Routes

- Criteria applied by applicant to rank the alternative routes
  - Environmental study results
  - Public input
  - Engineering and technical considerations
  - Cost

North Valley Project Benefits

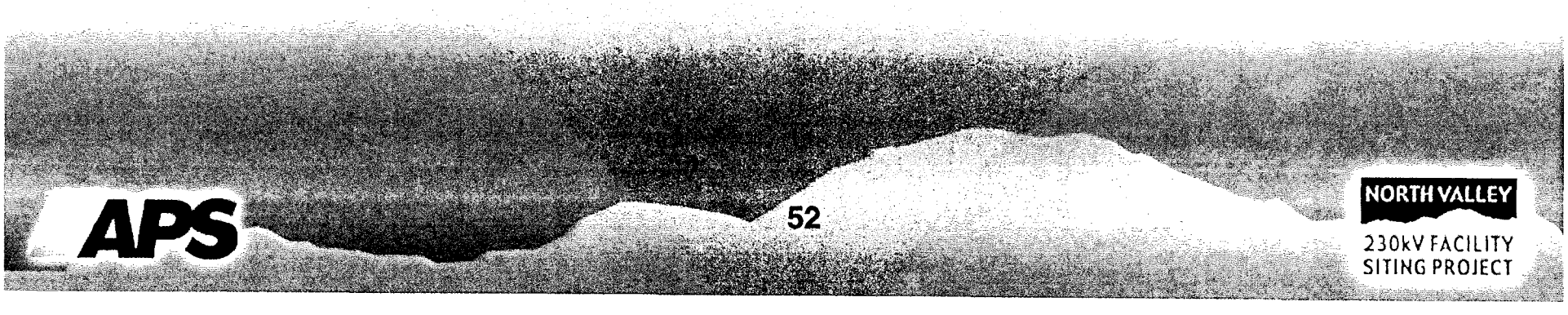
- Establishes needed electric infrastructure for the North Valley
- Improves APS' transmission system reliability
- Allows the incorporation of electrical infrastructure in future development plans
- Recognizes jurisdictional input

Environmental Studies

Paul Trenter

Environmental Planning Group

Project Manager



Witness Background

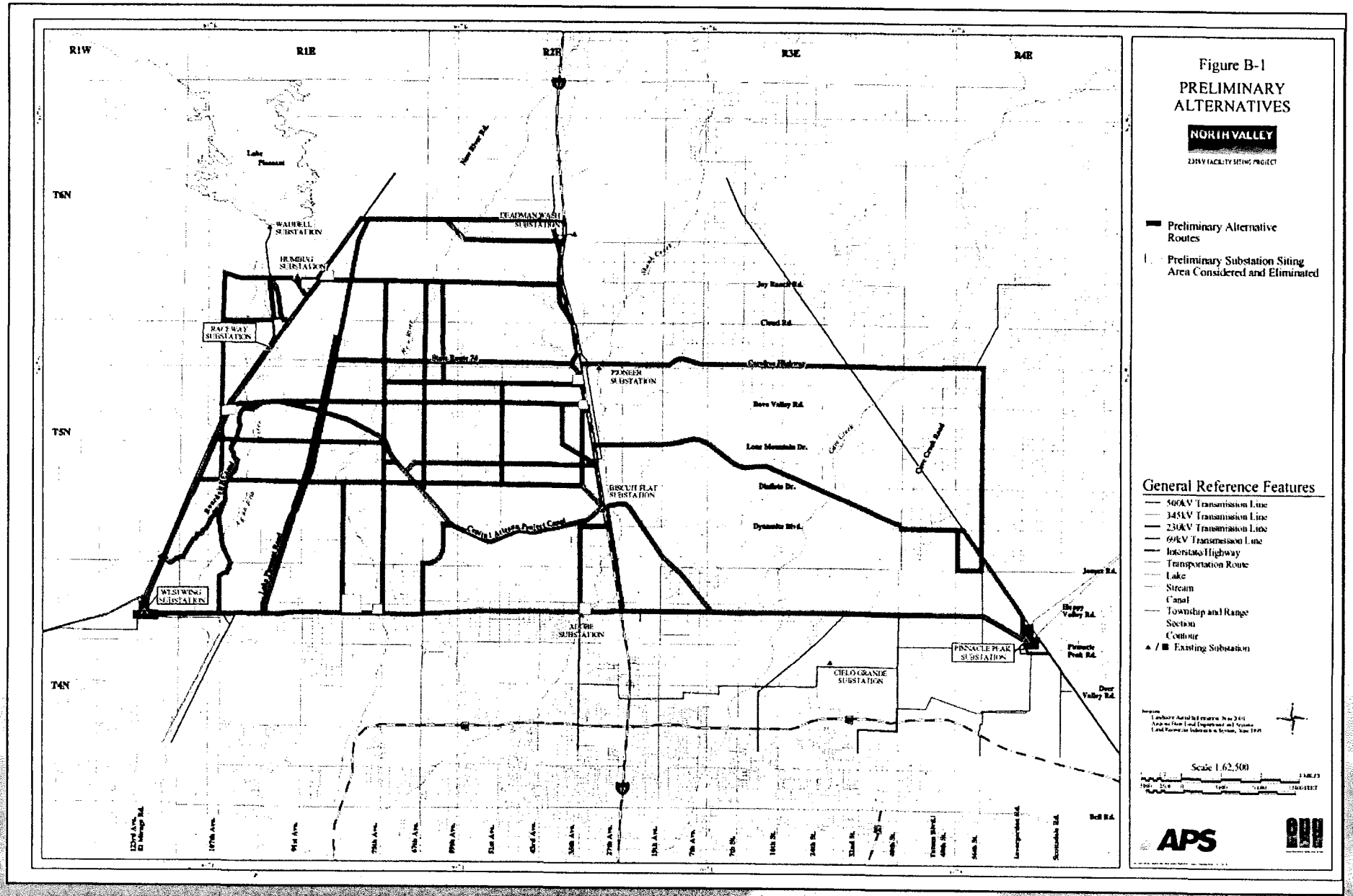
- Professional Credentials
  - BS, Landscape Architecture, Environmental Planning, University of Wisconsin
  - Principal at EPG
  - 14-years of experience in siting and environmental work with major utility projects
  - Managed or participated in over 26 major transmission line projects
  - Previously testified before the Siting Committee and most recently the APS/SRP Southwest Valley Project

Witness Background

- Environmental Planning Group
  - Provides comprehensive environmental planning, permitting and compliance
  - EPG's senior project managers have a combined total of more than 125 years of siting experience on a wide variety of projects
  - EPG or its staff have participated in a majority of all EHV and HV transmission line projects in Arizona in the last 25 years

Outline of Testimony

- Alternatives evaluation
- Environmental studies
  - Land use
  - Visual
  - Cultural
  - Biological
- Environmental compatibility



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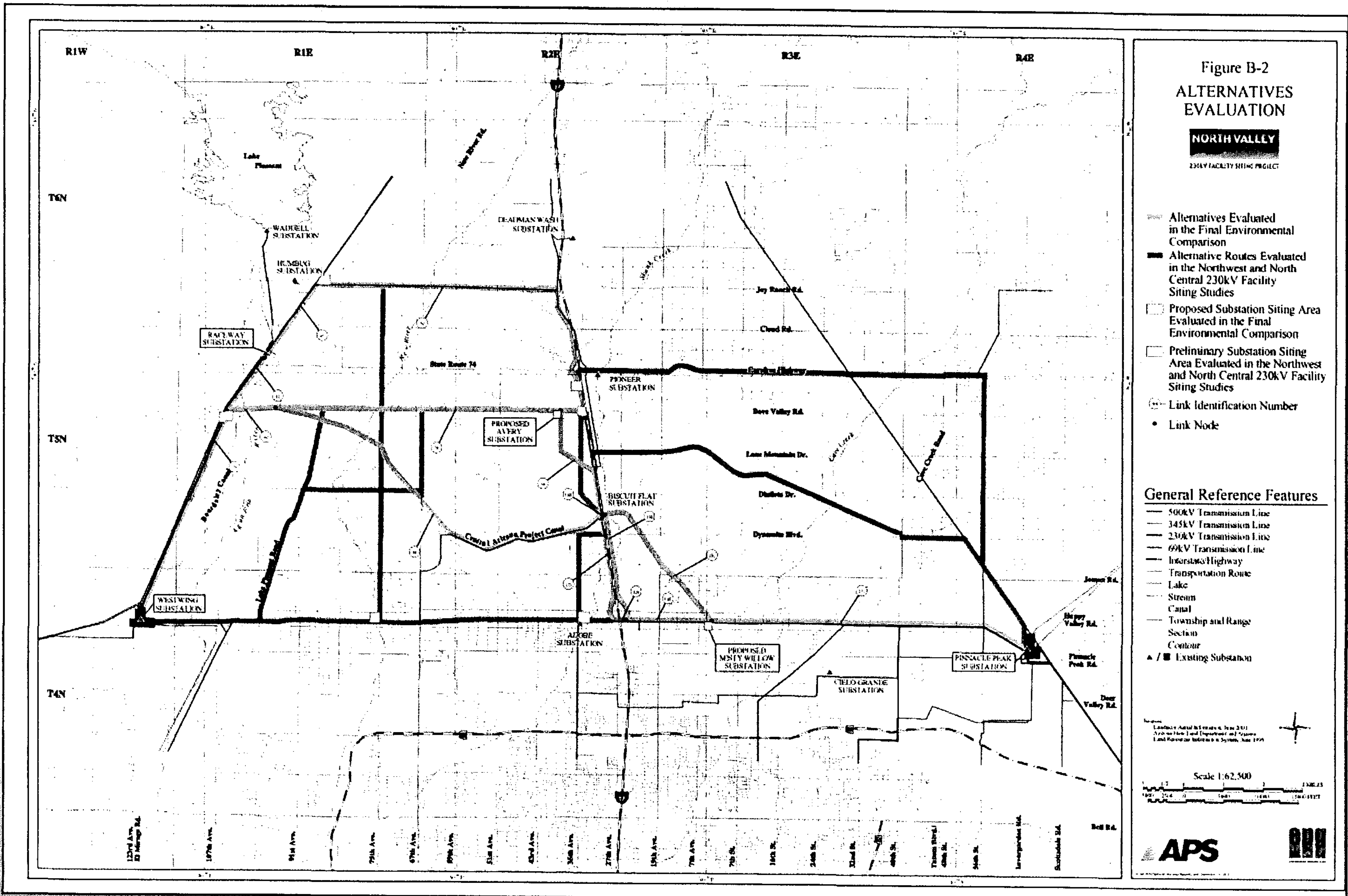
NORTH VALLEY
230kV FACILITY SITING PROJECT

Alternatives Identification

- Regional study conducted
- Identified 221 miles of preliminary transmission line alternatives and nine substation siting areas
- Environmental, public input, and engineering reduced the preliminary alternatives by 97 miles
- 124 miles of transmission line routes and nine substation sites were evaluated in a detailed corridor inventory and assessment



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230kV FACILITY SITING PROJECT

Environmental Evaluation of Alternatives

- Evaluated land use and visual impacts resulting in 60 miles of alternatives and two substation siting areas for final comparison
- These alternatives were combined to form five alternative routes
- Conducted detailed environmental evaluation of the alternative routes
- Provided environmental study results to APS

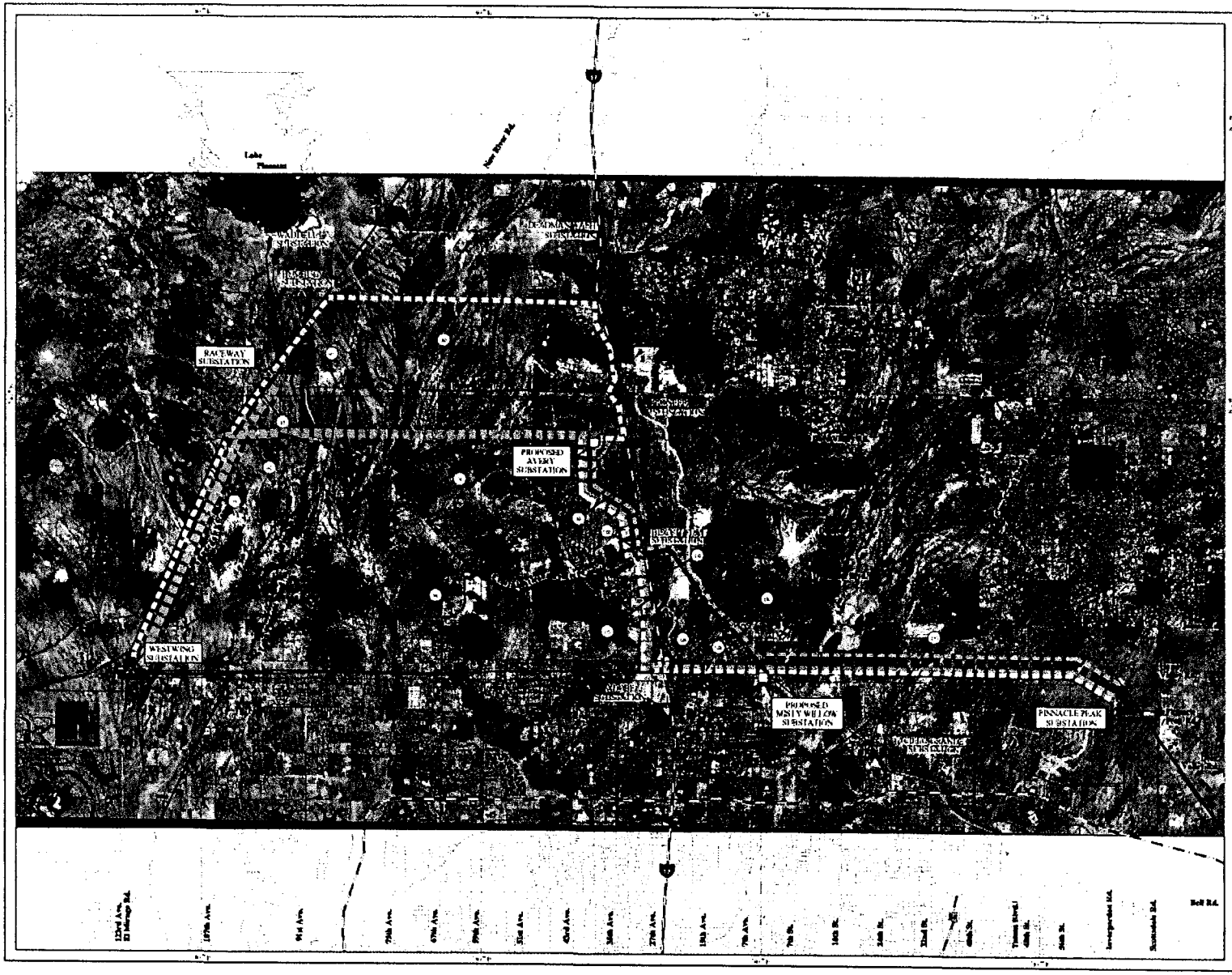


Exhibit A-5

PROPOSED AND ALTERNATIVE ROUTES

NORTH VALLEY

230kV FACILITY SITING PROJECT

Alternatives

- Proposed Route
  Links: 15, 35, 60, 70, 90, 115, 120, 140, 170
- Alternative Route #1
  Links: 15, 35, 60, 70, 90, 100, 110, 140, 170
- Alternative Route #2
  Links: 15, 35, 60, 70, 90, 100, 150, 170
- Alternative Route #3
  Links: 15, 35, 45, 50, 90, 115, 120, 140, 170
- Alternative Route #4
  Links: 15, 35, 60, 80, 90, 100, 150, 170
- Proposed Substation Siting Area
- Link Identification Number
- Link Node

General Reference Features

- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 69kV Transmission Line
- Interstate Highway
- Transportation Route
- Lake
- Stream
- Canal
- Existing Substation

Scale 1:62,500

APS

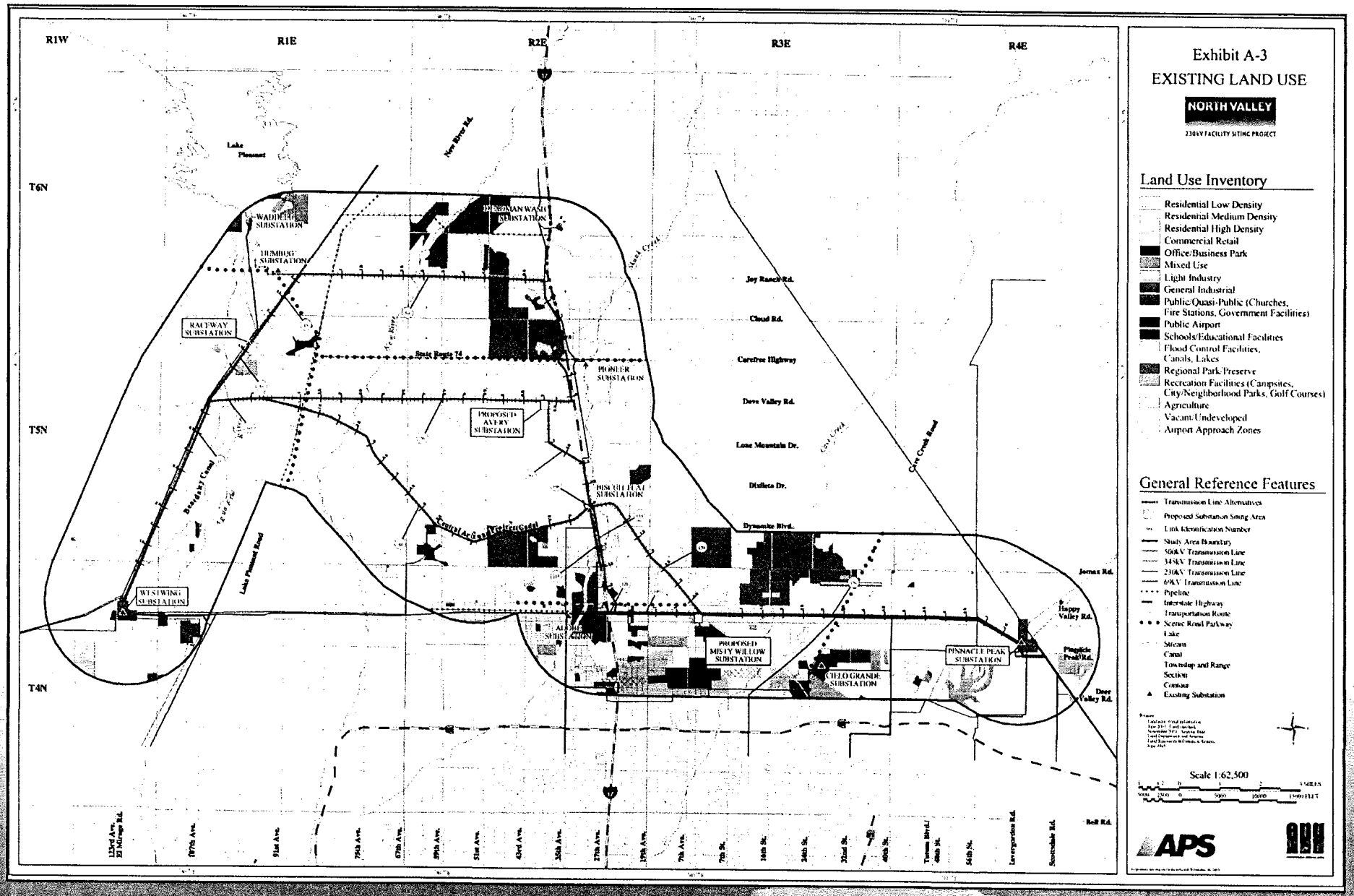
APS

NORTH VALLEY

230kV FACILITY SITING PROJECT

Land Use

- Inventory of existing and planned land uses
- Jurisdiction crossed for the Proposed Route
  - City of Phoenix (19.6 miles)
  - City of Peoria (8.5 miles)
  - Unincorporated (3.1 miles)
- Land ownership crossed for the Proposed Route
  - Private owners (7.7 miles)
  - State Trust (22.7 miles)
  - Bureau of Reclamation (0.8 mile)



APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

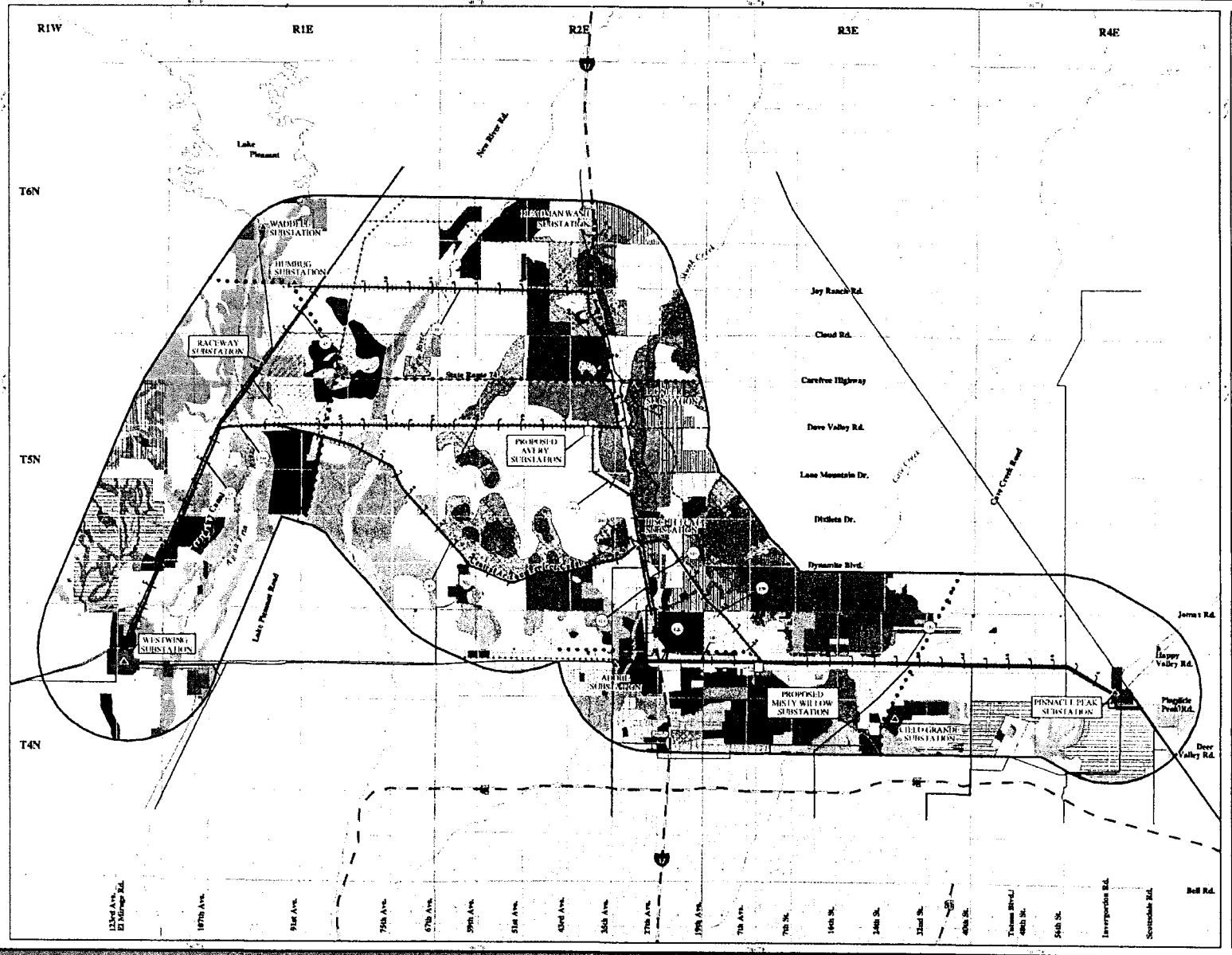


Exhibit A-4

FUTURE LAND USE

NORTH VALLEY

230kV FACILITY SITING PROJECT

Land Use Inventory

- Residential Low Density
- Residential Medium Density
- Residential High Density
- Mixed Use
- Hotel/Resort
- Office/Business Park
- Commercial Retail
- Light Industry
- General Industrial
- Public/Quasi-Public (Churches, Fire Stations, Government Facilities)
- Public Airport
- Schools/Educational Facilities
- Flood Control Facilities, Canals, Floodplains, Lakes
- *Regional Park/Preserve*
- Recreation Facilities and Open Space (Campsites, City/Neighborhood Parks, Golf Courses)
- Planned-Final Approval
- Planned-Concept Stage
- Proposed Sonoran Preserve
- Airport Approach Zones
- Aviation Study Area
- Planned Transportation
- Planned 69kV Transmission Line
- Utility Corridor

General Reference Features

- Transmission Line Alternatives
- Proposed Substation Siting Area
- Link Identification Number
- Study Area Boundary
- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 69kV Transmission Line
- Pipeline
- Interstate Highway
- Transportation Route
- Scenic Road Parkway
- Lake
- Stream River
- Canal
- Township and Range
- Section
- Contour
- Existing Substation

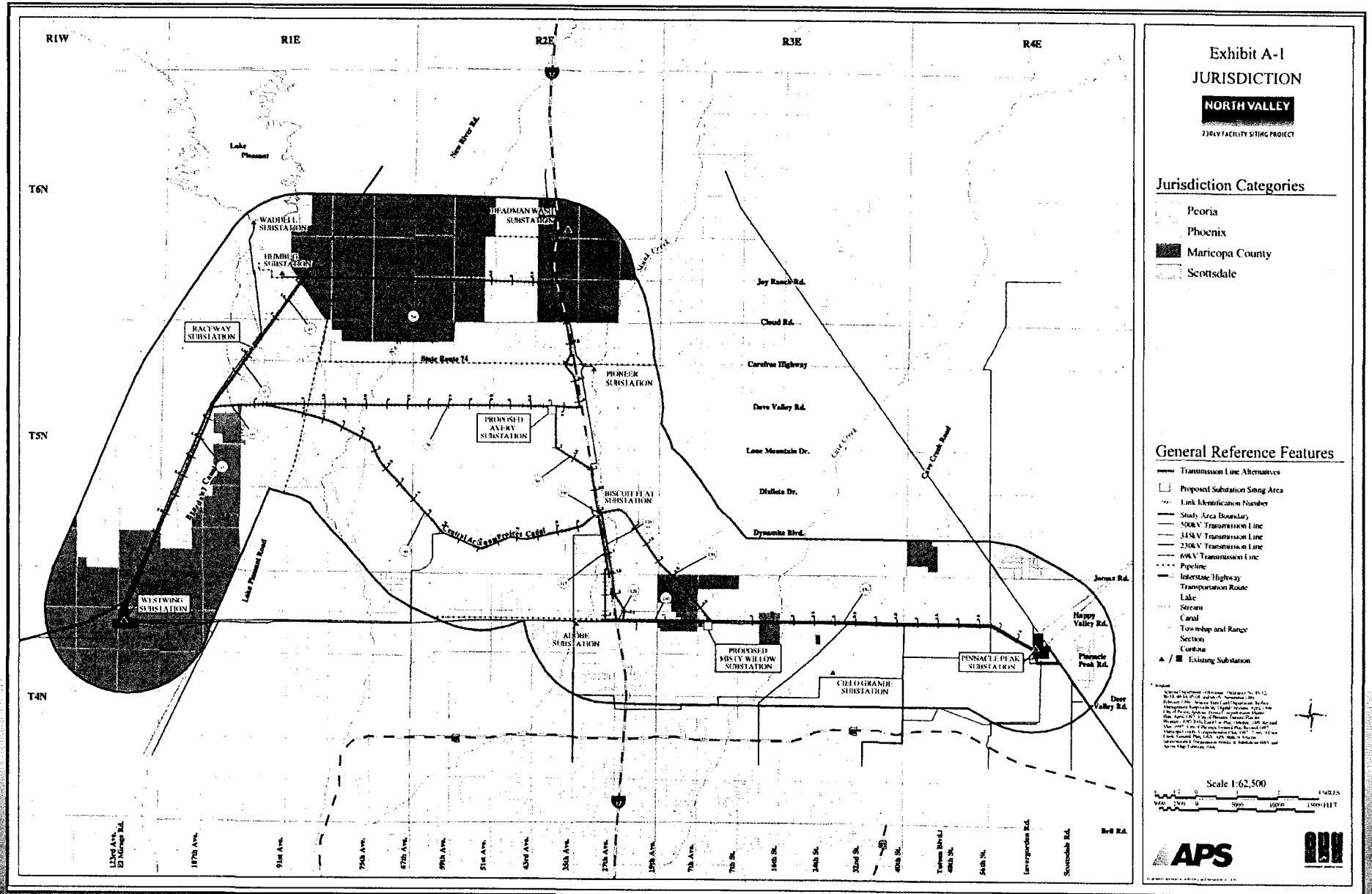
Scale 1:62,500

APS

APS

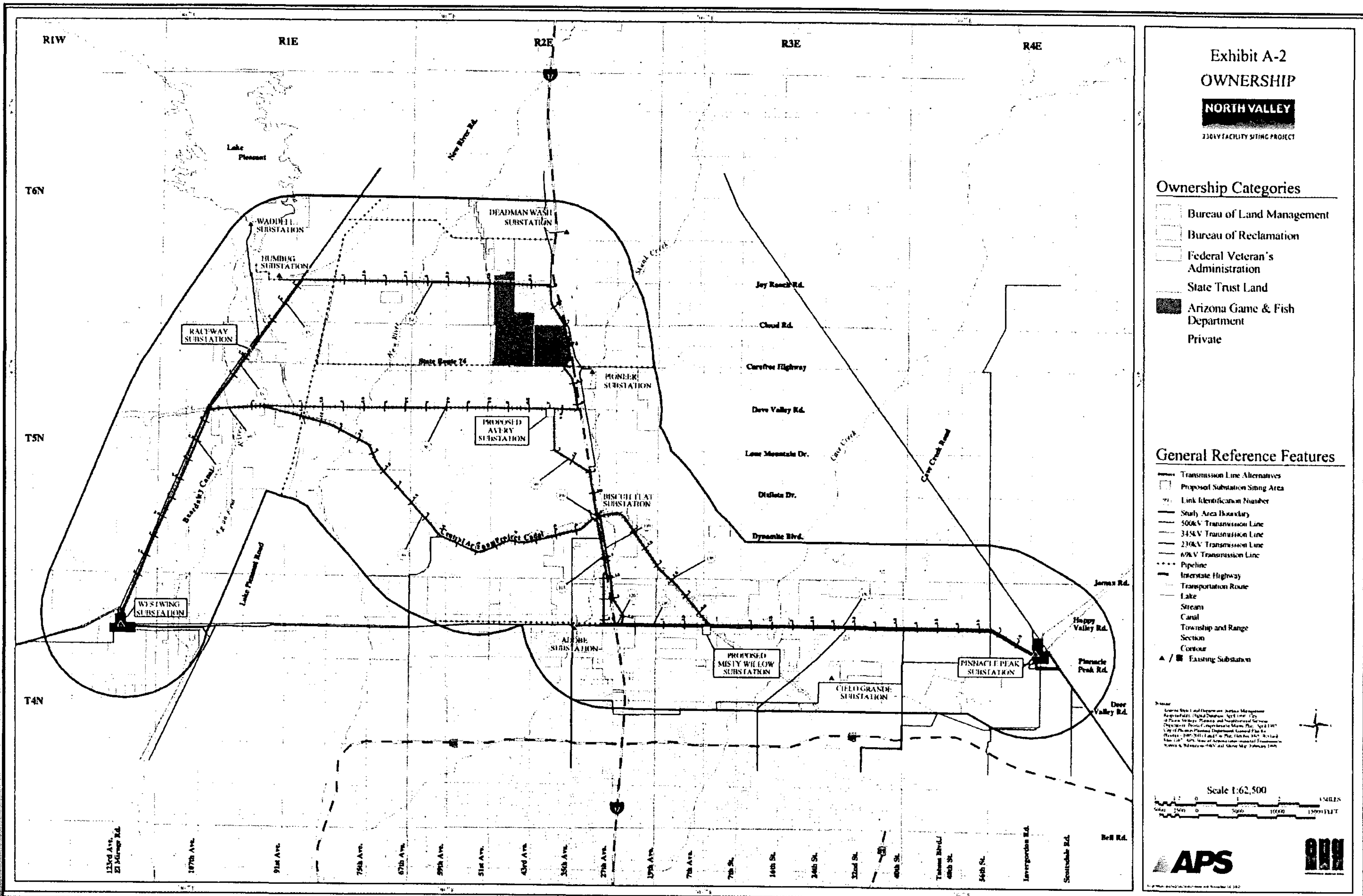
NORTH VALLEY

230kV FACILITY SITING PROJECT



APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT



65

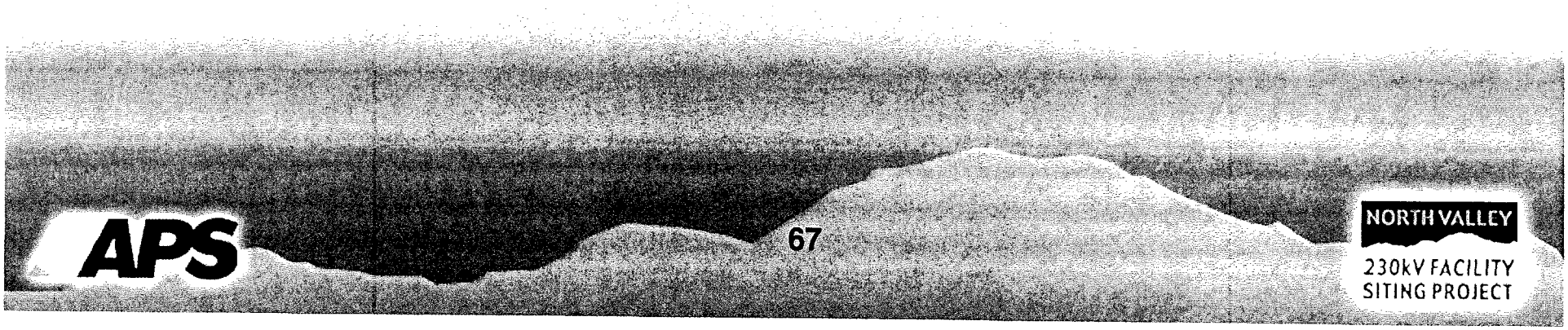
NORTH VALLEY
230kV FACILITY SITING PROJECT

Land Use (cont.)

- Proposed Route and substation sites are incorporated into the general plans of Phoenix and Peoria
- Minimizes impacts to existing or planned land uses by paralleling utility corridors and linear features for the entire route
- Mitigation to further reduce impacts includes
  - Consolidation of facilities where feasible
  - Selective structure placement
  - Use of tubular steel pole structures to minimize footprint

Visual Resources

- Visual resources inventory identified the following:
  - Landscape scenic quality
  - Sensitive viewers
  - Viewer visibility



Visual Resources (cont.)

- Project parallels and consolidates existing and proposed APS overhead lines minimizing visual impacts to setting and viewers
- Proposed route parallels existing transmission line crossing at I-17
- Substation locations are adjacent to existing or proposed transmission lines
- Mitigation includes
  - Consolidate APS overhead lines
  - Match existing structures where feasible
  - Use non-reflective surfaces and non-specular conductor for the proposed project
  - Landscaping and block walls for substations

Existing Condition - Single-Circuit 69kV Transmission Line

Viewpoint from inside Arizona Westwood at I-17 and Dynamite Subdivision (looking north towards SR 74)

Simulation of Proposed Route - 230kV Double-Circuit Steel Pole with Double-Circuit 69kV Underbuild

SIMULATION DATA

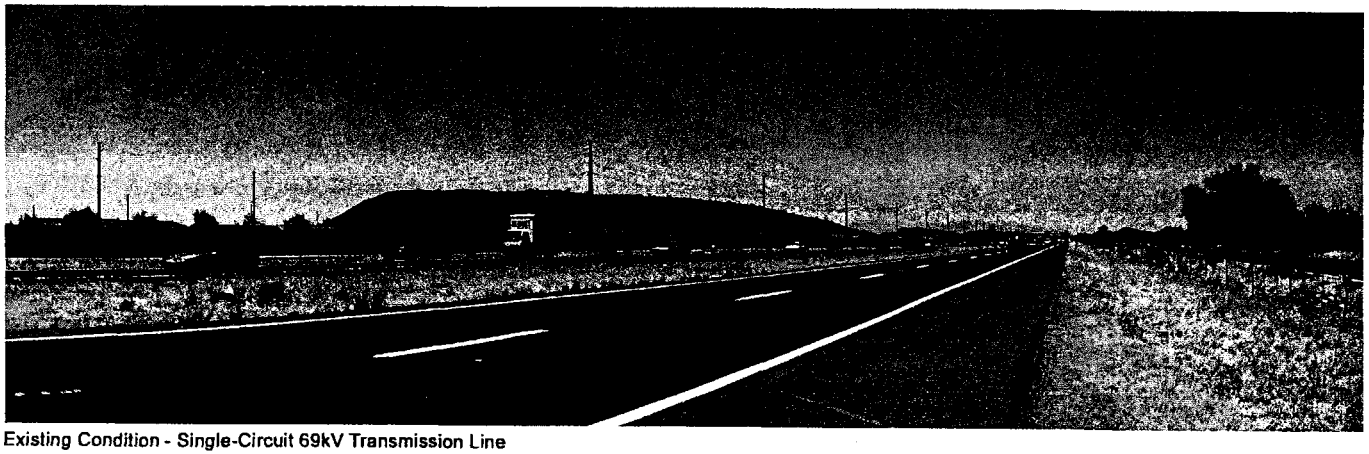
Date: 05-09-2002
Time: 2:17 pm
Weather: Clear
Simulated Focal Length: 22 mm
Simulated Field of View : 79 degrees

NORTH VALLEY

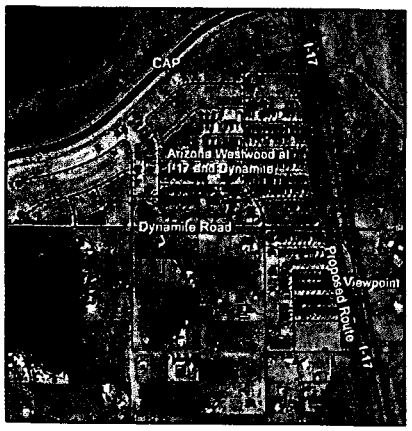
230kV FACILITY SITING PROJECT

APS

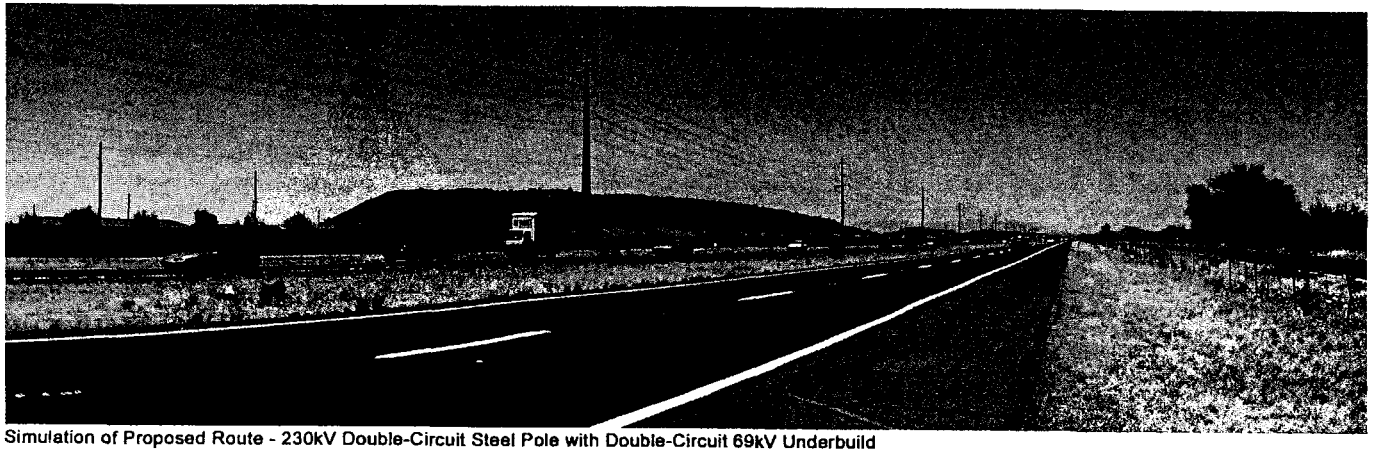
EXHIBIT G-7



Existing Condition - Single-Circuit 69kV Transmission Line



Viewpoint from I-17 (looking northwest toward Arizona Westwood at I-17 and Dynamite Subdivision)



Simulation of Proposed Route - 230kV Double-Circuit Steel Pole with Double-Circuit 69kV Underbuild

SIMULATION DATA

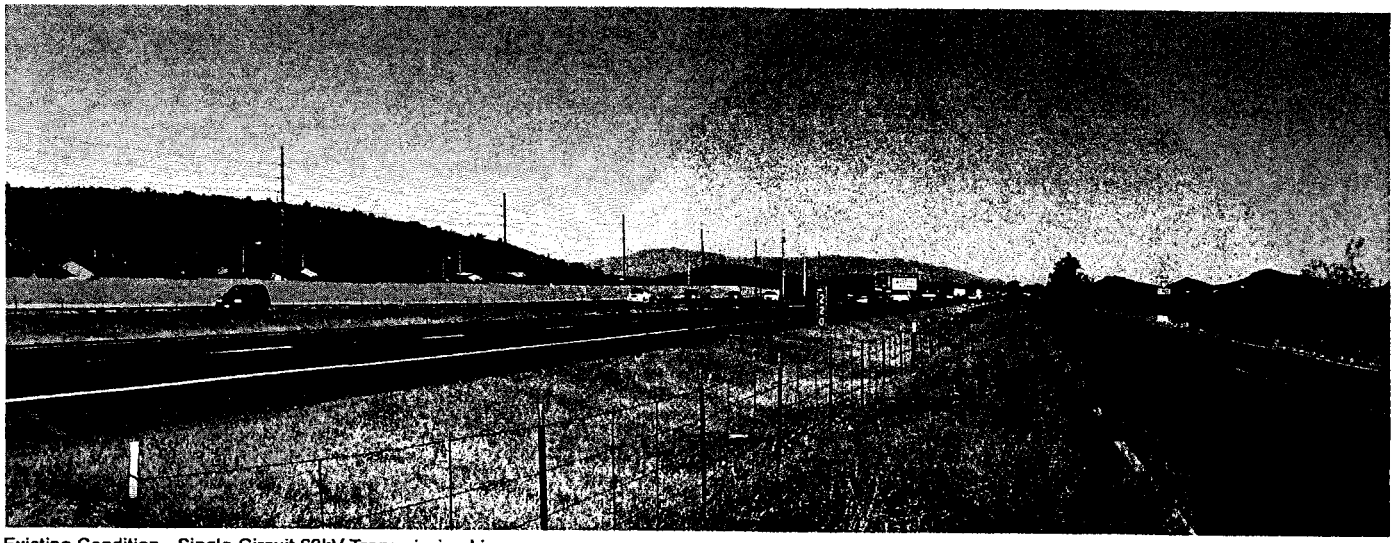
Date: 05-31-2002
Time: 1:05 pm
Weather: Clear
Simulated Focal Length: 16 mm
Simulated Field of View : 95 degrees

NORTH VALLEY

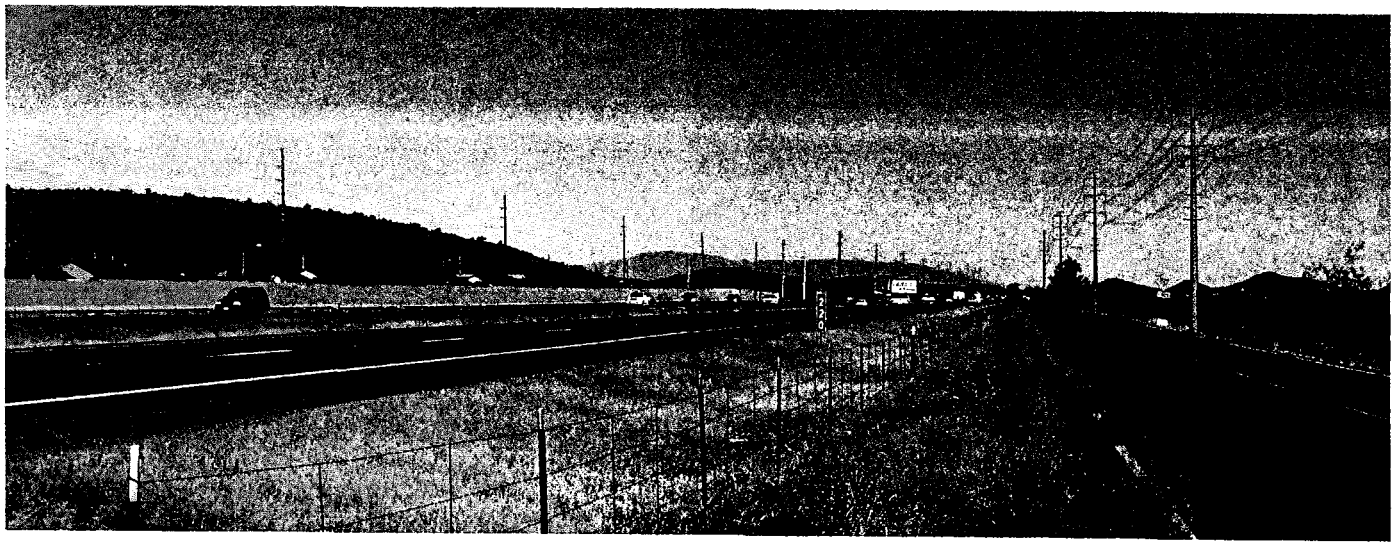
230kV FACILITY SITING PROJECT

APS

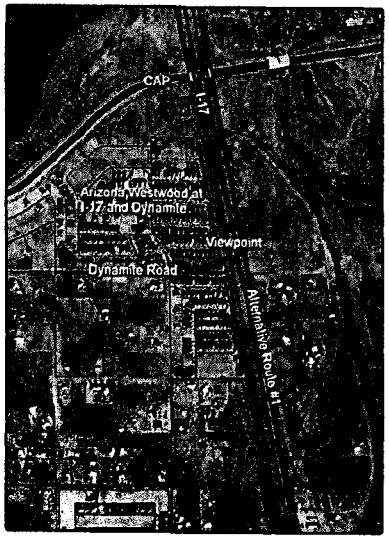
EXHIBIT G-6



Existing Condition - Single-Circuit 69kV Transmission Line



Simulation of Alternative Route #1 - 230kV Double-Circuit Steel Pole with Double-Circuit 69kV Underbuild



Viewpoint from east frontage road of I-17 looking north

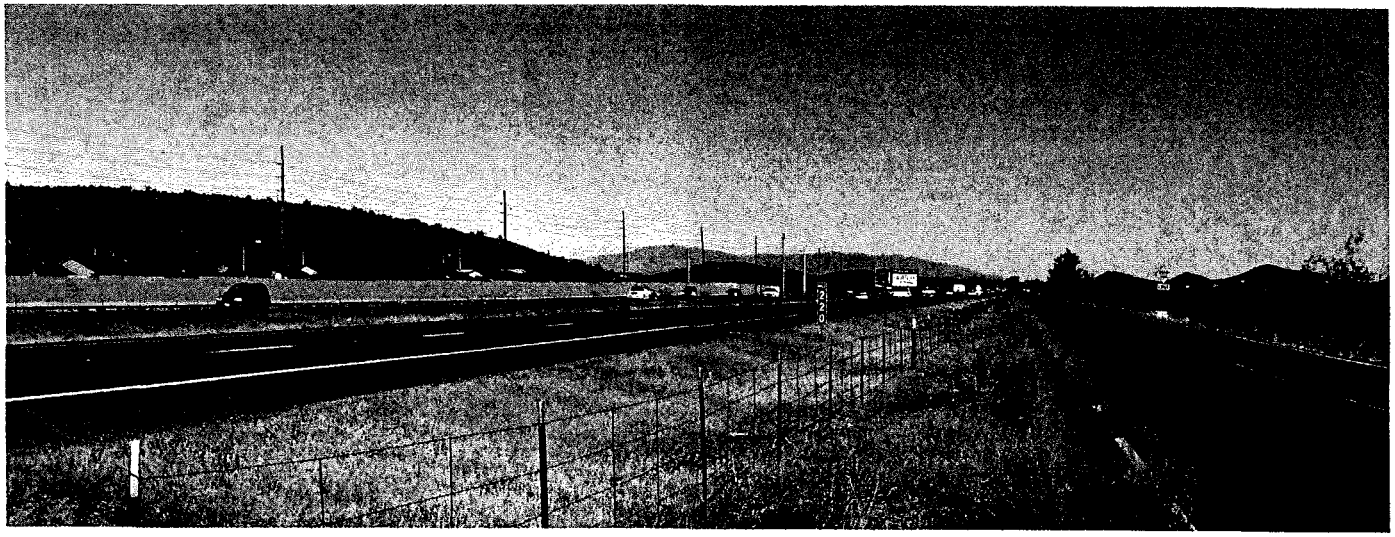
SIMULATION DATA

Date: 11-11-2002
Time: 9:20 am
Weather: Clear
Simulated Focal Length: 31 mm
Simulated Field of View : 61 degrees

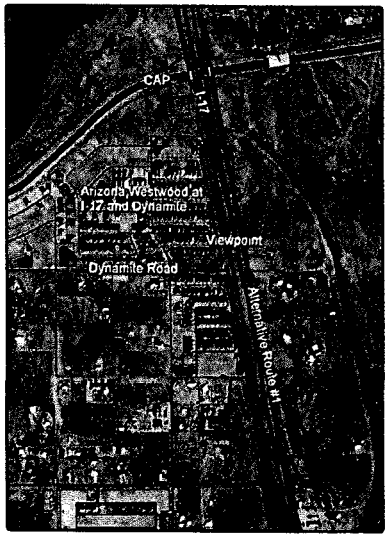
NORTH VALLEY

230kV FACILITY SITING PROJECT

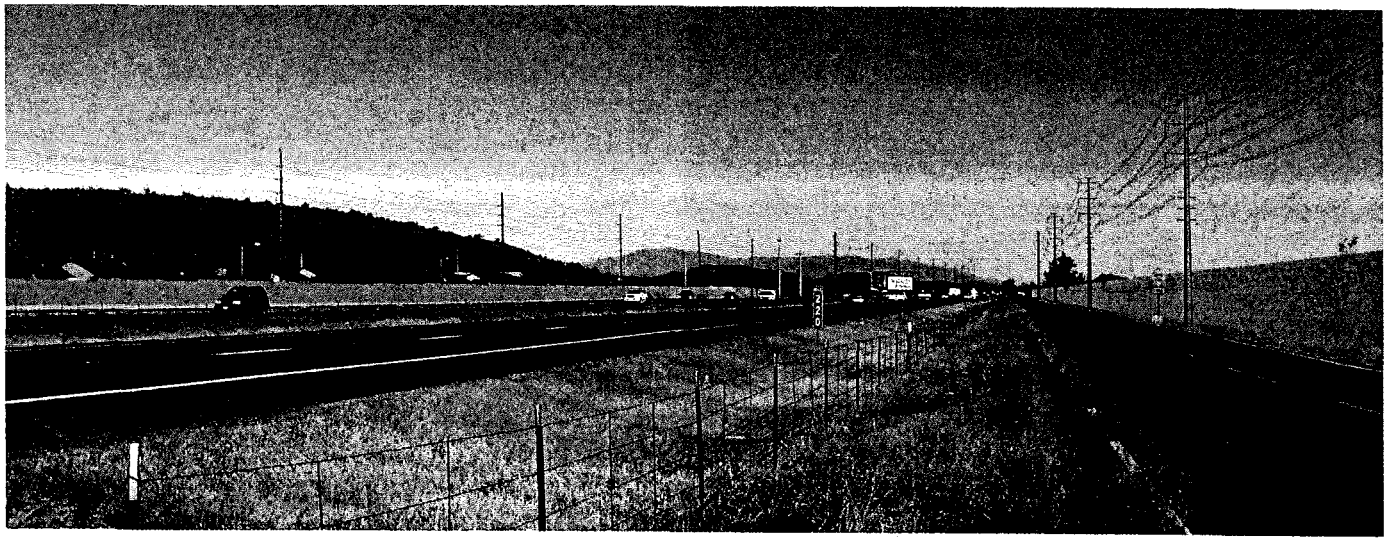
APS



Existing Condition - Single-Circuit 69kV Transmission Line



Viewpoint from east frontage road of I-17 looking north



Simulation of Alternative Route #1 with Development - 230kV Double-Circuit Steel Pole with Double-Circuit 69kV Underbuild

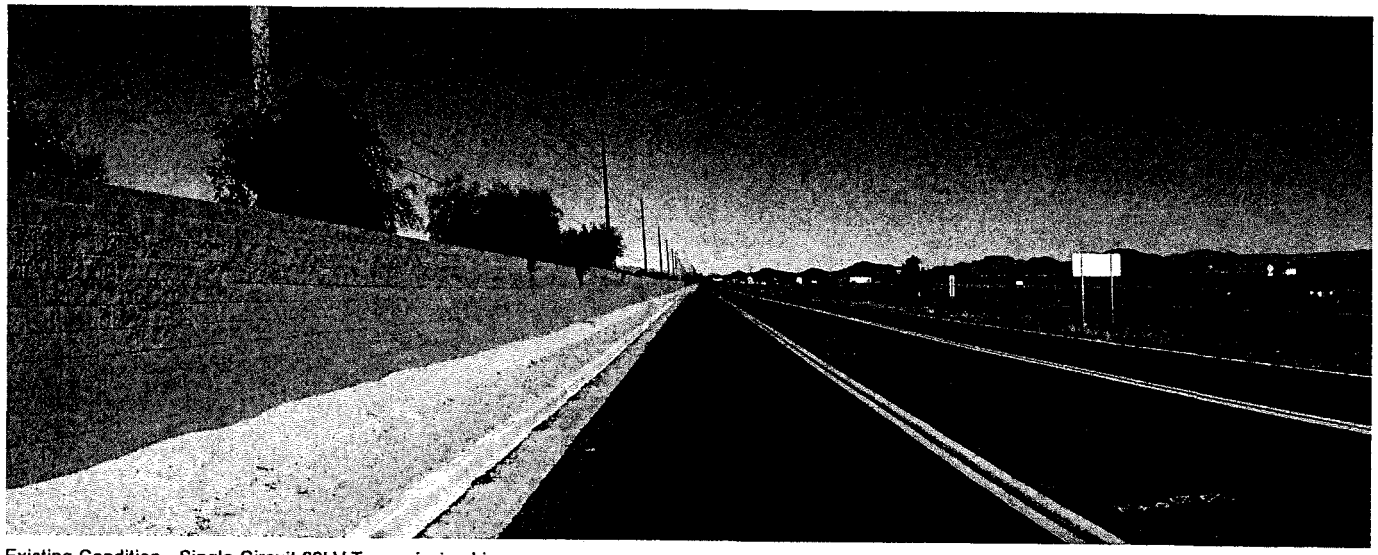
SIMULATION DATA

Date: 11-11-2002
Time: 9:20 am
Weather: Clear
Simulated Focal Length: 31 mm
Simulated Field of View : 61 degrees

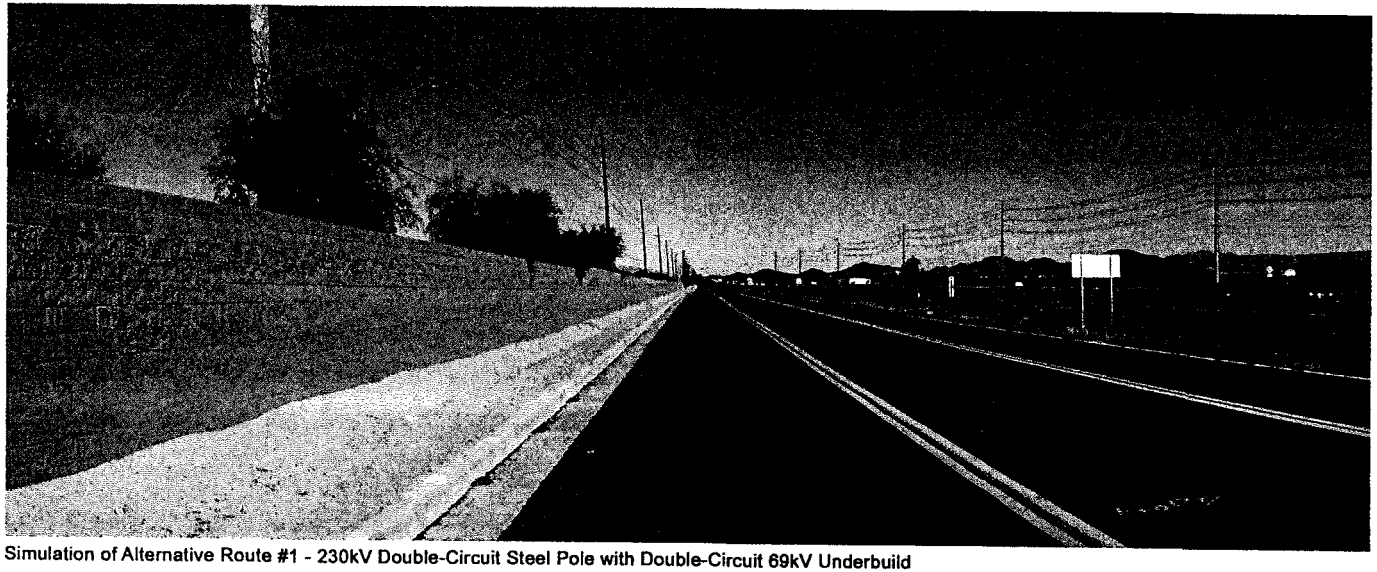
NORTH VALLEY

230kV FACILITY SITING PROJECT

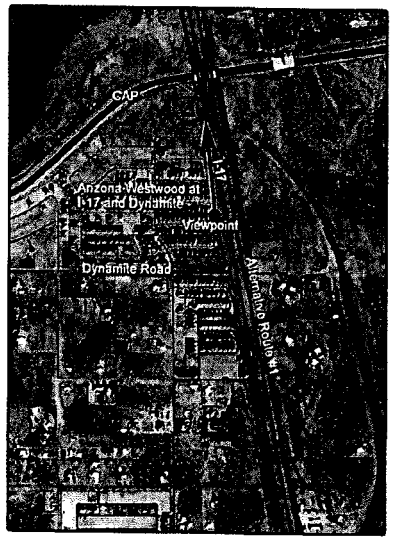
APS



Existing Condition - Single-Circuit 69kV Transmission Line



Simulation of Alternative Route #1 - 230kV Double-Circuit Steel Pole with Double-Circuit 69kV Underbuild



Viewpoint from west frontage road of I-17 looking north

SIMULATION DATA

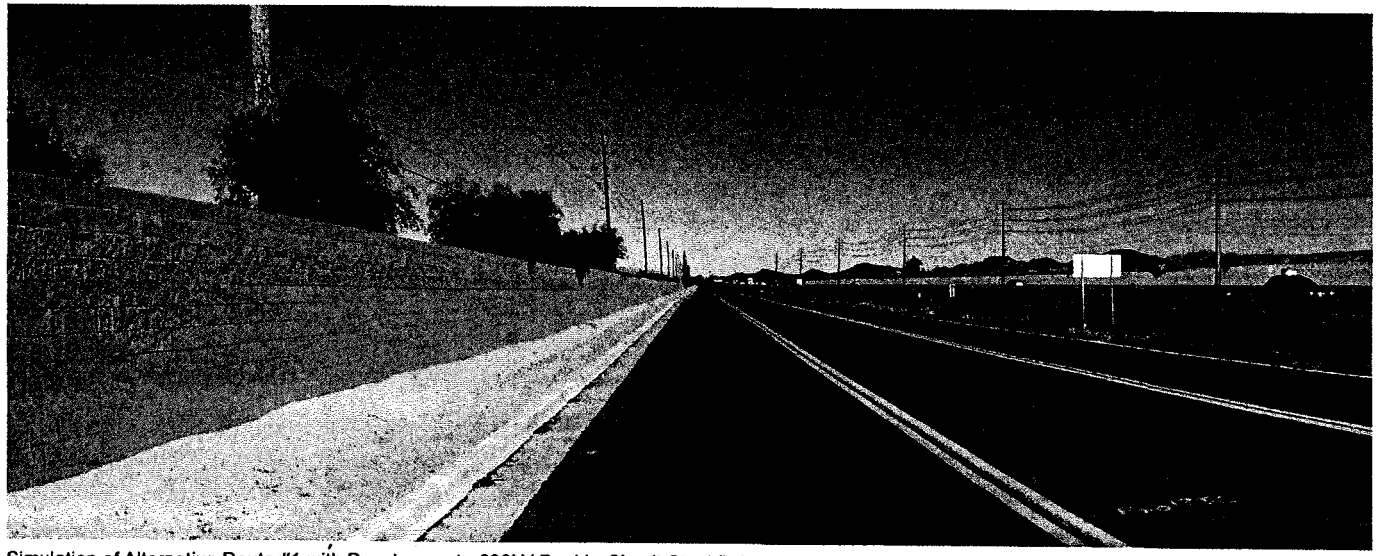
Date: 11-11-2002
Time: 9:55 am
Weather: Clear
Simulated Focal Length: 21 mm
Simulated Field of View : 82 degrees

NORTH VALLEY

230kV FACILITY SITING PROJECT

APS

Existing Condition - Single-Circuit 69kV Transmission Line



Simulation of Alternative Route #1 with Development - 230kV Double-Circuit Steel Pole with Double-Circuit 69kV Underbuild

Viewpoint from west frontage road of I-17 looking north

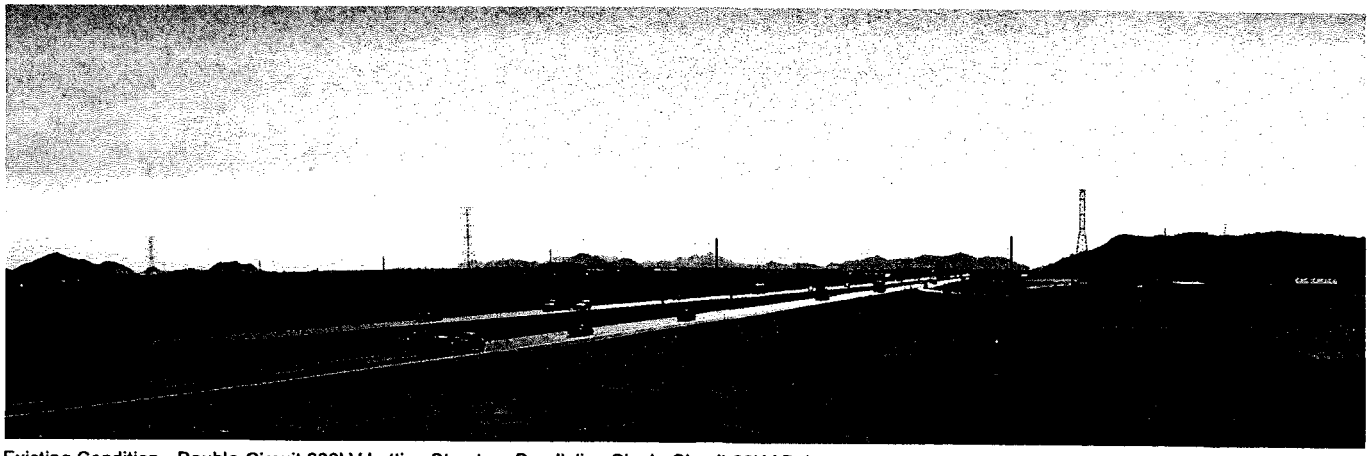
SIMULATION DATA

Date: 11-11-2002
Time: 9:55 am
Weather: Clear
Simulated Focal Length: 21 mm
Simulated Field of View : 82 degrees

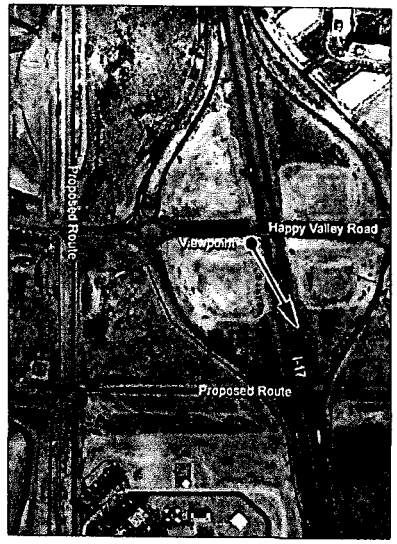
NORTH VALLEY

230kV FACILITY SITING PROJECT

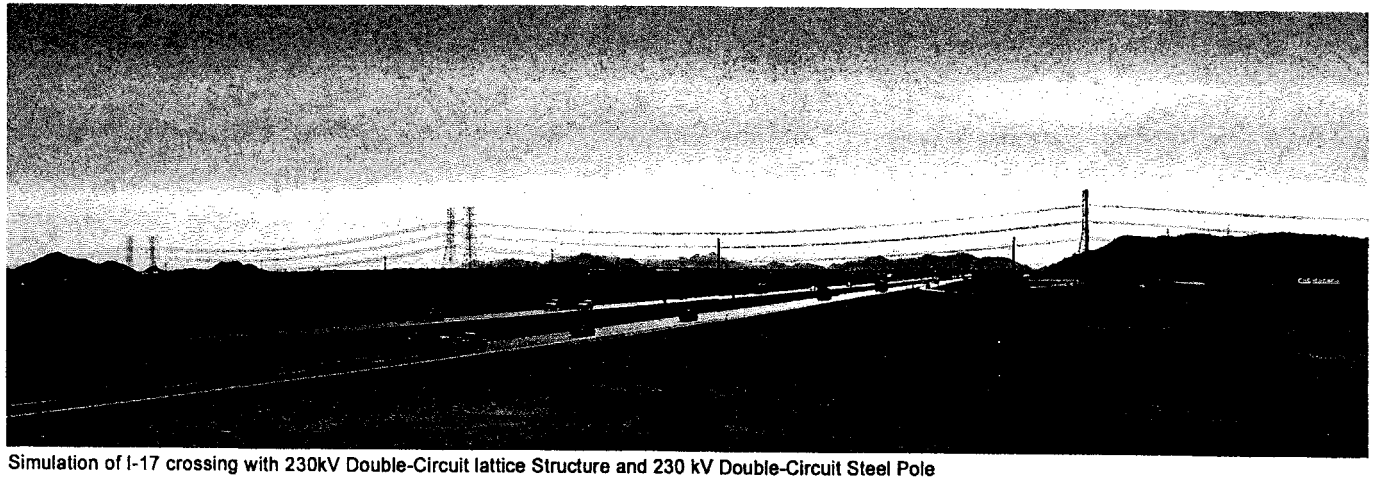
APS



Existing Condition - Double-Circuit 230kV Lattice Structure Paralleling Single-Circuit 69kV Pole



Viewpoint from Happy Valley Road looking southeast towards proposed I-17 crossing



Simulation of I-17 crossing with 230kV Double-Circuit lattice Structure and 230 kV Double-Circuit Steel Pole

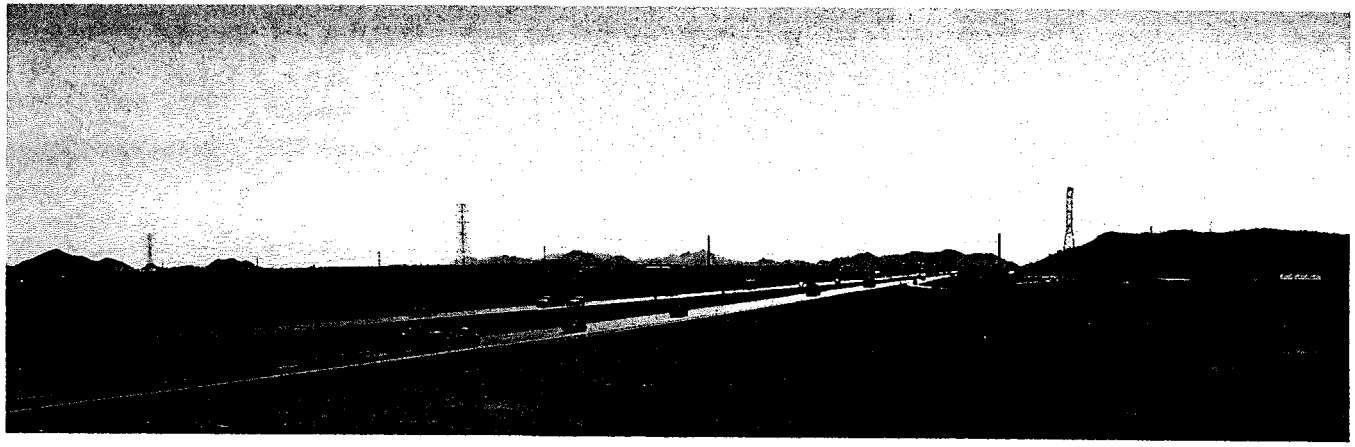
SIMULATION DATA

Date: 05-29-2002
Time: 10:14 am
Weather: Clear
Simulated Focal Length: 29 mm
Simulated Field of View : 65 degrees

NORTH VALLEY

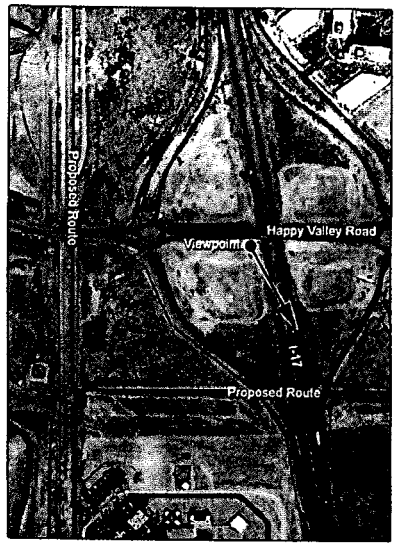
230kV FACILITY SITING PROJECT

APS



Existing Condition - Double-Circuit 230kV Lattice Structure Paralleling Single-Circuit 69kV Pole

Simulation of I-17 Crossing with Double-Circuit 230kV Steel Pole



Viewpoint from Happy Valley Road looking southeast towards proposed I-17 crossing

SIMULATION DATA

Date: 05-29-2002
Time: 10:14 am
Weather: Clear
Simulated Focal Length: 29 mm
Simulated Field of View : 65 degrees

NORTH VALLEY

230kV FACILITY SITING PROJECT

APS

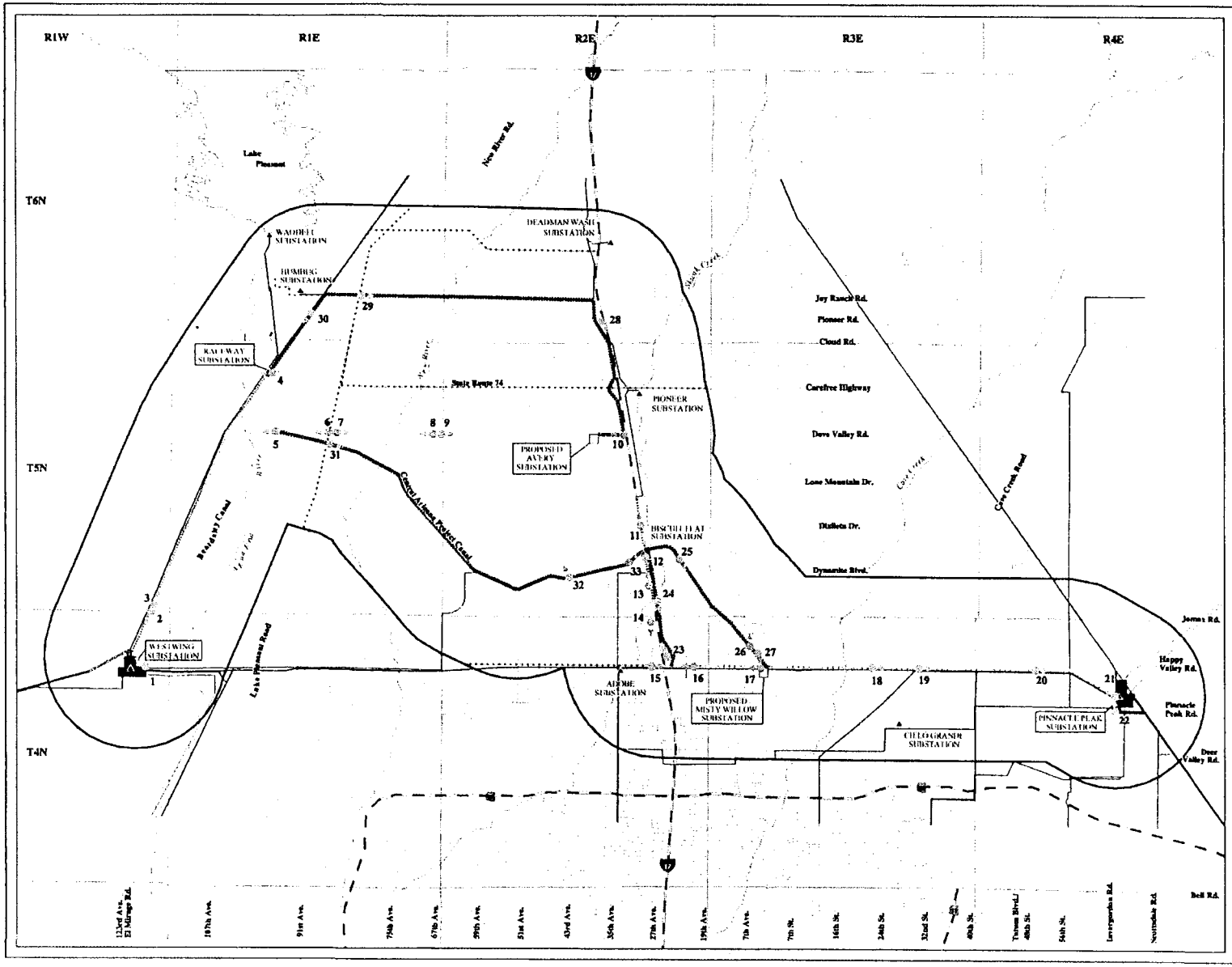


PHOTO POINT LOCATION MAP

NORTH VALLEY

230kV FACILITY SITING PROJECT

Legend

- Photo Points
- Proposed Route
- Alternative Route

General Reference Features

- Proposed Substation Siting Area
- Study Area Boundary
- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 69kV Transmission Line
- Pipeline
- Interstate Highway
- Transportation Route
- Lake
- Stream River
- Canal
- Township and Range
- Contour
- Existing Substation

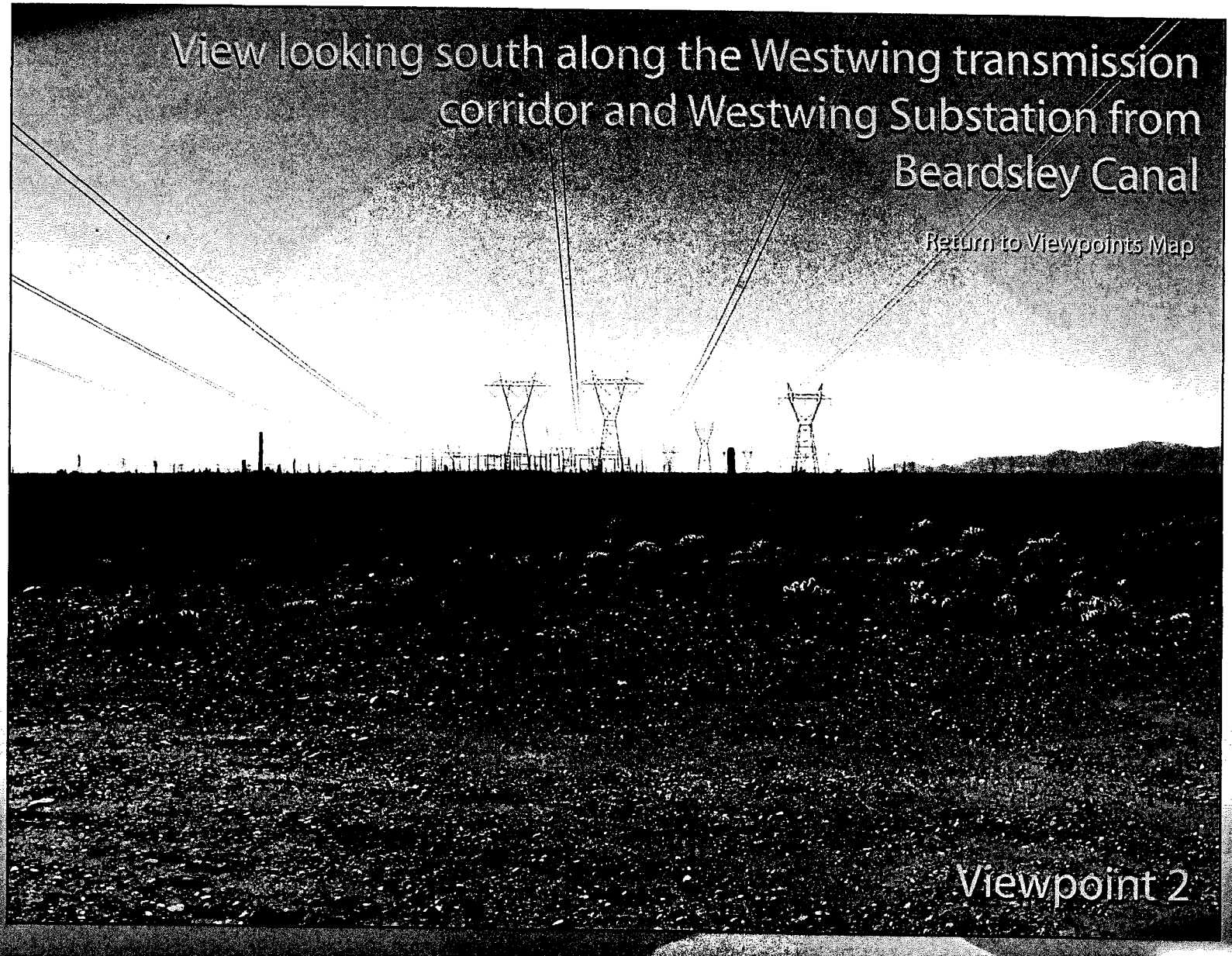
Scale 1:62,500

APS

APS

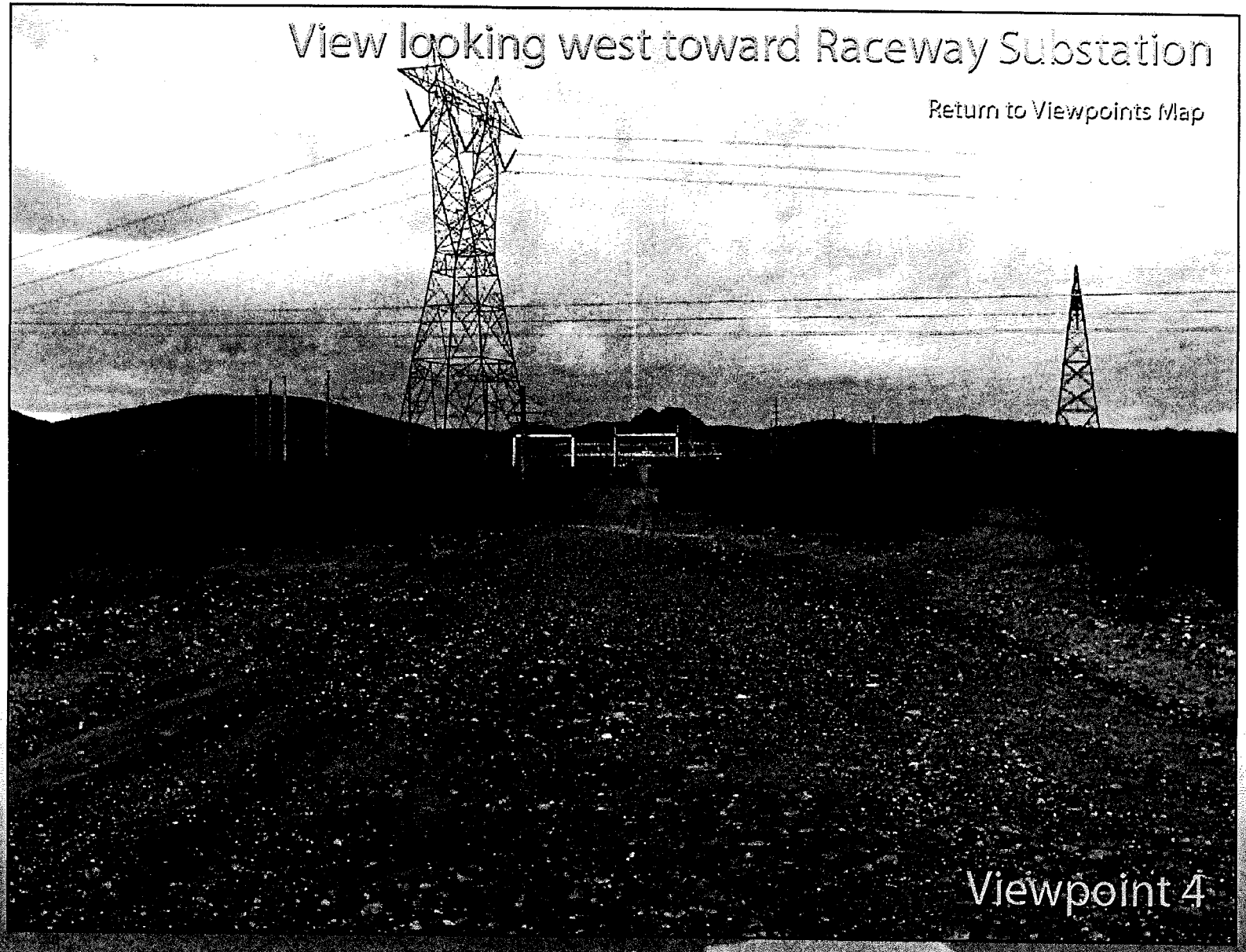
NORTH VALLEY

230kV FACILITY SITING PROJECT



APS

NORTH VALLEY
230kV FACILITY SITING PROJECT

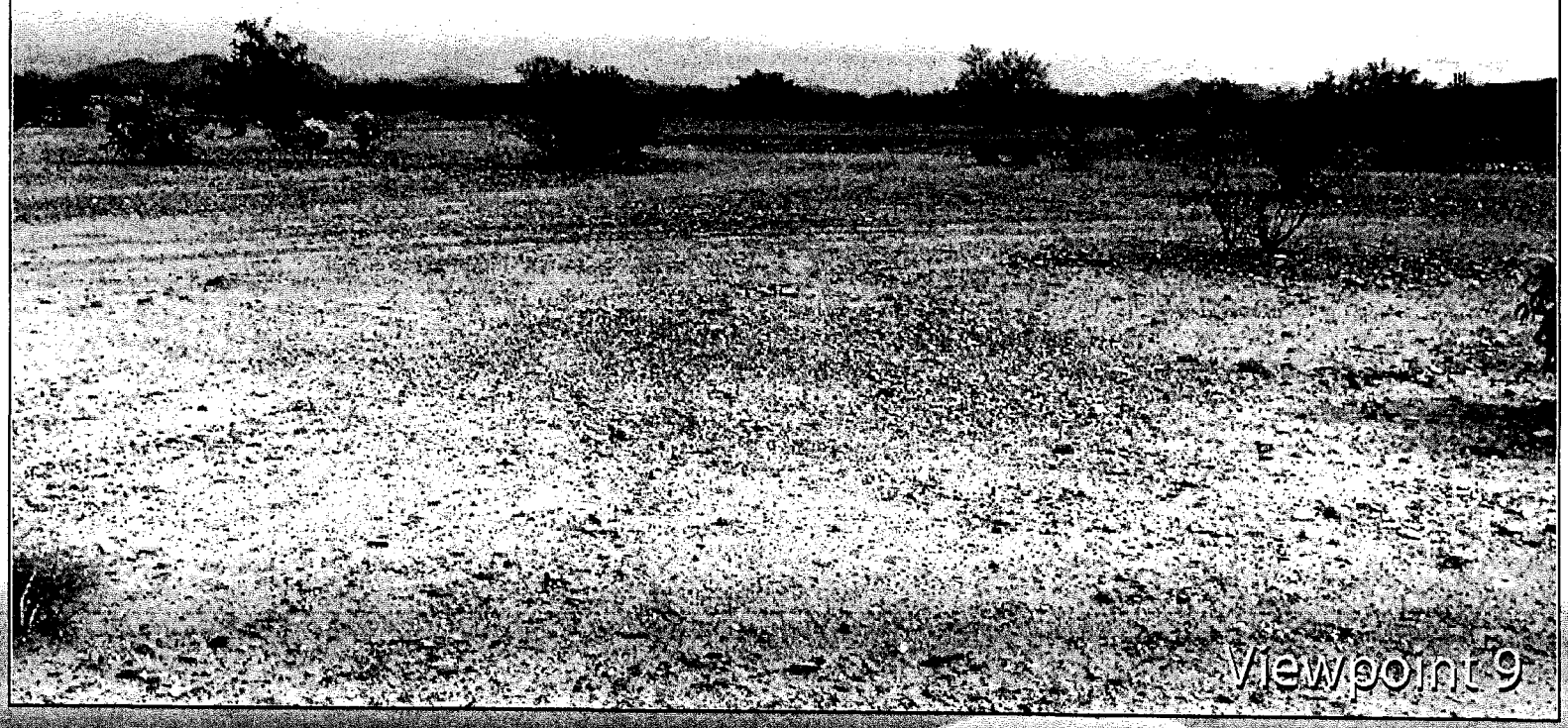


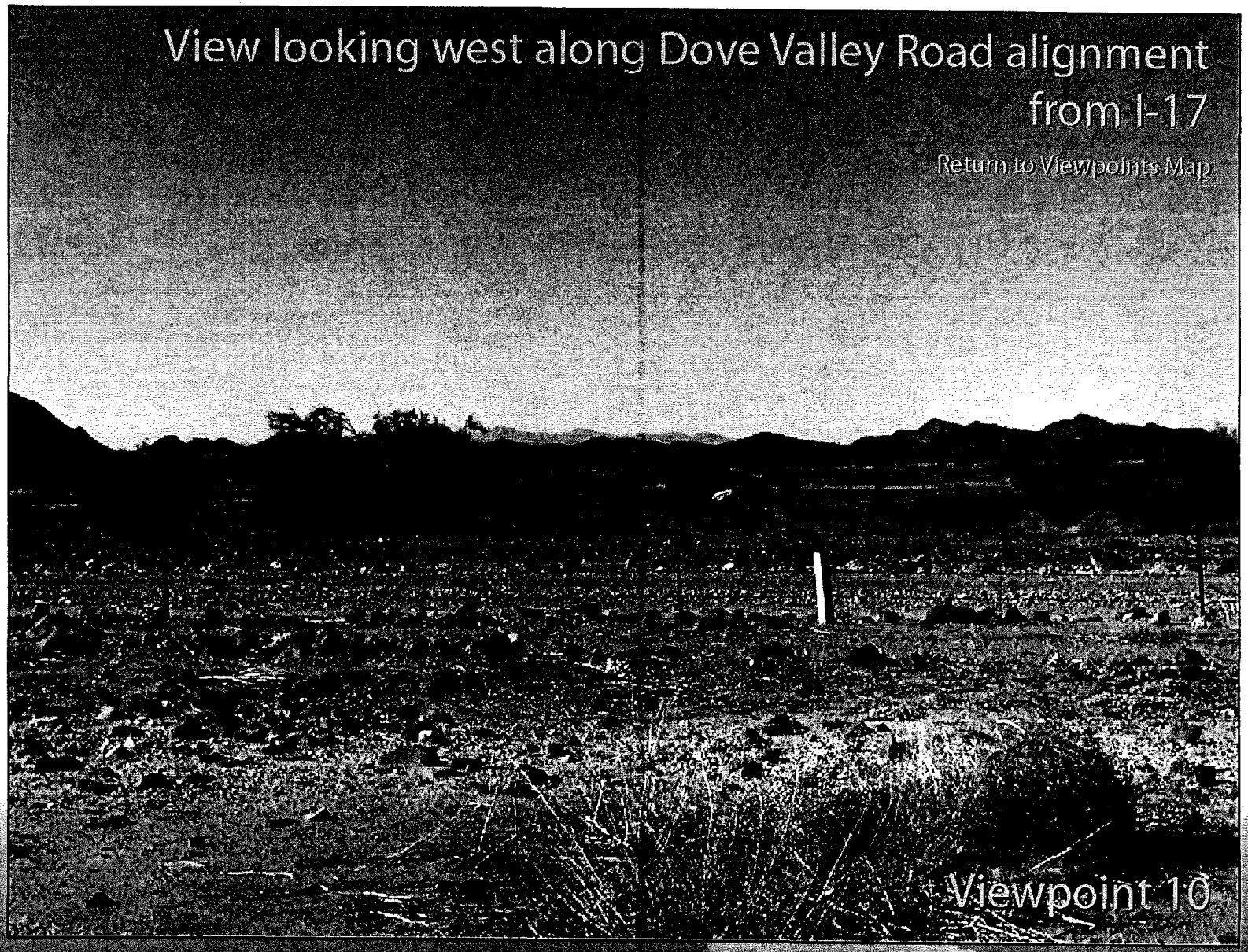
APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

View looking east along Dove Valley Road alignment

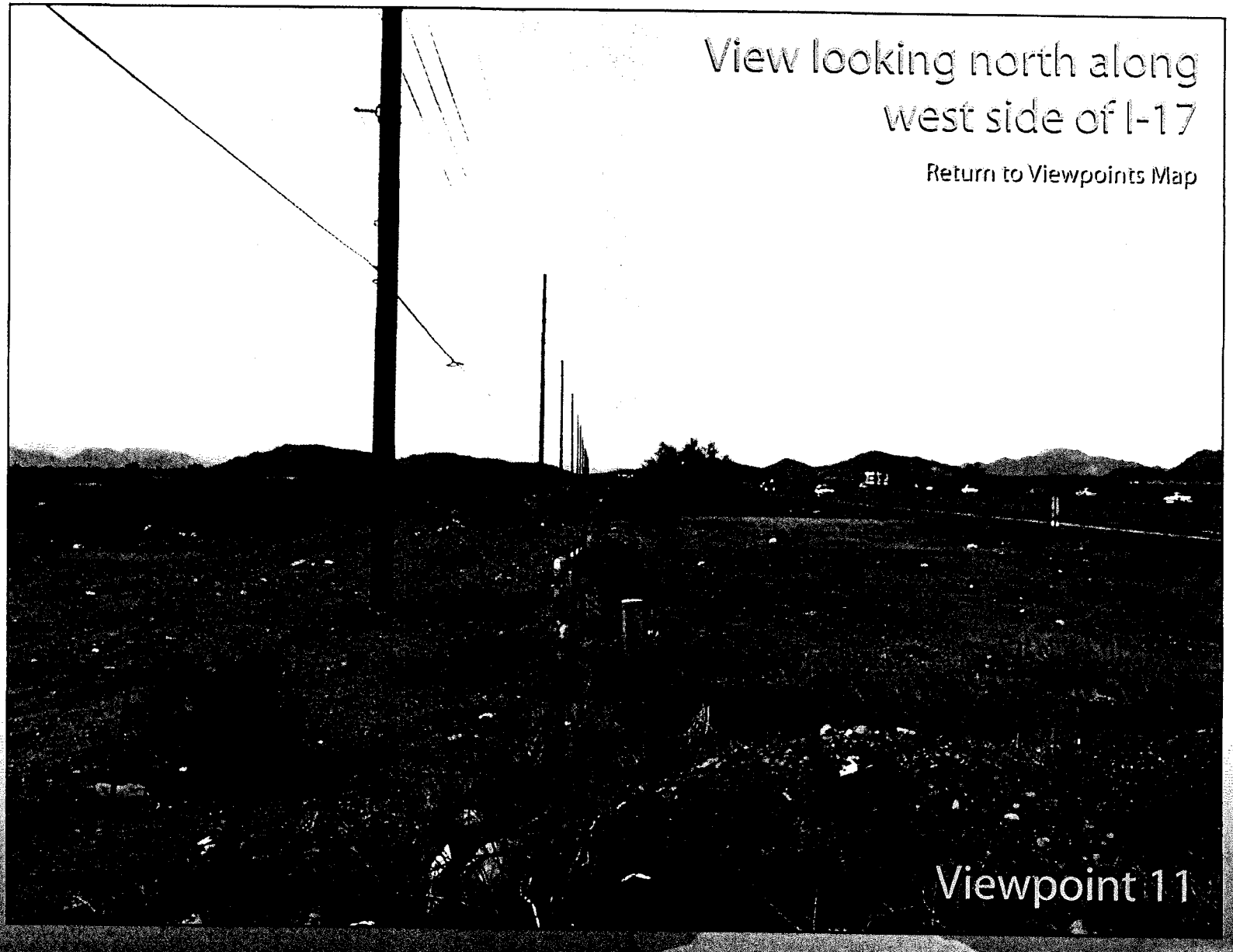
Return to Viewpoints Map





APS

NORTH VALLEY
230kV FACILITY SITING PROJECT



APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

View looking north along open space corridor west of I-17 from Oberlin Way

Return to Viewpoints Map

Viewpoint 13

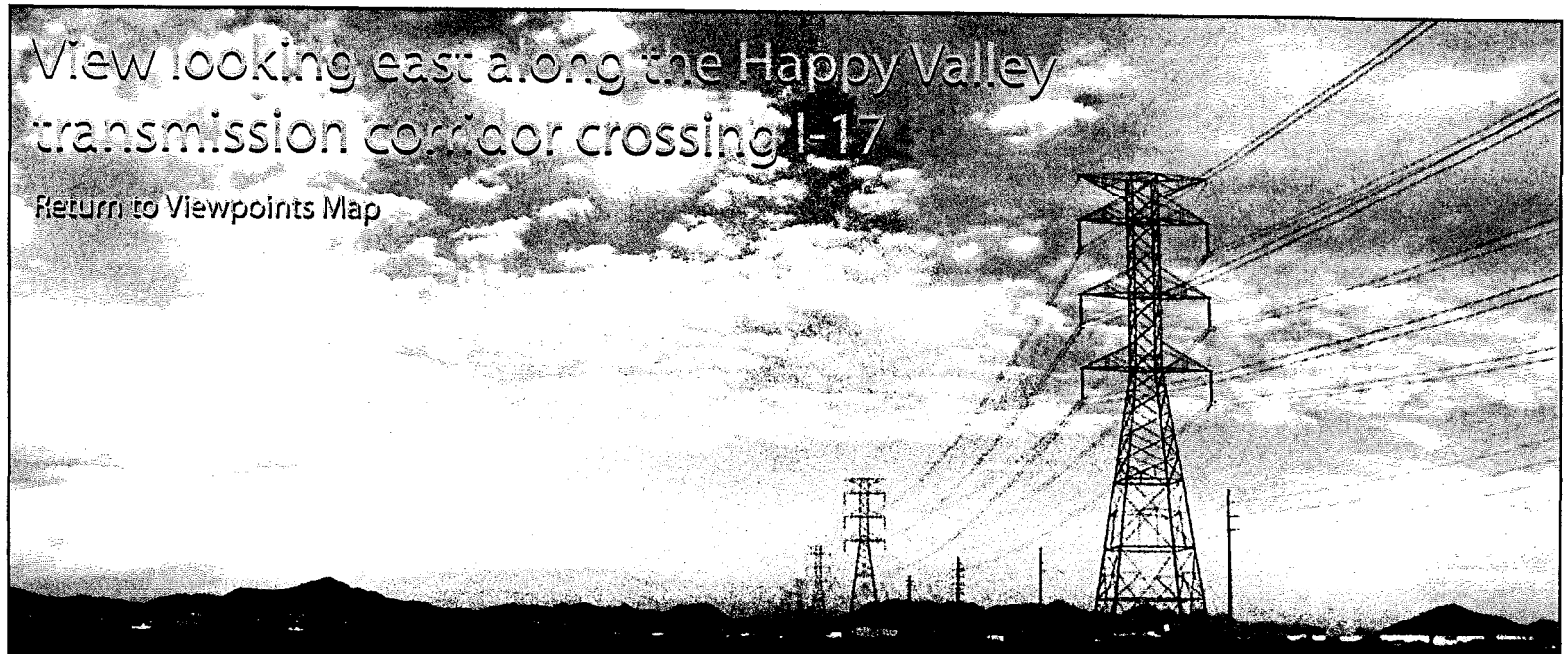
APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

View looking south along the eastern boundary of Skunk Creek Landfill

Return to Viewpoints Map

Viewpoint 14



View looking east along the Happy Valley transmission corridor crossing I-17

Return to Viewpoints Map

Viewpoint 15

APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

View looking west along the Happy Valley transmission corridor from the 7th Avenue alignment

Return to Viewpoints Map

Viewpoint 17

View looking east along the Happy Valley transmission corridor west of the 24th Street alignment

Return to Viewpoints Map

Viewpoint 18

View looking north at the Pinnacle Peak Substation

Return to Viewpoints Map

APS

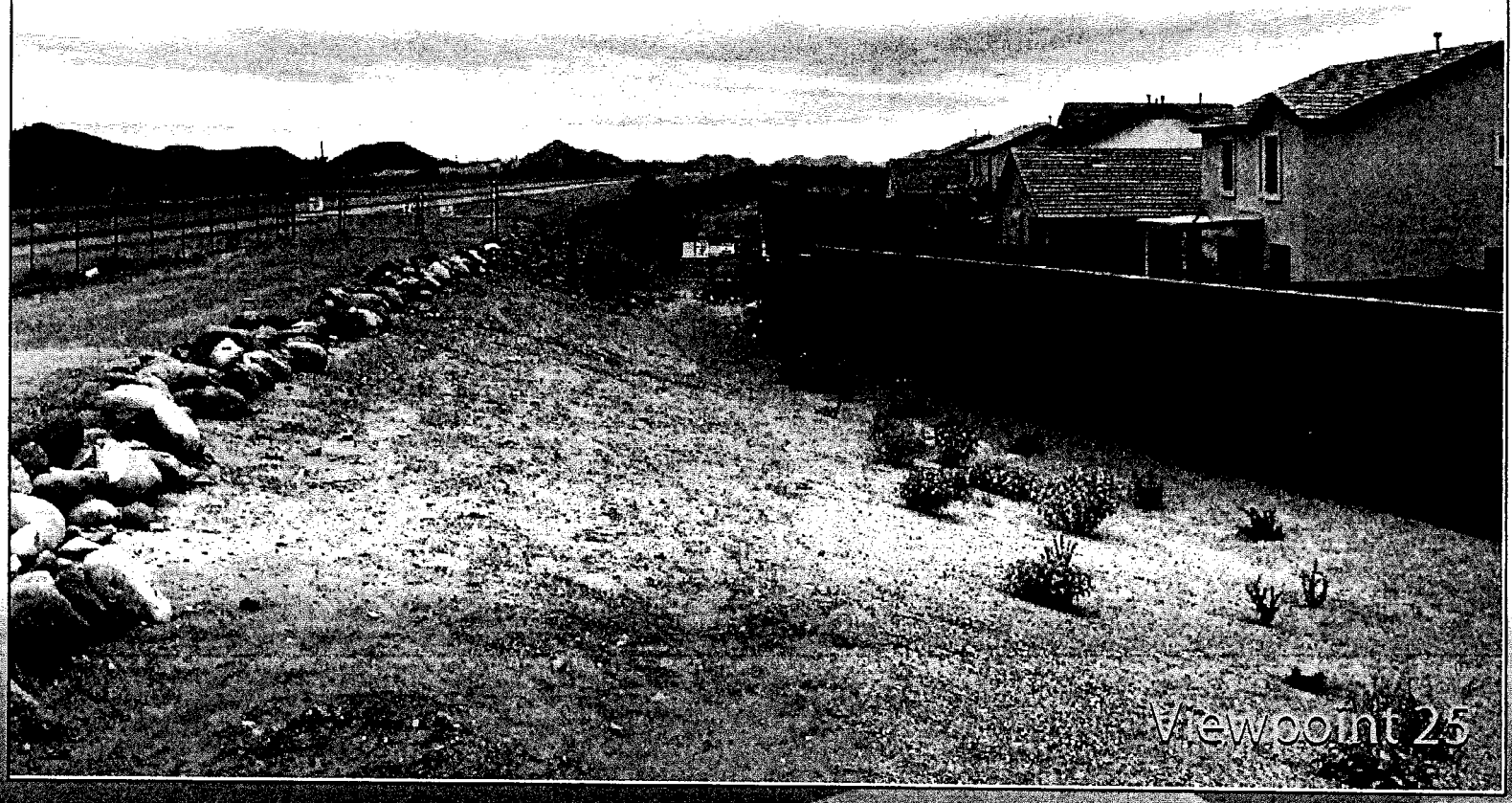
NORTH VALLEY
230kV FACILITY
SITING PROJECT

View looking north along the east side of I-17 from Happy Valley Road

Return to Viewpoints Map

View looking southeast along CAP from Dynamite Boulevard

Return to Viewpoints Map



APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

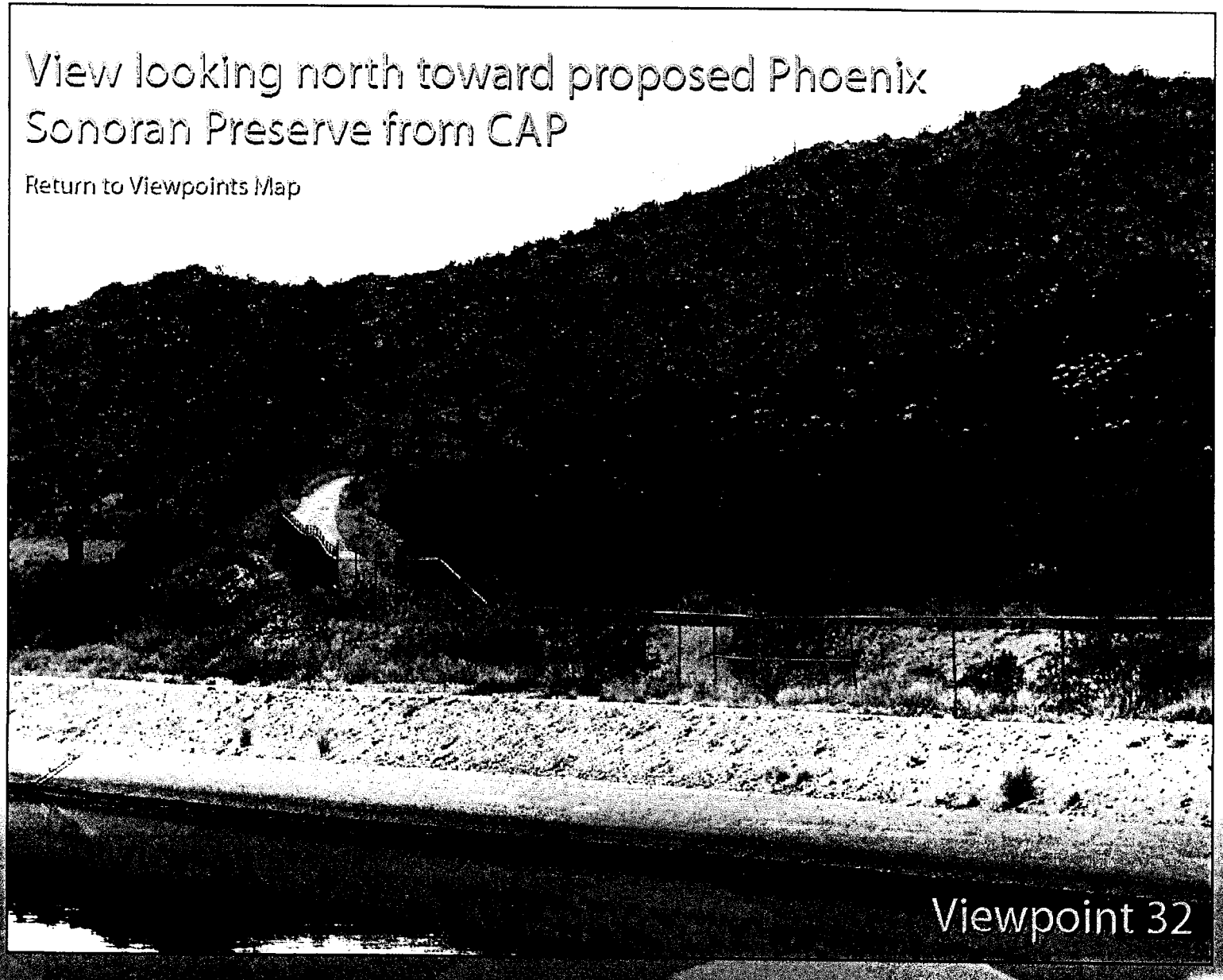
View looking south along I-17 from Pioneer Road

Return to Viewpoints Map

Viewpoint 28

View looking north toward proposed Phoenix Sonoran Preserve from CAP

Return to Viewpoints Map



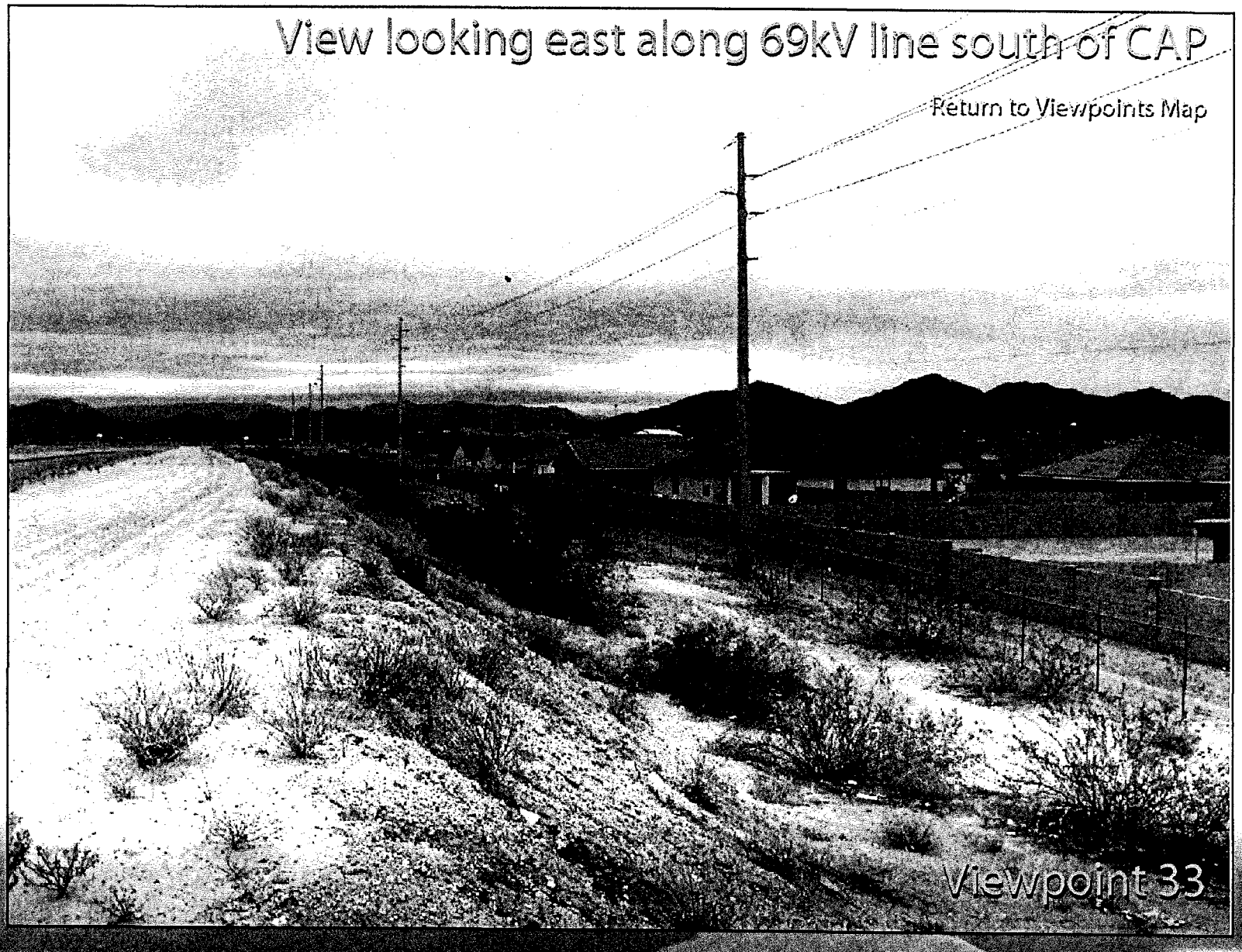
Viewpoint 32

APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

View looking east along 69kV line south of CAP

Return to Viewpoints Map



Viewpoint 33

APS

NORTH VALLEY
230kV FACILITY
SITING PROJECT

Results of Biological and Cultural Resource Studies

- Biological Resources
  - No adverse effects to special status species, unique habitats, or biological resources
- Cultural Resources
  - Minimal impacts after mitigation

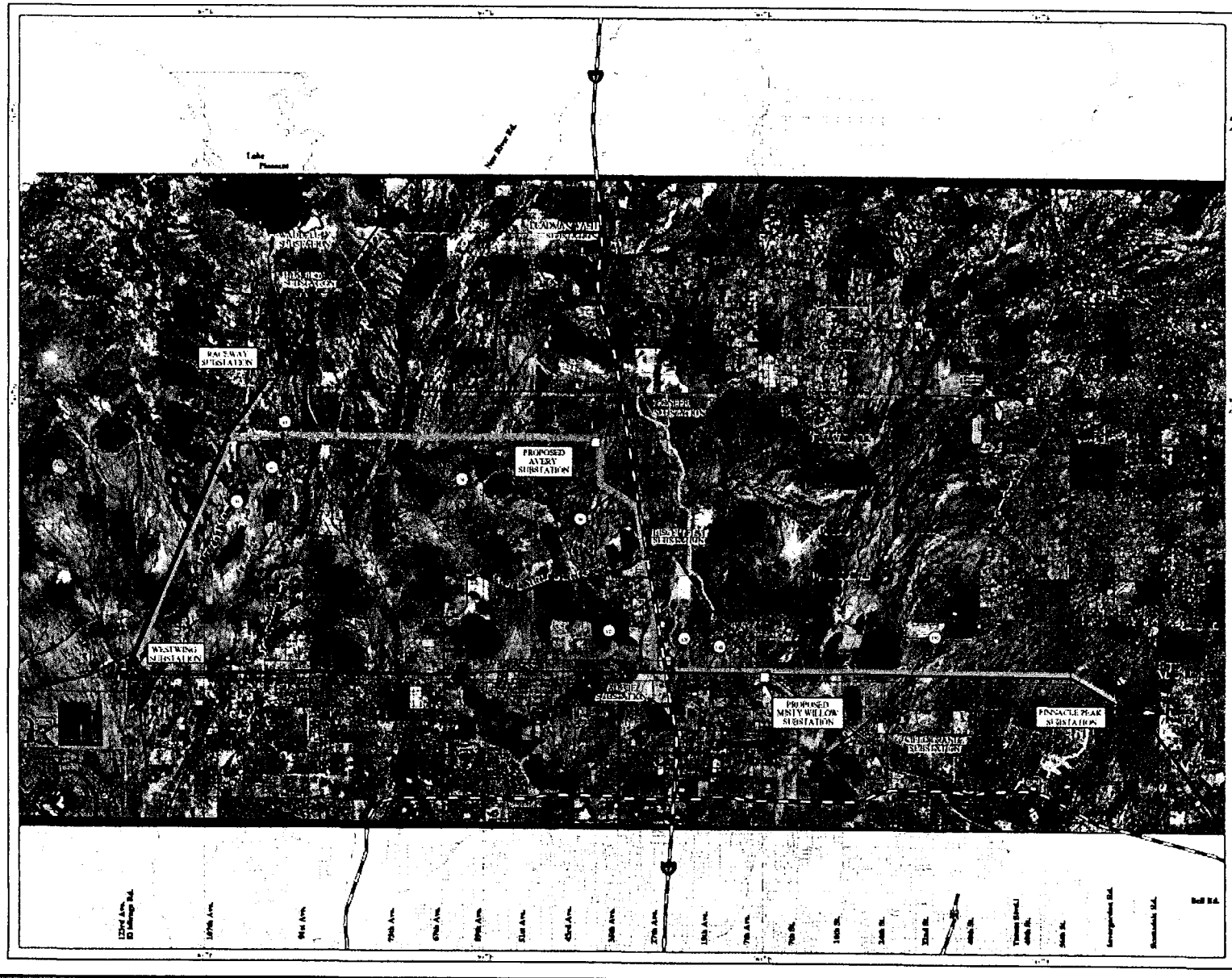


Figure 1
PROPOSED ROUTE

NORTH VALLEY
230kV FACILITY SITING PROJECT

Proposed Route
Links: 15, 35, 60, 70, 90, 115, 120, 140, 170
Proposed Substation Siting Area
Link Identification Number
Link Node

General Reference Features
500kV Transmission Line
345kV Transmission Line
230kV Transmission Line
69kV Transmission Line
Interstate/Highway
Transportation Route
Lake
Stream
Canal
Existing Substation

Scale 1:62,500

APS

APS

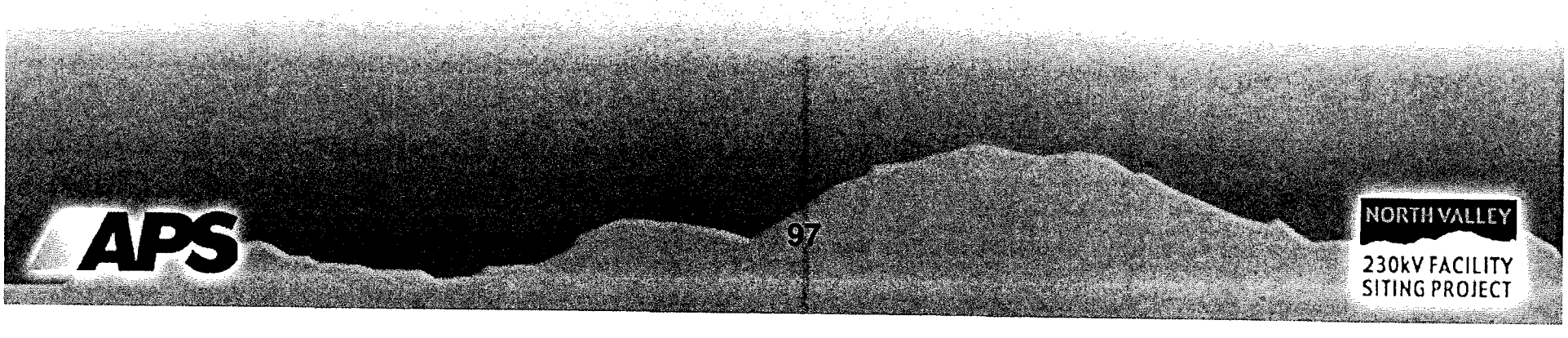
NORTH VALLEY
230kV FACILITY
SITING PROJECT

Environmental Compatibility

- Proposed Route parallels and consolidates existing and proposed overhead transmission lines
- Utilizes effective mitigation minimizing environmental impacts from the transmission line and substations
- Proposed Route and substation sites are identified in the general plans for the cities of Phoenix and Peoria
- Community Working Groups supported the Proposed Route (including the ASLD)
- Project is environmentally compatible

Environmental Studies

E. Linwood Smith, PhD
Environmental Planning Group
Biological Services Director



Witness Background

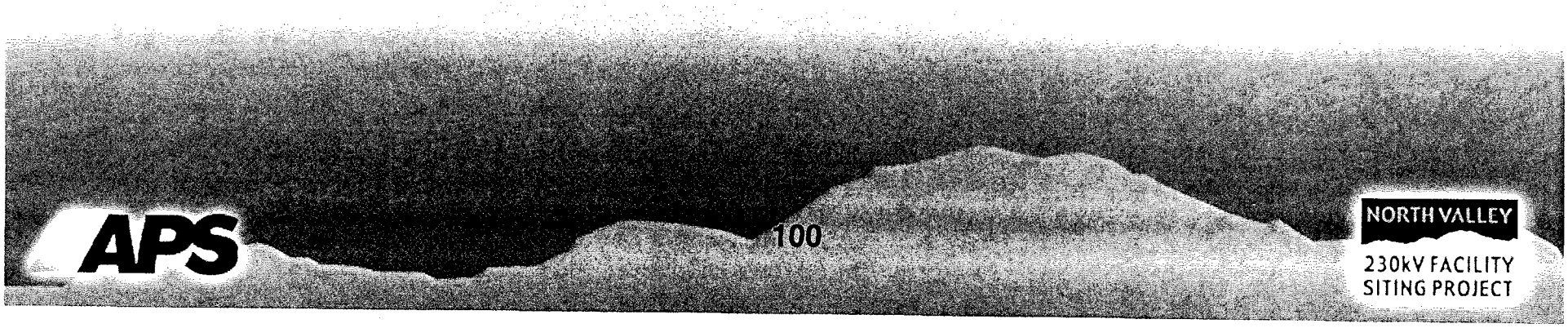
- Professional Credentials
  - PhD, Zoology, University of Arizona
  - MS, Zoology, University of Arizona
  - BA, Zoology, Central Washington University
  - Over 30 years of experience in conducting or managing ecological, ornithological, and botanical studies throughout the western United States and Alaska
  - Previously testified before the Siting Committee and most recently in the Southwest Valley Project

Biological Resources

- Detailed inventory of biological resources
- Use of existing access will minimize ground disturbance
- Transmission line design will minimize potential electrocution of raptors
- No adverse effects are expected to special status species or unique habitats
- No discernable impacts to biological resources
- Letter from Arizona Game and Fish Department states no concern with the proposed project

Archaeological Studies

Glenn Darrington, PhD
Environmental Planning Group
Cultural Resources Director



Witness Background

- Professional Credentials
  - PhD, History, University of St. Andrews
  - MA, Anthropology, Texas A&M
  - BA, Anthropology, Arizona State University
  - Over 15 years of experience in archaeology and cultural resource management
  - Previously testified before Siting Committee and most recently in the Southwest Valley Project

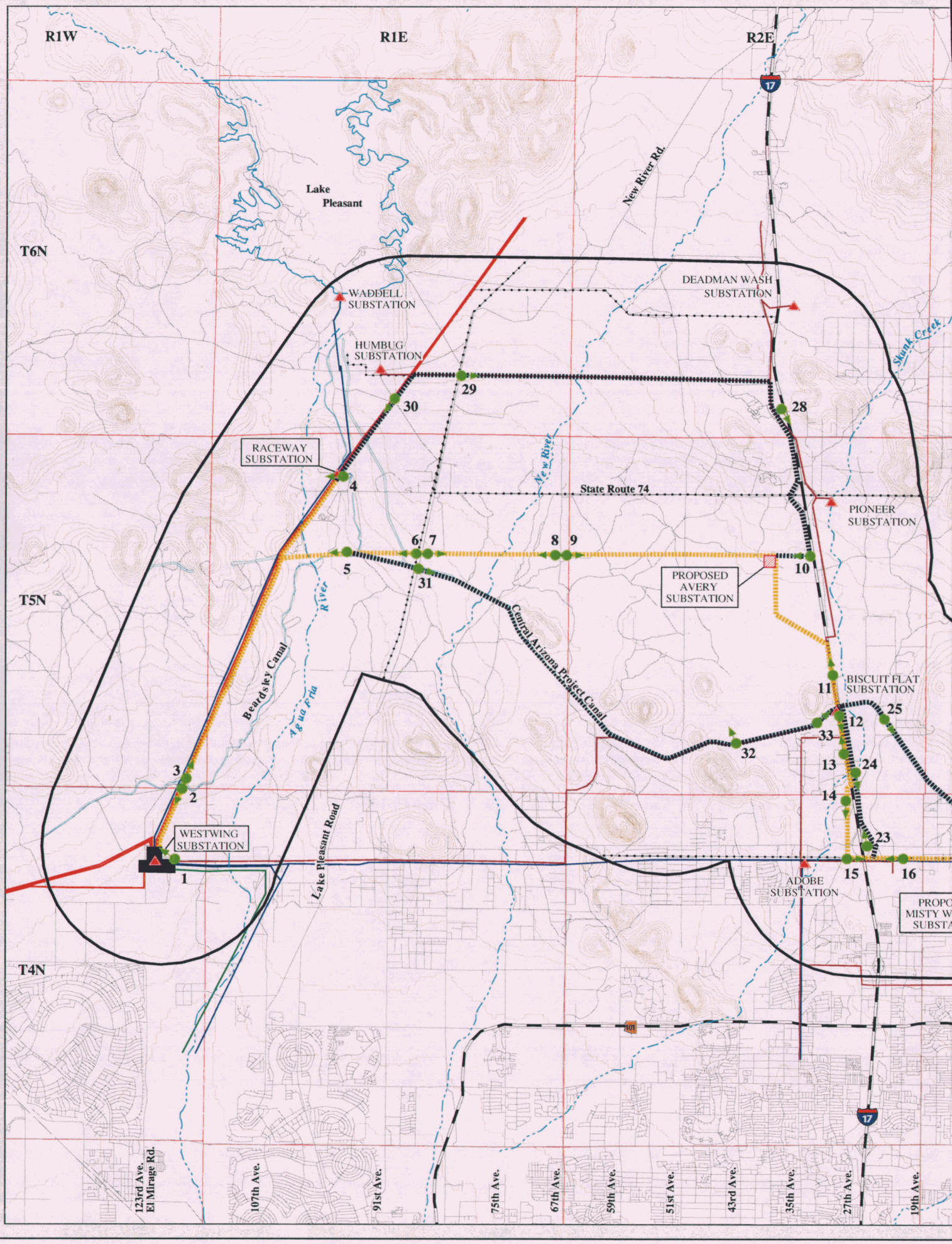
Cultural Resources

- Surveys Conducted on Proposed Route
  - Class I survey (all alternatives)
  - Class III survey (proposed route)
- Survey Results
  - A total of five National Register Eligible Sites, three archaeological districts, and two historic structures identified during survey
  - All but one of these cultural resources are avoidable
    - Site AZ T:7:192 (ASM) has three loci which consist of sherd and lithic scatters
    - The three loci within the site can be spanned
- Surveys submitted to SHPO

Cultural Resources (cont.)

- Mitigation plan will be developed
  - SHPO consultation and approval
  - Construction monitoring/site barricading
  - Site avoidance
- Cultural or archaeological impacts will be effectively mitigated
- CEC mitigation condition "lessons learned"

2


R1W
R1E
R2E
T6N
T5N
T4N
Lake Pleasant
New River Rd.
WADDELL SUBSTATION
HUMBUG SUBSTATION
DEADMAN WASH SUBSTATION
Skunk Creek
RACEWAY SUBSTATION
New River
State Route 74
PIONEER SUBSTATION
PROPOSED AVERY SUBSTATION
Central Arizona Project Canal
Beardsley Canal
Agua Fria River
BISCUIT FLAT SUBSTATION
WESTWING SUBSTATION
Lake Pleasant Road
ADOBE SUBSTATION
PROPO
MISTY W
SUBSTA
1
2
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17
101
123rd Ave.
El Mirage Rd.
107th Ave.
91st Ave.
75th Ave.
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51st Ave.
43rd Ave.
35th Ave.
27th Ave.
19th Ave.

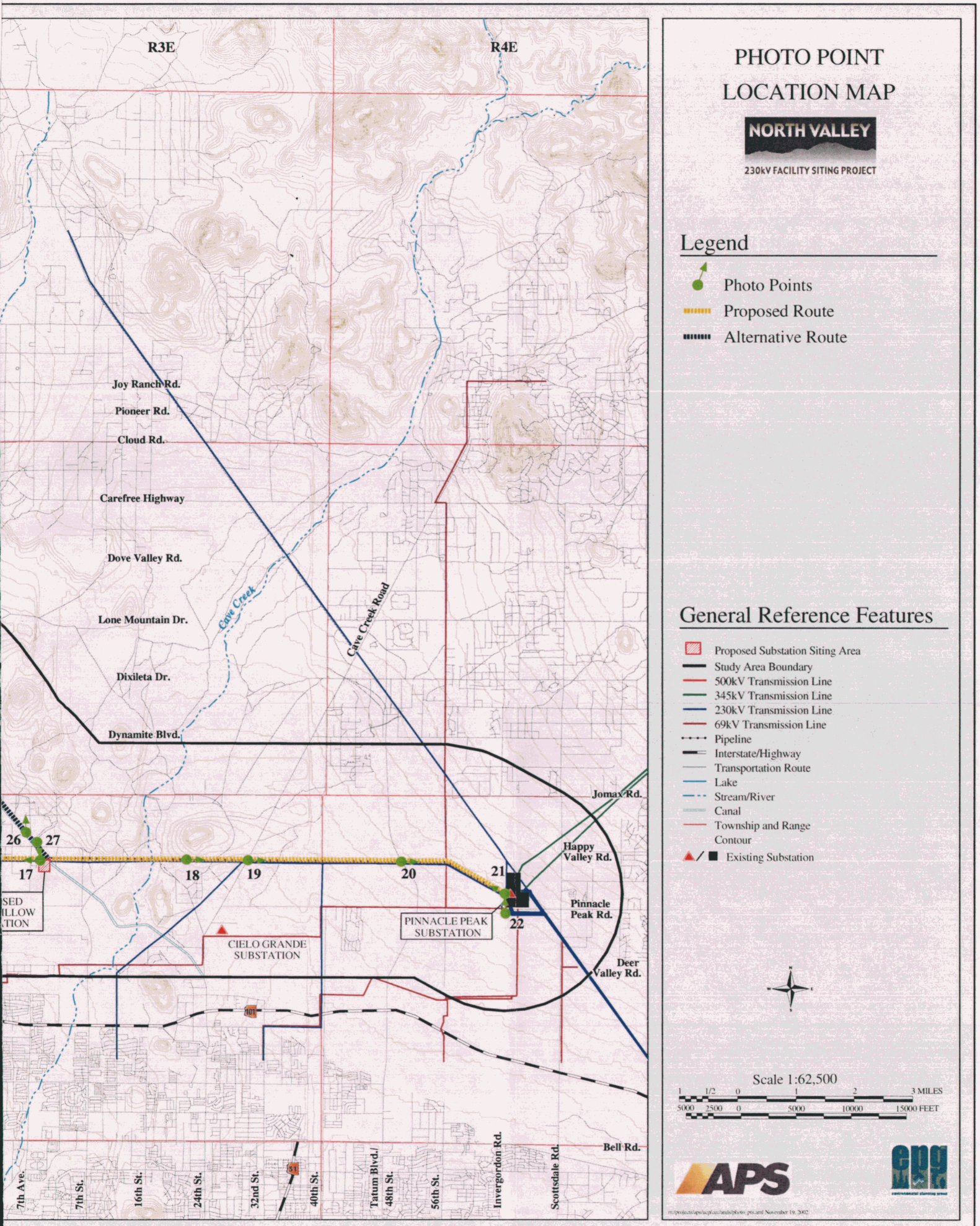
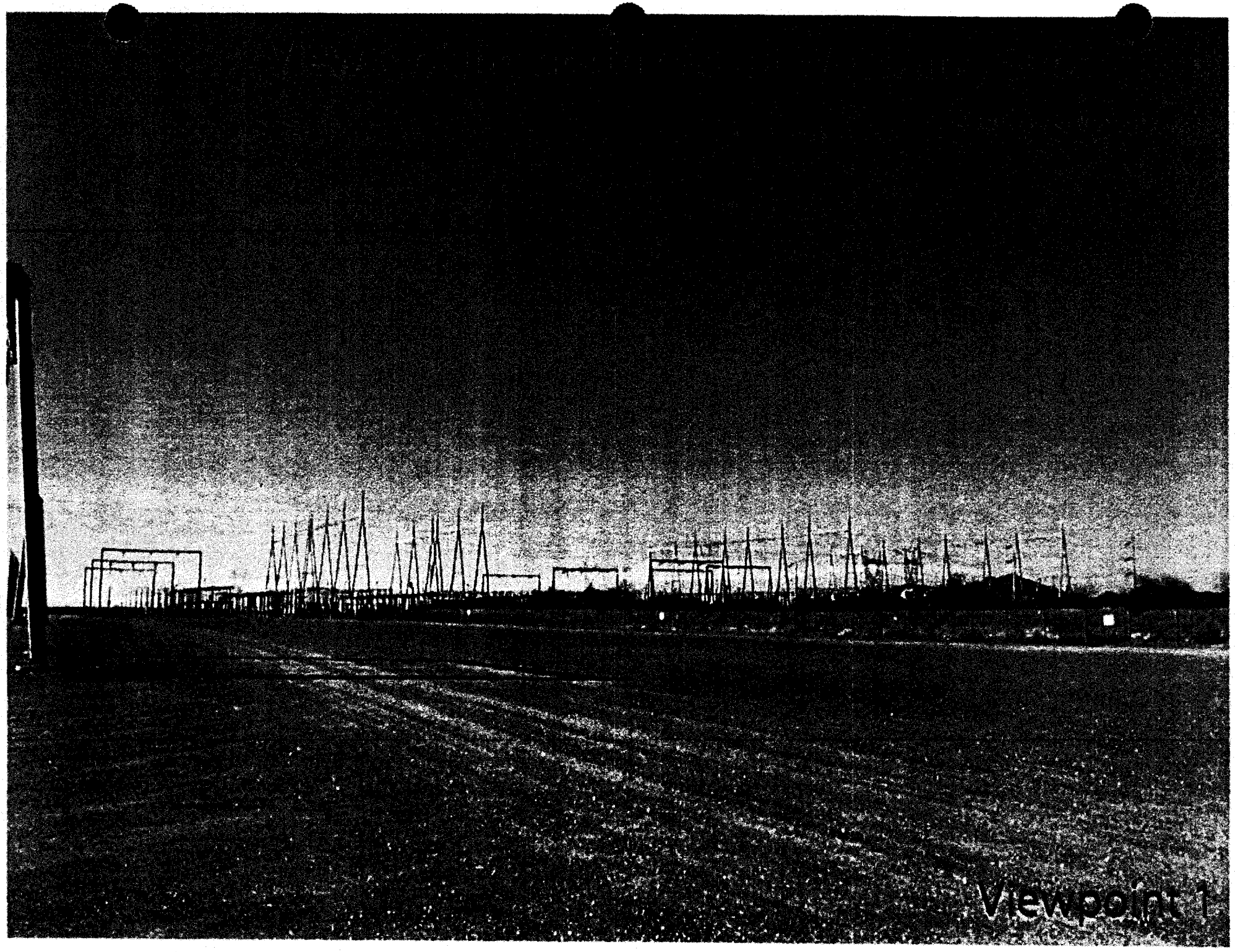


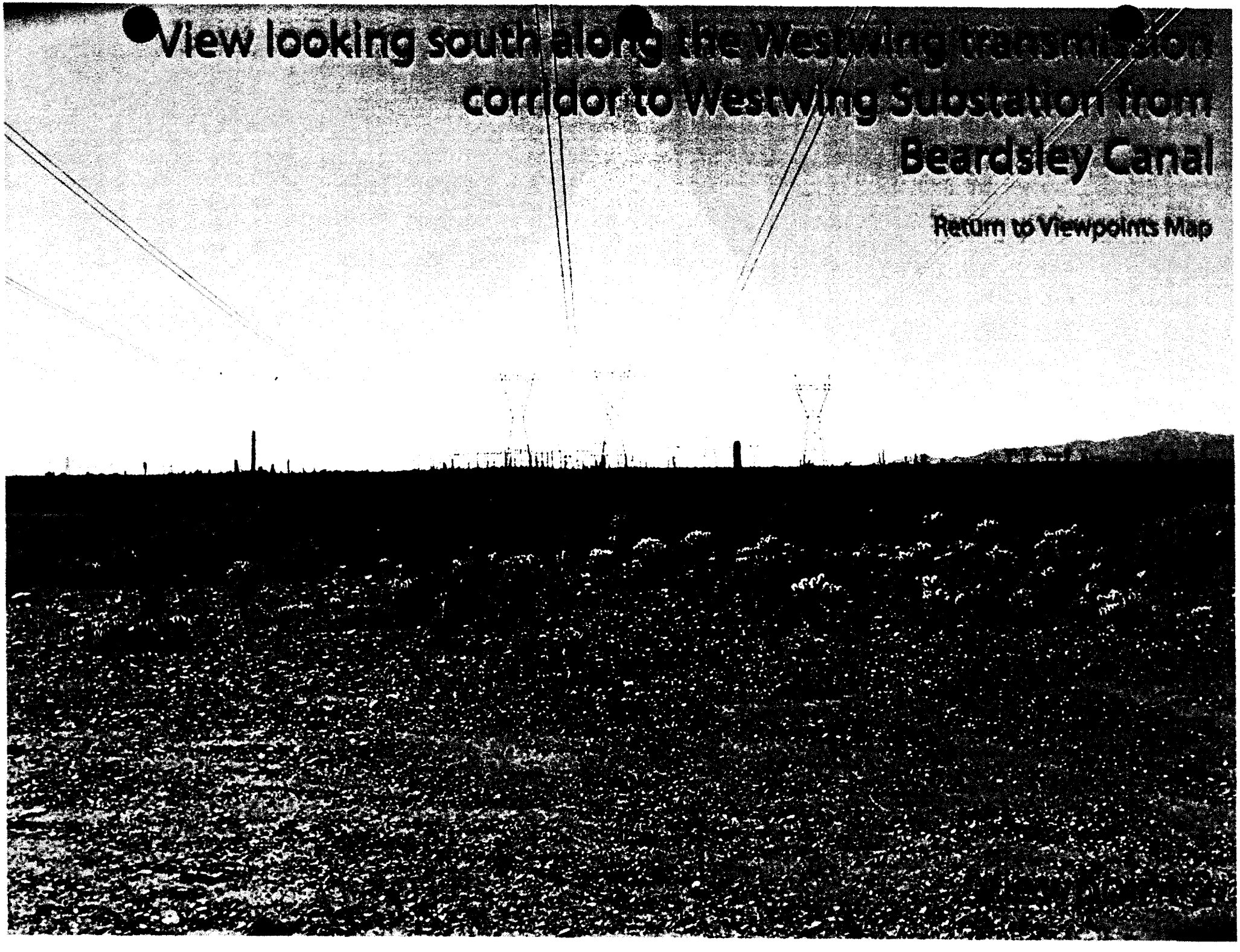
PHOTO POINT
LOCATION MAP
NORTH VALLEY
230kV FACILITY SITING PROJECT
Legend
Photo Points
Proposed Route
Alternative Route
General Reference Features
Proposed Substation Siting Area
Study Area Boundary
500kV Transmission Line
345kV Transmission Line
230kV Transmission Line
69kV Transmission Line
Pipeline
Interstate/Highway
Transportation Route
Lake
Stream/River
Canal
Township and Range
Contour
Existing Substation
Scale 1:62,500
1 1/2 0 1 2 3 MILES
5000 2500 0 5000 10000 15000 FEET
APS
epg
R3E
R4E
Joy Ranch Rd.
Pioneer Rd.
Cloud Rd.
Carefree Highway
Dove Valley Rd.
Lone Mountain Dr.
Dixileta Dr.
Dynamite Blvd.
Cave Creek
Cave Creek Road
Jomax Rd.
Happy Valley Rd.
Pinnacle Peak Rd.
Deer Valley Rd.
Bell Rd.
26
27
17
18
19
20
21
22
PINNACLE PEAK SUBSTATION
CIELO GRANDE SUBSTATION
101
51
7th Ave.
7th St.
16th St.
24th St.
32nd St.
40th St.
Tatum Blvd./ 48th St.
56th St.
Invergordon Rd.
Scottsdale Rd.

3


Viewpoint 1

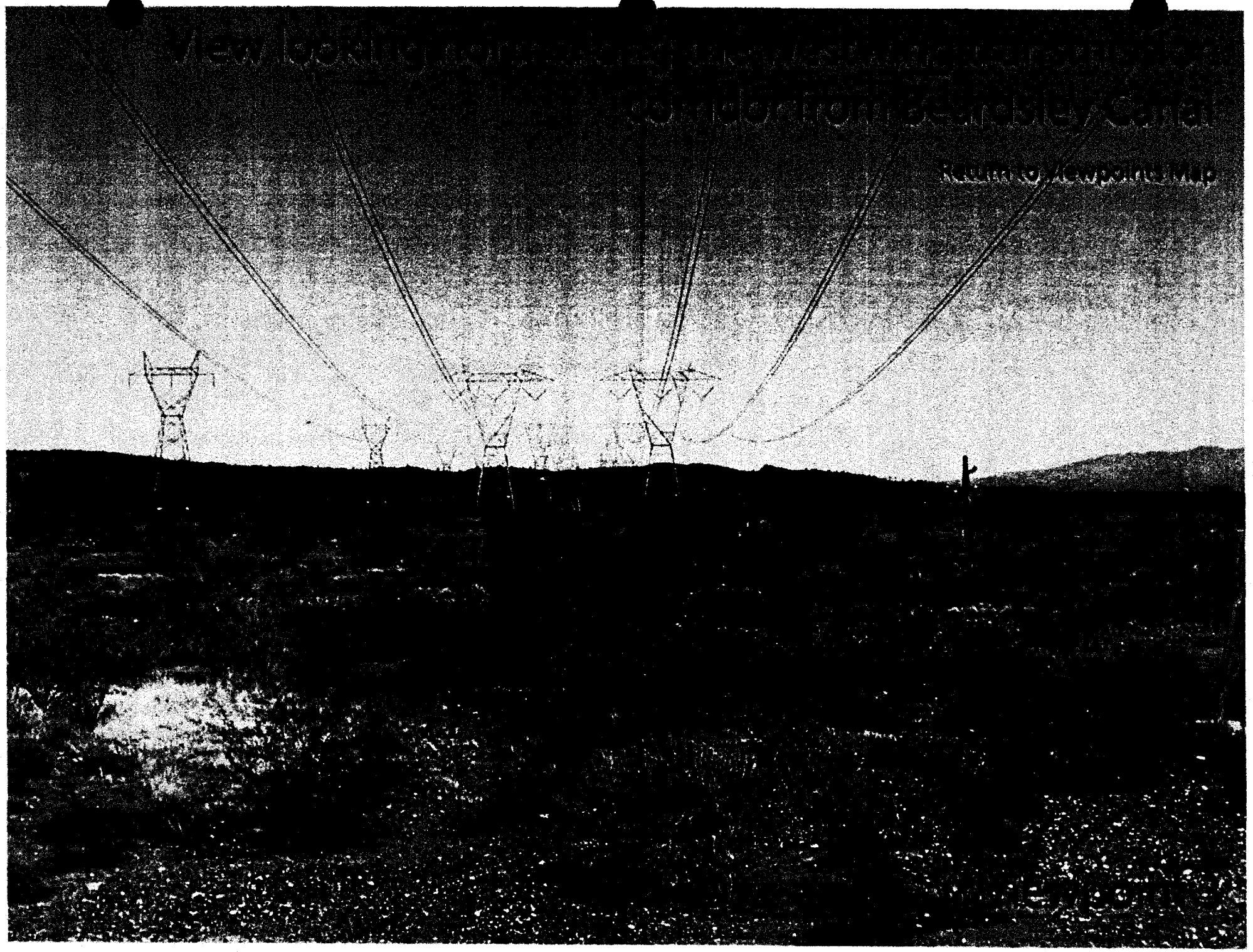
View looking south along the Westwing transmission corridor to Westwing Substation from Beardsley Canal

Return to Viewpoints Map



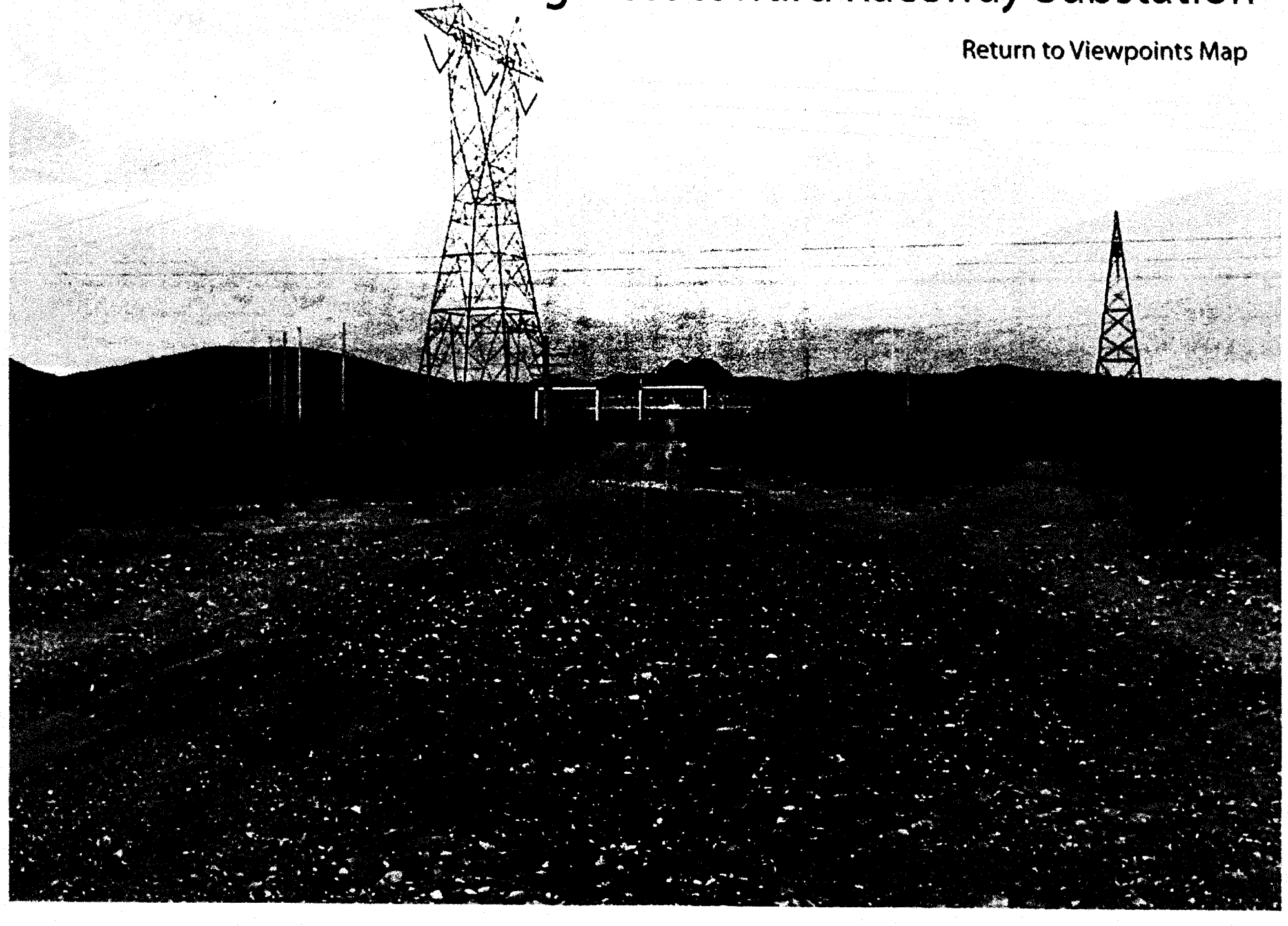
View looking [illegible]
corridor from Beardsley Canal

Return to: Viewpoint Map



View looking west toward Raceway Substation

Return to Viewpoints Map

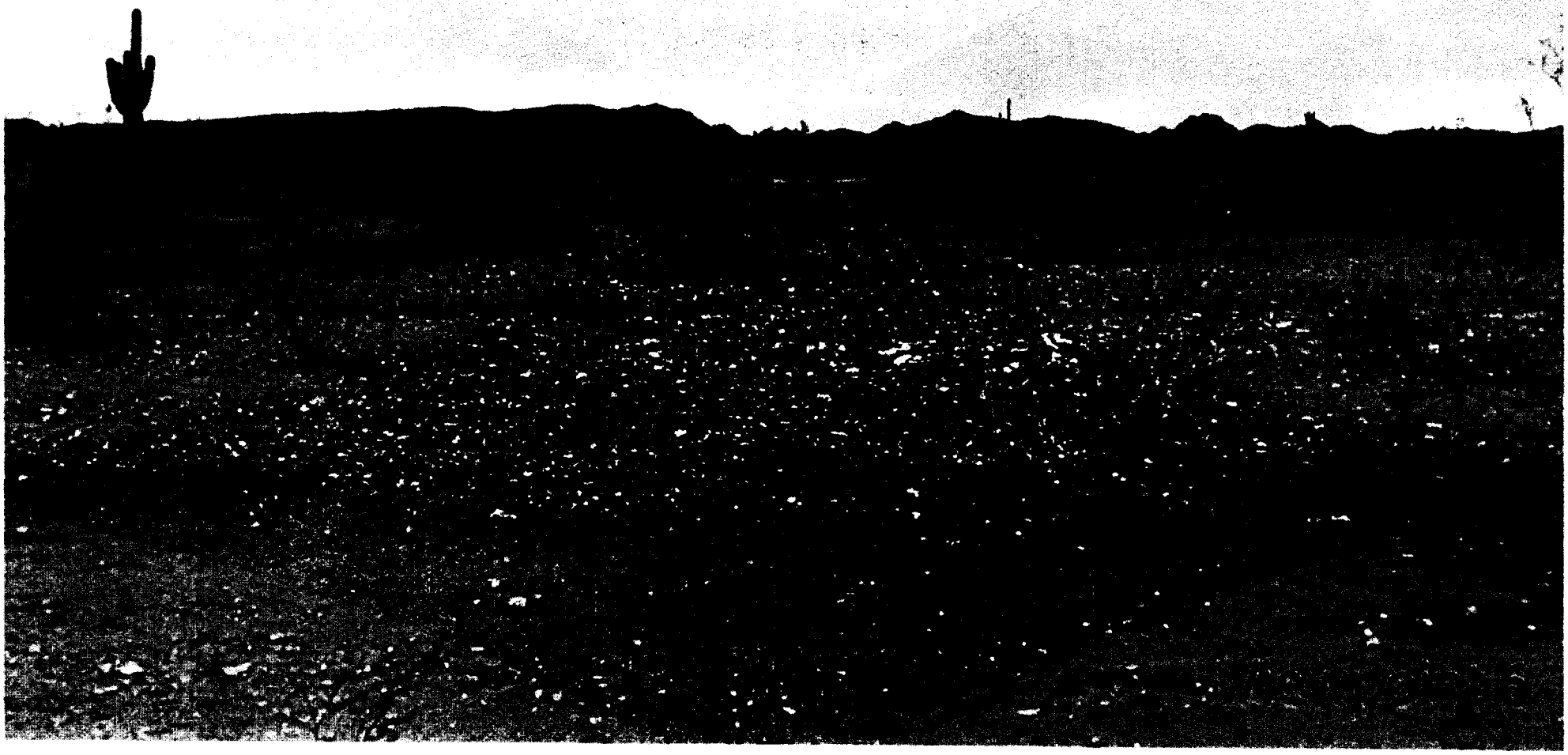


View looking west along CAP east of Aqua Fria River

Return to Viewpoints Map

View looking west along Dove Valley Road alignment from Lake Pleasant Road

Return to Viewpoints Map

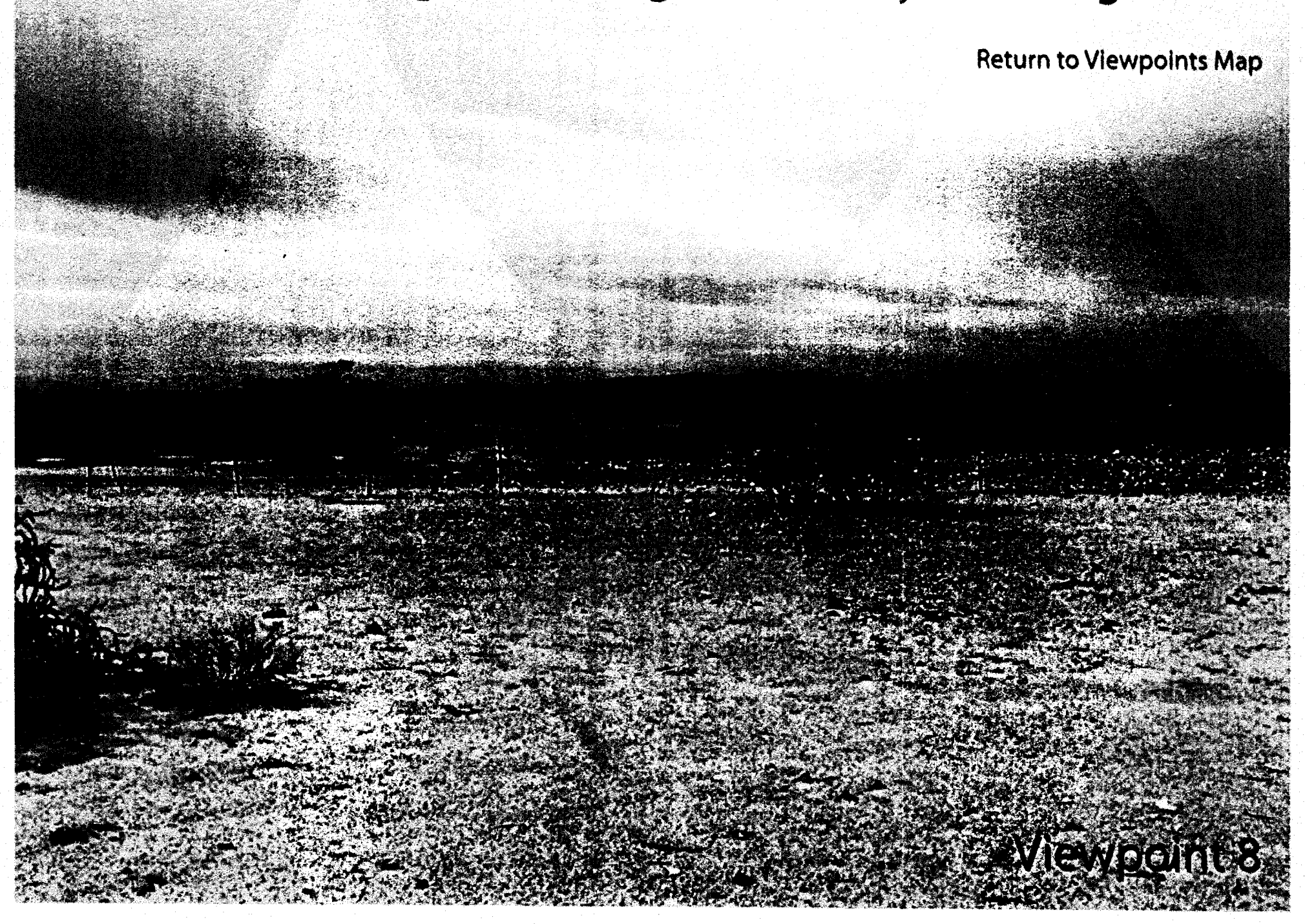


View looking east along Dove Valley Road alignment from Lake Pleasant Road

Return to Viewpoints Map

View looking west along Dove Valley Road alignment

Return to Viewpoints Map



View looking east along Dove Valley Road alignment

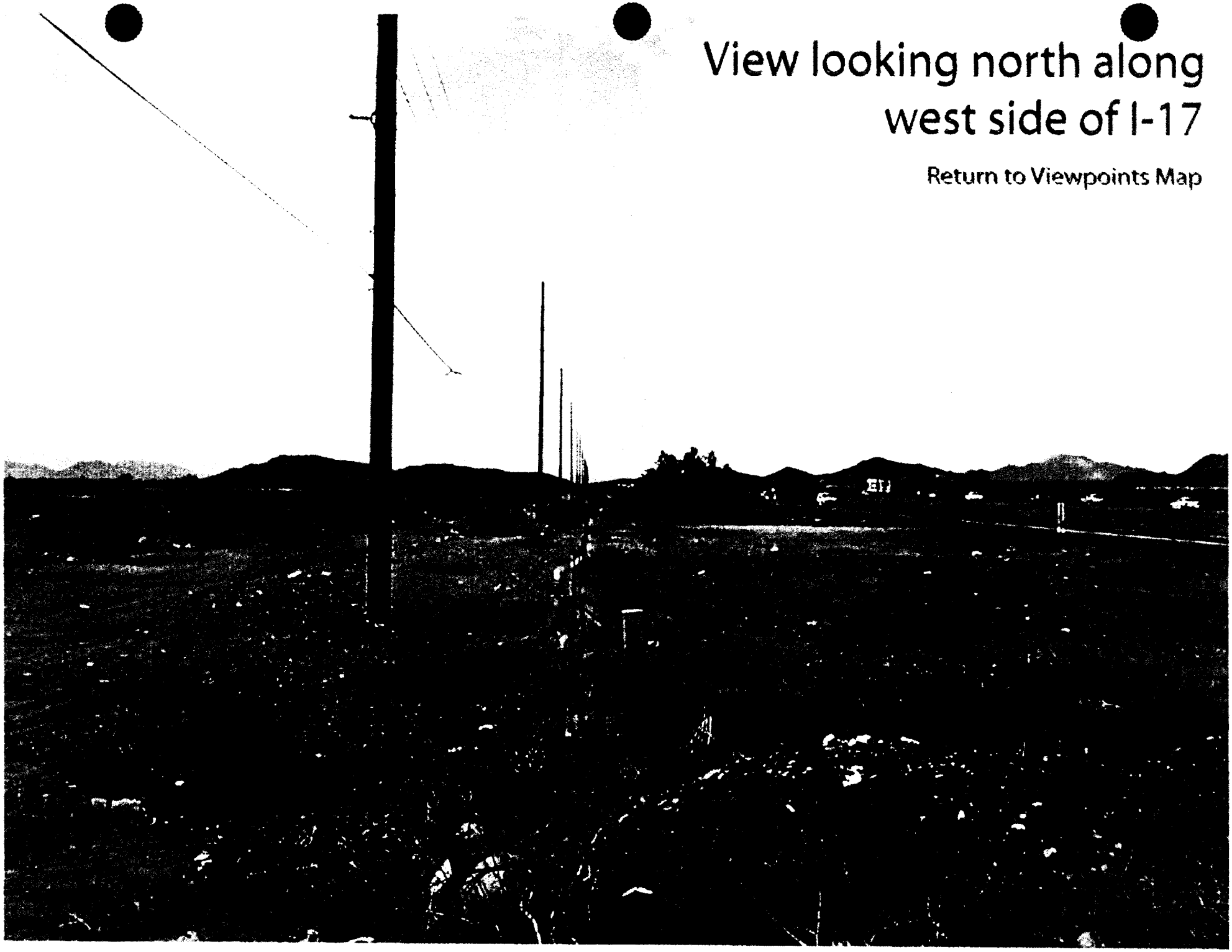
Return to Viewpoints Map

View looking west along Dove Valley Road alignment from I-17

Return to Viewpoints Map

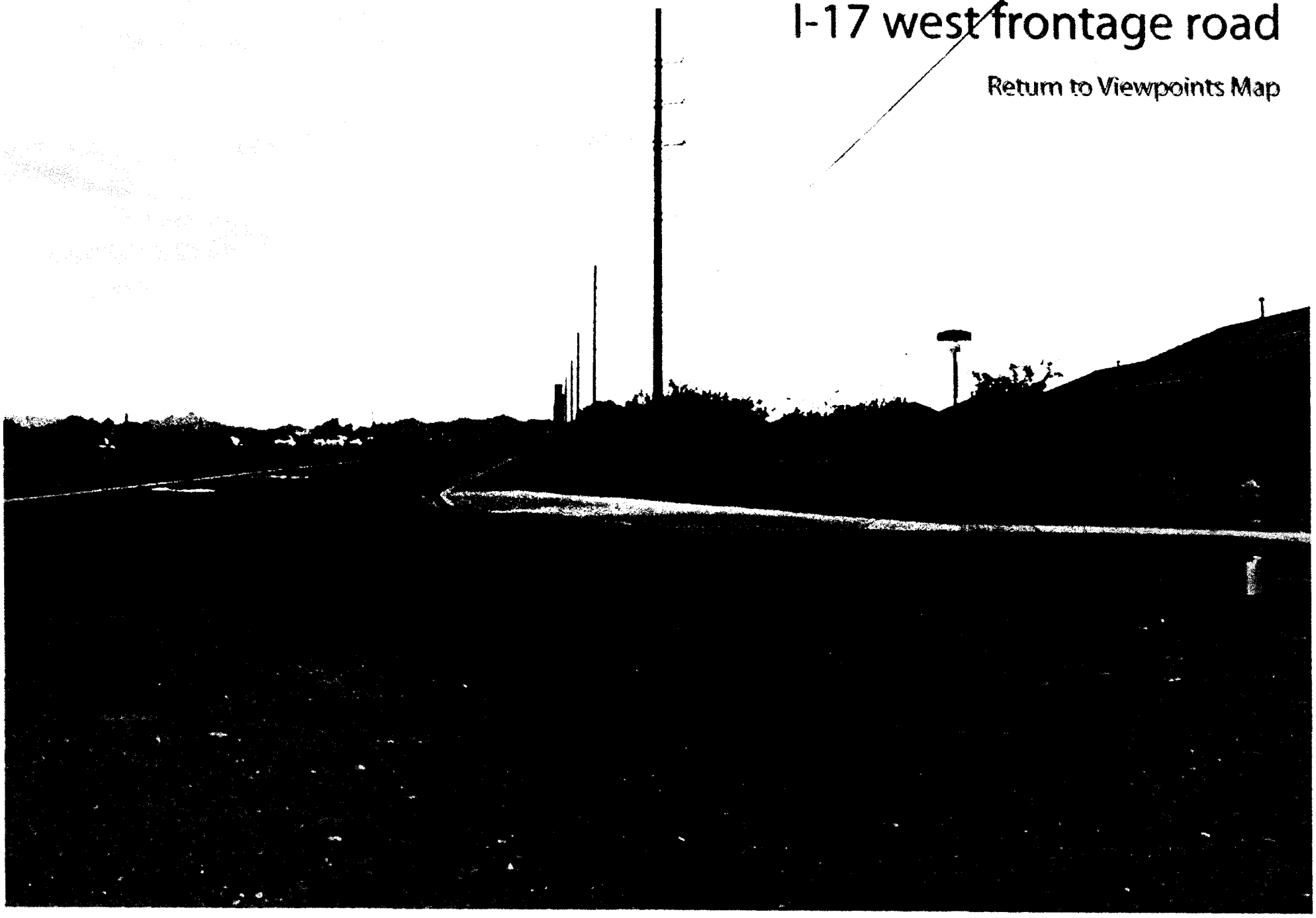
View looking north along west side of I-17

Return to Viewpoints Map



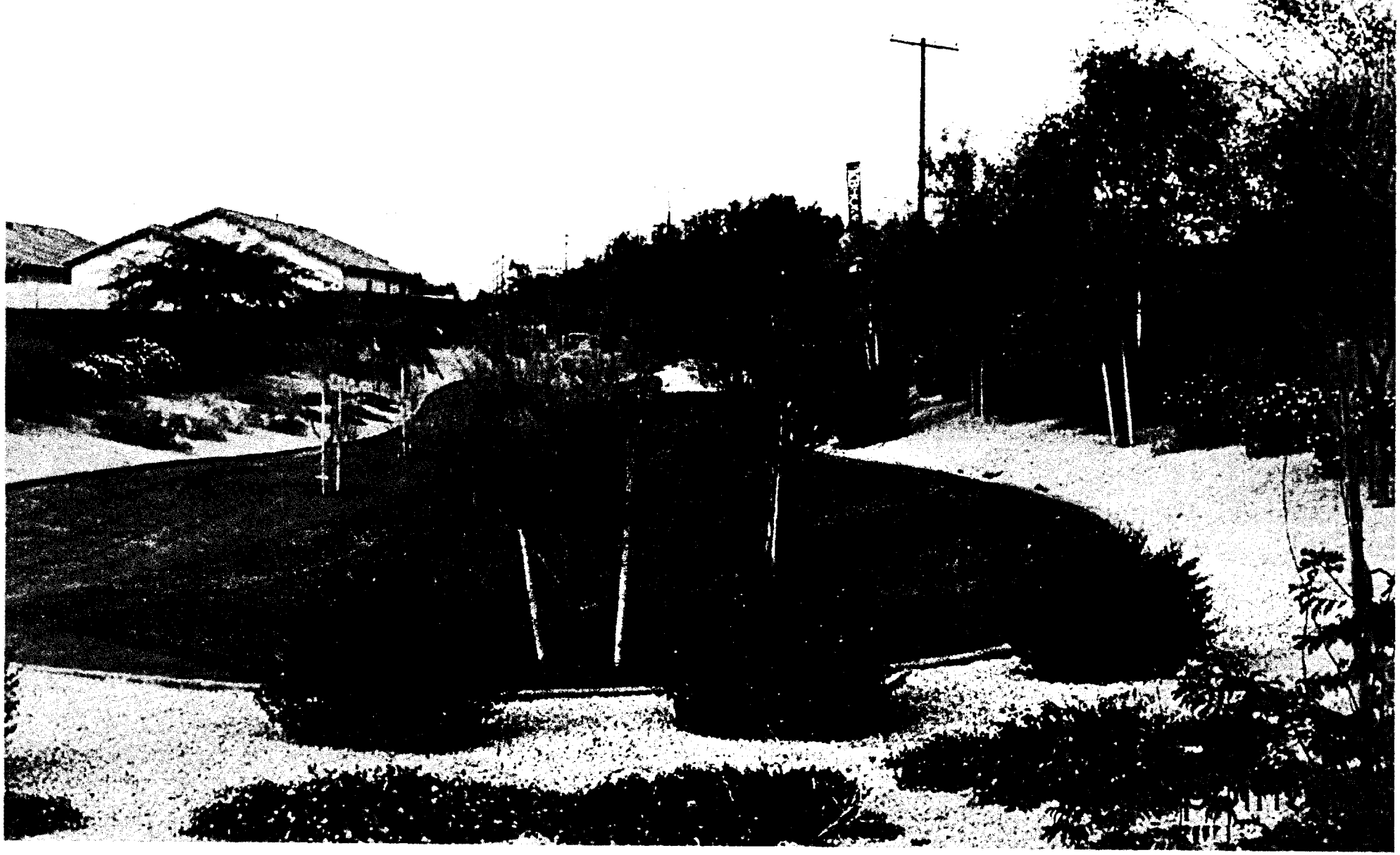
View looking south across Juana Court along I-17 west frontage road

Return to Viewpoints Map



View looking north along open space corridor west of I-17 from Oberlin Way

Return to Viewpoints Map

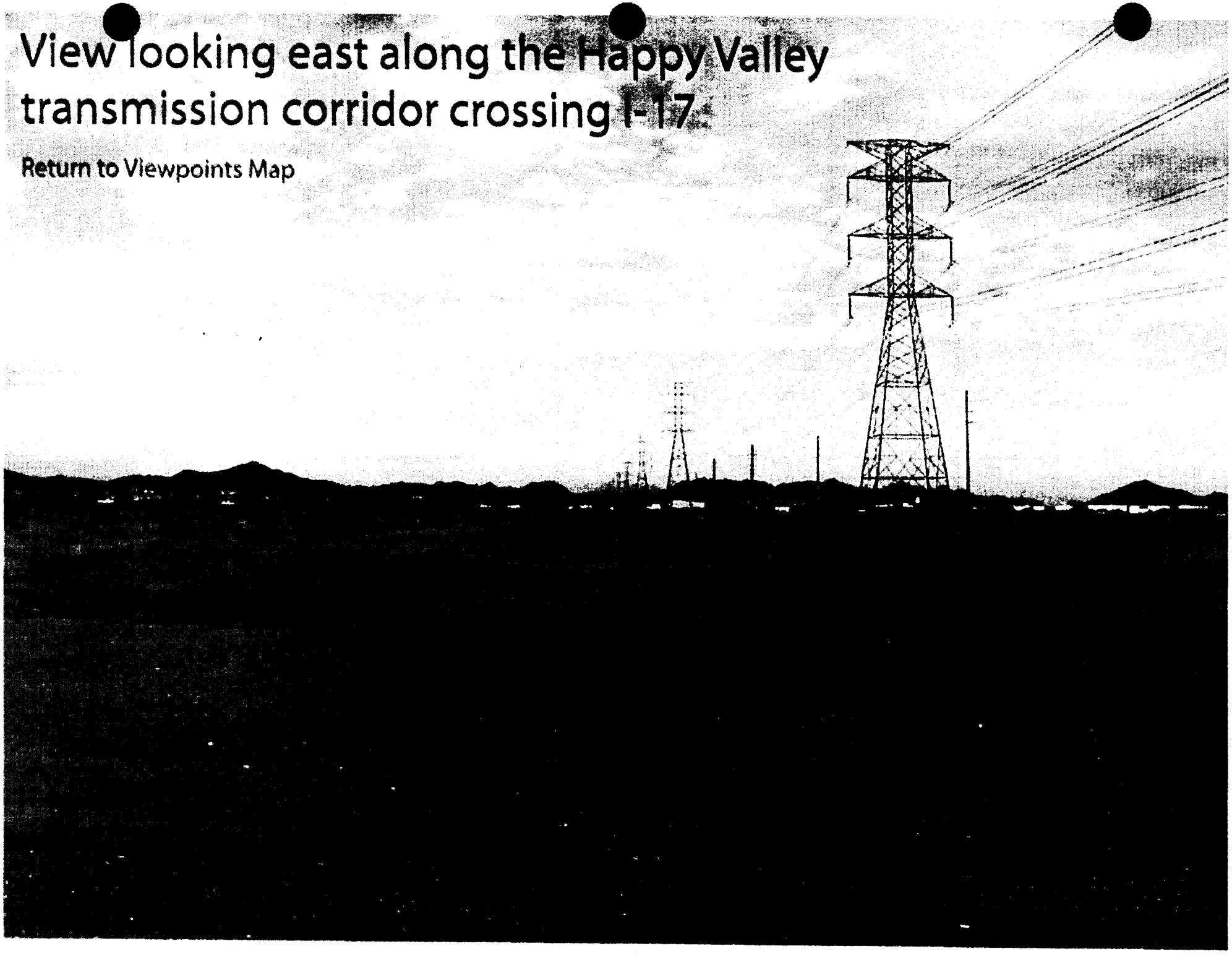


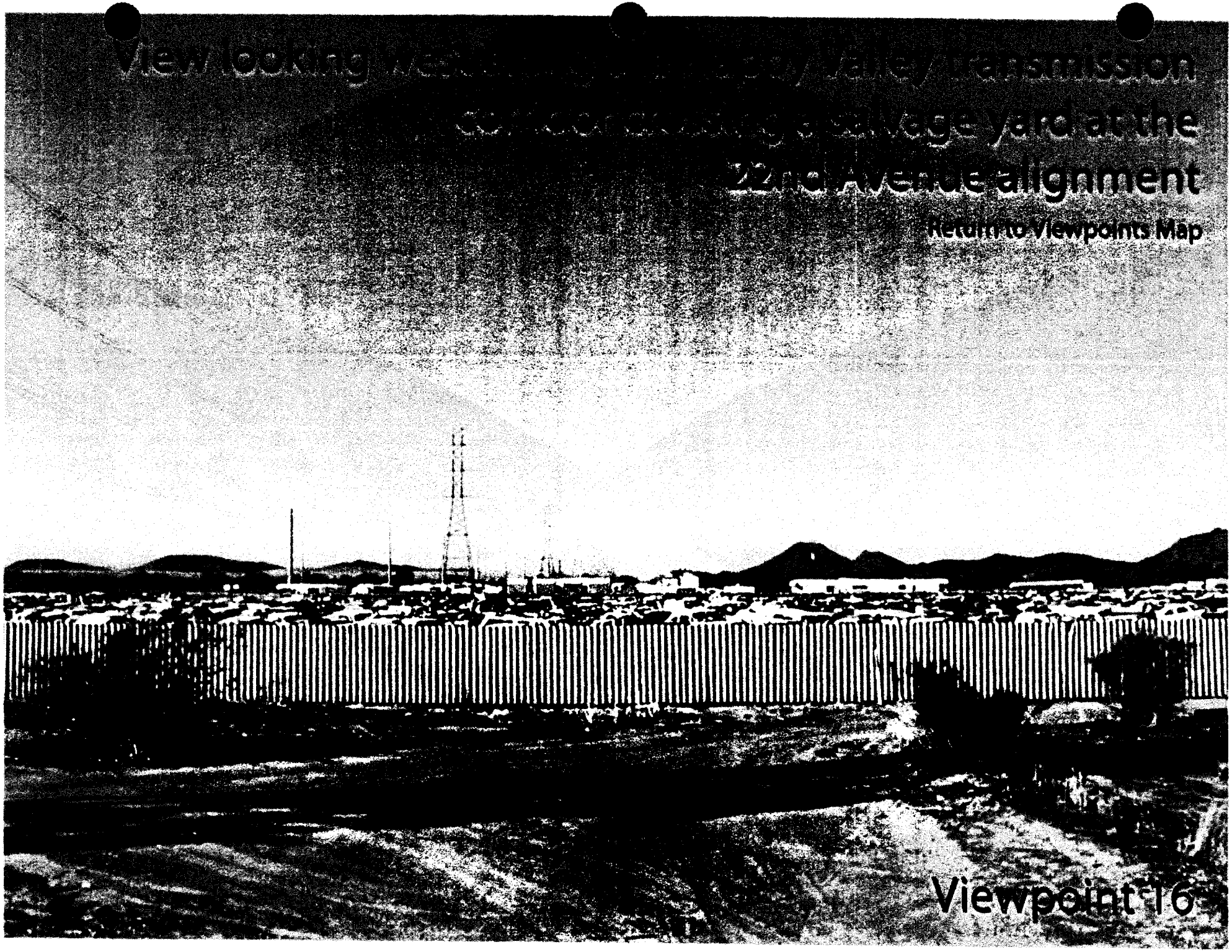
View looking south along the eastern boundary of Skunk Creek Landfill

Return to Viewpoints Map

View looking east along the Happy Valley transmission corridor crossing I-17.

Return to Viewpoints Map

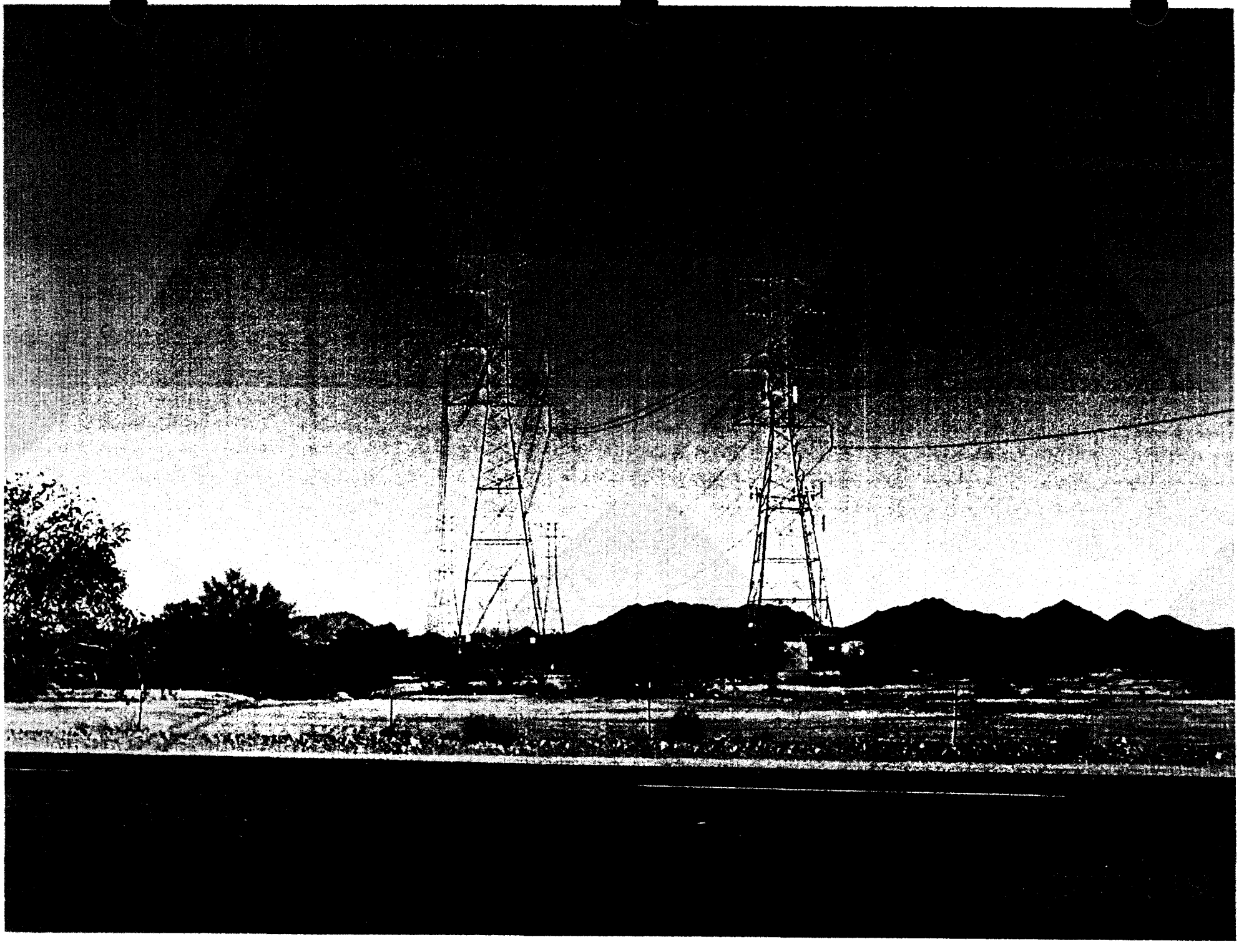



View looking west
22nd Avenue alignment
Return to Viewpoints Map
Viewpoint 16

View looking west along the Happy Valley transmission corridor from the 7th Avenue alignment
Return to Viewpoints Map
Viewpoint 17

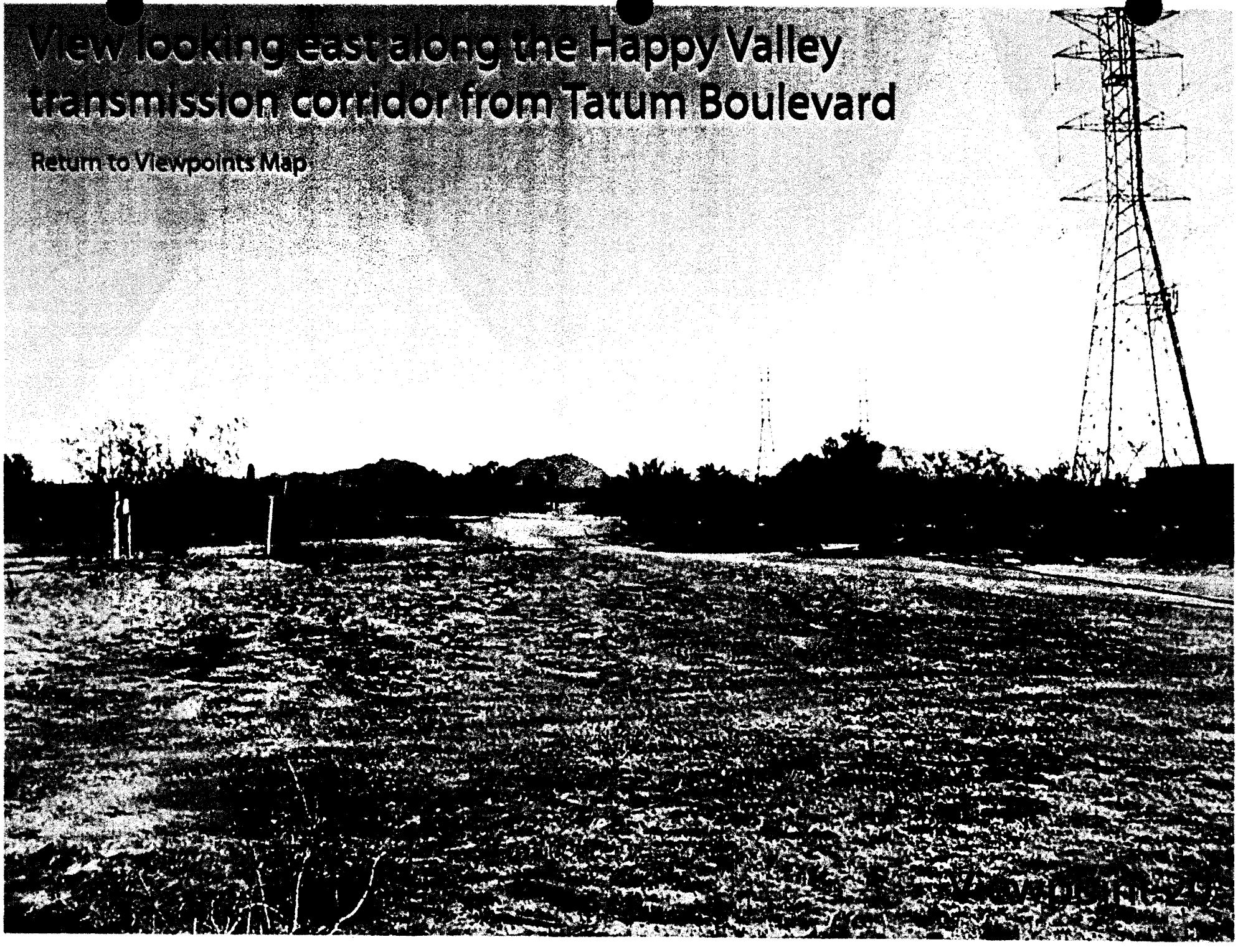
View looking east along the Happy Valley transmission corridor west of the 24th Street alignment

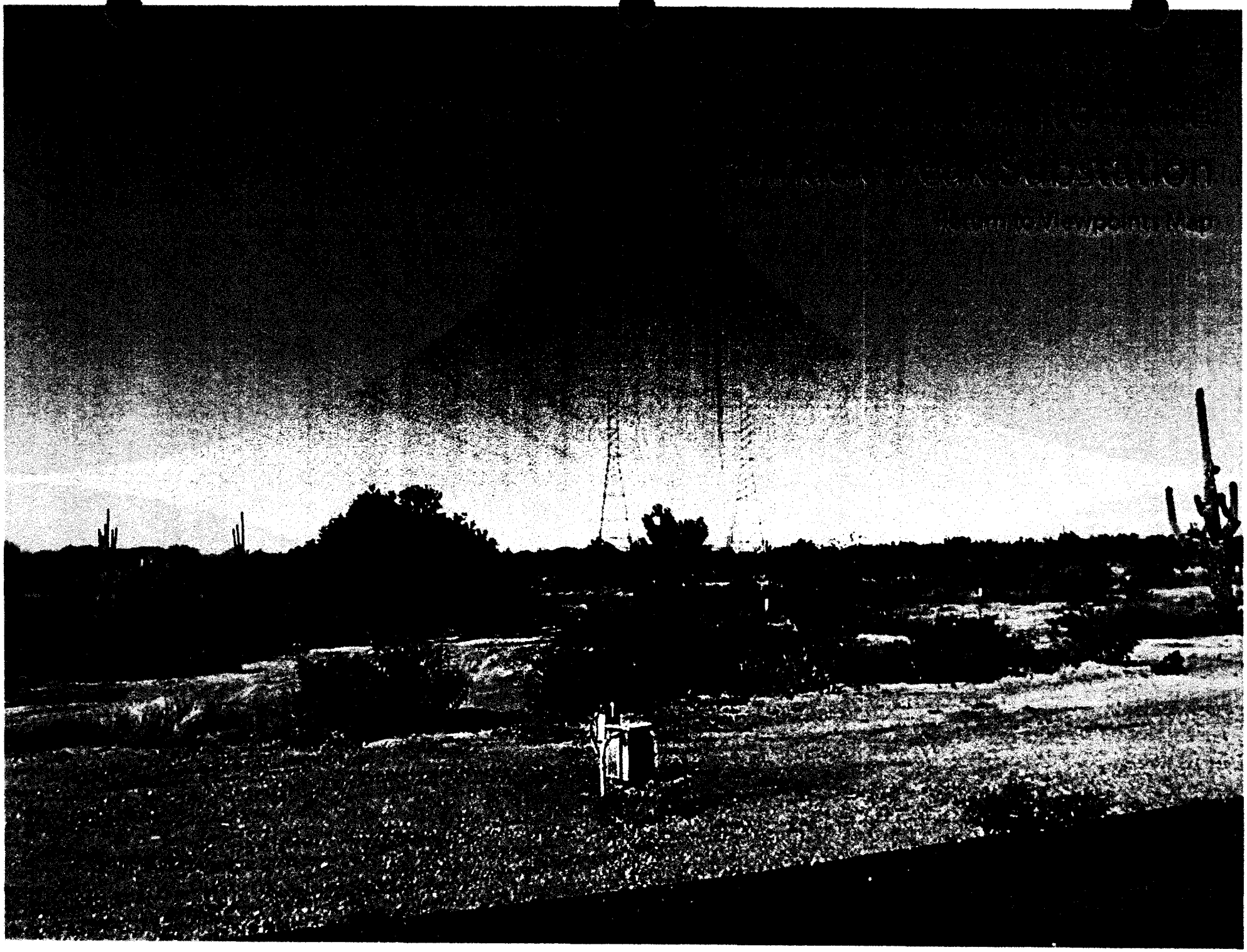
Return to Viewpoints Map



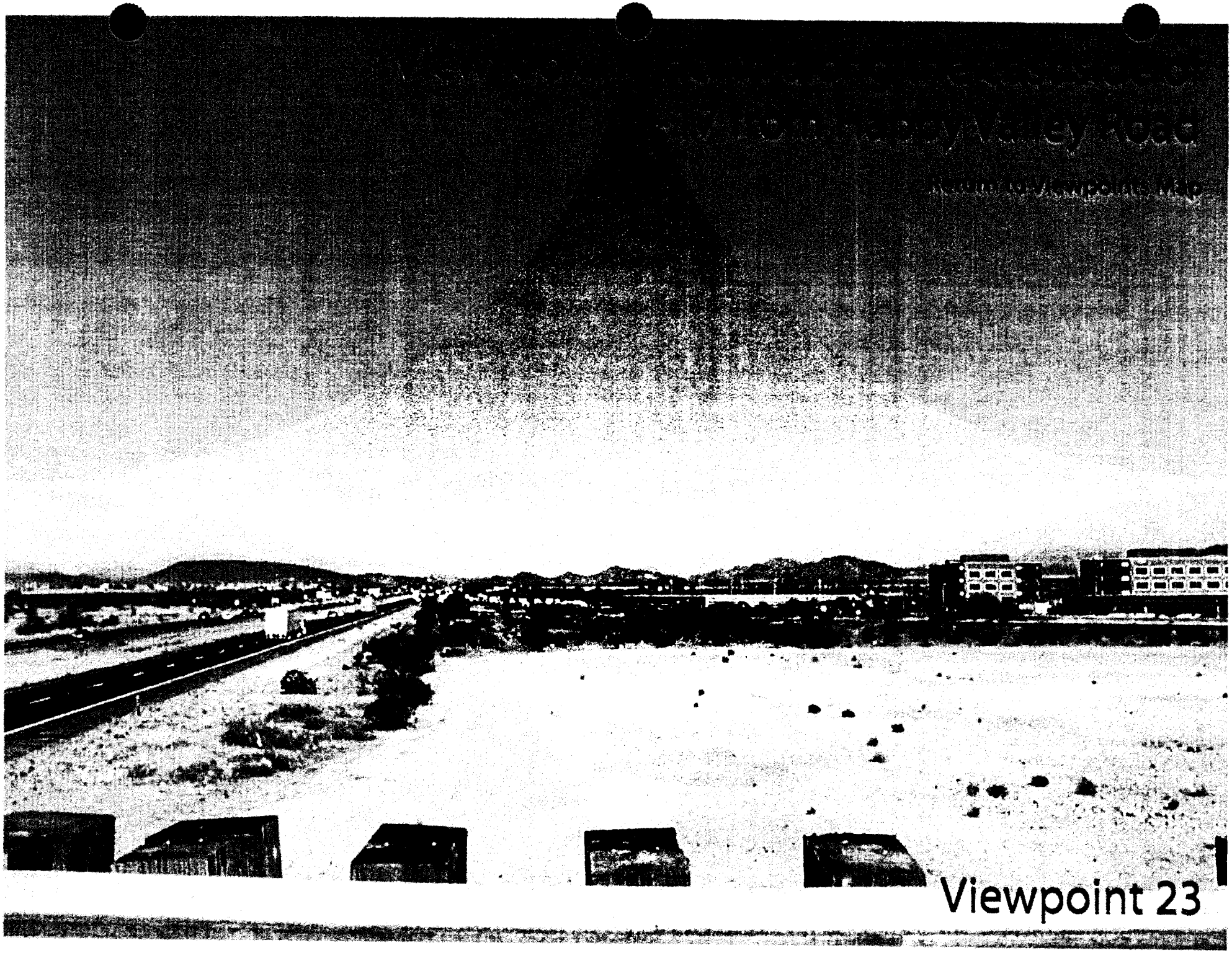
View looking east along the Happy Valley transmission corridor from Tatum Boulevard

Return to Viewpoints Map





Viewpoint 22


Return to Viewpoints Map
Viewpoint 23

View looking south along I-17 east frontage road across Skunk Creek

Return to Viewpoints Map

View looking southeast along CAP from Dynamite Boulevard

Return to Viewpoints Map

View looking north from CAP

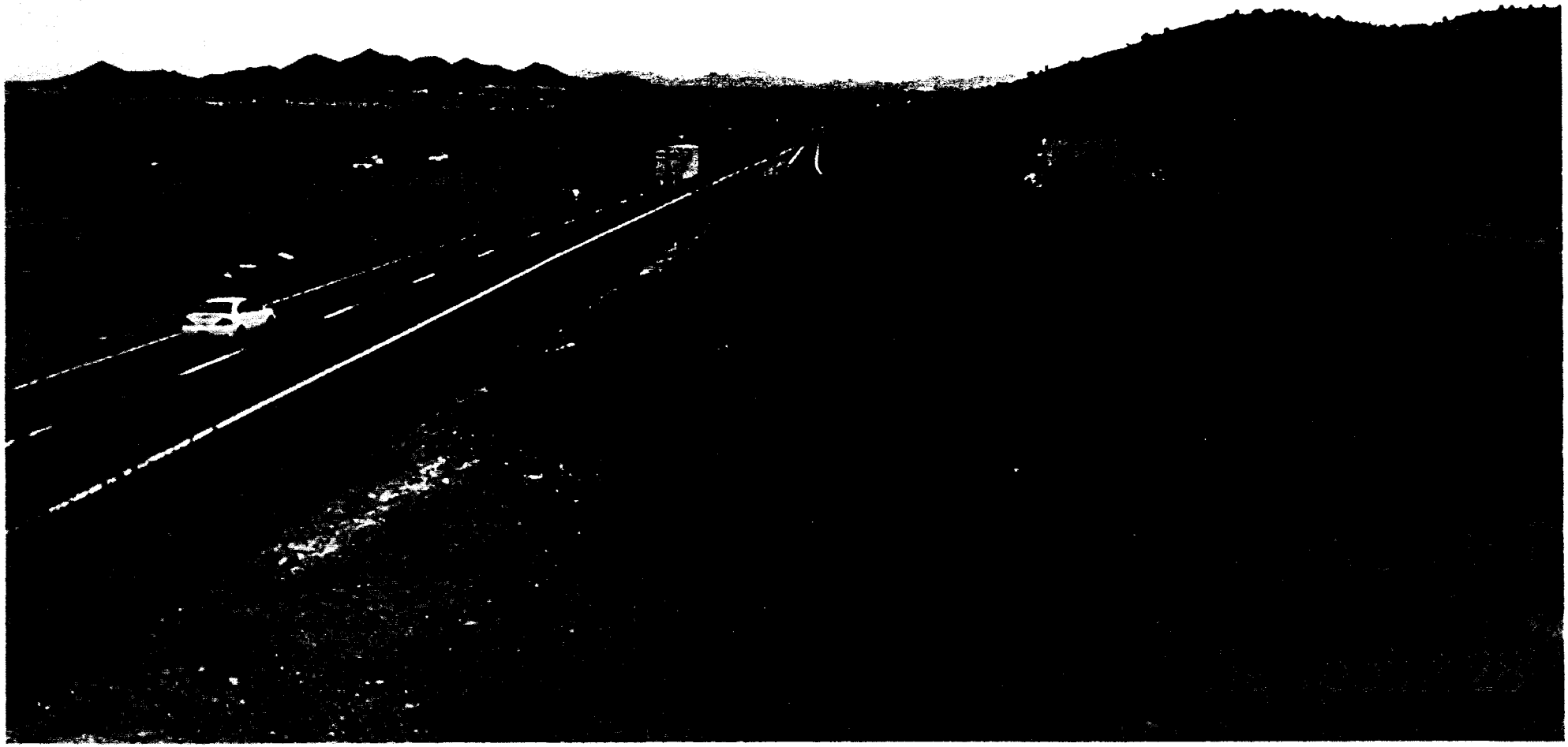
Return to Viewpoints Map

View looking south along CAP from Happy Valley Road

Return to Viewpoints Map

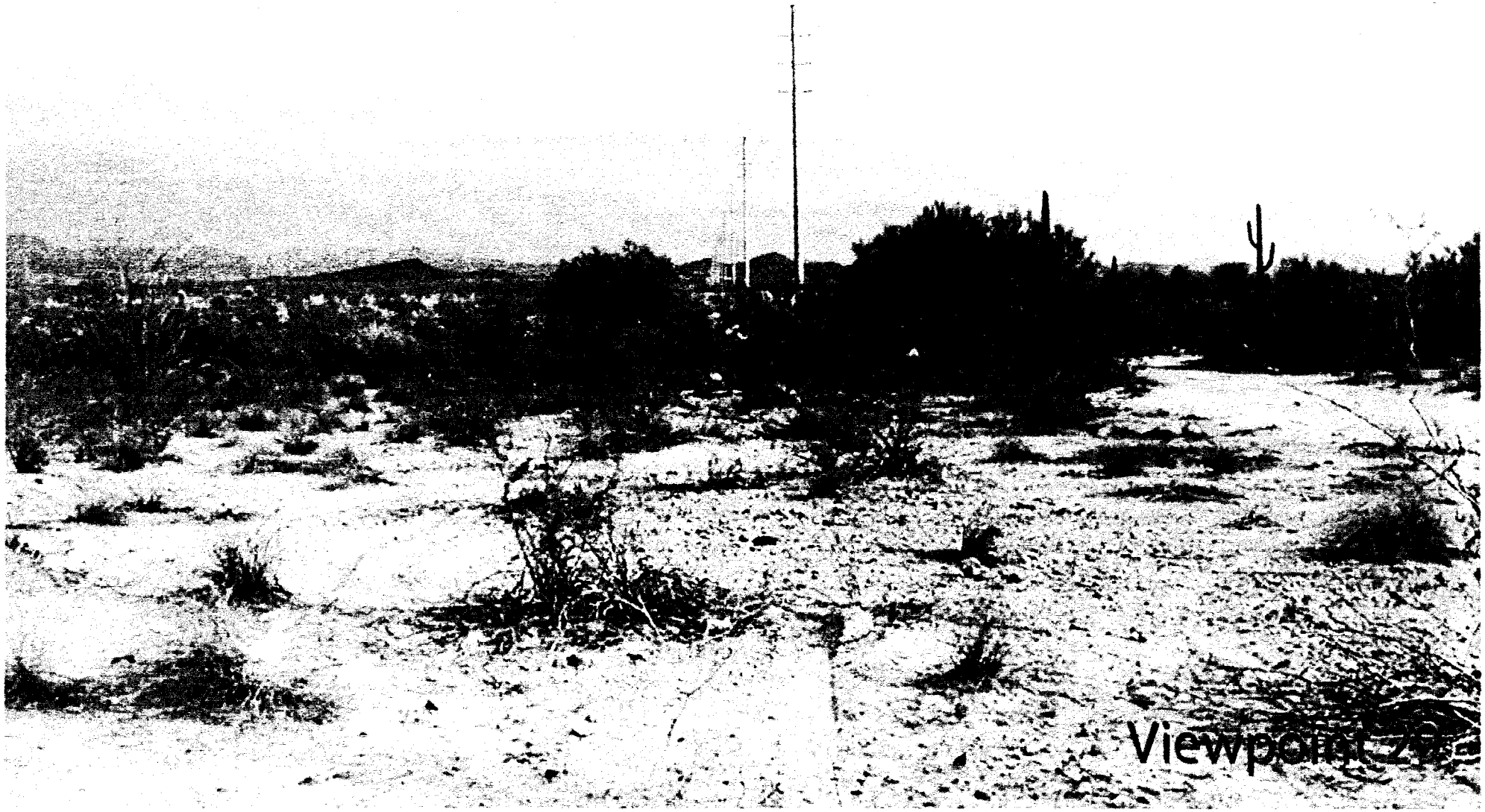
View looking south along I-17 from Pioneer Road

Return to Viewpoints Map



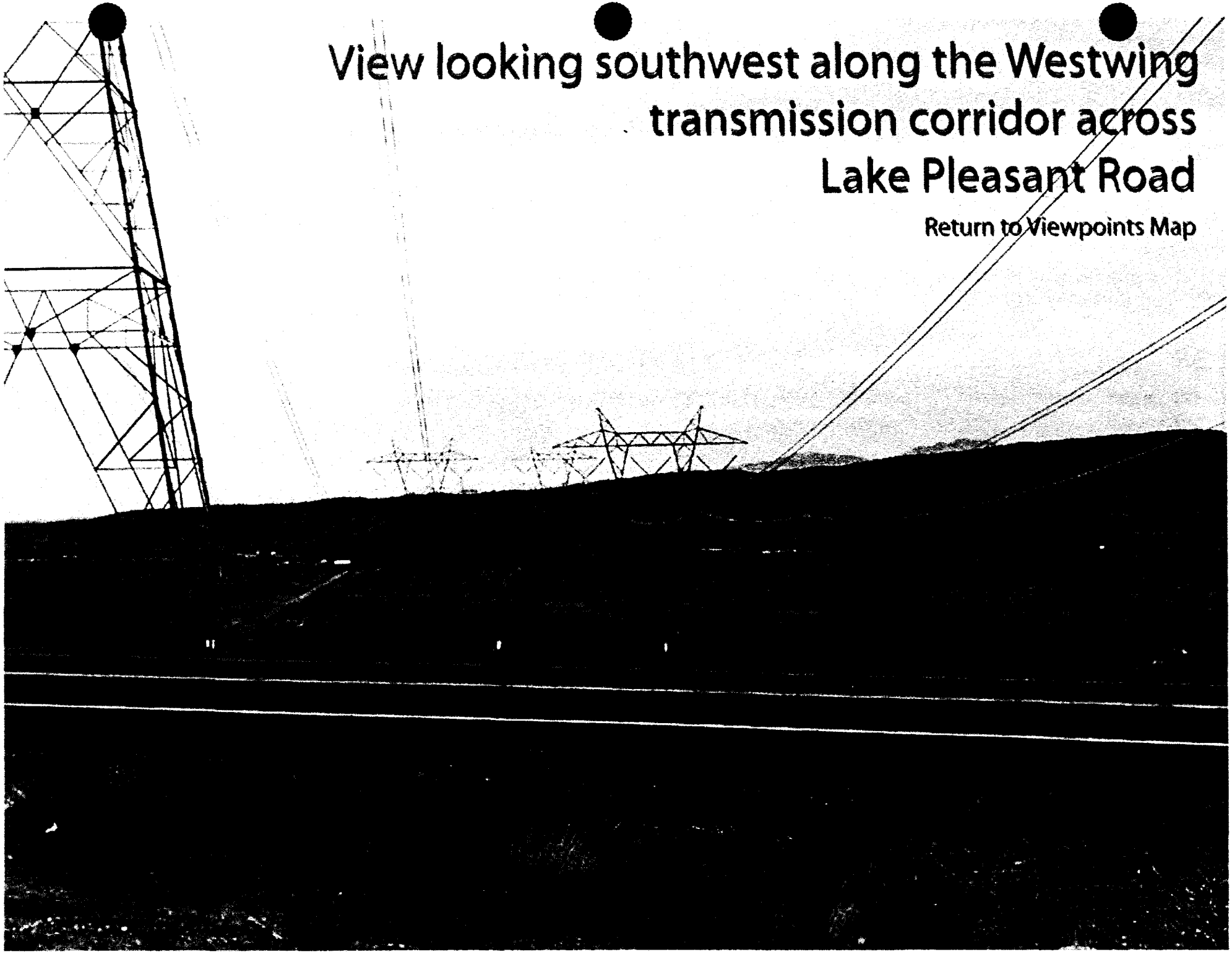
View looking east along the Joy Ranch Road alignment from New River Road

Return to Viewpoints Map



View looking southwest along the Westwing transmission corridor across Lake Pleasant Road

Return to Viewpoints Map

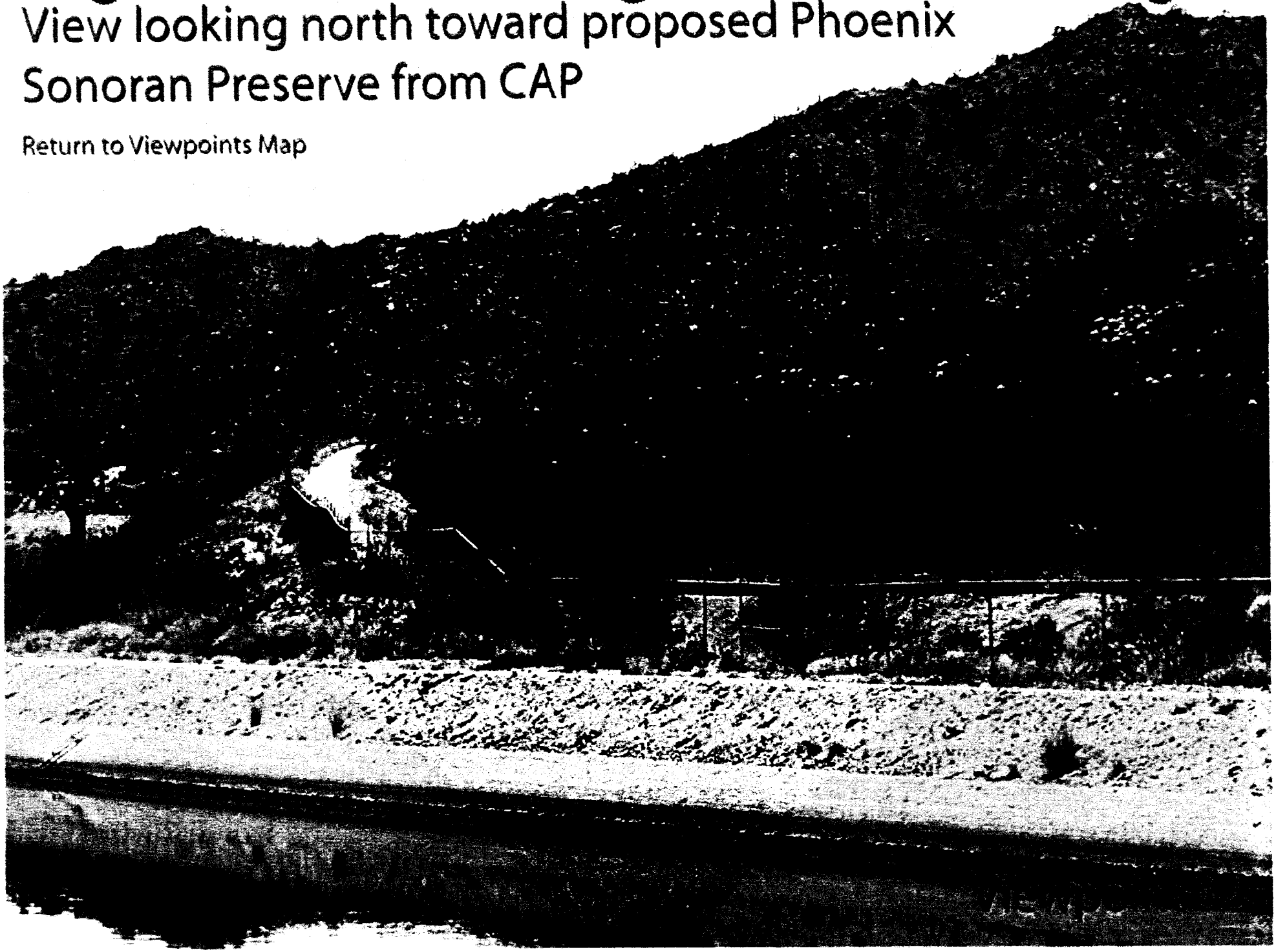


View looking east along CAP from Lake Pleasant Road

Return to Viewpoints Map

View looking north toward proposed Phoenix Sonoran Preserve from CAP

Return to Viewpoints Map



View looking east along 69kV line south of CAP

Return to Viewpoints Map

BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

DRAFT

IN THE MATTER OF THE APPLICATION OF ARIZONA PUBLIC SERVICE COMPANY IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES SECTION 40-360, ET SEQ., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING THE NORTH VALLEY 230KV FACILITY PROJECT, CASE NO. 120 INCLUDING THE CONSTRUCTION OF APPROXIMATELY 31 MILES OF 230KV TRANSMISSION LINES, TWO 230KV SUBSTATIONS, AND THREE SUBSTATION INTERCONNECTIONS IN MARICOPA COUNTY, ARIZONA, ORIGINATING AT THE WESTWING SUBSTATION IN SECTION 12, TOWNSHIP 4 NORTH, RANGE 1 WEST, G&SRB&M AND INTERCONNECTING AT THE RACEWAY SUBSTATION IN SECTIONS 4 AND 5, TOWNSHIP 5 NORTH, RANGE 1 EAST, G&SRB&M, CONTINUING TO THE PROPOSED AVERY SUBSTATION IN SECTION 15, TOWNSHIP 5 NORTH, RANGE 2 EAST, G&SRB&M AND THE PROPOSED MISTY WILLOW SUBSTATION IN SECTION 8, TOWNSHIP 4 NORTH, RANGE 3 EAST, G&SRB&M, AND TERMINATING AT THE PINNACLE PEAK SUBSTATION IN SECTION 10, TOWNSHIP 4 NORTH, RANGE 4 EAST, G&SRB&M.	Docket No. L-00000D-02-0120 CASE NO. 120

CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

Pursuant to notice given as provided by law, the Arizona Power Plant and Transmission Line Siting Committee (the "Committee") held public hearings on

November 25, 2002 and November 26, 2002, all in conformance with the requirements of Arizona Revised Statutes § 40-360, *et seq.*, for the purpose of receiving evidence and deliberating on the Application of Arizona Public Service Company ("Applicant") for a Certificate of Environmental Compatibility in the above-captioned case.

The following members and designees of members of the Committee were present for the deliberations and vote on the Application at the November 26, 2002 hearing:

Laurie Woodall	Chairman, Designee for Arizona Attorney General, Janet Napolitano
Ray Williamson	Arizona Corporation Commission
Richard Tobin	Arizona Department of Environmental Quality
Mark McWhirter	Department of Commerce
Pat Schiffer	Department of Water Resources
Jeff McGuire	Appointed Member
Margaret Trujillo	Appointed Member
A. Wayne Smith	Appointed Member
Michael Whalen	Appointed Member
Michael Palmer	Appointed Member
Sandie Smith	Appointed Member

The Applicants were represented by Jeffrey B. Guldner, Lisa A. Coulter and Faraz Sanei of Snell & Wilmer L.L.P., attorneys for the Applicant. The following parties were granted intervention pursuant to A.R.S. § 40-360.05: Arizona Corporation Commission Staff, represented by Janice M. Alward and Jason D. Gellman; Arizona

Utilities Investors Association, represented by Walter Meek; United Services Automobile Association, represented by C. Webb Crockett of Fennemore Craig; Roles Inc., represented by Roger K. Ferland and Laura Raffaelli of Quarles & Brady Streich Lang L.L.P.; and Beverly Jackson.

At the conclusion of the hearings, the Committee, having received the Application, the appearances of the parties, the evidence, testimony and exhibits presented at the hearings, and being advised of the legal requirements of Arizona Revised Statutes §§ 40-360 to 40-360.13, upon motion duly made and seconded, voted to grant the Applicants the following Certificate of Environmental Compatibility (Case No. 120):

> The North Valley project route will originate at the Westwing Substation in Section 12, Township 4 North, Range 1 West and parallel an existing 500/230kV transmission line corridor northeast to approximately the Dove Valley Road alignment. At that point, a radial line will extend northeast interconnecting with the 230/69kV Raceway Substation in Sections 4 and 5, Township 5 North, Range 1 East. This portion of the route will include a 1,500-foot corridor that will extend to the east from the westernmost edge of the exiting transmission line right-of-way. The route continues east along the section line associated with the Dove Valley Road alignment to the proposed Avery Substation, located approximately ½ mile west of I-17 in Section 15 Township 5 North, Range 2 East. There will be a 1,000-foot corridor on each side of the Dove Valley Road alignment. From that point the line will continue south along the 39th Avenue alignment to the Lone Mountain Road alignment and cross Sections 22 and 23, Township 5 North, Range 2 East on the diagonal to meet I-17, and continue south paralleling the west side of I-17 to the south side of Skunk Creek. There will be a 1,000-foot corridor on each side of the proposed centerline from the Avery

Substation to I-17. There will also be a 1,000-foot corridor west of the freeway controlled access of I-17. The route parallels the south side of Skunk Creek to the 29th Avenue alignment where it turns south and parallels the 29th Avenue alignment to a point approximately ¼ mile south of Happy Valley Road. Along Skunk Creek and the 29th Avenue alignment there will be a 1,000-foot corridor on either side of the proposed centerline. The route will turn east and cross I-17 approximately ¼ mile south of Happy Valley Road and parallel an existing 230kV transmission line corridor, interconnecting with the proposed Misty Willow Substation located south of the existing transmission corridor and west of the CAP in Section 8, Township 4 North, Range 3 East. The route then continues east and parallel to the 230kV transmission line corridor, terminating at the Pinnacle Peak Substation in Section 10, Township 4 North, Range 4 East. From I-17 east to the Pinnacle Peak Substation there will be a 1,000-foot corridor north of the existing Salt River Project (SRP) transmission line.

This Certificate is granted upon the following conditions:

1. The Applicant shall obtain all required approvals and permits necessary to construct the Project.

2. The Applicant shall comply with all existing applicable air and water pollution control standards and regulations, and with all existing applicable ordinances, master plans and regulations of the State of Arizona, the County of Maricopa, the United States, and any other governmental entities having jurisdiction.

3. This authorization to construct the Project shall expire ten (10) years from the date the Certificate is approved by the Arizona Corporation Commission unless construction is completed to the point that the transmission lines are capable of operating by that time; provided, however, that prior to such expiration the Applicant or its assignees may request that the Commission extend this time limitation.

4. The Applicant shall make every reasonable effort to identify and correct, on a case-specific basis, all complaints of interference with radio or television signals from operation of the transmission line and related facilities addressed in this Certificate. In addition to any transmission repairs, relevant corrective actions may include adjusting or modifying receivers; adjusting, repairing, replacing or adding antennas, antenna signal amplifiers, filters, or lead-in cables; or other corrective actions.

   The Applicant shall maintain written records for a period of five (5) years of all complaints of radio or television interference attributable to operation, together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action or for which there was no resolution shall be noted and explained. The record shall be signed by the Applicant and also the complainant, if possible, to indicate concurrence with the corrective action or agreement with the justification for a lack of action.

   Affected parties may submit complaints to the Applicant or the ACC when they believe the Project is creating noise in excess of applicable standards or causing interference with communications signals in excess of applicable FCC standards. The Applicant shall maintain records of complaints and corrective actions taken for the North Valley Project, for a period of five (5) years, which records shall be available for public inspection.

5. The North Valley Project shall comply with applicable noise standards of the federal Department of Housing and Urban Development and the Environmental Protection Agency.

6. The Applicant shall continue to consult with the State Historic Preservation Office ("SHPO") to reach a determination of any cultural or archeological impacts as a result of construction activities. The Applicant will provide

a treatment plan, to minimize impacts, for SHPO review and approval and shall continue to consult with SHPO to resolve any such impacts. The Applicant shall avoid or minimize impacts to properties considered eligible for inclusion in the State and National Register of Historic Places to the extent practicable.

7. If human remains and/or funerary objects are encountered during the course of any ground disturbing activities relating to the development of the subject property, Applicant shall cease work on the affected area of the Project and notify the Director of the Arizona State Museum in accordance with A.R.S. § 47-1685.

8. Applicant shall retain an archeologist on site during construction activities in applicable areas, as determined by SHPO, to advise them in connection with any additional archeological studies that may be required and any mitigation efforts for archeological sites that may be affected by the construction of the Project.

9. After construction, the Applicant, in conjunction with any applicable land managing agency, shall allow Arizona Site Stewards, a volunteer-staffed SHPO program, to periodically inspect the sites within the corridor for vandalism or other damage.

10. The Applicant shall follow the Arizona State Land Department's instructions, if any, regarding eligible properties situated on Arizona State Land in consultation with SHPO.

11. The Applicant shall design the transmission lines so as to minimize impacts to raptors.

12. Where practicable, the Applicant shall use existing roads for construction and access and the Applicant shall revegetate or restore areas of construction disturbance.

13. The Applicant shall use non-specular conductor and dulled surfaces for transmission line structures.

14. Within 45 days of securing easement or right of way for the Project, the Applicant shall erect and maintain signs providing public notice that the property is the site of a future transmission line. Such signage shall be no smaller than a normal roadway sign. The Applicant shall place signs in prominent locations at reasonable intervals such that the public is notified along the full length of the transmission line. There must also be signs at the location of the proposed substations. Copies of this Certificate shall be provided by the Applicant to city and county planning agencies. The signs shall advise:

- that the site has been approved for the construction of Project facilities including a 230 kV transmission line, as applicable to the individual site;
- the expected date of completion of the Project facilities; and
- a phone number for public information regarding the Project.

15. In the event that the Project requires an extension of the term of this Certificate prior to completion of construction, Applicants shall use reasonable means to directly notify all landowners and residents within a one-mile radius of the Project facilities for which the extension is sought. Such landowners and residents shall be notified of the time and place of the proceeding in which the Commission shall consider such request for extension.

16. Before construction on this Project may commence, the Applicant must file a construction mitigation and restoration plan with ACC Docket Control. The Applicant shall, within one year of completion of the Project, rehabilitate to its original state any area disturbed by construction of the Project, except for any road that may be necessary to access the transmission lines for maintenance and repair.

The goals of the Plan will be to:

- Avoid impacts where practical;
- Where impacts are unavoidable, minimize impacts; and
- Focus on site preparation to facilitate natural processes of revegetation

Other key elements of the Plan are to:

- Emphasize final site preparation to encourage natural revegetation
- Avoid (i.e., preserve), where practical, mature native trees;
- Stipulate a maximum construction corridor width;
- Reserve topsoil and native plan materials from right-of-way before grading, and respread over the right-of-way after construction is complete;
- Imprint the restored right-of-way to provide indentations to catch seed and water;
- Implement best management practices to protect the soil;
- Apply restoration methods that have been shown to work in the desert environment;
- Prevent the spread of noxious weeks or other undesirable species; and
- Apply methods to discourage unauthorized off-highway-vehicle (OHV) use of right-of-way.

17. Applicants shall retain a qualified biologist to monitor all ground clearing/disturbing construction activities that may affect sensitive habitat. The biological monitor will be responsible for ensuring proper actions are taken if a special status species is encountered.

18. Applicants shall salvage mesquite, ironwood, saguaro and palo verde trees removed during project construction activities consistent with Arizona' s Native Plant Law and

use the vegetation for reclamation in or near its original location.

19. APS shall implement landscaping for the substation sites in accordance with the applicable municipal planning and zoning requirements.

20. The Applicant shall submit a self-certification letter annually, identifying which conditions contained in the CEC have been met. Each letter shall be submitted to the Utilities Division Director on December 1, beginning in 2004. Attached to each certification letter shall be documentation explaining, in detail, how compliance with each condition was achieved. Copies of each letter, along with the corresponding documentation, shall also be submitted to the Arizona Attorney General and the Directors of the Arizona Department of Environmental Quality, Department of Water Resources, and Department of Commerce Energy Office.

GRANTED this _____ day of November, 2002 .

THE ARIZONA POWER PLANT AND
TRANSMISSION LINE SITING COMMITTEE

By:_____
Laurie A. Woodall, Chairman

APPROVED BY ORDER OF THE ARIZONA CORPORATION COMMISSION

_____	_____	_____
Chairman	Commissioner	Commissioner
_____	_____	
Commissioner	Commissioner	

In Witness Hereof, I, Brian C. McNeil, Executive Secretary of the Arizona Corporation Commission, set my hand and cause the official seal of this Commission to be affixed, this ____ day of _____, 200_.

By _____
Brian C. McNeil
Executive Secretary

Dissent:_____

1247375.1

Arizona Department of Transportation
Intermodal Transportation Division
206 South Seventeenth Avenue Phoenix, Arizona 85007-3213

Jane Dee Hull
Governor

Victor M. Mendez
Director

Dick Wright
State Engineer

November 19, 2002

Paul Trenter, Project Manager
Environmental Planning Group
4350 E. Camelback Rd. Suite G-200
Phoenix, Arizona 85018

RE: APS North Valley 230kV Facility Siting Project – CEC Application

Dear Mr. Trenter:

Thank you for meeting with us yesterday to discuss issues and concerns the Department has regarding your siting project. After discussing our concerns the Arizona Department of Transportation (ADOT) is no longer in opposition to your project. The Department is motivated by the necessity to maintain the integrity of the highway system and to facilitate public safety. For these reasons our concerns can be met if the following elements were included into the final alignment and design plans for the siting project:

- Placement of all new poles and foundations shall be outside the future right of way needs of the proposed I-17 widening. APS will work closely with ADOT as the right of way needs for the I-17 widening and the initial designs for the new traffic interchanges at Jomax Rd. and Dixileta Dr. are developed.
- It is desirable to ADOT to have the new 250 kv power lines located not over the future frontage road travel way. APS and ADOT will continue to work toward establishing a pole alignment suitable to both parties that would seek to prevent the standard at rest position or "blow-out" condition of the power lines from overhanging the travel way.
- During the initial construction of the new line or during future maintenance ADOT will allow APS vehicle access to the poles from off the frontage road in the area fronting the developed parcels. At these locations APS will work with the Homeowners Groups to reconstruct the right of way wall Westward around the new poles. Access to poles in undeveloped areas, at the time of this letter, may or may not be from the frontage road side depending on placement of the final right of way wall. APS shall follow all MUTCD guidelines for safe traffic control when utilizing frontage road access. Flagging service or use of a pilot car will be utilized when one lane is shut down for any reason. Permitted time of day lane closures shall be by the permitting authority.
- APS shall acquire a permit for the final agreed upon overhang width along with permits as needed for maintenance access.

Arizona Governor's Award for Quality
2001 Award Recipient

Thank you again for meeting and working with ADOT on these issues and we look forward to continuing discussions with you to complete your project. Please feel free to contact me if you have any further questions.

Sincerely,

Bruce D. Vana P.E., Engineer - Manager
ADOT Utility & Railroad Engineering Section
602-712-8681
205 S. 17th Ave. Mail-drop 618E
Phoenix, AZ 85007-3212

cc: Mike De Witt, APS Project Manager
Vince Li, ADOT
Jackie Noblitt, Stanley Consultants
Don Herp, City of Phoenix, Deputy Director Streets Trans. Dept.

Arizona Governor's Award for Quality
2001 Award Recipient

Office of the City Council

8401 West Monroe Street
Peoria, Arizona 85345
(623) 773-7306
Fax (623) 773-7301

November 12, 2002

Mr. Larry Krueger, Manager
Transmission & Facility Siting
Mail Station 4030
P.O. Box 53999
Phoenix, AZ 85072-3933

Dear Mr. Krueger:

I appreciate the time and effort APS staff has taken to present the facts on the North Valley 230kV Transmission Line Project.

Certainly, as our communities continue to grow, electrical facilities are paramount to that growth. Reliable energy is one of our top concerns, and I appreciate the responsibility you have to provide this product to us.

I believe that APS has done a good job of informing stakeholders of the project, and giving the public sufficient opportunity for input on their preferred route along the Dove Valley Road alignment and I-17 corridor.

I know these facilities will benefit all of us in Peoria directly and help the metropolitan area by increasing the reliability of our local transmission system. Paralleling an existing corridor in Peoria and then following the Dove Valley Road alignment to build the 230 kV power line makes a lot of sense to me.

For the reasons stated above, please consider this as my support for APS' recommended route in their application to the Arizona State Siting Committee.

Sincerely,

Ken Forgia

Ken Forgia, Councilor
Mesquite District

KCF/fam

To: The Environmental Planning Group
4350 E. Camelback Road G 200
Phoenix, AZ 85018

received
10.31.02

From: Beverly Jackson
27011 N. 31st Drive
Phoenix, AZ 85085
623-434-3222

To Whom It May Concern:

Attached is a copy of a letter that I wrote to you 18 months ago. I never received an acknowledgement of the letter nor did I receive a response. I have been in contact with the Arizona Corporation Commission and they don't have record of this letter.

I am sending this to you again. Please make sure the appropriate person/s receives it.

In Appreciation.....

Beverly Jackson

Beverly Jackson

To: Paul Prenter
The Environmental Planning Group
4350 E. Camelback Road G200
Phoenix, AZ 85018

From: Beverly Jackson
5738 N. 34th Drive
Phoenix, AZ 85017

Date: April 9th, 2001

Re: North-Central Power-Line Routes

It is with great concern and opposition I write this letter to you. I was sick to my stomach while reading the newspaper article regarding the new 230kV power line placement in the North Valley I-17 Frontage road area. This concerns me because I just recently purchased a home in that area that won't be built until July. It was disclosed that there would be some utility activity going on but nothing regarding the 230-kV lines/poles that are mentioned in the Republic article. Nor did I receive any information up until now regarding the utility line placement.

This Kaufman & Broad development is new. There are not many homes that are occupied at this present time but there are many homes that have begun the construction process. The development I'm referring to is Hillcrest at Westland at 31st Avenue and Pinnacle Vista. Therefore, I cannot gather together a GROUP of residents to help with the opposition process.

It appears that no decisions have been formally made to locate the 115 ft. tall, 230-kilovolt line/poles on the West side of the I-17 or the East side of the I-17. I am writing this letter in hopes that the location of the poles be placed on the **EAST side of the I-17**. This community is new, therefore, I feel like I am at a disadvantage in fighting this placement of poles. Please take in to consideration that there will be a new community with many new homes on the West side of I-17 close to the frontage road. On the East side there is only one business going up at the moment and the remaining is designated industrial. Wouldn't it be in the best interest/health of the people to have the lines on the East side? Where there are fewer homes!

There is only ONE access in to this community and that is the I-17 frontage road that means all of the people in this new community would have to drive by and under your lines/poles.

My home was very expensive. I have a lot of money to lose if I back out now. I am so sick over this latest information regarding the 230-kV lines/poles that I don't know what to do. I am not an electricity expert so I can't argue about our safety and the safety of others. I'm not sure which direction to go at this moment. There are many custom homes going in within blocks of where these poles would be placed. I am sure that once these poles have been placed they will surely decrease the value of our property, so you see we have much to loose.

By looking at the map that was in last weeks newspaper, it seems odd that APS would want to **cross over** the I-17 from the East side to the West side and then have to **cross back over** the I-17 from the West side to the East side when they get to the Carefree Highway. This is silly and I'm sure very expensive.

Looks to me like existing power poles and all other tall cement power supply lines are already in place **on the East side of I-17 from Bethany Home Rd. north to Happy Valley**.

I know that APS' first choice for the power pole placement is the West side frontage road from Happy Valley Rd to the Carefree Highway. This is not in the best interest of the homeowners in that area. I am asking you to please reconsider this placement to their (APS) alternative, which is on the **EAST side frontage road of the I-17.**

In the mean time, I will go door to door in the newly developed area and stir up as many interested parties for the opposition and pass on your address. As I said, Westland at Hillcrest is new and I don't believe any one is occupying their new homes as of yet. This is perfect for APS. No one is in there so no one hollers. This will make it more difficult for me to fight this placement I'm sure.

Of course no lines will be placed along Carefree Highway, they had the most vocal opposition because there are currently many residents of Carefree. Let's not pick on the area that has no one in it to shout.

Please, please consider my letter and pass it on to whomever who would be willing to back me up.

Sincerely Yours,

~~Beverly Jackson~~
~~5738 North 34th Drive~~
~~Phoenix, AZ 85017~~
~~work 602-336-2975~~
My new address will be:
27011 North 31st Drive
602-336-2975 work
623-434-3222

Docket

INTERVENTION

To: Director of Utilities
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

ARIZONA CORPORATION COMMISSION
RECEIVED
OCT 31 2002
Director of Utilities

From: Bev Jackson
27011 N. 31st Drive
Phoenix, AZ 85085
623-434-3222

Date: October 29, 2002

Re: Request to be an Intervenor

L-00000D-02-0120

To Whom It May Concern:

Let this be my formal request to be an **Intervenor** and appear at the public hearing before the Arizona Power Plant and Transmission Line Siting Committee at the Embassy Suites, 1515 North 44th Street on November 25, 2002 at 9:30 a.m.

My appearance will be in opposition of the Proposed Route as shown on the map. I am acting as the spokesperson for our Community. I would also like to bring an opposition petition that has been signed by the members of our new community.

I've never been involved in anything like this before so I will need some guidance from your office in preparing for the hearing.

In Appreciation,

Beverly Jackson

Bev Jackson

RECEIVED
2002 NOV -5 A 10:51
AZ CORP COMMISSION
DOCUMENT CONTROL

To: Arizona Corporation Commission
1200 W. Washington
Phoenix, AZ 85007-2927
Docket # 120

RECEIVED

2002 OCT -7 P 12: 27

AZ CORP COMMISSION
DOCUMENT CONTROL

From: Beverly & Dan Jackson
27011 N. 31st Drive
Phoenix, AZ 85085
623-434-3222 – home
602-336-2975 – work, Bev

Date: October 3, 2002

Re: **North Valley 230kV Facility Siting Project** **L-00000D-02-0120**

To Whom It May Concern:

We are writing this letter today in opposition of the Proposed Route (gold) for the 230kV lines which would follow the west side frontage road between Dixileta Dr. south to Happy Valley Road. In reviewing the Proposed Route Map, the area of installation will affect many residendents/residences in this growing community. These are many concerned community members in this area who oppose the gold route. Although we all agree that Phoenix needs to do something in order to provide continued service because of increased growth, there are other alternative routes, the proposed alternative (red), #1 (green) and #3 (black) that we feel would be best for us, our children and our rapidly growing communities.

One of our reasons for concern is that the west side frontage road of the I-17 is our **ONLY** access **into and out of** our community. Not only is it our only source of entrance, it is an extremely dangerous road to travel. There are no street lights in this area and the oncoming southbound I-17 traffic lights are blinding during non-daylight hours. We believe that these lines installed on the west side frontage road would add further risk to our safety and the safety of our young drivers. This is a narrow two way street which already is a dangerous stretch of road with many obstacles that obstruct our view therefore it is already a very dangerous road. Adding more poles, we believe, will only make driving on the **only road available to us** a more dangerous entrance in to our young community. There are many cars & school buses filled with children that must travel this road each and every day. We believe that this would be putting our community at risk by forcing us to enter and exit under the power lines of the proposed route (gold). Again, I must add, this is our **ONLY** entrance in to our community.

In looking at your Alternative Routes, and taking all communities into consideration, it is our opinion that the **Proposed Alternative (red)**, or **Alternative Route #1 (green)** would be in our community and surrounding communities' best interest. Both Proposed Alternative (red) & Alternative Route # 1 (green) crosses the I-17 to the east, north of Dynamite Blvd., therefore, it would not interfere with **ANY** of the new communities' entrances or exits. # 1 (green) continues east for a short distance and cuts south towards Happy Valley Rd at an angle on the east side of new developments. Red follows the I-17 frontage road on the east side where there are no developments built to date. There are no entrances to communities on the east side of the I-17 that would be affected by these powerful lines, therefore placing all of our communities in a much safer environment.

Another Alternative Route would be # 3 (black). This route would also be acceptable to our community. I must add that the best route for all concerned is the Proposed Alternative (red) or Alternative Route # 1 (green).

It is with utmost importance that you consider this a formal request to select an appropriate route for all members of our growing community. We are a new, young community. Most homeowners are busy moving in and these power lines are the farthest from their minds therefore leaving our community at a disadvantage. If you have any questions or would like to speak to me, please call one of the numbers listed above.

I would also like to know if I need to know about further action that I can take to make all of you aware of our community's great concern regarding this project. Should we put together a petition to be signed?

I would appreciate a confirmation to our request. Please send it to our home address listed above.

Sincerely,

Beverly Jackson
Dan Jackson

Beverly & Dan Jackson

Arizona Department of Transportation

Intermodal Transportation Division

206 South Seventeenth Avenue Phoenix, Arizona 85007-3213

Jane Dee Hull
Governor

Victor M. Mendez
Director

Dick Wright
State Engineer

10/16/2002

Received 10-18-02

Paul Trenter, Project Manager
Environmental Planning Group
4350 E. Camelback Rd. Suite G-200
Phoenix, Arizona 85018

RE: APS North Valley 230kV Facility Siting Project – CEC Application

We received a copy of the Certificate of Environmental Compatibility application and do not believe that the proposed overhead alignment that parallels I-17 is feasible. There is inadequate space to accommodate the new transmission line while maintaining the ultimate freeway width.

- There is inadequate space to accommodate new transmission lines adjacent to residential development along the west side of I-17 from Skunk creek to the CAP.
- The proposed alignment should swing west to accommodate a new traffic interchange at Jomax Road. Adequate space is needed to accommodate all future interchanges, ramps and relocated frontage roads.
- The crossing of I-17 south of Happy Valley Road should allow for the widening of I-17, relocated frontage roads and the future widening of Happy Valley Road.
- Applicant is invited to re-meet with ADOT personnel to discuss alignment issues.

While locating this transmission line is extremely complex, the integrity of I-17 must be maintained. Accommodation must not adversely affect the safety, design, construction, operation, maintenance or integrity of the highway.

Please feel free to contact me if you have any questions.

Respectfully,

Bruce D. Vana P.E., Engineer - Manager
ADOT Utility & Railroad Engineering Section
602-712-8681
205 S. 17th Ave. Mail-drop 618E
Phoenix, AZ 85007-3212

cc: Mike De Witt, APS Project Manager
Steven A Jimenez, Tami Wollaston, ADOT
Jackie Noblitt, Stanley Consultants
Don Herp, City of Phoenix, Deputy Director Streets Trans. Dept.

Arizona Governor's Award for Quality
2001 Award Recipient

ATI PROPERTIES, INC.
REAL ESTATE SERVICES

220 South River Drive ❖ Tempe, Arizona ❖ 85281 ❖ (480) 446-9555 ❖ fax (480) 446-9615

October 15, 2002

received
10-16-02

Paul Trenter, Project Manager
Environmental Planning Group (EPG)
4350 E. Camelback Road, Suite G-200
Phoenix, Arizona 85018

RE: Proposed 230 KV Line.

Dear Mr. Trenter:

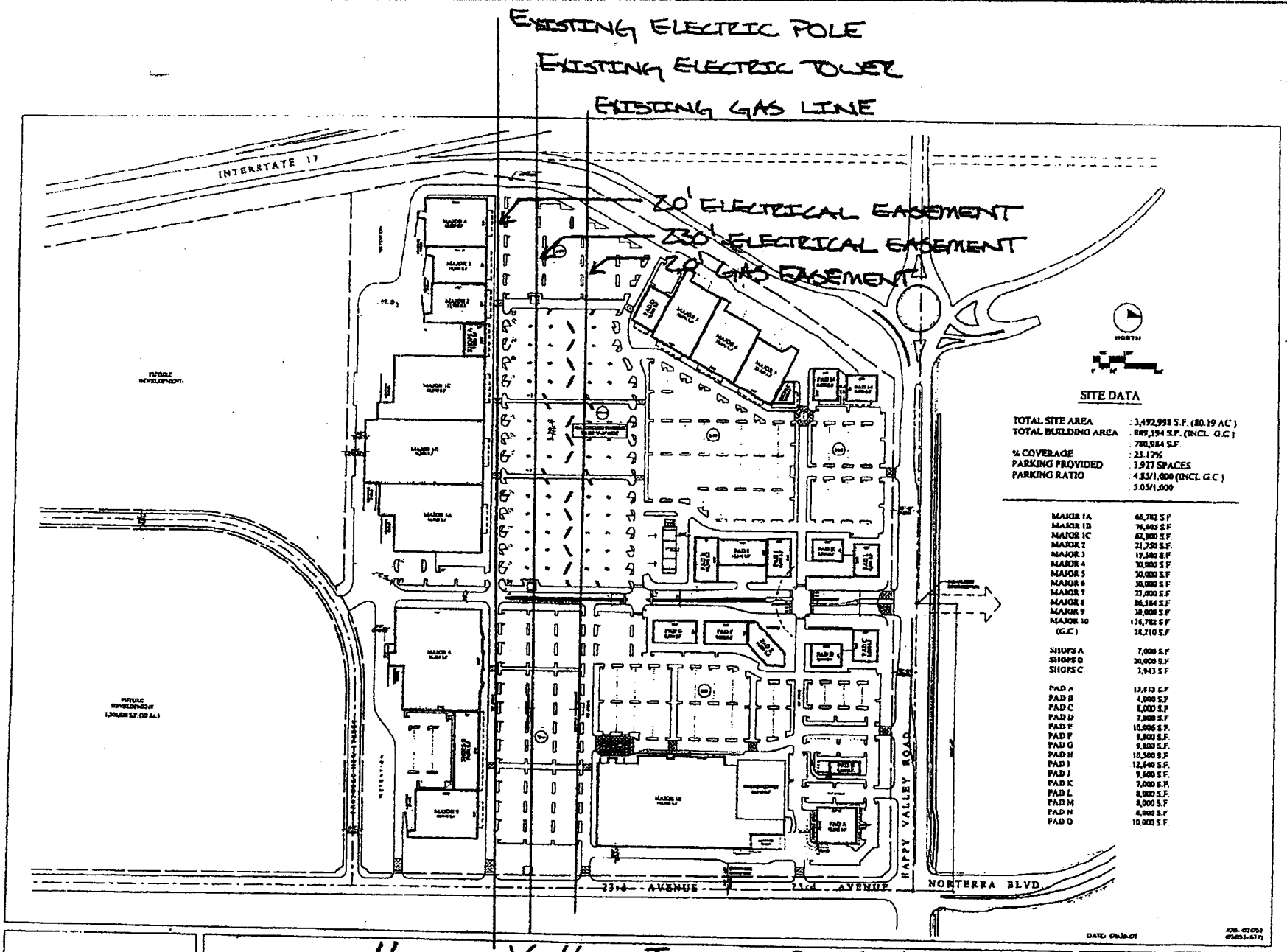
Following up on our conversation this week, I am sending you a copy of Vestar's site plan with the existing gas and electrical easements. Additional easements on this site or tower placement within the existing easement are of great concern. The Salt River Project electrical easement on this property does not allow for additional tower placement. The Arizona State Land Department and current lessee (Ray Roles) would have to approve any modification to the easement.

Vestar is planning an 800,000 square foot power center at the location. I look forward to working with you to allow this quality development to continue to move forward.

Please send any information pertaining to this project.

Sincerely,

Mark L. Wirth

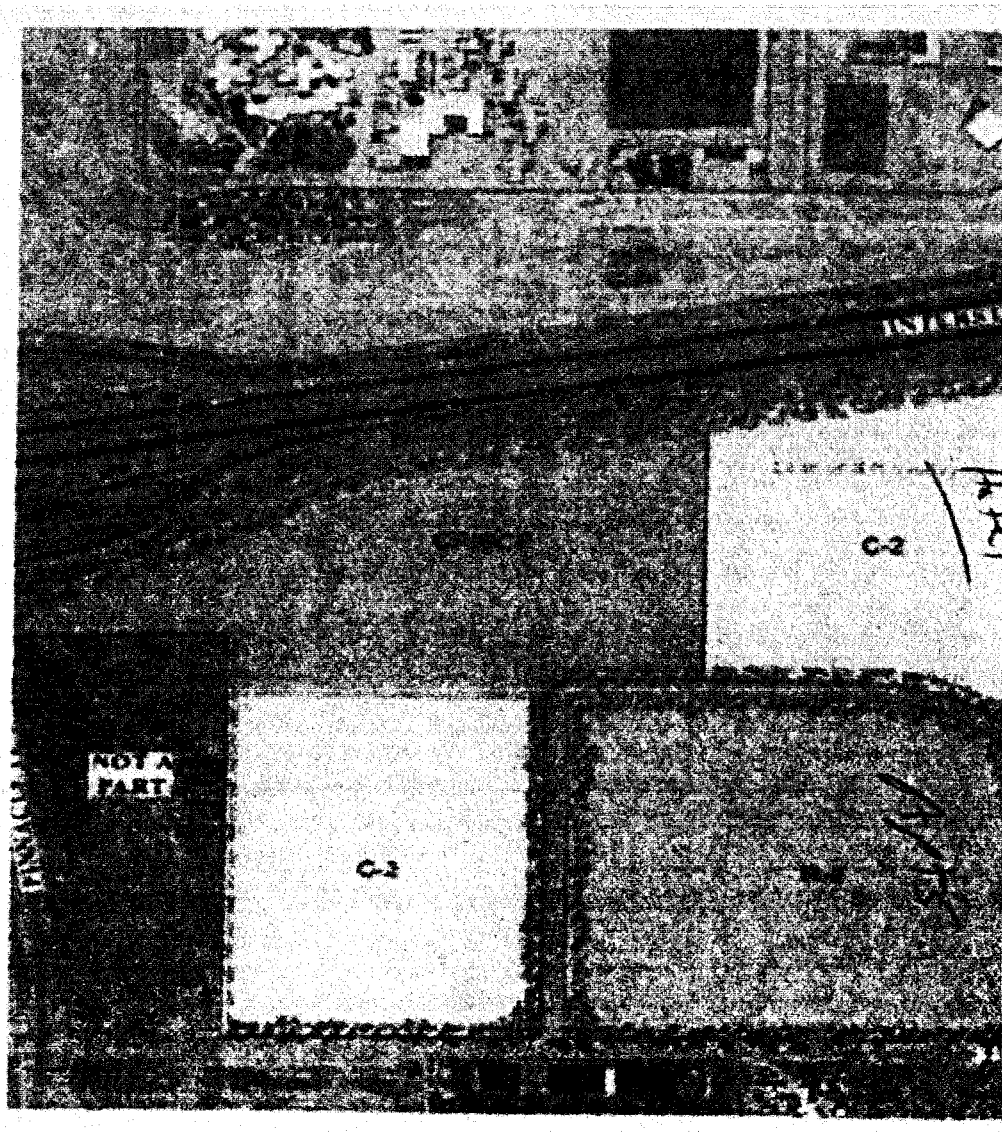


VESTAR DEVELOPMENT

Happy Valley Towne Center

Interstate 17 and Happy Valley Road
Phoenix, Arizona

Butler Design Group
Architects & Planners



I-17 AND HA

PR

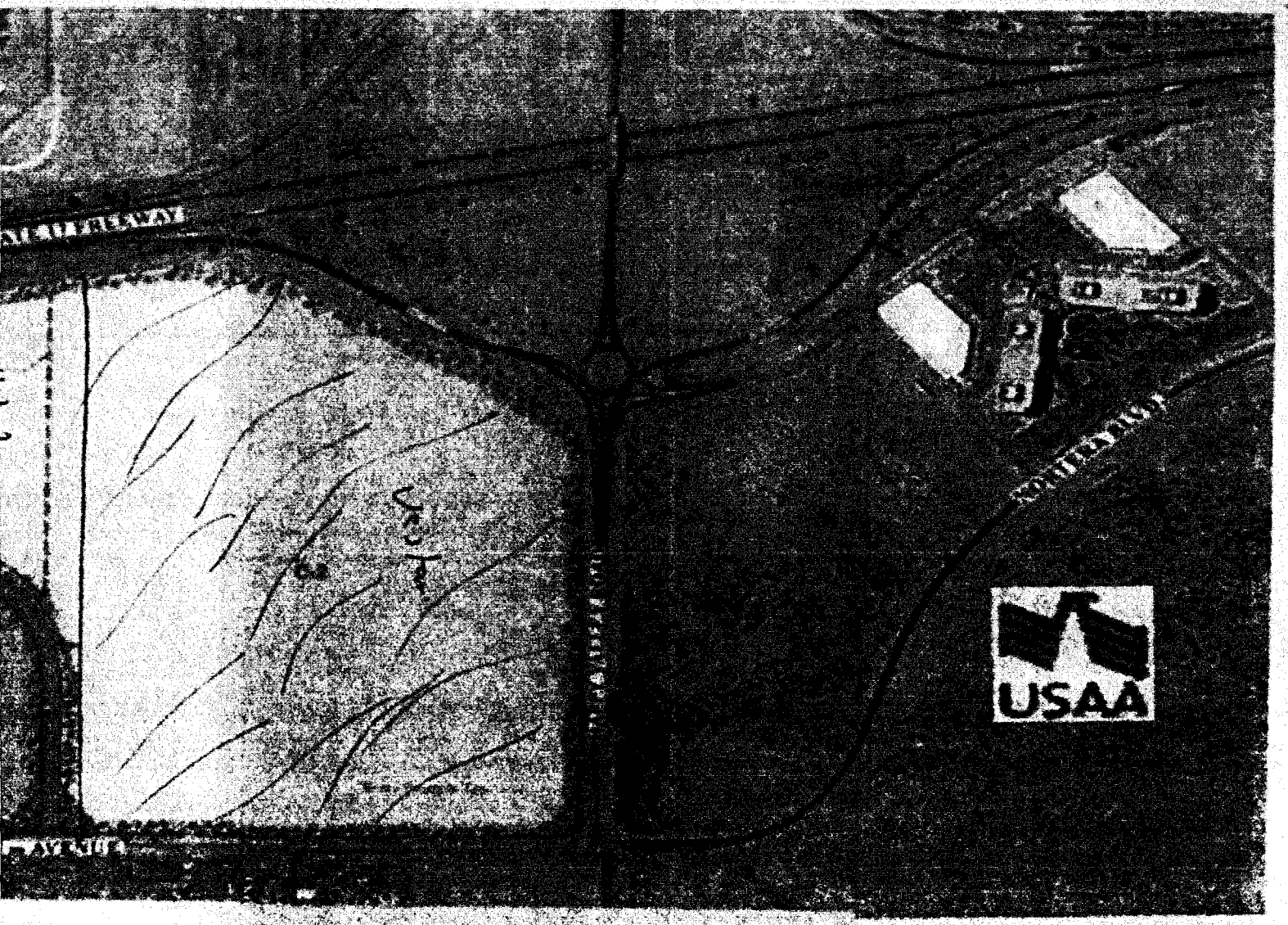


Exhibit LUP-1

APPY VALLEY ROAD
OPOSED LAND-USE PLAN
PHOENIX, ARIZONA

June 19th 2002

01131

4

ORIGINAL

To: Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007-2927

RE: North Valley 230k V Facility
Siting Proposal

(Docket Number 120)

From: Jon and Karen Shaul
3118 W. Redbird Road
Phoenix, Az. 85085
623-780-8281

Arizona Corporation Commission
DOCKETED
SEP 30 2002
DOCKETED BY

L-00000D-02-0120

To whom it may concern,

I am writing this letter with the hopes of inputting my feelings about the power lines that are in proposal for the North Valley 230k V Facility Sitting Project.
I am a resident residing approximately 31st ave and Pinnacle Vista. The proposed site for the power lines , your first choice (GOLD) I think should be reconsidered due to the space issue that this area already faces and **the only entrance into our area for 4 miles north is the West Side Frontage Road.** It appears looking at your plans and plan sites that the (GREEN or BLACK) routes would best serve this area and in doing so not effect surrounding homes and views and safety etc...

I am asking that APS would **PLEASE** consider **The GREEN Alternate Route,** This looks to be better direction for all home owners involved. We have talked to many in this area that feel the same way , although as you are aware only a select few will take the time to sit down and write a letter of concern, but believe me I speak for many in our neighborhood.

You have asked for homeowner input and I only hope you will consider this option with great thought.

Sincerely, Jon & Karen Shaul

Jon and Karen Shaul

RECEIVED
2002 SEP 30 A 11:52
AZ CORP COMMISSION
DOCUMENT CONTROL

ATI PROPERTIES, INC.
REAL ESTATE SERVICES

220 South River Drive ✣ Tempe, Arizona ✣ 85281 ✣ (480) 446-9555 ✣ fax (480) 446-9615

September 30, 2002

Mr. Mike Dewitt
Arizona Public Service
PO Box 53933, No. 4030
Phoenix, AZ 85072

RE: Proposed 230 KV Line.

COPY

Dear Mr. Dewitt:

Following up on our conversation last week, I am sending you a copy of Vestar's site plan with the existing gas and electrical easements. Additional easements on this site or tower placement within the existing easement are of great concern. The Salt River Project electrical easement on this property does not allow for additional tower placement. The Arizona State Land Department and current lessee (Ray Roles) would have to approve any modification to the easement.

Vestar is planning an 800,000 square foot power center at the location. I look forward to working with you to allow this quality development to continue to move forward.

Please send any information pertaining to this project.

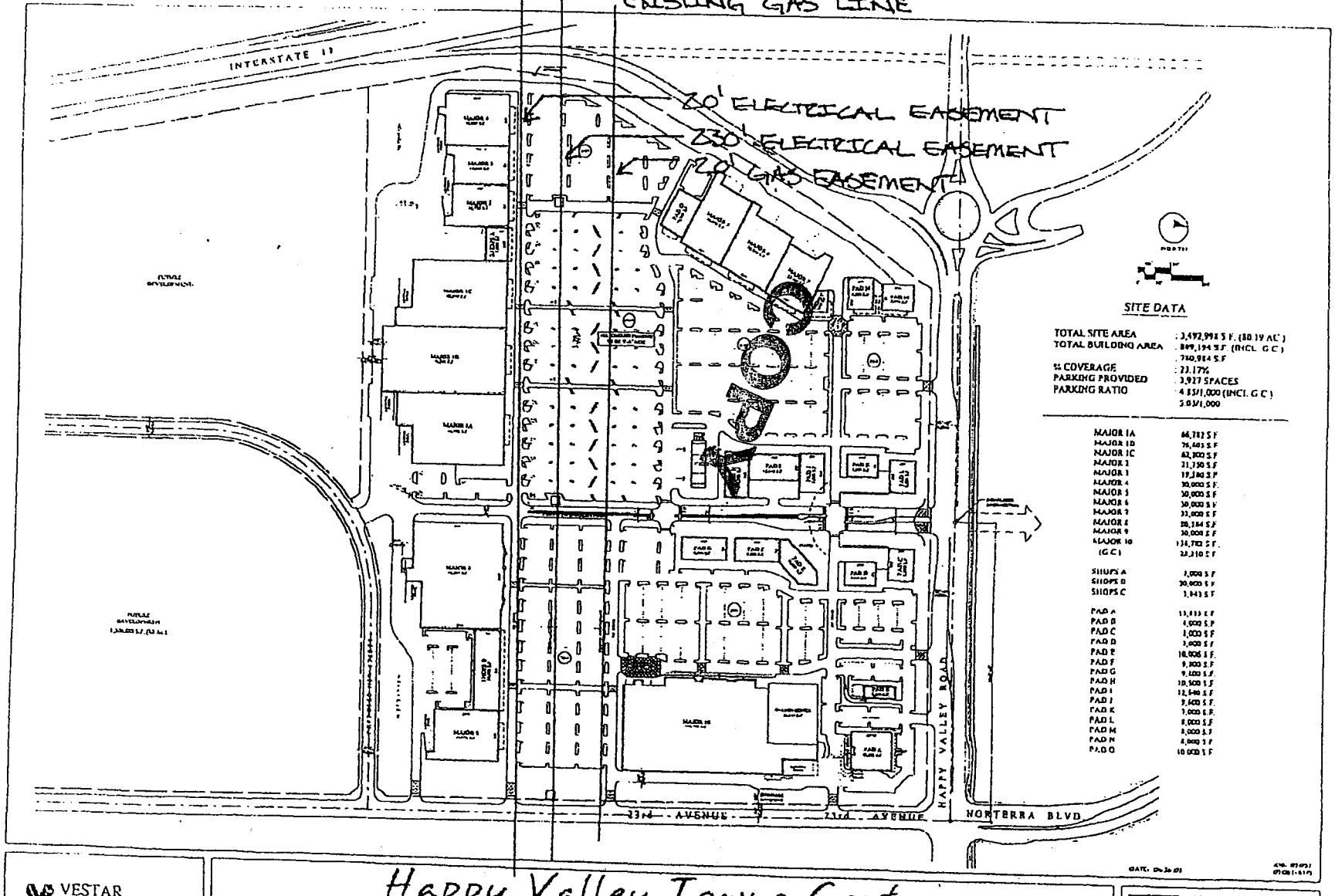
Sincerely,

Mark L. Wirth

EXISTING ELECTRIC POLE

EXISTING ELECTRIC TOWER

EXISTING GAS LINE



VESTAR DEVELOPMENT

Happy Valley Towne Center

Interstate 17 and Happy Valley Road
Phoenix, Arizona

Butler Design Group
Architects & Planners

Arizona Department of Transportation

Intermodal Transportation Division

206 South Seventeenth Avenue Phoenix, Arizona 85007-3213

Jane Dee Hull
Governor

Victor M. Mendez
Director

Dick Wright
State Engineer

September 18, 2002

Mr. Mike DeWitt
APS, Project Manager, Transmission and Facility Siting
Mail Station 4310, P.O. Box 53933
Phoenix, Arizona 85072-3933

RE: Proposed APS 230 kV Transmission Line
I-17 Widening Study: 101L to Black Canyon City
TRACS No. 17 MA 215 H5162 01L

Dear Mr. DeWitt:

Thank you for meeting with us on September 11, 2002 to discuss your proposed 230 kV powerline adjacent to I-17 between Happy Valley Road and approximately Lone Mountain Road. We are willing to work with you to locate the transmission line alignment in its best location considering our ultimate freeway widening.

In response to your September 12 correspondence, we take exception to the 2nd and 3rd bullets listed in your letter:

- "Should APS be able to meet design setback criteria, placement of the structures in the ADOT ROW would be acceptable.
- The portion of the ADOT ROW that is currently being looked at (for placement of the structures) is between the CAP and Skunk Creek on the west side and the CAP and Happy Valley Road on the east side."

Placement of the new transmission line within ADOT's current ROW is not acceptable since ADOT is planning the widening of the existing I-17 facility. The widened section will consist of five general use lanes in each direction, plus HOV lanes and auxiliary lanes. The frontage roads will require relocation outward in some sections to accommodate the widened section. As presented to you in the meeting, the draft typical sections for the ultimate widening reflect acquisition of ROW by ADOT for the proposed widening. If APS wishes to locate its new facility adjacent to I-17, ADOT will request that APS place the transmission line outside the future widened mainline and relocated frontage roads. Also, the 3rd bullet should reflect that the powerline is being examined on the west side between CAP and approximately Lone Mountain Road.

It appears that APS' construction schedule will precede ADOT's ROW acquisition and construction. Should APS desire to share ROW with ADOT, APS could plan to acquire an easement for the transmission line facilities that could be incorporated into ADOT's ultimate ROW. We look forward to continuing coordination and cooperation on our respective projects. Please let me know if you have questions or need additional information.

Sincerely,

Vincent W. Li

Vincent W. Li, P.E.

cc: John Louis, Steve Jimenez, Mary Viparina, Bruce Vana, Tami Wollaston: ADOT
Jackie Noblitt, Stanley Consultants

Arizona Governor's Award for Quality
2001 Award Recipient

United States Department of the Interior

BUREAU OF RECLAMATION
Phoenix Area Office
PO Box 81169
Phoenix, Arizona 85069-1169

IN REPLY REFER TO:

PXAO-4000 LND-5.00

AUG 28 2002

Mr. Clark Van Epps
Director, General Services
Administration, Region IX
Phillip Burton Federal Building
450 Golden Gate Avenue, 4th Floor East
San Francisco, CA 94102-3400

Subject: Disposal of Two Parcels of Surplus Reclamation Property – Arizona Public Service Land Sale – Agreement No. 3-07-32-L0387 between Reclamation and the General Services Administration (GSA) – Agua Fria River - Central Arizona Project (CAP)

Dear Mr. Van Epps:

In accordance with the subject agreement dated September 10, 1993, between Reclamation and GSA, we request that GSA dispose of the land described within in a manner most advantageous to the Government. The land is located in Peoria, Arizona, 3 miles south of the New Waddell Dam and Reservoir at the junction of the Agua Fria River and the Carefree Highway. The land was acquired to provide mineral materials for the construction of New Waddell Dam, and this 10 acre parcel is no longer required for project purposes. We also request that your office perform the appraisal for this site. This parcel is just a small part of approximately 579.35 acres which have been identified for sale in this area. Please find the enclosed Report of Excess Real Property (Standard Form 118) and Excess Property Checklist for information on the property. Arizona Public Service Company (APS) has initiated this land sale request for development of a new substation to service the northwest portion of the city. Mr. James W. Dugan, Senior Land Agent is the contact person for APS. You may reach Mr. Dugan at his office at 602-371-7948, or on his mobile phone at 602-684-4710.

Thank you for your assistance, and if you have any questions or require additional information, please contact Mr. Larry A. Koontz, of our Water and Lands Division, at 602-216-3852.

Sincerely,

Acting For Carol Lynn Erwin
Area Manager

Enclosures

cc: Mr. James W. Dugan, Senior Land Agent, Arizona Public Service Company, Mail Station: 3016, P.O. Box 53933, Phoenix, AZ 85072
Mr. David S. "Sid" Wilson, Jr., General Manager, Central Arizona Water Conservation District, P.O. Box 43020, Phoenix, AZ 85080
Attention: Ms. Sharon Hood

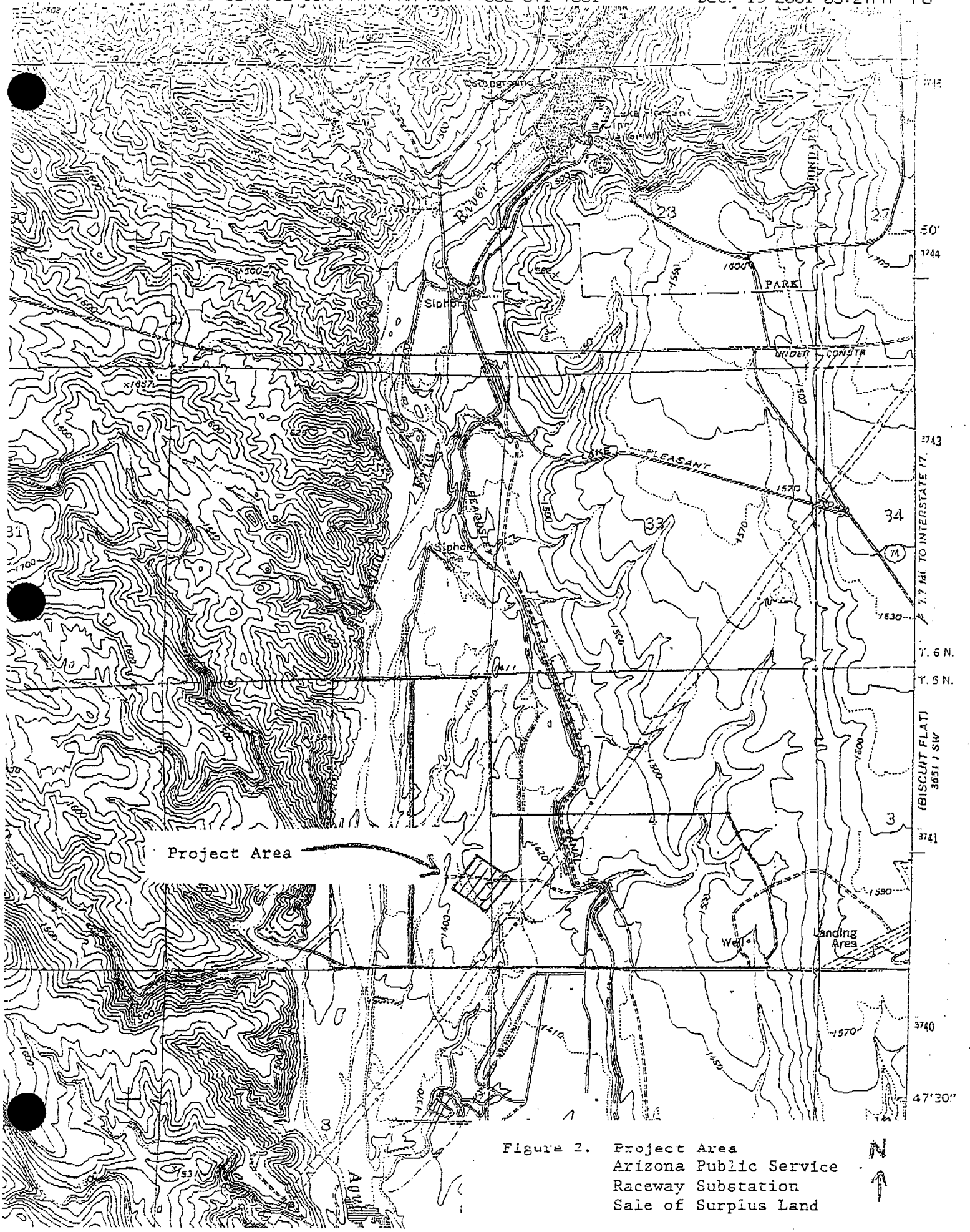


Figure 2. Project Area
Arizona Public Service
Raceway Substation
Sale of Surplus Land

N

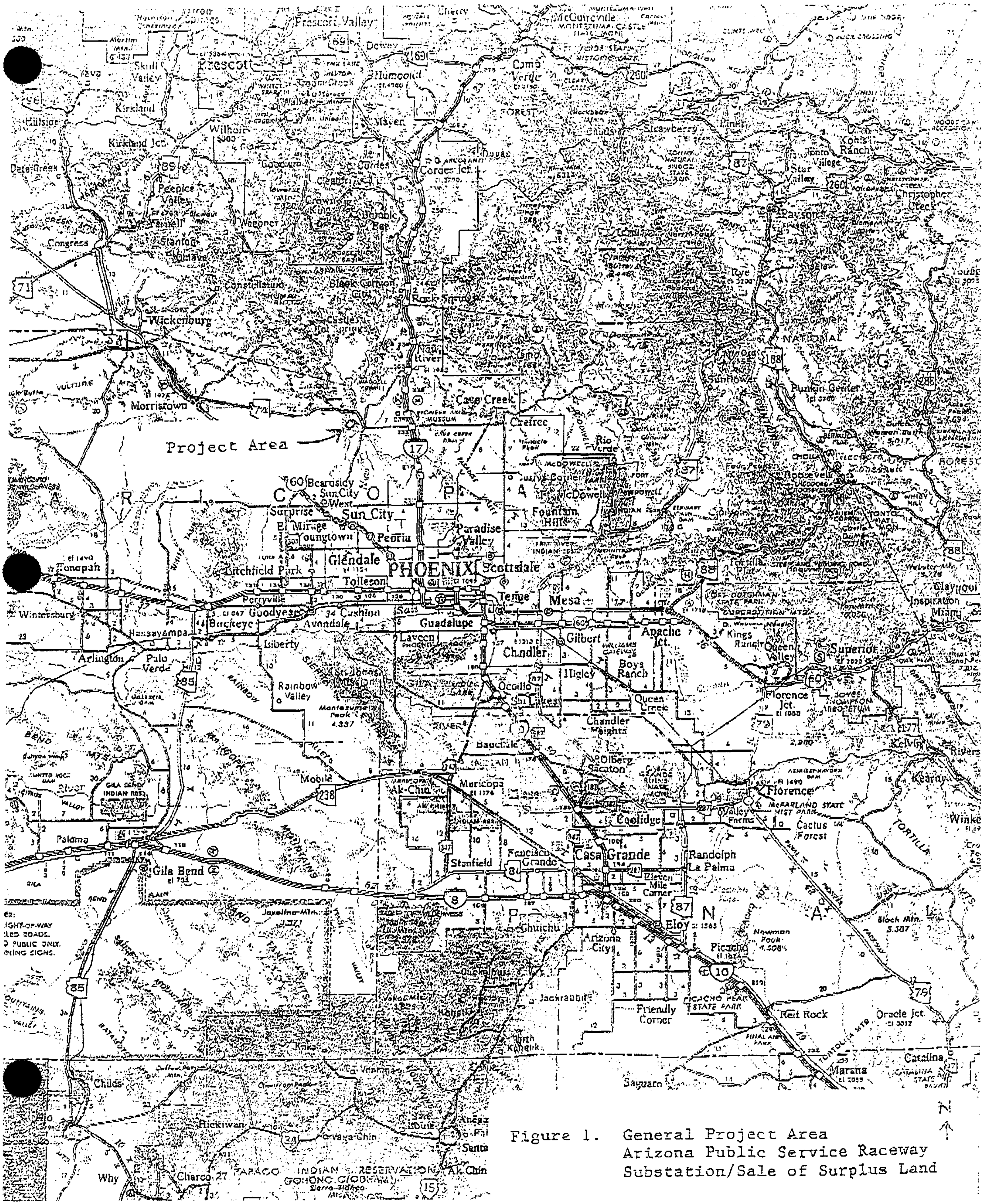


Figure 1. General Project Area
Arizona Public Service Raceway
Substation/Sale of Surplus Land

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department
Revised January 17, 1997

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

Desert tortoises of the Sonoran population are those occurring south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position at all times and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 105 degrees fahrenheit unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to two miles, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 105 degrees fahrenheit, the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mohave population of desert tortoises (north and west of the Colorado River). Mohave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.

- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.

- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

RAC:NLO:rc

5

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
2221 WEST GREENWAY ROAD, PHOENIX, AZ 85023-4399
(602) 942-3000 • WWW.AZGFD.COM

GOVERNOR
JANE DEE HULL
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JOE CARTER, SAFFORD
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JOE MELTON, YUMA
DIRECTOR
DUANE L. SHROUFE
DEPUTY DIRECTOR
STEVE K. FERRELL

November 5, 2002

Ms. Laurie A. Woodall, Chairman
Power Plant & Transmission Line Siting Committee
Office of the Attorney General
1275 West Washington
Phoenix, AZ 85007

RE: North Valley 230kV Facility Siting Project – Case No. 120
Application for a Certificate of Environmental Compatibility

Dear Ms. Woodall:

The Arizona Game and Fish Department (Department) has reviewed the Application for a Certificate of Environmental Compatibility (CEC) for the North Valley 230kV Facility Siting Project in north-central Maricopa County. We understand the proposed 230kV transmission lines and two substations will be constructed parallel to existing and approved utility corridors and transmission lines for approximately 27 miles of the 31-mile project route.

The Department notes that much of the project area has been previously disturbed by urban development, existing transmission lines, the Skunk Creek Landfill and I-17. These developments have reduced the value of the area to wildlife. To minimize potential impacts to wildlife resources, we recommend incorporating raptor protection practices on power line structures and keeping vegetation disturbance to a minimum, particularly in drainage channels and along streambanks. In addition, if Sonoran desert tortoises are encountered during construction, the Department recommends following the enclosed Guidelines For Handling Sonoran Desert Tortoises.

Thank you for the opportunity to review and comment on this CEC. Please contact me at (602) 789-3602 if you have any questions regarding this letter.

Sincerely,

John Kennedy
Habitat Branch Chief

JK:am

cc: Bob Broscheid, Project Evaluation Program Supervisor
Paul Trenter, Environmental Planning Group

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department

Revised January 17, 1997

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

Desert tortoises of the Sonoran population are those occurring south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position at all times and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 105 degrees Fahrenheit unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to two miles, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 105 degrees Fahrenheit, the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mohave population of desert tortoises (north and west of the Colorado River). Mohave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.

- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.

- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

RAC:NLO:rc

6

"Managing and conserving natural, cultural, and recreational resources"

Arizona State Parks

In reply, please refer to
SHPO-2002-1521 (12808)
general comments

November 15, 2002

Laurie A. Woodall, Chairperson, Power Plant & Transmission Line Siting Committee
Assistant Attorney General, Environmental Enforcement Section,
Office of the Attorney General
1275 West Washington
Phoenix, Arizona 85007

RE: Proposed North Valley 230kV Transmission Line, Maricopa County, Arizona

Dear Ms. Woodall:

Thank you for having the committee's applicant (i.e., Arizona Public Services Co.) submit a copy of their application for a certificate of environmental compatibility. The proposed state plan entails the construction of approximately 31 miles of overhead utility lines and access roads as needed between three existing substations: Westwing, Raceway, and Pinnacle Peak. I reviewed the documents submitted and offer the following comments pursuant to the State Historic Preservation Act (i.e., A.R.S. § 41-861 to 41-864) and the committee's factors to be considered (i.e., A.R.S. § 40-360.06.A.5).

At this time, a proposed route and four alternative routes are being evaluated. Based on background research, all of the proposed routes cross portions of three archaeological districts: Calderwood Butte, New River Dam, and Cave Creek Dam, although the Proposed Route and Alternative Routes 1 & 2 occur along the north edge of the New River Dam Archaeological District, Alternative 4 crosses through the district following a modern canal. Overall, the estimated archaeological site density within the route corridors is similar. One known historic-period property, the Beardsley Canal, is also present in all of the corridors.

Based on the scoping-level identification efforts conducted to date, the five proposed routes exhibit similar, relatively moderate, levels of possible impacts to historic properties (i.e., any prehistoric or historic district, site, structure, object, or Traditional Cultural Place included in, or eligible for inclusion in the State or National Registers of Historic Places).

We look forward to reviewing a cultural resource survey for the selected route, so that we can make a detailed evaluation of the plan's impacts to historic properties. We appreciate the committee's cooperation with this office in considering the effects of state plans on cultural resources situated in Arizona. If you have any questions, please contact me at (602) 542-7137.

Sincerely,

Matthew H. Bilsbarrow, RPA
Compliance Specialist/ Archaeologist
Arizona State Historic Preservation Office

Jane Dee Hull
Governor

State Parks
Board Members

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cc. Paul Trenter, Project Manager, EPG; 4350 E Camelback Rd, Ste G-200; Phoenix, AZ 85018

7

OVERSIZED MAP

-North Valley 230kV Facility Siting Project Route Tour Map

TO REVIEW SEE DOCKET SUPERVISOR

DOCKET L-00000D-02-0120-00000

NORTH VALLEY 230KV FACILITY SITING PROJECT
ITINERARY FOR PROPOSED ROUTE TOUR

November 25, 2002

The following itinerary describes the APS Proposed and Alternative 230kV transmission line routes as they originate at the Westwing Substation, proceed east to interconnect at the Raceway and proposed Avery and Misty Willow substations, and terminate at the Pinnacle Peak Substation.

Start of Tour
EMBASSY SUITES HOTEL
1515 NORTH 44TH STREET
PHOENIX, ARIZONA

The route tour will begin at the Embassy Suites Hotel at 1515 North 44th Street in Phoenix, Arizona. A pilot car will lead the route tour.

Point of Interest #1
WESTWING SUBSTATION AREA

From the Embassy Suites Hotel, go south on 44th Street to Highway 202. Go west on Highway 202 to I-10. Go west on I-10 to exit 133b at the north Loop 101. Go north on Loop 101 to exit 15 at Union Hills Road. Go west on Union Hills Road to 99th Avenue. Go north on 99th Avenue. Continue north on 99th Avenue as it turns to Lake Pleasant Road. Go north on Lake Pleasant Road to Jomax Road. Go west on Jomax Road. The Westwing Substation can be viewed to the west. The Proposed and Alternative Route alignments can be viewed following the Westwing transmission corridor on the east side of the existing structures as it leaves the Westwing Substation. Continue along Jomax Road to 107th Avenue (dirt road). Go south on 107th Avenue for approximately 1 mile to Hatfield Road. Go west on Hatfield Road through the Agua Fria River to Point of Interest #1 at the Westwing Substation. The Westwing Substation can be viewed from Point of Interest #1.

Point of Interest #2
THE BEARDSLEY CANAL AND THE WESTWING TRANSMISSION CORRIDOR

From Point of Interest #1, drive west around the south side of the Westwing Substation and north on the dirt road along the east side of a barbed wire fence. At the end of the dirt road, go east along the paved road to the Beardsley Canal. Follow the road along the Beardsley Canal to Point of Interest #2 at the Westwing transmission corridor. The Proposed and Alternative Route alignments can be viewed to the north and south along the east side of the existing structures.

Point of Interest #3
LAKE PLEASANT ROAD AND THE CAP

From Point of Interest #2 return to the Westwing Substation and go east along Hatfield Road to 107th Avenue. Go north on 107th Avenue to Jomax Road. Go east on Jomax Road to Lake Pleasant Road. Along Lake Pleasant Road, the Westwing transmission corridor is visible approximately 2.5 miles to the west. Go north on Lake Pleasant Road approximately 2.7 miles to Point of Interest #3 at Lake Pleasant Road and the CAP. Alternative Route 4 can be viewed from the Westwing transmission corridor east along the CAP to I-17.

Point of Interest #4
LAKE PLEASANT ROAD AND THE DOVE VALLEY ROAD ALIGNMENT

From Point of Interest #3, go north for approximately ¼ mile to Point of Interest #4 at Lake Pleasant Road and the Dove Valley Road alignment. The Proposed Route can be viewed from the Westwing transmission corridor along the Dove Valley Road alignment to the proposed Avery Substation.

Point of Interest #5
RACEWAY SUBSTATION

From Point of Interest #4, continue north along Lake Pleasant Road to the Old Carefree Highway. Turn west on the Old Carefree Highway towards the Turf Soaring School, Canyon Raceway, and Cowtown. Follow the Old Carefree Highway west across the Waddell Canal. The Westwing transmission corridor is visible to the west. Go right immediately after the Beardsley Canal on the APS Raceway Substation Road. Continue along this road to Point of Interest #5 at Raceway Substation. The Raceway Substation can be viewed from Point of Interest #5.

Point of Interest #6
DOVE VALLEY ROAD ALIGNMENT SOUTH OF HIGHWAY 74/CAREFREE HIGHWAY

From Point of Interest #5, go east to the APS Raceway Substation Road, over to the Old Carefree Highway. Go east along the Old Carefree Highway to Lake Pleasant Road. Go north on Lake Pleasant Road for approximately 4/10 mile to the Highway 74/Carefree Highway intersection. Go east on Highway 74/Carefree Highway across New River for approximately 2.1 miles to a cattle guard. Go south immediately after the cattle guard through a barbed wire gate. Continue south along the east side of the fence for approximately 1 mile to Point of Interest #6 at the Dove Valley Road alignment. The Proposed Route can be viewed east and west along this alignment.

Point of Interest #7
I-17 AND THE JOY RANCH ROAD ALIGNMENT

From Point of Interest #6, go north to the Highway 74/Carefree Highway. Go east on Highway 74/Carefree Highway to I-17. Go north on I-17 to exit 225 at Pioneer Road. Go west on Pioneer Road. Follow Pioneer Road as it goes west and turns north along existing 69kV self-weathering corten steel poles. Go north along Pioneer Road to Point of Interest #7, at the Joy Ranch Road alignment where Pioneer Road turns to the west along existing 69kV galvanized steel poles. Alternative Route 3 can be viewed east along the Joy Ranch Road alignment parallel to the 69kV galvanized steel poles to the self-weathering corten poles and south along the west side of I-17. The 69kV poles currently on the west side of I-17 would be removed and the circuits would be underbuilt on the 230kV structures.

Point of Interest #8
I-17 WEST FRONTAGE ROAD AND DYNAMITE BOULEVARD

From Point of Interest #7, drive south and east on Pioneer Road to I-17. Go south on I-17. The Dove Valley Road alignment is approximately 1 mile south of Highway 74/Carefree Highway. The proposed Avery Substation is approximately ½ mile west of I-17 on the Dove Valley Road alignment. Approximately 1 mile south of the Dove Valley Road alignment (where the existing 69kV line crosses I-17), the Proposed Route and alternatives would come from the west on a diagonal to I-17, where they would parallel the west side of I-17 to the CAP. Go south on I-17 to exit 218 at Happy Valley Road. From the CAP south to the Happy Valley transmission corridor, the Proposed Route and Alternative Route 3 would parallel the west side of I-17. Alternative Route 1 would cross I-17 and parallel the east side of I-17 south to the Happy Valley transmission corridor. Alternative routes 2 and 4 would cross I-17 and parallel the CAP southeast to the Happy Valley transmission corridor. Go west on Happy Valley Road across I-17. Go north on the I-17 west frontage road. The west frontage road is the turn after the I-17 north entrance ramp. The Skunk Creek Landfill can be seen to the west of the frontage road. The Proposed Route will go north along the east side of the Skunk Creek Landfill to the south side of Skunk Creek (approximately ¼ mile west of the I-17 west frontage road on the 29th Avenue alignment). South of Skunk Creek, the Proposed Route will turn northeast to the frontage road, span Skunk Creek, and continue along the I-17 west frontage road. Go north along the I-17 west frontage road to Dynamite Boulevard. Go west on Dynamite Boulevard to Point of Interest #8 under the 69kV subtransmission lines at the I-17 west frontage road and Dynamite Boulevard. The Proposed Route can be viewed to the north and south. The existing 69kV poles would be removed and the circuits would be underbuilt on the proposed 230kVstructures.

Point of Interest #9
I-17 WEST FRONTAGE ROAD AND THE BISCUIT FLAT SUBSTATION

From Point of Interest #8, go north along the I-17 west frontage road to Point of Interest #9 at the Biscuit Flat Substation. Biscuit Flat is a 69/12kV substation. No interconnection will be made to this substation. The Proposed and Alternative routes can be viewed north along the west side of

I-17 past the Biscuit Flat Substation. Alternative routes 1, 2, and 4 can be viewed across I-17 from the east at this point and north along the west side of I-17 to the proposed Avery Substation. Alternative Route 4 can be viewed west along the CAP at this location.

Point of Interest #10
I-17 EAST FRONTAGE ROAD AND USAA PARKING GARAGE

From Point of Interest #9, drive south on the I-17 west frontage road to Happy Valley Road. Go east across I-17 on Happy Valley Road to the turnabout. Go north on the I-17 east frontage road. The east frontage road is the turn with the "Dead End" sign before the I-17 on-ramp. Go north on the frontage road to a gravel road immediately south of the USAA parking garage to Point of Interest #10. The USAA development is planned for an area north of Happy Valley Road and east of I-17. Alternative 1 can be viewed from the Happy Valley transmission corridor north along the east side of I-17 and west of the USAA development.

Point of Interest #11
I-17 EAST FRONTAGE ROAD AND CAP

From Point of Interest #10, go north along the I-17 east frontage road to Point of Interest #11 at the north side of the CAP. Alternative Route 1 can be viewed south along the I-17 east frontage road and across I-17 at the CAP to the west. Alternative routes 2 and 4 can be viewed along the CAP from the east and across I-17 at this point. Alternative Route 4 can be viewed west along the CAP.

Point of Interest #12
CAP AND HAPPY VALLEY ROAD

From Point of Interest #11, follow the pilot car southeast along the north side of the CAP. Alternative routes 2 and 4 (located on the north side of the CAP fence line) can be viewed along the CAP from I-17 to the Happy Valley transmission corridor. Follow the CAP to Point of Interest #12 at the CAP and Happy Valley Road. The proposed Misty Willow Substation can be viewed south of the Happy Valley transmission corridor and west of the CAP. The Proposed and Alternative routes can be viewed on the north side of the Happy Valley transmission corridor.

Point of Interest #13
CAVE CREEK ROAD AND HAPPY VALLEY TRANSMISSION CORRIDOR

From Point of Interest #12, go east on Happy Valley Road. Follow Happy Valley Road as it curves south and turns into 7th Street. Go south on 7th Street under the Happy Valley transmission corridor to Pinnacle Peak Road. Go east on Pinnacle Peak Road and follow it as it curves to the north and east to Cave Creek Road. Go north on Cave Creek Road to Point of

Interest #13 at the Happy Valley transmission corridor. The Proposed and Alternative routes can be viewed along the north side of the corridor.

Point of Interest #14
PINNACLE PEAK SUBSTATION

From Point of Interest #13, go south on Cave Creek Road to Pinnacle Peak Road. Go east on Pinnacle Peak Road to Point of Interest #14 at the Pinnacle Peak Substation. The Pinnacle Peak Substation can be viewed from Point of Interest #14.

The Proposed and Alternative routes can be viewed from the Pinnacle Peak Substation following two 230kV lines to the northeast to the Happy Valley Road transmission corridor (approximately ¼ mile south of the Happy Valley Road alignment) then turning east. The route tour ends at the Pinnacle Peak Substation on the north side of Pinnacle Peak Road, approximately 1 mile west of Scottsdale Road.

8

NORTH VALLEY 230kV PROJECT
NOISE STUDY REPORT
November 2002

Summary of Predicted and Measured Audible Noise for Proposed NV 230 kV Line

Introduction

This document provides a more detailed write up of the expected audible noise levels for the proposed line. In addition, some measurements of audible noise along the proposed right-of-way are presented for comparison purposes. The results show that the audible noise generated by the proposed line will be well below the existing noise levels along the proposed right-of-way. The noise levels are also significantly below the levels which tend to generate complaints. Consequently, no audible noise problems due to this line are expected.

Background

Estimation and modeling of anticipated noise is based on many factors which can vary from one point in time to another. In particular, foul weather has a negative impact on audible noise and periods of rain will generally result in higher noise emissions from the transmission lines. However, the noise inherent with rain and storms has a masking effect on the noise. Even in fair weather the noise generated by a transmission line can vary. Consequently, the calculation of sound levels are generally reported in statistical terms. That is, a calculated decibel level is associated with a given percent of the time that the noise is expected to be higher or lower than the given value. The standard values generated by noise calculation software are as follows:

Fair Weather L50 - This is the calculated noise level which is not expected to be exceeded 50% of the time during fair weather.

Foul Weather L5 - This is the calculated noise level that is not expected to be exceeded 95% of the time during foul weather.

Foul Weather L50 - This is the calculated noise level that is not expected to be exceeded 50% of the time during foul weather. In general, this is the quantity that is used in the industry to quantify and compare transmission line audible noise levels.

Ldn - This is the sound energy averaged over a 24 hour period with a 10 dB nighttime weighting penalty from the hours of 10 p.m. to 7 a.m..

Other parameters are also defined and sometimes are used.

There are various calculation methods which are available to predict the noise levels associated with transmission lines. The particular program used for the Exhibit I results was the ACDC Line program which is part of the EPRI Transmission Line Workstation. This particular program has six different methods by which the audible noise is calculated and can be compared. The two major methods available are as follows:

1. HVTRC Method - This is a noise calculation method which was developed at the EPRI High Voltage Test and Research Center. The results are pessimistic compared with the other methods reported (that is, the results with this method give higher noise

levels than other methods). The results in Exhibit I are taken from the HVTRC method and therefore predict higher sound levels than other methods of calculation.

2. BPA Method - This is a method based on research done in the past by the Bonneville Power Administration. Noise levels based on this method are generally lower than by the HVTRC method. This method is used throughout the industry.

The following general guidelines come from past Exhibit I documentation or from the EPRI Red Book.

1. Normal ambient noise levels in the open desert are in the range of 43 to 52 dB(A) with a typical value of 50 dB(A). -- From past Exhibit I documentation.
2. The probability of receiving complaints from transmission line noise breaks down into the following ranges: Below 52 to 53 dB(A) - Low or no complaints, Between 52 and 58 dB(A) - Moderate or some complaints, Above 58 dB(A) - High or numerous complaints. -- From the EPRI Red Book.
3. EPA noise guidelines specify an Ldn level of 55 dB(A) for outside annoyance and 45 dB(A) for inside annoyance. These are not standards, but merely guidelines.

Table 1 shows the expected (calculated) transmission line noise levels for various sections of the proposed line siting locations. In addition, the table shows noise levels measured in the vicinity of representative locations along the route.

Table 1 – Calculated Expected Noise Levels at Edge of ROW

Distance from Center	Calculated L50 Fair (HVTRC)	Calculated L50 Foul (HVTRC)	Measured Noise (Fair)
Line Section 1 75 Feet from center	44.6 dB(A)	53.2 dB(A)	43 dB(A)
Line Section 2 50 feet from center	12.5 dB(A)	24.9 dB(A)	42.0 dB(A)
Line Section 3 50 feet from center	12.5 dB(A)	24.9 dB(A)	63.5 dB(A)
Line Section 4 75 feet from center	10.4 dB(A)	23.2 dB(A)	42 dB(A)

From Table 1 the following is seen:

1. In the section of line that parallels the existing 500 kV corridor, the audible noise due to the existing lines is essentially the same level as is expected with the new 230 kV line added. Thus, no differences in noise level are expected between the present day system and the system with the proposed 230 kV line.
2. The expected noise level in Section 2 of the line (East/West portion which runs to the proposed Avery Substation) is very low even under the adverse (foul weather) conditions. It is not expected that any noise will be audible in this section of the line. Note that existing measurements gave noise levels in the range of 42 dB(A) compared with expected worst case levels of just under 25 dB(A). The existing noise levels are due to background noise such as traffic on the interstate, wind, birds, etc...

3. The expected noise levels in Section 3 of the line (North/South portion along I-17) are the same as in Section 2 of the line. Again, these are very low levels. Currently existing sound levels are in the range of 63 – 64 dB(A) which is significantly higher than the expected transmission line noise. The high noise levels measured in this area are due to the traffic on the adjacent freeway.
4. Expected noise levels in Section 4 of the line (East/West portion east of the freeway) are slightly lower than in Sections 2 and 3 of the line. Actual measurements of existing noise along this portion of the existing 230 kV lines shows sound levels in the range of 42 dB(A).

The above points illustrate that the proposed transmission line will not generate audible noise levels that will be noticed above the existing noise in the area. It is recognized that the predicted noise levels are statistically based and the measured noise levels being compared are spot measurements and perfect correlation is not expected. However, the comparison is provided to illustrate and give a feeling for the noise levels existing and expected.

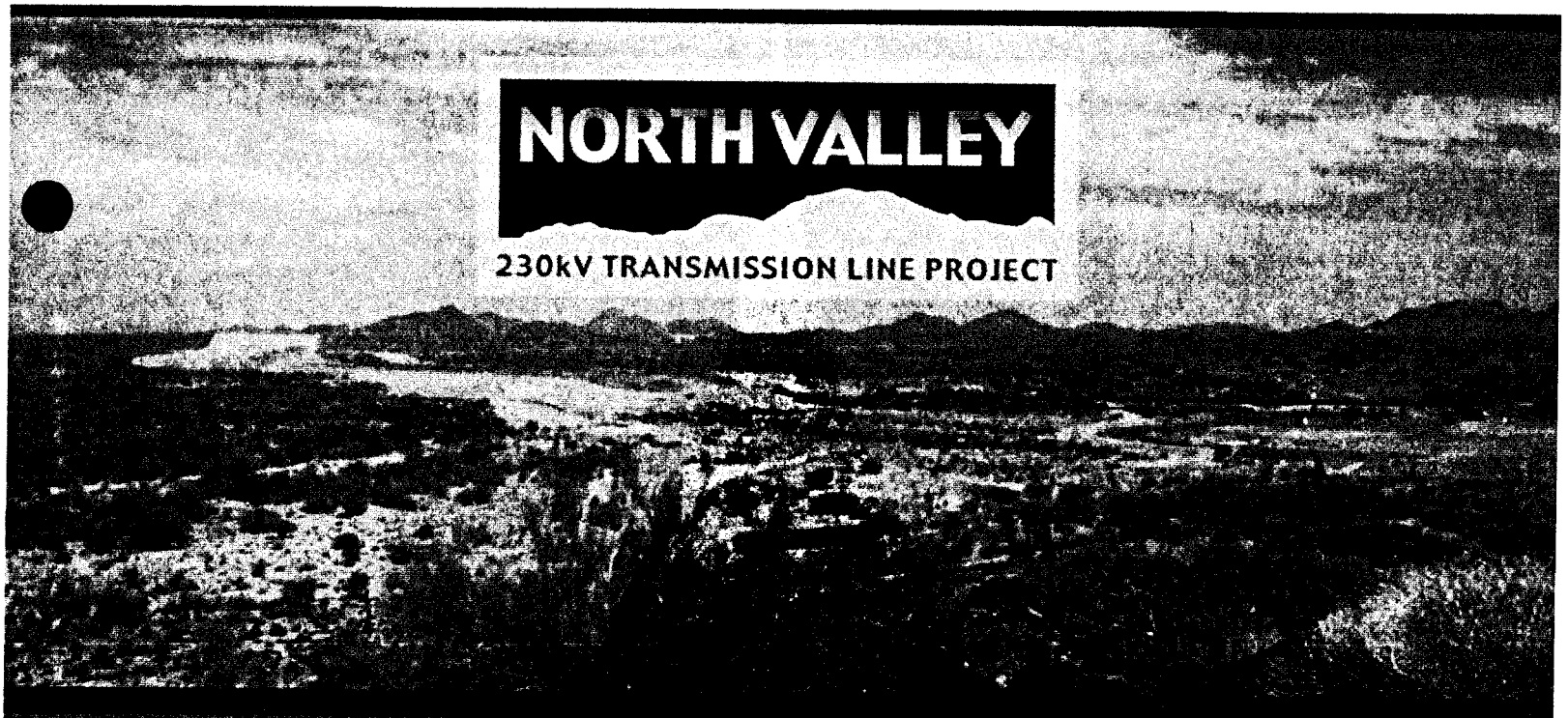
In addition to making noise measurements in the various sections of proposed line right-of-way, spot measurements of the audible noise near two existing 230 kV transmission lines similar to the one being proposed were made. Inasmuch as it is impossible to measure just the transmission line noise without the surrounding background noise, these measurements don't isolate the transmission line noise. Indeed, while making the measurements, no discernable noise was heard emanating from the transmission lines and therefore the given noise levels are primarily background noise. The measured values of noise are given as follows:

Location 1: Along the Westwing – Deer Valley 230 kV line in the area of 35th Avenue and Behrend Ave: 60 dB(A). This level was affected primarily by traffic on adjacent roads and highways as well as due to the wind. No discernable transmission line noise was audible.

Location 2: Along the canal bank between 35th Avenue and 43rd Avenue just North of Dunlap: 46 dB(A). These noise levels were affected primarily by wind, traffic on 35th Ave, and barking dogs in the neighborhood. No discernable transmission line noise was audible.

Douglas A. Selin
AZ P.E. #23279
Arizona Public Service Co.

9



A CULTURAL RESOURCE SURVEY FOR THE NORTH VALLEY 230kV TRANSMISSION LINE PROJECT

MARICOPA COUNTY, ARIZONA

PREPARED FOR

Arizona Public Service

FOR SUBMITTAL TO

Arizona Power Plant and Transmission Line Siting Committee of the
Arizona Corporation Commission
and
Arizona State Land Department

Environmental Planning Group
4350 E. Camelback Road, Suite G200
Phoenix, Arizona 85018

EPG Cultural Resource Services Technical Paper No. 2002-16

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OCTOBER 2002

A CULTURAL RESOURCE SURVEY FOR THE NORTH VALLEY 230kV TRANSMISSION LINE PROJECT MARICOPA COUNTY, ARIZONA

Prepared for

Arizona Public Service

For submittal to

Arizona Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission
and
Arizona State Land Department

Prepared by

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October 2002

TABLE OFCONTENTS

Abstract v

Introduction 1
- Project Description 1
- Project Location 1
- Scope of Survey 4

Environmental Setting 5
- Climate 5
- Native Flora and Fauna 5
- Terrain 6
- Hydrology 6

Culture History 7
- Paleoindian Period (10,000 BC to 7500 BC) 7
- Archaic Period (7500 BC to AD 500) 7
- Formative Period (AD 500 to AD 1500) 8
- Ethnohistoric and Historic Period (AD 1500 to AD 1950) 12

Methods 13
- Class I Records Review 13
- Class III Pedestrian Survey 13
- National Register Assessment 15

Survey Expectations 16

Records Review 16
- Prior Cultural Resource Surveys 38
- Previously Recorded Sites 38
- General Land Office Plat Maps 44

Isolated Occurrences 46

Newly Recorded Sites 60
- AZ T:8:166 (ASM) 61
- AZ T:8:167 (ASM) 66
- AZ T:4:374 (ASM) and AZ T:3:131 (ASM) 73
- AZ T:4:375 (ASM) 81
- AZ T:3:274 (ASM) 85
- AZ T:7:276 (ASM) 95

Table of Contents (continued)

Revisited Sites 99
AZ T:3:264 (ASM) 100
AZ T:3:2 (MNA) 103
AZ T:3:1 (MNA) 107
AZ T:7:192 (ASM) 113
AZ T:8:104 (ASU) 132
AZ U:5:73 (ASU) 133
AZ U:5:72 (ASU) 134

Material Distribution 135

Conclusions and Recommendations 136

References Cited 139

LIST OF TABLES

1 Prior Cultural Resource Surveys 17
2 Previously Recorded Sites 24
3 Tabulation of Isolated Occurrences 46
4 Newly Recorded Cultural Resources 60
5 Debitage Index: AZ T:8:167 (ASM) 69
6 Debitage Index: AZ T:4:375 (ASM) 84
7 Debitage Index: AZ T:3:274 (ASM) Locus 2 93
8 Previously Recorded Revisited Sites 100
9 Debitage Index: AZ T:3:1 (MNA) 111
10 Debitage Index: AZ T:7:192 (ASM) Eastern Locus 2 123

LIST OF FIGURES

1 General Project Location 2
2a-2i Previous Research 29-37
3a-3i Survey Results 49-57
4 Site Map AZ T:8:166 (ASM) 63
5 Maker's Marks at AZ T:8:166 (ASM) 65
6 Site Map AZ T:8:167 (ASM) 68
7a-7b Lithic Tools at AZ T:8:167 (ASM) 70-71
8 Site Map AZ T:4:374 (ASM) 74
9 Maker's Mark at AZ T:4:374 (ASM) 79
10 Site Map AZ T:4:375 (ASM) 82
11 Site Map AZ T:3:274 (ASM) 87
12 Site Map AZ T:7:276 (ASM) 96
13 Site Map AZ T:3:264 (ASM) 102
14 Site Map AZ T:3:2 (MNA) 106
15 Site Map AZ T:3:1 (MNA) 110
16 Overview Map of Site AZ T:7:192 (ASM) 114
17 Site Map AZ T:7:192 (ASM) Locus 1 116
18 Site Map AZ T:7:192 (ASM) Locus 2 121
19 Site Map AZ T:7:192 (ASM) Locus 3 130

LIST OF PHOTOGRAPHS

1 Overview of project area looking east 3
2 Overview of project area looking west 4
3 Overview of AZ T:3:55 (ASM) looking northeast 41
4 Overview of AZ T:3:55 (ASM) flume looking southwest 43
5 Flaking Station, IO 54 59
6 Overview of AZ T:8:166 (ASM) looking north 62
7 Overview of AZ T:8:167 (ASM) looking east 67
8 Overview of AZ T:4:374 (ASM) looking south 75
9 Overview of AZ T:4:374 (ASM) Feature 1 looking west 76
10 Overview of AZ T:4:374 (ASM) Feature 2 looking north 76
11 Overview of AZ T:4:131 (ASM) looking south 77
12 Overview of AZ T:4:375 (ASM) looking north 83
13 Overview of AZ T:3:274 (ASM) Locus 1 looking south 88
14 Overview of AZ T:3:274 (ASM) Locus 1 Feature 6 looking east 90
15 Overview of AZ T:3:274 (ASM) Locus 1 Feature 7 looking north 90
16 Overview of AZ T:3:274 (ASM) Locus 1 Feature 8 looking southwest 91
17 Overview of AZ T:3:274 (ASM) Locus 2 looking north 93
18 Overview of AZ T:7:276 (ASM) looking north 97
19 Overview of AZ T:7:276 (ASM) ceramics 98
20 Overview of AZ T:3:264 (ASM) looking northwest 100
21 Overview of AZ T:3:2 (MNA) looking west 104
22 Overview of AZ T:3:1 (MNA) looking west 108
23 Overview of AZ T:3:1 (MNA) Feature 1 looking north 111
24 Overview of AZ T:3:1 (MNA) Feature 2 looking south 112
25 Overview of AZ T:7:192 (ASM) Locus 1 looking north 117
26 Overview of AZ T:7:192 (ASM) Locus 2 looking south 120
27 Overview of AZ T:7:192 (ASM) Locus 2 Feature 1 looking north 125
28 Overview of AZ T:7:192 (ASM) Locus 2 Feature 2 looking east 126
29 Overview of AZ T:7:192 (ASM) Locus 2 ceramic 127
30 Overview of AZ T:7:192 (ASM) Locus 3 looking northeast 128
31 Overview of AZ T:7:192 (ASM) Locus 3 Feature 1 looking northeast 131
32 Overview of AZ U:5:73 (ASU) site location as mapped looking west 134
33 Overview of AZ U:5:72 (ASU) site location as mapped looking south 135

ABSTRACT

Project Title: North Valley 230kV Transmission Line Project

Report Title: A Cultural Resource Survey for the North Valley 230kV Transmission Line Project, Maricopa County, Arizona

Report Date: October 2002

Agencies: Arizona Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission and the Arizona State Land Department

Permit Number: Arizona State Museum (ASM) Blanket Permit No. 2002-24bl

Project Number: Environmental Planning Group (EPG) Job Number 1073

Project Description: Arizona Public Service (APS) is proposing to develop the North Valley Project, which includes double circuit 230kV transmission lines, three interconnections to existing 230kV substations, and two new 230kV substations in north-central Maricopa County. The proposed route would connect the existing Westwing and Pinnacle Peak substations and the proposed Avery and Misty Willow substations, crossing privately owned land and land owned by the Arizona State Land Department (ASLD). The project is part of long-range planning efforts to develop a 230kV system in this area that is sufficient to accommodate existing and future development in the area.

Acreage: The surveyed area consisted of 1,243 acres, 242 acres of which is privately owned and 1,001 acres of which is owned by the ASLD.

Location and Jurisdiction: The proposed route originates at the Westwing Substation and proceeds to the northeast paralleling two 500kV transmission lines and a 230kV transmission line to the Raceway Substation. The route then turns southwest to the Dove Valley alignment and proceeds east along the Dove Valley alignment to a point approximately ½ mile west of I-17, at the proposed Avery Substation. From the proposed Avery Substation, the route extends south for approximately 1 mile adjacent to 39th Avenue, then turns to the southeast towards I-17. The proposed route then parallels the west side of I-17 south of the Happy Valley corridor, where the proposed route turns to the east and parallels a 230kV transmission line, interconnects with the proposed Misty Willow Substation, and continues east terminating at the existing Pinnacle Peak Substation.

The project is within Sections 7, 8, 9, and 10, Township 4 North, Range 4 East (Curry's Corner); Sections 1, 2, 3, 4, 5, and 6, Township 4 North, Range 3 East (Union Hills); Section 2, Township 4 North, Range 2 East (Union Hills); Sections 7, 8, 9, 10, 15, 17, 22, and 23, Township 5 North, Range 2 East (Biscuit Flat); Section 26, Township 5 North, Range 2 East (New River); Section 35, Township 5 North, Range 2 East (Hedgepeth Hills); Sections 4, 8, 9, 10, 16, 17, 19, and 30, Township 5 North, Range 1 East (Baldy Mountain); Sections 10, 11, 12, 13, 14, and 15, Township 5 North, Range 1 East (Biscuit Flat); Sections 25 and 36, Township 5 North, Range 1 West (Calderwood Butte); and Sections 1 and 12, Township 4 West, Range 1 West (Calderwood Butte). The route is depicted on the Curry's Corner, Union Hills, Biscuit Flat, Baldy Mountain, and Calderwood Butte 7.5-minute U.S. Geologic Survey (USGS) topographic quadrangles.

Personnel and Dates of Fieldwork:

The detailed class I records review in support of the proposed project was conducted on February 5 through 9, 12 through 14, 23, and 27 and March 1 and 2 by Marci Adamson. Glennda Luhnow, RPA, directed the fieldwork and was assisted by field-crew members Alan Kirkland, Victoria Webdale, Karin Rebnegger, and Kim Ryan. Kris Dobschuetz served as principal investigator. Glenn Darrington served as senior reviewer. The fieldwork was conducted from June 24 through 28 and July 1 through 3, 8 through 12, and 15 through 18. A total of 64 person-days of effort were devoted to fieldwork.

Register-eligible Properties:

AZ T:3:55 (ASM)	Beardsley Canal
AZ T:4:131 (ASM)	Black Canyon Road
AZ T:7:192 (ASM)	(in Calderwood Butte Archaeological District)
AZ T:3:274 (ASM)	
AZ T:3:1 (MNA)	
AZ T:3:2 (MNA)	
AZ T:3:264 (ASM)	

Register-ineligible Properties:

AZ T:8:166 (ASM)	
AZ T:8:167 (ASM)	
AZ T:7:276 (ASM)	
AZ T:4:374 (ASM)	
AZ T:4:375 (ASM)	
AZ T:8:104 (ASU)	(destroyed)

AZ U:5:72 (ASU)
AZ U:5:73 (ASU)

Recommendations: The intensive pedestrian survey in support of the proposed APS North Valley Project identified a total of 89 isolated occurrences (IOs), 6 newly recorded cultural sites, 7 previously recorded sites, and 2 historic structures within the area of potential effect (APE). Newly recorded sites identified by survey are: AZ T:8:166 (ASM), AZ T:8:167 (ASM), AZ T:4:374 (ASM), AZ T:7:276, AZ T:4:375 (ASM), and AZ T:3:274 (ASM). Of these sites, only AZ T:3:274 (ASM) is considered to be eligible for inclusion on the National Register of Historic Places (NRHP) under Criterion D for its potential to yield information about prehistoric agricultural and land-use strategies along the Agua Fria River. It may be possible to avoid this site by spanning.

Seven sites were identified by class I records review as occurring in the APE of the proposed project. These sites are AZ T:7:192 (ASM), AZ T:3:264 (ASM), AZ T:3:1 (MNA), AZ T:3:2 (MNA), AZ T:8:104 (ASU), AZ U:5:72 (ASU), and AZ U:5:73 (ASU).

Sites AZ T:3:1 (MNA), AZ T:3:2 (MNA), AZ T:3:264 (ASM), and AZ T:7:192 (ASM), are situated either within or immediately adjacent to the APE, and had not been previously evaluated for NRHP eligibility. These sites were revisited and assessed for eligibility during field survey. All of these sites are located in the extreme western portion of the proposed project and are depicted on the Baldy Mountain and Calderwood Butte 7.5-minute USGS topographic quadrangles, and all are considered to be eligible for inclusion on the NRHP under Criterion D for their potential to yield information regarding prehistoric agricultural practices, land-use strategies, trade, and settlement patterns along the Agua Fria River. It may be possible to avoid these sites by spanning.

Site AZ T:8:104 (ASU) is situated in the APE of the proposed project. It is described as a small sherd concentration. The site had been previously evaluated as not eligible for the NRHP. This site location was revisited but the site could not be relocated. Extensive disturbance in the area for erosion control has likely resulted in the destruction of this site.

Sites AZ U:5:72 (ASU) and AZ U:5:73 (ASU) are situated immediately adjacent to the APE or the proposed project. Both sites are described as small sherd scatters. These sites were previously evaluated as not eligible for the NRHP. These site locations were revisited but the sites could not be relocated. Extensive disturbance of both locations in conjunction with

the construction of the existing transmission corridor has likely resulted in the destruction of both of these sites.

The proposed transmission line crosses three areas of archaeological interest: (1) the Calderwood Butte Archaeological District, (2) New River Archaeological District, and (3) Cave Creek Archaeological District. These areas represent zones of high archaeological potential that can be found in many localities across the northern margins of the Phoenix Basin. The New River Archaeological District and the Cave Creek Archaeological District are determined eligible for listing on the NRHP. The Calderwood Butte Archaeological District is on the Arizona Sate Inventory. Transmission corridors are already in place in the viewshed of these districts. The proposed transmission corridor would follow these existing corridors throughout the majority of the project area. Any additional impacts will be reduced because of the proximity to existing structures.

In addition, two historic structures were identified by class I records review and pedestrian survey. These properties are AZ T:4:131 (ASM), the Black Canyon Road, and AZ T:3:55 (ASM), the Beardsley Canal. Both of these are recommended as eligible for inclusion on the NRHP as they occur in the proposed project area. Black Canyon Road has the potential to provide information on early transportation within Maricopa County, whereas the Beardsley Canal has the potential to provide information on early agriculture and development in the West Valley. Based on the size of these sites, however, through careful planning it should be possible to avoid these sites by spanning them.

Due to the large size of site AZ T:7:192 (ASM) and the archaeological sensitivity, it is our recommendation that the three loci identified in the APE be spanned and that an archaeologist be present to monitor construction activities within the site boundaries.

If, however, avoidance of those sites that are recommended as eligible for inclusion on the NRHP is not possible, a mitigation plan should be developed in conjunction with the ASLD and Arizona State Historic Preservation Office (SHPO) and implemented prior to project construction.

If human remains or funerary objects are discovered during construction of the proposed project on state or private lands, all work in the area should cease and the finding reported to the director of the Arizona State Museum in accordance with Arizona Revised Statutes §41-844 and §41-865.

A CULTURAL RESOURCE SURVEY FOR THE NORTH VALLEY 230kV LINE TRANSMISSION PROJECT MARICOPA COUNTY, ARIZONA

INTRODUCTION

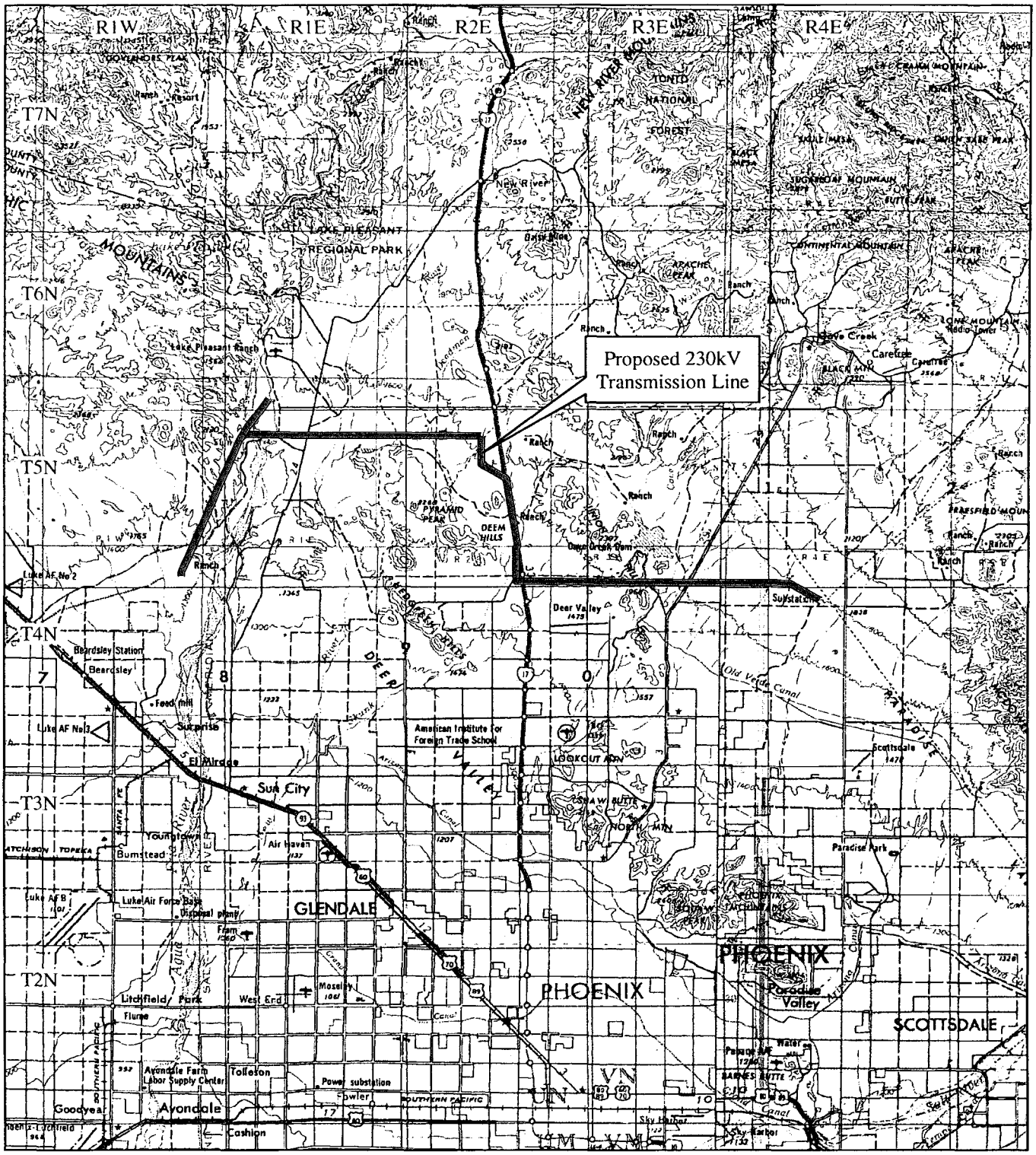
APS retained EPG to conduct a cultural resources survey of the proposed route for the North Valley 230kV Transmission Line Project (Figure 1). These studies are intended to assist the ASLD and the Arizona Corporation Commission in compliance with the Arizona State Historic Preservation Act.

Project Description

APS is proposing to develop the North Valley Project, which includes double circuit 230kV transmission lines, three interconnections to existing 230kV substations, and two new 230kV substations in north-central Maricopa County. The proposed route would connect the existing Westwing and Pinnacle Peak substations and the proposed Avery and Misty Willow substations, crossing privately owned land and land owned by the ASLD. The project is part of long-range planning efforts to develop a 230kV system in this area that is sufficient to accommodate existing and future development in the area.

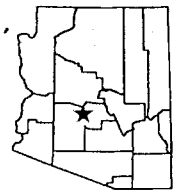
Project Location

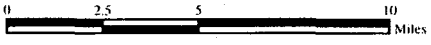
The proposed route originates at the Westwing Substation and proceeds to the northeast paralleling two 500kV transmission lines and a 230kV transmission line to the Raceway Substation. The route then turns southwest to the Dove Valley alignment and proceeds east along the Dove Valley alignment to a point approximately ½ mile west of I-17, at the proposed Avery Substation. From the proposed Avery Substation, the route extends south for approximately 1 mile adjacent to 39th Avenue, then turns to the southeast towards I-17. The proposed route then parallels the west side of I-17 south of the Happy Valley corridor, where the proposed route turns to the east and parallels a 230kV transmission line, interconnects with the proposed Misty Willow Substation, and continues east terminating at the existing Pinnacle Peak Substation.



★ Project Location

Proposed 230kV Transmission Line





m:/projects/aps/ncp/cec/mxds/figure1.mxd August 27, 2002

General Project Location

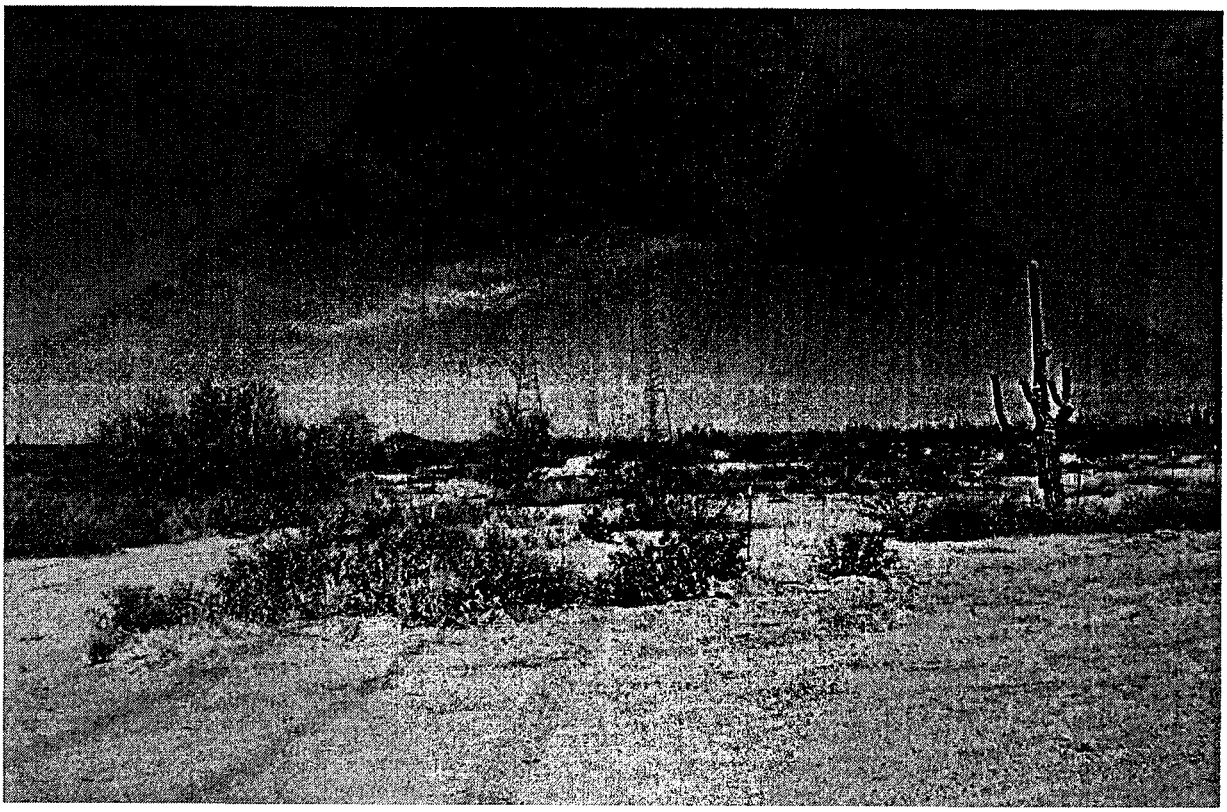
Figure 1

Sources:

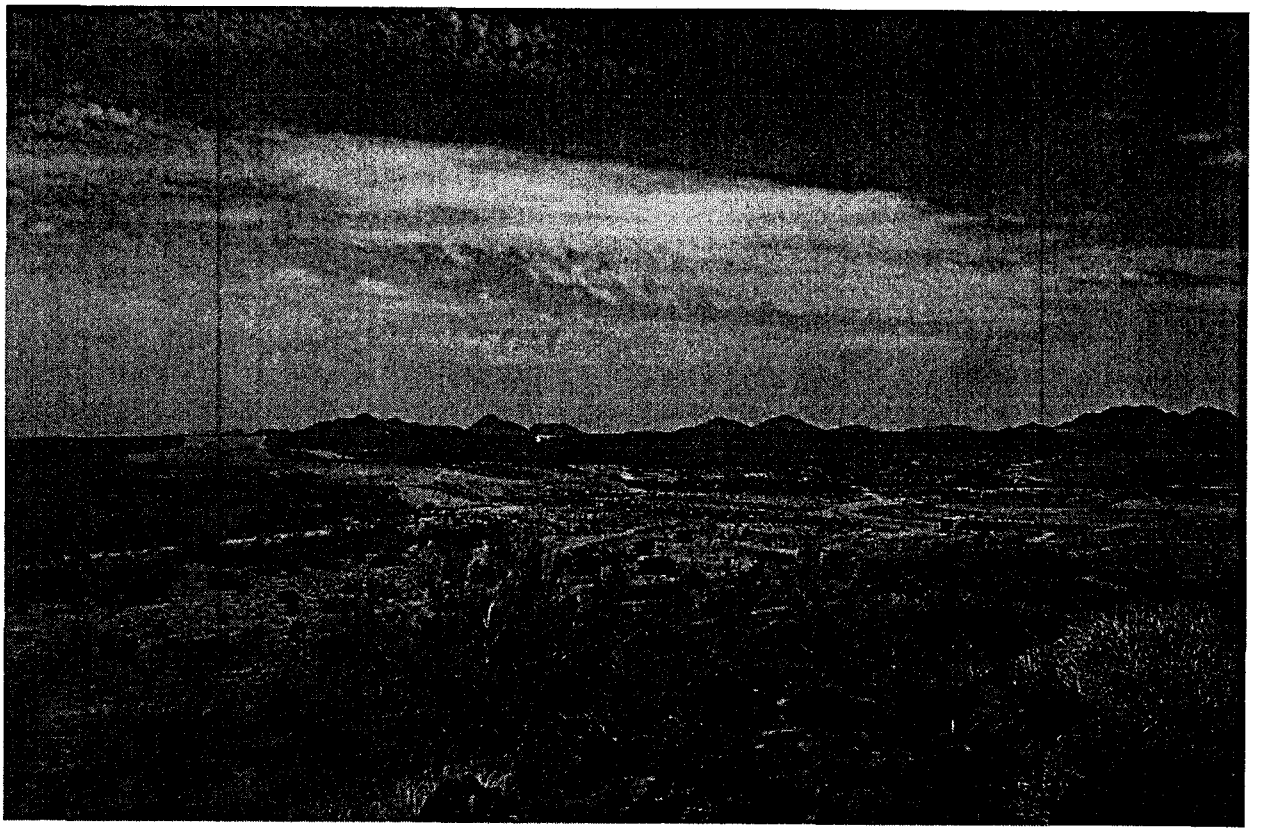
United States Geological Survey (USGS), Phoenix, AZ (1969), Mesa, AZ (1978), 1:250,000-scale topographic maps.

The project is within Sections 7, 8, 9, and 10, Township 4 North, Range 4 East (Curry's Corner); Sections 1, 2, 3, 4, 5, and 6, Township 4 North, Range 3 East (Union Hills); Section 2, Township 4 North, Range 2 East (Union Hills); Sections 7, 8, 9, 10, 15, 17, 22, and 23, Township 5 North, Range 2 East (Biscuit Flat); Section 26, Township 5 North, Range 2 East (New River); Section 35, Township 5 North, Range 2 East (Hedgepeth Hills); Sections 4, 8, 9, 10, 16, 17, 19, and 30, Township 5 North, Range 1 East (Baldy Mountain); Sections 10, 11, 12, 13, 14, and 15, Township 5 North, Range 1 East (Biscuit Flat); Sections 25 and 36, Township 5 North, Range 1 West (Calderwood Butte); and Sections 1 and 12, Township 4 West, Range 1 West (Calderwood Butte). The route is depicted on the Curry's Corner, Union Hills, Biscuit Flat, Baldy Mountain, and Calderwood Butte 7.5-minute U.S. Geologic Survey (USGS) topographic quadrangles.

Photographs 1 and 2 show an overview of the project location.



Photograph 1
Overview of project area looking east.



Photograph 2
Overview of project area looking west.

Scope of Survey

Approximately 31 linear miles encompassing approximately 1,243 acres were surveyed in support of the North Valley Project. Listed below are the surveyed areas:

- 100-foot corridor between the existing transmission line and existing pipeline corridor and a 250-foot corridor north of the existing pipeline corridor between Pinnacle Peak Substation and I-17, a distance of 10 linear miles

- 250-foot corridor adjacent to existing Arizona Department of Transportation (ADOT) right-of-way on the west side of I-17

- 500-foot corridor between I-17 and Central Arizona Project (CAP) Reach 9, a distance of 11 linear miles

- 250-foot corridor on the east side of the existing transmission corridor between the Raceway and Westwing substations, a distance of 7 linear miles

A crew of four conducted the class III intensive pedestrian survey on June 24 through 28, and July 1 through 3, 8 through 12, and 15 through 18. A total of 68 person-days of effort were devoted to fieldwork. Glennda Luhnow served as field director for the project and was assisted by crew members Karin Rebnegger, Victoria Webdale, and Alan Kirkland. Kris Dobschuetz served as principal investigator for the study. Glenn Darrington served as senior reviewer.

ENVIRONMENTAL SETTING

Although environmental factors do not necessarily determine the course of human events, they do create a stage on which societies play out their histories. Environment affects the actions and interactions of all human groups. Thus, it is important to characterize the local environment as a background for the summary of local cultural history.

The North Valley Project is located in the northern margin of the Phoenix Basin (see Figure 1). The project area is bounded by the Hieroglyphic Mountains to the west, New River Mountains to the north, Deem and Hedgpeth hills to the south, and McDowell Mountains to the east. This area is located within the Basin and Range physiographic province of interior western North America (Chronic 1983). This province is characterized by north-south tending mountain ranges separated by deep, wide valleys.

Climate

The project area is contained within the Sonoran Desert environmental region. Local climate is hot and very dry. The mean winter temperature recorded at the local Deer Valley Weather Station is 11 degrees Celsius (52 degrees Fahrenheit), and the mean summer temperature recorded is 31 degrees Celsius (88 degrees Fahrenheit). Average mean precipitation recorded at the Deer Valley Weather Station for both winter and summer is 70 millimeters.

Native Flora and Fauna

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region. This region is commonly associated with desertscrub species of flora, the modern distribution of which occurred 8,000 to 9,000 years before present during drought conditions associated with the early Holocene transition (Brown 1994). The project area is located in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

As a result of high temperatures and low precipitation, the Lower Colorado River Valley is considered to be the largest and driest subdivision of the greater Sonoran Desert. In open landscapes, the local vegetation community is dominated by desert saltbush (*Atriplex* spp.), creosotebush (*Larrea tridentata)*, saguaro (*Carnegiea gigantea*), diamond cholla (*Opuntia ramossima),* teddy bear cholla (*Opuntia bigelovii*), chainfruit cholla (*Opuntia fulgida),* brittlebush (*Encelia farinosa),* and white bursage (*Ambrosia dumosa).*

Along washes, small trees such as ironwood (*Olneya tesota*), mesquite (*Prosopis* spp.), cat-claw acacia (*Acacia greggii*), and paloverde *(Cercidium* spp.) are found. Animals associated with this subdivision include mule deer (*Odocoileus hemionus crooki*), coyote (*Canis latrans)*, black-tailed jackrabbit (*Lepus californicus)*, desert cottontail (*Sylvilagus audoboni*), and a variety of small rodents, lizards, and snakes.

Terrain

Three types of desert terrain characterize the project area: bajada flats, alluvial plains, and mountains.

Of these, bajada flats are the most commonly encountered type of desert terrain in the project area. The term "bajada" refers to the alluvial apron at the base of elevated landforms. Bajadas occur between level alluvial plains and the base of mountains. Soils associated with bajadas are most generally coarse, gravelly, and well-percolated. Often the transition between the alluvial plain and bajada is delineated only by soil type and vegetation (Olin 1994). Cholla and other cacti are commonly associated with this environmental region.

The alluvial plain is the second most commonly encountered type of desert terrain in the study area. The alluvial plain is characteristically flat with little to no relief and is crosscut by ephemeral washes and rivers. Soils are generally fine-grained and range from silty to sandy. Creosotebush is commonly associated with this environmental region (Olin 1994).

Desert mountains are encountered only in a small portion of the western study area, where the transmission corridor crosses the eastern foothills of the Hieroglyphic Range. In the Sonoran Desert, this type of terrain is typically block-faulted or volcanic in origin (Olin 1994). They are generally low-lying and surrounded by the alluvial fill of the bajada zone. Desert mountains are generally poorly hydrated and exhibit rugged relief due to runoff.

Hydrology

The hydrology of the study area is extensive. The Agua Fria River, a major tributary of the Gila River, is a north-south tending drainage that flows through the western portion of the study area. The Agua Fria likely contained water year-round prehistorically and historically. The New River, a tributary of the Agua Fria, is a northeast-southwest tending drainage that flows through the

central portion of the study area. The New River may have flowed year-round prehistorically and historically. Skunk Creek, an intermittent tributary of the New River, flows through the south-central portion of the study area and likely was a good water source after storms. Cave Creek, an intermittent tributary of the Salt River, is a major seasonal water source located in the eastern portion of the study area.

CULTURE HISTORY

The culture history of central Arizona has been divided into four primary eras that very broadly equate with changing human adaptations. These include the Paleoindian (10,000 BC to 7500 BC), Archaic (7500 BC to AD 500), Formative (AD 500 to AD 1500), and Ethnohistoric (AD 1500 to AD 1950). Detailed discussions of these cultural traditions may be found in several regional studies that have been conducted (e.g., Crown and Judge 1991; Hackbarth 1998b; Reid and Whittlesey 1997; Rogge and Darrington 2000). The following sections present a brief overview of these periods as they are currently understood.

Paleoindian Period (10,000 BC to 7500 BC)

The earliest occupation in the region is known as the Paleoindian Period. Groups hunted large game animals, collected native plant food, and were highly mobile. The populations during this time remained fairly small and dispersed. Physical remains of two Paleoindian cultural traditions, the Clovis and the San Dieguito, dating from 10,000 BC to 7500 BC, have been located in southern Arizona.

The Clovis groups, concentrated near the eastern Arizona to Mexico border, are represented by kill sites at which fluted projectile points of the Clovis and Llano hunting complexes are found in association with bones of now extinct bison and mammoth (Reid and Doyel 1986). The San Dieguito culture ranged primarily in the southern California deserts and Lower Colorado River Basin.

Local evidence for this period is scarce and limited to isolated spear points including a Clovis point identified at site AZ T:4:107 (ASM). This site is located 3 miles north of the study area on Biscuit Flat (Crownover 1994).

Archaic Period (7500 BC to AD 500)

The transition from the Paleoindian Period to the Archaic Period is marked by the extinction of the large Pleistocene mammals. While this is not the only factor influencing the shift from large-scale hunting to small-scale hunting and plant processing, most scholars believe that this was at least one factor in the subsistence shift that characterizes the subsequent Archaic Period.

During the Archaic Period, people began to focus on hunting smaller animals and collecting a wider variety of plant resources. Archaic groups also adapted their social organization to a changing social environment by aggregating into larger social groups. Sites such as camp clearings, zoomorphic intaglios, trails, and shrines are often associated with the Archaic Period. Artifact assemblages during this time demonstrate a wider variety of chipped stone artifacts, and an increasing dependence on ground stone artifacts.

The end of the Archaic Period is associated with early agriculture, the beginning of settled village life and pottery production. The adoption of new technologies such as pottery production and farming is a slow process. Experimenting with new technologies was an ongoing process. For example, the increase in ground stone artifacts suggests an increased reliance toward plant processing activities and possibly toward the beginning of domestication. Pieces of a rare plain brown ware were identified on Late Archaic sites within Arizona, demonstrating experimentation with early ceramic containers.

Formative Period (AD 500 to AD 1500)

Subsistence strategies changed during this period to reflect an increasing reliance on farming. The prehistoric population was expanding and settlement systems were adapting to cope with this increase. Villages became more permanent and ceramics were produced more regularly. Within the Phoenix Basin, the cultural remains of this period have been named the Hohokam.

The Hohokam has been the subject of intensive study in the Gila-Salt Basin (Crown and Judge 1991; Gumerman 1991; Noble 1991). There are five major periods in the Hohokam chronological sequence, which in turn are divided into a number of phases based on variations in architectural forms, mortuary practices, decorated ceramic types, and other styles of artifacts. These periods include the Pioneer (AD 500 to AD 775), Colonial (AD 775 to AD 975), Sedentary (AD 975 to AD 1150), Classic (AD 1150 to AD 1350), and Post-Classic (AD 1350 to AD 1500) (Crown and Judge 1991).

There has been considerable debate over the origins of the Hohokam. The main dispute involves whether the Hohokam developed out of an indigenous Archaic population or whether the Hohokam represent immigrants from Mexico. Initially, Haury (1950) purported the indigenous model of Hohokam origins, but after excavating Snaketown a second time changed his opinion to the immigrant model based upon the presence of a fully developed irrigation system (Haury 1976). Several others argue for an indigenous development of non-Hohokam populations. Gladwin (1948) believes the Pioneer Period Hohokam was a local manifestation of the Mogollon culture; Schroeder (1947) named the local adaptation the Hakataya; and Di Peso (1956) stated that the nonagricultural predecessor was the O'otam. These researchers believe that the Hohokam entered the Southwest from Mexico sometime between AD 750 to AD 900 (Crown and Judge 1991). Ciolek-Torrello (1998) has identified a site in the Tucson Basin that provides evidence of a site that bridges the gap between the preceramic culture and the earliest phases of the cultures known as the Hohokam and Mogollon. While the issue has not entirely been

resolved, information from sites like the Houghton Road site (Ciolek-Torrello 1998) provides interesting avenues of research into the concept of Hohokam origins.

Pioneer Period (AD 500 to AD 775)

It is during this period that the characteristics we associate with the Hohokam were established. Five phases are associated with the Pioneer Period: Red Mountain, Vahki, Estrella, Sweetwater, and Snaketown.

In the Phoenix Basin the earliest phase of the Pioneer Period is known as the Red Mountain Phase. During this phase Hohokam populations constructed small square houses, shallow basin metates, corner-notched projectile points, clay figurines, sand-tempered plain brown pottery, and flexed inhumations (Doyel 1988). Following the Red Mountain Phase is the Vahki Phase. During this phase, houses consisted of large waddle and daub structures over 50 square meters surrounded by a central plaza (Wilcox et al. 1981). Ceramics during the Vahki Phase were plain brown wares and polished red wares. Other artifacts identified at Vahki Phase sites include human figurines and chipped and ground stone artifacts. Cremations in pits or trenches (Haury 1976) and flexed and semi-flexed inhumations (Doyel 1988) occur.

Structures in the Estrella, Sweetwater, and Snaketown phases continue to be placed around a central plaza area, with either square, rectangular, or ellipsoidal houses with single side entries generally centered along the long wall (Crown and Judge 1991). The Estrella Phase saw the earliest known decorated ceramics, Estrella red-on-gray, characterized by a thick red line on a gray background with incised grooves. The ceramics were initially constructed by a mixture of different methods including both the coil and scrape method of their neighbors to the north and east and the paddle and anvil technique. Sweetwater pottery continues with a red-on-gray broad lined decoration. By the Snaketown Phase, Hohokam potters mastered the art of firing and were able to produce a distinctive red-on-buff ceramic manufactured through the paddle and anvil technique. Snaketown pottery was red-on-buff with hatched designs and light incising. Other artifacts identified during the last few phases of the Pioneer Period include shell, turquoise, and macaws. Cremations become the primary means of disposing of the dead. New material traits emerged during the final phase of the Pioneer Period—trash mounds capped with adobe and large-scale irrigation systems (Reid and Whittlesey 1997).

Colonial Period (AD 775 to AD 975)

The Colonial Period was a time of cultural florescence for the Hohokam. It is during this time that the Hohokam expanded across Arizona, inhabiting new areas and trading widely with their neighbors. This exploration period is not limited to the Hohokam, but was experienced throughout the greater Southwest at this time. The Colonial Period consists of two phases—Gila Butte and Santa Cruz.

During this period Hohokam villages become more patterned and appear to reflect household and supra-household organization (Reid and Whittlesey 1997). Habitation structures consisted of rectangular pit houses that were organized in house clusters (Wilcox et al. 1981) or courtyard groups (Howard 1985). House clusters were two to four structures with entries focusing on a common area. Often these courtyard groups were associated with a cremation area (Gregory 1984; Sires 1984), trash disposal areas, and communal cooking facilities such as hornos (Reid and Whittlesey 1997). Several courtyard groups made up a village. Two features of village organization also began during this period—ball court and platform mound. These structures were often associated with large villages. Ball courts tended to vary in size, but were large earthen structures of an elongated oval form with low-rounded walls, entries on each end, and stone markers at the end and center. It is believed the Hohokam might have borrowed the idea of ball courts from Mesoamerican peoples to the south that had a similar game. Platform mounds consisted of capped trash mounds (Gregory 1982). While the specific activities associated with the ball courts and platform mounds are not known (Wilcox and Sternberg 1983), they probably served as an integrative mechanism for community cohesion.

Artifacts, in addition to site organization, also became more elaborate during this period. Artifacts were skillfully carved out of stone and shell. Bowls were carved in the shape of frogs, toads, and snakes. Animal effigies such as birds, frogs, and snakes were carved out of shell and often covered with turquoise. Craft specialization existed at the household and village level (Reid and Whittlesey 1997). Stone palettes also become more elaborate during this period (Haury 1976). Ceramics during the Gila Butte Phase include scored exteriors on a buff background with curvilinear scrolls, small design elements, and life forms in red paint. During the Santa Cruz Phase, ceramics exhibit extreme detail in line work containing small repeated elements forming spiral or circular bands of decoration. Animal and human figures appear on these ceramics. Exotic forms of ceramic vessels appear during this phase, including human and animal effigy vessels, thick walled censors, rectangular bowls, and tripod plates (Reid and Whittlesey 1997).

Mortuary ritual changes slightly during this period as well. Deceased individuals are cremated and then interred within small pits (Haury 1976). In addition, deceased individuals are buried at the crematory, which is associated with individual courtyard groups (Reid and Whittlesey 1997).

Sedentary Period (AD 975 to AD 1150)

The Hohokam continued to grow and expand during the Sedentary Period. However, by the end of this period significant numbers of sites are abandoned. Settlement began to concentrate along major drainages. There is one phase within this period, the Sacaton.

Settlements during the Sedentary Period consisted of large, permanently occupied villages located along major watercourses. In addition to these large villages, seasonally occupied structures such as hamlets and farmsteads were also inhabited at a variety of environmental locations (Reid and Whittlesey 1997). Houses constructed during this period tended to be ellipsoidal with a mean size of approximately 24.6 square meters (Wilcox et al. 1981). Platform

mounds became even more formalized, consisting of large, artificial, flat-topped mounds that served as stage-like areas for performing ceremonies (Reid and Whittlesey 1997). In addition to the formalization of platform mounds, more ball courts continued to be constructed. According to Wilcox and Sternberg (1983), it was during the Sedentary Period that most of the ball courts were built and used.

Artifacts during this period become more refined. New technologies for working with shell jewelry were invented, along with more elaborate mosaic mirrors (Reid and Whittlesey 1997). Copper bells were traded from Mexico. New types of ceramics (red ware and polychrome) were introduced. The ceramic technology of this period includes an increase in the amount of ceramics produced.

Burial practices of interring cremated bones into pottery vessels become more common, as do inhumations (Crown 1991). According to Haury (1976), at Snaketown the inhumations identified during the Sedentary Period are oriented with their heads to the east.

Classic Period (AD 1150 to AD 1350)

This period in Hohokam culture departs radically from the conventions of preceding generations. Changes in architecture, settlement patterns, interaction spheres, community structures, material culture, and burial practices appear during this period. Although these changes do occur, the old styles continue to persist. The period contains two phases—Soho and Civano.

Previous settlements in outlying areas such as Gila Bend, the Lower Verde River, Flagstaff, and San Pedro River were abandoned at the end of the Sedentary Period (Doyel 1980; Wilcox and Sternberg 1983). Population rises in the Gila-Salt Basin at this time, probably with immigrants from outlying areas migrating back to the Gila-Salt Basin. Several new forms of house structures appear during the Classic Period. These styles include houses with post-reinforced caliche walls, built-in pits, and freestanding walls of cobbles with adobe (Crown 1991). During the Civano Phase, rectangular, aboveground, coursed caliche structures appeared alongside pre-existing jacal and post-reinforced structures. Contiguous-walled pueblos of coursed adobe also appear during this period, mostly associated with sites containing ceremonial architecture within compound walls (Crown 1991). New ball courts were still being constructed during the Soho Phase, but it is unclear whether they were also constructed during the Civano Phase. Similarly, platform mounds continued to be constructed during the Soho Phase, but were only remodeled during the Civano Phase. Within the Classic Period, sites with platform mounds are spaced at regular intervals of 5 kilometers along the river (Gregory and Nials 1985).

The artifact assemblage during the Classic Period is much less diverse. Figurines, palettes, and elaborate projectile points cease to be made and there is a decline in the manufacture of red-on-buff ceramics. Polychrome vessels become the dominant ceramic type, along with an increase in red ware ceramics.

Burial patterns begin to shift to more inhumations, with an increased number of cremations being buried in vessels (Haury 1976). The inhumations tended to occur in the eastern portion of the Classic Period compounds, with heads oriented toward to the east (Sires 1983).

Post-Classic Period (AD 1350 to AD 1500)

Most of the sites within the Gila-Salt Basin were largely abandoned by the end of the Classic Period. The Post-Classic Period has only been defined on scant data from a few sites (Crown and Sires 1984; Sires 1983). There is only one phase within the Post-Classic Period, the Polvoron.

Architecture associated with this phase was primarily rectangular jacal pit houses focused around a courtyard cluster. Sometimes Polvoron Phase structures may appear on top of existing platform mounds (Crown and Judge 1991). Polychrome ceramics continue to be the most prevalent ceramic type in the artifact assemblage, with smaller amounts of red-on-buff and red ware. Obsidian and clay figurines are also present at these types of sites (Crown and Judge 1991).

The burials during this period include both inhumations and cremations, with seated inhumations first appearing at this time (Crown and Judge 1991). Cremations tend to be associated with the crematorium, while inhumations are associated with the habitation areas (Sires 1984).

Ethnohistoric and Historic Period (AD 1500 to AD 1950)

Spanish explorers traveled southern Arizona during the sixteenth through eighteenth centuries. In 1539, Father Marcos de Niza, looking for the fabled Seven Cities of Cibola, explored Arizona and claimed it for Spain. The Jesuit missionary Father Eusebio Kino visited Arizona in 1692, and established Tumacac Mission north of Nogales and San Xavier del Bac in Tucson. In 1776, a presidio was built in Tucson.

Arizona was governed by Mexico between 1821 and 1848, at which time a portion of the future state became part of the United States at the end of the Mexican War. The Gadsen Purchase of 1853 brought the rest of Arizona into the United States.

Early Arizona settlement during the Anglo period was centered on mining and agriculture. Copper was discovered in Arizona in 1854, and gold was discovered on the Gila River in 1858. Congress created the Territory of Arizona in 1863, and the mining town of Prescott was selected as the territorial capital.

Anglo settlers first arrived in the Salt River Valley in numbers in the mid-1860s. The majority of these early settlers were Mormons, who named the present-day site of Phoenix "Pumpkinville."

The early settlement of the future Phoenix townsite was likely in 1868. The first post office was established in Phoenix in 1869. The early settlers of the Salt River Valley originally met and

decided upon the name of Phoenix for the new townsite in 1870. The name "Phoenix" was suggested by settler Darrell Duppa, who upon noting the evidence of earlier Hohokam settlement in the area claimed that "A new city would spring Phoenix-like upon the ruins of a former civilization" (Barnes 1988). Phoenix became the capital of the Arizona Territory in 1880.

METHODS

Class I Records Review

The class I survey involved a review of records maintained by the following institutions:

- Arizona State Museum (ASM)
- Arizona State Historic Preservation Office (SHPO)
- National Register of Historic Places (NRHP)
- Arizona State Register of Historic Places
- Anthropology Department at Arizona State University
- Bureau of Land Management Public Records Office
- Azsite (http://azsite.asu.edu/azsiteweb/)

The purpose of the review was to identify any prior research or previously recorded sites located within a 1-mile radius of the project area. The detailed class I records review in support of the proposed project was conducted on February 5 through 9, 12 through 14, 23, and 27, and March 1 and 2 by Marci Adamson.

Class III Pedestrian Survey

Archaeologists Glennda Luhnow, Karin Rebnegger, Victoria Webdale, Alan Kirkland and Kim Ryan conducted the intensive class III pedestrian survey of the area identified as the APE of the proposed project on June 24 through 28, and July 1 through 3, 8 through 12, and 15 through 18. The survey corridor was walked using 20-meter pedestrian transactions to ensure complete survey coverage. A total of 68 person-days of effort were devoted to fieldwork. Glennda Luhnow served as field director for the class III survey and Kris Dobschuetz served as principal investigator for the study. Glenn Darrington served as senior reviewer.

The field crew identified the survey areas using the Curry's Corner, Union Hills, Biscuit Flat, Baldy Mountain, and Calderwood Butte 7.5 minute USGS topographic quadrangles, as well as employing a Trimble global positioning system (GPS) unit. The field crew surveyed the proposed pipeline relocation corridor with pedestrian transects spaced 15 meters (50 feet) apart. The GPS unit also was used to map the boundaries of the survey area and the location of IOs, sites, and topographic features. This instrument has an accuracy of 1 meter to 5 meters with differential correction.

The survey area consisted mostly flat terrain in desert environment. Vegetation consisted of creosotebush, saguaro, cholla, brittlebush, and bursage. Ground visibility was approximately 95 percent for the majority of the project area. Ground visibility dropped to approximately 85 percent in the areas immediately surrounding wash channels associated with thick mesquite, cat-claw acacia, and ironwood stands.

Site identification and boundaries were defined according to the ASM Guidelines. ASM Site Recording Manual (version 1.1) specifies that a site is the physical remains of past human activity that is at least 50 years old.

ASM letters dated October 1, 1994 and August 21, 1995 further specifies what may constitute a site. These additional situations include the following:

- 30 or more artifacts of a single class within an area 15 meters (50 feet) in diameter, except when all pieces appear to originate from a single source
- 20 or more artifacts, including at least two classes of artifact types within an area of 15 meters (50 feet) in diameter
- one or more archaeological features in temporal association with any number of artifacts
- two or more temporally associated archaeological features without any artifacts

ASM recognizes that there may be situations that warrant designation as an archaeological site, and gives archaeologists authority to use their professional judgments in making appropriate field determinations. One such circumstance includes a non-linear, isolated feature devoid of artifacts. ASM defined an "isolated feature" as a feature that does not have any additional features within a 100-meter (325-foot) diameter. Examples of non-linear features include isolated rock piles, mine shafts, prospecting pits, and or unidentified depressions. In these types of situations, ASM allows archaeologists to make decisions concerning the determination of these features as sites.

When cultural material was identified in the field, the crew examined the surrounding area to determine whether any additional artifacts were present. From the presence or absence of additional cultural materials, members of the field crew determined whether the artifact was part of a site or an IOs. The site integrity and subsurface potential of each site was evaluated as accurately as possible based solely upon surface observation. No artifact collections were made and no subsurface testing was conducted during the survey.

All cultural material was recorded according to type and material and its location plotted with the GPS. Within each artifact class, further designations were used to describe each artifact. These designations were used to draw inferences concerning the activities that may have occurred at each location.

Chipped stone material was identified according to the stages of lithic manufacturing and was labeled as primary, secondary, or tertiary flakes. We broadly define each of the flakes types as follows:

- primary flakes have an exterior side of all cortex and are the result of initial core reduction
- secondary flakes have a thin edge of cortex and represent the middle process of tool manufacturing
- tertiary flakes are typically very thin and do not have cortex; often known as bifacial thinning flakes, these flakes represent the last stage in tool manufacturing

Cores were identified as either unifacially or bifacially flaked and were recorded as unidirectional, multidirectional, or bifacial. Unidirectional or multidirectional core designations describe the location of the striking platform.

Ceramics are important temporal and cultural indicators. At a minimum, all ceramics identified in the field are recorded according to ware (plain ware, red ware, etc.). If a design element is present and is sufficient to allow a confident identification, the ceramic will be recorded to specific type.

Artifact density at archaeological sites was determined on the basis of artifact distribution across the total area of the site. Artifact distribution of 0.1 artifact/square meter or greater was determined to be high density, artifact distribution of 0.09 to 0.01 artifact/square meter was determined to be moderate density, while artifact distribution of 0.01 artifact or less/square meter was determined to be low density.

National Register Assessment

Sites were evaluated in the field as to their eligibility for listing on the NRHP. The eligibility of a property for listing on the NRHP may be based on national, state, or local significance. Properties eligible for listing on the NRHP must demonstrate importance in American history, architecture, archaeology, engineering, or culture. A property is considered significant in these categories if it meets one or more of the following criteria from the NRHP regulations.

> *National Register criteria for evaluation. The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:*
>
> *(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or*

(b) *that are associated with the lives of persons significant in our past; or*
(c) *that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
(d) *that have yielded, or may be likely to yield, information important in prehistory or history.* [36 CFR § 60.4]

In addition to demonstrating significance in one or more of the categories listed above, a property must also demonstrate integrity. The historic property must be a "preservable entity" that demonstrates the qualities that make it significant. Integrity is most often judged on location, setting, design, materials, workmanship, feeling, and association.

The eligibility of prehistoric sites for listing on the NRHP is most often considered under Criterion D. Under Criterion D, the potential of the site to contain intact deposits of cultural materials relevant to the study of specific aspects of prehistoric lifeways and cultural practices is assessed. Those archaeological sites that are limited to a surface manifestation of cultural materials, and where our recording has essentially exhausted the information potential of the surface artifact assemblage, and where there is no potential for a subsurface deposit to exist, are considered to be not eligible for listing on the NRHP. For this reason, sites that are limited to surface materials based on their association with bedrock exposures or desert pavement are not considered to be eligible for listing on the NRHP.

SURVEY EXPECTATIONS

Review of site distribution in the study area as established by previously conducted cultural resource studies indicates that site density increases in the primary bajada flats at the base of elevated landforms, along permanent or well-developed intermittent waterways, and atop isolated promontories or ridgelines. Site density appears to diminish on valley floors with increased distance from elevated landforms.

Based on these patterns as observed in the existing local database, sensitivity for cultural resources is anticipated to be high along the Agua Fria, New River, and Cave Creek drainages and on the primary bajada flats at the base of the Hedgepeth/Deem Hills and Hieroglyphic Mountains. Site density is anticipated to be low along the steep side slopes of the Hieroglyphic Mountains and on the valley floor east of the I-17 freeway.

RECORDS REVIEW

Our class I research identified 103 prior studies (Table 1) and 155 previously recorded sites (Table 2). Figures 2a to 2i show the previously recorded sites and surveys within the 1-mile class I study area.

TABLE 1 PRIOR CULTURAL RESOURCE SURVEYS						
	Survey Name	**Survey Number**	**Quad**	**Scope**	**Sites in Project Area**	**Reference**
1	Burat Mountains and Agua Fria Tunnels	1978-67.ASM	Baldy Mountain	180 acres	AZ T:3:19 (ASU)	Simonis 1978
2	Materials Pit #7764	1979-110.ASM	Baldy Mountain	information not available	None	Gregory and Hammack 1979
3	New Waddell Dam and Reservior CAP	1983-183.ASM	Baldy Mountain	31 acres	None	Lincoln and Rogge 1983
4	Agua Fria Borrow Area and Waddell Canal	1985-151.ASM	Baldy Mountain	2,075 acres	AZ T:3:6(ASM) AZ T:3:9-32 (ASM)	Green et al. 1985
5	Hieroglyphic Survey	1988-243.ASM	Baldy Mountain	8,385 acres	None	Greenwald and Keller 1989
6	Construction Area Survey Agua Fria Siphon Repair	1991-59.ASM	Baldy Mountain	30 acres	None	Czaplicki 1991
7	Agua Fria Recharge Project	1999-67.ASM	Baldy Mountain	350 acres	AZ T:7:183(ASM)	Stubing 1999
8	Calderwood Peoria 120 Acres Project	2000-151.ASM	Baldy Mountain	106 acres	AZ T:3:155-157, 159-161, & 163(ASM)	Shepard 2000
9	Agua Fria Drill Site Survey	2001-133.ASM	Baldy Mountain	1 acre	AZ T:3:145(ASM)	Lundin 2001
10	Granite-Reef Aqueduct	1972-5.ASM	Baldy Mountain, Biscuit Flat	2,585 acres; 278 miles of 600-foot right-of-way	AZ T:8:9(ASM)	Kemrer 1972
11	Reach 9, Granite Reef	1979-122.ASM	Baldy Mountain, Biscuit Flat	65 acres	None	Stone 1979
12	APS Lake Pleasant	1980-78.ASM	Baldy Mountain, Biscuit Flat	5.89 acres	AZ T:3:6(ASM)	Madsen 1980
13	Maricopa Water District Baldy Mtn./Adobe Dam Sites Inventory	1982-73.ASM	Baldy Mountain, Biscuit Flat	6 acres	None	Madsen 1982a
14	Hayden Rhodes Aqueduct Siphons	1991-26.ASM	Baldy Mountain, Biscuit Flat	100.7 acres	None	Lincoln 1991
15	UPCO-Universal Propulsion Survey	2000-500.ASM	Baldy Mountain, Biscuit Flat	741 acres	AZ T:3:164-5 and 169-5, 177-178 (ASM)	Stubing and Wenker 2000

TABLE 1 PRIOR CULTURAL RESOURCE SURVEYS						
	Survey Name	**Survey Number**	**Quad**	**Scope**	**Sites in Project Area**	**Reference**
16	Agua Fria 230kV Line Test Trench	1986-39.ASM	Baldy Mountain, Calderwood Butte	17.5 acres	None	Effland and Green 1986; Green 1986
17	Agua Fria Recharge Project	1991-263.ASM	Baldy Mountain, Calderwood Butte	25.5 acres	AZ T:7:64-67 (ASM)	Rhodes et al. 1991
18	Westwing Raceway 69/12kV Powerline	2001-064.ACS	Baldy Mountain, Calderwood Butte	57 acres	AZ T:3:263-4 (ASM) AZ T:7:192(ASM) AZ T:7:251(ASM) AZ T:3:55(ASM)	Gage 2002
19	State Land Survey Tanner Company	1981-82.ASM	Biscuit Flat	680 acres	AZ T:4:11(ASM)	Lange 1981
20	State Land Survey	1984-38.ASM	Biscuit Flat	4 acres	None	Lange 1984
21	ARS - State Route 74 Survey	1993-128.ASM	Biscuit Flat	5.75 mi corridor	None	Stone 1993
22	EPNG Meter Station Survey	1993-71.ASM	Biscuit Flat	2.3 acres	None	Troncone 1993
23	Desert Hills Off Site Water Supply System	1996-463.ASM	Biscuit Flat	377 acres	None	Greenwald 1996
24	UMS-Rural ITS, Phase 4	1999-324.ASM	Biscuit Flat	115.8 acres	None	Hathaway 1999
25	Arizona State Land Department Geological Test Pits for Mineral Content	2000-98.ASM	Biscuit Flat	0.91 acres	None	Ross 2000
26	Granite Reef/Salt-Gila Aquaduct	1972-5.ASM	Biscuit Flat, Hedgepeth Hills, Union Hills	2,585 acres	None	Grady and Hall 1972
27	APS I-17 69kV Realignment	1998-158.ASM	Biscuit Flat, Hedgepeth Hills, Union Hills	14 acres	None	Adams 1998
28	I-17 Corridor Water and Wastewater Project	1999-28.ASM	Biscuit Flat, New River SE, Union Hills	102 acres	None	Crownover 1999
29	Eastwing Substation	1983-122.ASM	Calderwood Butte	140 acres	None	Weaver and Keller 1983
30	Unknown	1986-128.ASM	Calderwood Butte	216 acres	None	ASM Files

TABLE 1 PRIOR CULTURAL RESOURCE SURVEYS						
	Survey Name	**Survey Number**	**Quad**	**Scope**	**Sites in Project Area**	**Reference**
31	Mead to Phoenix 500kV Transmission Project	1994-458.ASM	Calderwood Butte	97 acres	AZ T:7:128(ASM)	Seymour and Purcell 1995
32	Mead to Phoenix Project Access Roads	1994-459.ASM	Calderwood Butte	1,994.37 (238.5 miles of 50-foot right-of-way)	None	Purcell et al. 1994
33	Estrella Interim Parkway	1997-271.ASM	Calderwood Butte	985 acres	AZ T:7:143-145 (ASM) AZ T:7:147-162	Adams 1997
34	El Mirage Road Loop 303 Corridor	1999-191.ASM	Baldy Mountain, Calderwood Butte	220 acres	None	Garcia et al. 1999
35	Lakeland Village Development	Unknown	Baldy Mountain, Calderwood Butte	3,144 acres	AZ T:7:187-8, 190-3, and AZ T:3:153(ASM)	Slawson 1999
36	Unknown	1982-013.ASM	Curry's Corner	Unknown	None	ASM Files
37	North Scottsdale Reconnaissance	1987-243.ASM	Curry's Corner	24.25 sq. mi.	None	Recon 1987b
38	New River Borrow Area - Eastern Addition	1988-19.ASM	Curry's Corner	26.5 acres	None	Green and Rankin 1988
39	Pinnacle Peak Substation Extension	1988-39.ASM	Curry's Corner	247 acres	None	Hoffman 1988a
40	Desert Ridge Project	1988-73.ASM	Curry's Corner	5,575.42 acres	None	NE Phoenix Partners 1988
41	Pinnacle Peak Substation Expansion and Temporary Transmission Line Bypasses	1988-74.ASM	Curry's Corner	4 acres	None	Killam 1988
42	APS Pinnacle Peak to Lone Mountain 69kV Distribution Line	1989-23.ASM	Curry's Corner	126.26 acres	None	Rankin 1989

TABLE 1 PRIOR CULTURAL RESOURCE SURVEYS						
	Survey Name	**Survey Number**	**Quad**	**Scope**	**Sites in Project Area**	**Reference**
43	Landmark Land/Scottsdale Road	1993-110.ASM	Curry's Corner	2,230.29 acres	None	Woodall 1993
44	Pinnacle Peak and Tatum Roads Powerline	1994-14.ASM	Curry's Corner	12 acres	None	Hayton 1994
45	Survey of Land Along Pinnacle Peak Road West of Curry Corner	1994-303.ASM	Curry's Corner	40 acres	None	Foster 1994
46	Desert Ridge Master Planned Community	1997-466.ASM	Curry's Corner	9,513 acres	AZ U:5:218 (ASM)	Ruble 1997
47	APS: Scottsdale Road and Happy Valley Roads	1999-10.ASM	Curry's Corner	6.35 acres	None	Moreno 1999a
48	Pinnacle Peak/Rawhide 69kV/12kV Rebuild	1999-130.ASM	Curry's Corner	2,067 acres	None	Moreno 1999b
49	Pinnacle Peak-Jomax Line Survey	1999-26.ASM	Curry's Corner	8 acres	None	DeMaagd 1999a
50	Happy Valley Reservior Additional Survey Project	2000-200.ASM	Curry's Corner	39.3 acres	AZ U:5:255(ASM)	Wright 2000a, 2000b
51	Pinnacle Peak-Lone Peak-Paradise 230kV Transmission Line	1984-223.ASM	Curry's Corner, Union Hills	16 miles of 20- to 40-foot right-of-way	None	Effland 1984
52	Unknown	1984-75.ASM	Curry's Corner, Union Hills	7.8 acres	None	ASM Files
53	Tatum and Jomax Road Survey	1992-229.ASM	Curry's Corner, Union Hills	400 acres	None	Wright 1992
54	Tatum Ridge Development	1993-100.ASM	Curry's Corner, Union Hills	10.3 acres	None	Gunn 1993
55	Survey Near Cave Creek and Pinnacle Peak Roads	1998-81.ASM	Curry's Corner, Union Hills	59.2 acres	None	Stone 1998
56	El Paso Natural Gas North Phoenix	85-3.ASU	Curry's Corner, Hedgepeth Hills, Union Hills	Unknown	None	Hackbarth 1985

TABLE 1 PRIOR CULTURAL RESOURCE SURVEYS						
	Survey Name	**Survey Number**	**Quad**	**Scope**	**Sites in Project Area**	**Reference**
57	Archaeological Sites Along Reach 10 Realignment, Granite Reef Aqueduct	1976-41.ASM	Hedgepeth Hills	7 acres	None	Brown 1976
58	Homesite Clearance	1985-31.ASM	Hedgepeth Hills	10 acres	None	Rozen 1985
59	Station Hills Development Project	1987-65.ASM	Hedgepeth Hills	2,200 acres	None	Recon 1987a
60	35th Avenue and Pinnacle Peak Road	1998-165.ASM	Hedgepeth Hills	160 acres	None	Hackbarth 1998a
61	APS Hedgepeth/Biscuit Flats 69/12kV Powerline	1999-384.ASM	Hedgepeth Hills	8 acres	None	Jackman 1999
62	35th Avenue and Happy Valley Road Project	1999-511.ASM	Hedgepeth Hills	6.2 acres	None	Punzmann 2000
63	35th Avenue and Pinnacle Vista Drive Development Project	2000-74.ASM	Hedgepeth Hills	160 acres	None	Marshall 2000
64	North Phoenix Adobe USAA 69/12kV Line	2000-479.ASM	Hedgepeth Hills	7.43 acres	None	ACS 2000
65	Pinnacle Peak Road 12kV Installation	1988-43.ASM	Hedgepeth Hills, Union Hills	12 acres	Unknown	Hoffman 1988b
66	6 Geotechnical Transects Inventory Project	1999-260.ASM	New River SE	3,883.8 acres	None	Rodgers 1999
67	North Gateway Water Reclamation Plant	1998-456.ASM	New River SE, Union Hills	185 acres	None	Crary 1998
68	Southwest Communities Water Pipeline Addendum	1999-254.ASM	New River SE, Union Hills	102 acres	None	Aguila 1999
69	Phoenix Vicinity Flood Control Project	1970-3.ASM	Union Hills	300 acres	AZ T:8:4,5,& 9 (ASM)	Vivian 1970
70	Cave Buttes Dam Alternative Site	1974-4.ASU	Union Hills	261 acres	AZ T:4:53(ASU)	Dittert 1974

TABLE 1 PRIOR CULTURAL RESOURCE SURVEYS						
	Survey Name	**Survey Number**	**Quad**	**Scope**	**Sites in Project Area**	**Reference**
71	State Land Survey # 03-77761	1980-62.ASM	Union Hills	12.5 acres	None	Lange 1980
72	Permanent Headquarters	1982-218.ASM	Union Hills	129 acres	None	Lincoln and Rogge 1982
73	Tanner Land Company Inc. Union Hills	1982-63.ASM	Union Hills	8 acres	None	Madsen 1982b
74	Atkinson Survey Cave Creek	1983-13.ASM	Union Hills	5 acres	None	Madsen 1983a
75	State Land Survey - AZ Department of Corrections	1983-26.ASM	Union Hills	11 acres	None	Lange 1983
76	Knochel Sand and Gravel	1983-35.ASM	Union Hills	20 acres	None	Madsen 1983b
77	State Land Survey Universal Propulsion	1984-105.ASM	Union Hills	227.82 acres	None	Murphy 1984
78	I-17 Pinnacle Peak Access Survey	1984-114.ASM	Union Hills	Unknown	None	Johnson 1984
79	Urban Land Pinnacle Peak and 7th	1984-148.ASM	Union Hills	240 acres	None	Madsen 1984b
80	North Mountain Stables	1984-175.ASM	Union Hills	176 acres	None	Madsen 1984a
81	Callahan Ltd.	1986-147.ASM	Union Hills	4.05 acres	None	Madsen 1986b
82	State Land Survey for Adobe Mountain Correction School	1986-26.ASM	Union Hills	60 acres	None	Rozen 1986
83	Coombs Claim	1986-45.ASM	Union Hills	7 acres	None	Madsen 1986a
84	Adobe Mountain #1	1986-69.ASM	Union Hills	Unknown	None	Madsen 1986c
85	Unknown Project Title	1987-163.ASM	Union Hills	0.33 acres	None	Macnider 1987
86	Pinnacle Peak Property	1988-10.ASM	Union Hills	5.32 acres	None	Bayman 1988
87	Metro Mobile - Adobe Mountain Microwave Station	1989-52.ASM	Union Hills	1 acre	None	Effland 1989
88	Cave Creek/Pinnacle Peak Road	1990-120.ASM	Union Hills	37.4 acres	None	Hoffman 1990

TABLE 1 PRIOR CULTURAL RESOURCE SURVEYS						
	Survey Name	**Survey Number**	**Quad**	**Scope**	**Sites in Project Area**	**Reference**
89	State Land Clearance Near Adobe Mountain	1995-125.ASM	Union Hills	158 acres	None	Boloyan 1995
90	Grosvenor Archaeology	1995-69.ASM	Union Hills	32 acres	None	Larkin 1995
91	Little Deer Valley	1996-124.ASM	Union Hills	814.4 acres	AZ T:8:74-7 (ASM)	Punzmann 1996
92	Mountaingate North 1	1996-30.ASM	Union Hills	68.7 acres	AZ T:8:72 (ASM)	Tweedy and Lite 1996
93	City of Phoenix, Cave Creek Road Facilities	1997-177.ASM	Union Hills	56.4 acres	AZ T:8:82(ASM)	Hackbarth 1997
94	Holy Redeemer Catholic Cemetery	1997-458.ASM	Union Hills	5.54 acres	None	Larkin and Giacobbe 1997
95	Adobe Mountain	1997-487.ASM	Union Hills	1 acre	Unknown	Northland Research Inc. 1997
96	Eagle Bluff Development Survey	1998-415.ASM	Union Hills	1.24 acres	None	Shepard 1998
97	Mixed Use Property Project	1998-455.ASM	Union Hills	7.4 acres	None	Walsh 1998
98	Happy Valley Road I-17 Roundabout	1999-385.ASM	Union Hills	100 acres	None	DeMaagd 1999b
99	Cave Creek/Pinnacle Peak Road	1999-454.ASM	Union Hills	43.8 acres	None	Stephen 1999
100	Cave Buttes Excess Property (CBEP) Inventory	2000-175.ASM	Union Hills	281 acres	AZ T:8:105(ASM)	Rodgers 2000
101	56th Street and Deer Valley Road	2000-259.ASM	Union Hills	20 acres	None	Kober 2000
102		2000-813	Union Hills	2,420 acres	AZ T:8:76 (ASU) AZ T:8:77 (ASU)	Courtright 2001
103		1984-223	Curry's Corner	--	None	Effland 1984

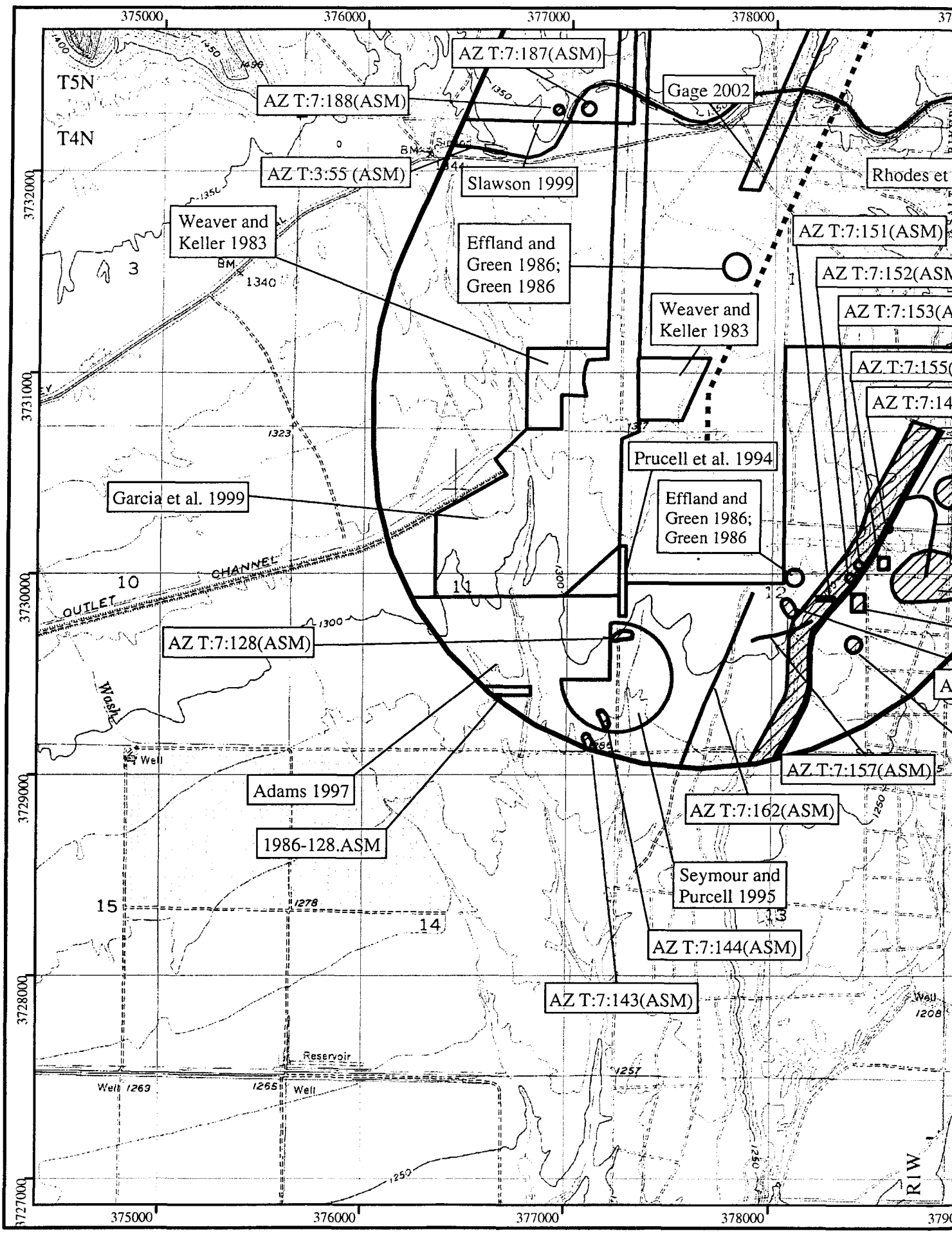
TABLE 2 PREVIOUSLY RECORDED SITES					
	Site Name and Number	**Quad**	**Description**	**NRHP Status**	**Reference**
1	AZ T:3:1(MNA)	Baldy Mountain	Sherd scatter	Unevaluated	MNA Site Card
2	AZ T:3:2(ASU)	Baldy Mountain	Roasting pit with artifact scatter	Unevaluated	ASU Site Card 1964
3	AZ T:3:2(MNA)	Baldy Mountain	Artifact scatter	Unevaluated	MNA Site Card
4	AZ T:3:4(ASU)	Baldy Mountain	5-room Pueblo with artifact scatter	Unevaluated	ASU Site Card
5	AZ T:3:5(ASU)	Baldy Mountain	Artifact scatter	Unevaluated	ASU Site Card 1965
6	AZ T:3:6(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Madsen 1980; Green et al. 1985
7	AZ T:3:6(ASU)	Baldy Mountain	Mound/trash midden	Unevaluated	ASU Site Card 1965
8	AZ T:3:7(ASU)	Baldy Mountain	Trash midden/mound	Unevaluated	ASU Site Card 1965
9	AZ T:3:9(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
10	AZ T:3:9(ASU)	Baldy Mountain	Large trash area with sherd scatter	Unevaluated	ASU Site Card 1965
11	AZ T:3:10(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
12	AZ T:3:11(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
13	AZ T:3:12 (ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
14	AZ T:3:13(ASM)	Baldy Mountain	Rock alignment and artifact scatter	Unevaluated	Green et al. 1985
15	AZ T:3:14(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
16	AZ T:3:15(ASM)	Baldy Mountain	Rock clusters with artifact scatter	Unevaluated	Green et al. 1985
17	AZ T:3:16(ASM)	Baldy Mountain	Cobble structure with artifact scatter	Unevaluated	Green et al. 1985
18	AZ T:3:17(ASM)	Baldy Mountain	Room block and artifact scatter	Unevaluated	Green et al. 1985
19	AZ T:3:18(ASM) AZ T:3:8(ASU)	Baldy Mountain	Hohokam Hamlet: Masonry structure with artifact scatter	Unevaluated	Green et al. 1985
20	AZ T:3:19(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
21	AZ T:3:19(ASU)	Baldy Mountain	Extensive lithic scatter	Eligible	Simonis 1978
22	AZ T:3:20(ASM)	Baldy Mountain	Rock alignment	Unevaluated	Green et al. 1985
23	AZ T:3:21(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
24	AZ T:3:22(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
25	AZ T:3:23(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
26	AZ T:3:24(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
27	AZ T:3:25(ASM)	Baldy Mountain	Structure and artifact scatter	Unevaluated	Green et al. 1985
28	AZ T:3:26(ASM)	Baldy Mountain	Two check dams	Unevaluated	Green et al. 1985
29	AZ T:3:27(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
30	AZ T:3:28(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
31	AZ T:3:29(ASM)	Baldy Mountain	Artifact scatter with rock ring and pebble structure	Unevaluated	Green et al. 1985
32	AZ T:3:30(ASM)	Baldy Mountain	Rock alignments	Unevaluated	Green et al. 1985
33	AZ T:3:31(ASM)	Baldy Mountain	Historic scatter	Unevaluated	Green et al. 1985
34	AZ T:3:32(ASM)	Baldy Mountain	Artifact scatter	Unevaluated	Green et al. 1985
35	AZ T:3:55(ASM)* AZ T:3:4(ARS) Beardsley Canal	Baldy Mountain	1926 irrigation canal	Unevaluated	Garcia et al. 1999; Gage 2002

TABLE 2 PREVIOUSLY RECORDED SITES					
	Site Name and Number	**Quad**	**Description**	**NRHP Status**	**Reference**
36	AZ T:3:145(ASM)	Baldy Mountain	Artifact scatter	Not eligible	Lundin 2001
37	AZ T:3:153(ASM)	Baldy Mountain	Historic trash dump	Not eligible	Slawson 1999
38	AZ T:3:155(ASM)	Baldy Mountain	Hohokam artifact scatter	Eligible	Shepard 2000
39	AZ T:3:156(ASM)	Baldy Mountain	Artifact scatter	Potentially eligible	Shepard 2000
40	AZ T:3:157(ASM)	Baldy Mountain	Hohokam pithouse settlement	Eligible	Shepard 2000
41	AZ T:3:159(ASM)	Baldy Mountain	Field house w/artifact scatter	Eligible	Shepard 2000
42	AZ T:3:160(ASM)	Baldy Mountain	Hohokam artifact scatter	Eligible	Shepard 2000
43	AZ T:3:161(ASM)	Baldy Mountain	Hohokam pithouse settlement	Eligible	Shepard 2000
44	AZ T:3:163(ASM)	Baldy Mountain	Prehistoric artifact scatter	Eligible	Shepard 2000
45	AZ T:3:164(ASM)	Baldy Mountain	Room block with artifact scatter	Eligible	Stubing and Wenker 2000
46	AZ T:3:165(ASM)	Baldy Mountain	Agricultural system and field house with artifact scatter	Eligible	Stubing and Wenker 2000
47	AZ T:3:169(ASM)	Baldy Mountain	Artifact scatter	Eligible	Stubing and Wenker 2000
48	AZ T:3:170(ASM)	Baldy Mountain	Artifact scatter	Eligible	Stubing and Wenker 2000
49	AZ T:3:171(ASM)	Baldy Mountain	Artifact scatter	Eligible	Stubing and Wenker 2000
50	AZ T:3:172(ASM)	Baldy Mountain	Water control feature with artifact scatter	Eligible	Stubing and Wenker 2000
51	AZ T:3:173(ASM)	Baldy Mountain	Historic trash scatter	Not eligible	Stubing and Wenker 2000
52	AZ T:3:174(ASM)	Baldy Mountain	Rock features with artifact scatter	Eligible	Stubing and Wenker 2000
53	AZ T:3:175(ASM)	Baldy Mountain	Artifact scatter	Eligible	Stubing and Wenker 2000
54	AZ T:3:177 (ASM)	Baldy Mountain	Artifact scatter with petroglyphs	Not eligible	Stubing and Wenker 2000
55	AZ T:3:178(ASM)	Baldy Mountain	Artifact scatter	Not eligible	Stubing and Wenker 2000
56	AZ T:3:263(ASM)	Baldy Mountain	Artifact scatter with features	Unknown	Gage 2002
57	AZ T:3:264 (ASM)*	Baldy Mountain	Prehistoric artifact and Historic trash scatter	Unknown	Gage 2002
58	AZ T:4:11 (ASM)	Biscuit Flat	Artifact scatter	Unevaluated	Lange 1981
59	AZ T:4:11 (ASU)	Biscuit Flat	Artifact scatter	Unevaluated	ASU Site Card 1982
60	AZ T:4:16(ASM) AZ T:4:10(ASU)	Biscuit Flat	Hohokam/Archaic habitation site	Unevaluated	Site Card
61	AZ T:4:16 (ASU)	Biscuit Flat	Artifact scatter	Not eligible	ASU 1963 Site Card
62	AZ T:4:31(ASU)	Biscuit Flat	Artifact scatter	Not eligible	ASU Site Card 1973
63	AZ T:4:44(ASU)	Biscuit Flat	Artifact scatter	Not eligible	ASU 1974 Site Card
64	AZ T:4:45(ASU)	Biscuit Flat	Artifact scatter	Not eligible	ASU 1974 Site Card
65	AZ T:4:46(ASU)	Biscuit Flat	Agricultural system with artifact scatter	Not eligible	ASU 1974 Site Card
66	AZ T:4:53(ASU)	Biscuit Flat	Extensive lithic scatter	Determined eligible	Dittert 1974

TABLE 2 PREVIOUSLY RECORDED SITES					
	Site Name and Number	**Quad**	**Description**	**NRHP Status**	**Reference**
67	New River Dam Archaeological District 64 SHPO (2879-I)	Biscuit Flat, Calderwood Butte, Baldy Mountain, Hedgepeth Hills	9,000-acre area containing 43 archaeological sites	Determined eligible	SHPO Files
68	AZ T:7:2(ASM) AZ T:7:5(ASU) Casa Piedra	Calderwood Butte	Casa de las Piedras Village	Eligible	Turney 1929
69	AZ T:7:6(ASM)	Calderwood Butte	Artifact scatter	Potentially eligible	Adams 1997
70	AZ T:7:9(ASU)	Calderwood Butte	Stone structure with artifact scatter	Unevaluated	ASU Site Card 1965
71	AZ T:7:10(ASU)	Calderwood Butte	Artifact scatter	Unevaluated	ASU Site Card 1964
72	AZ T:7:11(ASU)	Calderwood Butte	Artifact scatter	Unevaluated	ASU Site Card 1965
73	AZ T:7:12(ASU)	Calderwood Butte	Rock alignments with artifact scatter	Unevaluated	ASU Site Card 1965
74	AZ T:7:13(ASU)	Calderwood Butte	Rock alignments with artifact scatter	Unevaluated	ASU Site Card 1965
75	AZ T:7:14(ASU)	Calderwood Butte	Structures with artifact scatter	Unevaluated	ASU Site Card 1965
76	AZ T:7:16(ASU)	Calderwood Butte	Masonry rooms with artifact scatter	Unevaluated	ASU Site Card 1965
77	AZ T:7:17(ASU)	Calderwood Butte	Middens with artifact scatters	Unevaluated	ASU Site Card 1965
78	AZ T:7:19(ASU)	Calderwood Butte	Circular stone structure with artifact scatter	Unevaluated	ASU Site Card 1965
79	AZ T:7:20(ASU)	Calderwood Butte	Masonry rooms with artifact scatter	Unevaluated	ASU Site Card 1965
80	AZ T:7:21(ASU)	Calderwood Butte	Circular stone structure with ceramic scatter	Unevaluated	ASU Site Card 1965
81	AZ T:7:22(ASU)	Calderwood Butte	Structure with artifact scatter	Unevaluated	ASU Site Card 1965
82	AZ T:7:27(ASU) Westwing Site	Calderwood Butte	Roasting pit with artifact scatter	Not eligible	ASU Site Card 1973
83	AZ T:7:28(ASU)	Calderwood Butte	Hohokam agricultural water control features	Unevaluated	ASU Site Card
84	AZ T:7:33(ASM)	Calderwood Butte	Artifact scatter	Unevaluated	ASM Site Card 1987
85	AZ T:7:34(ASM)	Calderwood Butte	Artifact scatter with petroglyph	Unevaluated	ASM Site Card 1987
86	AZ T:7:35(ASM)	Calderwood Butte	Masonry rock wall	Unevaluated	ASM Site Card 1987
87	AZ T:7:36(ASM)	Calderwood Butte	Artifact scatter	Unevaluated	ASM Site Card 1987
88	AZ T:7:37(ASM)	Calderwood Butte	Masonry field house with artifact scatter	Unevaluated	ASM Site Card 1987
89	AZ T:7:38(ASM)	Calderwood Butte	Sherd concentrations with rock features	Unevaluated	ASM Site Card 1987
90	AZ T:7:39(ASM)	Calderwood Butte	Room block	Unevaluated	ASM Site Card 1987
91	AZ T:7:40(ASM)	Calderwood Butte	Room block with artifactscatter	Unevaluated	ASM Site Card 1987
92	AZ T:7:41(ASM)	Calderwood Butte	Artifact scatter	Unevaluated	ASM Site Card 1987
93	AZ T:7:42(ASM)	Calderwood Butte	Possible room block with artifact scatter	Unevaluated	ASM Site Card 1987
94	AZ T:7:43(ASM)	Calderwood Butte	Check dam with artifact scatter	Unevaluated	ASM Site Card 1987

TABLE 2 PREVIOUSLY RECORDED SITES					
,	Site Name and Number	Quad	Description	NRHP Status	Reference
95	AZ T:7:45 (ASM) AZ T:7:18(ASU)	Calderwood Butte	Ceramic scatter	Unevaluated	ASU Site Card
96	AZ T:7:64(ASM)	Calderwood Butte	Artifact scatter	Eligible	Rhodes et al. 1991
97	AZ T:7:65(ASM)	Calderwood Butte	Artifact scatter	Eligible	Rhodes et al. 1991
98	AZ T:7:66(ASM)	Calderwood Butte	Pithouses with artifacts	Eligible	Rhodes et al. 1991
99	AZ T:7:67(ASM)	Calderwood Butte	Check dam with artifacts	Unevaluated	Rhodes et al. 1991
100	AZ T:7:128(ASM)	Calderwood Butte	Rock pile and small scatter of artifacts	Not eligible	Seymour and Purcell 1995
101	AZ T:7:143(ASM)	Calderwood Butte	Artifact scatter	Unevaluated	Adams 1997
102	AZ T:7:144(ASM)	Calderwood Butte	Artifact scatter	Unevaluated	Adams 1997
103	AZ T:7:145(ASM)	Calderwood Butte	Artifact Scatter	Not eligible	Adams 1997
104	AZ T:7:147(ASM)	Calderwood Butte	Lithic procurement and reduction locus	Eligible	Adams 1997
105	AZ T:7:148(ASM)	Calderwood Butte	Roasting pit with associated artifact	Eligible	Adams 1997
106	AZ T:7:149(ASM)	Calderwood Butte	Artifact scatter	Unevaluated	Adams 1997
107	AZ T:7:150(ASM)	Calderwood Butte	Artifact scatter	Unevaluated	Adams 1997
108	AZ T:7:151(ASM)	Calderwood Butte	Rock structure and cobble alignment	Unevaluated	Adams 1997
109	AZ T:7:152(ASM)	Calderwood Butte	Rock pile	Not Eligible	Adams 1997
110	AZ T:7:153(ASM)	Calderwood Butte	Rectangular rock pile	Not Eligible	Adams 1997
111	AZ T:7:154(ASM)	Calderwood Butte	Historic canal system	Not Eligible	Adams 1997
112	AZ T:7:155(ASM)	Calderwood Butte	FCR scatter with artifacts	Eligible	Adams 1997
113	AZ T:7:156(ASM)	Calderwood Butte	Artifact scatter	Eligible	Adams 1997
114	AZ T:7:157(ASM)	Calderwood Butte	Historic cobble-beamed road	Not Eligible	Adams 1997
115	AZ T:7:162(ASM)	Calderwood Butte	Canals	Not Eligible	Adams 1997
116	AZ T:7:183(ASM) AZ T:7:15(ASU)	Calderwood Butte	Ceramic Period Hohokam habitation	Eligible in 1999; not eligible in 1965	Stubing 1999
117	AZ T:7:187(ASM)	Calderwood Butte	Ceramic scatter	Potentially Eligible	Slawson 1999
118	AZ T:7:188(ASM)	Calderwood Butte	Ceramic scatter	Potentially Eligible	Slawson 1999
119	AZ T:7:190(ASM)	Calderwood Butte	Artifact scatter	Potentially Eligible	Slawson 1999
120	AZ T:7:191(ASM)	Calderwood Butte	Ceramic scatter	Potentially Eligible	Slawson 1999
121	AZ T:7:192 (ASM)*	Calderwood Butte	Prehistoric agricultural site	Potentially Eligible	Slawson 1999; Gage 2002
122	AZ T:7:193(ASM)	Calderwood Butte	Historic Trash Dump	Not Eligible	Slawson 1999
123	AZ T:7:251(ASM)	Calderwood Butte	Artifact scatter with features	Unknown	Gage 2002
124	Calderwood Butte Archaeological District 43-SHPO	Calderwood Butte, Baldy Mountain	4,480 acre area containing 70+ archaeological sites	On state inventory	SHPO Files
125	AZ U:5:72(ASU)*	Curry's Corner	Sherd scatter	Not eligible	ASU Site Files
126	AZ U:5:73(ASU)*	Curry's Corner	Artifact scatter	Not eligible	ASU Site Files
127	AZ U:5:218(ASM)	Curry's Corner	1920s trash dump	Eligible	Ruble 1997
128	AZ U:5:246(ASM)	Curry's Corner	Ash stain	Eligible	ASM Site Card 1999
129	AZ U:5:255 (ASM) AZ U:5:71(ASU)	Curry's Corner	Artifact scatter	Not eligible	Wright 2000a, 2000b

TABLE 2 PREVIOUSLY RECORDED SITES					
	Site Name and Number	**Quad**	**Description**	**NRHP Status**	**Reference**
130	AZ T:8:5(ASU) AZ T:8:20(ASU)	Hedgepeth Hills	Agricultural field with artifact scatter	Not eligible	ASU Site Card 1973
131	AZ T:8:63(ASM)	Hedgepeth Hills	Structure with artifact scatter	Unevaluated	ASM Site Card 1997
132	AZ T:8:81(ASU)	Hedgepeth Hills	Rock rings, lithics, and ground stone.	Not eligible	ASU Site Card 1976
133	AZ T:8:82(ASU)	Hedgepeth Hills	Unknown	Unknown	ASU Site Card 1976
134	AZ T:8:4(ASM)	Union Hills	Village	Unevaluated	Vivian 1970
135	AZ T:8:5(ASM) AZ T:8:34(ASU)	Union Hills	Fortified hilltop with petroglyphs	Unevaluated	Vivian 1970
136	AZ T:8:9(ASM)	Union Hills	Agricultural terraces with structure	Unevaluated	Vivian 1970; Kemrer 1972
137	AZ T:8:33(ASU)	Union Hills	Structure with sherd scatter	Not eligible	ASU Site Card 1970
138	AZ T:8:35(ASU)	Union Hills	Surface rooms with garden plots	Unevaluated	ASU Site Card 1970
139	AZ T:8:36(ASU)	Union Hills	Petroglyphs and lithics	Unevaluated	ASU Site Card 1970
140	AZ T:8:68(ASU)	Union Hills	Petroglyph and possible rock "shrine"	Determined eligible	ASU Site Card 1974
141	AZ T:8:72(ASM)	Union Hills	Rock features	Potentially eligible	Tweedy and Lite 1996
142	AZ T:8:74(ASM)	Union Hills	Historic road segments	Unevaluated	Punzmann 1996
143	AZ T:8:75(ASM)	Union Hills	Rock rings with lithic scatter	Not eligible	Punzmann 1996
144	AZ T:8:76(ASM)	Union Hills	Pet burial	Not eligible	Punzmann 1996
145	AZ T:8:76(ASU)	Union Hills	Artifact scatter	Not eligible	Rodgers 1974
146	AZ T:8:77(ASM)	Union Hills	Rock ring	Not eligible	Punzmann 1996
147	AZ T:8:77(ASU) AZ T:8:119 (ASM)	Union Hills	Artifact scatter with wind deflectors	Determined eligible	Rodgers 1974
148	AZ T:8:82(ASM)	Union Hills	Unknown	Unknown	Hackbarth 1997
149	AZ T:8:85(ASU)	Union Hills	Sherd scatter	Not eligible	ASU Site Card 1988
150	AZ T:8:90(ASU)	Union Hills	Rock rings with artifacts	Unevaluated	ASU Site Card 1982
151	AZ T:8:103(ASU)	Union Hills	Unknown	Unknown	ASU Site Card 1988
152	AZ T:8:104(ASU)	Union Hills	Sherd scatter	Not eligible	Stone 2000
153	AZ T:8:105(ASM)	Union Hills	Stone monument	Not eligible	Rodgers 2000
154	AZ T:8:142(ASM) AZ T:8:37(ASU)	Union Hills	Surface room with artifact scatter	Eligible	ASU Site Card 1970
155	Cave Creek Dam Arhaeological District 47-SHPO	Union Hills, New River	8,000-acre area containing 19 archaeological sites, 3 historic sites, and 5 previously destroyed sites	Determined eligible	SHPO Files
*These sites are within or immediately adjacent to the North Valley Project APE.					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AZ T:7:188(ASM)
Gage 2002
AZ T:3:55 (ASM)
Slawson 1999
Rhodes et
Weaver and Keller 1983
Effland and Green 1986; Green 1986
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AZ T:7:152(ASM
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Weaver and Keller 1983
AZ T:7:155(
AZ T:7:14
Prucell et al. 1994
Garcia et al. 1999
Effland and Green 1986; Green 1986
CHANNEL
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Well
Adams 1997
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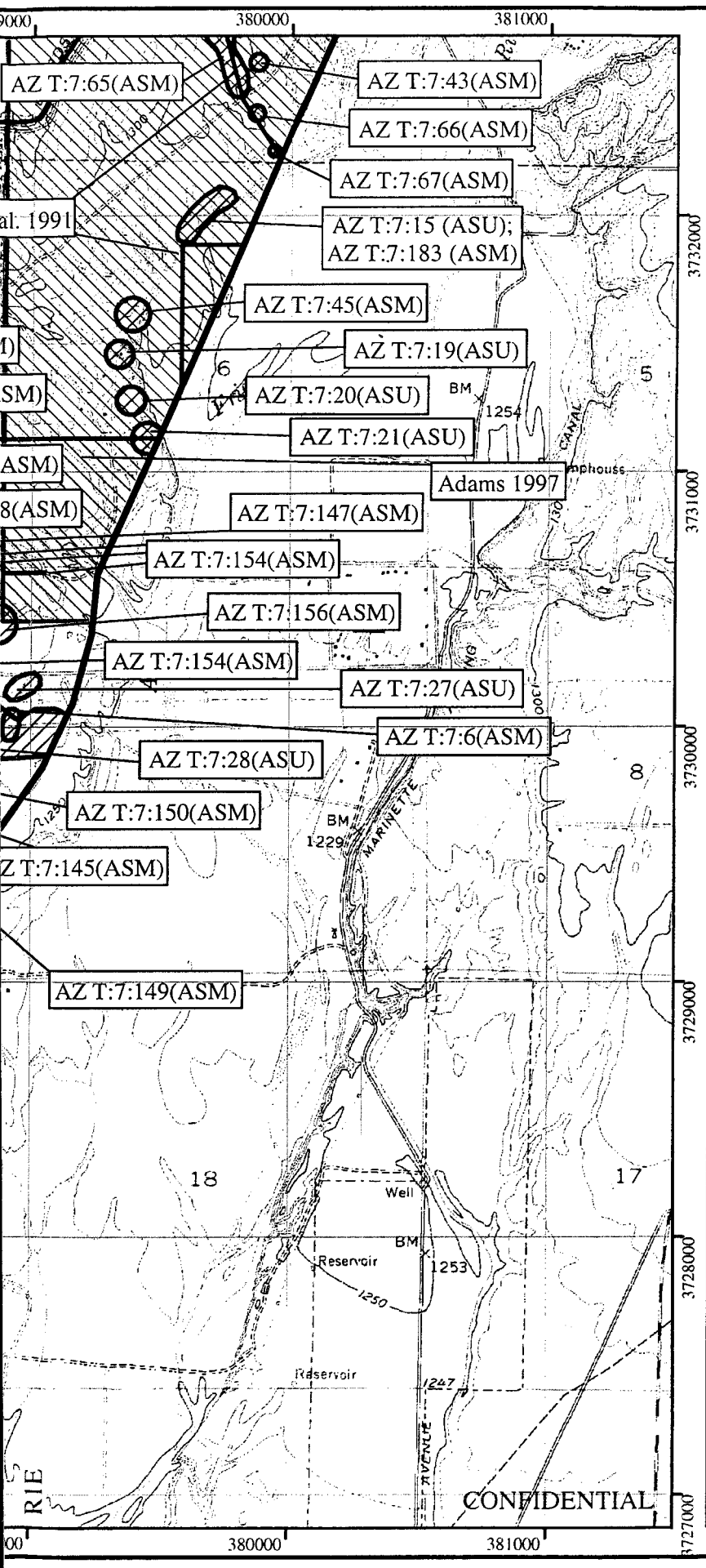
Well
RIW



PREVIOUS RESEARCH

Figure 2a

Legend

- Previously Conducted Survey
- Previously Recorded Site
- Calderwood Butte Archaeological District
- Study Area Boundary
- Proposed Transmission Line

Sources:

United States Geological Survey (USGS), Calderwood Butte, AZ (1981), 1:24,000-scale metric topographic map.

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Scale 1:24,000

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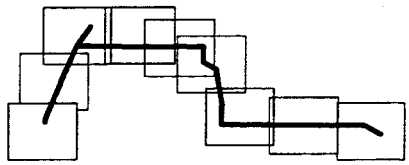
Index Map



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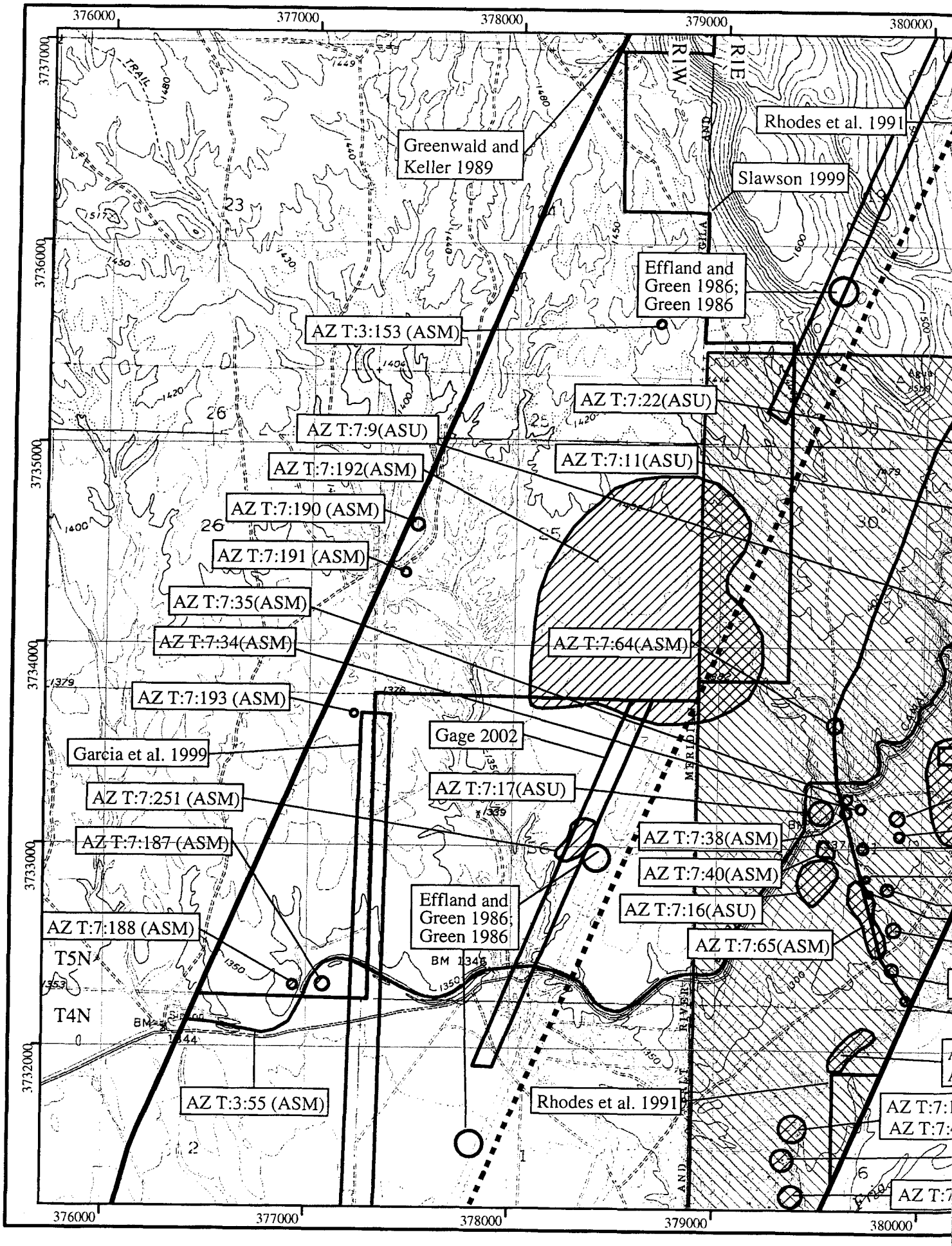
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Rhodes et al. 1991
Greenwald and Keller 1989
Slawson 1999
Effland and Green 1986; Green 1986
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Garcia et al. 1999
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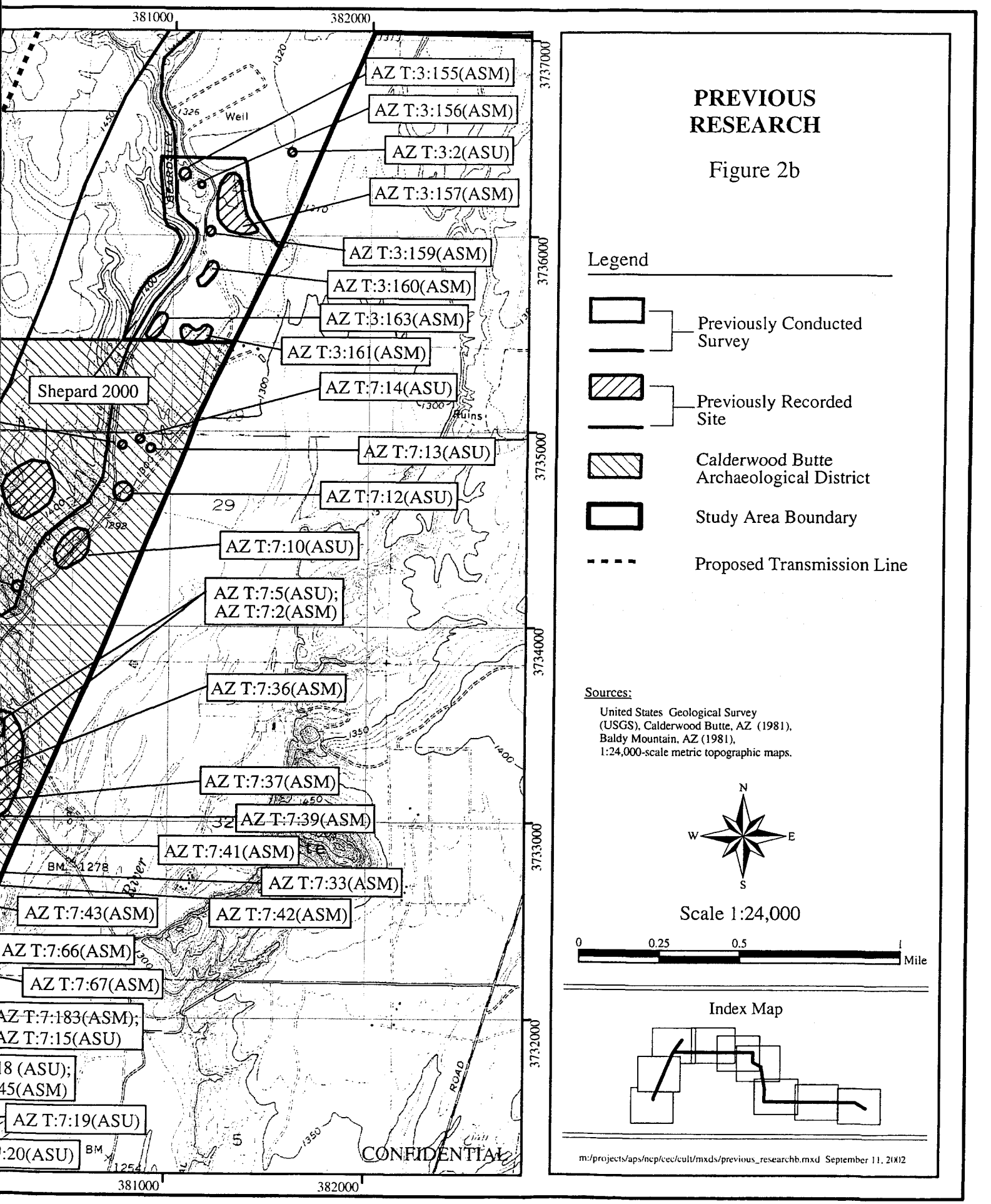
Rhodes et al. 1991



PREVIOUS RESEARCH
Figure 2b
Legend
Previously Conducted Survey
Previously Recorded Site
Calderwood Butte Archaeological District
Study Area Boundary
Proposed Transmission Line
Sources:
United States Geological Survey (USGS), Calderwood Butte, AZ (1981), Baldy Mountain, AZ (1981), 1:24,000-scale metric topographic maps.
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AZ T:3:163(ASM)
AZ T:3:161(ASM)
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AZ T:7:13(ASU)
AZ T:7:12(ASU)
AZ T:7:10(ASU)
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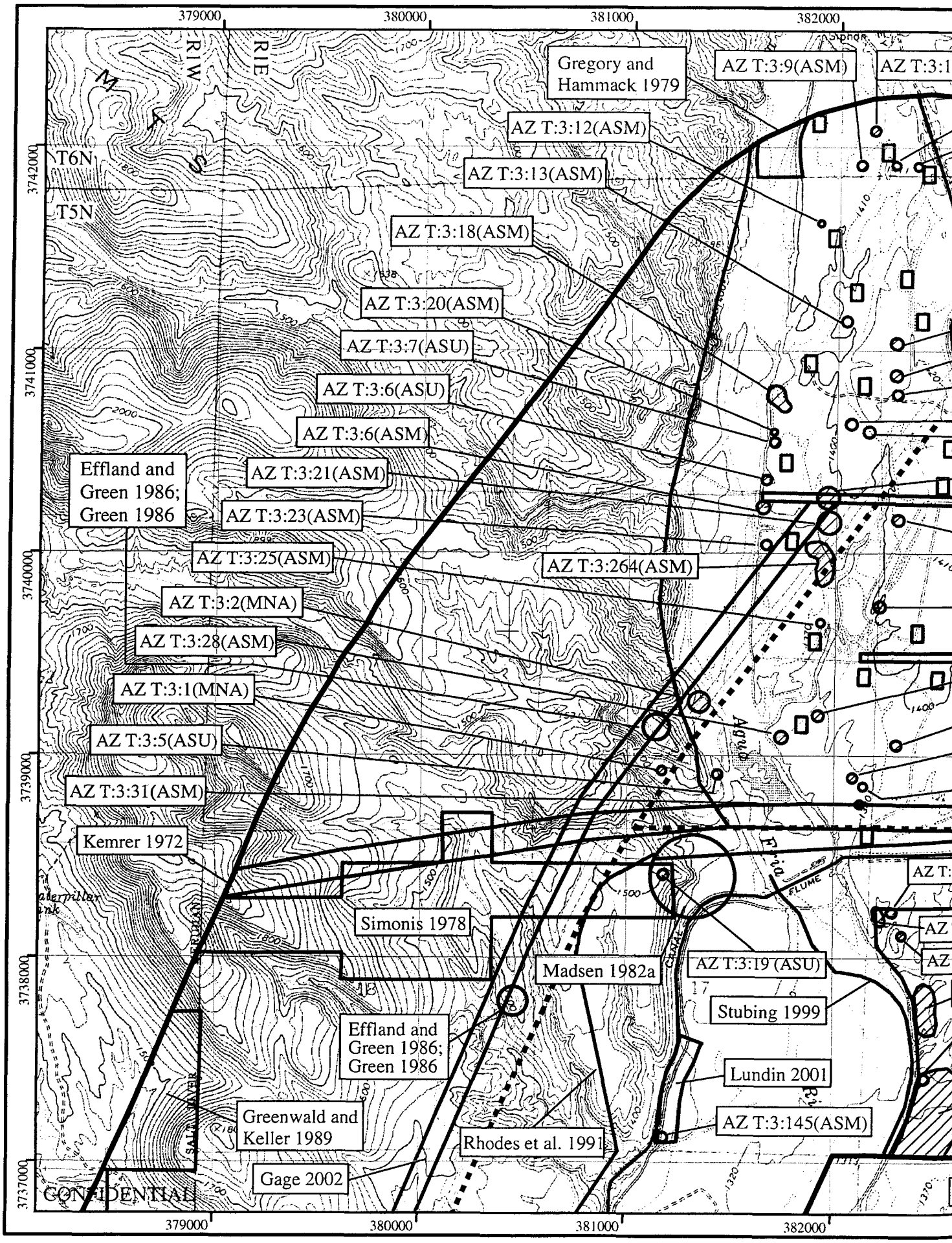
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AZ T:3:23(ASM)
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AZ T:3:31(ASM)
Effland and Green 1986; Green 1986
Kemrer 1972
Simonis 1978
Madsen 1982a
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Lundin 2001
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Rhodes et al. 1991
Gage 2002
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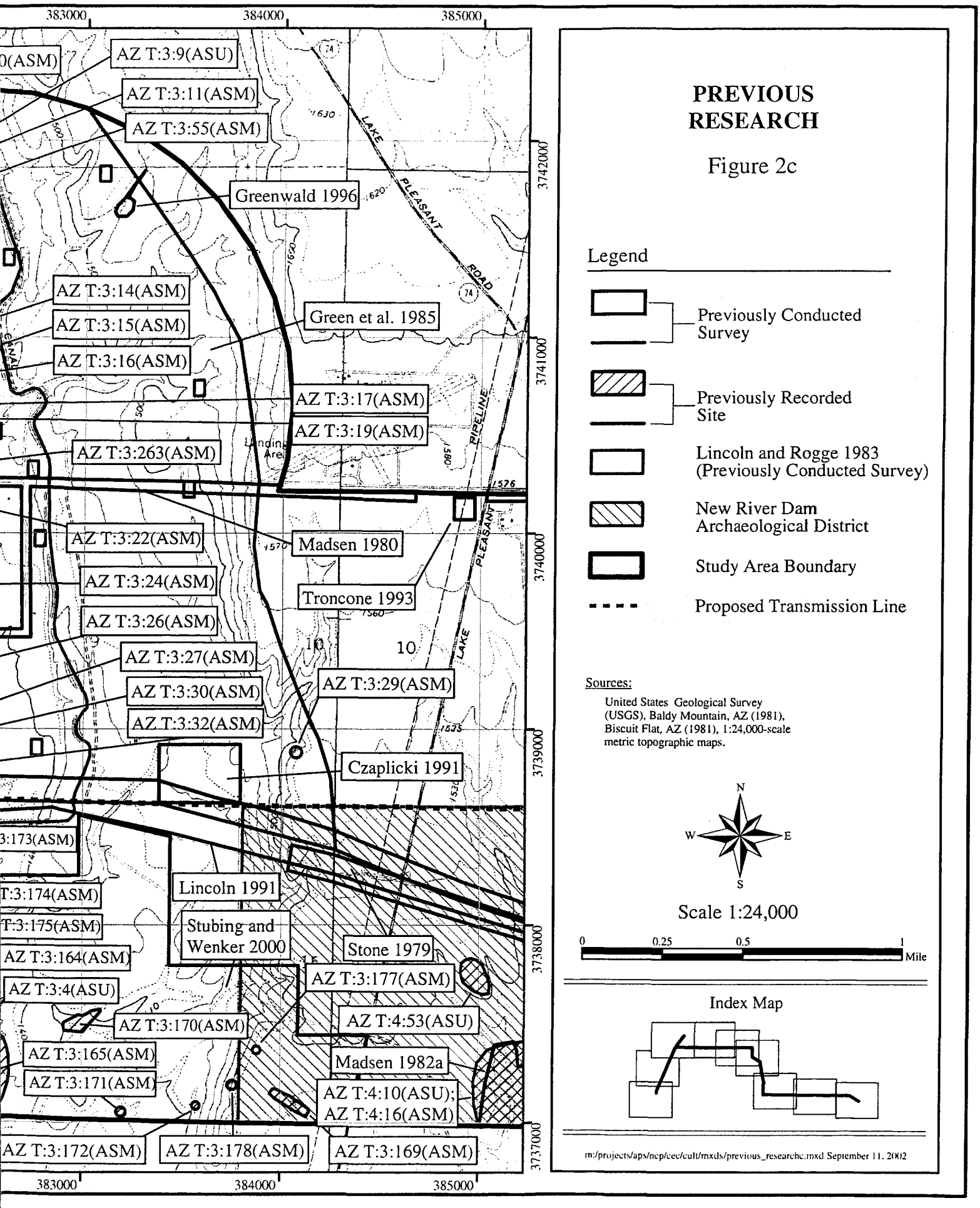
PREVIOUS RESEARCH
Figure 2c
Legend
Previously Conducted Survey
Previously Recorded Site
Lincoln and Rogge 1983 (Previously Conducted Survey)
New River Dam Archaeological District
Study Area Boundary
Proposed Transmission Line
Sources:
United States Geological Survey (USGS), Baldy Mountain, AZ (1981), Biscuit Flat, AZ (1981), 1:24,000-scale metric topographic maps.
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Troncone 1993
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Czaplicki 1991
Lincoln 1991
Stubing and Wenker 2000
Stone 1979
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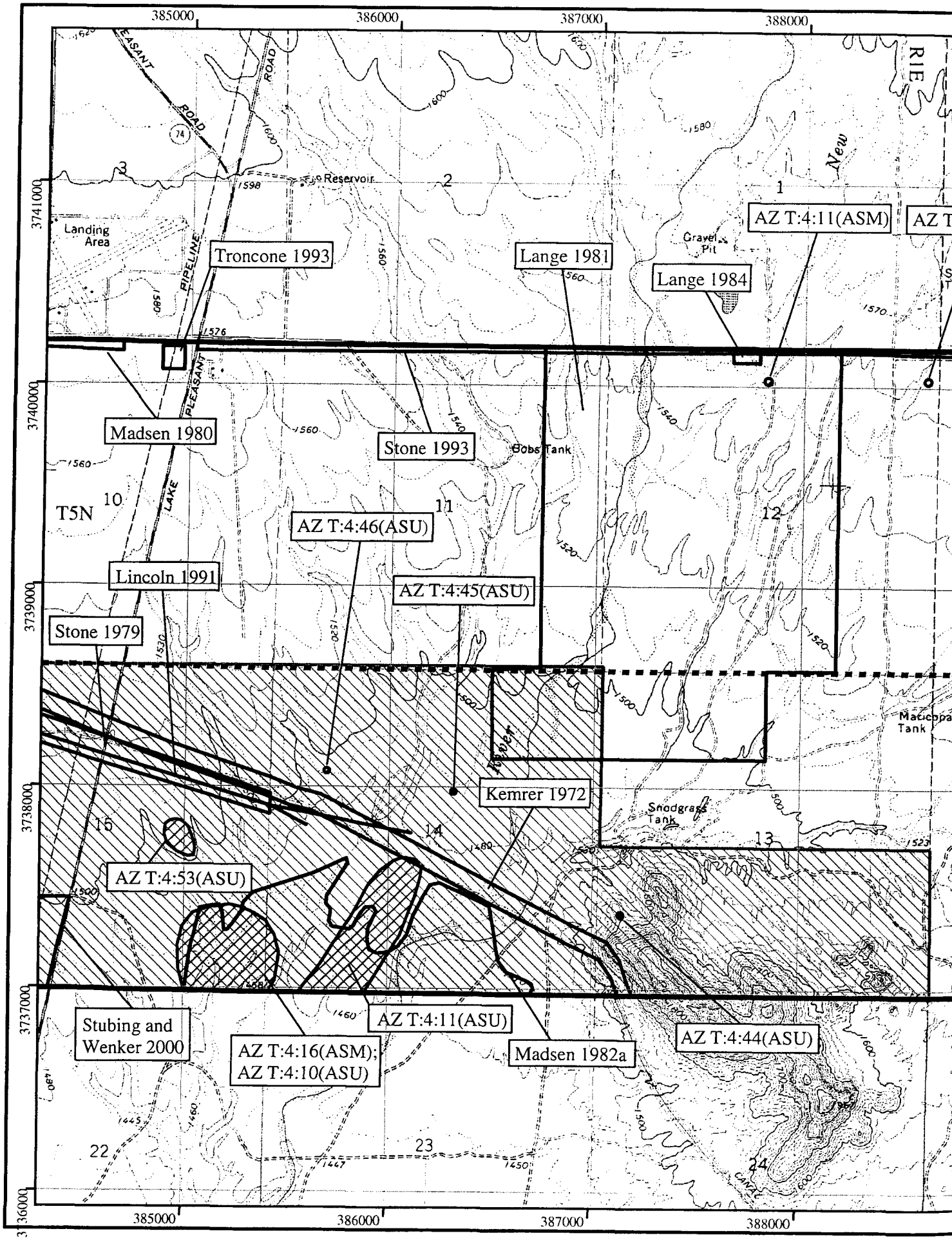
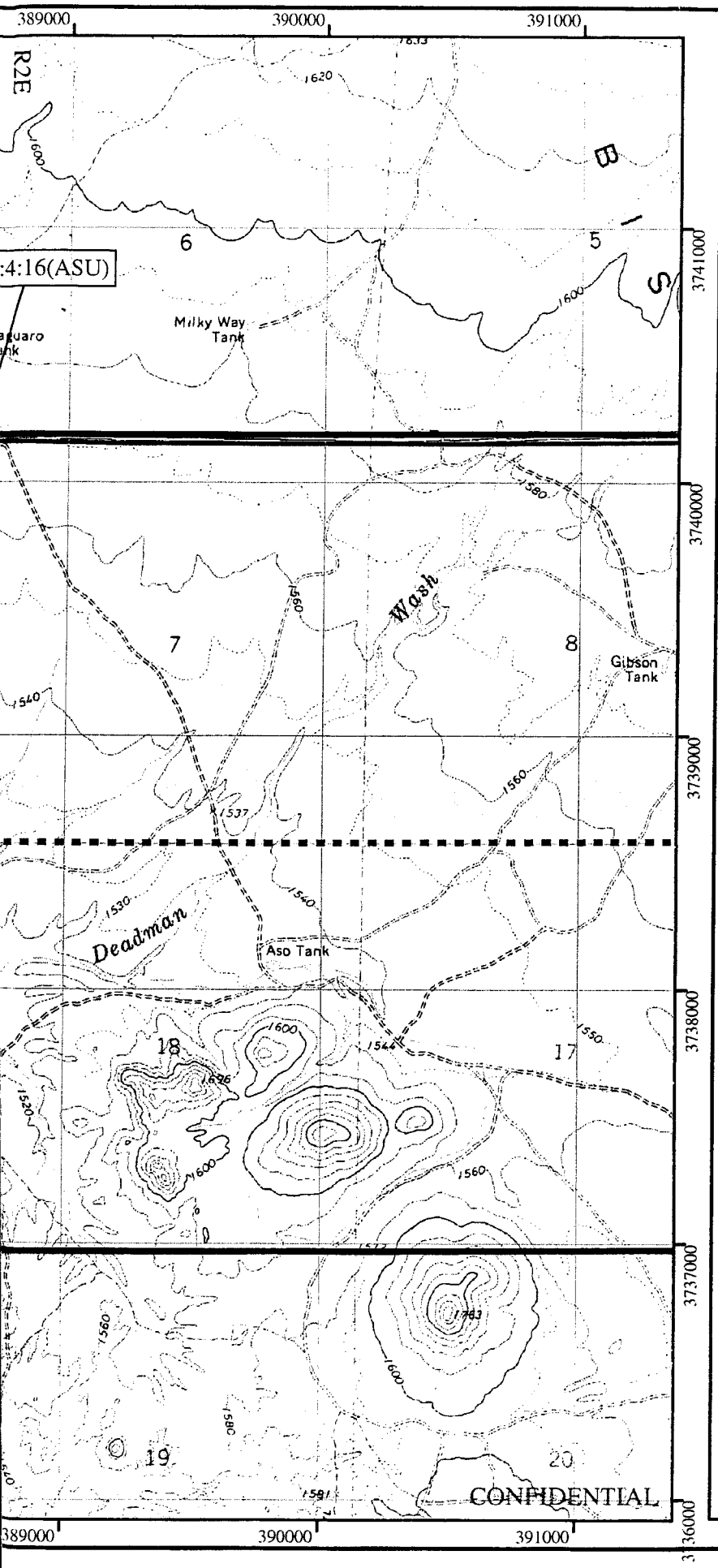
AZ T:4:53(ASU)
AZ T:3:165(ASM)
Madsen 1982a
AZ T:3:171(ASM)
AZ T:4:10(ASU); AZ T:4:16(ASM)
AZ T:3:172(ASM)
AZ T:3:178(ASM)
AZ T:3:169(ASM)
LAKE PLEASANT ROAD
PIPELINE
CANAL


385000
386000
387000
388000
3741000
3740000
3739000
3738000
3737000
3736000
Landing Area
Reservoir
Gravel Pit
Bobs Tank
Snodgrass Tank
Maricopa Tank
PLEASANT ROAD
PIPELINE
LAKE
T5N
Troncone 1993
Lange 1981
Lange 1984
AZ T:4:11(ASM)
Madsen 1980
Stone 1993
AZ T:4:46(ASU)
Lincoln 1991
AZ T:4:45(ASU)
Stone 1979
Kemrer 1972
AZ T:4:53(ASU)
Stubing and Wenker 2000
AZ T:4:16(ASM); AZ T:4:10(ASU)
AZ T:4:11(ASU)
Madsen 1982a
AZ T:4:44(ASU)



PREVIOUS RESEARCH

Figure 2d

Legend

- Previously Conducted Survey
- Previously Recorded Site
- New River Dam Archaeological District
- Study Area Boundary
- Proposed Transmission Line

Sources:

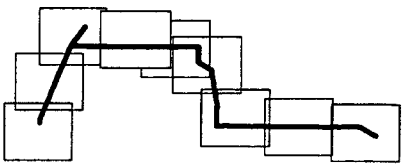
United States Geological Survey (USGS), Biscuit Flat, AZ (1981), 1:24,000-scale metric topographic map.

N W E S

Scale 1:24,000

0 0.25 0.5 1 Mile

Index Map



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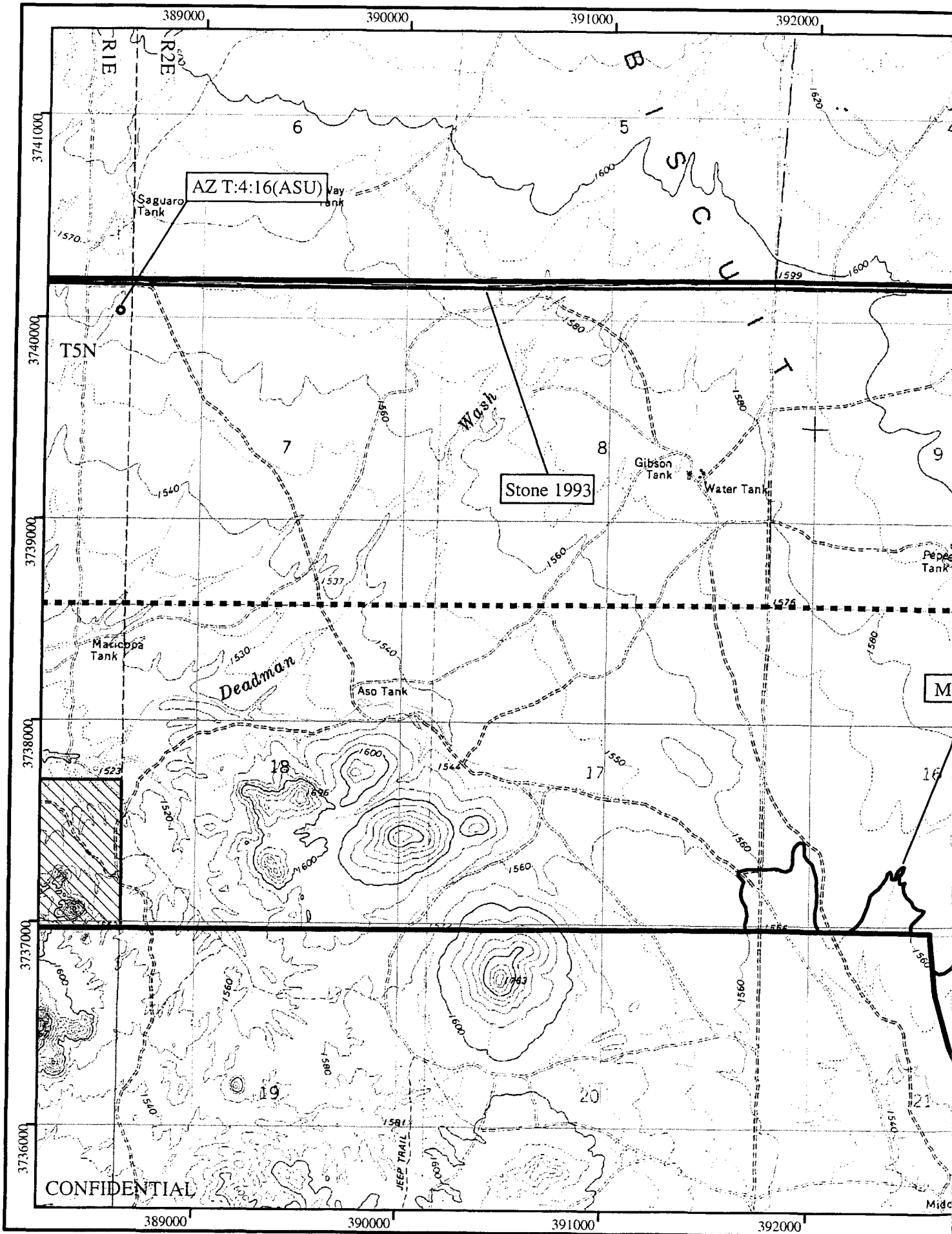
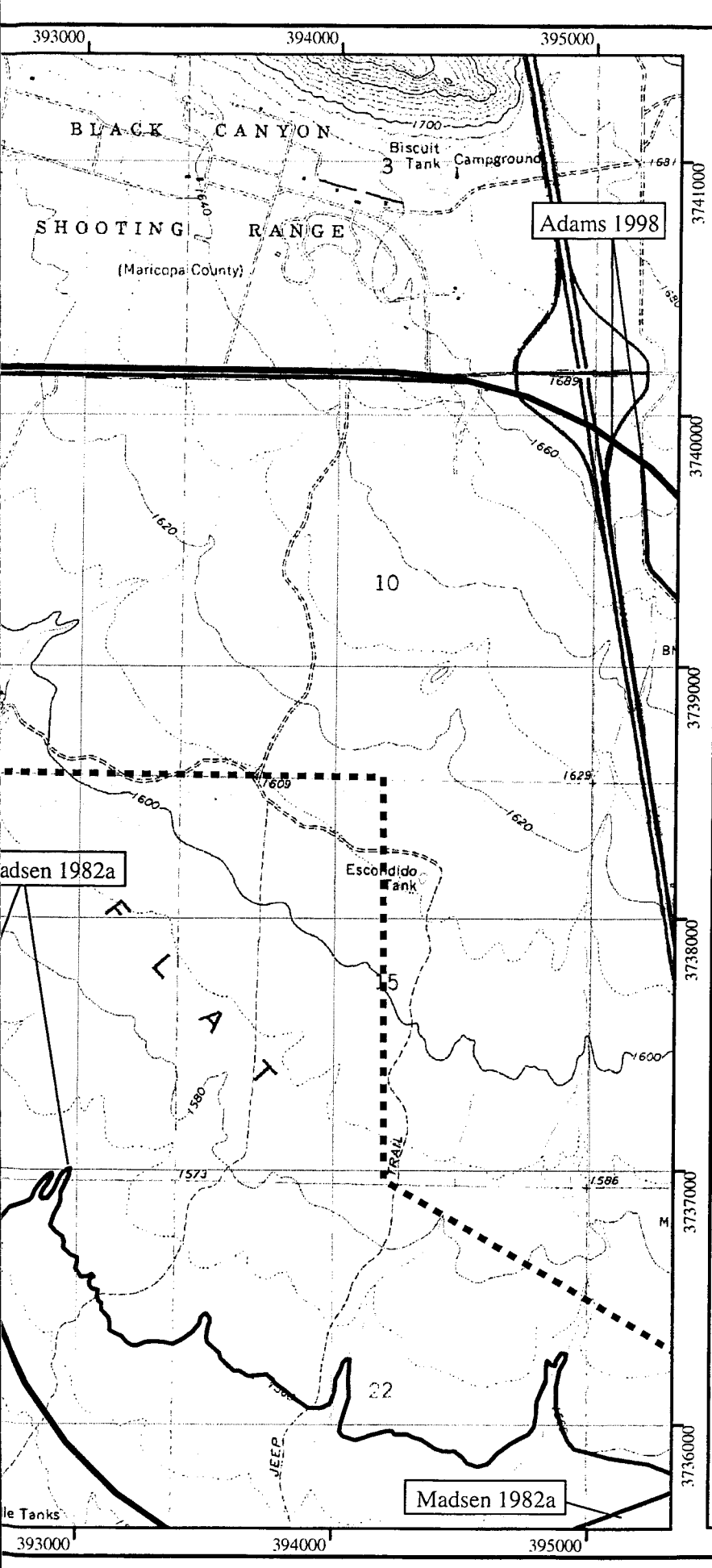

389000
390000
391000
392000
3741000
3740000
3739000
3738000
3737000
3736000
R1E
R2E
T5N
AZ T:4:16(ASU)
Saguaro Tank
Stone 1993
Gibson Tank
Water Tank
Wash
Deadman
Maricopa Tank
Aso Tank
JEEP TRAIL
CONFIDENTIAL



PREVIOUS RESEARCH

Figure 2e

Legend

- Previously Conducted Survey
- Previously Recorded Site
- New River Dam Archaeological District
- Study Area Boundary
- Proposed Transmission Line

Sources:

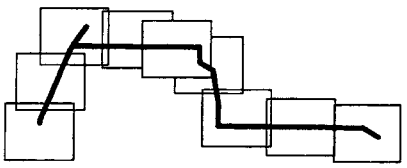
United States Geological Survey (USGS), Biscuit Flat, AZ (1981), 1:24,000-scale metric topographic map.

N
W E
S

Scale 1:24,000

0 0.25 0.5 1 Mile

Index Map



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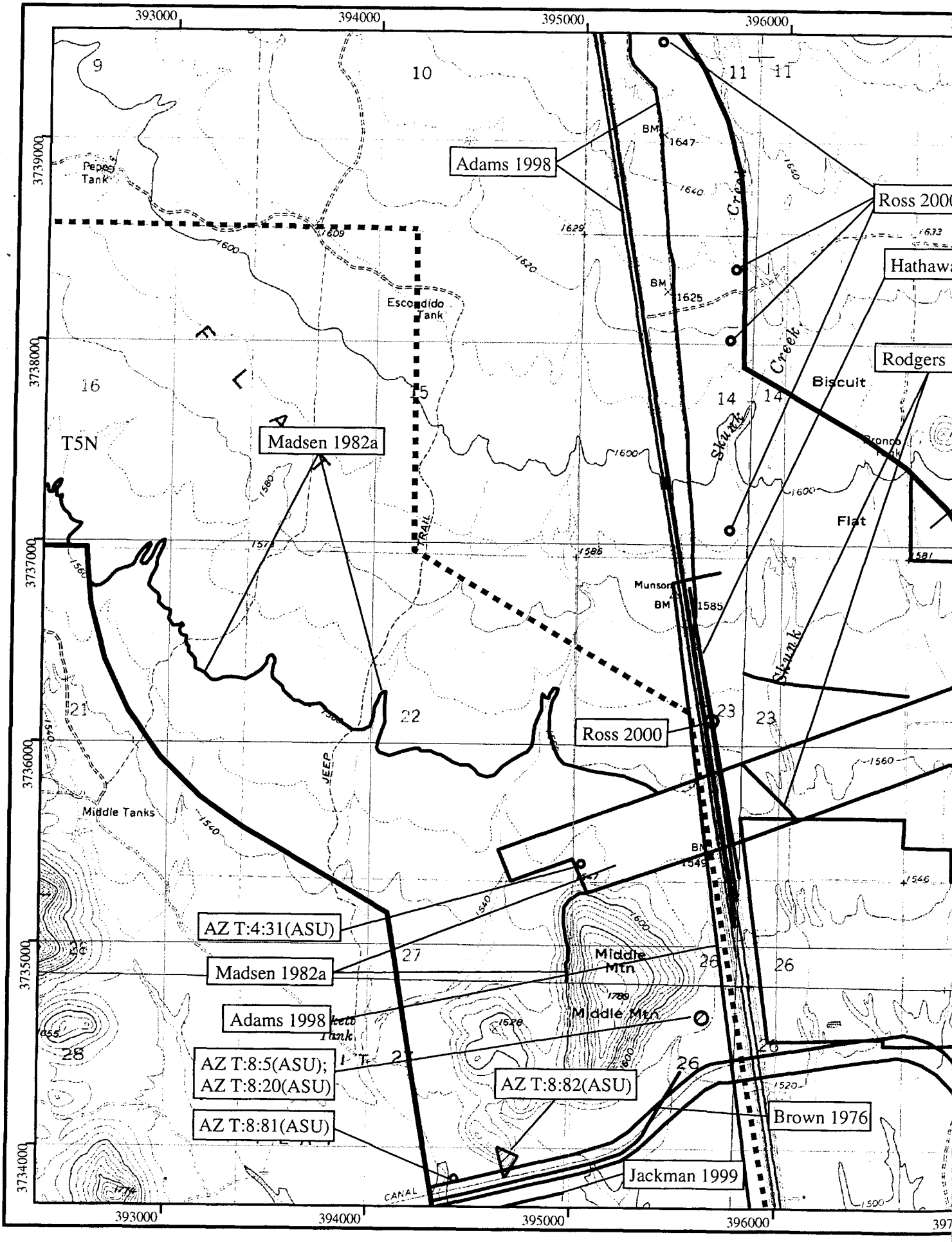
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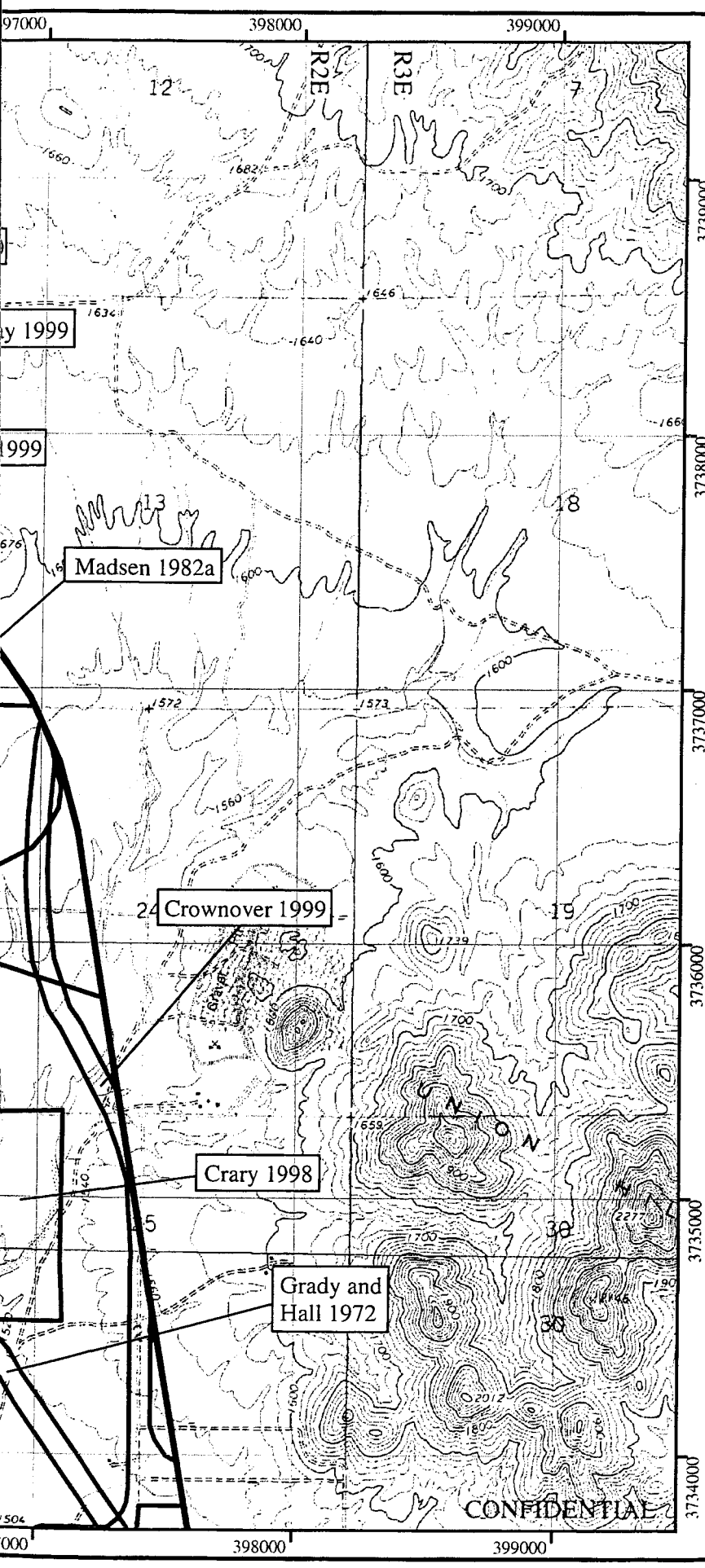
3735000
3734000
Adams 1998
Ross 2000
Hathaw
Rodgers
Madsen 1982a
Ross 2000
AZ T:4:31(ASU)
Madsen 1982a
Adams 1998
AZ T:8:5(ASU);
AZ T:8:20(ASU)
AZ T:8:82(ASU)
AZ T:8:81(ASU)
Brown 1976
Jackman 1999
T5N
Pepes Tank
Escondido Tank
Biscuit
Flat
Skunk
Creek
Middle Tanks
Middle Mtn
JEEP
TRAIL
CANAL



PREVIOUS RESEARCH

Figure 2f

Legend

- Previously Conducted Survey
- Previously Recorded Site
- Study Area Boundary
- Proposed Transmission Line

Sources:

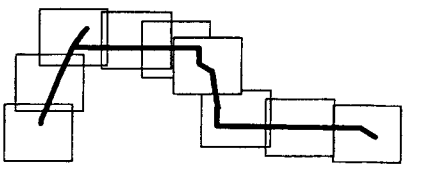
United States Geological Survey (USGS), Biscuit Flat, AZ (1981), Hedgpeth Hills, AZ (1981), New River SE, AZ (1981), Union Hills, AZ (1981) 1:24,000-scale metric topographic maps.

N
W E
S

Scale 1:24,000

0 0.25 0.5 1 Mile

Index Map



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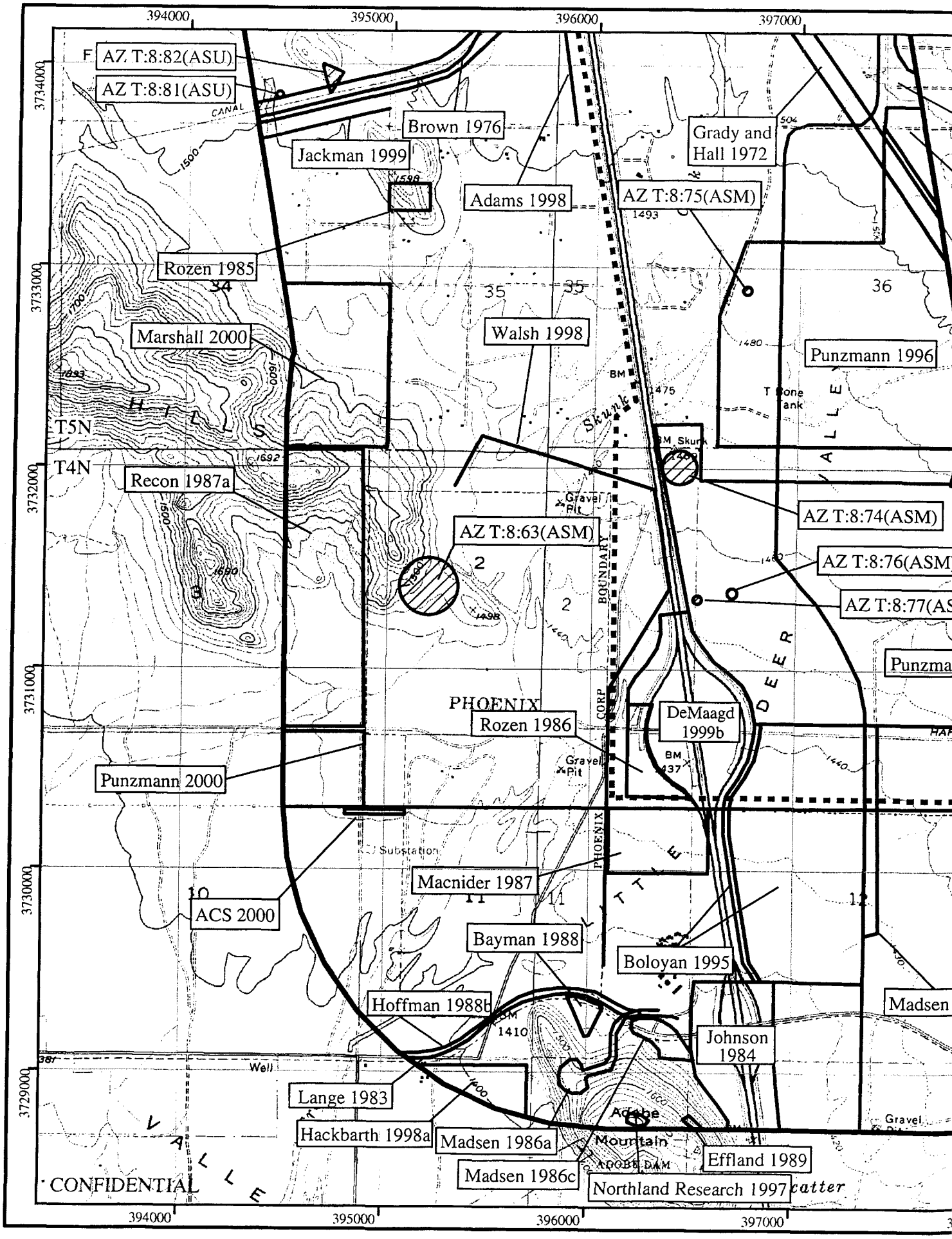
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395000
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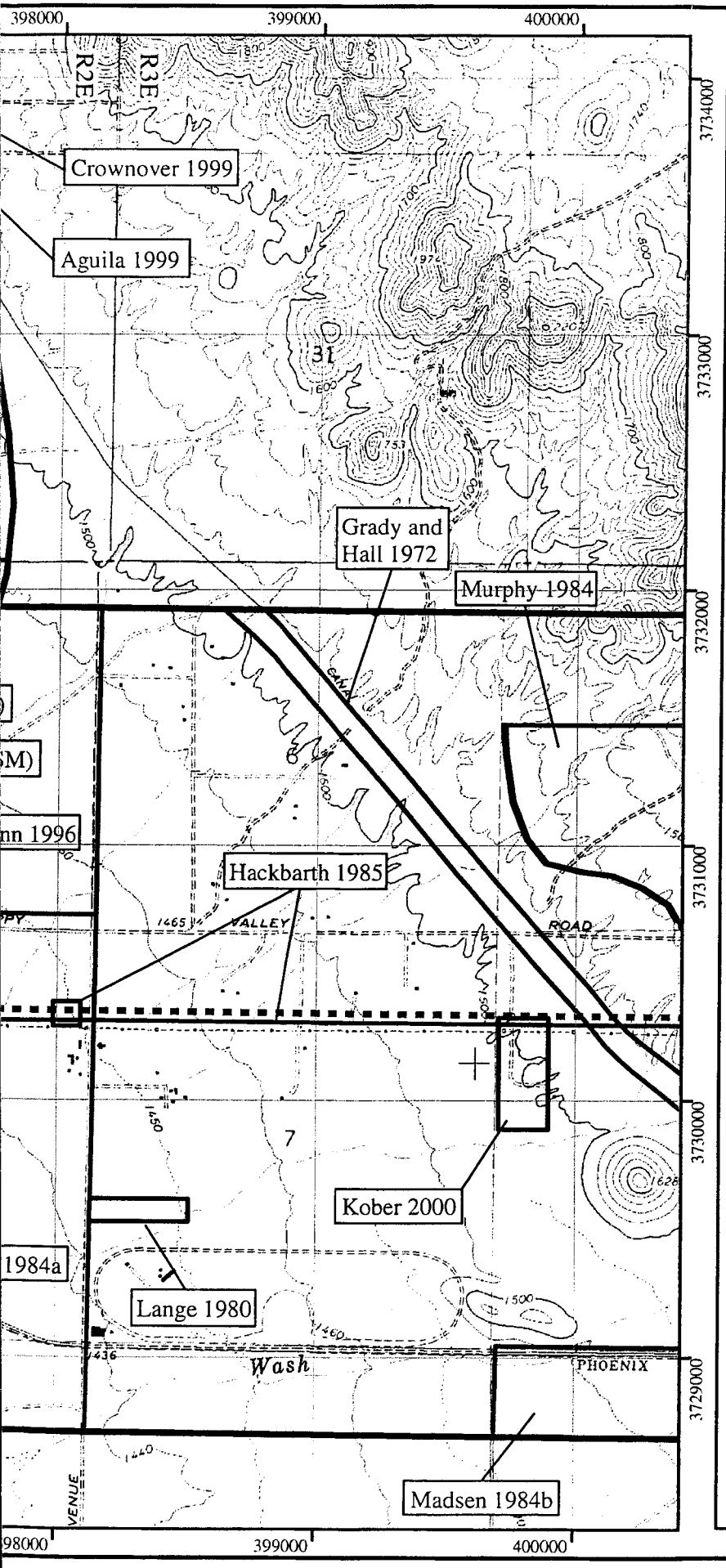
397000
3734000
3733000
3732000
3731000
3730000
3729000
AZ T:8:82(ASU)
AZ T:8:81(ASU)
Brown 1976
Jackman 1999
Grady and Hall 1972
Adams 1998
AZ T:8:75(ASM)
Rozen 1985
Marshall 2000
Walsh 1998
Punzmann 1996
T5N
T4N
Recon 1987a
AZ T:8:74(ASM)
AZ T:8:63(ASM)
AZ T:8:76(ASM
AZ T:8:77(AS
Punzma
PHOENIX
Rozen 1986
DeMaagd 1999b
Punzmann 2000
Macnider 1987
ACS 2000
Bayman 1988
Boloyan 1995
Hoffman 1988b
Madsen
Johnson 1984
Lange 1983
Hackbarth 1998a
Madsen 1986a
Effland 1989
Madsen 1986c
Northland Research 1997
CONFIDENTIAL



PREVIOUS RESEARCH

Figure 2g

Legend

- Previously Conducted Survey
- Previously Recorded Site
- Study Area Boundary
- Proposed Transmission Line

Sources:

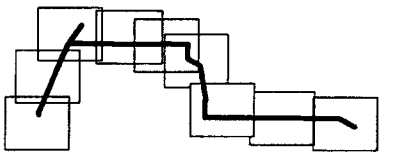
United States Geological Survey (USGS), Hedgpeth Hills, AZ (1981), Union Hills, AZ (1981), 1:24,000-scale metric topographic maps.

N
W E
S

Scale 1:24,000

0 0.25 0.5 1 Mile

Index Map



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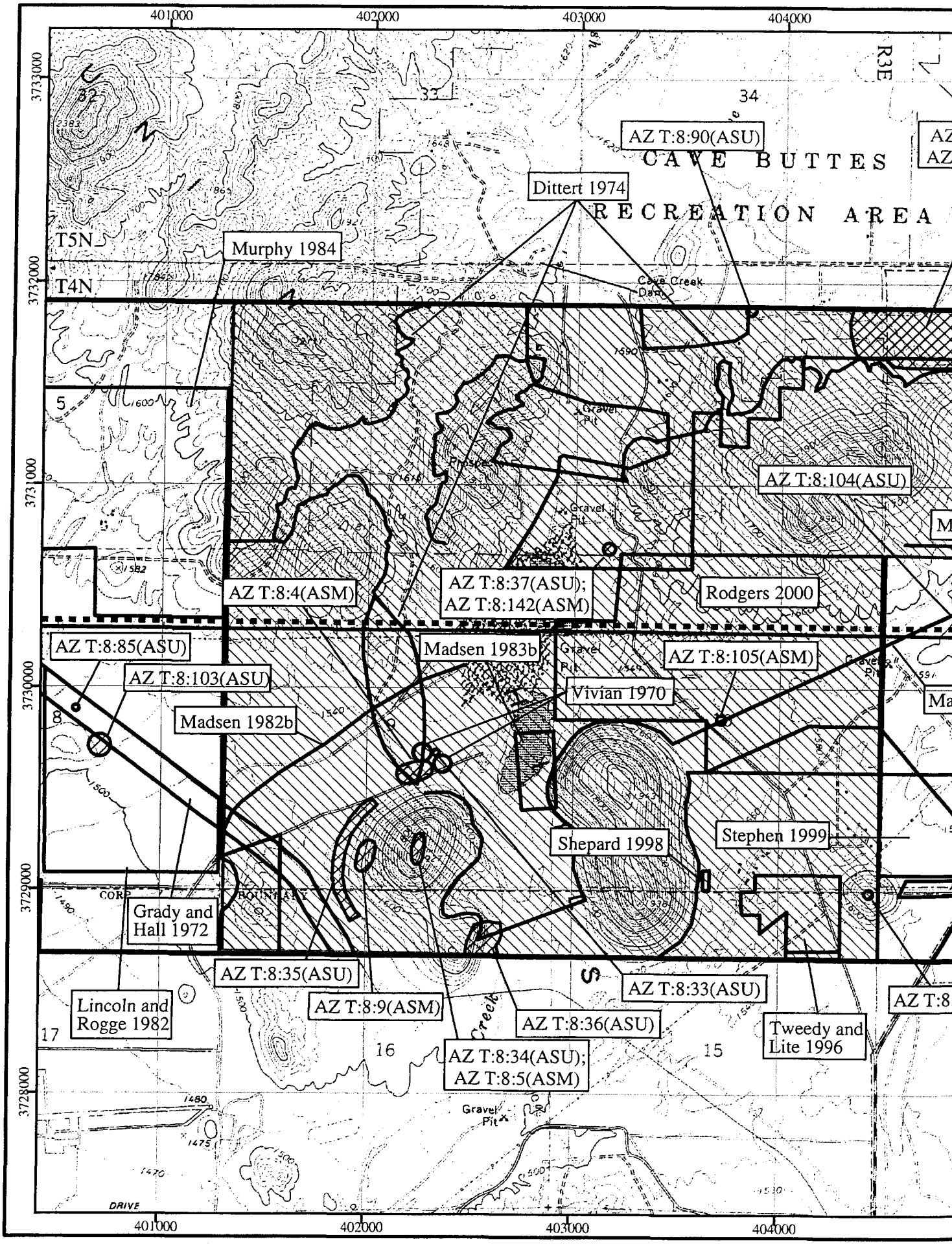
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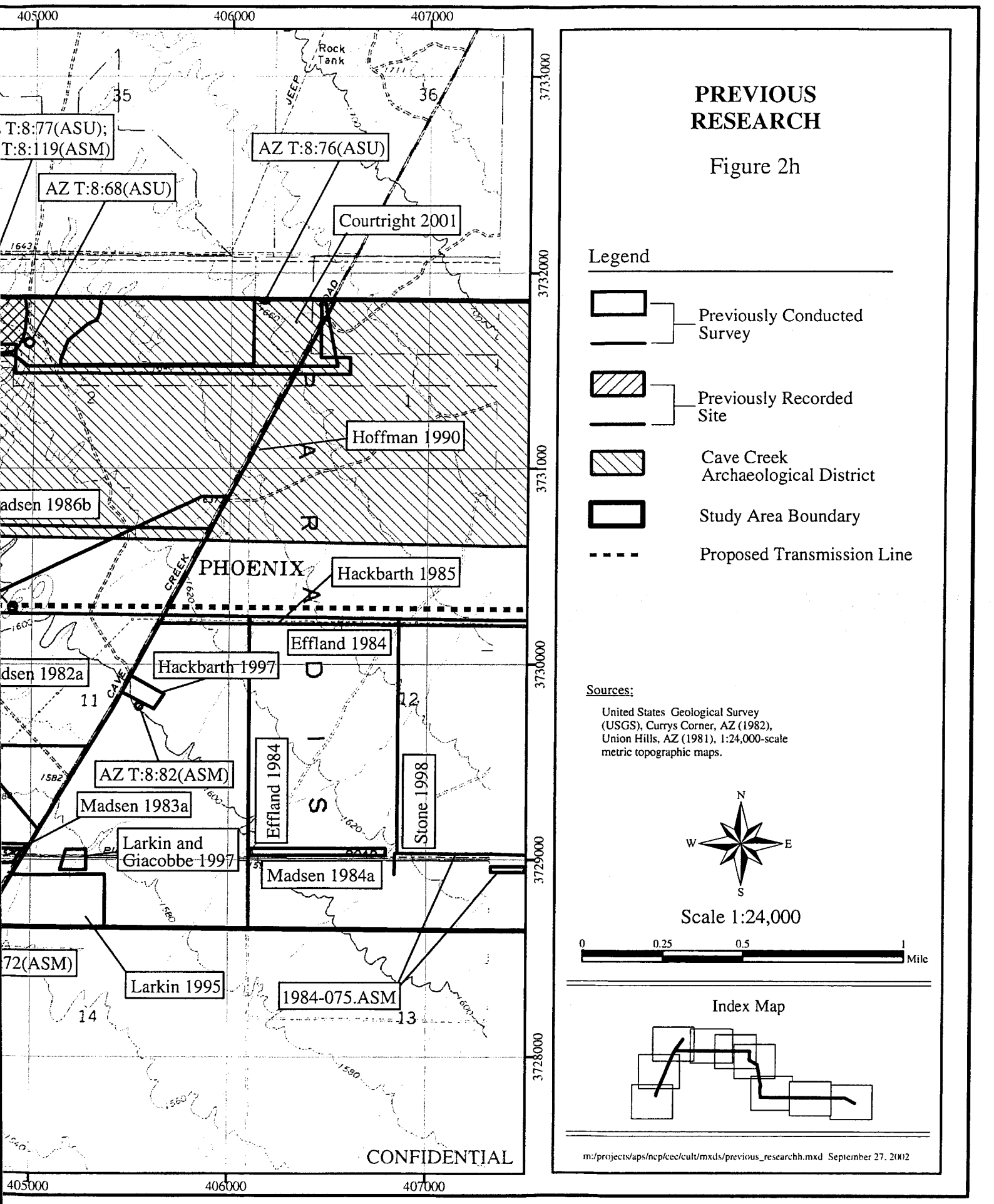
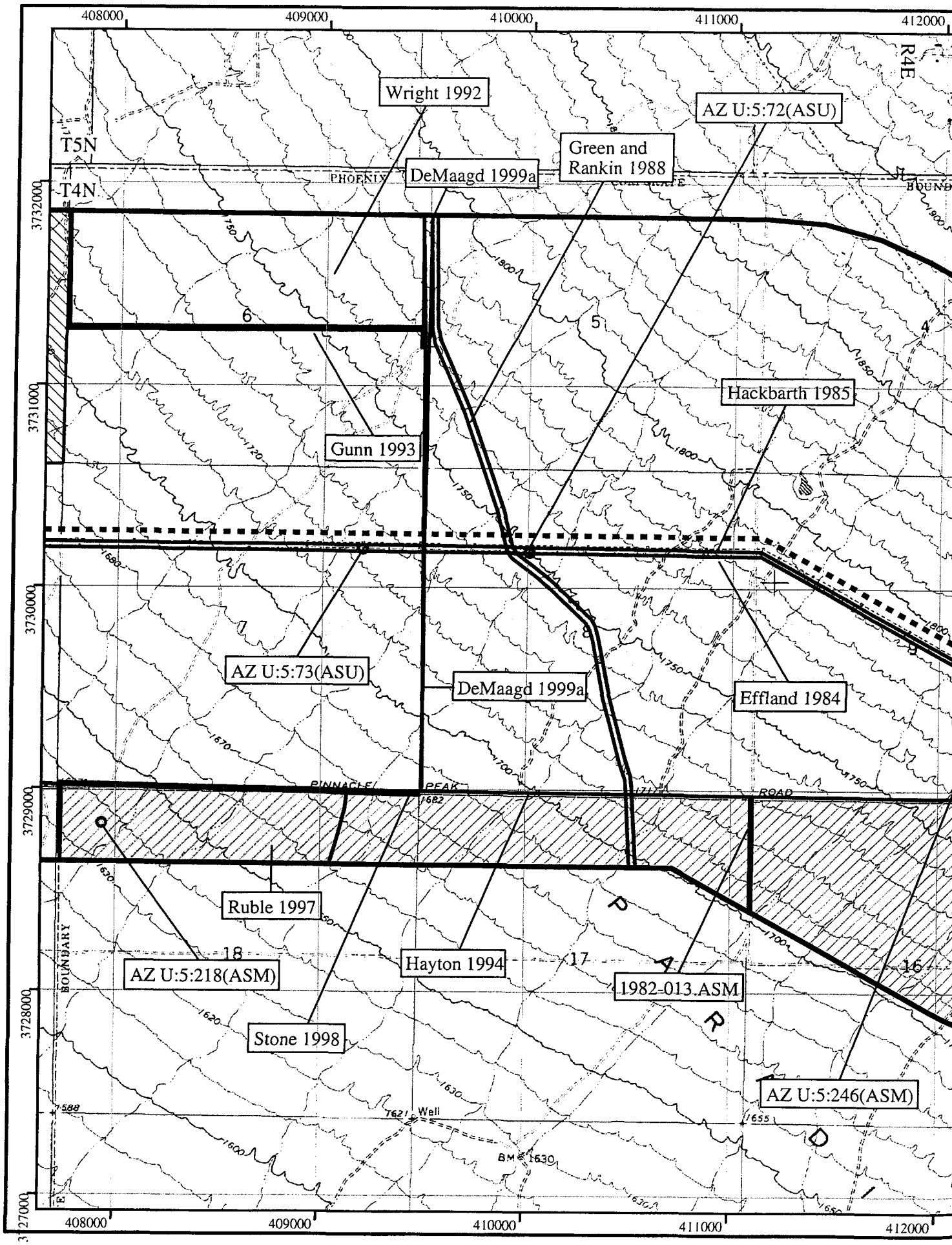
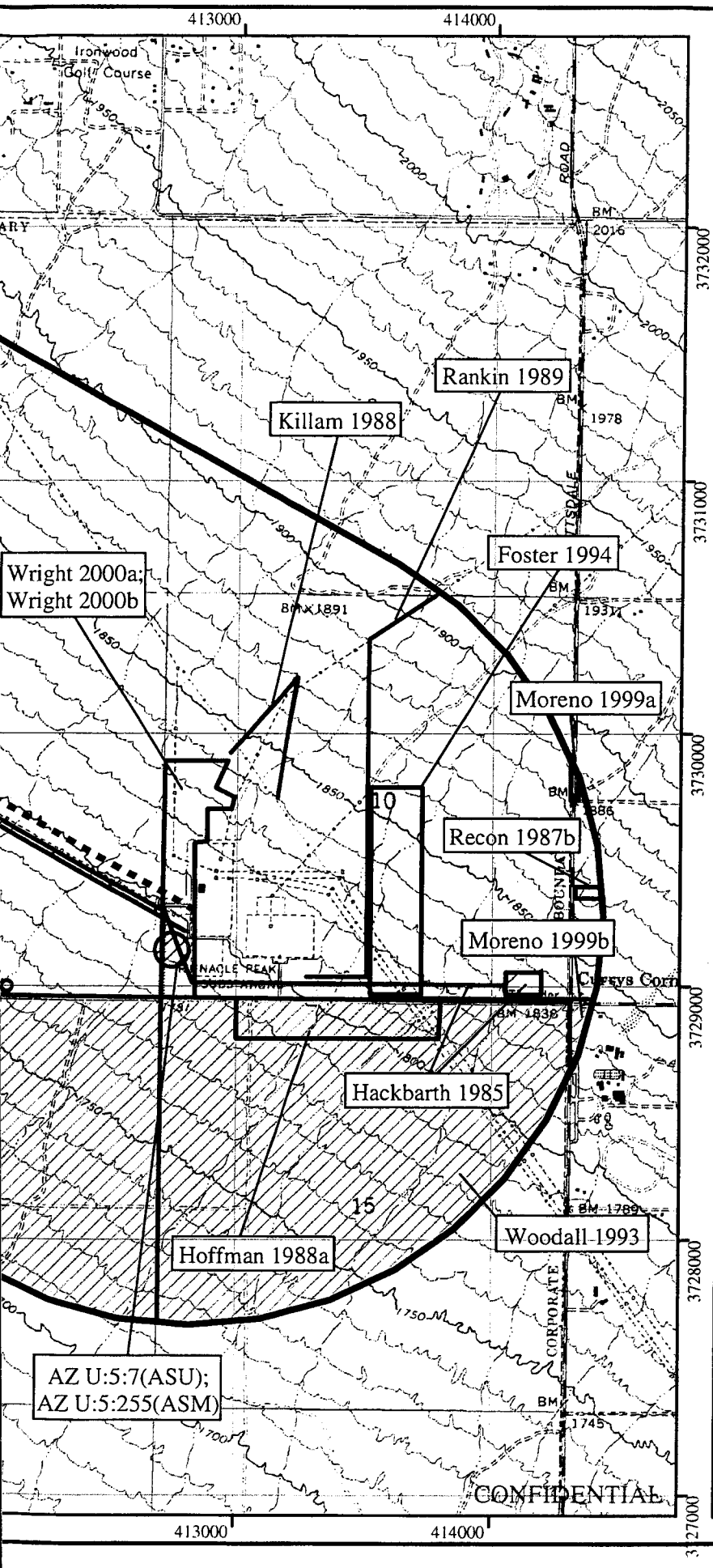
402000
403000
404000
3733000
3732000
3731000
3730000
3729000
3728000
R3E
T5N
T4N
CAVE BUTTES
RECREATION AREA
AZ T:8:90(ASU)
Dittert 1974
Murphy 1984
Cave Creek Dam
Gravel Pit
AZ T:8:104(ASU)
AZ T:8:4(ASM)
AZ T:8:37(ASU);
AZ T:8:142(ASM)
Rodgers 2000
AZ T:8:85(ASU)
AZ T:8:103(ASU)
Madsen 1983b
AZ T:8:105(ASM)
Vivian 1970
Madsen 1982b
Shepard 1998
Stephen 1999
Grady and
Hall 1972
AZ T:8:35(ASU)
AZ T:8:33(ASU)
Lincoln and
Rogge 1982
AZ T:8:9(ASM)
AZ T:8:36(ASU)
Tweedy and
Lite 1996
AZ T:8:34(ASU);
AZ T:8:5(ASM)
DRIVE


PREVIOUS RESEARCH
Figure 2h
Legend
Previously Conducted Survey
Previously Recorded Site
Cave Creek Archaeological District
Study Area Boundary
Proposed Transmission Line
Sources:
United States Geological Survey (USGS), Currys Corner, AZ (1982), Union Hills, AZ (1981), 1:24,000-scale metric topographic maps.
N
W
E
S
Scale 1:24,000
0
0.25
0.5
1
Mile
Index Map
m:/projects/aps/ncp/cec/cult/mxds/previous_researchh.mxd September 27, 2002
405000
406000
407000
3733000
3732000
3731000
3730000
3729000
3728000
Rock Tank
JEEP
35
36
T:8:77(ASU);
T:8:119(ASM)
AZ T:8:76(ASU)
AZ T:8:68(ASU)
Courtright 2001
Hoffman 1990
adsen 1986b
PHOENIX
Hackbarth 1985
Effland 1984
Hackbarth 1997
dsen 1982a
11
12
AZ T:8:82(ASM)
Madsen 1983a
Effland 1984
Stone 1998
Larkin and Giacobbe 1997
Madsen 1984a
72(ASM)
Larkin 1995
1984-075.ASM
14
13
CONFIDENTIAL


408000
409000
410000
411000
412000
R4E
T5N
T4N
3732000
3731000
3730000
3729000
3728000
3727000
Wright 1992
AZ U:5:72(ASU)
Green and Rankin 1988
DeMaagd 1999a
PHOENIX
BOUND
6
5
4
Hackbarth 1985
Gunn 1993
AZ U:5:73(ASU)
DeMaagd 1999a
Effland 1984
PINNACLE
PEAK
ROAD
Ruble 1997
18
17
16
AZ U:5:218(ASM)
Hayton 1994
1982-013.ASM
Stone 1998
AZ U:5:246(ASM)
BOUNDARY
Well
BM
1630



PREVIOUS RESEARCH

Figure 2i

Legend

- Previously Conducted Survey
- Previously Recorded Site
- Cave Creek Archaeological District
- Northeast Phoenix Partners 1988 (Previously Conducted Survey)
- Study Area Boundary
- Proposed Transmission Line

Sources:

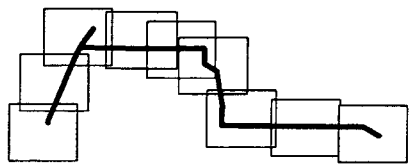
United States Geological Survey (USGS), Currys Corner, AZ (1982), 1:24,000-scale metric topographic maps.

N
W E
S

Scale 1:24,000

0 0.25 0.5 1 Mile

Index Map



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Prior Cultural Resource Surveys

The earliest cultural resource survey within the study area was conducted in 1970. Through the 1970s, most cultural resource surveys were in conjunction with hydrological projects for water procurement throughout Arizona, for example the Phoenix Vicinity Flood Control Project (Vivian 1970), and several projects associated with the construction of the Granite Reef Aqueduct (Brown 1976; Grady and Hall 1972; Kemrer 1972; Stone 1979).

Approximately 80 percent of previous surveys identified were conducted through the 1980s and 1990s. These studies have been performed primarily for suburban development and utilities expansion to facilitate the growth of the Phoenix metropolitan area. Additionally, studies like the El Mirage Loop 303 Corridor (Garcia et al. 1999) and the Lakeland Village Development (Slawson 1999) recorded many archaeological sites within our study area.

Most cultural resource surveys performed since 2000 are smaller block-type surveys or short linear alignments conducted for a wide variety of project types including resource procurement, continuing suburban development, and road maintenance. Some recent surveys, like the Calderwood Peoria 120 Acre Project (Shepard 2000) have been successful in locating new archaeological sites. Of the more recent studies, most have rerecorded known sites to update old records.

Previously Recorded Sites

Of the 155 previously recorded sites, 13 are identified as historic features, such as canals and roads, or historic trash scatters. Most sites in the study area are prehistoric with the majority of these located within three archaeological districts. The Calderwood Butte, Cave Creek Dam, and New River Dam Archaeological Districts encompass over 21,000 acres containing over 130 archaeological sites. Other identified sites were recorded in the 1960s and 1970s by ASU and ASM. These early documentations give little information on site descriptions and possible associations with formal cultural resource projects.

A total of seven previously recorded sites were identified by class I records review as occurring within or immediately adjacent to the APE of the North Valley 230kV proposed route. Five sites were originally identified during records review. An additional two sites were identified as being previously recorded only after completion of fieldwork. These sites are: AZ T:7:192 (ASM); AZ T:3:264 (ASM); AZ T:3:1 (MNA), AZ T:3:2 (MNA); AZ T:8:104 (ASU); AZ U:5:72 (ASU), and AZ U:5:73 (ASU). All of these site locations were revisited during intensive field survey of the proposed project area.

Four of the previously identified sites, AZ T:3:1 (MNA), AZ T:3:2 (MNA), AZ T:3:264 (ASM), and AZ T:7:192 (ASM), are situated either within or immediately adjacent to the APE and have not been previously evaluated for NRHP eligibility. These sites were revisited and assessed for eligibility during field survey. All of these sites are located in the extreme western portion of the

proposed project and are depicted on the Baldy Mountain and Calderwood Butte 7.5-minute USGS topographic quadrangles.

Site AZ T:3:1 (MNA), just beyond the right-of-way 200 feet to the west, is a sherd scatter that has not been evaluated for NRHP significance.

Site AZ T:3:2 (MNA), located within the APE, is an artifact scatter containing sherds, lithics, and ground stone. Evidence of previous site disturbance (pot holes) has been noted in the records. At the time the site was recorded, it was not evaluated for NRHP significance.

AZ T:3:264 (ASM), located within the APE, is a multi-component artifact scatter consisting of both historic and prehistoric artifacts concentrated in two discrete loci. This site was identified in the field rather than through record review. Locus 1, the historic concentration, is located outside of the APE of the proposed project area to the west. Locus 2, the prehistoric concentration, is located within the APE of the proposed project area and was revisited during survey.

AZ T:7:192 (ASM), located within the APE, is a very large and extensive Hohokam agriculture and habitation site which has only been incompletely recorded, given its size and multi-agency jurisdiction land ownership issues. Current data suggests that the site may be two miles in length (Laurie Slawson 2002). Although this site did not initially appear on the records review due to its recent investigation, field observation and personal communication provided additional information. Excavation at the site conducted by Aztlan Archaeology in 2001 revealed the presence of pithouses, field houses, and extensive dry farming features (Slawson et al. 2001). The evidence suggests that this site is eligible for inclusion on the NRHP.

Three of the previously recorded sites, AZ T:8:104 (ASU), AZ U:5:72 (ASU), and AZ U:5:73 (ASU), were evaluated as not eligible for the NRHP. All of these sites are located in the eastern and central portion of the proposed project area and are depicted on the Curry's Corner and Union Hills 7.5-minute USGS topographic quadrangles. Intensive field survey of the site locations did not relocate the sites. It is likely that these sites have been destroyed by construction activity in the area.

Site AZ T:8:104 (ASU) is situated in the APE of the proposed project. It is described as a pot drop within a 1-square-meter area. This site had been previously evaluated as not eligible for the NRHP. This site location was revisited but the site was not relocated by intensive field survey. Extensive disturbance in the area for erosion control has likely resulted in the destruction of this site.

Site AZ U:5:72 (ASU) is situated immediately adjacent to the APE of the proposed project. The site is described as a small sherd scatter within a 25-square-meter area. This site had been previously evaluated as not eligible for the NRHP. This site location was revisited but the site was not relocated by intensive field survey. Extensive disturbance in the area associated with the construction of the existing transmission corridor has likely resulted in the destruction of this site.

AZ U:5:73 (ASU) is situated immediately adjacent to the APE of the proposed project. The site is described as a small scatter of chipped stone and ceramic artifacts within a 600-square-meter area. This site was previously evaluated as not eligible for the NRHP. This site location was revisited but the site was not relocated by intensive field survey. Extensive disturbance in the area associated with the construction of the existing transmission corridor has likely resulted in the destruction of this site.

The proposed transmission line crosses portions of three areas of archaeological interest; (1) the Calderwood Butte Archaeological District; (2) New River Archaeological District; and (3) Cave Creek Archaeological District. The New River Dam and Cave Creek archaeological districts have been determined eligible for inclusion on the NRHP. Calderwood Butte Archaeological District is on the state inventory. These areas represent zones of high archaeological potential that can be found in many localities across the northern margins of the Phoenix Basin.

Calderwood Butte Archaeological District

The Calderwood Butte Archaeological District encompasses approximately 4,480 acres along the lower Agua Fria River and contains more than 70 archaeological sites (Rogge and Darrington 2000). Previous research along the Agua Fria River suggests that this area has been occupied since AD 300 and it contains evidence of prehistoric and historic use. One of the most interesting sites within this area is the Westwing Site, AZ T:7:27 (ASU), a classic period Hohokam Village investigated by Arizona State University in the early 1970s (Weaver 1974). This area also contains evidence of prehistoric settlements and historic irrigation and ranching establishments. The proposed North Valley transmission line route crosses approximately 3½ miles of the Calderwood Butte Archaeological District in an area where two transmission lines already exist. No archaeological or historic sites are known to be present within this portion of the district.

New River Dam Archaeological District

New River Dam Archaeological District contains approximately 9,000 acres along the middle New River drainage. Currently, 43 archaeological sites have been recorded within this district. These sites range from large habitation sites to sherd and lithic scatters. The proposed transmission line follows the northern edge of the district for approximately 2 miles. No previously recorded sites are located within the APE within this portion of the district.

Cave Creek Dam Archaeological District

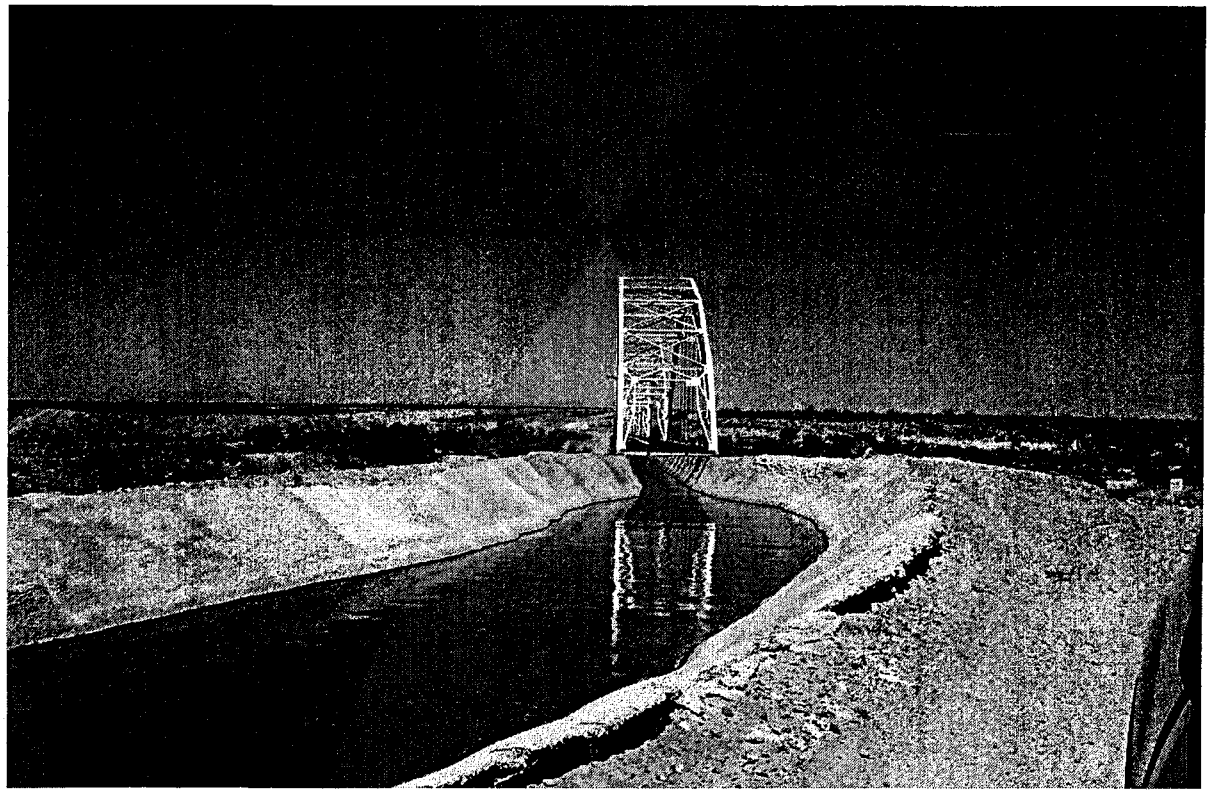
Cave Creek Dam Archaeological District contains approximately 8,000 acres within the Cave Creek Recreation Area. Prehistoric occupation of this area dates from AD 700. Currently, the inventory of known cultural resources includes 19 prehistoric sites, 3 historic sites, and 5 previously destroyed sites. These sites include habitation areas, field houses, garden plots,

agricultural terraces, water control features, canals, and petroglyph panels. The proposed transmission line crosses approximately 2 miles of the District. No previously recorded sites are located within the APE within this portion of the District.

The proposed transmission line crosses portions of two historic structures, the Beardsley Canal and the Black Canyon Road. Each of these structures are described below.

AZ T:3:55 (ASM) Beardsley Canal

AZ T:3:55 (ASM) refers to the historic Beardsley Canal alignment. This canal alignment was constructed in 1926 and is a part of the privately developed Maricopa County Water District irrigation system. It is 33 miles in length, and serves as the means by which surface water of the Agua Fria River stored in Lake Pleasant is delivered to water facilities in the Phoenix area. Photograph 3 is an overview of the Beardsley Canal as it occurs in the project area.



Photograph 3
Overview of AZ T:3:55 (ASM) looking northeast.

Original planning for the Beardsley Canal was begun in 1888 by an investor consortium called the Agua Fria Water and Land Company (AFWLC). The eventual leader of this private consortium was William Beardsley, who unveiled extensive plans for irrigation development including the construction of two storage dams, a diversion dam, and 50 miles of main canal with an additional 200 miles of laterals (Fenicle et al. 1994). Under Beardsley's plan, approximately 160,000 acres on the west side of the Agua Fria River would have been developed as irrigated agricultural land.

Initial construction of the diversion dam and an earthen canal began in 1892. Unfortunately, construction was halted in 1895 due to a series of financial difficulties and flooding episodes. These misfortunes lead to the eventual bankruptcy of the AFWLC, and the sale at auction of the diversion dam and canal alignment. In 1897, these properties were repurchased by a private group of investors and returned to Beardsley.

Beardsley did not abandon hope for the eventual completion of the project. In 1925 he formed the Beardsley-Agua Fria Water Conservation District and sold bonds in order to finance completion of the project. At the end of 1925, the project was at last given the green light to proceed and was renamed the Maricopa County Municipal Water Conservation District #1. Despite the name, the district remained a private entity.

William Beardsley died in December of 1925. Upon his death, plans for construction passed on to engineer Carl Pleasant, who was able to secure private funding for the project from a New York investment company. Donald Waddell was a partner at this firm, and the future Waddell Dam was named in his honor.

Construction on the project began again in 1926 to 1927 and followed the original route of the earlier project from the diversion dam to a point approximately 1.5 miles to the south. At this point, the new route diverged from the original alignment and followed an eastern corridor. Under Pleasant's guidance, the project was finally completed in 1935.

In her report on the historic resources of the Agua Fria River, Jackman (2000) concluded that the eligibility of the Beardsley Canal for the NRHP was undetermined. The Bureau of Reclamation has concluded that at least the upper portions of the canal are Register-eligible (Fenicle et al. 1994). A more complete assessment of the historic integrity of the canal in its entirety has yet to be completed.

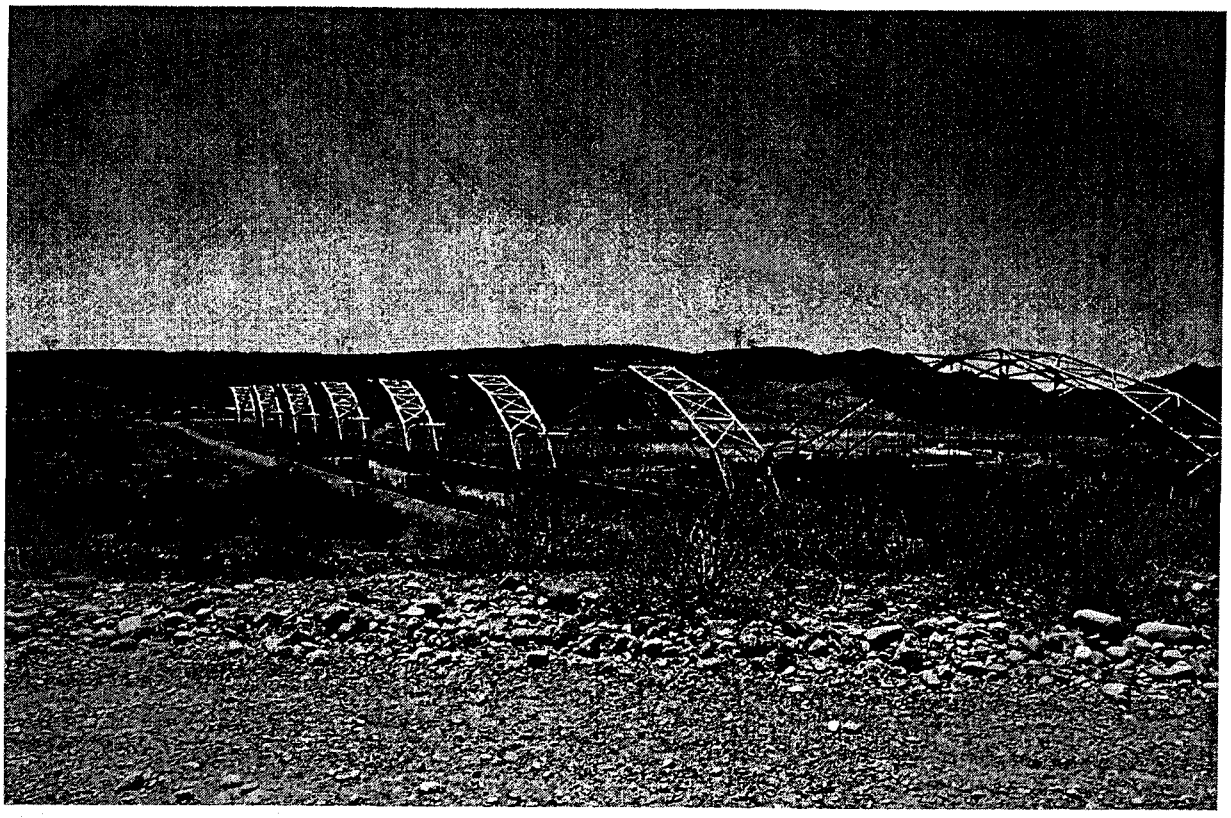
Linear features such as the Beardsley Canal are evaluated for NRHP eligibility on the basis of their integrity as demonstrated in specific project areas. Portions of AZ T:3:55 (ASM) have thus been evaluated by several other researchers along its original route (Bauer et al. 2001; Gage 2002).

The Beardsley Canal is an active water system and passes through the proposed project area in two areas. The first is located in the extreme southern portion of the proposed project to the

adjacent north of Jomax Road. In this area, the canal follows an elevated alignment above a well-developed intermittent wash.

In their recent survey of the power corridor to the adjacent west of the proposed project area, Gage (2002) completed an assessment of the canal alignment and found it to be eligible for inclusion on the NRHP under Criteria A and C. The canal is associated with the development of irrigation technology in the northern Phoenix Basin during the early nineteen hundreds. We concur with this assessment.

The second location in the proposed project area where the Beardsley Canal occurs is above the eastern terrace of the Agua Fria River to the east of CAP Reach 9. Here the canal is not elevated and empties into the Agua Fria flume. Photograph 4 is an overview of the Agua Fria flume as it occurs in the project area.



Photograph 4
Overview of AZ T:3:55 (ASM) flume looking southwest.

Examination of the canal alignment and flume in this area indicates that the canal retains its original historic integrity. We therefore conclude that this portion of the canal is also eligible for inclusion on the NRHP under the same criteria as mentioned above.

AZ T:4:131 (ASM) Black Canyon Road

AZ T:4:131 (ASM) refers to the historic Phoenix to Prescott Road, also known as the Black Canyon Road. This road alignment was originally given the site designation AZ T:4:131 (ASM) by Neal (1994) as part of the Desert Hills Development Project, several miles north of the project area.

The exact date of construction for the Black Canyon Road is unknown, however, it does occur on the General Land Office (GLO) plat map for Township 5 North, Range 2 East dated 1886, and the GLO plat map for Township 5 North, Range 3 East dated 1895.

The Black Canyon Road was originally constructed for use as a wagon road, and was used as a stagecoach line as early as 1889. Use of the road as a stagecoach and freight route continued until 1917 (Ellis et al. 2002). The road was subjected to improvements including grading and gravel base to make it suitable for automobile use in both 1917 and 1937. In 1937, the road was designated as SR 69. The road was paved and partially realigned in 1946 and 1956. Portions of the original road were also incorporated into I-17 during its construction in the 1960s.

Linear features such as historic road alignments are evaluated for NRHP eligibility on the basis of their integrity as demonstrated in specific project areas. Portions of AZ T:4:131 (ASM) have thus been evaluated by several other researchers along its original route.

The portion of the road as originally recorded was designated as not eligible for inclusion on the NRHP due to a lack of integrity demonstrated in the project area. However, Bilsbarrow et al. (1997) evaluated a portion of this road to the north of the New River interchange and determined it to be eligible under Criteria A, C, and D. Other researchers, such as Ellis et al. (2002), Crownover and Macnider (2001), and Montero and Walsh (2000), have examined portions of this road to the north of the current study area and have found it to be not eligible for inclusion on the NRHP.

The newly recorded portion of site AZ T:4:131 (ASM) that occurs in association with newly recorded site AZ T:4:374 (ASM) is observed to demonstrate historical integrity. It is likely that this portion of the road was abandoned after the route realignments of 1917 and 1937, as the road corridor appears to demonstrate width and configuration consistent with wagon roads rather than automobile conveyance routes. In the project area, this portion of AZ T:4:131 (ASM) is recommended eligible for inclusion on the NRHP under Criterion A for its relationship with early transportation routes within Maricopa County.

General Land Office Plat Maps

Review of the historic GLO plat maps for Township 4 North, Range 4 East dated 1916 depict road alignments in Sections 7, 8, 9, and 10. Examination of the Curry's Corner 7.5-minute

topographic quadrangle dated 1964 (photo-revised 1982), show none of these roads still in existence.

Review of the historic GLO plat maps for Township 4 North, Range 3 East dated 1895 depict a road alignment in Section 1 and a water pipe alignment in Section 2. Examination of the Union Hills 7.5-minute topographic quadrangle dated 1964 (photo-revised 1981), show neither the road nor the water pipe alignment still in existence.

Review of the historic GLO plat maps for Township 4 North, Range 2 East dated 1895 depict portions of the road from Phoenix to Prescott (Black Canyon Road) passing through Sections 1 and 2. This historic road alignment has been given the site designation of AZ T:3:131 (ASM) by previous researchers. Examination of the Union Hills 7.5-minute topographic quadrangle dated 1964 (photo-revised 1981), indicate that this road alignment was likely destroyed by the construction of the I-17/Happy Valley Road interchange corridor.

Review of the historic GLO plat maps for Township 5 North, Range 2 East dated 1895 depict portions of the road from Phoenix to Prescott (Black Canyon Road) passing through Sections 23, 26, and 35. This historic road alignment has been given the site designation of AZ T:3:131 (ASM) by previous researchers. Examination of the Biscuit Flat 7.5-minute topographic quadrangle dated 1965 (photo-revised 1981) does not show this road. Field examination found evidence for its existence at newly recorded site AZ T:4:374 (ASM), a historic road alignment associated with early twentieth century artifacts.

Review of the historic GLO plat maps for Township 5 North, Range 1 East dated 1895 depict portions of the road from Santos as passing through the project area in Sections 10 and 15. Examination of Biscuit Flat 7.5-minute USGS quadrangle dated 1965 (photo-revised 1981) indicates that that is the modern Lake Pleasant Road. In addition, the historic 1895 GLO plat depicts an unnamed road alignment as passing through the project area in Sections 8 and 17 along the west side of the Agua Fria River. Examination of the Baldy Mountain 7.5-minute USGS quadrangle dated 1964 (photo-revised 1981) shows no evidence of this road; however, as mapped on the GLO in Section 8 it appears to follow the modern transmission corridor where it crosses the Agua Fria. This may indicate that this historic road is currently utilized as the transmission line access road. If this is the case it has maintained none of its original integrity.

Review of the historic GLO plat maps for Township 5 North, Range 1 West dated 1924 depict road alignments in Section 25 and 36. Examination of the Calderwood Butte 7.5-minute topographic quadrangle dated 1957 (photo-revised 1981) shows the road alignment in Section 25 as still existing. However, this road alignment is located in the northwestern quarter of Section 25, and the proposed corridor is located in the extreme southeastern corner of the southeastern quarter. As such, this road will not be impacted by the proposed construction action. The road alignment in Section 36 is not mapped and no longer exists.

ISOLATED OCCURRENCES

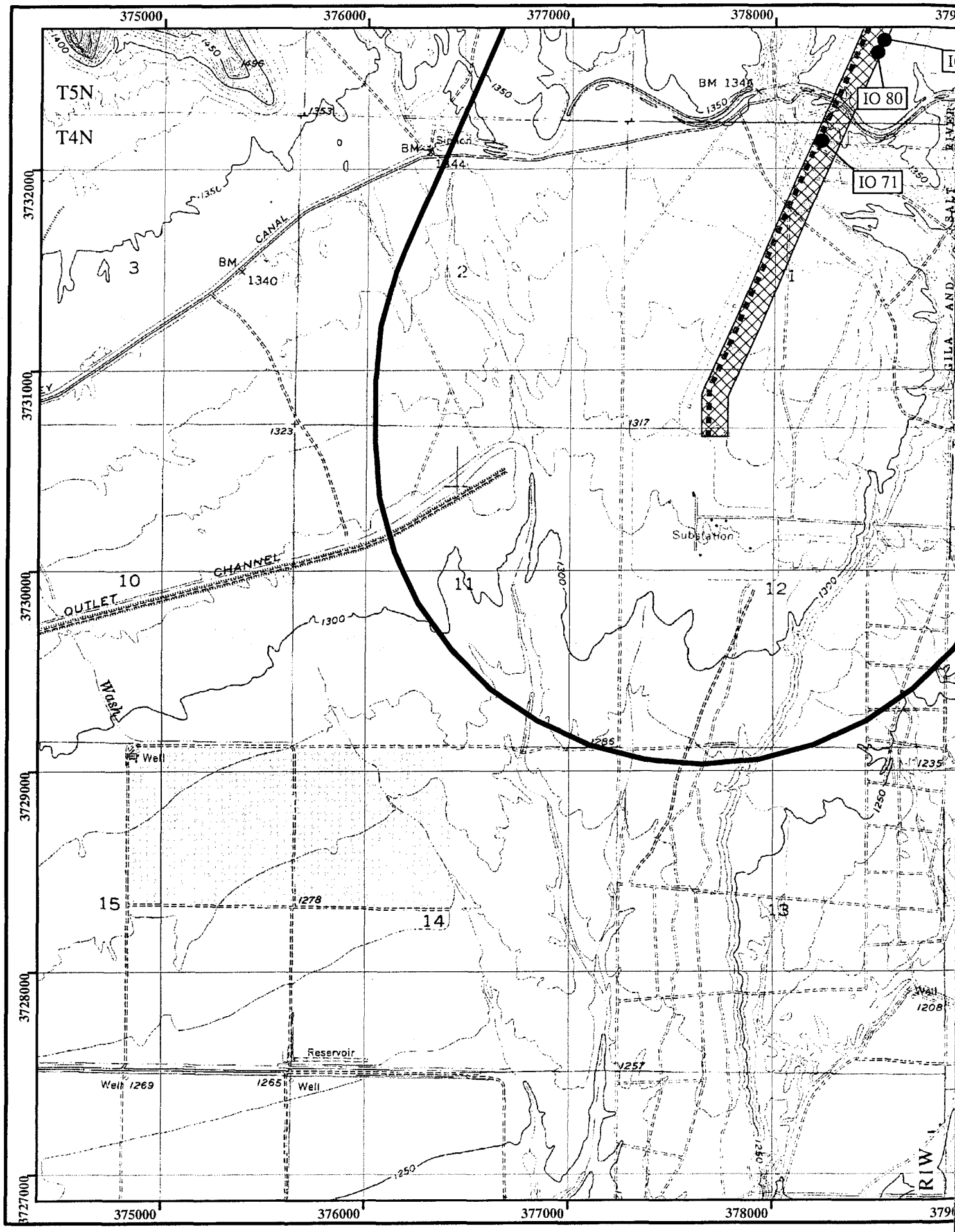
A total of 89 IOs were encountered during survey of the transmission line corridor (Figures 3a to 3i). Of these, 70 consisted of prehistoric artifacts, 15 were historic artifacts, 1 was a rock feature, and 3 were roadside shrines (Table 3).

TABLE 3
TABULATION OF ISOLATED OCCURRENCES

	IO Type	Description	Area	UTM
1	Historic	Soldier-top can	1x1 m	3729513N/412493E
2	Historic	Solarized glass, milk glass	1x1 m	3729873N/411862E
3	Shrine	Roadside shrine, Eric A. Benson	1x1 m	3730299N/409800E
4	Lithic	Tertiary flake, quartz crystal	1x1 m	3730406N/409063E
5	Historic	Metal, solarized glass	1x2 m	3730396N/407380E
6	Shrine	Pet graves	2x2 m	3730310N/401617E
7	Lithic	Primary flake, quartzite	1x1 m	3730427N/403721E
8	Lithic	Graver, white chert	1x1 m	3730436N/404554E
9	Historic	1947 US Coast and Geodetic Survey marker	1x1 m	3731519N/396152E
10	Lithic	Primary flake, chalcedony	1x1 m	3735959N/395614E
11	Historic	Four hole-in-top cans, porcelain plate base, solarized glass associated with AZ T:4:131 (ASM)	5x15 m	3735955N/395587E
12	Lithic	Tested cobble, quartzite	1x1 m	3736240N/395515E
13	Lithic	Primary flake, metaquartzite	1x1 m	3736405N/395277E
14	Lithic	Primary flake, metaquartzite	1x1 m	3736660N/394869E
15	Historic	Hole-in-top lid	1x1 m	3736659N/394750E
16	Lithic	Tested cobble, diorite	1x1 m	3736709N/394666E
17	Lithic	Bifacial core, fine-grained rhyolite	1x1 m	3736953N/394367E
18	Historic	Rock cairn	1x1 m	3736953N/394183E
19	Flaking station	Flaking station, 3 brown chert secondary flakes, 1 chalcedony secondary flake, 4 pieces brown chert shatter	5x5 m	3736454N/395059E
20	Lithic	Primary flake, chert, Primary flake, porphyritic basalt, Secondary flake, fine-grained rhyolite	1x22 m	3736334N/395243E
21	Lithic	Multidirectional fine-grained rhyolite, Secondary flake, porphyritic basalt	1x4 m	3736291N/395339E
22	Historic	Hole-in-top meat tin lid	1x1 m	3736156N/395565E
23	Lithic	Tested cobble, Secondary flake, metaquartzite	1x1 m	3738418N/394134E
24	Lithic	Unidirectional core, porphyritic basalt	1x1 m	3738370N/394105E
25	Lithic	Biface, metachalcedony	1x1 m	3738072N/394125E
26	Lithic	Multidirectional core, fine-grained rhyolite	1x1 m	3737864N/394088E
27	Lithic	Cobble scraper, metaquartzite	1x1 m	3737599N/394116E
28	Lithic	Primary flake, Secondary flake, Flake tool, fine-grained rhyolite	1x1 m	3737024N/394094E
29	Lithic	Primary flake, Multidirectional core, metaquartzite, Multidirectional core, porphyritic basalt	1x4 m	3737008N/394115E
30	Lithic	Secondary flake, metaquartzite	1x1 m	3737172N/394212E
31	Lithic	Multidirectional core, chalcedony	1x1 m	3737851N/394173E
32	Lithic	Primary flake, fine-grained rhyolite	1x1 m	3738612N/393864E

TABLE 3 TABULATION OF ISOLATED OCCURRENCES				
	IO Type	Description	Area	UTM
33	Lithic	2 Secondary flakes, porphyritic basalt	1x1 m	3738541N/393847E
34	Lithic	3 Secondary flakes, porphyritic basalt	1x2 m	3738647N/393017E
35	Lithic	Mulidirectional core, fine-grained diorite, Secondary flake, metaquartzite	1x8 m	3738648N/392670E
36	Historic	Rock cairn, 2 courses, deflated	1x1 m	3738610N/392692E
37	Lithic	Cobble tool, diorite	1x1 m	3738604N/392127E
38	Historic	Burro shoe	1x1 m	3738648N/391591E
39	Lithic	Unidirectional core/scraper plane, metachalcedony	1x1 m	3738543N/392043E
40	Historic	Rock cairn, two courses, (metavolcanic).	1x1 m	3738564N/392679E
41	Lithic	Secondary flake, fine-grained rhyolite, battered cobble, porphyritic basalt	1x1 m	3738519N/393437E
42	Lithic	Bifacial core, porphyritic basalt	1x1 m	3738628N/391024E
43	Lithic	Secondary flake, porphyritic basalt	1x1 m	3738609N/391079E
44	Lithic	Multidirectional core, porphyritic basalt	1x1 m	3738626N/391680E
45	Lithic	Multidirectional core, fine-grained rhyolite	1x1 m	3738507N/391694E
46	Historic	Rock cairn, one course, (metavolcanic).	1x1 m	3738527N/391470E
47	Lithic	Unidirectional core, porphyritic basalt	1x1 m	3738554N/390367E
48	Historic	Soldier-top can	1x1 m	3738531N/389894E
49	Lithic	Primary flake, Secondary flake, porphyritic basalt	1x1 m	3738633N/389175E
50	Lithic	Unidirectional core, fine-grained metavolcanic	1x1 m	3738636N/389123E
51	Flaking station	Flaking station, unidirectional core, 2 Secondary flakes, 3 tertiary flakes, shatter, porphyritic basalt	2x2 m	3738643N/388538E
52	Flaking station	Flaking station, Primary flake, Secondary flake, end scraper, porphyritic basalt	2x18 m	3738626N/388763E
53	Lithic	Multidirectional core, bifacial chopper, Secondary flake, porphyritic basalt	1x1 m	3738565N/389155E
54	Flaking station	Flaking station, approximately 20 flakes, primary to tertiary reduction, biface, porphyritic basalt	5x5 m	3738643N/388166E
55	Lithic	Secondary flake, porphyritic basalt	1x1 m	3738619N/388132E
56	Lithic	Multidirectional core, porphyritic basalt, Secondary flake, metavolcanic	1x20 m	3738647N/388043E
57	Lithic	Tertiary flake, porphyritic basalt	1x1 m	3738626N/387816E
58	Flaking station	3 Secondary flakes, tertiary flake, porphyritic basalt, Primary flake, 3 tertiary flakes, fine-grained basalt	10x10m	3738622N/387586E
59	Lithic	Unidirectional core, porphyritic basalt	1x1 m	3738666N/386364E
60	Lithic	Bifacial core, 2 Secondary flakes, 2 tertiary flakes, porphyritic basalt	7x7 m	3738590N/387558E
61	Historic	One-hinge upright tobacco tin	1x1 m	3738590N/387558E
62	Lithic	Unidirectional core, 2 Secondary flakes, end scraper, porphyritic basalt, modern rock cairn	10x14 m	3738577N/387916E
63	Lithic	Unidirectional core, porphyritic basalt	1x1 m	3738587N/388113E
64	Lithic	2 Primary flakes, 3 Secondary flakes (one with retouch), porphyritic basalt	3x6 m	3738559N/388239E
65	Historic	Three-hinge upright tobacco tin	1x1 m	3738690N/384856E
66	Lithic	Secondary flake, porphyritic basalt	1x1 m	3738663N/384845E
67	Lithic	Secondary flake, porphyritic basalt	1x1 m	3738664N/385531E

TABLE 3 TABULATION OF ISOLATED OCCURRENCES				
	IO Type	Description	Area	UTM
68	Lithic	Unidirectional core, Secondary flake, porphyritic basalt, 2 Secondary flakes, fine-grained basalt, disturbed context	2x20 m	3738626N/385837E
69	Lithic	Secondary flake, metaquartzite	1x1 m	3738525N/385735E
70	Lithic	Tertiary flake, porphyritic basalt	1x1 m	3738547N/385155E
71	Feature	Rock alignment, one course, metavolcanic (E/W) (N/S)	24x3.6 m	3732137N/378225E
72	Lithic	Flake tool, diorite	1x1 m	3734611N/379269E
73	Groundstone, ceramics	Rectangular mano, bifacial, complete, 5 Gila body sherds	2x7 m	3733880N/379065E
74	Flaking station	Flaking station, multidirectional core, 7 tertiary flakes, porphyritic basalt	4x13 m	3733336N/378859E
75	Lithic	Bifacial chopper, tertiary flake, fine-grained basalt, 2 Secondary flakes, porphyritic basalt	1x15 m	3733290N/378859E
76	Lithic	Unidirectional core, primary flake, porphyritic basalt	1x1 m	3733145N/378797E
77	Lithic	Flaking station, 1 Primary flake, 5 Secondary flakes, porphyritic basalt	3x3 m	3733102N/378774E
78	Lithic	Primary flake, 4 Secondary flakes, porphyritic basalt, tertaiary flake, chert, secondary flake, fine-grained basalt	2x3 m	3732910N/378617E
79	Lithic	Tertiary flake, chert, tertiary flake, quartz crystal	1x13 m	3732640N/378528E
80	Lithic	Unidirectional core, porphyritic basalt, soldier-top can	1x13 m	3732579N/378497E
81	Ceramic	Pot drop, 20 body sherds Gila Plain	2x2 m	3736456N/380146E
82	Shrine	Road shrine, "In Memory of John Schatz, Jan 23, 1973-Dec. 23, 2001"	1x1 m	3730334N/399743E
83	Lithic	Unidirectional core, fine-grained basalt	1x1 m	3738618N/390023E
84	Lithic/historic	Seven-hinge tobacco can, Tertiary flake, secondary flake, porphyritic basalt, Primary flake, tested cobble, 2 Secondary flakes, fine-grained basalt,	4x18 m	3739651N/381809E
85	Lithic	Bifacial core, 2 Secondary flakes, rhyolite, Tested cobble, Secondary flake, porphyritic basalt	10x10 m	3739989N/382013E
86	Flaking station	Porphyritic basalt, approximately 30 flakes	3x3 m	3740007N/382025E
87	Lithic	Primary flake, fine-grained basalt	1x1 m	3740369N/382321E
88	Lithic	Flake tool, fine-grained rhyolite	1x1 m	3740390N/382315E
89	Flaking station	Multidirectional core, approximately 15 flakes, porphyritic basalt	4x4 m	3740441N/382378E



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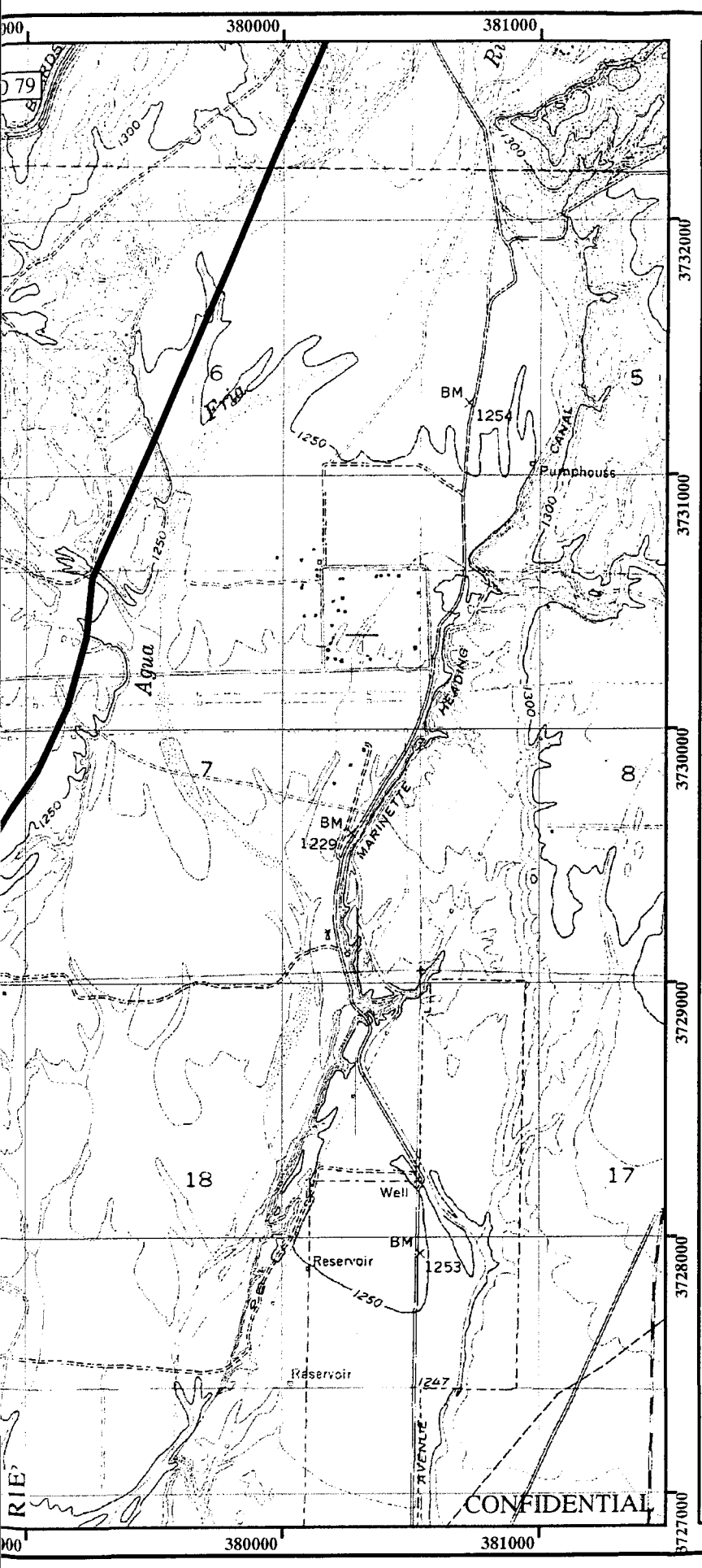

SURVEY RESULTS

Figure 3a

Legend

- Study Area Boundary
- Proposed Transmission Line
- Area Surveyed
- Isolated Occurrence

Sources:

United States Geological Survey (USGS), Calderwood Butte, AZ (1981), 1:24,000-scale metric topographic map.

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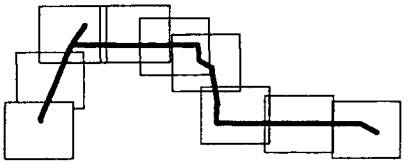
Index Map



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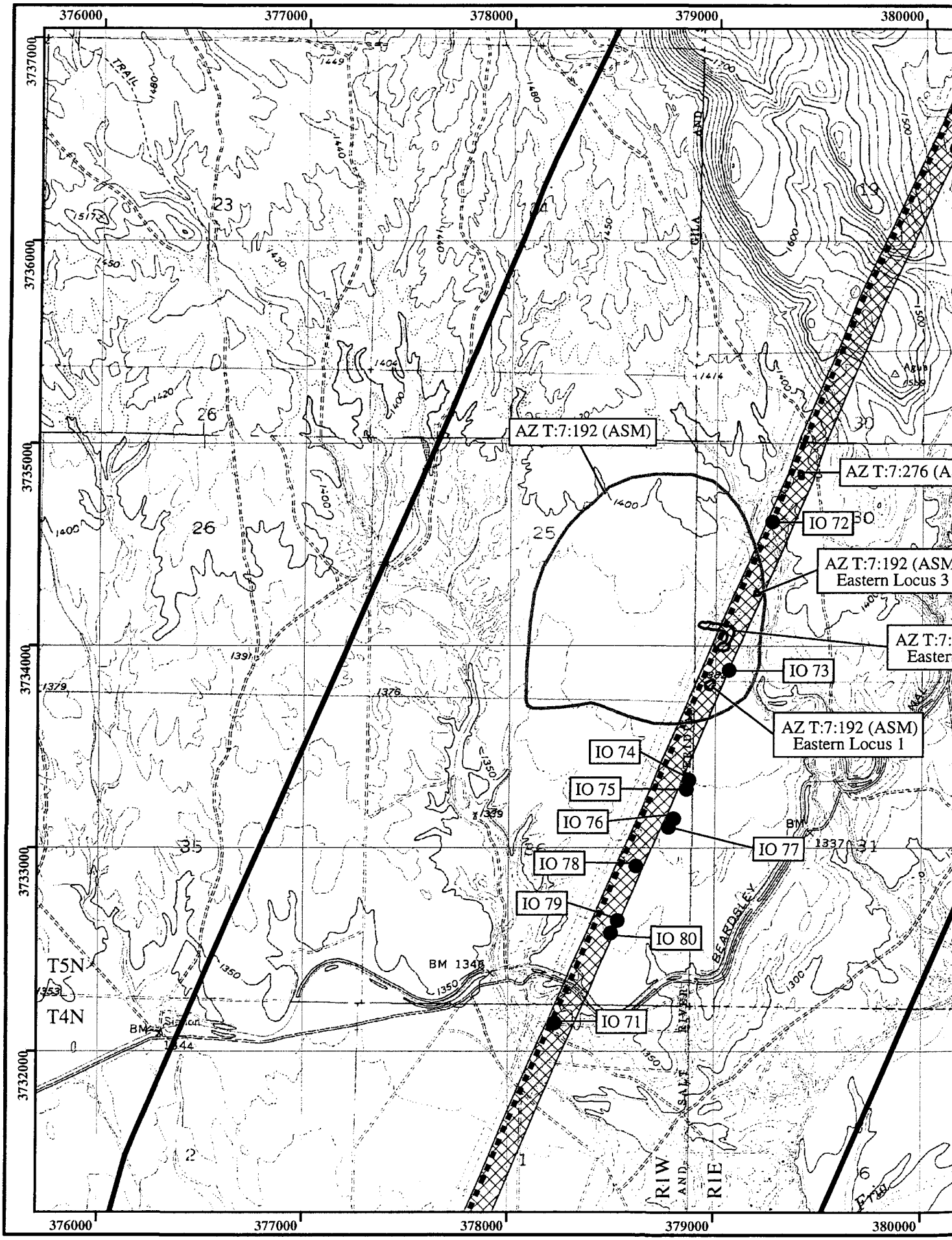

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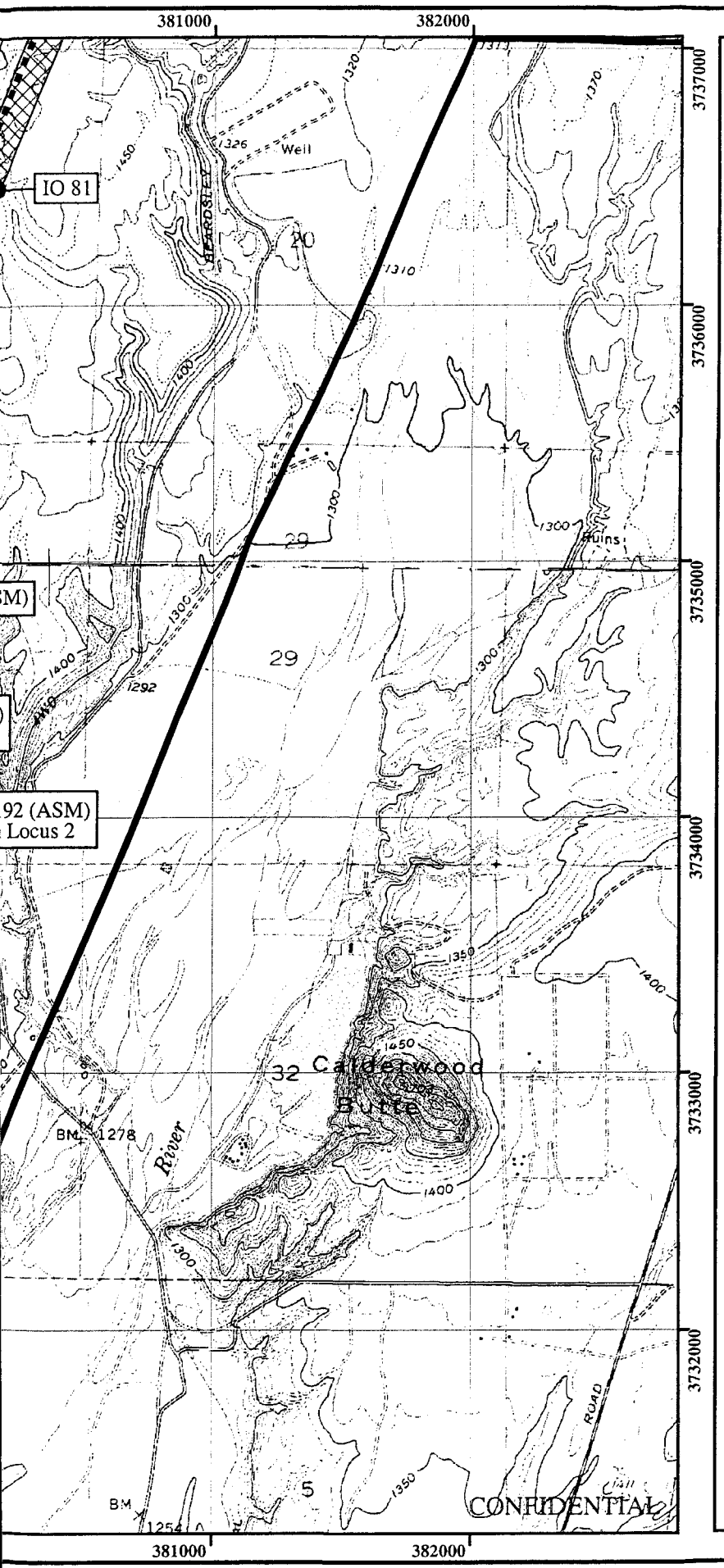
GILA AND SALT RIVER
TRAIL
BM 1348



SURVEY RESULTS

Figure 3b

Legend

- Study Area Boundary
- Proposed Transmission Line
- Newly Recorded Site
- Revisited Site
- Area Surveyed
- Isolated Occurrence

Sources:

United States Geological Survey (USGS), Calderwood Butte, AZ (1981), Baldy Mountain, AZ (1981), 1:24,000-scale metric topographic maps.

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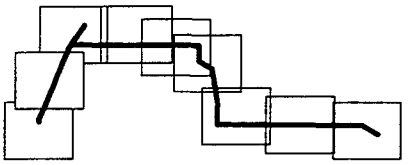

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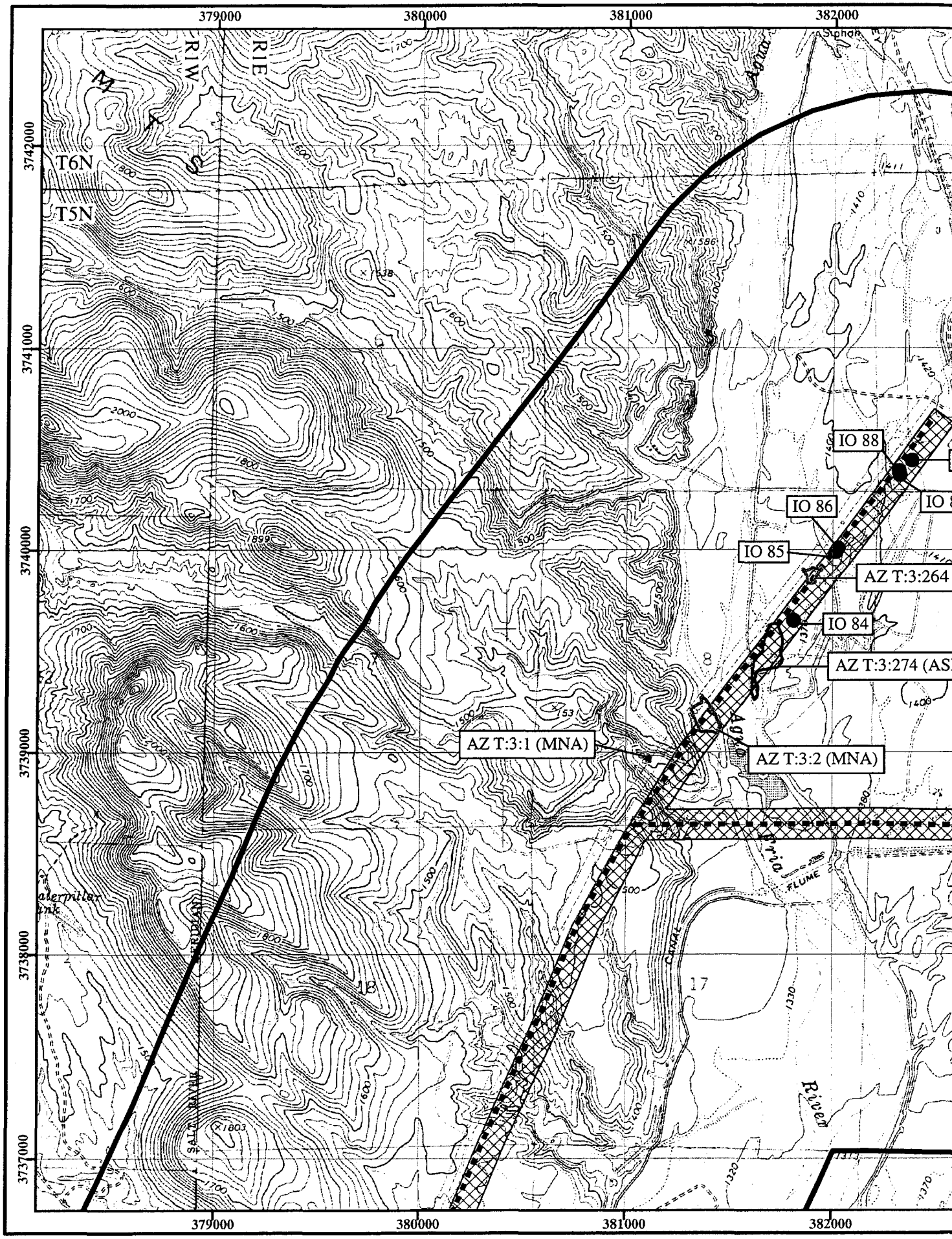
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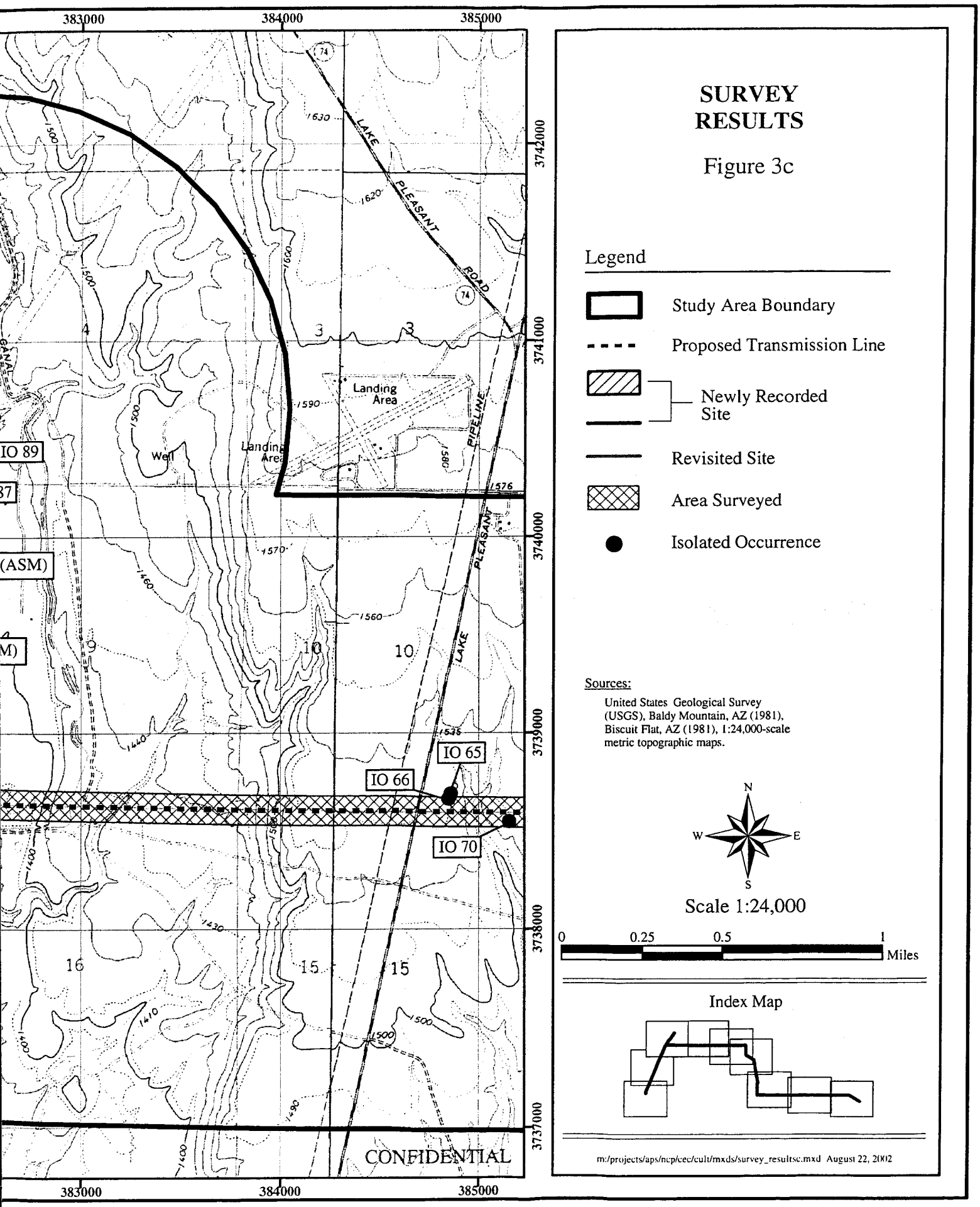
SURVEY RESULTS
Figure 3c
Legend
Study Area Boundary
Proposed Transmission Line
Newly Recorded Site
Revisited Site
Area Surveyed
Isolated Occurrence
Sources:
United States Geological Survey (USGS), Baldy Mountain, AZ (1981), Biscuit Flat, AZ (1981), 1:24,000-scale metric topographic maps.
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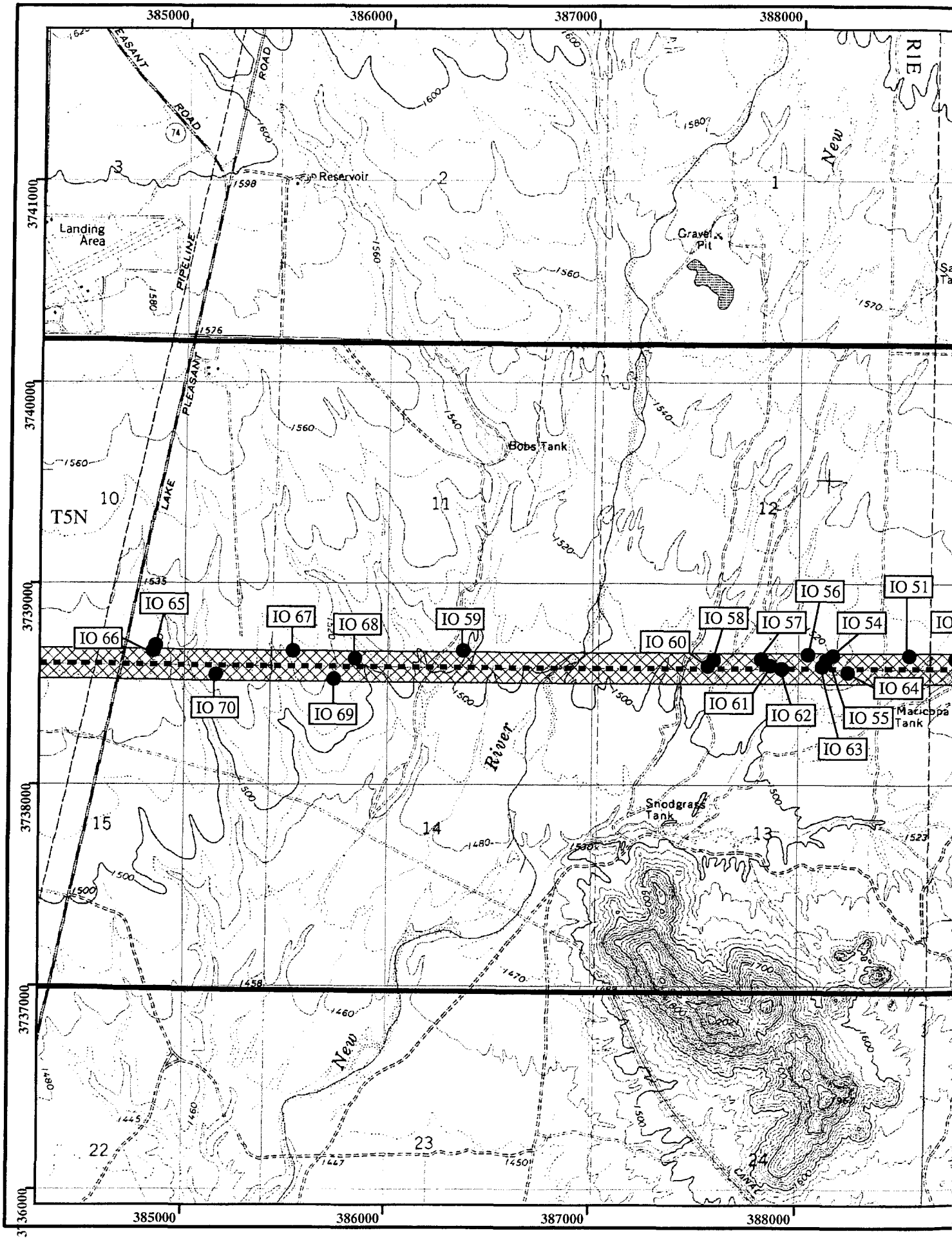
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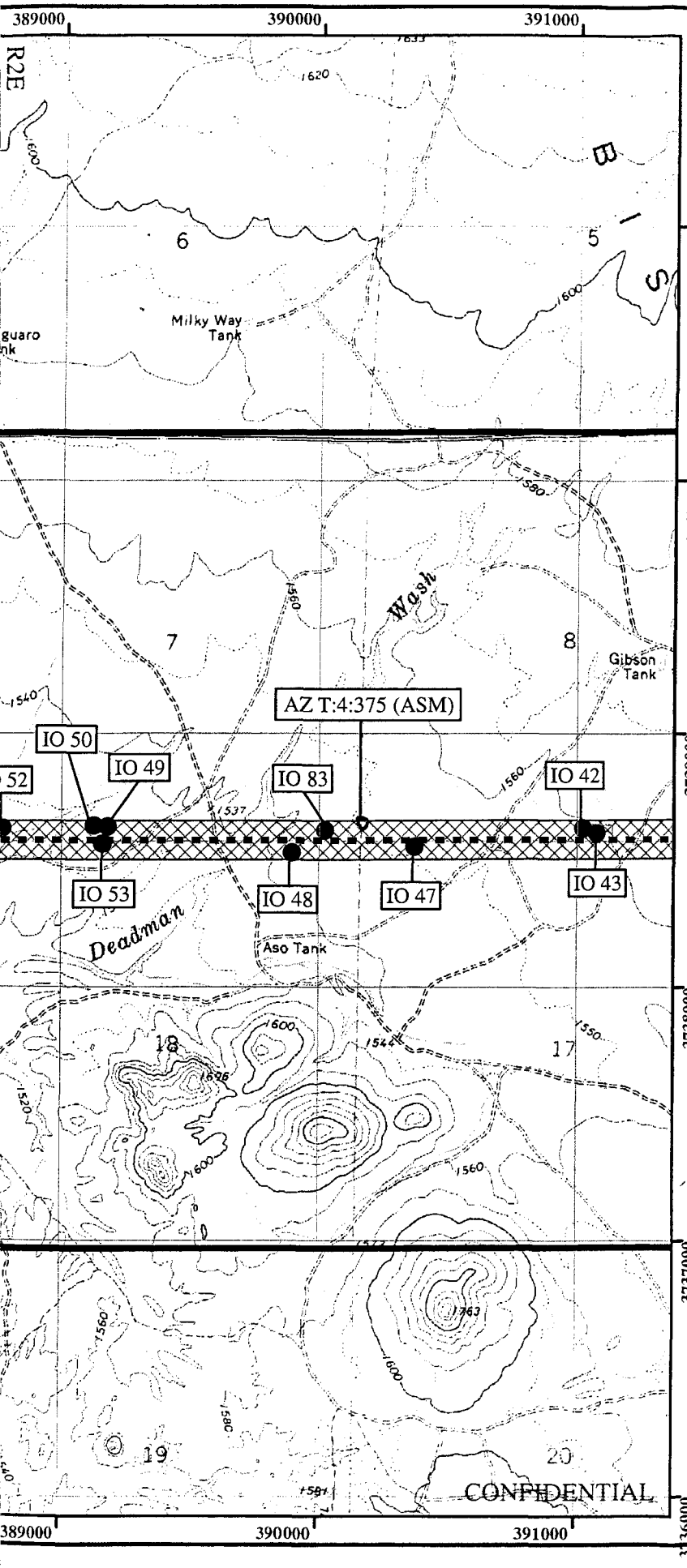

SURVEY RESULTS

Figure 3d

Legend

- Study Area Boundary
- Proposed Transmission Line
- Newly Recorded Site
- Area Surveyed
- Isolated Occurrence

Sources:

United States Geological Survey (USGS), Biscuit Flat, AZ (1981), 1:24,000-scale metric topographic map.

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Scale 1:24,000

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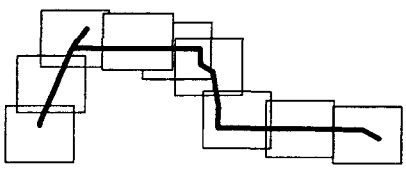
Index Map



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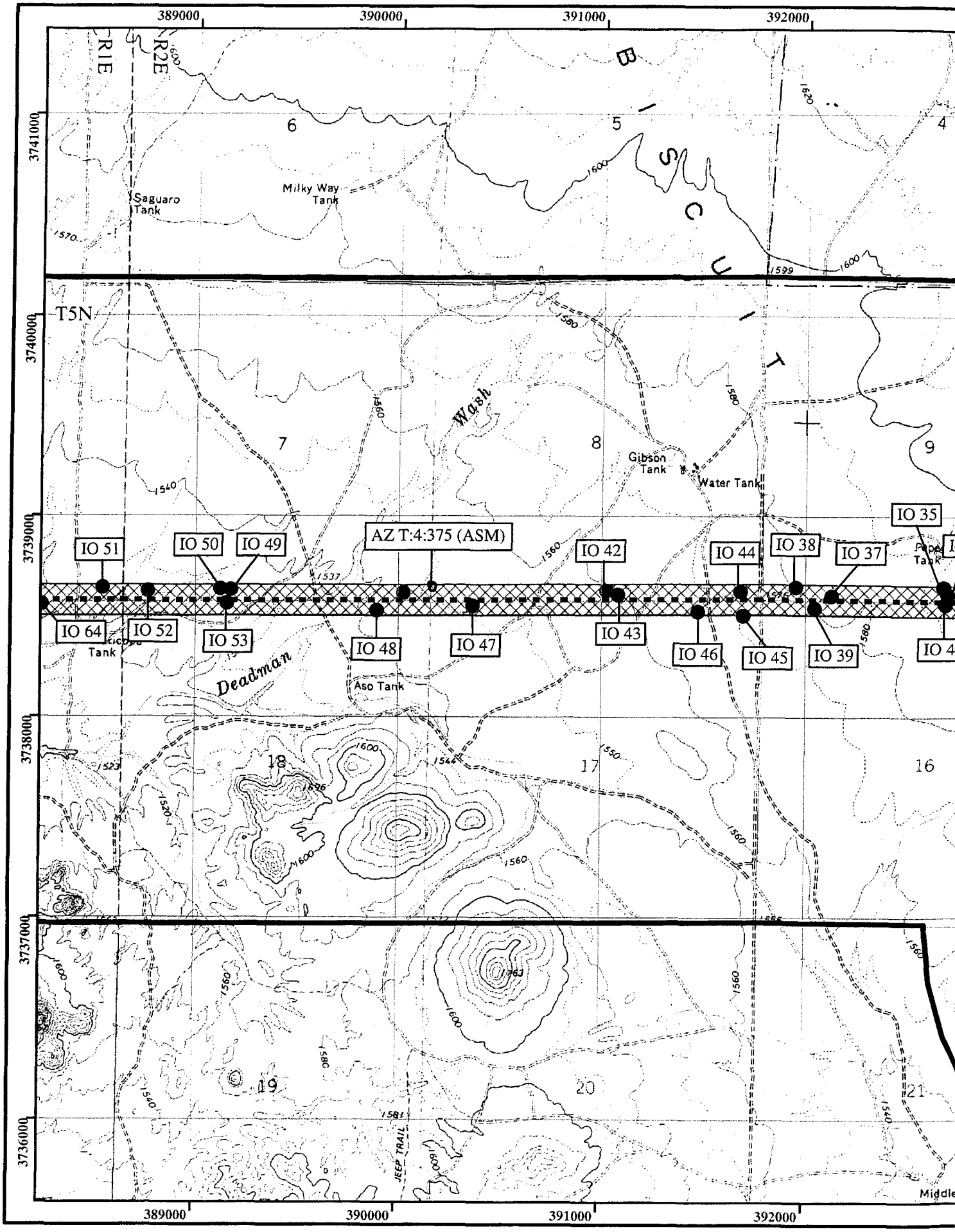
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Saguaro Tank
Milky Way Tank
Gibson Tank
Water Tank
Deadman Wash
Aso Tank
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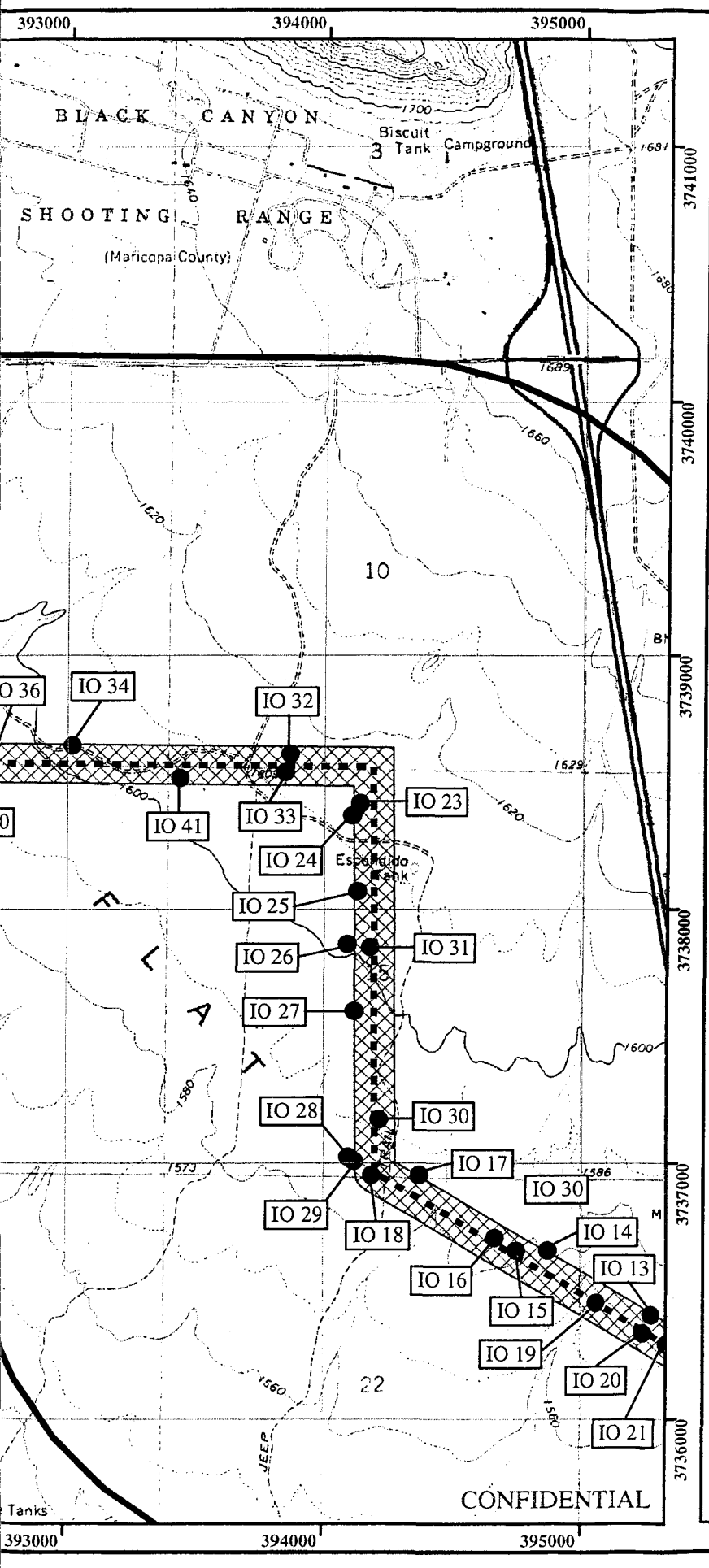


SURVEY RESULTS

Figure 3e

Legend

- Study Area Boundary
- Proposed Transmission Line
- Newly Recorded Site
- Area Surveyed
- Isolated Occurrence

Sources:

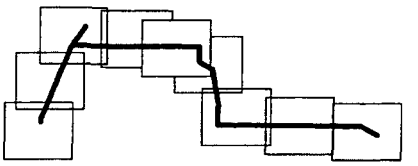
United States Geological Survey (USGS), Biscuit Flat, AZ (1981), 1:24,000-scale metric topographic map.

N
W E
S

Scale 1:24,000

0 0.25 0.5 1 Miles

Index Map



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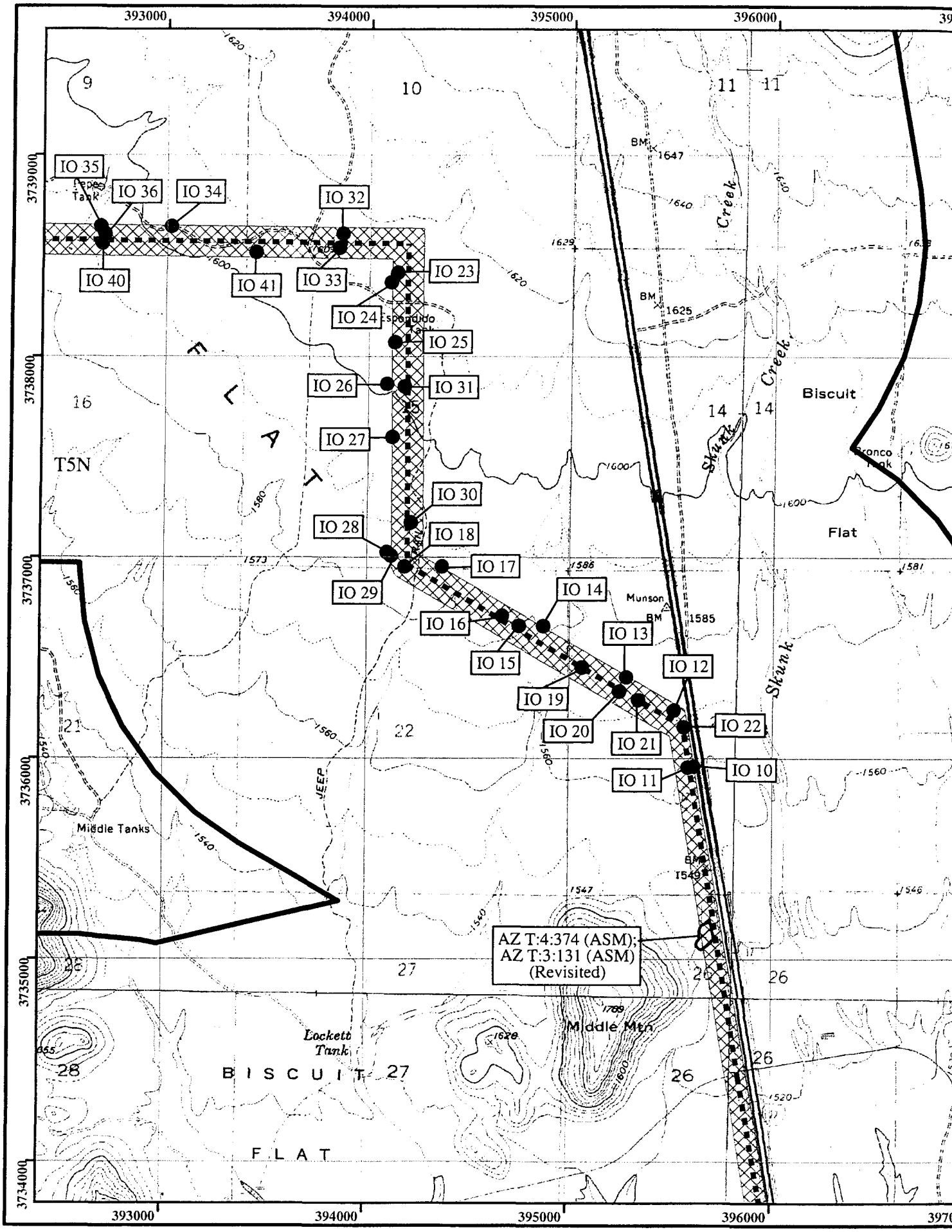

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IO 15
IO 13
IO 12
IO 19
IO 20
IO 21
IO 22
IO 11
IO 10
AZ T:4:374 (ASM);
AZ T:3:131 (ASM)
(Revisited)
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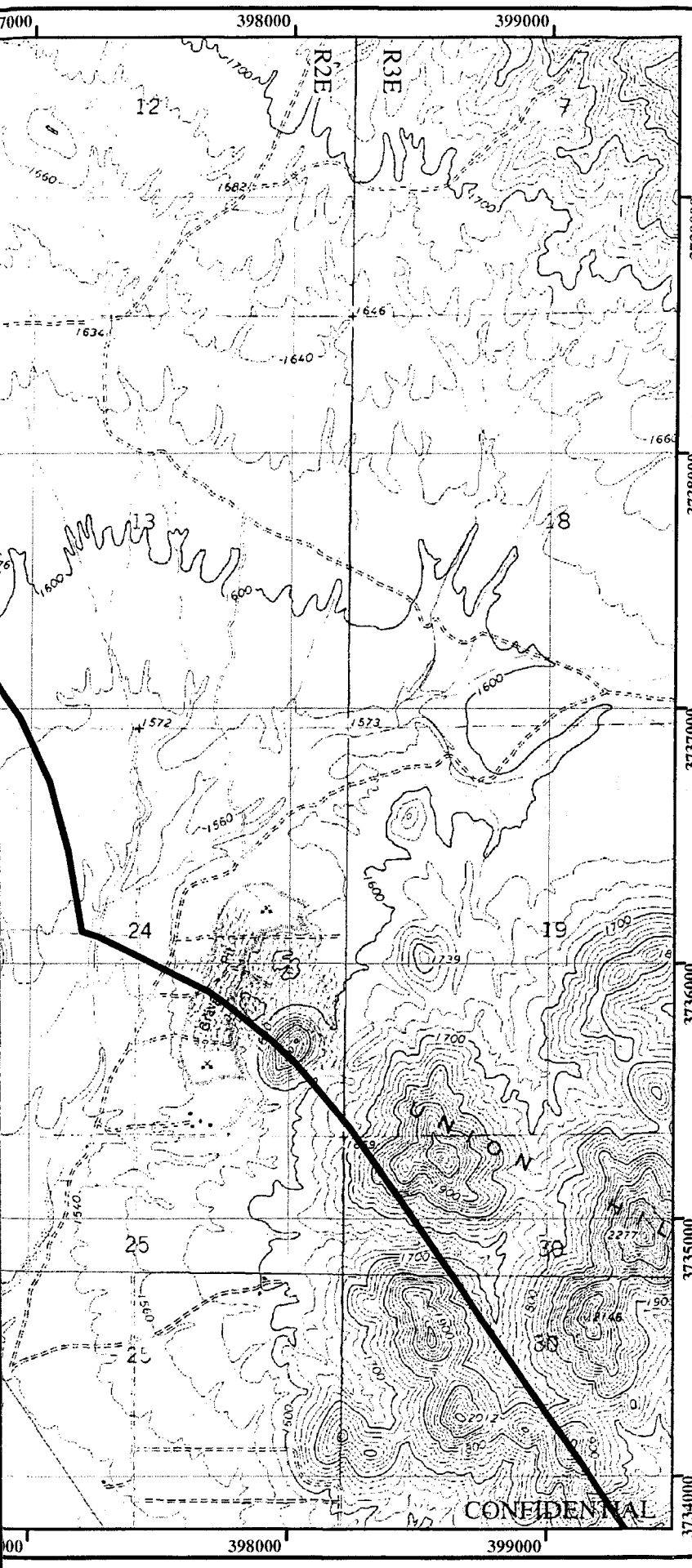
Biscuit
Flat
Skunk Creek
Munson
Middle Tanks
Middle Mtn
Lockett Tank
BISCUIT
FLAT
JEEP



SURVEY RESULTS

Figure 3f

Legend

- Study Area Boundary
- Proposed Transmission Line
- Newly Recorded Site
- Area Surveyed
- Isolated Occurrence

Sources:

United States Geological Survey (USGS), Biscuit Flat, AZ (1981), Hedgpeth Hills, AZ (1981), New River SE, AZ (1981), Union Hills, AZ (1981) 1:24,000-scale metric topographic maps.

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Scale 1:24,000

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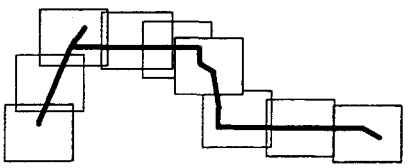
Index Map



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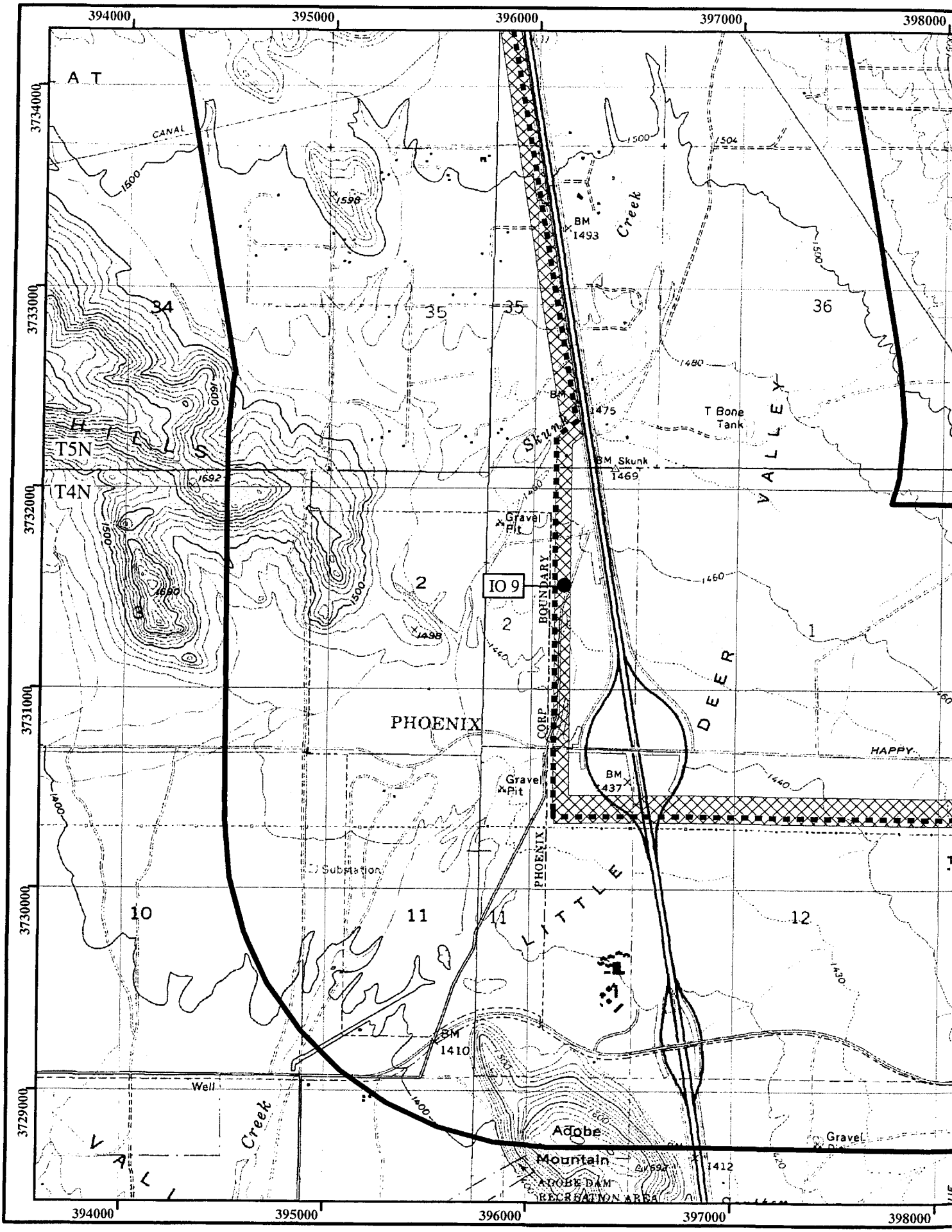

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BOUNDARY
CORP
PHOENIX
DEER
HAPPY
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1437
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1400
Substation
PHOENIX
LITTLE
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1430
BM
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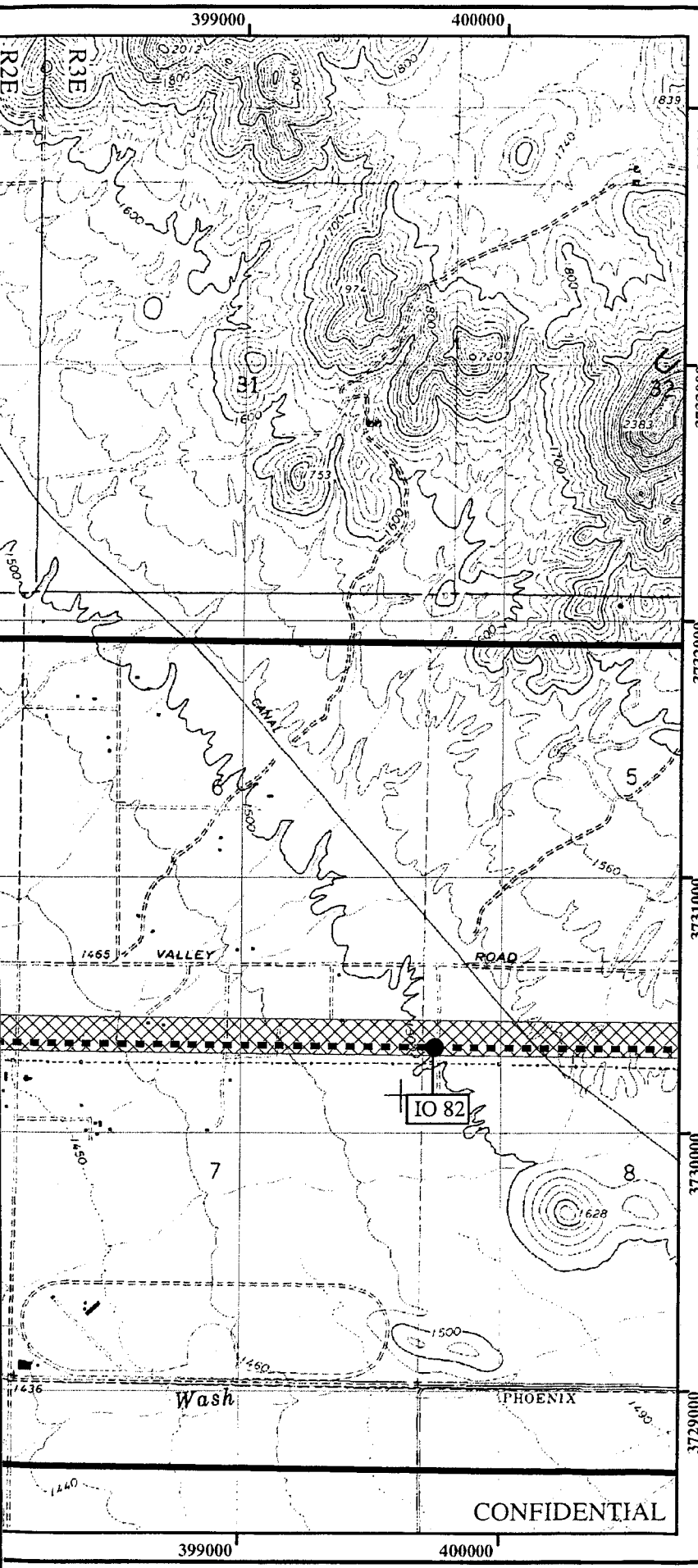
Creek
Adobe
Mountain
ADOBE DAM
RECREATION AREA
1412
Gravel



SURVEY RESULTS

Figure 3g

Legend

- Study Area Boundary
- Proposed Transmission Line
- Area Surveyed

Sources:

United States Geological Survey (USGS), Hedgpeth Hills, AZ (1981), Union Hills, AZ (1981), 1:24,000-scale metric topographic maps.

N
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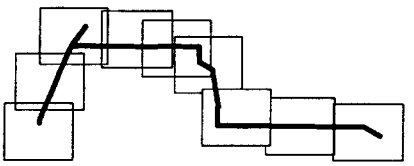
Scale 1:24,000

0 0.25 0.5 1 Miles

Index Map



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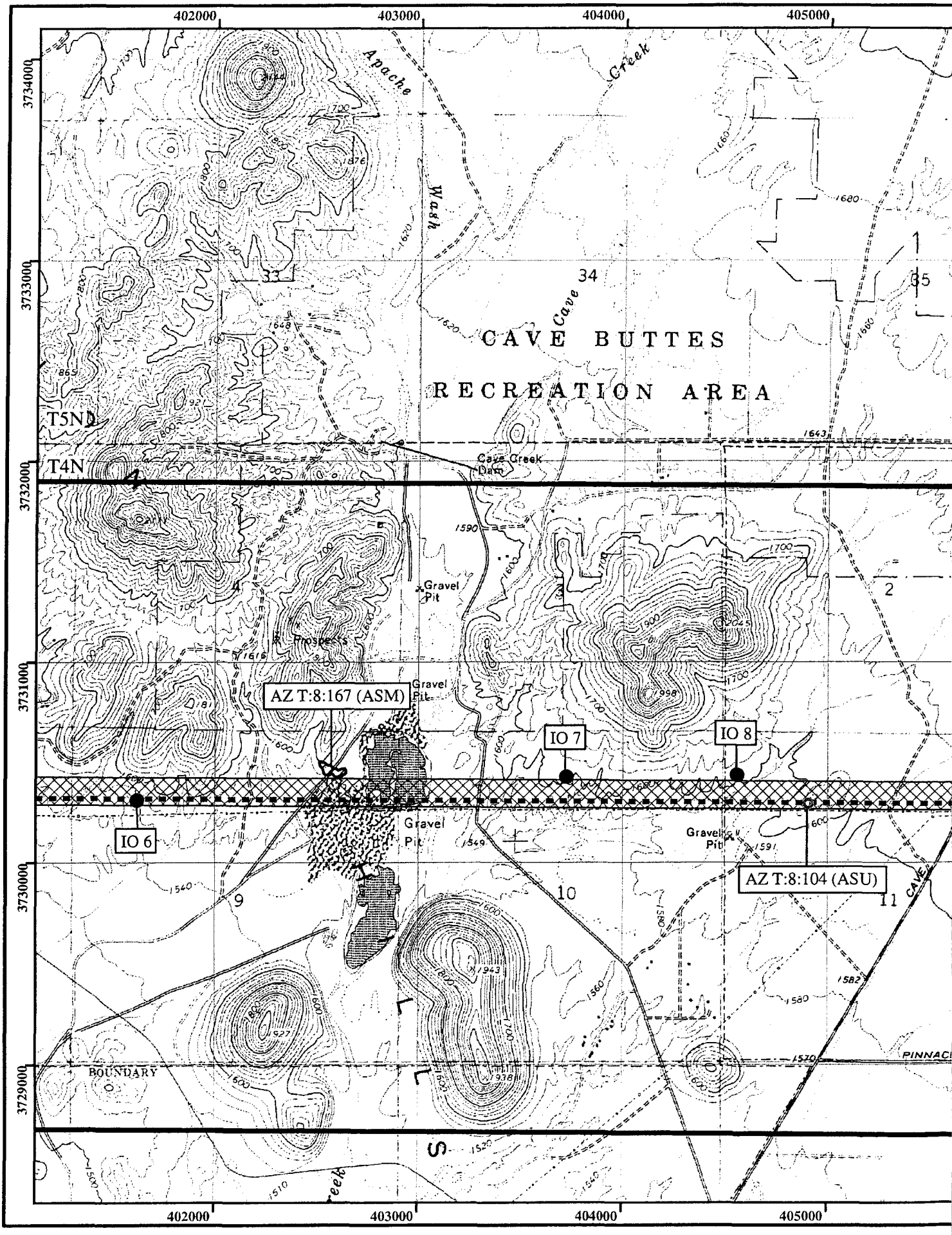
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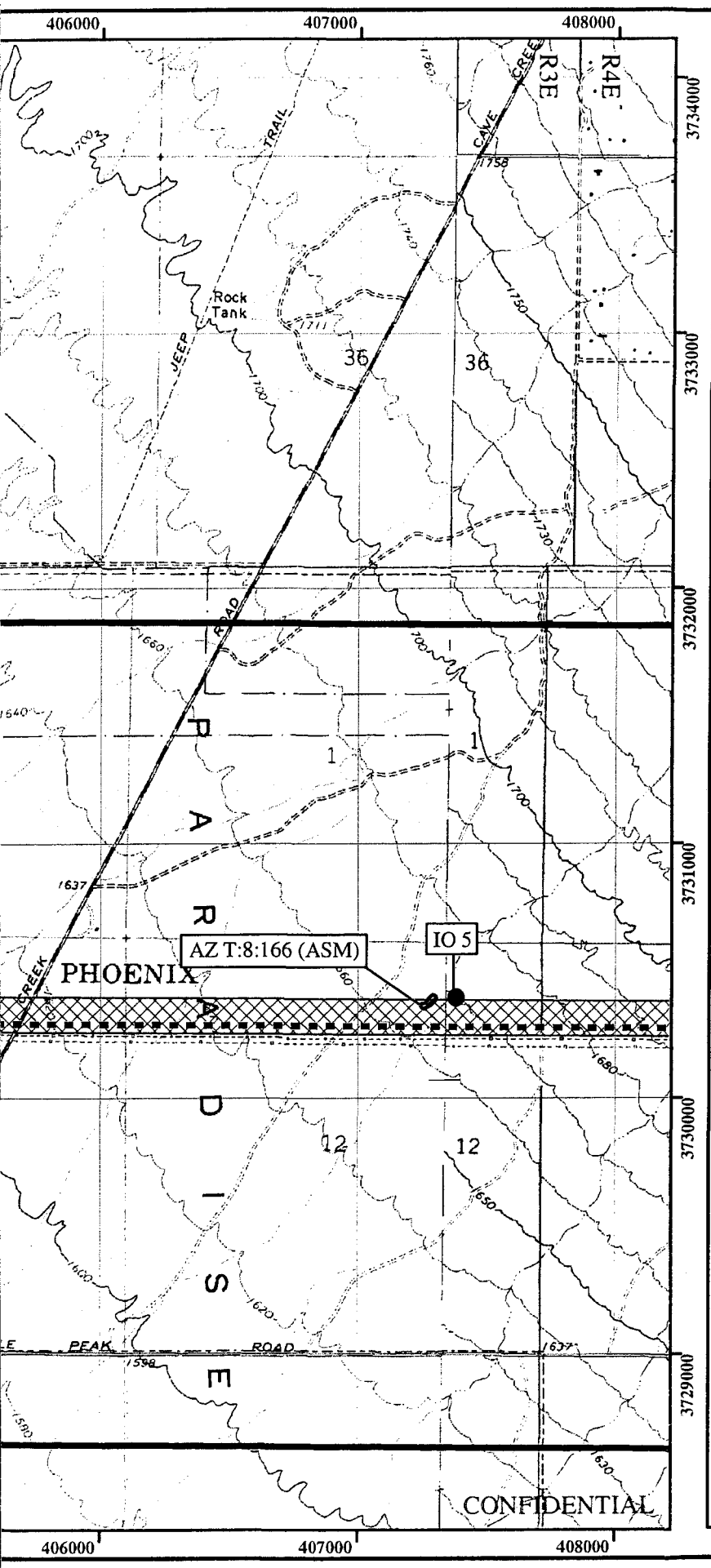
Creek
CAVE BUTTES
RECREATION AREA
T5N
T4N
Cave Creek Dam
Gravel Pit
Prospects
AZ T:8:167 (ASM)
IO 7
IO 8
IO 6
AZ T:8:104 (ASU)
BOUNDARY
PINNACL



SURVEY RESULTS

Figure 3h

Legend

- Study Area Boundary
- Proposed Transmission Line
- Newly Recorded Site
- Revisited Site
- Area Surveyed
- Isolated Occurrence

Sources:

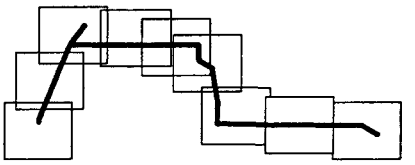
United States Geological Survey (USGS), Currys Corner, AZ (1982), Union Hills, AZ (1981), 1:24,000-scale metric topographic maps.

N W E S

Scale 1:24,000

0 0.25 0.5 1 Miles

Index Map



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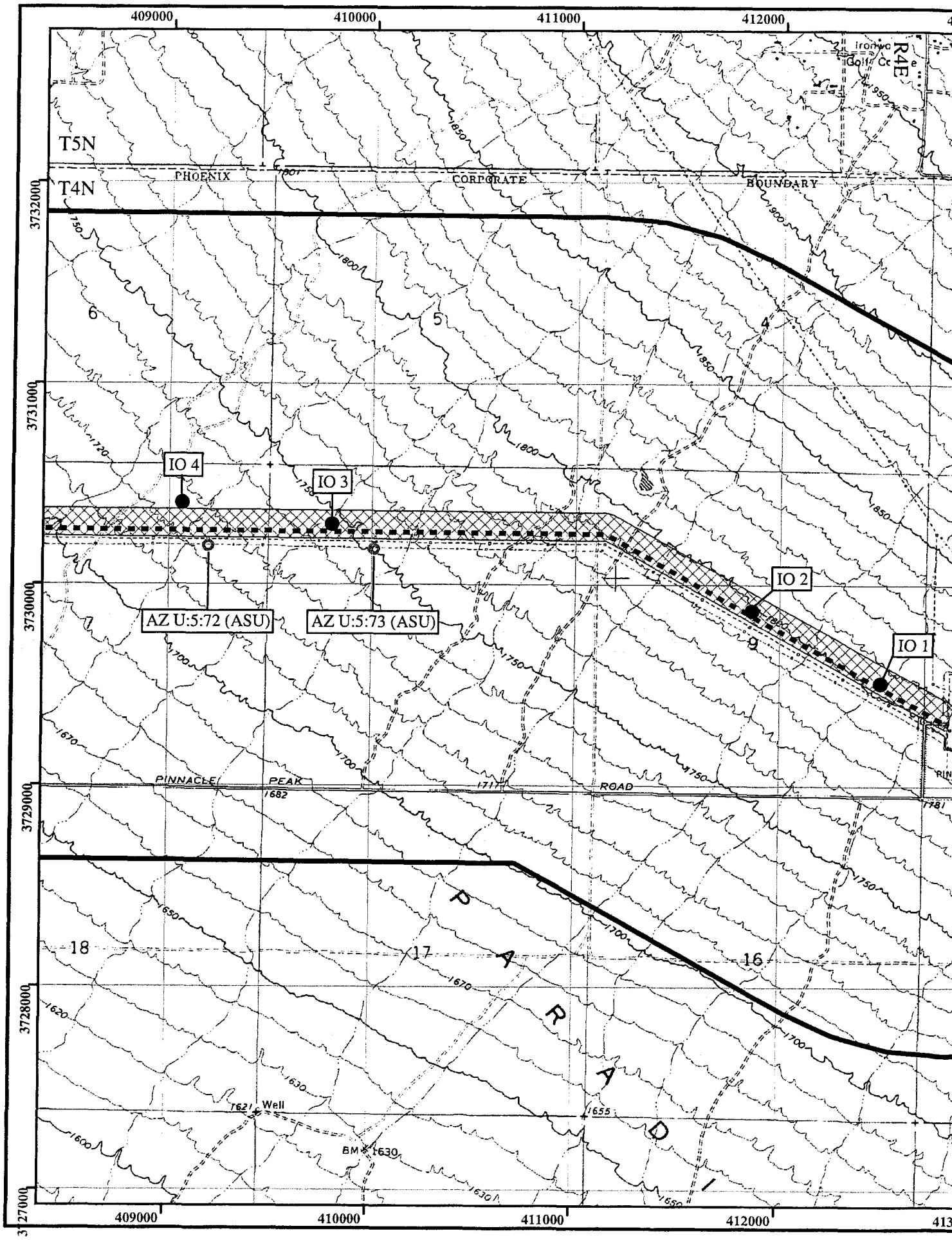
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PHOENIX
CORPORATE
BOUNDARY
IO 4
IO 3
IO 2
IO 1
AZ U:5:72 (ASU)
AZ U:5:73 (ASU)
PINNACLE
PEAK
ROAD
PARADISE
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BM
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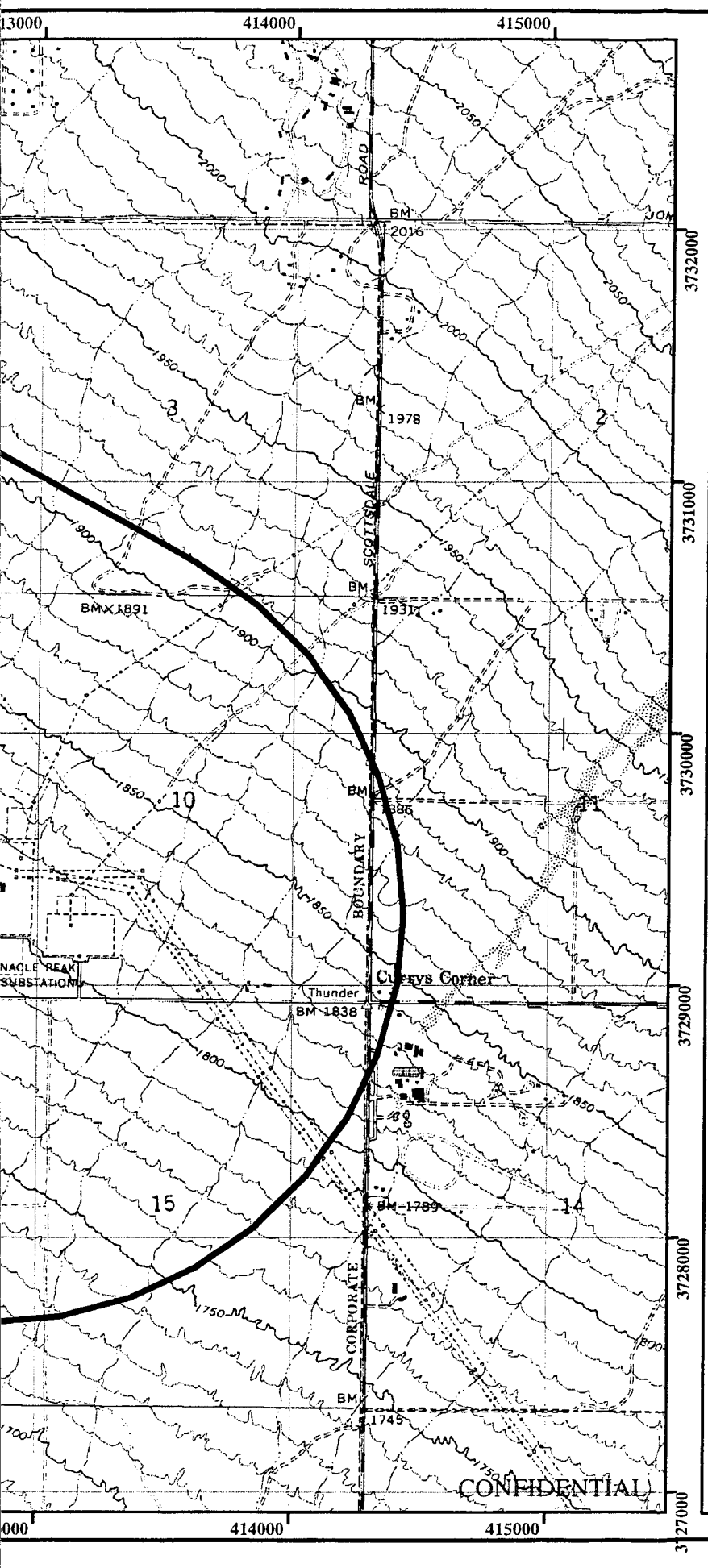


SURVEY RESULTS

Figure 3i

Legend

- Study Area Boundary
- Proposed Transmission Line
- Revisited Site
- Area Surveyed
- Isolated Occurrence

Sources:

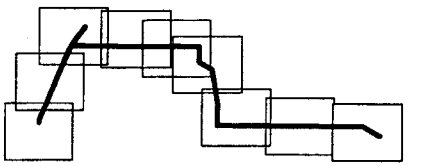
United States Geological Survey (USGS), Currys Corner, AZ (1982), 1:24,000-scale metric topographic maps.

N
W E
S

Scale 1:24,000

0 0.25 0.5 1 Miles

Index Map



m:/projects/aps/ncp/cec/cult/mxds/survey_resultsi.mxd August 22, 2002

Of the 70 prehistoric IOs encountered during survey of the proposed project area, 32 consisted of single lithic artifacts such as debitage or tools. An additional 28 IOs were observed to consist of 2 or more lithic artifacts. Only a single IO consisted of ceramic artifacts.

Lithic isolates encountered in the proposed project area were represented by 8 material types. Porphyritic basalt was the most commonly represented (n=39), followed by fine-grained rhyolite (n=10), metaquartzite (n=6), fine-grained basalt (n=7), metachalcedony (n=2), chert (n=4), quartz crystal (n=2), and metavolcanic (n=2).

In terms of reduction, secondary flakes (n=56), were the most common stage of manufacture represented, followed by tertiary flakes (n=24), primary flakes (n=18), unidirectional cores (n=11), multidirectional cores (n=11), and bifacial cores (n=4).

Eight tools were represented in the IO index. Five of these (IOs 8, 25, 27, 37, and 39) were isolated tools, while the others occurred in association with debitage or other artifacts. Unifacial end and domed scrapers (n=3), were the most common tool type observed, followed by flake tools (n=2), a cobble tool (n=1), a biface (n=1), and a graver (n=1).

In addition, ten IOs were observed to be small flaking stations where the reduction of lithic materials took place. For the purposes of this report, flaking stations are defined as concentrations restricted to an area less than 10 by 10 meters in size and exhibiting five or more artifacts. Photograph 5 shows IO 54 as a representation of a flaking station in the proposed project area.

Of the 16 historic isolates encountered during survey for the proposed project, four were rock cairns, six were isolated historic cans, three were solarized glass scatters representing one glass item, one was a historic survey marker, one was an artifact scatter associated with the former Prescott to Phoenix road alignment, and one was a burro shoe. All of the historic artifacts encountered during survey were restricted in their distribution across the landscape to the eastern and central portions of the project area.

The rock cairns (IOs 18, 36, 40, and 46) encountered during survey were restricted in their distribution to the central portion of the project area on Biscuit Flat. All were constructed of native metavolcanic and vesicular basalt cobbles and were one or two courses in height. These rock cairns were likely associated with ranching activity in the area, and lacked associated artifacts necessary to demonstrate temporal affiliation with either modern or historic activities.

Of the six historic cans encountered during survey of the proposed project (IOs 1, 15, 22, 48, 61, and 65), two (IOs 1 and 48) were soldier-top cans, two (IOs 15 and 22) were hole-in-top cans, and two (IOs 61 and 65) were upright tobacco tins.

Photograph 5
Flaking Station, IO 54.

Hole-in-top cans were manufactured between 1880-1920. IO 22 is a rectangular hole-in-top can of the top used for canned meat production. The soldier-top cans observed on site had crimped seams and were of dimensions commonly manufactured between 1917-1929. These cans were typically used for condensed or evaporated milk production. Multi-hinged upright tobacco tins such as IO 65 were manufactured between 1907-1948, while single-hinged upright tobacco tins such as IO 61 were manufactured between 1945-present.

The three solarized glass scatters encountered during survey (IOs 2, 5, and 11) are definitive historic temporal indicators. Sun-colored amethyst (SCA) glass is indicative of manganese glass manufactured between 1880 and 1917.

IO 11 is an artifact scatter of historic solarized glass, ceramics and four hole-in-top cans associated with the former Prescott to Phoenix road alignment. The historic road alignment itself was not immediately evident in this areas, and may have been re-graded to serve as the fenceline access road that runs along the west side of I-17. Materials observed in association with IO 11 indicate temporal affiliation with the period between 1880 and 1920.

IO 9 is a historic azimuth located on the west side of I-17. This azimuth is marked "U.S. Coast and Geodetic Survey Azimuth Mark 1947 Skunk." This designation refers to the Skunk Creek crossing located north of the azimuth point.

The final historic isolate encountered during survey of the proposed project area was IO 38, a small burro shoe. No temporal affiliation could be determined for this artifact.

IO 71, an unusual rock feature of unknown function, was encountered in the extreme southwestern potion of the project area just south of the Beardsley Canal crossing. This feature consisted of a linear rock alignment measuring 78 feet (east/west) by 12 feet (north/south). The alignment was one course high and constructed out of native metavolcanic cobbles. Centerline of this alignment followed a bearing of 98 degrees. A large cholla cactus was observed growing out of the center of the alignment. No temporal affiliation could be determined for this feature. The rocks associated with this feature did not exhibit infilling or siltation indicative of great age, and is likely associated with modern recreational use of the area.

Of the three roadside shrines encountered during survey, two (IOs 3 and 89) were roadside shrines dedicated to traffic fatalities, and one (IO 6) was a pair of pet graves. Isolate 3, a road shrine located on the existing pipeline corridor at its point of crossing at Tatum Road is dedicated to the memory of Eric A. Benson, 1966-1999. Isolate 89, located on the existing pipeline corridor at its crossing at Happy Valley Road/7th Avenue, is dedicated to the memory of John Schatz, 1973-2001. Isolate 6, located on the north side of the pipeline access road approximately ¼ mile to the east of Happy Valley Road/7th Avenue, consists of two pet graves.

NEWLY RECORDED SITES

A total of six new sites were identified by survey of the proposed transmission corridor. These sites are tabulated in terms of their description and location in Table 4. A more detailed description of each site follows below in text.

TABLE 4
NEWLY RECORDED CULTURAL RESOURCES

Site Number	Quadrangle	Jurisdiction	Chronology	Description	Eligibility
AZ T:8:166 (ASM)	Union Hills	State	Historic	Artifact scatter	Not eligible
AZ T:8:167 (ASM)	Union Hills	State, Private	Prehistoric	Artifact scatter	Not eligible
AZ T:4:374 (ASM)	Biscuit Flat	Private	Historic	Artifact scatter	Not eligible
AZ T:4:131 (ASM)	Biscuit Flat	Private	Historic	Road alignment	Eligible
AZ T:4:375 (ASM)	Biscuit Flat	State	Prehistoric	Lithic scatter	Not eligible
AZ T:3:274 (ASM)	Baldy Mountain	State	Prehistoric	Artifact scatter	Eligible
AZ T:7:276 (ASM)	Calderwood Butte	State	Prehistoric	Artifact scatter	Not eligible

AZ T:8:166 (ASM)

Site AZ T:8:166 (ASM) is a small historic trash scatter situated in the project APE on lands under the jurisdiction of the ASLD. This location is depicted on the Union Hills 7.5-minute USGS topographic quadrangle in the southwest ¼ of the southeast ¼ in Section 1, Township 4 North, Range 3 East. UTM grid coordinates for this location are 3730198mN/407414mE (see Figure 3h).

Environmental Setting

The site is located in Maricopa County on lands owned by the ASLD. It is situated in an open exposure on a bajada flat in the northern Phoenix Basin. The site is approximately 1½ miles to the east of the Union Hills at an elevation of 1,660 feet above mean sea level.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran desertscrub biotic community (Brown 1994). Site AZ T:8:166 (ASM) is located on the western bank of one of the numerous small, north-south tending seasonal drainages that are observed to crosscut the survey corridor in this area.

Vegetation on site was observed to be dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), gold cholla (*Opuntia echinocarpa*), mesquite (*Prosopis* spp.), cat-claw acacia (*Acacia greggii*), and paloverde (*Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

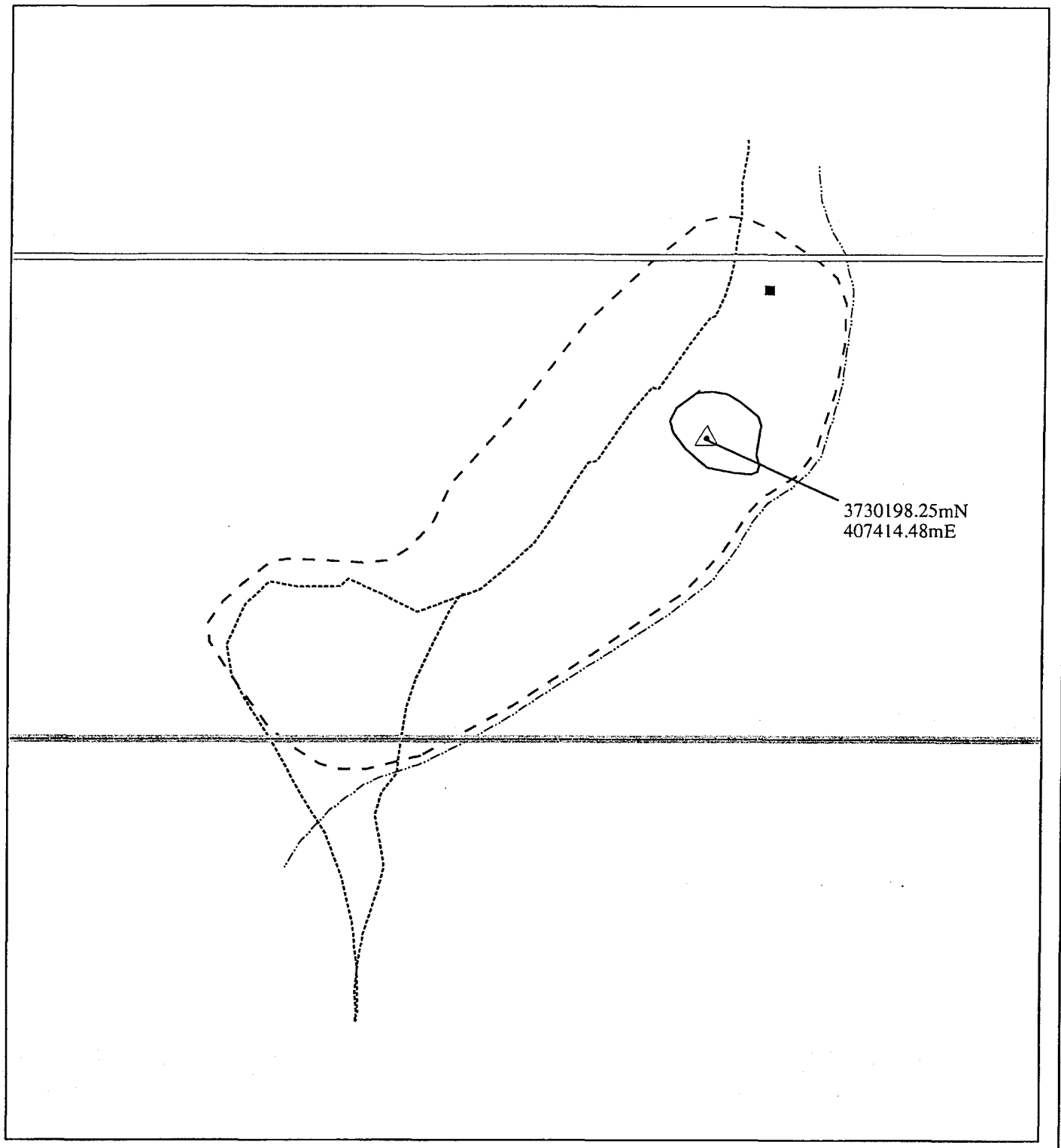
Description

Site AZ T:8:166 is a low-density historic trash scatter situated in an open exposure in the northern Phoenix Basin (Figure 4). The site is located on the west side of a small, north-south tending intermittent drainage. A well-developed north-south tending two-track road was observed to cut through the western portion of the site. Most artifacts were observed on the east side of this road. Site integrity is thus noted as fair to good. Photograph 6 is an overview of the site area.

Photograph 6
Overview of AZ T:8:166 (ASM) looking north.

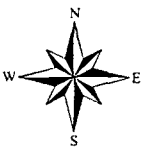
Site dimensions are approximately 33 meters (north/south) by 42 meters (east/west) for a total area of 1,386m2. Approximately 35 historic artifacts were observed in this area for a total artifact density of 0.02 artifacts/m2.

Materials observed at AZ T:8:166 (ASM) were concentrated in a 3 by 3 meter area in the center of the site, with other materials radiating out from this concentration in a uniformly sparse distribution. Three artifact classes, metal, glass, and ceramics, were noted at the site.



0 5 10 20 Meters

– – –	Site Boundary	═══	Right-of-Way
----------	Road	-·-·-	Wash
———	Artifact Concentration	△	Site Datum
-·-·-·-	Centerline	■	Modern Trash



Newly Recorded Site
AZ T:8:166 (ASM)

Figure 4

m:/projects/aps/ncp/cec/mxds/site166.mxd

Evidence of Site Age and Function

The most common artifact type observed at site AZ T:8:166 (ASM) was metal. Much of the metal observed was extremely degraded and non-diagnostic. Identifiable non-diagnostic metal artifacts included a spice shaker lid and two metal canning jar caps.

Diagnostic metal artifacts observed at the site included soldier-top cans (n=4), hole-in-top cans (n=2), the embossed lid of a Calumet baking powder tin, a tin lid embossed "Canco," and a five-hinge tobacco tin.

Hole-in-top cans were manufactured between 1880 and 1920. The soldier-top cans observed on site had crimped seams and were of dimensions commonly manufactured between 1917 and 1929. These cans were typically used for condensed or evaporated milk production.

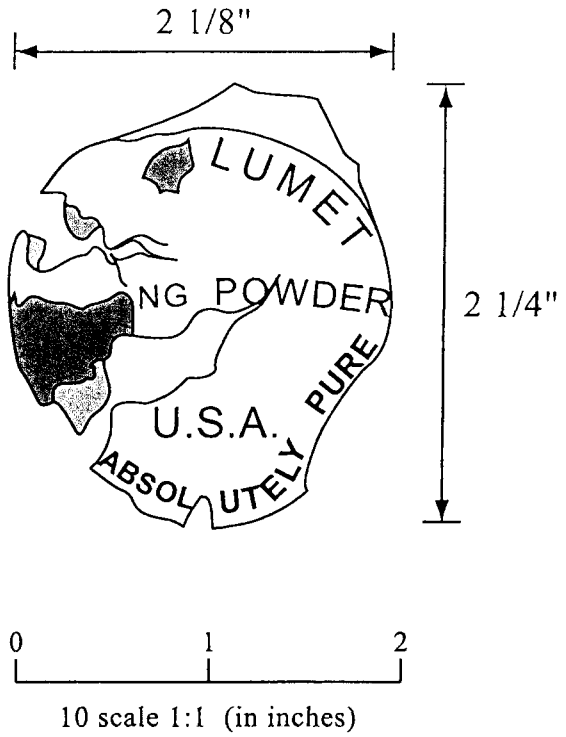
Calumet backing powder tin lids are commonly associated with the period between 1890 and 1940. "Canco" is a trademark of the American Can Company manufactured post-1910. Upright five-hinge tobacco tins such as the one observed on site were manufactured between 1907 an 1948.

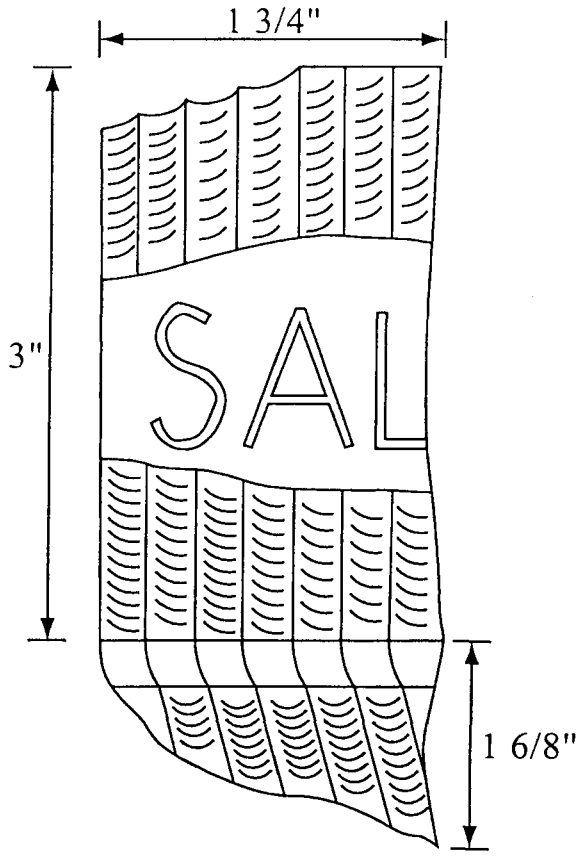
Glass was the second most common artifact type observed at site AZ T:8:166 (ASM). Glass types observed at the site were clear, aqua, and SCA. SCA glass is indicative of manganese glass manufactured between 1880 and 1917. Clear glass on site was manufactured post-1917 without the manganese that causes the glass to turn purple when exposed to sunlight. Aqua glass was commonly manufactured between 1880 and 1920.

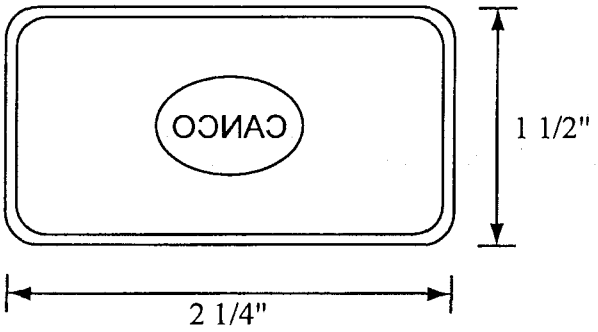
Maker's marks observed on glass artifacts at AZ T:8:166 (ASM) included a base embossed with "O.D." and a base embossed with the letter "O" superimposed over the letter "W." Fragments of a glass salt jar embossed with the word "SAL-" were also observed. These were not identified as to dates of manufacture. Figure 5 shows the marker's marks identified at AZ T:8:166 (ASM).

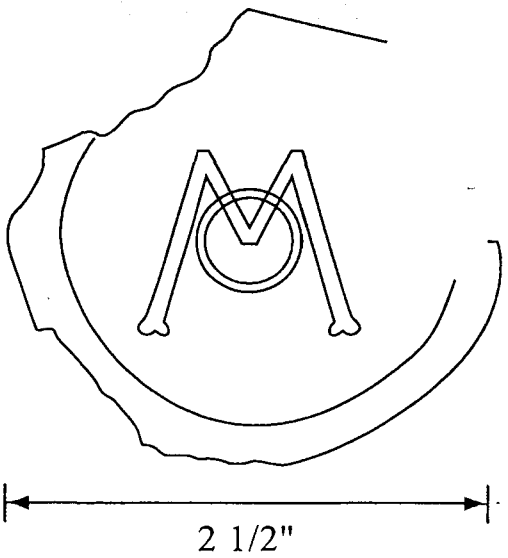
Ceramics observed on site were both white earthenware and terracotta. No maker's marks were observed and neither ceramic types are considered to temporally diagnostic.

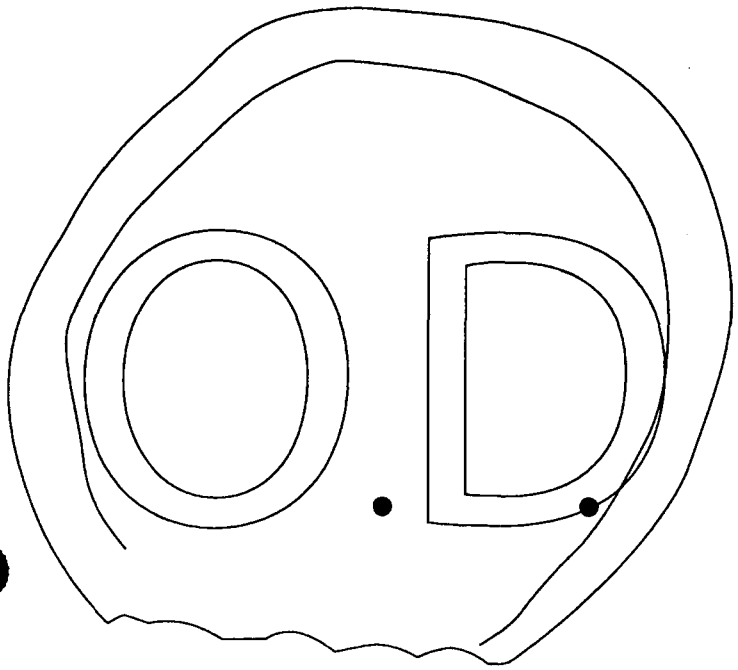
Artifacts observed at site AZ T:8:166 (ASM) indicate that the materials present were manufactured between 1880 and 1947 and were deposited either during this timeframe or after. Materials present were not necessarily indicative of household refuse but more provisionary in nature, reflecting items easy to pack as travel provisions. Given the discrete nature of the deposit and the relative remoteness of the site area, it is likely that the site materials represent a single depositional episode associated with refuse from a temporary historic campsite in the area.











3 1/2 Diameter

- surface dirt

AZ T:8:166 (ASM)

Maker's Marks
Illustration: A. Kirkland

Figure 5

National Register Assessment

Site AZ T:8:166 is a low-density historic trash scatter situated in an open exposure in the northern Phoenix Basin. The site is located on the west side of a small, north-south tending intermittent drainage. A well-developed north-south tending two-track road cut through the western portion of the site, and as such site integrity is fair.

Field observations at AZ T:8:166 (ASM) suggest no indication of any buried deposits present at the site. As such the data potential of the site is limited, and has likely been exhausted by surface inventory of the site. Further study of the site is unlikely to yield any new information and no other historic values have been identified to warrant preservation. For this reason, it is our recommendation that the site is ineligible for NRHP listing.

AZ T:8:167 (ASM)

Site AZ T:8:167 (ASM) is a lithic and ceramic scatter situated in the APE of the proposed project south of the Cave Buttes Recreation Area. It is located on privately owned land and lands owned by the ASLD. This location is depicted on the Union Hills 7.5-minute USGS topographic quadrangle in the southwest ¼ of the southeast ¼ of Section 4, Township 4 North, Range 3 East. UTM grid coordinates for this location are 3730274mN/402678mE (see Figure 3h).

Environmental Setting

The site is located in Maricopa County in a southern exposure on a secondary finger ridge at the base of the Union Hills in the northern Phoenix Basin. The site is situated approximately at an elevation of 1,600 feet above mean sea level.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley Subdivision of the Sonoran desertscrub biotic community (Brown 1994). Site AZ T:8:167 (ASM) is located on the western bank of Cave Creek to the adjacent southwest of the present-day Cave Creek Dam.

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), gold cholla (*Opuntia echinocarpa*), mesquite (*Prosopis* spp.), cat-claw acacia (*Acacia greggii*), and paloverde (*Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

Description

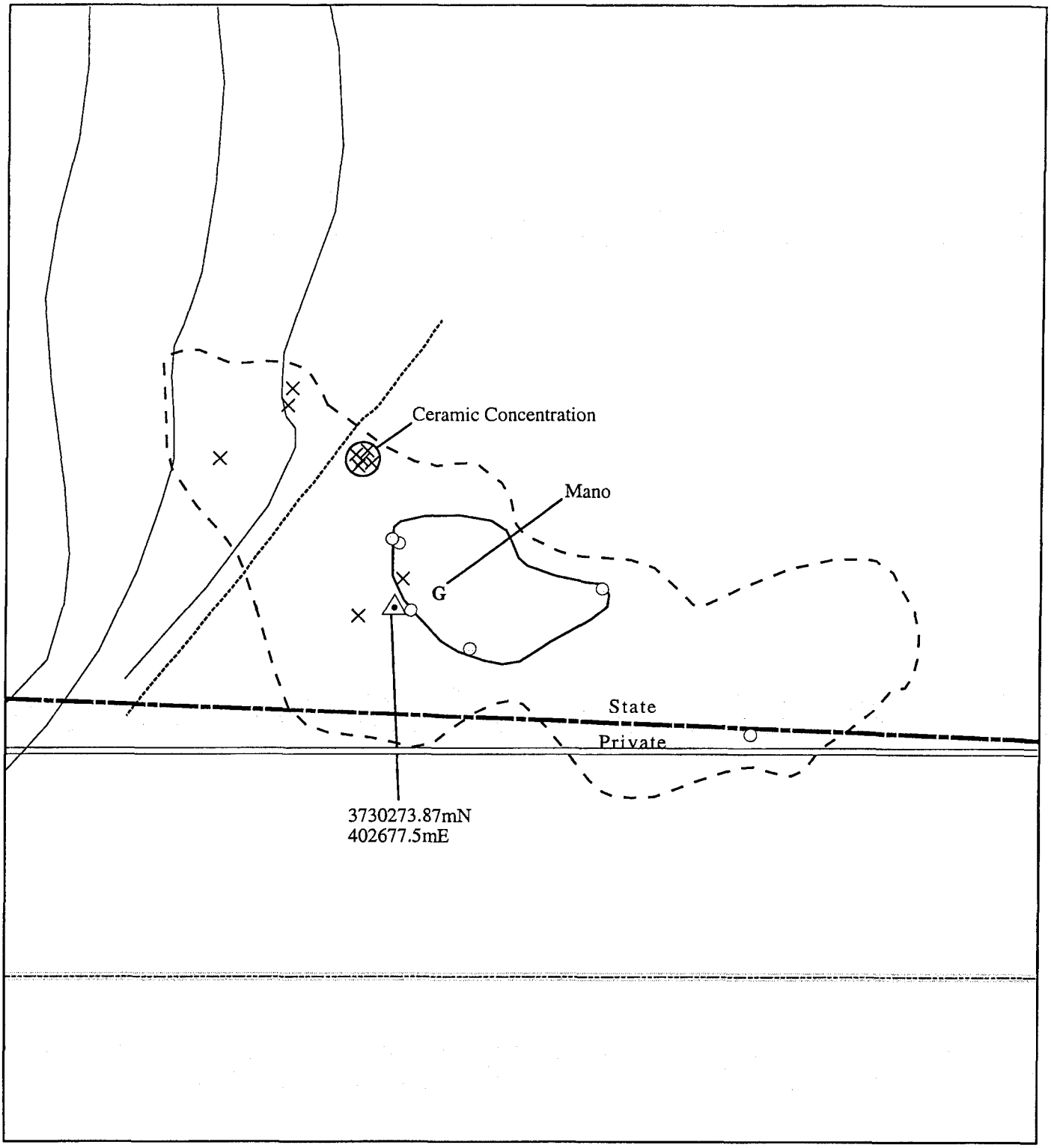
Site AZ T:8:167 (ASM) is a sparse artifact scatter (Figure 6). The western portion is bisected by a northeast-southwest tending dirt road cut into the side slope of the site. Artifacts were observed on both sides of the road, as well in push piles along the eastern side of the road, indicating that construction of the road impacted the integrity of the site. Despite this, site integrity is good. Photograph 7 is an overview of the site area.

Photograph 7
Overview of AZ T:8:167 (ASM) looking east.

The exposed ground surface contains desert pavement, although in places creosote, palo verde, saguaro, and cholla disrupt the desert pavement. Various raw materials such as igneous basalts interspersed with quartzite and sedimentary siltstones are present as cobbles on site.

Site dimensions are approximately 58 meters (north/south) by 112 meters (east/west) for a total area of 6496m2. Approximately 60 artifacts were observed in this area for a total artifact density of 0.01 artifacts/m2.

Materials observed at AZ T:8:167 (ASM) were observed to be concentrated in a 10 (north/south) by 15 (east/west) meter area in the center of the site, with other materials radiating out from this concentration in a uniformly sparse distribution. Three artifact classes, lithics, groundstone, and ceramics, were noted at the site. A complete inventory of observed surface materials was tabulated during recording of the site.



0 10 20 40 Meters

- - -	Site Boundary	———	Contour Line
----------	Road	△	Site Datum
———	Artifact Concentration	G	Ground Stone
———	Centerline	×	Sherd
═══	Right-of-Way	○	Tool
▬ ▬	Jurisdiction Boundary		

Newly Recorded Site
AZ T:8:167 (ASM)

Figure 6

N W E S

m:/projects/aps/ncp/cec/mxds/site167.mxd

The lithic assemblage observed at site AZ T:8:167 (ASM) was dominated by metavolcanic material (n=25), followed by quartzite (n=7), chert (n=6), basalt (n=3), jasper (n=1), siltstone (n=1) and obsidian (n=1). Of these materials, chert, jasper, and obsidian are exotic in origin, while metavolcanic, quartzite, siltstone, and basalt are locally available materials.

Groundstone was present at the site. One shouldered unifacial mano fragment manufactured from sandstone was identified during surface recordation of the site. The length of this artifact measured 7 centimeters (incomplete), the width measured 10.5 centimeters (complete), and the thickness was 7 centimeters (complete).

The ceramic assemblage observed on site consisted of Gila Plain-Salt variety body sherds. Five body sherds were observed over the general site area, and another four were observed in a 1 by 1 meter concentration in the north-central portion of the site.

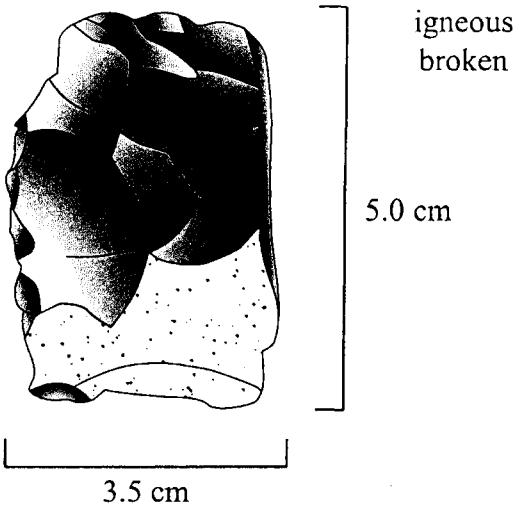
Several expedient tools (n=12) were observed on site (Figure 6). The majority of these (n=10) were unifacial end scraper and side scraper flake tools with percussion-flaked lateral margins. A small chert thumbnail scraper with pressure flaked lateral margins and a bifacial metavolcanic chopper tool with percussion-flaked lateral margins were also noted. The majority of the unifacial flake scrapers observed were manufactured from metavolcanic materials (n=6); however, quartzite, chert, obsidian and siltstone tools (n=4) were also noted. Figure 7 shows the tools identified at site AZ T:8:167 (ASM).

Table 5 presents the debitage index observed at site AZ T:8:167 (ASM). Metavolcanic materials (n=16) were observed to dominate the debitage assemblage, followed by quartzite (n=7), basalt (n=3), chert (n=5) and jasper (n=1). The debitage index clearly indicates a reliance on locally available materials, with exotic materials occurring predominately as shatter or tertiary flakes, indicating an emphasis on late-stage tool rejuvenation. Locally available materials tend to reflect a greater emphasis on mid- to late-stage manufacture indicative of the manufacture of expedient tools.

TABLE 5
DEBITAGE INDEX: AZ T:8:167 (ASM)

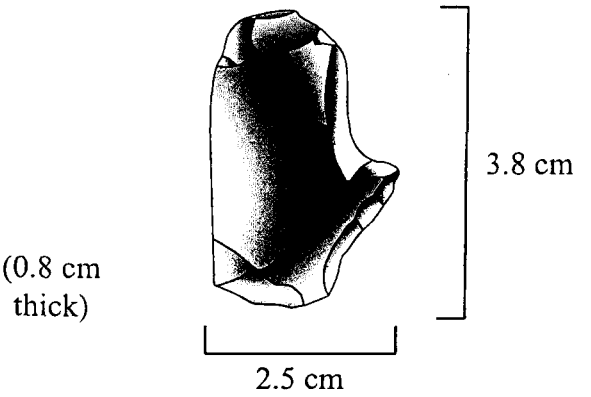
Material	Stage of Manufacture					Total
	Core	Primary	Secondary	Tertiary	Shatter	
Metavolcanic	Multidirectional	3	10	1	1	16
Quartzite	Multidirectional	0	2	3	1	7
Basalt	0	0	1	2	0	3
Jasper	0	0	0	0	1	1
Chert	0	1	0	1	3	5
TOTALS	**2**	**4**	**13**	**7**	**6**	**32**

Uniface / Scraper



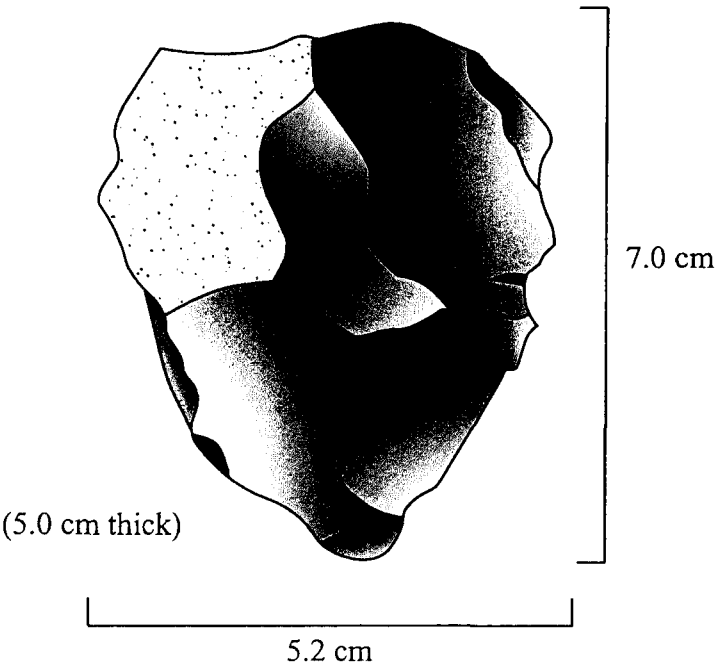
(2.3 cm thick)

Flake Tool

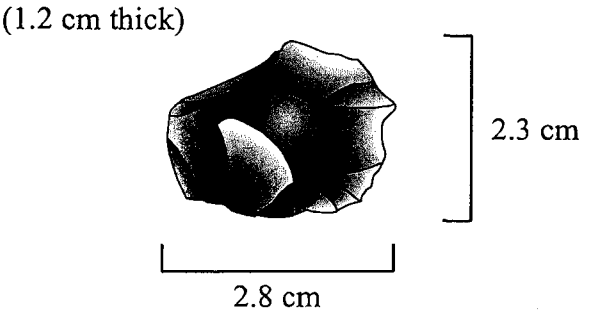


Core 1

multidirectional - metabolcanic



Thumbnail Scraper



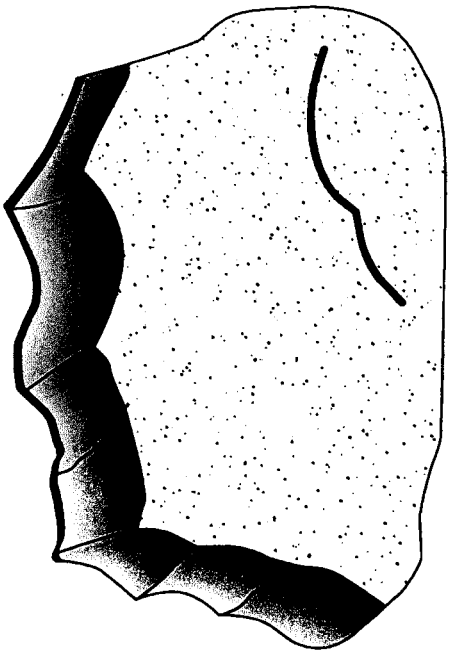
Lithic Tools at

AZ T:8:167 (ASM)

Illustration: K. Rebnegger

Figure 7a

Cobble Tool



Lithic Tools at

AZ T:8:167 (ASM)

Illustration: K. Rebnegger

Figure 7b

Evidence of Site Age and Function

No diagnostic artifacts were observed at site AZ T:8:167 (ASM). The site assemblage likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain ware varieties that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

Tools observed on site are expedient and task-specific in nature. Their presence in the site assemblage may be an indication of the short use-life of expedient tools, as tools of this type could easily be manufactured from available material and discarded upon completion of a specific task.

The lithic assemblage observed indicates that production at the site focused on the reduction of raw material. Raw material is locally available in the form of large- to medium-sized cobbles associated with small dry washes in the site vicinity. The debitage assemblage present at the site indicates that cobble testing occurred for the purpose of producing expedient, task-specific tools or flake blanks. The lack of primary flakes in the assemblage may indicate that these flakes were either taken from the site as flake blanks or that these flakes were further reduced to secondary stage during the production of expedient tools. The lack of tertiary flakes indicates that tool rejuvenation or the manufacture of formal artifacts was not a focus of tool production practiced at the site.

The presence of ceramics and groundstone at the site indicates an emphasis on the collecting and processing of locally available plant resources. Mesquite is only one of the resources available at this location. Mesquite stands are located in close proximity to the site along the natural channel of Cave Creek. The pods of this tree were harvested and ground into meal by the native inhabitants of the area.

National Register Assessment

Site AZ T:8:167 (ASM) likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Materials observed are indicative of short-term use of the site as a limited use area where resource procurement took place. The lithic assemblage present at the site suggests that cobble-testing for the purpose of producing expedient task-specific tools was the dominant emphasis of tool manufacture that took place at the site. The presence of ceramics and groundstone at the site suggests a possible emphasis on the collecting and processing of locally available plant resources.

Field observations at AZ T:8:167 (ASM) revealed no indication of any buried deposits present at the site. The presence of native desert pavement in formation across the site surface indicates that there is little or no potential for a subsurface component of the site to exist.

As such the data potential of the site is limited, and has likely been exhausted by surface inventory of the site. Further study of the site is unlikely to yield any new information and no other historic values have been identified to warrant preservation. For this reason, it is our recommendation that the site is ineligible for NRHP listing.

AZ T:4:374 (ASM) and AZ T:3:131 (ASM)

Site AZ T:4:374 (ASM) is a historic trash scatter associated with a historic road alignment (see Figure 3f). The site is located in the APE of the proposed project on privately owned land. This location is depicted on the Biscuit Flat 7.5-minute USGS topographic quadrangle in the northeast ¼ of the northwest ¼ of Section 26, Township 5 North, Range 2 East. UTM grid coordinates for the site datum are 3735151mN/395691mE.

Environmental Setting

The site is located in Maricopa County in an open exposure on a bajada flat at the base of Middle Mountain in the northern Phoenix Basin. The site is situated approximately at an elevation of 1,550 feet above mean sea level.

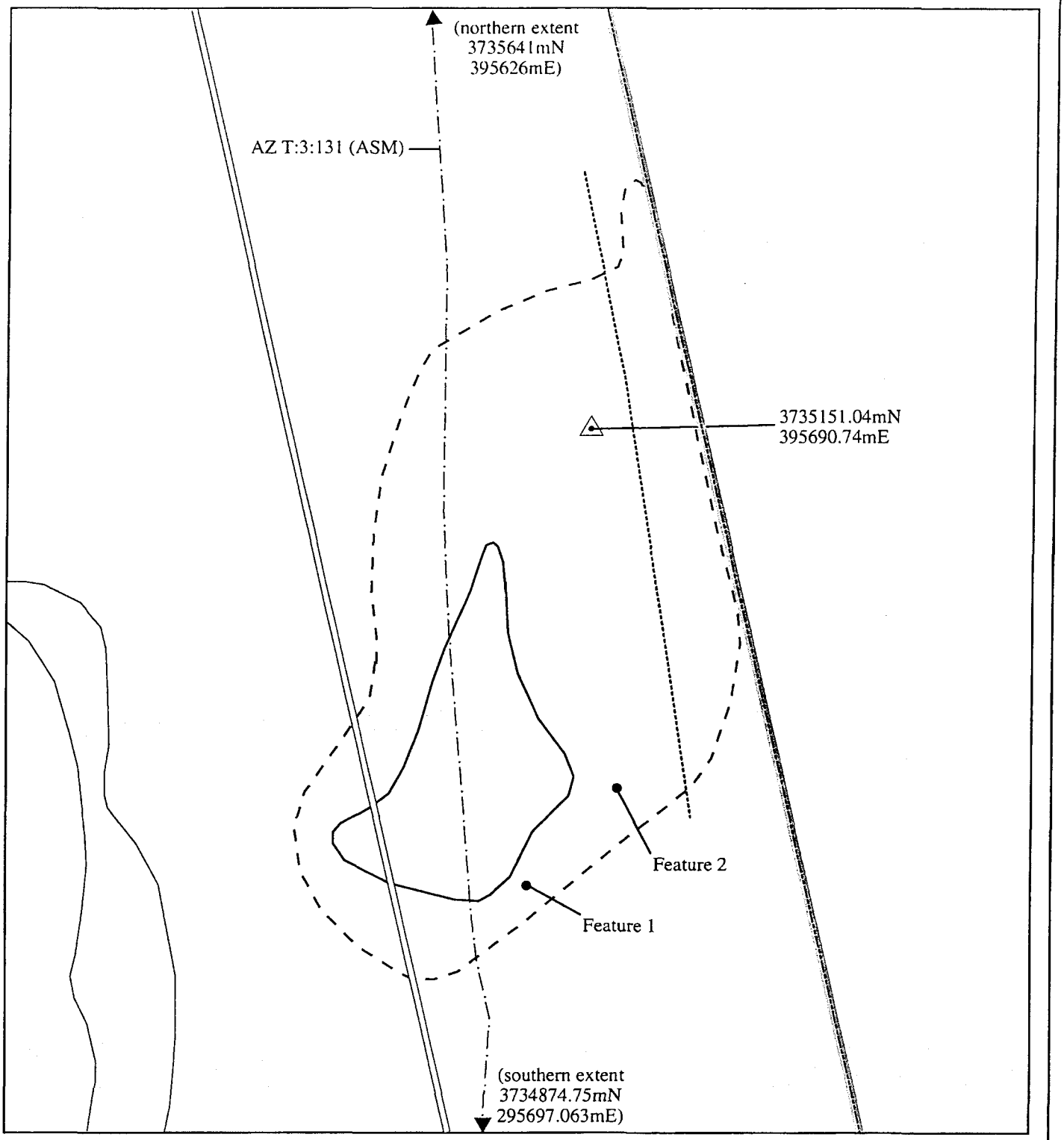
The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), and gold cholla (*Opuntia echinocarpa*), were abundantly present both on site and in the surrounding area.

Description

Site AZ T:4:374 (ASM) is a low-density historic trash scatter associated with the former Phoenix to Prescott road alignment (Figure 8). It is situated in an open exposure on a bajada flat at the base of Middle Mountain. A well-developed modern road is observed to cut through the eastern portion of the site. Artifacts were observed in the berm of the modern road, indicating some degree of site impact. Despite this, site integrity is noted to be good. Photograph 8 is an overview of the site area.



0 10 20 40 Meters

Newly Recorded Site AZ T:4:374 (ASM) and Previously Recorded Site AZ T:3:131 (ASM)

Figure 8

Site Boundary	Centerline
Artifact Concentration	Right-of-Way
Modern Road	Contour Line
Historic Road	Site Datum
	Site Feature

N W E S

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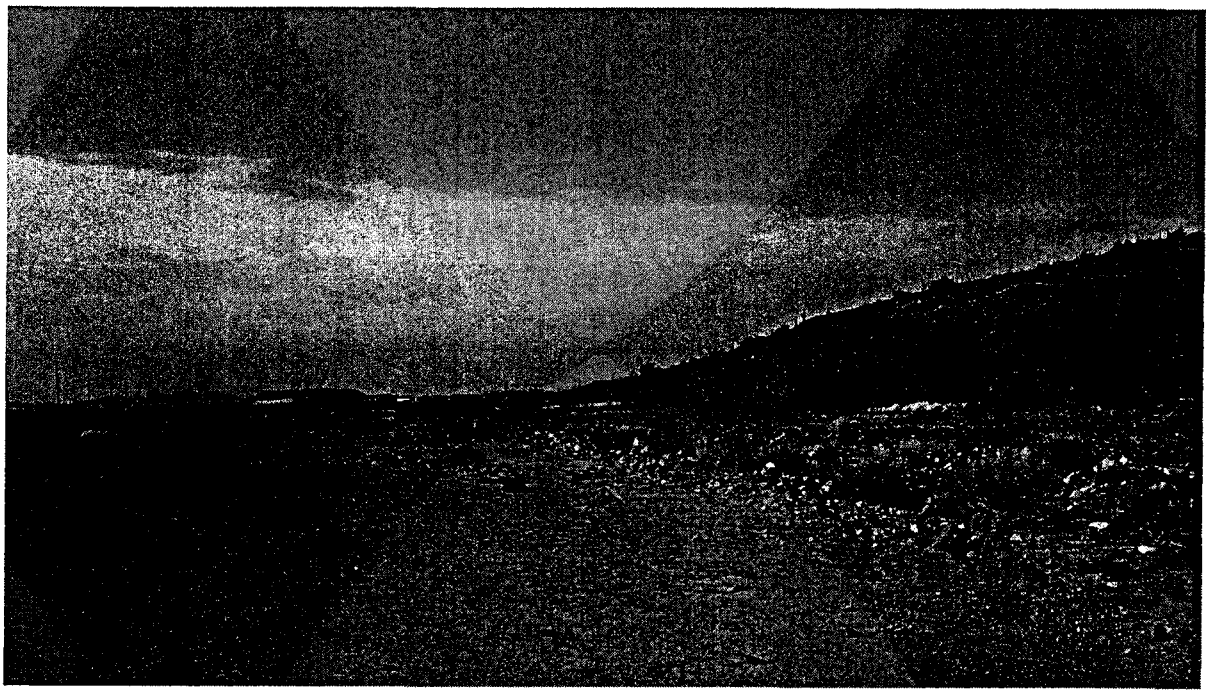


Photograph 8
Overview of AZ T:4:374 (ASM) looking south.

Site dimensions are approximately 132 meters (north/south) by 69 meters (east/west) for a total area of 9108m2. Approximately 50 artifacts were observed in this area for a site density of .005 artifacts/m2.

Two features were noted at site AZ T:4:374 (ASM). Feature 1 is a small rock ring measuring 66 inches in diameter. It is manufactured from native vesicular basalt and metavolcanic cobbles and is one course high. A single steel beer can was associated with Feature 1. The feature is observed to have been infilled by aeolian deposition. Rocks are observed to exhibit attributes consistent with thermal alteration and likely represents a camping episode that took place at that location. Temporal affiliation for this feature cannot be determined. Photograph 9 is an overview of Feature 1.

Feature 2 is a small cluster of native vesicular basalt and metavolcanic cobbles measuring 120 inches in length (north/south) and 57 inches in width (east/west). Cobbles are stacked one course high and do not exhibit any attributes consistent with thermal alteration. A small stub of milled wood measuring 2.5 inches by 1.5 inches was observed in the southern portion of the feature. A solarized glass scatter consisting of approximately 20 pieces of bottle glass was noted to occur over the top of Feature 2, indicating that the feature was constructed prior to the deposition of the glass. Exact temporal affiliation for this feature cannot be determined at this time. Photograph 10 is an overview of Feature 2.

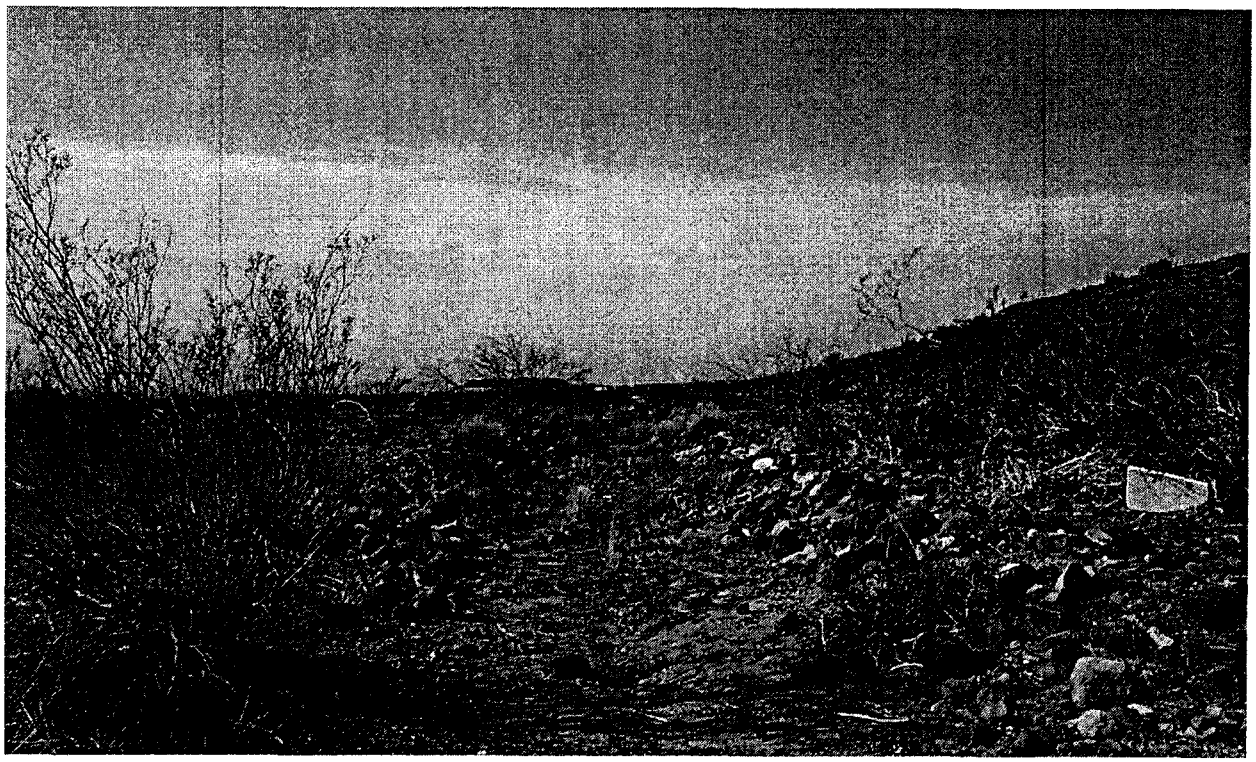
Photograph 9
Overview of AZ T:4:374 (ASM) Feature 1 looking west.

Photograph 10
Overview of AZ T:4:374 (ASM) Feature 2 looking north.

Materials observed at site AZ T:4:374 (ASM) were observed to be concentrated in a 60 (north/south) by 40 (east/west) meter area in the center of the site in association with a historic road alignment. Other materials were observed to radiate out from this main area of concentration in a uniformly sparse distribution. Three artifact classes, metal, glass, and ceramics, were noted to be present at the site. A complete inventory of observed historic artifacts was compiled during recording of the site.

The historic road alignment observed at the site is the former Prescott to Phoenix road, also known as the Black Canyon Road. This road alignment has been designated as site AZ T:3:131 (ASM) by Neal (1994). Photograph 11 shows site AZ T:3:131 as it occurs in the project area. The exact date of construction for this road is unknownl however, it does occur on the 1895 GLO plat map for Township 5 North, Range 3 East and on the 1886 GLO plat map for Township 5 North, Range 2 East.

The Black Canyon Road was originally constructed for use as a wagon road, and was used as a stagecoach line as early as 1889. Use of the road as a stagecoach and freight route continued until 1917 (Ellis et al. 2002). The road was subjected to improvements including grading and gravel base to make it suitable for automobile use in both 1917 and 1937. In 1937, the road was designated as SR 69. The road was paved and partially realigned in 1946 and 1956. Portions of the original road were also incorporated into I-17 during its construction in the 1960s.



Photograph 11
Overview of AZ T:3:131 (ASM) looking south.

The road is observed to pass through the western portion of the site in a north-south orientation. Large native cobbles are built up along the side of the alignment to height of two feet above the actual roadbed. The width of the roadbed is nine and one-half feet, while the width between the built-up berms along the roadbed is 15.5 feet.

The portion of site AZ T:3:131 (ASM) that occurs in association with newly recorded site AZ T:4:374 (ASM) retains its historical integrity. It is likely that this portion of the road was abandoned after the route realignments of 1917 and 1937, as the road corridor appears to demonstrate width and configuration consistent with wagon roads rather than automobile conveyance routes.

Evidence of Site Age and Function

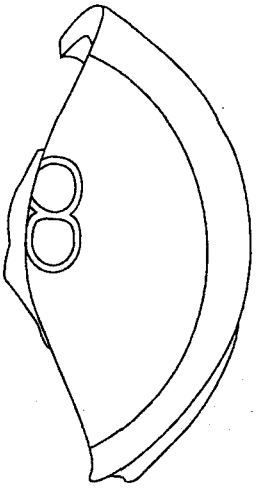
The most common artifact type observed at site AZ T:4:374 (ASM) was metal. Some degraded and non-diagnostic metal was observed, but for the most part metal observed as part of the site assemblage was well preserved. Non-diagnostic artifacts observed at the site included a soldiered-spout fuel jerry can, a screw-top jar lid, a round metal pail, a paint can, and an unidentifiable automobile fender.

Diagnostic metal artifacts observed at the site included cylindrical sanitary cans (n=5), steel beer or soda cans with church key openings (n=6), 3-, 4- and 5-hinge tobacco tins (n=4), cylindrical hole-in-top tins (n=3), rectangular hole-in-top meat tins (n=2), a soldier-top condensed milk tin (n=1), and an oval sardine tin (n=1).

Hole-in-top cans were manufactured between 1880-1920, and were replaced by sanitary cans beginning as early as 1904. Multi-hinged upright tobacco tins such as those observed on site were manufactured between 1907 and 1948. Steel beer cans with church key openings were manufactured between 1935 and 1960s, with production halting during World War II. The soldier-top condensed milk tin observed at the site was of dimensions commonly manufactured between 1917 and 1929.

Glass was the second most common artifact type observed at the site. Most glass on site was bottle glass, with one clear glass screw-top jar fragment also observed. Colored glass observed at the site was aqua, SCA, olive, and clear. SCA glass is indicative of clear glass manufactured with manganese that was produced between 1880 and 1917. Clear glass on site was manufactured post-1917 without the manganese that causes the glass to turn purple when exposed to sunlight. Aqua glass was commonly manufactured between 1880 and 1920.

Only one partial maker's mark was noted at AZ T:4:374 (ASM). This was an aqua glass bottle base embossed with what appears to be the number "8." This mark was not identified as to temporal affiliation of manufacture. Figure 9 shows the partial "8" of the maker's mark on the bottle.



Pale blue bottle
Partial maker mark

10 SCALE 1:1

Illustration: A. Kirkland

AZ T:4:374 (ASM)

Maker's Marks

Figure 9

Ceramics observed on site were restricted to brown porcelain insulator fragments. These were too fragmentary to be identified as to type. Their presence on site may be associated with either the telegraph line following the Prescott to Phoenix road alignment or with an existing modern transmission line located to the adjacent east of the site along I-17.

In addition to the historic materials observed on site, an isolated fine-grained rhyolite tertiary flake was also observed. This artifact was not assigned an isolate number and is discussed here in text only.

National Register Assessment

Site AZ T:4:374 (ASM) is a low-density historic trash scatter associated with a historic road alignment that is situated in an open exposure at the base of Middle Mountain in the northern Phoenix Basin. A well-developed modern road cuts through the middle portion of the site. Artifacts were observed in the berm of the modern road, indicating some degree of site impact. Despite this, site integrity is good.

Artifacts observed at site AZ T:4:374 (ASM) indicate that the materials present were likely deposited as discard as a result of travel along the Prescott to Phoenix road alignment. Materials present were not indicative of household refuse but were more provisionary in nature, reflecting items easy to pack as travel provisions. Diagnostic artifacts observed at the site were largely manufactured between 1880 and 1940, and likely represent a series of depositional episodes associated with travel along the roadway.

Field observations at AZ T:4:374 (ASM) revealed no indication of any buried deposits present at the site. While site integrity is good, data potential of the site is limited. It is likely that the information potential of the site has been exhausted by surface inventory. Further study of the site is unlikely to yield any new information and no other historic values have been identified to warrant preservation. For this reason, it is our recommendation that the site is ineligible for NRHP listing.

The historic road alignment observed at the site is the former Prescott to Phoenix road, Arizona T:3:131 (ASM). The exact date of construction for this road is unknown; however, it does occur on the 1895 GLO plat map for Township 5 North, Range 3 East. The portion of this historic road alignment that passes through the site is intact. This road alignment is observed to be intact outside of the northern and southern boundaries of site AZ T:4:374 (ASM) for a total distance of 767 meters (2,531 feet). UTM grid coordinates for the intact portion of the road alignment are 3734874mN/ 295697mE at the southern terminus, and 3735641mN/395626mE for the northern terminus.

In the project area, this portion of AZ T:3:131 (ASM) is recommended to be eligible for inclusion on the NRHP under Criterion A for its relationship with early Maricopa County transportation. We therefore recommend that AZ T:3:131 (ASM) be avoided by future proposed

construction action, and that archaeological monitoring be required when construction work in the vicinity is scheduled to commence.

AZ T:4:375 (ASM)

Site AZ T:4:375 (ASM) is a small lithic scatter located in the APE of the proposed project on Arizona State Trust land (see Figures 3e and 3f). This location is depicted on the Biscuit Flat 7.5-minute USGS topographic quadrangle in the southwest ¼ of the southwest ¼ of Section 8, Township 5 North, Range 2 East (Figure 3d). UTM grid coordinates for the site datum are 3738639mN/390174mE.

Environmental Setting

The site is located in Maricopa County on State Trust land. It is situated in an open exposure on a bajada flat approximately ½ mile to the north of the Deem Hills in the northern Phoenix Basin. The site is situated approximately at an elevation of 1,550 feet above mean sea level.

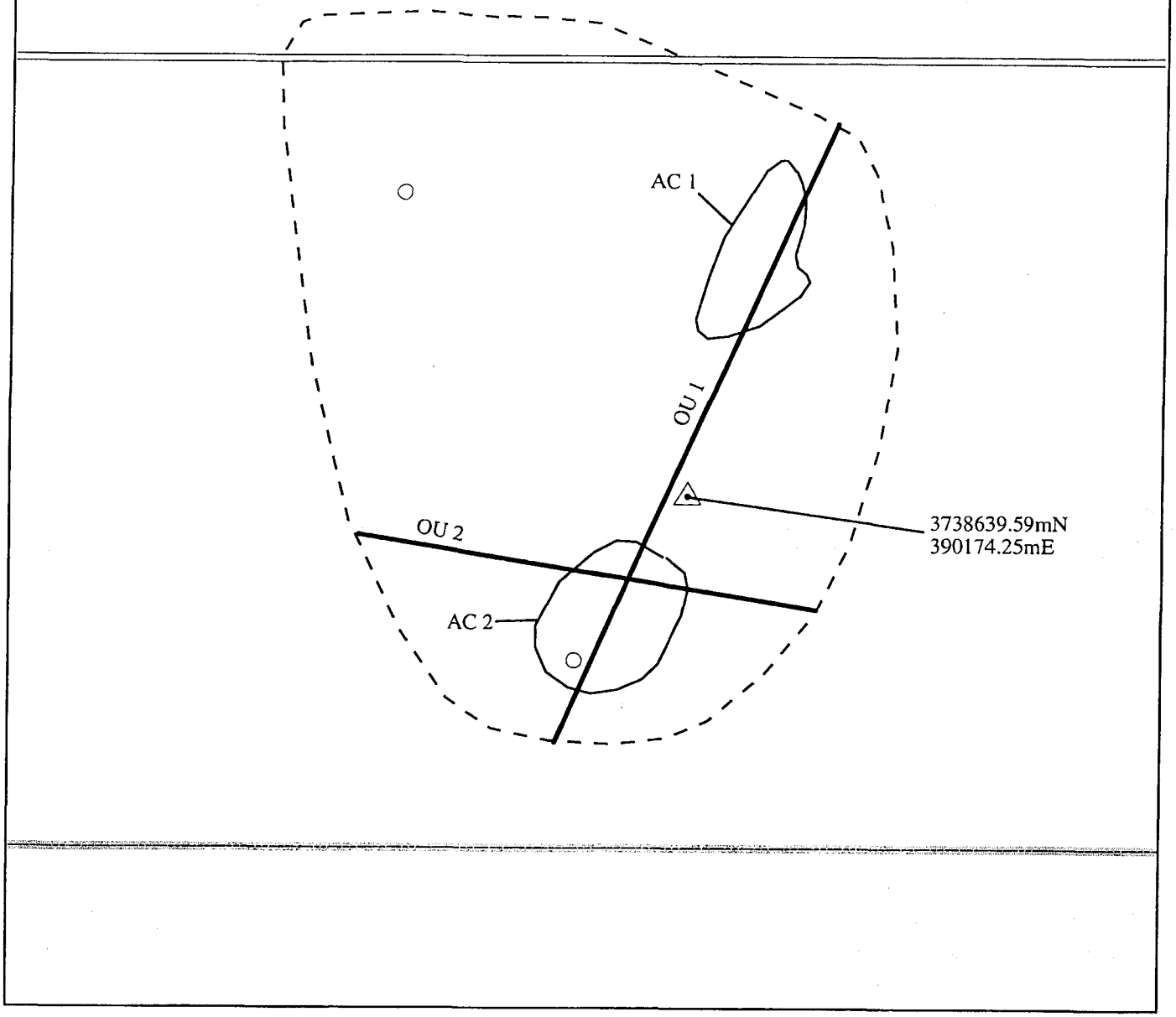
The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), saguaro (*Carnegiea* gigantea), and gold cholla *(Opuntia echinocarpa*) were all abundantly present both on site and in the surrounding area.

Description

Site AZ T:4:375 (ASM) is a moderate density lithic scatter on desert pavement in an open exposure on Biscuit Flat (Figure 10). It is approximately 1 mile to the north of the Deem Hills. With the exception of an ephemeral cattle trail passing through the center of the site, no other site impacts were noted. Overall site integrity is above average. Photograph 12 is an overview of the site area.



0 5 10 20 Meters

Newly Recorded Site
AZ T:4:375 (ASM)

Figure 10

Site Boundary	Right-of-Way
Artifact Concentration (AC)	Observation Unit (OU)
Centerline	Site Datum
	Tool

N W E S

m:/projects/aps/ncp/cec/mxds/site375.mxd

Photograph 12
Overview of AZ T:4:375 (ASM) looking north.

Site dimensions are 43 meters (north/south) by 34 meters (east/west) for a total site area of 1462m2. Approximately 80 artifacts were observed in this area for a total artifact density of .05 artifacts/m2.

Materials observed at site AZ T:4:375 (ASM) were noted to occur in two large, discrete concentrations. Cultural material observed outside of the boundaries of these concentrations was extremely sparse. A complete surface inventory of items within the two lithic concentrations and in two observational units set across the site was compiled during the recording of the site.

Table 6 presents the lithic assemblage observed at site AZ T:4:375 (ASM). Four material types were noted to be present in the site assemblage. Porphyritic basalt (n=69) was the dominant material types noted, followed by metachalcedony (n=2), chert (n=1), and fine-grained basalt (n=1). Porphyritic basalt and metachalcedony were noted to be locally available as raw material cobbles associated with washes and exposed desert pavement, while the chert and fine-grained basalt are from unknown sources.

TABLE 6 DEBITAGE INDEX: AZ T:4:375 (ASM)							
		Stage of Manufacture					
Provenience	**Material**	**Core**	**Primary**	**Secondary**	**Tertiary**	**Shatter**	**Total**
OU 1	Porphyritic basalt	MD*	2	12	0	8	**23**
OU 2	Porphyritic basalt	MD*	1	5	0	4	**11**
	Metachalcedony	0	0	1 (tool)	0	0	**1**
Concentration 1	Porphyritic basalt	0	1	18	0	0	**19**
	Metachalcedony	0	0	1	0	0	**1**
Concentration 2	Porphyritic basalt	MD*	1	14	0	0	**16**
	Chert	0	1	0	0	0	**1**
	Fine-grained basalt	0	0	1	0	0	**1**
TOTAL		**3**	**6**	**52**	**0**	**12**	**73**
***Multidirectional**							

The source for the metaquartzite and metachalcedony cobbles has been documented at quarry sites in the New River Mountains at sites AZ T:4:372 (ASM) and AZ T:4:176 (ASM). These quarry sites are located approximately 2 miles to the north of the proposed project area. At site AZ T:4:372 (ASM), Ellis et al. (2002) documented the presence of 2,000 to 3,000 lithic waste flakes on the surface of the site.

The debitage index indicates that early- to mid-stage tool production was the primary focus of tool manufacturing activity that took place at the site. Secondary flakes dominated the assemblage (n=52), followed by non-diagnostic shatter (n=12), primary flakes (n=6), and cores (n=3). All of the cores observed were multidirectional.

In addition to the debitage observed on site, two tools were noted. The first is a bifacial porphyritic basalt cobble chopper with one percussion flaked end. The second was a percussion flaked unifacial dome scraper manufactured from fine-grained basalt.

Evidence of Site Age and Function

The lithic assemblage observed indicates that production at site AZ T:4:375 (ASM) focused on the early- to mid-stage reduction of raw material. Raw material is locally available in the form of large- to medium-sized cobbles associated with washes and exposed desert pavement both at the site and in the surrounding area. Materials observed are thus indicative of short-term use episodes associated cobble-testing and early- to mid-stage lithic reduction for the purpose of producing expedient tools.

Tools observed on site are expedient and task-specific in nature. Their presence in the site assemblage may be an indication of the short-use life of expedient tools, as tools of this type could easily be manufactured from available material and discarded upon completion of a specific task.

The lack of primary flakes in the assemblage may indicate that these flakes were either taken from the site as flake blanks or that these flakes were further reduced to secondary stage during the production of expedient tools. The lack of tertiary flakes indicates that tool rejuvenation or the manufacture of formal artifacts was not a focus of tool production practiced at the site.

No diagnostic materials were identified at this site that would indicate site age.

National Register Assessment

Site AZ T:4:375 (ASM) is a moderate density lithic scatter on desert pavement in an open exposure on Biscuit Flat approximately 1 mile to the north of the Deem Hills. With the exception of an ephemeral cattle trail passing through the center of the site, no site impacts were noted. Overall site integrity is above average.

Site AZ T:4:375 (ASM) likely represents a use area that was utilized during the prehistoric or protohistoric periods. Materials observed are indicative of short-term use episodes associated with cobble-testing and early- to mid-stage lithic reduction for the purpose of producing expedient tools or formal artifacts.

Field observations at AZ T:4:375 (ASM) suggest no indication of any buried deposits present at the site. The presence of native desert pavement in formation on the site surface indicates that there is little potential for a subsurface component of the site to exist.

As such the data potential of the site is limited, and has likely been exhausted by surface inventory of the site. For this reason, it is our recommendation that the site is ineligible for NRHP listing.

AZ T:3:274 (ASM)

Site AZ T:3:274 (ASM) is an extensive sherd and lithic scatter located in the APE of the proposed project on lands owned by the ASLD (see Figure 3c). This location is depicted on the Baldy Mountain 7.5-minute USGS topographic quadrangle in the southwest ¼ of the northeast ¼ of Section 8, Township 5 North, Range 1 East. UTM grid coordinates for AZ T:3:274 (ASM) Locus 1 are 3739561mN/381696mE. UTM grid coordinates for AZ T:3:274 (ASM) Locus 2 are 3739343mN/381620mE.

Environmental Setting

The site is located in Maricopa County in open exposure on an elevated terrace above the east bank of the Agua Fria River in the northern Phoenix Basin region. The foothills of the Hieroglyphic Mountains are located across the Agua Fria approximately ⅛ mile to the west. The site is situated approximately at an elevation of 1,370 feet above mean sea level.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), saguaro (*Carnegiea* gigantea), gold cholla *(Opuntia echinocarpa)*, and paloverde *(Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

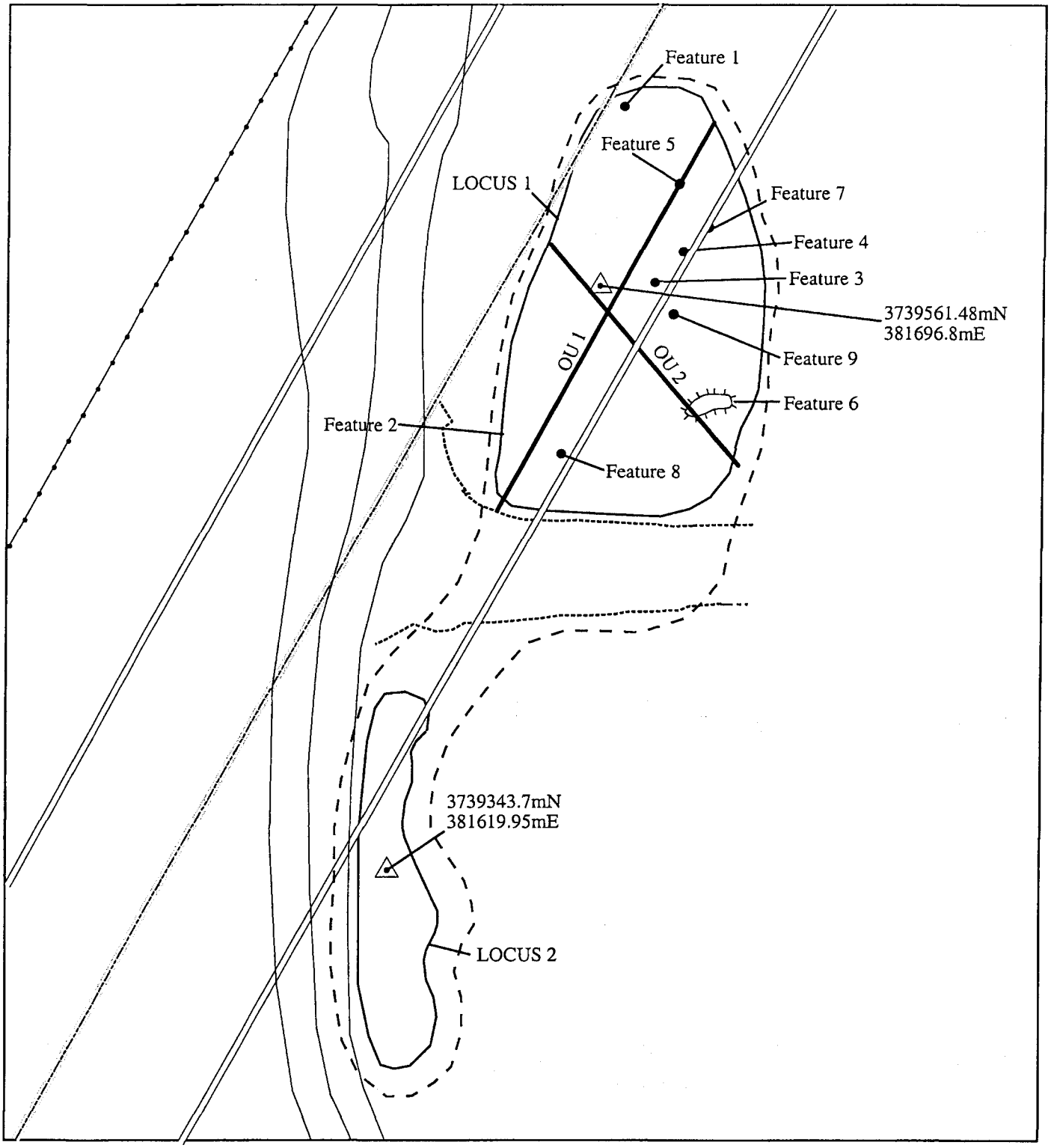
Description

Site AZ T:3:274 (ASM) is an extensive sherd and lithic scatter situated in open exposure on an elevated terrace above the east bank of the Agua Fria River (Figure 11).

Materials observed at site AZ T:3:274 (ASM) were noted to occur in two discrete loci, with a sparse scatter of artifacts connecting the two. Locus 1, the northernmost loci, is situated slightly above and overlooking Locus 2 on an elevated terrace. Locus 2, the southernmost loci, is situated to the south of Locus 1 on an elevated terrace overlooking the east bank of the Agua Fria River.

Locus 1

Locus 1 is a large, discrete sherd and lithic scatter located on an elevated terrace above and overlooking Locus 2 (Photograph 13). The dimensions of Locus 1 are 100 meters (east/would) by 160 meters (north/south) for a total area of 16000m2. Materials were tabulated in two observation units (OUs) across the site. Based on artifact counts derived from these OUs an estimated 2,880 artifacts may be present on the surface of the site.



0 25 50 100 Meters

Site Boundary	Existing Transmission Line
Locus Boundary	Contour Line
Cleared Area	Modern Road
Observation Unit (OU)	Site Datum
Centerline	Site Feature
Right-of-Way	

Newly Recorded Site
AZ T:3:274 (ASM)

Figure 11

N W E S

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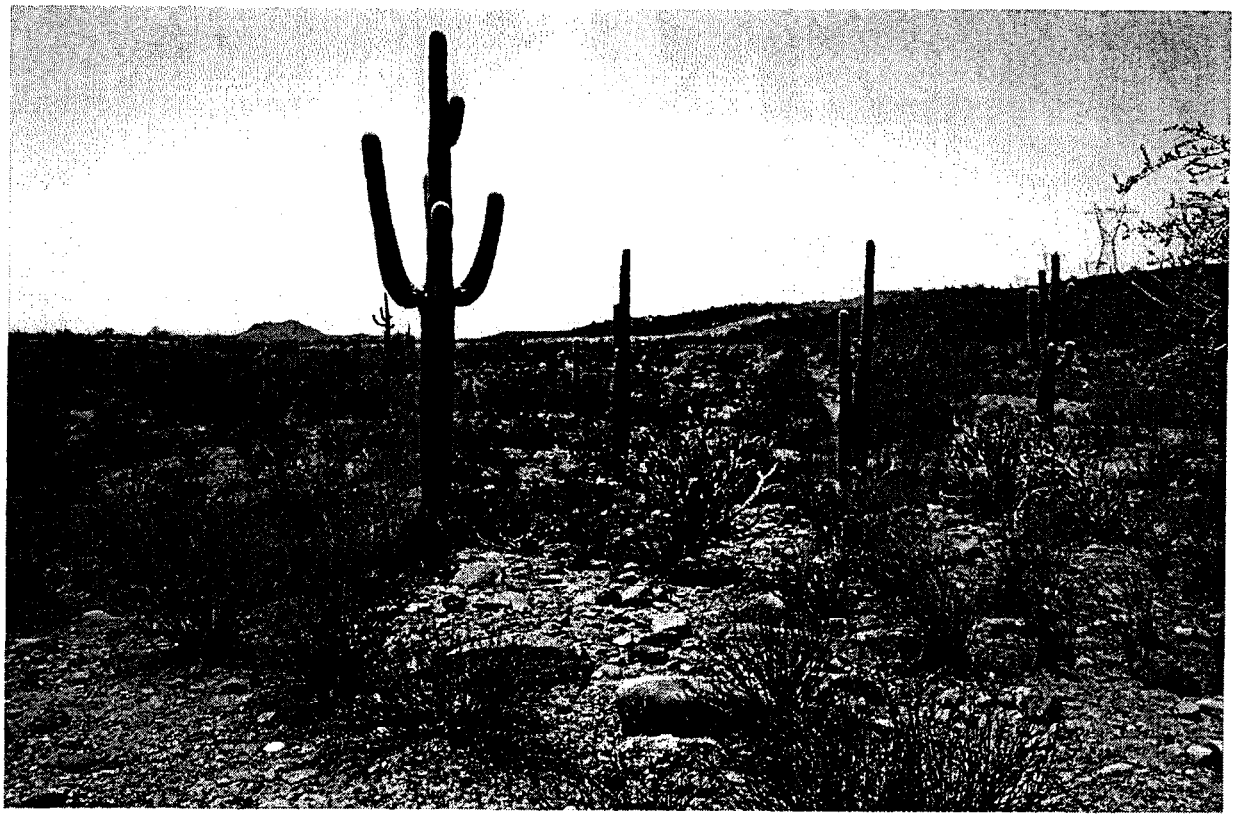


Photograph 13
Overview of AZ T:3:274 (ASM) Locus 1 looking south.

Nine features were observed in Locus 1. Four of these features were identified as flaking stations where the reduction of raw material occurred. One feature is a pot drop, one is a sherd and lithic artifact concentration, and three more are possible agricultural features.

Feature 1

Feature 1 is a flaking station located in the northern portion of Locus 1. Approximately 20 pieces of porphyritic basalt and fine-grained basalt was noted in an area measuring 4 meters by 4 meters in diameter. Total area was 16m2. The Feature 1 assemblage is dominated by primary and secondary flakes and non-diagnostic shatter. Total artifact density is 0.8 artifacts/m2.

Feature 2

Feature 2 is a flaking station located in the southern portion of Locus 2. Approximately 15 flakes of fine-grained basalt were observed in an area measuring 2 meters by 2 meters, with a total area

of 4m2. Only primary and secondary flakes were noted in Feature 2. The total artifact density is .27 artifacts/m2.

Feature 3

Feature 3 is a porphyritic basalt flaking station located in the east-central portion of Locus 2. Approximately 20 primary and secondary flakes were noted in an area measuring 2 meters by 2 meters, with a total area was 4m2. The total artifact density for Feature 3 is .2 artifacts/m2. One multidirectional core was observed in this area.

Feature 4

Feature 4 is a pot drop noted in the east-central portion of Locus 2. Approximately 15 plain ware body sherds and one rim sherd were noted in association with a very slight natural wash feature. The assemblage suggests that one vessel is represented at Feature 3.

Feature 5

Feature 5 is a flaking station located in the eastern portion of Locus 1. Two discrete concentrations of materials were noted in an area measuring 5 meters by 7 meters. One discrete concentration of fine-grained basalt consisting of seven secondary flakes were noted in a 2-meter by 2-meter area. A second discrete concentration of approximately 35 pieces of porphyritic basalt debitage was noted in an adjacent 3-meter by 5-meter area. The artifact density for Feature 5 is 1.2 artifacts/m2. Items observed in this area included two multidirectional cores. Debitage was dominated by primary and secondary flakes and non-diagnostic shatter.

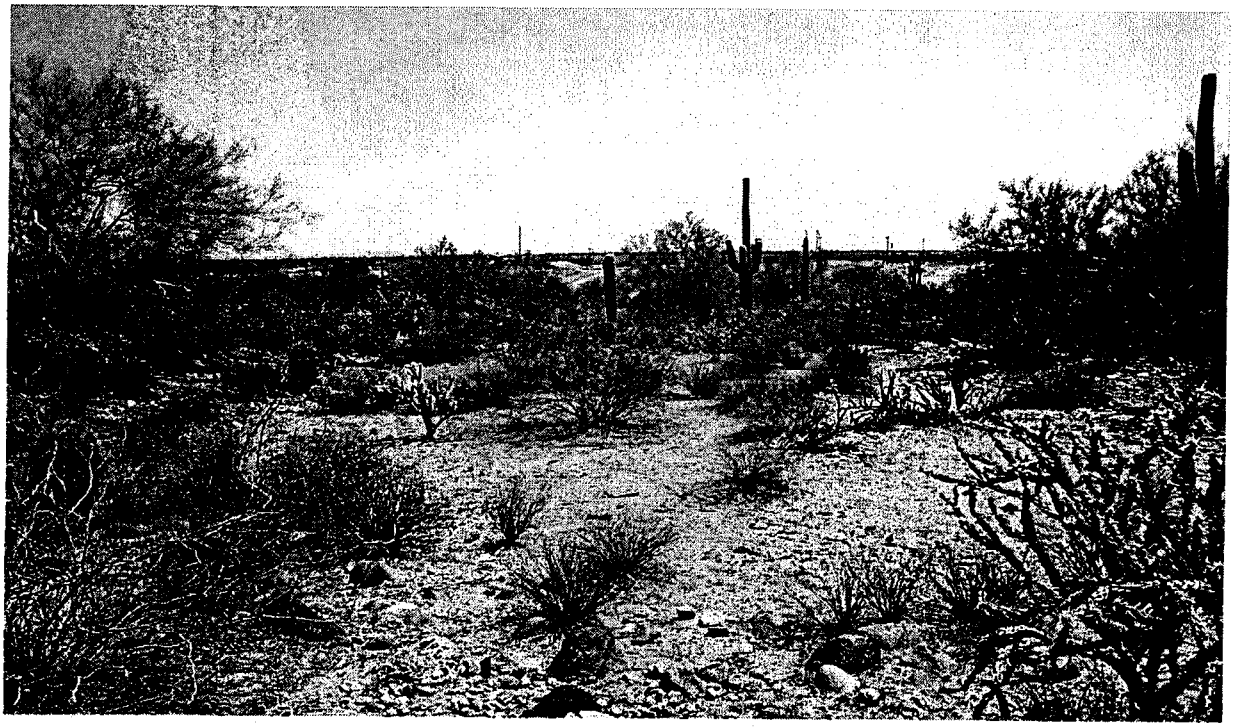
Feature 6

Feature 6 is a cleared area located in the southeastern corner of Locus 1 along the edge of the elevated terrace. This area measured approximately 10 meters (north/south) by 25 meters (east/west) for a total area of 250m2. It is devoid of rocks or desert pavement. Rocks occur along the margin of the cleared area and may represent a clearing episode. While the function of this cleared area is not certain, it may represent an agricultural location. Photograph 14 is an overview of Feature 6.

Feature 7

Feature 7 is a triangular rock feature constructed of native metavolcanic cobbles to a height of one course. This feature measures 1.5 meters (east/west) by 2.5 meters (north/south) and is

placed along the eastern edge of a slight elevation on the Locus 1 terrace. This feature is of unknown function, and may be associated with water retention. Photograph 15 is an overview of Feature 7.



Photograph 14
Overview of AZ T:3:274 (ASM) Locus 1 Feature 6 looking east.

Photograph 15
Overview of AZ T:3:274 (ASM) Locus 1 Feature 7 looking north.

Feature 8

Feature 8 is a cluster of three small rock cairns located in the southwestern portion of Locus 1. These cairns are associated with desert pavement and are constructed of native metavolcanic and granodiorite cobbles to a height of one course.

The first two cairns, field designated as A and B, are situated directly adjacent to each other. The third rock feature, field designated as C, is situated approximately 2 meters to the north of A and B.

Cairn A is oval in shape and measures 91 centimeters by 81 centimeters and is 13 centimeters in height. Cairn B is also oval in shape, and measures 97 centimeters by 62 centimeters. It is also 13 centimeters in height. Cairn C is circular and measures 92 centimeters in diameter and 13 centimeters in height. The exact function of these features is unknown, but may be associated with prehistoric agriculture. Photograph 16 is an overview of Feature 8.

Photograph 16
Overview of AZ T:3:274 (ASM) Locus 1 Feature 8 looking southwest.

Feature 9

Feature 9 is a flaking station located in the eastern portion of the site. Porphyritic basalt reduction was observed here in a concentration measuring 3 meters by 3 meters. Approximately 10 artifacts were noted in this area, all of which were secondary and primary flakes. Feature 9 has an artifact density of 1.1 artifacts/m2.

Observation Units

OU 1

In OU 1, porphyritic basalt non-diagnostic shatter (n=7) was the dominant material type noted. In addition, four porphyritic basalt secondary flakes, two porphyritic basalt tertiary flakes, one fine-grained basalt secondary flake, and one fine-grained basalt scraper plane were also observed.

OU 2

In OU 2, material was observed to be extremely sparse and was limited to two porphyritic basalt secondary flakes, and one piece of rhyolite non-diagnostic shatter.

Locus 2

Locus 2 is located along the edge of a 30-foot-tall cobble cliff overlooking the eastern bank of the Agua Fria River (Photograph 17). Artifacts were noted to be most numerous along the western edge of Locus 2 along the cobble cliff above the Agua Fria, indicating that the site is eroding down the cliff. The integrity of Locus 2 is fair. Dimensions recorded for Locus 2 are approximately 100 meters (north/south) by 18 meters (east/west) for a total site area of 1800m2. Approximately 42 artifacts were observed in this area for a total artifact density of .02/m2.

Materials observed at AZ T:3:274 (ASM) Locus 2 were sparsely and uniformly distributed across the site area. Lithics were the most common artifact type noted. A complete inventory of observed surface artifacts was compiled during recording of the locus.

Table 7 presents the lithic assemblage observed at Locus 2. Three material types were noted to be present in the site assemblage. Porphyritic basalt (n=17) was the dominant material type noted, followed by fine-grained basalt (n=7), and quartzite (n=3). All of these material types were locally obtainable.

Photograph 17
Overview of AZ T:3:274 (ASM) Locus 2 looking north.

TABLE 7 DEBITAGE INDEX: AZ T:3:274 (ASM) LOCUS 2						
		Stage of Manufacture				
Provenience	**Material**	**Core**	**Primary**	**Secondary**	**Tertiary**	**Total**
General site area	Porphyritic basalt	MD*	1	14	1	**17**
General site area	Fine-grained basalt	MD*	0	6	0	**7**
General site area	Quartzite	0	0	3	0	**3**
TOTAL		**2**	**1**	**23**	**1**	**27**
*Multidirectional						

The debitage index indicates that early- to mid-stage tool production was the primary focus of tool manufacturing activity that took place at the site. Secondary flakes dominated the assemblage (n=23), followed by cores (n=2), with only one primary and tertiary flake occurring. Both of the cores observed were multidirectional.

In addition, three lithic tools were noted at site Locus 2. All of these tools were representative of expedient tool technology, and consisted of a bifacial cobble chopper manufactured from metavolcanic stone, a unifacial porphyritic basalt side scraper, and a porphyritic basalt utilized secondary flake.

Ceramics (n=12) were also observed at site AZ T:3:274 (ASM) Locus 2. Sherds were differentiated on the basis of wall thickness and temper attributes. Examination of these attributes led to the identification of thin-walled (3mm) Gila Plain-Salt variety body sherds (n=7), thick-walled (9mm) Gila Plain-Gila variety body sherds (n=3), and thick-walled (8mm) Gila Plain-Salt variety body sherds with fine-grained sand temper (n=2). The ceramic assemblage noted indicates that at least three vessels are represented at Locus 2.

Evidence of Site Age and Function

No diagnostic artifacts were observed at site AZ T:3:274 (ASM). The site assemblage likely represents activity areas that were utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain ware varieties that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

The presence of possible agricultural features at AZ T:3:274 (ASM) Locus 1 indicates that this area may have been utilized for prehistoric agricultural pursuits. The site location in an open exposure on a terrace above the Agua Fria River to the west and a well-developed intermittent drainage to the adjacent east is highly desirable for agricultural purposes. Rock features present at the site may be an indication that this area was used for dry farming during Hohokam occupation of the region.

In addition to the rock features, several flaking stations indicate that activities that may be associated with resource procurement.

National Register Assessment

Field observations at AZ T:3:274 (ASM) revealed the potential for buried deposits in association with possible agricultural features observed at the site. For this reason, it is our recommendation that the site is eligible for NRHP listing under Criterion D for its potential to address issues of prehistoric agricultural strategies and resource procurement practiced in the northern Phoenix Basin. This site should be avoided by future construction action in the vicinity. If avoidance is not possible, then we recommend the development of appropriate mitigative measures in consultation with the SHPO and ASLD.

AZ T:7:276 (ASM)

Site AZ T:7:276 (ASM) is a small sherd and lithic scatter located in the APE of the proposed project on lands owned by the ASLD (see Figure 3b). This location is depicted on the Calderwood Butte 7.5-minute USGS topographic quadrangle in the southeast ¼ of the northwest ¼ of Section 30, Township 5 North, Range 1 East. UTM grid coordinates for the site datum are 3734834mN/379416mE.

Environmental Setting

The site is situated in open exposure on a bajada flat approximately ¼ mile to the south of the Hieroglyphic Mountains in the northern Phoenix Basin. The site is situated approximately at an elevation of 1,400 feet above mean sea level.

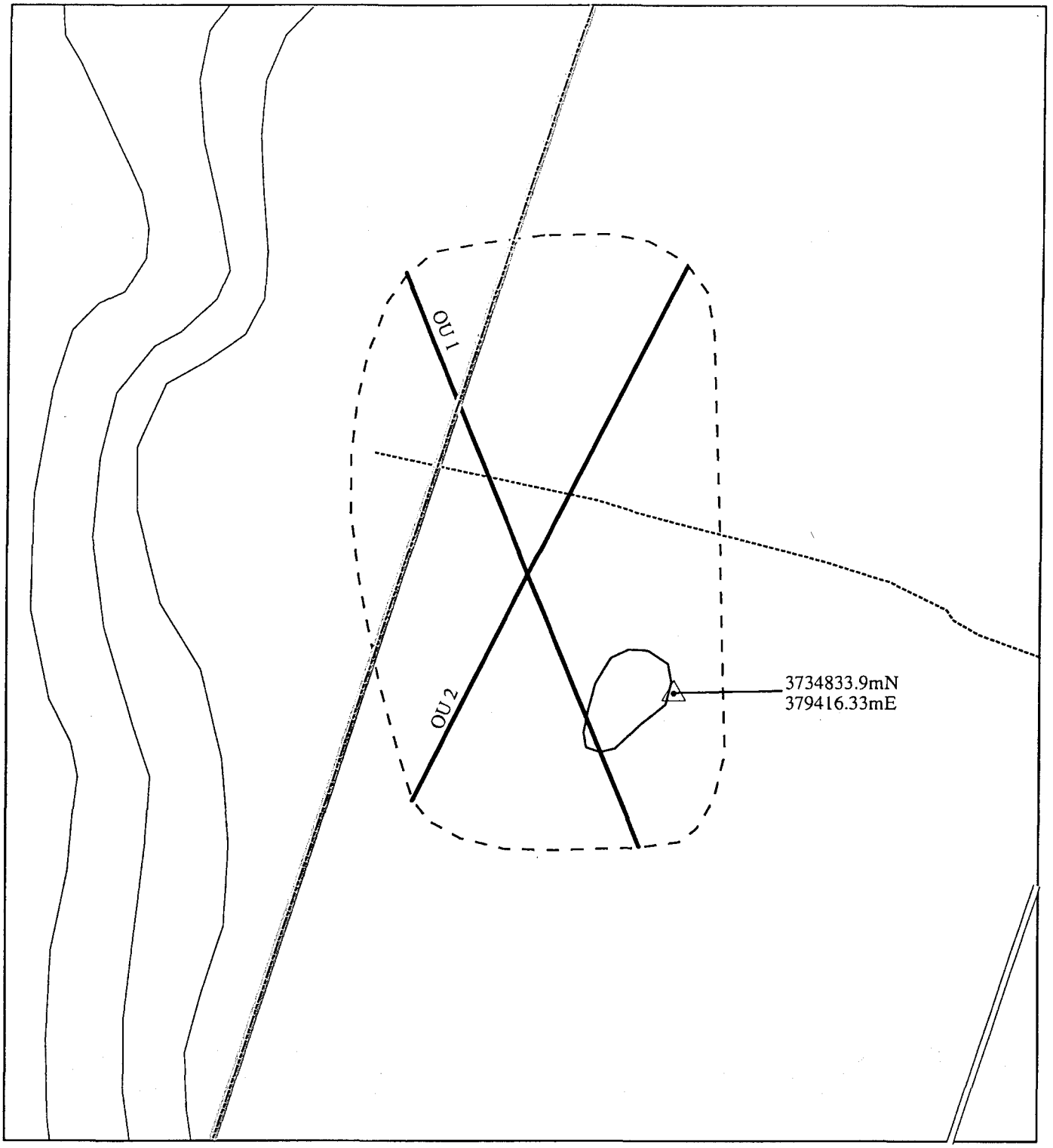
The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), saguaro (*Carnegiea* gigantea), mesquite (*Prosopis* spp.), cat-claw acacia (*Acacia greggii*), gold cholla (*Opuntia echinocarpa*), and paloverde (*Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

Description

Site AZ T:7:276 (ASM) is a moderate density sherd and lithic scatter situated on a low terrace above a well-developed seasonal wash located approximately 25 meters to the west of the site (Figure 12). Tire tracks were observed in the desert pavement in the north of the site, and a two-track road cuts through the northern portion of the site. Artifacts were noted in the tracks in the road, indicating that the site has been impacted by off-road vehicle use. Although the site has been impacted by the road, the majority of it retains its integrity. Photograph 18 is an overview of the site area.



0 5 10 20 Meters

Newly Recorded Site
AZ T:7:276 (ASM)

Figure 12

- - -	Site Boundary		Centerline
----------	Modern Road		Right-of-Way
———	Artifact Concentration	———	Observation Unit (OU)
———	Contour Line	△	Site Datum

N
W E
S

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Photograph 18
Overview of AZ T:7:276 (ASM) looking north.

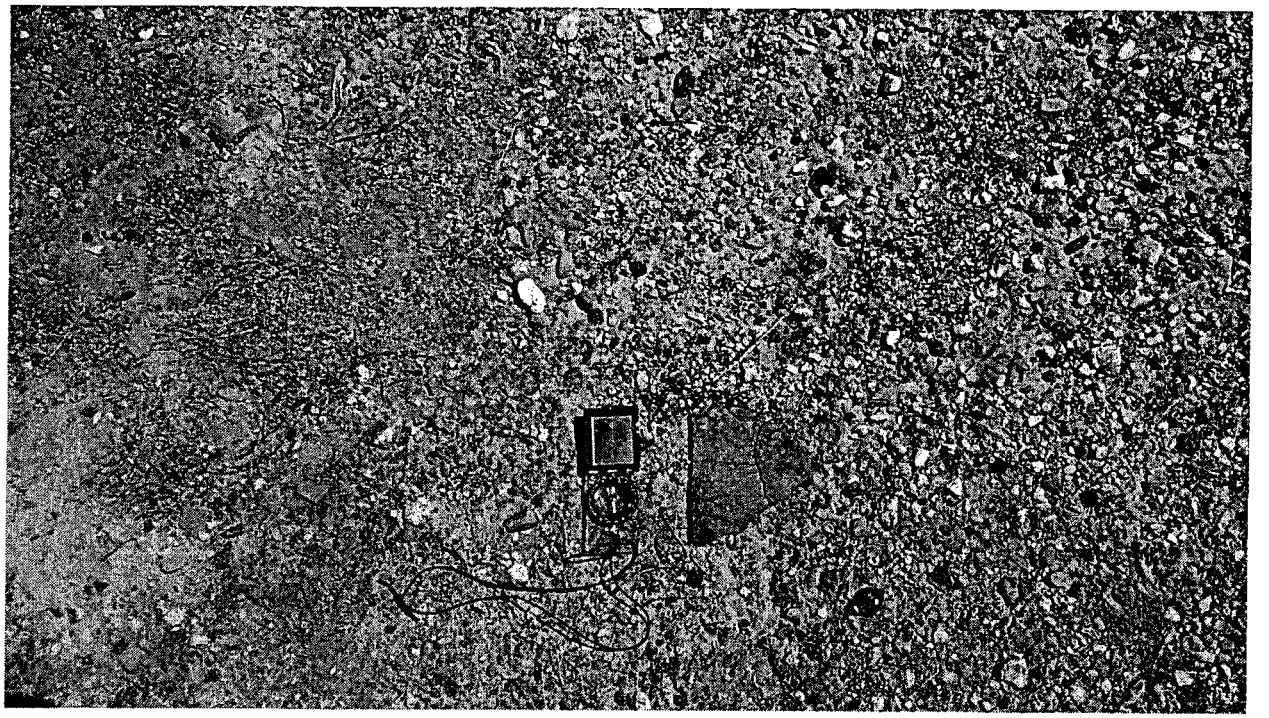
Dimensions of site AZ T:7:276 (ASM) are approximately 36 meters (north/south) by 21 meters (east/west) for a total site area of 756m2. Approximately 61 artifacts were observed in this area for a total artifact density of .08 artifacts/m2.

Materials observed at site AZ T:7:276 (ASM) were sparsely and uniformly distributed across the site area. The majority of artifacts were ceramic plain ware body sherds, many of which are very large in size. A small number of lithic artifacts were also observed.

One ceramic concentration was noted. A complete surface inventory of items within the ceramic concentration and in two OUs set across the site was tabulated during the recording of the site.

Concentration 1

Concentration 1 is a small ceramic concentration measuring approximately 7 meters (north/south) by 3 meters (east/west) for a total area of 21m2. Approximately 29 items were observed in this area for a total artifact density of .72 artifacts/m2. This concentration was observed in and around a very slight natural wash slope. Photograph 19 is an overview of ceramics observed at AZ T:7:276 (ASM).



Photograph 19
Overview of AZ T:7:276 (ASM) ceramics.

The majority of sherds observed in Concentration 1 were of the Gila Plain-Gila variety (n=25). One of the sherds of this type measured approximately 12 centimeters by 8 centimeters in size.

In addition, thin-walled (4mm) Gila Plain-Salt variety body sherds (n=3). The ceramic assemblage noted in Concentration 1 indicates that at least two vessels are represented.

Observational Units

In OU 1, nine thick-walled (1 centimeter) Gila Plain-Gila variety body sherds were observed. In addition, one fine-grained basalt secondary flake and one porphyritic basalt secondary flake were observed.

In OU 2, 19 thick-walled (1 cm) Gila Plain-Gila variety body sherds were observed. One rim sherd of this type was also observed. In addition, a fine-grained basalt secondary flake, a rhyolite secondary flake, and a fine-grained basalt unidirectional core was also observed.

Evidence of Site Age and Function

No diagnostic artifacts were observed at site AZ T:7:276 (ASM). The site assemblage likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain ware varieties that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

The ceramic assemblage noted at the site is very similar to that observed at site AZ T:7:192 (ASM), a large Hohokam habitation and agricultural site located approximately ¼ mile to the south of site AZ T:7:276 (ASM). Due to the proximity and similarity in the ceramic assemblage, it is thus likely that the assemblage present at site AZ T:7:276 (ASM) represents a small activity area associated with the catchment area of site AZ T:7:192 (ASM).

National Register Assessment

Site AZ T:7:276 (ASM) likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Materials observed are indicative of short-term use of the site as a limited use area where procurement of native resources may have taken place. The paucity of lithic artifacts observed at the site may indicate that resource procurement at the site did not necessitate the manufacture of task-specific tools.

Field observations at AZ T:7:276 (ASM) revealed low possibility of buried deposits at the site. The presence of native desert pavement in formation on the site surface indicates that there is little potential for a subsurface component of the site to exist.

As such the data potential of the site is limited, and has likely been exhausted by surface inventory of the site. Further study of the site is unlikely to yield any new information and no other historic values have been identified to warrant preservation. For this reason, it is our recommendation that the site is ineligible for NRHP listing.

REVISITED SITES

Seven sites, AZ T:3:1 (MNA), AZ T:3:2 (MNA), AZ T:3:264 (ASM), AZ T:7:192 (ASM), AZ T:8:104 (ASU), AZ U:5:72 (ASU), and AZ U:5:73 (ASU) that are situated within or immediately adjacent to the APE were revisited during field survey.

These sites are tabulated in terms of their description and location in Table 8. A more detailed description of each site follows below in text.

TABLE 8 PREVIOUSLY RECORDED REVISITED SITES					
Site Number	**Quadrangle**	**Jurisdiction**	**Chronology**	**Description**	**Eligibility**
AZ T:3:264 (ASM)	Baldy Mountain	State	Prehistoric	Artifact scatter	Eligible
AZ T:3:2 (MNA)	Baldy Mountain	State	Prehistoric	Artifact scatter	Eligible
AZ T:3:1 (MNA)	Baldy Mountain	State	Prehistoric	Artifact scatter	Eligible
AZ T:7:192 (ASM)	Calderwood Butte	Private, State	Prehistoric	Hohokam habitation	Eligible
AZ T:8:104 (ASU)	Union Hills	State	Prehistoric	Pot drop	Likely destroyed
AZ U:5:72 (ASU)	Curry's Corner	State	Prehistoric	Ceramic scatter	Likely destroyed
AZ U:5:73 (ASU)	Curry's Corner	State	Prehistoric	Artifact scatter	Likely destroyed

AZ T:3:264 (ASM)

Site AZ T:3:264 (ASM) is a multicomponent site consisting of a prehistoric artifact scatter and a historic trash scatter. It is situated in the APE of the proposed project on lands owned by the ASLD. The site is located in the northeast ¼ of the northeast ¼ of Section 8, Township 5 North, Range 1 East, as depicted on the Baldy Mountain 7.5-minute USGS topographic quadrangle. UTM grid coordinates for the site datum are 3739840mN/381897mE.

Environmental Setting

The site is situated on an open exposure on an elevated terrace above the eastern bank of the Agua Fria River in the northern Phoenix Basin region. The site is located in the foothills of the Hieroglyphic Mountains. The site is situated approximately at an elevation of 1,375 feet above mean sea level. Photograph 20 is an overview of the site area.

Photograph 20
Overview of AZ T:3:264 (ASM) looking northwest.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley Subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), saguaro (*Carnegiea gigantea*), gold cholla (*Opuntia echinocarpa*), and paloverde (*Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

Description

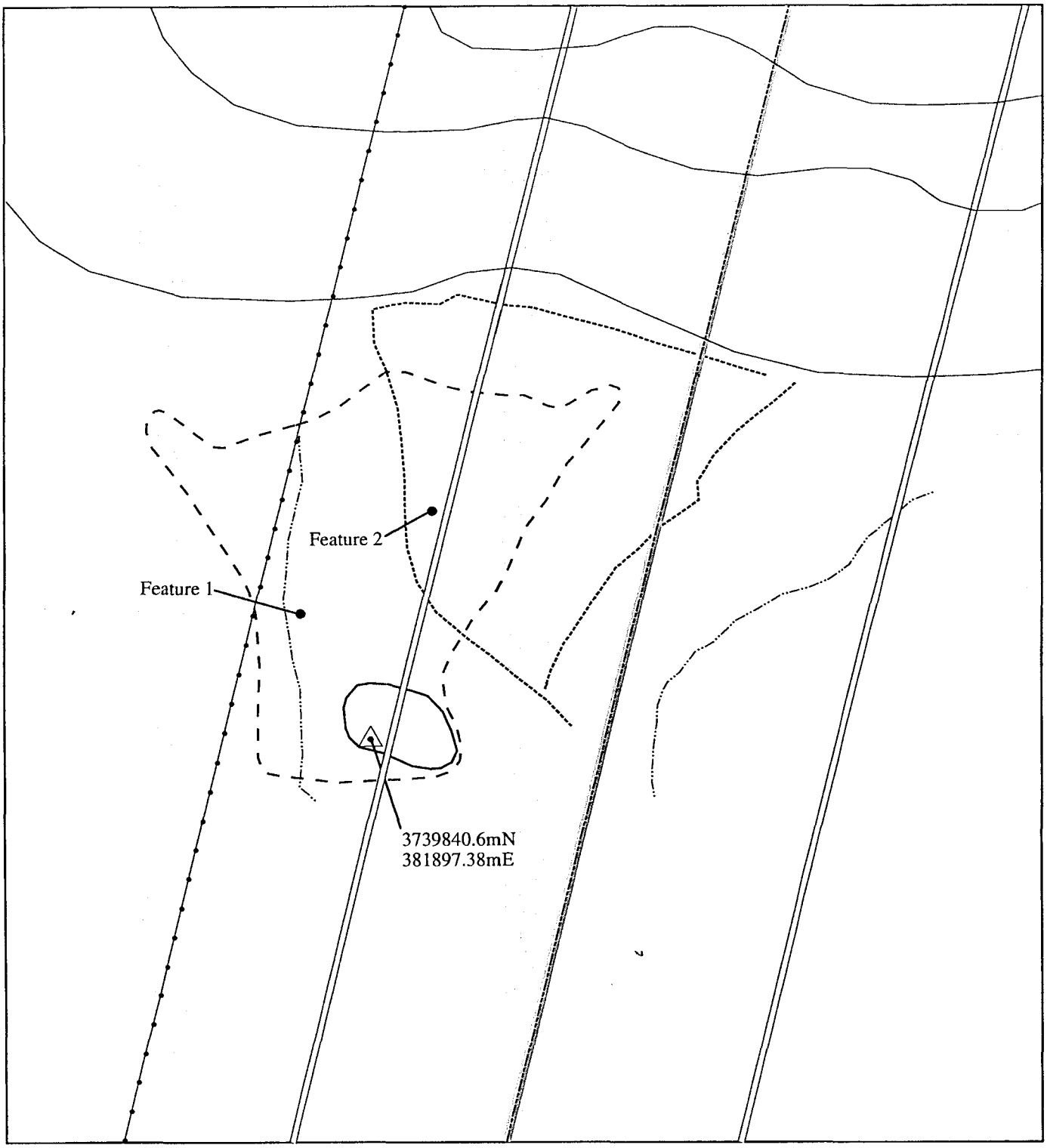
Site AZ T:3:264 (ASM) was first recorded by Gage (2002) as part of the proposed Westwing-Raceway 69/12kV transmission corridor survey (Figure 13). The site was described as a multi-component artifact scatter exhibiting both prehistoric and historic artifacts. Locus 1, located outside of the APE of the current project to the northwest of the existing transmission corridor, consisted of historic materials, while Locus 2, located within the APE of the current project, exhibited the prehistoric materials noted on site. Only Locus 2 was revisited by the current project.

Recording of Locus 2 by Archaeological Consulting Services (ACS) noted 10 prehistoric features and approximately 92 artifacts in an area measuring 120 meters (north/south) by 60 meters (east/west). This site was revisited by Glennda Luhnow and Kim Ryan of EPG on July 18, 2002.

At the time of the site revisit, roads were noted to disturb the site surface at the western, southern and northern site boundaries, as well as in the center of the site. The surface of these roads exhibited deep powder from extensive off-road vehicle use. Site integrity is fair.

Materials noted during the site revisit were sparsely distributed across the site surface. No groundstone artifacts were observed. Lithic and ceramic artifacts were observed to occur at the site in roughly the same density as that observed by ACS. Ceramics noted were both Gila Plain-Salt variety and Gila Plain-Gila variety. Lithic materials were noted to be manufactured from native porphyritic basalt, granodiorite, fine-grained basalt, rhyolite, chalcedony, dacite and schist.

Only two of the 10 features identified by ACS were relocated at the time of the site revisit. Both of these were rock features constructed of uncoursed native cobbles and may have functioned as prehistoric agricultural features.



0 10 20 40 Meters

Site Boundary		Existing Transmission Line	
Artifact Concentration		Contour Line	
Road		Wash	
Centerline		Site Datum	
Right-of-Way		Site Feature	

Previously Recorded/ Revisited Site AZ T:3:264 (ASM)

Figure 13

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Evidence of Site Age and Function

No diagnostic artifacts were observed at site AZ T:3:264 (ASM) to aid in the identification of site function. The general nature of the site assemblage likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain wares that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

Although no diagnostic artifacts were observed, the presence of potential agricultural features associated with site materials may indicate that this location was used for small-scale cultivation by its inhabitants.

National Register Assessment

Site AZ T:3:264 (ASM) likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. The site location in an open exposure on a terrace above the Agua Fria River is highly desirable in terms of agricultural pursuits. Rock features present at the site may be an indication that this area was used for dry farming during Hohokam occupation of the region.

Field observations at AZ T:3:264 (ASM) revealed some potential for buried deposits to occur in association with possible agricultural features at the site. For this reason, it is our recommendation that the site is eligible for NRHP listing under Criterion D. The site demonstrates the potential to provide information regarding the prehistoric/protohistoric subsistence strategies utilized along the Agua Fria.

It is probable that the site can be avoided by spanning. However, if avoidance is not possible, then the potential for intact subsurface site deposits will need to be discussed in terms of future mitigative measures including, but not limited to, monitoring, testing, and data recovery.

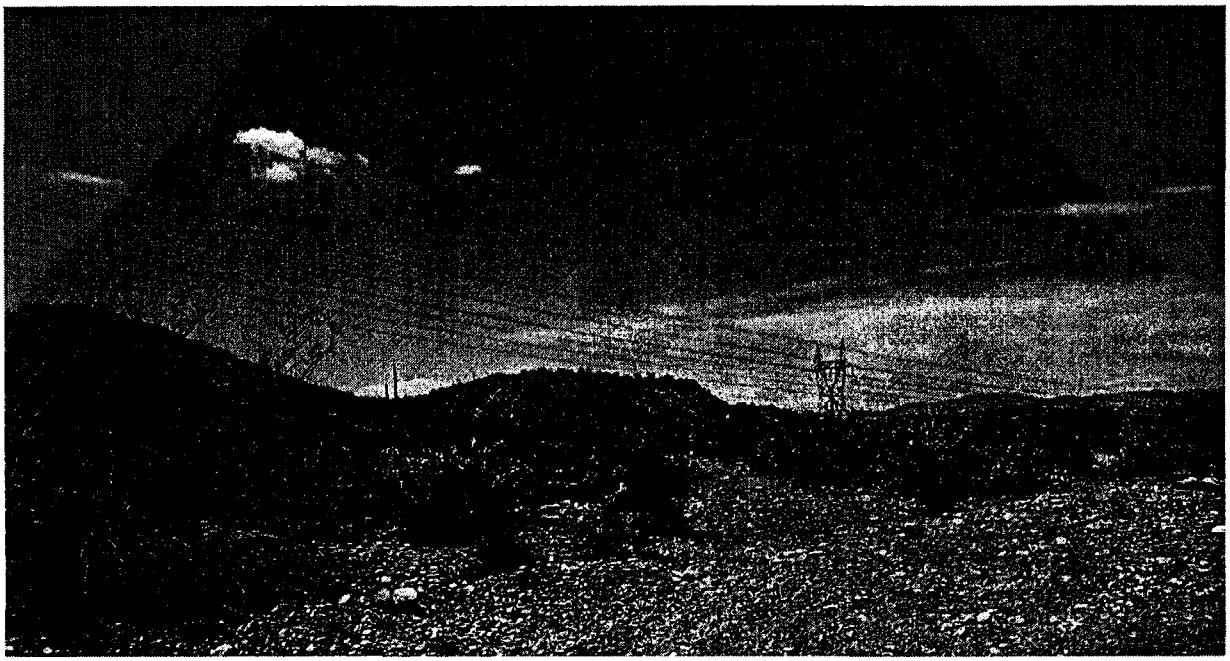
AZ T:3:2 (MNA)

Site AZ T:3:2 (MNA) is described as an extensive sherd, groundstone, and lithic scatter situated on a small terrace above the western bank of the Agua Fria River (see Figure 3c). It is situated in the APE of the proposed project on lands owned by the ASLD. The site is located in the northeast ¼ of the southwest ¼ of Section 8, Township 5 North, Range 1 East as depicted on the Baldy Mountain 7.5-minute USGS quadrangle. UTM grid coordinates for the site are 3739198mN/381367mE.

Environmental Setting

The site is situated on a northern exposure of an elevated terrace above the western bank of the Agua Fria River in the northern Phoenix Basin region. The site is located in the foothills of the Hieroglyphic Mountains. The site is situated at an elevation of 1,400 feet above mean sea level. Photograph 21 is an overview of the site area.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.



Photograph 21
Overview of AZ T:3:2 (MNA) looking west.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), saguaro (*Carnegiea gigantea*), gold cholla (*Opuntia echinocarpa*), and paloverde (*Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

Description

Site AZ T:3:2 (MNA) was recorded by E.T. Karlstrom and the Museum of Northern Arizona as an artifact scatter exhibiting groundstone, ceramics and lithics over an area measuring 50 meters in diameter (Figure 14). At the time the site was recorded, Karlstrom noted that the site exhibited signs of pothunting, and that artifacts were evident in the sidewalls of the potholes to a depth of 30 centimeters.

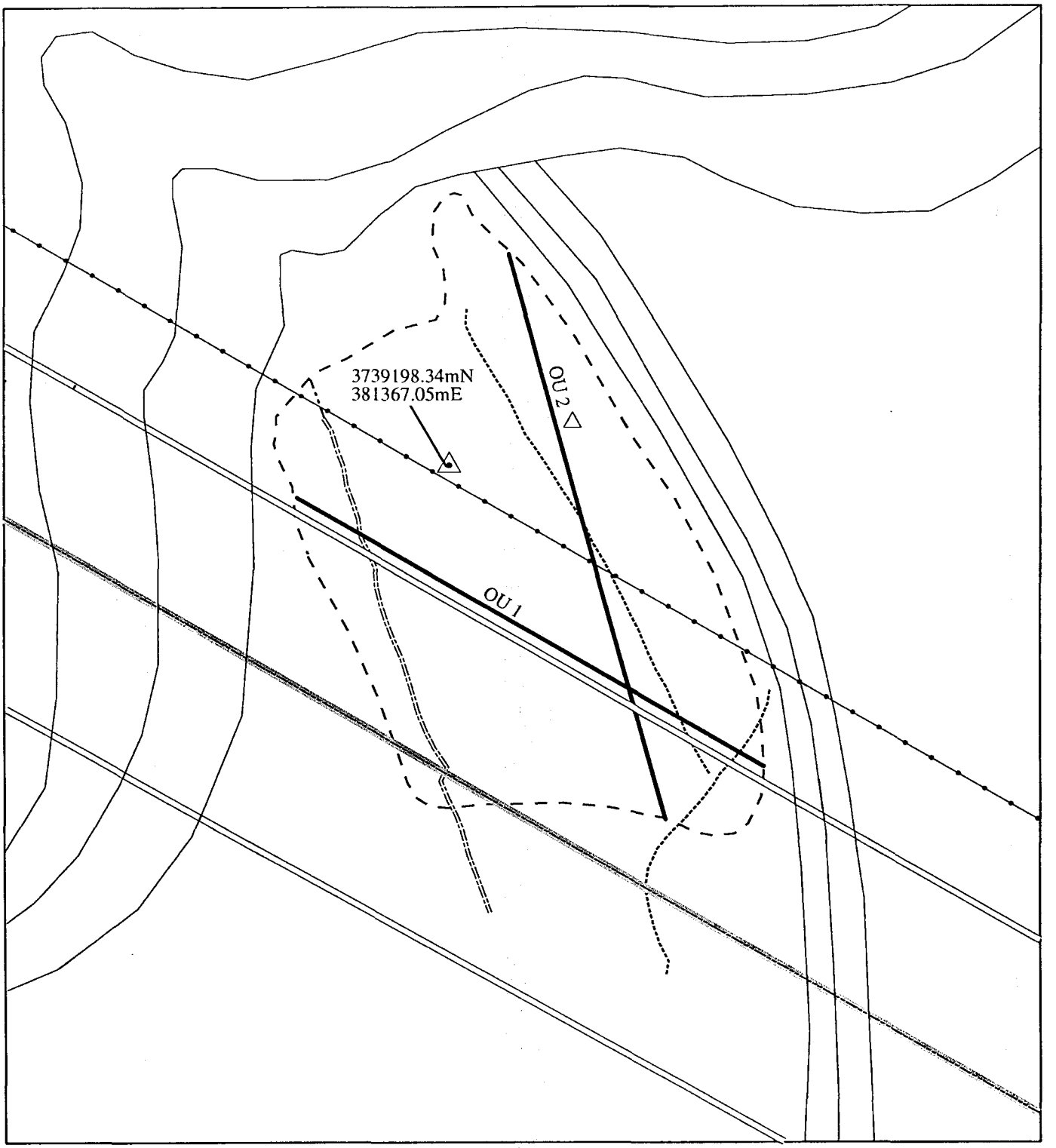
Site AZ T:3:2 (MNA) was revisited on July 18, 2002 by Glennda Luhnow and Kim Ryan. Site boundaries were expanded based upon surface observations to 100 meters (north/south) by 200 meters (east/west). The original site boundaries are within the northwestern quarter of the site as defined by the current survey. The northern and eastern boundaries of the site follow the edge of a steep cobble cliff overlooking the western bank of the Agua Fria River. The western and southern boundaries of the site roughly follow the basal contours of a steep side slope of a foothill of the Hieroglyphic Mountains.

Site disturbances include two roads in the center and eastern portions of the area that bisect the site. Artifacts were observed both in the road and in the adjoining road berms, indicating that construction of the road impacted the site. In addition, the potholes described in the earlier site record were relocated. These are badly eroded and backfilled by aeolian deposition. Closer examination did not reveal any evidence of a subsurface deposit in the sidewalls of these holes. No more recent evidence of illegal excavation was observed on the site at this time.

Site AZ T:3:2 (MNA) was inventoried during the site revisit by two pedestrian OUs. In OU 1, only lithic materials were observed. These consisted of 2 porphyritic basalt multidirectional cores, 1 porphyritic basalt primary flake, 11 porphyritic basalt secondary flakes, 1 quartzite secondary flake, and 1 chert secondary flake.

In OU 2, four Gila Plain-Gila variety body sherds were observed. Lithics observed in OU 2 were dominated by porphyritic basalt secondary flakes (n=16), followed by red chert pressure flakes (n=2), red chert shatter (n=2) and fine-grained basalt secondary flakes (n=3). In addition one each quartzite secondary, white chert secondary, fine-grained basalt tertiary, and rhyolite secondary flakes were observed in OU 2. One tool, a rhyolite flake tool, was also present in OU 2.

Most ceramics noted at site AZ T:3:2 (MNA) were observed in the northwestern portion of the site. Ceramics observed were all plain wares of the Gila Plain-Gila variety and Wingfield Plain.



0 25 50 100 Meters

- - -	Site boundary	•—•—	Existing Transmission Line
▬▬▬	Observation Unit (OU)	═══	Fence
▒▒▒	Centerline	----------	Road
═══	Right-of-Way	◬	Site Datum
———	Contour Line	△	Pothole

Previously Recorded/ Revisited Site AZ T:3:2 (MNA)

Figure 14

W S N E

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Evidence of Site Age and Function

No diagnostic artifacts were observed at site AZ T:3:2 (MNA). The site assemblage likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain ware varieties that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

National Register Assessment

Site AZ T:3:2 (MNA) likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. The site location in northern exposure on a terrace above the western bank of the Agua Fria River is highly desirable in terms of agricultural pursuits.

No features were noted at site AZ T:3:2 (MNA); however, there is a potential for a subsurface deposit to exist at the site as noted by the original site record. For this reason, it is our recommendation that the site is eligible for NRHP listing under Criterion D for its potential to provide information about prehistoric subsistence and land-use strategies practiced along the Agua Fria.

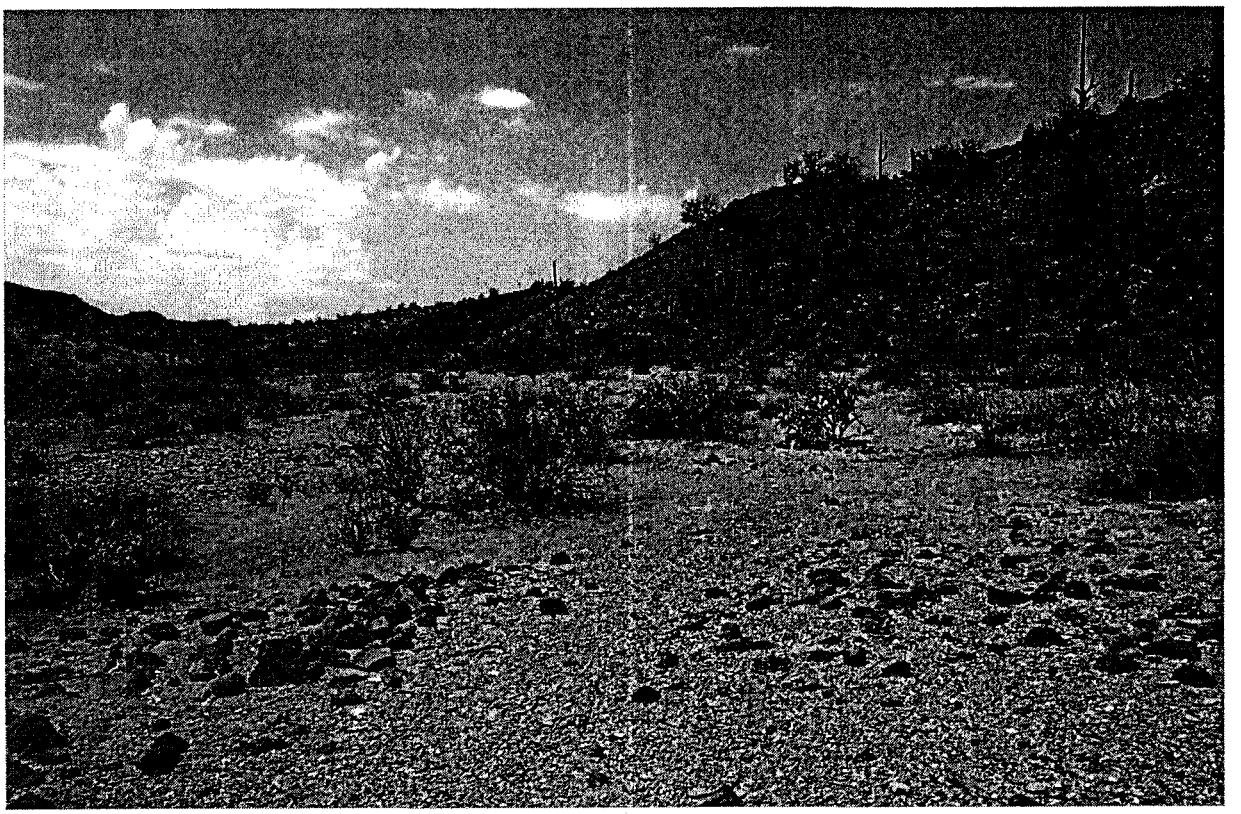
It is likely that site AZ T:3:2 (MNA) can be avoided by spanning. If, however, avoidance is not possible, then the potential for intact subsurface site deposits will need to be discussed in terms of future mitigative measures including, but not limited to, monitoring, testing, and possibly data recovery.

AZ T:3:1 (MNA)

Site AZ T:3:1 (MNA) is described as a small sherd and lithic scatter measuring 20 meters in diameter (Figure 3c). It is situated immediately adjacent to the west outside the APE in the existing transmission corridor on lands owned by the ASLD. This location is depicted on the Baldy Mountain 7.5-minute USGS topographic quadrangle in the southeast ¼ of the southwest ¼ of Section 8, Township 5 North, Range 1 East. UTM grid coordinates for the site datum are 3738923mN/381211mE.

Environmental Setting

The site is situated on a southern exposure on an elevated terrace on the northern bank of an east-west tending seasonal drainage in the northern Phoenix Basin region. The site is located in the foothills of the Hieroglyphic Mountains. The Agua Fria River is located approximately ⅛ mile to the east of the site. The site is situated at an elevation of 1,400 feet above mean sea level. Photograph 22 is an overview of the site area.



Photograph 22
Overview of AZ T:3:1 (MNA) looking west.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), saguaro (*Carnegiea* gigantea), gold cholla *(Opuntia echinocarpa*), and paloverde *(Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

Description/Surface Description

Site AZ T:3:1 (MNA) is a high-density sherd and lithic scatter situated on a southern exposure on an elevated terrace above the northern bank of an east-west tending seasonal drainage (Figure 15). The site was recorded by E.T. Karlstrom and the MNA in 1972. Site AZ T:3:1 (MNA) was revisited on July 18, 2002 by Glennda Luhnow and Kim Ryan. No site impacts were noted and overall integrity of the site is above average.

Site dimensions are approximately 25 meters (north/south) by 15 meters (east/west) for a total site area of 375m2. Approximately 55 artifacts were observed in this area for a total density of .15 artifacts/m2. In addition, two potential cultural features were observed at site AZ T:3:1 (MNA). These will be discussed in more detail below.

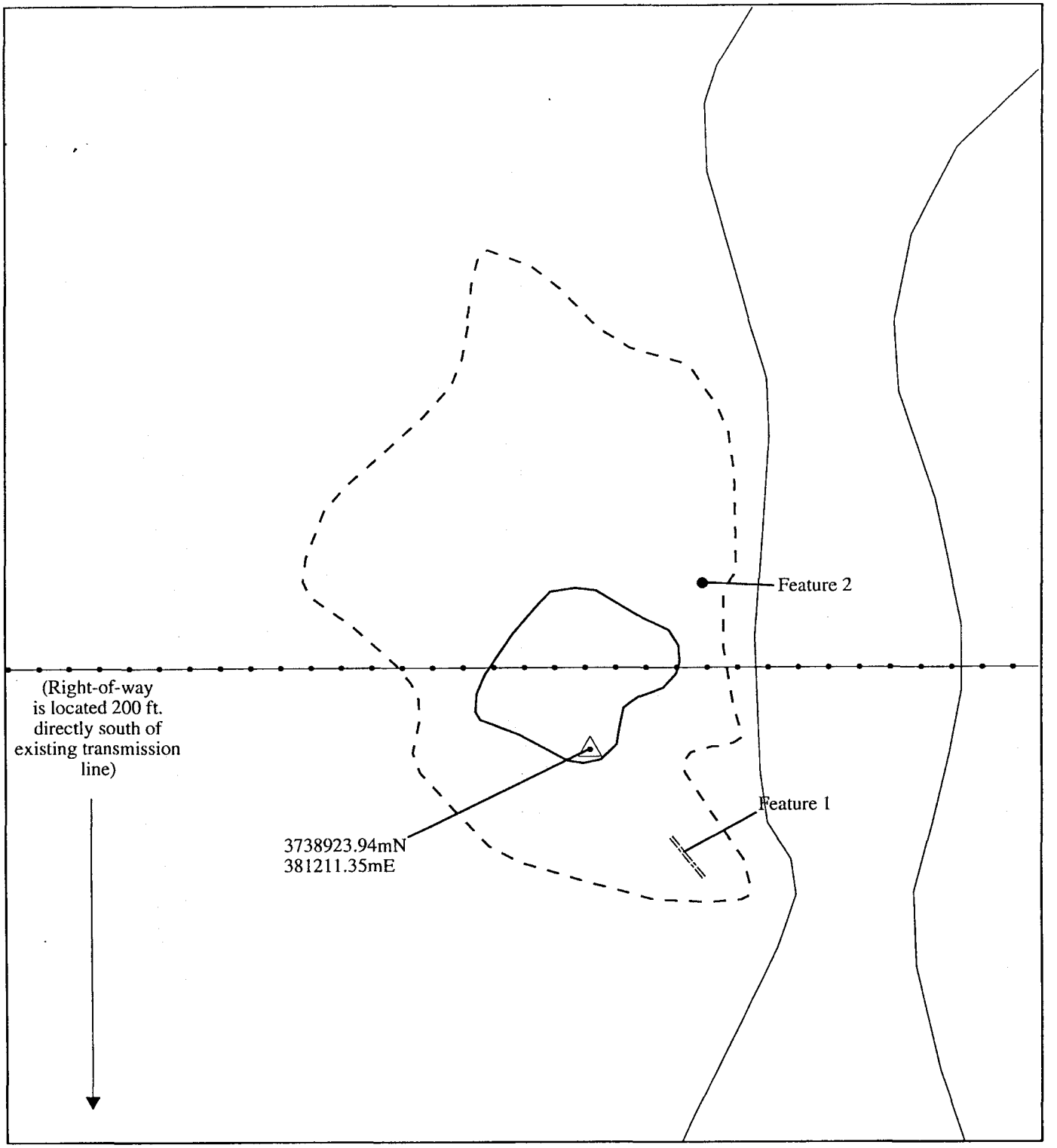
Materials observed at AZ T:3:1 (MNA) were concentrated in a 7-meter (north/south) by 7-meter (east/west) area with other materials radiating out from this concentration in patchy distribution. Two artifact classes, ceramics and lithics, were observed to occur at the site. A complete inventory of observed surface materials was tabulated during recording of the site.

Concentration 1

Concentration 1 measures 7 meters by 7 meters for a total area of 49m2. Approximately 35 ceramic sherds representing at least three vessels were observed in this area for a total artifact density of 0.7 artifacts/m2. Two ceramic types, as differentiated by temper, were present. The first and most numerous were Gila Plain-Gila variety body sherds. Also present were Gila Plain-Salt Variety body sherds. Field observation indicates that Concentration 1 represents a pot drop where at least three vessels were broken, given both temper and wall thickness attributes observed.

The lithic assemblage at site AZ T:3:1 (MNA) was observed to be distributed fairly uniformly across the site area. Six material types, porphyritic basalt, argillite, chert, fine-grained basalt, obsidian, and quartzite, were present at the site. Of these, argillite, chert, and obsidian are exotic materials that are not locally obtainable. Porphyritic basalt, fine-grained basalt, and quartzite are all local materials observed to be present in association with desert pavement in the project area.

Porphyritic basalt (n=4) was the most common material type noted, followed by fine-grained basalt (n=3), argillite (n=3), chert (n=3), quartzite (n=1), and obsidian (n=1). As presented in Table 9 below, local materials tend to occur as mid-to-late stage manufacturing waste, while exotic materials occur only as late stage waste associated with tool rejuvenation activity.



0 5 10 20 Meters

Previously Recorded/ Revisited Site AZ T:3:1 (MNA)

Figure 15

- Site Boundary
- Pot Drop
- Existing Transmission Line
- Contour Line
- Site Feature
- Site Datum
- Site Feature

W S N E

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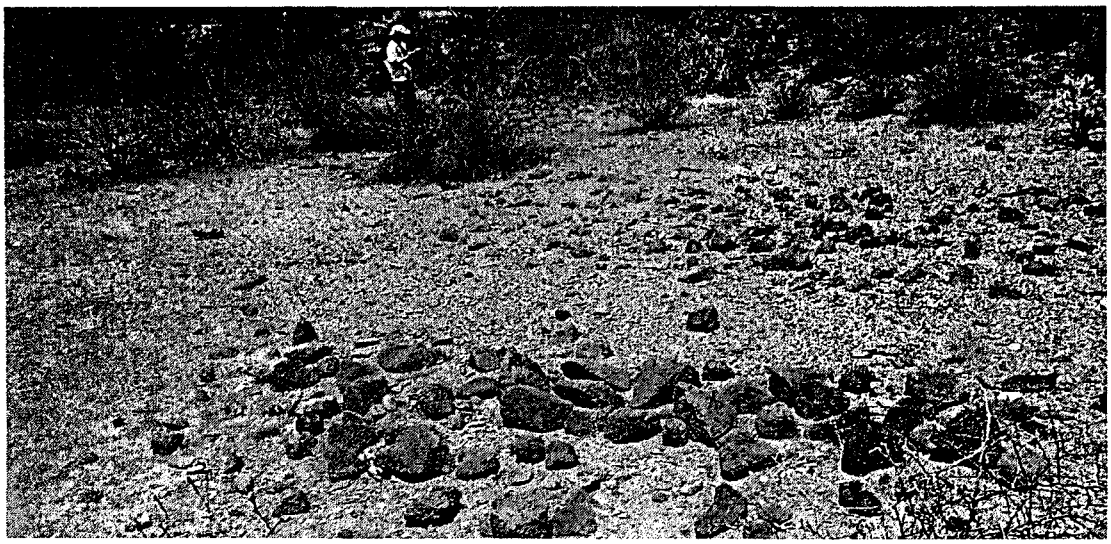
TABLE 9 DEBITAGE INDEX: AZ T:3:1 (MNA)						
	Stage of Manufacture					
Material	Core	Primary	Secondary	Tertiary	Pressure	Total
Porphyritic basalt	0	0	4	0	0	4
Fine-grained basalt	0	0	2	1	0	3
Argillite	0	0	0	3	0	3
Chert	0	0	0	1	2	3
Quartzite	0	0	1	0	0	1
TOTAL	**0**	**0**	**7**	**5**	**2**	**14**

Tools observed on site consisted of a fine-grained basalt unifacial thumbnail scraper with percussion preparation, a fine-grained flake tool uniface, a chert unifacial flake tool, and an obsidian flake tool fragment.

Feature 1

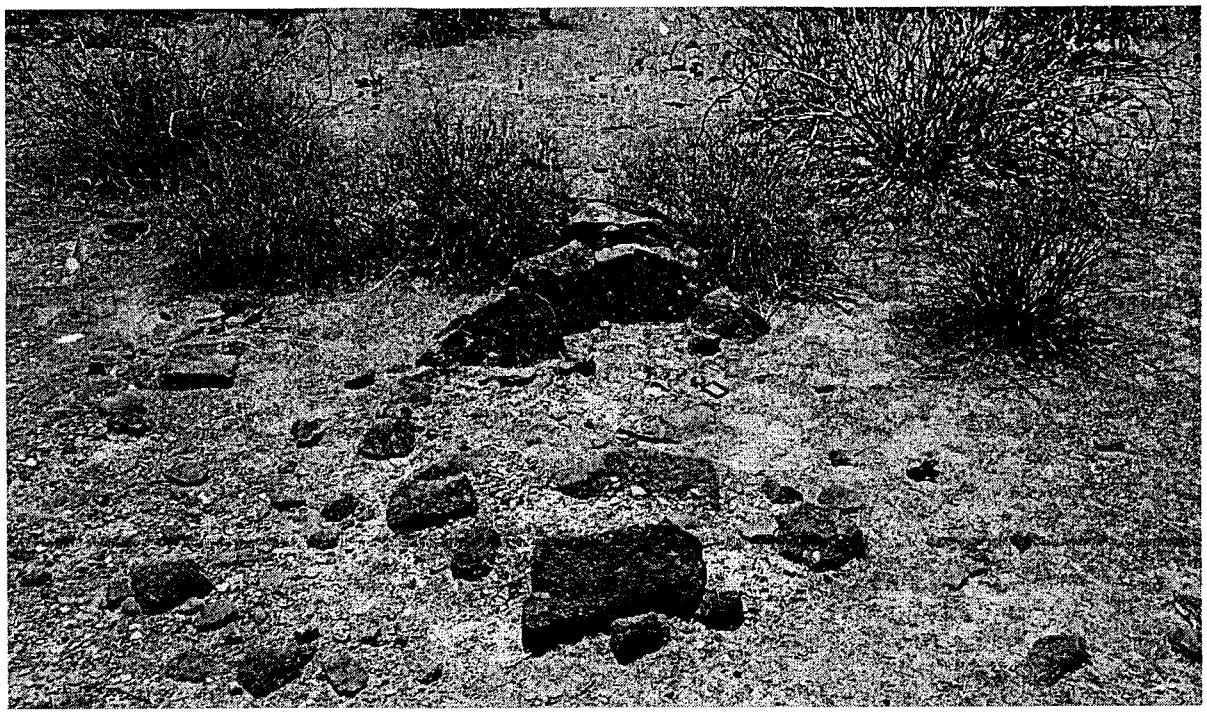
Feature 1 is a linear rock feature measuring 3 meters in length and oriented east-west. It is one course high, three courses deep and is constructed from native vesicular basalt boulders that are available from a steep talus slope to the immediate north of the site. This feature is oriented at a parallel angle to the natural landform and may be a water retention feature constructed for agricultural purposes. Infilling of the base of the feature due to siltation may be an indication of this function. Five Gila Plain body sherds were noted in association with Feature 1. Photograph 23 is an overview of Feature 1.



Photograph 23
Overview of AZ T:3:1 (MNA) Feature 1 looking north.

Feature 2

Feature 2 is a rock semi-circle constructed around a massive vesicular basalt boulder. Several vesicular basalt boulders have been arranged around this boulder to create a basin effect. Surface ash is visible in this basin, and soil within the basin is friable to a depth of six inches. It is possible that this surface ash is modern in origin. The feature measures 2.9 meters (north/south) by 1.5 meters (east/west) and is associated with lithic artifacts. Photograph 24 is an overview of Feature 2.



Photograph 24
Overview of AZ T:3:1 (MNA) Feature 2 looking south.

Evidence of Site Age and Function

No diagnostic artifacts were observed at site AZ T:3:1(MNA). The site assemblage likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain ware varieties that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

The presence of exotic lithics representing late-stage indicates that the people using this location had access to trade materials. The late-stage emphasis of the reduction sequence associated with the exotic materials indicates that these materials were used for formal, rather than expedient, tools. In the project area, expedient tools manufactured from local material are observed to be

associated with the procurement and processing of plant resources. Formal tools manufactured from high-quality exotic materials suggest that these tools served a different function and were associated with activities such as hunting.

Late stage manufacturing debitage indicative of tool rejuvenation may also indicate that these tools enjoyed a longer use-life that those manufactured from local materials as expedient tools. The lack of cores or primary flakes associated with the exotic materials at the site may also be an indication that these materials were obtained in the form of reduced blanks or formal artifacts. The lithic assemblage present at site AZ T:3:1 (MNA) is significantly different that that observed at other sites in the project area and is significant in terms of its implications for trade along the Agua Fria River.

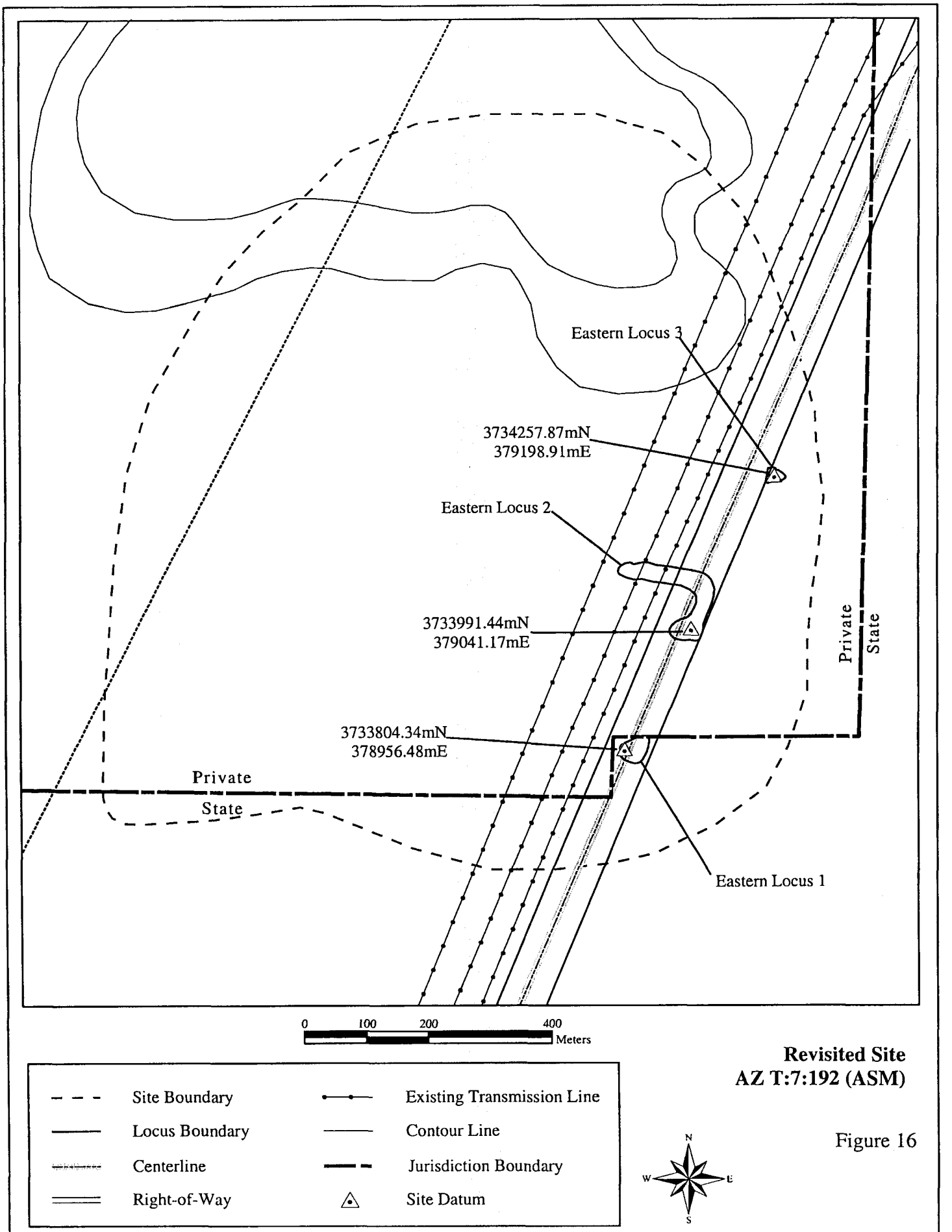
National Register Assessment

Site AZ T:3:1 (MNA) likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. The site location in southern exposure on a terrace above a well-developed intermittent drainage is highly desirable both for hunting and for agricultural pursuits. Two rock features present at the site may be an indication that this area was used for dry farming during Hohokam occupation of the region.

Field observations at AZ T:3:1 (MNA) revealed some indication of buried deposits in association with the two features at the site. It is our recommendation that the site is eligible for NRHP listing under Criterion D for its potential to address issues relating to prehistoric trade along the Agua Fria River as well as lithic technology. Since the site is not located in the APE of the proposed project, it will be avoided. No further consideration of this site is necessary.

AZ T:7:192 (ASM)

Site AZ T:7:192 (ASM) is a very large and extensive Hohokam habitation and agricultural site situated in the APE of the proposed project on privately owned lands and lands owned by the ASLD (see Figure 3b, Figure 16). This location is depicted on the Calderwood Butte 7.5-minute USGS topographic quadrangle in the southeast ½ of Section 25, Township 5 North Range 1 West, and the southwest ¼ of Section 30 and the northwest ¼ of Section 31, Township 5 North, Range 1 West.



Revisited Site
AZ T:7:192 (ASM)

Figure 16

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Site History

Site AZ T:7:192 (ASM) was originally recorded by Aztlan Archaeology in 1999 as part of the proposed Lakeland Village Project. The site boundaries were mapped only in relationship to the survey boundaries of the proposed project. Within those boundaries, site AZ T:7:192 (ASM) is estimated to encompass an area measuring 1,050 meters (north/south) by 950 meters (east/west) for a total area of 997,500m2 (246.5 acres).

An extensive archaeological test program at the site undertaken by Aztlan has recently been completed. The results of this test program, which identified pithouses and dry farming features, indicate that the site is eligible for listing on the NRHP. A data recovery program at site AZ T:7:192 (ASM) is planned in the future (Laurie Slawson 2002).

Subsequent survey of a project corridor to the adjacent east of the Aztlan survey corridor conducted by ACS in 2002 extended the known site boundaries beyond the Aztlan study area to the east. Survey by ACS identified nine features and a low-density artifact scatter consisting of chipped stone and ceramics. The features identified consisted of three flaking stations and six rock concentrations. Based on the subsurface findings recorded by Aztlan, ACS recorded the portion of the site that fell within their survey corridor as eligible for inclusion on the NRHP under Criterion D.

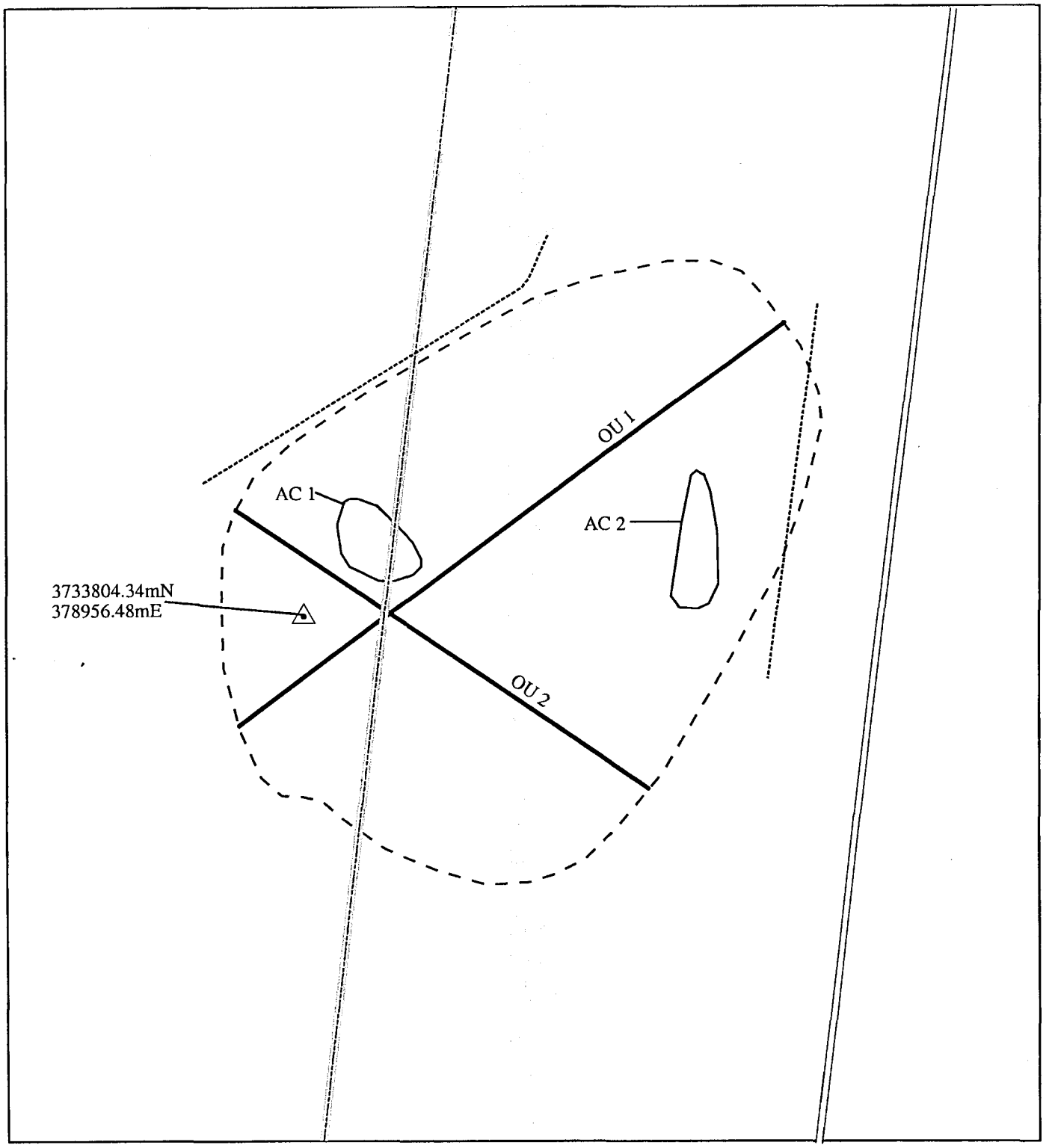
The current survey identified three small, discrete activity loci that fall within the boundaries of site AZ T:7:192 (ASM) as currently defined. These three loci are discussed here individually as eastern activity areas associated with site AZ T:7:192 (ASM).

Eastern Locus 1

Site AZ T:7:192 (ASM) Eastern Locus 1 is a ceramic and lithic scatter situated in the APE of the proposed project on lands owned by the ASLD (see Figure 3c). This location is depicted on the Calderwood Butte 7.5-minute USGS topographic quadrangle in the northwest ¼ of the northwest ¼ of Section 31, Township 5 North, Range 1 East. UTM grid coordinates for the Locus 1 datum are 3733804mN/378956mE (Figure 17).

Environmental Setting

The site is situated in an open exposure on the bajada flat approximately 1 mile to the south of the Hieroglyphic Mountains in the northern Phoenix Basin. The site is situated approximately at an elevation of 1,382 feet above mean sea level. Photograph 25 is an overview of AZ T:7:192 Locus 1.



0 5 10 20 Meters

Previously Recorded Site
AZ T:7:192 (ASM)
Newly Recorded
Eastern Locus 1

Site Boundary
Artifact Concentration (AC)
Observation Unit (OU)
Centerline
Right-of-Way
Road
Site Datum

N
W E
S

Figure 17

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Photograph 25
Overview of AZ T:7:192 (ASM) Locus 1 looking north.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), and gold cholla (*Opuntia echinocarpa*), were abundantly present both on site and in the surrounding area.

Description

Site AZ T:7:192 (ASM) Eastern Locus 1 is a moderate density sherd and lithic scatter situated in an open exposure on the alluvial plain approximately 1 mile to the south of the Hieroglyphic

Mountains in the northern Phoenix Basin. Two small two-track roads are noted in proximity to the site, one occurring at the north site boundary and one crossing through the extreme southern portion of the site. Artifacts are noted in the track of the southern road. This road has impacted a portion of the site.

Site dimensions are 35 meters (north/south) by 33 meters (east/west) for a total site area of 1155m2. A total of 73 artifacts were observed during surface recording for a surface density of .06 artifacts/m2. Artifact density was recorded within each of the two concentrations and is noted below.

Materials observed at site AZ T:7:192 (ASM) Eastern Locus 1 were concentrated in two discrete areas, with other items radiating out from these concentrations in a uniformly sparse distribution. Two artifact classes, ceramics and lithics, were observed on site. Ceramics were the dominant material type noted. A complete surface inventory of items within both concentrations and in two OUs set across the site was compiled during the recording of the site.

Concentration 1

Concentration 1 is a high-density artifact concentration that measures 3 meters (north/south) by 3 meters (east/west) in size for a total area of 9m2. A total of 18 artifacts were identified within this area for an artifact density of .5 artifacts/m2.

The majority of items identified in this area were ceramic sherds, most of which were Gila Plain-Gila variety body sherds (n=15). In addition, a single Gila Plain-Salt variety body sherd was also noted. The ceramic assemblage noted in Concentration 1 indicates that at least two vessels are represented. In addition to the ceramic artifacts noted in Concentration 1, one fine-grained basalt secondary flake was also observed.

Concentration 2

Concentration 2 is a high-density artifact concentration that measures 3 meters (north/south) by 3 meters (east/west) in size for a total area of 9m2. A total of 23 artifacts were noted in this area for an artifact density of .34 artifacts/m2.

The majority of artifacts identified in this area were ceramic sherds, most of which were Gila Plain-Gila variety body sherds (n=17). Additionally, a Gila Plain-Salt variety rim sherd, possibly an olla, was noted. Two body sherds of this vessel type were also present. The ceramic assemblage observed in Concentration 2 indicates that at least two vessels are represented.

In addition, one porphyritic basalt tertiary flake exhibiting one utilized lateral margin was also recorded. A fine-grained basalt unifacial chopper and a fine-grained basalt secondary flake were also present.

Observational Units for Eastern Locus 1

In OU 1, a total of 17 Gila Plain-Gila variety body sherds were observed. In addition, one fine-grained basalt secondary flake, and one porphyritic basalt tertiary flake were also noted.

In OU 2, a total of 15 Gila Plain-Gila variety body sherds were observed. In addition, one fine-grained basalt secondary flake was also noted.

Evidence of Site Age and Function

No diagnostic artifacts were observed at site AZ T:7:192 (ASM) Eastern Locus 1. The site assemblage likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain ware varieties that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

Eastern Locus 2

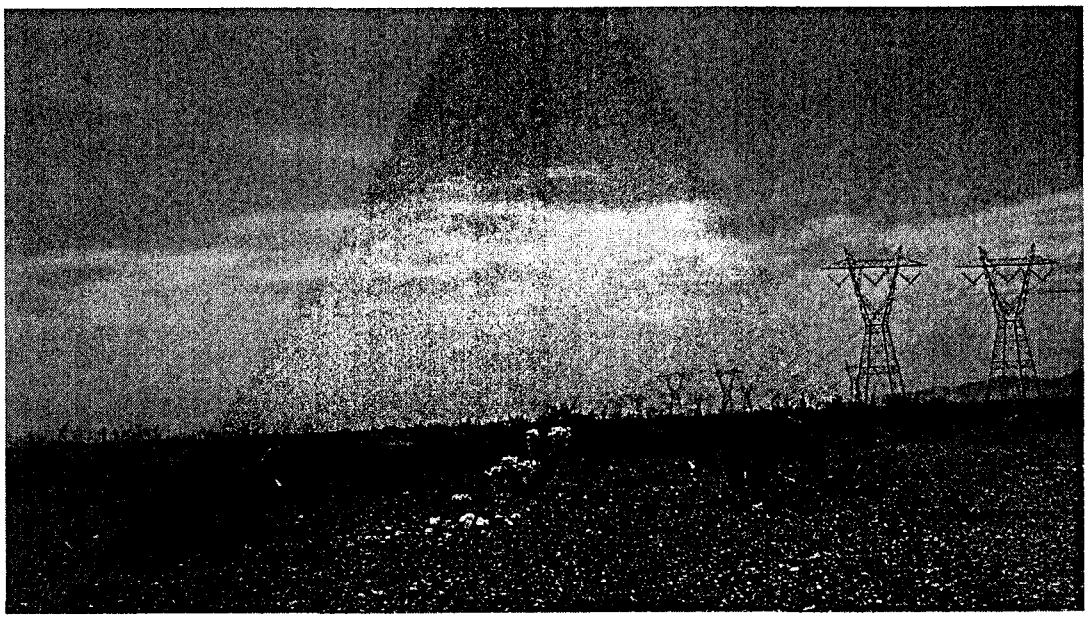
Site AZ T:7:192 (ASM) Eastern Locus 2 is a large sherd and lithic scatter situated in the APE of the proposed project on privately owned land (Figure 3b). This location is depicted on the Calderwood Butte 7.5-minute USGS topographic quadrangle in the southwest ¼ of the southwest ¼ of Section 30, Township 5 North, Range 1 East. UTM grid coordinates for the Eastern Locus 2 datum are 3733991mN/379041mE.

Environmental Setting

The site is situated in open exposure on an alluvial plain approximately in the northern Phoenix Basin region. The foothills of the Hieroglyphic Mountains are located approximately ½ mile to the north. The site is at an elevation of 1,382 feet above mean sea level. Photograph 26 is an overview of AZ T:7:192 (ASM) Locus 2.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).



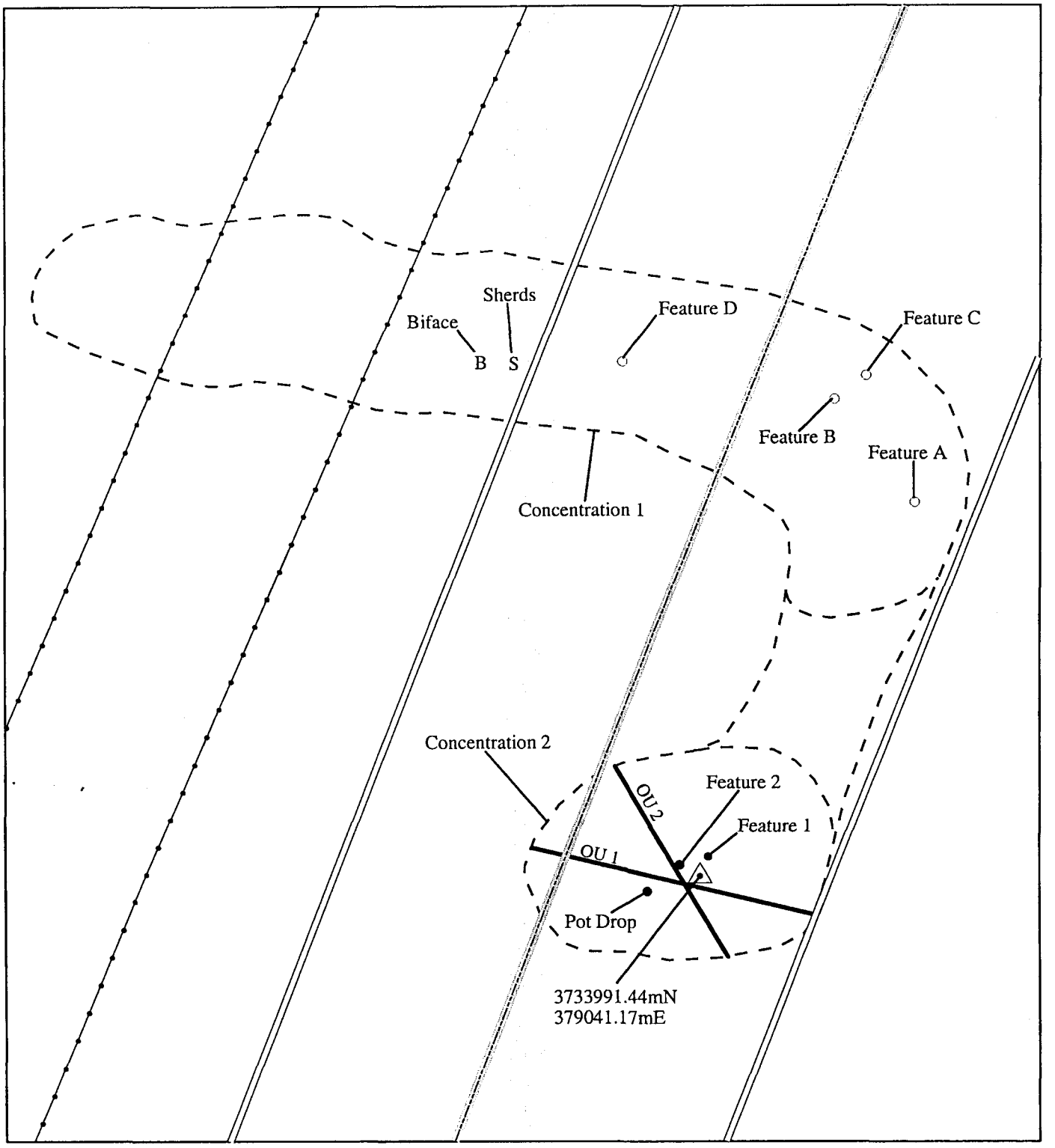
Photograph 26
Overview of AZ T:7:192 (ASM) Locus 2 looking south.

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), saguaro (*Carnegiea gigantea*), gold cholla (*Opuntia echinocarpa*), and paloverde (*Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

Description

Site AZ T:7:192 (ASM) Eastern Locus 2 is a large sherd and lithic scatter situated in an open exposure on the alluvial plain ½ mile to the south of the Hieroglyphic Mountains (Figure 18). The northwestern portion of the site is bisected by the transmission line access road. Artifacts were noted in the berm of this road, indicating that construction of the road impacted the site. No other evidence of disturbance was noted and overall integrity of the site is good.

Site dimensions are approximately 100 meters (north/south) by 160 meters (east/west) for a total site area of 16000m2. Artifacts observed in this area were concentrated in two discrete concentrations that were connected to the east by a sparse lithic scatter associated with desert pavement.



0 10 20 40 Meters

Previously Recorded Site
AZ T:7:192 (ASM)
Newly Recorded
Eastern Locus 2

Figure 18

Site Boundary	Existing Transmission Line
Observation Unit (OU)	Site Datum
Centerline	Site Feature
Right-of-Way	Feature Concentration

N W E S

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The northernmost concentration, Concentration 1, is associated with desert pavement and measured 40 meters (north/south) by 160 meters (east/west) for a total area of 6400m2. Approximately 75 artifacts were observed in this area for an artifact density of .001 artifacts/m2. The southernmost concentration, Concentration 2, is outside of the limits of desert pavement and measures 30 meters (north/south) by 23 meters (east/west) for a total site area of 690m2. Approximately 25 artifacts were observed in this area for a total artifact density of .035 artifacts/m2.

Two artifact classes, ceramics and lithics, were noted at Eastern Locus 2. A complete inventory of observed surface materials was tabulated during recording of the site (Table 10).

Concentration 1

Concentration 1 is a large (40 meter by 160 meter) sherd and lithic scatter associated with exposed desert pavement in the northern portion of site AZ T:7:192 (ASM) Eastern Locus 2. Artifacts were noted to occur in Concentration 1 in four discrete clusters, with artifacts outside of these clusters occurring in a sparse and uniform distribution across the area. Lithics were the dominant artifact type noted to occur in Locus 1. All four artifact clusters were defined by lithics. A complete tabulation of lithic materials observed at the site is presented in Table 10.

Feature A

Feature A measures 3 meters (north/south) by 5 meters (east/west) for a total area of 15m2. Twelve artifacts were noted to occur in this area for a total artifact density of .8 artifacts/m2. This concentration was defined by lithics.

Debitage observed in Feature A consisted of five material types. Porphyritic basalt was the dominant material type observed, consisting of 1 primary flake and 3 secondary flakes. Quartzite is represented by 2 primary flakes and 1 unifacial chopper. Quartz is represented by 2 secondary flakes, and diorite was represented by 1 primary flake and a tertiary flake. One fine-grained basalt unidirectional core was also observed.

Feature B

Feature B measures 3 meters (north/south) by 3 meters (north/south) for a total area of 9m2. A total of 18 artifacts were observed in this area for a total artifact density of .5 artifacts/m2. Feature B is a fine-grained basalt flaking station, and fine-grained basalt is the dominant material type noted, consisting of 2 primary flakes, 7 secondary flakes, 5 tertiary flakes, and 2 pieces of non-diagnostic shatter. In addition, 1 secondary flake exhibiting pressure flaking one lateral margin was also noted.

TABLE 10 DEBITAGE INDEX: AZ T:7:192 (ASM) EASTERN LOCUS 2						
		Stage of Manufacture				
Provenience	**Material**	**Core**	**Primary**	**Secondary**	**Tertiary**	**Total**
Concentration 1, Feature A	Porphyritic basalt	0	1	3	0	**4**
	Quartzite	0	2	0	0	**2**
	Quartz	0	0	2	0	**2**
	Diorite	0	1	0	1	**2**
	Fine-grained basalt	1	0	0	0	**1**
Concentration 1 Feature B	Fine-grained basalt	0	2	7	5	**14**
	Porphyritic basalt	0	0	1	0	**1**
	Argillite	0	0	1	0	**1**
Concentration 1 Feature C	Fine-grained basalt	0	0	3	0	**3**
	Quartzite	0	1	2	0	**3**
	Porphyritic basalt	0	0	2	0	**2**
Concentration 1, Feature D	Porphyritic basalt	0	0	6	0	**6**
Concentration 1, General area	Fine-grained basalt	0	1	8	1	**9**
	Quartzite	0	0	5	1	**6**
	Porphyritic basalt	0	1	3	0	**4**
	Fine-grained rhyolite	0	0	1	1	**2**
	Chert	0	0	2	0	**2**
	Argillite	0	0	0	1	**1**
	Quartz	0	0	1	0	**1**
	Fine-grained metavolcanic	0	0	1	0	**1**
Concentration 2 Observation Unit 1	Porphyritic basalt	0	0	4	0	**4**
	Quartzite	0	2	0	0	**2**
	Quartz	0	0	1	0	**1**
	Fine-grained basalt	0	1	0	0	**1**
Concentration 2 Observation Unit 2	Porphyritic basalt	0	0	4	0	**4**
	Quartzite	0	0	2	0	**2**
	Fine-grained basalt	UD*	0	1	0	**2**
TOTAL		**2**	**12**	**60**	**10**	**81**
*unidirectional						

One porphyritic basalt secondary flake and one argillite secondary flake was also noted to occur in Feature B. Argillite is an exotic material that is imported from the Prescott area to the north of the site.

Feature C

Feature C measures 1 meter (north/south) by .5 meter (east/west) for a total area of .5m2. Eight artifacts were observed in this area for a total artifact density of .06 artifacts/m2. Three material types were present in Feature C. Three fine-grained basalt secondary flakes, 2 quartzite secondary flakes, 1 quartzite primary flake, and 2 porphyritic basalt secondary flakes were observed in Feature C.

Feature D

Feature D measures 0.5 meter (north/south) by 0.5 meter (east/west) for a total area of 0.25m2. Six artifacts were observed in this area for a total artifact density of .08 artifacts/m2. Feature D is a small porphyritic basalt flaking station consisting of six porphyritic basalt secondary flakes.

In addition to the lithic materials noted in Concentration 1, two ceramic sherds were also observed in the western portion of the site in association with desert pavement just east of the transmission line access road. Both of these body sherds were Gila Plain-Gila variety body sherds.

One percussion-flaked biface was also observed in Concentration 1 in the general area east of the transmission line access road. This biface was manufactured from fine-grained basalt. All tools noted at Concentration 1 were expedient tools manufactured with percussion flaking.

Concentration 2

Concentration 2 is a small (23 meter by 30 meter) sherd and lithic scatter located in the southern portion of site AZ T:7:192 (ASM) Eastern Locus B. Concentration 2 is situated outside of desert pavement, and lithics were the most numerous artifacts observed to be present. Concentration 2 materials were tabulated in two observational transects during surface recording of the site. All surface materials were observed to be restricted in distribution to these OUs. In addition, a ceramic concentration was noted during surface recording of Locus 2.

Observational Unit 1

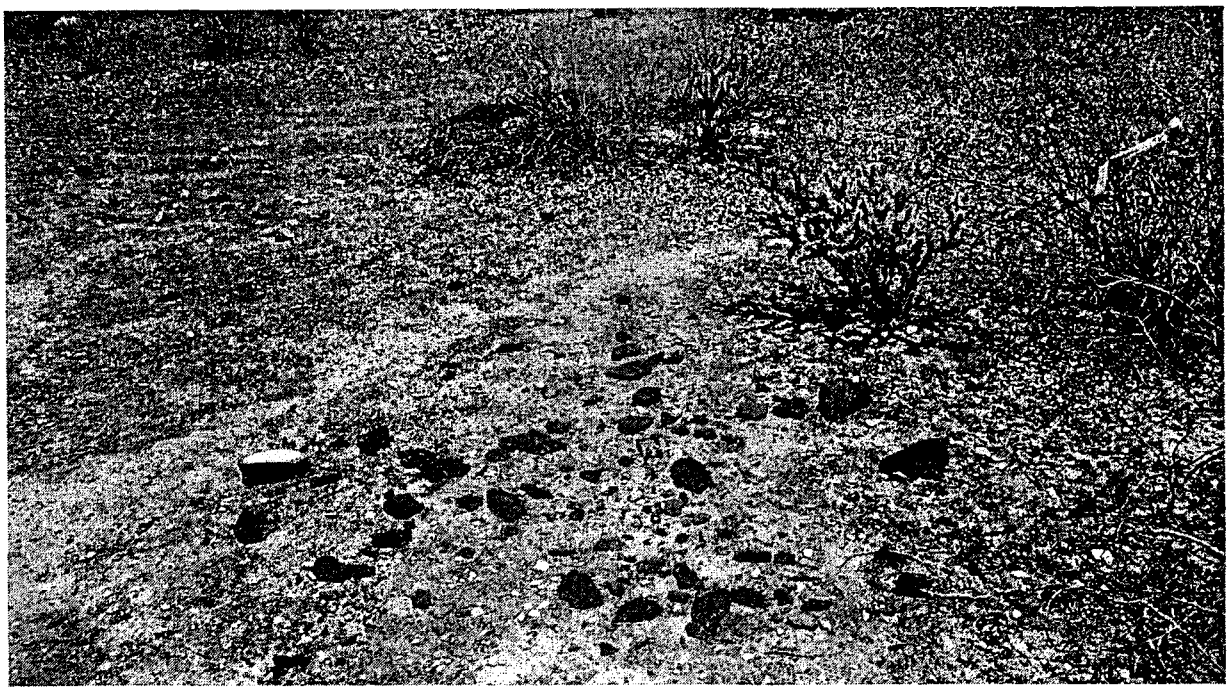
Materials observed in OU 1 consisted solely of lithic artifacts. Four material types, porphyritic basalt, fine-grained basalt, quartzite, and quartz were observed. Of these materials, porphyritic basalt was the most numerous, and consisted of 4 secondary flakes and 2 pieces of non-diagnostic angular shatter. Quartzite is represented by 2 primary flakes. Quartz is represented by 1 secondary flake. One tool, a bifacial chopper with three percussion-flaked lateral margins manufactured from porphyritic basalt was also noted in OU 1.

Observational Unit 2

Materials observed in OU 2 consisted solely of lithic artifacts. Three material types, porphyritic basalt, fine-grained basalt, and quartzite, were noted. Porphyritic basalt was the dominant material type noted in OU 2, consisting of 4 secondary flakes, while quartzite was represented by 1 secondary flake. One fine-grained basalt unidirectional core fragment and 1 secondary flake were also noted in OU 2.

Feature 1

Feature 1 is a concentration of scattered discontiguous vesicular basalt cobbles. There are no other cobbles of this type noted in the surrounding area. Approximately 35 cobbles are present in an area measuring 2 meters (north/south) by 1.5 meters (east/west). There was no evidence of thermal alteration, nor was the presence of scorched earth noted. Feature 1 likely represents a groundstone manufacturing location where vesicular basalt was reduced for the production of processing artifacts such as manos and metates. Photograph 27 is an overview of Feature 1.



Photograph 27
Overview of AZ T:7:192 (ASM) Locus 2 Feature 1 looking north.

Feature 2

Feature 2 is a discrete concentration of native cobbles that is roughly circular in shape. Approximately 35 cobbles are present in an area measuring 2.5 meters in diameter. There was no evidence of thermal alteration, nor was the presence of scorched earth noted. This feature may represent an episode of rock clearing associated with agricultural pursuits, but the exact nature of this feature is unknown at this time. Photograph 28 is an overview of Feature 2.

Photograph 28
Overview of AZ T:7:192 (ASM) Locus 2 Feature 2 looking east.

Ceramic Concentration

One ceramic concentration representing a single-vessel pot drop was noted in Concentration 2. This concentration measured 2 meters (north/south) by 3 meters (east/west) for a total area of 6m2. Six artifacts were noted in this area for a total artifact density of 1 artifact/m2. One large Gila Plain-Gila variety rim sherd and four body sherds were noted in this area. In addition, one fine-grained basalt tested cobble was also noted in this area. Photograph 29 is an overview of the ceramics present at AZ T:7:192 (ASM) Locus 2.

Photograph 29
Overview of AZ T:7:192 (ASM) Locus 2 ceramics.

Evidence of Site Age and Function

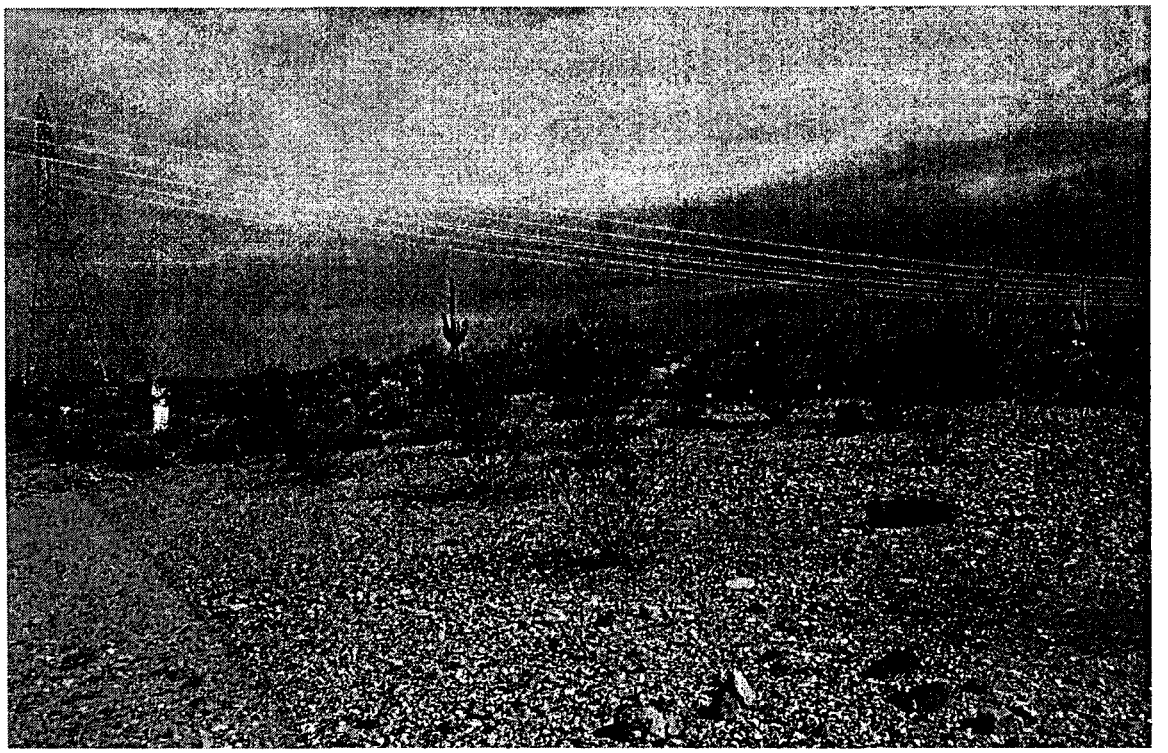
No diagnostic artifacts were observed at site AZ T:7:192 (ASM) Eastern Locus 2. The site assemblage likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain ware varieties that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

Eastern Locus 3

Site AZ T:7:192 (ASM) Eastern Locus 3 is a small sherd and lithic scatter situated in an eastern exposure on a low terrace overlooking a small drainage confluence (Figure 3b). The site is within the APE of the proposed project on privately owned lands. This location is depicted on the Calderwood Butte 7.5-minute USGS topographic quadrangle in the southwest ¼ of the southwest ¼ of Section 30, Township 5 North, Range 1 East. UTM grid coordinates for the site datum are 3734257mN/379198mE.

Environmental Setting

The site is located in Maricopa County on lands owned by the ASLD. It is situated in an eastern exposure on an alluvial plain approximately ½ mile to the south of the Hieroglyphic Mountains in the northern Phoenix Basin. The site is situated at an elevation of 1,550 feet above mean sea level. Photograph 30 is an overview of AZ T:7:192 (ASM) Locus 3.



Photograph 30
Overview of AZ T:7:192 (ASM) Locus 3 looking northeast.

The Phoenix Basin is part of the greater Basin and Range physiographic province. This basin was formed by fault block uplift and metamorphic core uplift (Abbott 2000). Stream sediments and erosional deposits originating from local mountains have accumulated and settled to partially fill the basin floor.

The proposed project area is situated within the environmental boundaries of the Sonoran Desert region in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994).

Vegetation on site was dominated by species commonly associated with the Lower Colorado River Valley biotic community. Creosotebush (*Larrea tridentata*), saguaro (*Carnegiea* gigantea), mesquite (*Prosopis* spp.), cat-claw acacia (*Acacia greggii*), gold cholla *(Opuntia echinocarpa*), and paloverde *(Cercidium* spp.) were all abundantly present both on site and in the surrounding area.

Description

Site AZ T:7:192 (ASM) Eastern Locus 3 is a moderate density ceramic and lithic scatter situated in an eastern exposure at the confluence of a small east-west tending intermittent drainage with a larger north-south tending intermittent wash (Figure 19). Artifacts were observed to be restricted to the southwestern side bank of this confluence.

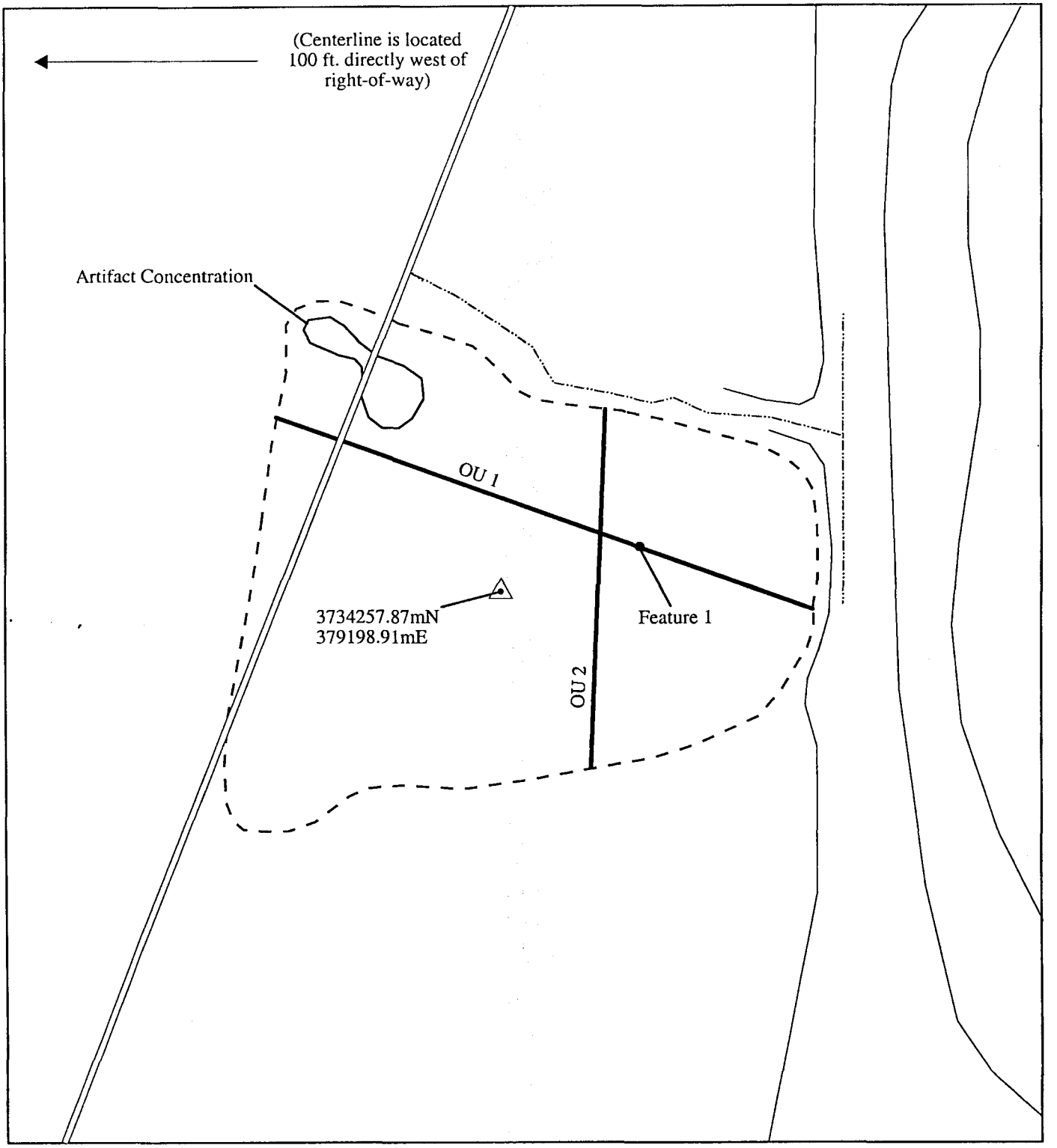
Site dimensions are approximately 28 meters (north/south) by 42 meters (east/west) for a total site area of 1176m2. A total of 25 artifacts were observed in this area for a total artifact density of .02 artifacts/m2.

Materials observed at site AZ T:7:192 (ASM) Eastern Locus 3 were sparsely and uniformly distributed across the site area. The majority of artifacts were ceramic plain ware body sherds, with one small lithic concentration noted in the northwestern corner of the site. A complete surface inventory of items within the lithic concentration and in two OUs set across the site was compiled during the recording of the site.

Concentration 1

Concentration 1 measures 3 meters (north/south) by 5 meters (east/west) for a total area of 15m2. Approximately 12 items were observed within this area for a total artifact density of .8 artifacts/m2.

Concentration 1 is a small flaking station consisting of waste flakes and shatter derived from porphyritic basalt. A tested porphyritic basalt cobble was also noted in this concentration. All of the waste flakes noted were secondary flakes.



0 2.5 5 10 Meters

Previously Recorded Site
AZ T:7:192 (ASM)
Newly Recorded
Eastern Locus 3

Figure 19

- - -	Site Boundary	———	Contour Line
-·-·-·-	Drainage	━━━	Observation Unit (OU)
———	Artifact Concentration	△	Site Datum
═══	Right-of-Way	●	Rock Feature

N W E S

m:/projects/aps/ncp/cec/mxds/siteC.mxd

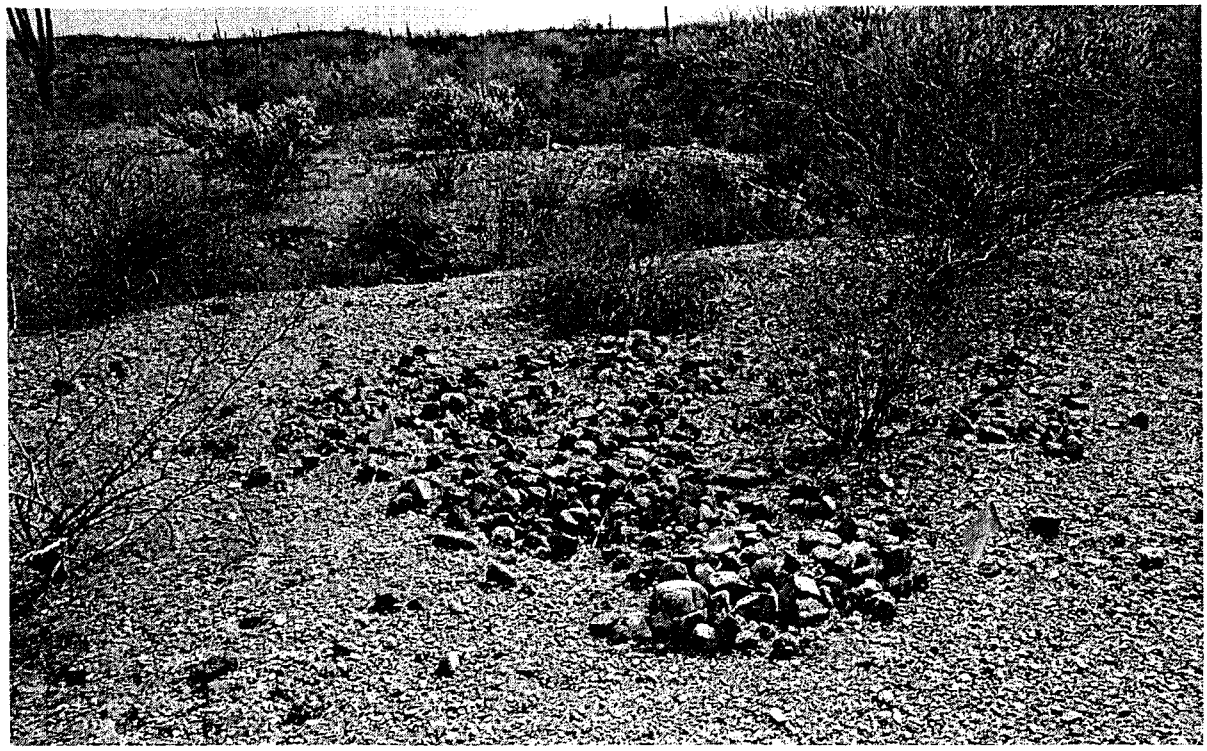
Observational Units

In OU1, four Gila Plain-Gila variety body sherds were noted. In terms of lithic materials, 2 quartzite secondary flakes, 1 granodiorite secondary flake, and 1 porphyritic basalt secondary flake were observed. In addition, 1 unifacial cobble chopper manufactured from fine-grained basalt was observed. This tool exhibited percussion flaking on one lateral margin.

In OU2, three Gila Plain-Gila variety body sherds were noted. In addition, one porphyritic basalt secondary flake was observed.

Feature 1

Feature 1 is an unusual rock feature of unknown function. This feature consists of three shallow depressions approximately 15 centimeters in depth associated with metavolcanic fist-sized cobbles. Total length of the feature is 3.35 meters (north/south) by 2.9 meters (east/west). None of the rocks in this feature were observed to show any signs of fire alteration, and none of the feature soils were scorched. Only one artifact, a Gila Plain-Gila variety body sherd was observed within the feature itself. Although the exact function of this feature is unclear, it may represent a clearing episode associated with agricultural pursuits. Photograph 31 is an overview of Feature 1.



Photograph 31
Overview of AZ T:7:192 (ASM) Locus 3 Feature 1 looking northeast.

Evidence of Site Age and Function

No diagnostic artifacts were observed at site AZ T:7:192 (ASM) Eastern Locus 3. The site assemblage likely represents a limited activity area that was utilized during either the Prehistoric or Protohistoric periods. Ceramics noted on site were non-diagnostic plain ware varieties that have a long temporal use span throughout later prehistory into the Protohistoric and Early Historic periods.

National Register Assessment

Site AZ T:7:192 (ASM) is a very large and extensive Hohokam habitation and agricultural site. An extensive archaeological test program at the site undertaken by Aztlan Archaeology has identified pithouses and dry farming features. The results of this test program indicates that the site is eligible for listing on the NRHP under Criterion D for its potential to reveal information about prehistoric Hohokam farming practices.

Survey of a project corridor to the adjacent east of the Aztlan survey corridor conducted by ACS in 2002 extended the known site boundaries beyond the Aztlan study area to the east. Based on the subsurface findings recorded by Aztlan, ACS recorded the portion of the site that fell within their survey corridor as eligible for inclusion on the NRHP under Criterion D.

The current survey identified three small, discrete activity loci that fall within the boundaries of site AZ T:7:192 (ASM) as currently defined. These three loci are discussed here individually as eastern activity areas associated with site AZ T:7:192 (ASM). Based on this association, we recommend that site AZ T:7:192 (ASM) is eligible for the NRHP under Criterion D for its potential to yield information on prehistoric subsistence strategies and land-use patterns within the northern Phoenix Basin.

Due to the archaeologically sensitive nature of the area encompassing site AZ T:7:192 (ASM), we recommend avoidance of the three loci by spanning and monitoring during construction within site boundaries.

AZ T:8:104 (ASU)

Site AZ T:8:104 (ASU) is a pot drop previously recorded in the APE of the proposed project on lands owned by the ASLD (see Figure 3h). This location is depicted on the Union Hills 7.5-minute USGS topographic quadrangle in the southeast ¼ of the northwest ¼ of Section 11, Township 4 North, Range 3 East. UTM grid coordinates for the site as determined from the location as originally mapped are 3730300mN/404900mE.

AZ T:8:104 (ASU) was originally recorded during archaeological survey for the El Paso natural gas pipeline corridor (Hackbarth 1985). It was recorded as a small pot drop occurring in a 1-meter by 1-meter area. The site was recommended as not eligible for listing on the NRHP.

Intensive field survey of the site location as recorded failed to relocate this site. During the relocation efforts, extensive disturbance associated with the existing transmission corridor, natural gas pipeline, access road, and side-slope erosion control were noted. Given the small size of the site and the extent of observed disturbance in the area, it is likely that AZ T:8:104 (ASU) has been destroyed by construction.

AZ U:5:73 (ASU)

Site AZ U:5:73 (ASU) is an artifact scatter previously recorded adjacent to the APE of the proposed project on lands owned by the ASLD (see Figure 3i). This location is depicted on the Curry's Corner 7.5-minute USGS topographic quadrangle in the northeast ¼ of the northeast ¼ of Section 7, Township 4 North, Range 4 East. UTM grid coordinates for the site as determined from the location as originally mapped are 3730180mN/409240mE.

AZ U:5:73 (ASU) was originally recorded by Effland (1984) during the Pinnacle Peak-Lone Peak-Paradise 230kV transmission line survey. It was recorded as a small artifact scatter occurring in a 20-meter by 30-meter area. The site was recommended as not eligible for listing on the NRHP.

Intensive field survey of the site location as recorded failed to relocate this site. Although the area were the site is mapped as occurring is generally in natural landscape, some disturbance associated with the existing transmission corridor, natural gas pipeline, and access road were noted during relocation efforts. It is possible that AZ U:5:73 (ASU) has been destroyed by construction action in the area. Photograph 32 is an overview of the site location as it occurred at the time of field survey.

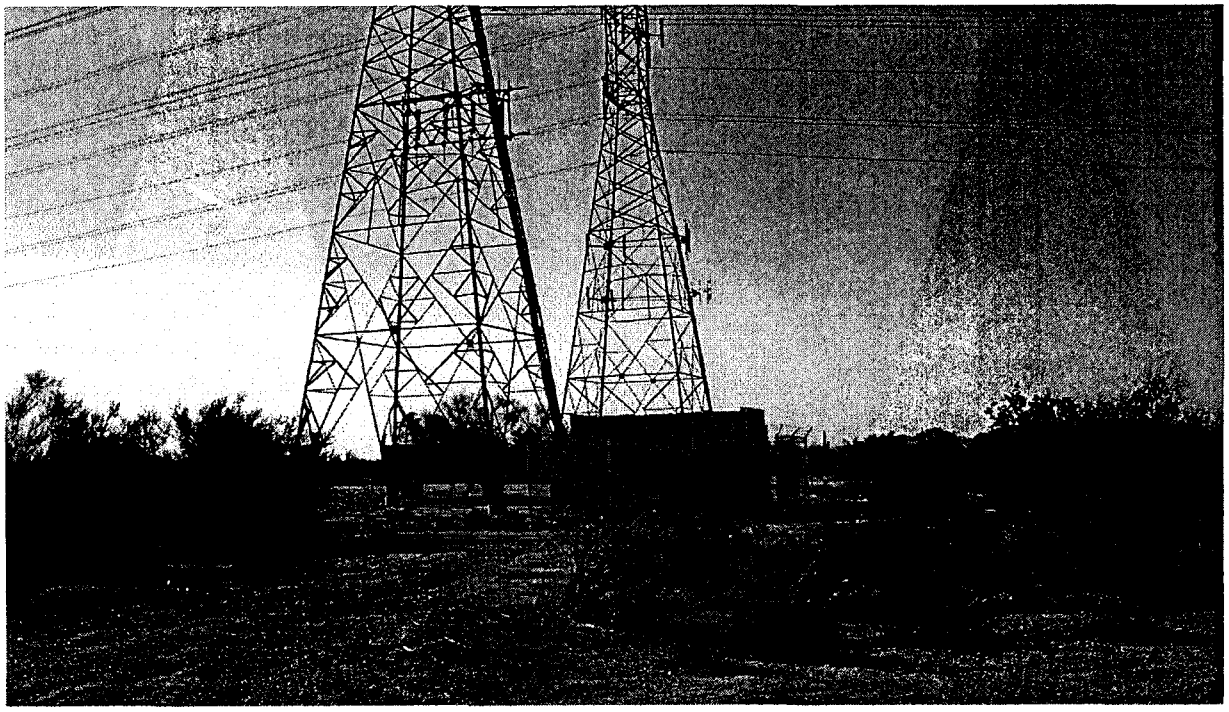
Photograph 32
Overview of AZ U:5:73 (ASU) site location as mapped looking west.

AZ U:5:72 (ASU)

Site AZ U:5:72 (ASU) is a sherd scatter previously recorded adjacent to the APE of the proposed project on lands owned by the ASLD (see Figure 3i). This location is depicted on the Curry's Corner 7.5-minute USGS topographic quadrangle in the southeast ¼ of the northwest ¼ of Section 8, Township 4 North, Range 4 East. UTM grid coordinates for the site as determined from the location as originally mapped are 3730180mN/410000mE.

AZ U:5:72 (ASU) was originally recorded by Effland (1984) during the Pinnacle Peak-Lone Peak-Paradise 230kV transmission line survey. It was recorded as a small sherd scatter occurring in a 5-meter by 5-meter area. The site was recommended as not eligible for listing on the NRHP.

Intensive field survey of the site location as recorded failed to relocate this site. During the relocation efforts, extensive disturbance associated with the existing transmission corridor, natural gas pipeline, equipment shelter, equipment staging area, and access road were noted. Given the small size of the site and the extent of observed disturbance in the area, it is likely that AZ U:5:72 (ASU) has been destroyed by construction. Photograph 33 is an overview of the site location as it occurred at the time of field survey.



Photograph 33
Overview of AZ U:5:72 (ASU) site location as mapped looking south.

MATERIAL DISTRIBUTION

Patterns in the distribution of archaeological material within the proposed project area were observed during field survey. These patterns do not necessarily reflect those distributional patterns as they occur in the greater region outside of the project corridor.
Historic artifacts were restricted in their distribution across the landscape to the eastern and central portions of the project area. Isolated historic artifacts observed during survey were noted to be largely limited to rock cairns, tobacco tins and hole-in-top or matchstick cans. Isolated historic glass fragments were observed only in the extreme eastern portion of the project area or in association with historic sites.

Rock cairns consisting of small, discrete stacks of native metavolcanic cobbles were limited to the central portion of the study area on Biscuit Flat. These small cairns likely are associated with historic ranching activity. Temporal affiliation for these small cairns cannot be determined; however, given their lack of association with temporally diagnostic artifacts.

Patterns were also apparent in the distribution of prehistoric material as it occurred across the landscape. With the exception of ceramics observed at newly recorded site AZ T:8:167 (ASM), prehistoric ceramics were observed to the west of and on the eastern banks of the Agua Fria

River. Ceramics were not noted in association with prehistoric materials outside of this context, indicating that perhaps during later prehistory the Biscuit Flat area was not intensively utilized by native peoples and was a marginal exploitation area.

In terms of lithic distribution, a definite preference for porphyritic basalt was reflected both in site assemblages and isolated artifacts. On Biscuit Flat, fine-grained rhyolite, metaquartzite, and metachalcedony were observed to occur in association. All of these materials were locally available in the form of large, fist-sized native cobbles occurring in washes and on exposed patches of desert pavement.

The source for the metaquartzite and metachalcedony cobbles has been documented at quarry sites in the New River Mountains at sites AZ T:4:372 (ASM), and AZ T:4:176 (ASM). These quarry sites are located approximately 2 miles to the north of the proposed project area. At site AZ T:4:372 (ASM), Ellis et al. (2002) documents the presence of 2,000 to 3,000 lithic waste flakes on the surface of the site.

To the west, exotic materials such as argillite, obsidian, and high-grade fine-grained basalt and chert are observed to occur in greater frequency, especially in conjunction with with ceramics. This serves to illustrate the florescence of active trade that occurred along the Agua Fria.

CONCLUSIONS AND RECOMMENDATIONS

The intensive pedestrian survey in support of the proposed APS North Valley Project identified a total of 89 IOs, 6 newly recorded cultural sites, 7 previously recorded sites and 2 historic structures within the area of potential effect (APE). Newly recorded sites identified by survey are: AZ T:8:166 (ASM), AZ T:8:167 (ASM), AZ T:4:374 (ASM), AZ T:7:276, AZ T:4:375 (ASM), and AZ T:3:274 (ASM). Of these sites, only AZ T:3:274 (ASM) is considered to be eligible for inclusion on the NRHP under Criterion D for its potential to yield information about prehistoric agricultural and land-use strategies along the Agua Fria River. It may be possible to avoid this site by spanning.

Seven sites were identified by class I records review as occurring in the APE of the proposed project. These sites are AZ T:7:192 (ASM), AZ T:3:264 (ASM), AZ T:3:1 (MNA), AZ T:3:2 (MNA), AZ T:8:104 (ASU), AZ U:5:72 (ASU), and AZ U:5:73 (ASU).

Sites AZ T:3:1 (MNA), AZ T:3:2 (MNA), AZ T:3:264 (ASM), and AZ T:7:192 (ASM), are situated either within or immediately adjacent to the APE, and had not been previously evaluated for NRHP eligibility. These sites were revisited and assessed for eligibility during field survey. All of these sites are located in the extreme western portion of the proposed project and are depicted on the Baldy Mountain and Calderwood Butte 7.5-minute USGS topographic quadrangles, and all are considered to be eligible for inclusion on the NRHP under Criterion D for their potential to yield information regarding prehistoric agricultural practices, land-use

strategies, trade, and settlement patterns along the Agua Fria River. It may be possible to avoid these sites by spanning.

Site AZ T:8:104 (ASU) is situated in the APE of the proposed project. It is described as a small sherd concentration. The site had been previously evaluated as not eligible for the NRHP. This site location was revisited but the site could not be relocated. Extensive disturbance in the area for erosion control has likely resulted in the destruction of this site.

Sites AZ U:5:72 (ASU) and AZ U:5:73 (ASU) are situated immediately adjacent to the APE or the proposed project. Both sites are described as small sherd scatters. These sites were previously evaluated as not eligible for the NRHP. These site locations were revisited but the sites could not be relocated. Extensive disturbance of both locations in conjunction with the construction of the existing transmission corridor has likely resulted in the destruction of both of these sites.

The proposed transmission line crosses three areas of archaeological interest: (1) the Calderwood Butte Archaeological District, (2) New River Archaeological District, and (3) Cave Creek Archaeological District. These areas represent zones of high archaeological potential that can be found in many localities across the northern margins of the Phoenix Basin. The New River Archaeological District and the Cave Creek Archaeological District are determined eligible for listing on the NRHP. The Calderwood Butte Archaeological District is on the Arizona Sate Inventory. Transmission corridors are already in place in the viewshed of these districts. The proposed transmission corridor would follow these existing corridors throughout the majority of the project area. Any additional impacts will be reduced because of the proximity to existing structures.

In addition, two historic structures were identified by class I records review and pedestrian survey. These properties are AZ T:4:131 (ASM), the Black Canyon Road, and AZ T:3:55 (ASM), the Beardsley Canal. Both of these are recommended as eligible for inclusion on the NRHP as they occur in the proposed project area. Black Canyon Road has the potential to provide information on early transportation within Maricopa County, whereas the Beardsley Canal has the potential to provide information on early agriculture and development in the West Valley. Based on the size of these sites, however, through careful planning it should be possible to avoid these sites by spanning them.

Due to the large size of site AZ T:7:192 (ASM) and the archaeological sensitivity, it is our recommendation that the three loci identified in the APE be spanned and that an archaeologist be present to monitor construction activities within the site boundaries.

If, however, avoidance of those sites that are recommended as eligible for inclusion on the NRHP is not possible, a mitigation plan should be developed in conjunction with the ASLD and Arizona State Historic Preservation Office (SHPO) and implemented prior to project construction.

If human remains or funerary objects are discovered during construction of the proposed project on state or private lands, all work in the area should cease and the finding reported to the director of the Arizona State Museum in accordance with Arizona Revised Statutes §41-844 and §41-865

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