

XI

TRI-STATE SYNFUELS WATER SUPPLY PROGRAM

Prepared by William M. Scriber, Resource Coordinator

1.0 INTRODUCTION

1.1 Scope of Work

Synfuel plants are known to be significant users of water and the Tri-State plant was no exception. One of the reasons for the Henderson County Kentucky plant site was the abundance of water available for the plant from the near-by Ohio River. Tri-State's Water Supply Program scope of work included the determination of plant water requirements, appropriate methods of water collection and the application for permits required to serve the water supply.

1.2 Objectives and Goals

Following the siting of the Tri-State plant in Henderson County, Kentucky approximately 1.5 miles from the Ohio River (See Exhibit XI-A), the completion of several objectives was needed to satisfy the plant's water requirements needs:

- o Determine overall water requirements for the plant.
- o Optimize the method and location of the water collection system from the Ohio River.
- o Obtain appropriate water withdrawal and usage permits from the Commonwealth of Kentucky.

1.3 Work Efforts

Exhibits XI-B provides a list of those involved in the Water Supply Program from June 1981 until June 1982.

1.4 Estimated Costs & Manpower

The only external cost involved to date in the Tri-State Water Supply Program was the contract awarded to Ranney (\$) for their hydrological work for the Ohio River collection facilities.

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EXHIBIT XI-A

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Tri-State Synfuels Project Site Plan

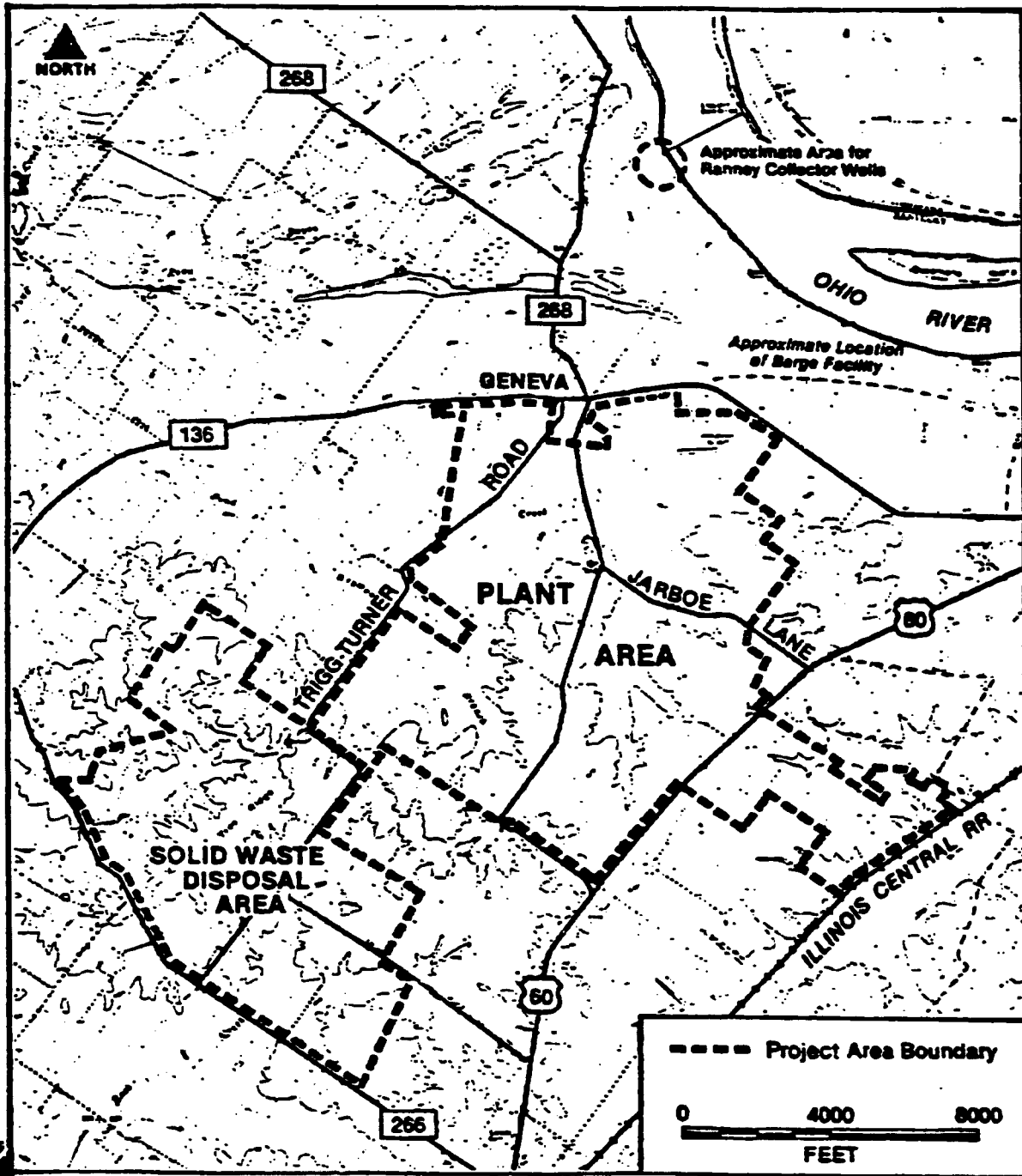


EXHIBIT XI-B
WATER SUPPLY
PROJECT PERSONNEL

Tri-State

<u>Name</u>		<u>Title</u>	<u>Dates of Service</u>	<u>Area of Responsibility</u>
J.S. Christopher (2)		Environmental Coordinator	1/81 - 06/82	Environmental Compliance of water withdrawal program and permit application
L.S. Rathbun	(1)	Manager-Project Development	7/81 - 05/82	Overall management of program
W.M. Scriber	(3)	Resource Coordinator	1/81 - 06/82	Coordination of permit filing and water re- quirements

* 3-Key
2-Impact but on "as required basis"
1-Occasional use

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2.0 SUMMARY

2.1 History

2.1.1 Work Plan

The initial concern was to determine the procedures and timing for obtaining the appropriate water permits for withdrawal from the Ohio River. Exhibit XI-C was prepared by Radian Corporation and addresses the procedures and permits required from the Commonwealth of Kentucky. Radian's conclusion was there should be no difficulty in obtaining the required permits which are identified as Exhibit XI-D.

Another portion of the Water Supply work plan involved the determination of the most effective method of withdrawal water from the Ohio River. The Ranney Company was contracted to complete a field test to determine the appropriate method of water withdrawal (See Exhibit XI-E). Also in the Tri-State files are the results of the Ranney work entitled "The Ranney Well Final Report" and Fluor's Evaluation of the Ranney System and another method of water withdrawal. This report is entitled "The Structural Development Study #10, Ranney Water System vs. Intake Structure."

2.1.2 Description of Work Completed

The major work package completed in the Water Supply Program was the completion of the Ranney Well Study (Exhibit XI-E). The study was initiated in mid 1981 and completed in June 1982.

2.1.3 Consultant/Contractor Reviews

The evaluation of the Ranney Corporation as a consultant can be found in Fluor's subcontractor package.

2.2 Current Status

There was little to no work activity ongoing at the time of project termination other than the Ranney Contract work.

2.3 Future

In the event the Tri-State project is reactivated the permits required by the Commonwealth of Kentucky (Exhibit XI-E) should be completed and submitted for approval (See Exhibit XI-F). Exhibit XI-G was supplied Radian and shows the schematic of Kentucky's water withdrawal permit program.

2.4.4 Kentucky Water Withdrawal Permit Program

2.4.4.1 Summary

Subject to certain exemptions, withdrawals of surface water and ground water for industrial purposes and potable water supply at the TSSP will require water withdrawal permit(s) from the KDNREP Division of Water. Issued in perpetuity, a water withdrawal permit specifies the quantity, time, place, and rate of diversion or withdrawal of surface water or ground water. The principal issue in the permit process is water availability: unimpairment of existing water uses. Although the water withdrawal permit program is coordinated with other programs administered by KDNREP Division of Water, the actual review and processing of a water withdrawal permit application requires only 7-14 days. No public notice or hearing is required to issue the permit. The Kentucky water withdrawal permit program is not anticipated to present any significant problems or uncertainties.

2.4.4.2 Program Description

Pursuant to Section 151.140, Kentucky Revised Statutes, and 401 KAR 4:010 (Appendix A), a person who proposes to divert or withdraw public water from a Kentucky stream, lake, ground water source or other body of state water at an average withdrawal rate which exceeds 10,000 gpd must apply for and receive a water withdrawal permit from the KDNREP Division of Water. A water withdrawal permit is not required under the following circumstances:

- If the water withdrawn is "diffused surface water which flows vagrantly over the surface of the ground" or is "water left standing in

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natural pools in a natural stream when the natural flow of the stream has ceased."

- If the withdrawal of water is made at a relatively constant rate each day and the average withdrawal rate is 10,000 gpd or less;
- If the withdrawal of water is made for agricultural and/or domestic purposes, including irrigation;
- If the water withdrawn is to be used by steam generating plants of companies which retail rates are regulated by the Kentucky Public Service Commission or for which plants a certificate of environmental compatibility from the Commission is required by law; or
- If the water withdrawn is to be injected underground in conjunction with operations for the production of oil and gas.¹

Issued in perpetuity, a water withdrawal permit specifies the quantity, time, place, and rate of diversion or withdrawal of surface water or ground water. The withdrawal permit is not a "water right" in the sense that it vests ownership or an absolute right to withdraw or use the water. Nor does a water withdrawal permit establish in the permittee a "priority right" as against other users to divert water during periods of shortage. Permits for the withdrawal or diversion of public water may be amended at any time upon application to KDNREP by the permittee, or by KDNREP when the annual water use reports indicate that the permittee is using substantially more or less water than the permit authorizes.

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The water withdrawal permit program is coordinated with other programs administered by the KDNREP Division of Water: waste discharge, floodway construction, dam construction, and new water supply source (Sections 2.3.5, 2.4.6, 2.4.7, 2.4.8). Coordination generally consists of joint review and processing of applications. The program does not interface with the CWA Section 404 permit program, administered by U.S. Army Corps of Engineers, unless the applicant proposes to withdraw water from a federal reservoir (Section 2.4.2). An applicant proposing to develop a new potable surface water or ground water supply must also obtain system design approval from the KDNREP Division of Water (Section 2.4.8).

2.4.4.3 Applicability

The Kentucky water withdrawal permit program will apply to the following aspects of the TSSP:

- Water withdrawn from the Ohio River through either an intake structure and/or Ranney wells for use in the synfuels plant and ancillary facilities; and
- Water withdrawn from the Ohio River, from creeks in the project area, and/or from ground water sources to provide a potable water supply.

2.4.4.3 Performance Standards

Section 151.170, Kentucky Revised Statutes, states that KDNREP shall issue a permit to an applicant "if an investigation by the department reveals that the quantity, time, place or rate of withdrawal of public water will not be detrimental to the public interests or rights of other public water users. No permit shall be denied to a responsible applicant who has established an amount of water for which he has a need for a useful purpose, provided the requested amount of water is available." KDNREP may issue a permit for an amount of water withdrawal less than requested, "if found by the department to be in the best interests of the public or other water users."²

A permittee is required to complete and return water withdrawal forms to the KDNREP Division of Water within 30 days after receiving such forms. Water Division regulations specify that withdrawals made at a relatively constant daily rate shall be recorded monthly and reported to semiannually. If withdrawals are made on an irregular basis and at an irregular rate, the Division may specify recording frequency as the circumstances may require.

Any person who withdraws or diverts public waters without having obtained a permit from KDNREP is subject to injunctive remedies and is also liable for a civil penalty of not to exceed \$1,000 per day for each day of violation.³

2.4.4.5 Permitting Procedural Requirements and Timing

As earlier indicated in the discussion of the Kentucky waste discharge permit program (Section 2.3.5), KDNREP Division of Water advises applicants for programs administered by the

Division to file all applications at the same time to facilitate intradivisional coordination of review and processing. A pre-application conference with the Division is also recommended.

The Division estimates that actual review and processing of a water withdrawal permit application requires only 7-14 days. If other programs require more time, however, issuance of the water withdrawal permit may be delayed pending review and processing of the other water division applications.

Application requirements for a water withdrawal permit are contained in Table 2.4.4-1. A copy of the application form is contained in Appendix B.

As in the Kentucky waste discharge permit program, there are no public notice and hearing requirements prior to permit issuance. Under Sections 224.081-.085, Kentucky Revised Statutes, there are post-issuance complaint procedures which a person aggrieved by water withdrawal permit issuance may pursue, however. These post-issuance procedures may include public notice and hearing, preparation of a formal record and proposed to the courts. Described more fully in Section 2.3.5, these rarely used procedures are included in the water withdrawal permit process illustrated in Figure 2.4.4-1.

2.4.4.6 Areas of Uncertainty

There do not appear to be significant problems or uncertainties associated with the Kentucky water withdrawal permit process. Water availability is the principal consideration in the process, and there appears to be sufficient surface water and ground water available in the project area for synfuels development.

TABLE 2.4.4-1 APPLICATION REQUIREMENTS FOR KENTUCKY
WATER WITHDRAWAL PERMIT

-
- I. Information concerning applicant (name/address/telephone no.)
- II. Description of proposed withdrawal
- A. Type
 - B. Surface Withdrawal
 - 1. Name of spring
 - 2. Description of impoundment from which withdrawal proposed
 - C. Ground water withdrawal
 - 1. Description of proposed wells
 - 2. Pump test results
 - D. Requested withdrawal amounts (average gpd/month)
 - E. Description of water purchased from another supplier.
 - F. Description of water supplied to others.
 - G. Description of water measurement methods.
 - H. Description of return flows.
 - I. Description of population served, treatment plant capacity, raw water storage capacity, finished water storage capacity, amount of water used by industry.
 - J. Location of intake described by altitude, longitude, and county.
- III. U.S.G.S. quadrangle map of site showing surface intake facilities or wells, dams and reservoirs, pumping plant(s), water treatment plant(s), waste water return(s).
-

IF WITHDRAWAL IS FROM A GROUND WATER SOURCE, COMPLETE SECTION A
IF WITHDRAWAL IS FROM A SURFACE WATER SOURCE, COMPLETE SECTION B

A. Ground Water Withdrawal

Number of wells Average depth Drawdown Maximum sustained yield

Location of well or well field: County Latitude Longitude

B. Surface Water Withdrawal

Name of surface stream or spring

Location of intake site: County Latitude Longitude

If Surface Withdrawal Is From An Impoundment:

Impoundment Name Approximate Volume

Impoundment Owner Address

Attach documentation of owner's consent to the proposed withdrawal, if applicable.

III. WATER RETURN

Name of stream or spring receiving discharge

Location of discharge site: County Latitude Longitude

Average amount of water returned (gallons per day)

Method used to estimate discharge rate

Discharge Permit Number(s)

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COMPLETE SECTION IV ONLY IF THE APPLICANT IS A PUBLIC WATER SUPPLIER

IV. PUBLIC WATER SUPPLIER

Number of people served _____ Number of connections served _____

ATTACH A MAP DISPLAYING SERVICE BOUNDARIES

Water Treatment Plant Capacity (gpd) _____ Average Plant Output _____

Finished water storage capability (number, type and capacity) _____

List the approximate percentage of water distributed to each of the following:

	Percentage		Percentage
Residential	_____	Public/Institutional	_____
Industrial	_____	Other	_____
Commercial	_____	Sold to other water suppliers	_____

If water is sold to other water systems or suppliers, please list:*

1. _____ <i>Name of Supplier</i>	3. _____ <i>Name of Supplier</i>
_____	_____
<i>Address</i>	<i>Address</i>
_____	_____
<i>Gallons per day sold</i>	<i>Gallons per day sold</i>
2. _____ <i>Name of Supplier</i>	4. _____ <i>Name of Supplier</i>
_____	_____
<i>Address</i>	<i>Address</i>
_____	_____
<i>Gallons per day sold</i>	<i>Gallons per day sold</i>

If additional water is purchased from another water system, please list:*

1. _____ <i>Name of Supplier</i>	3. _____ <i>Name of Supplier</i>
_____	_____
<i>Address</i>	<i>Address</i>
_____	_____
<i>Gallons per day purchased</i>	<i>Gallons per day purchased</i>
2. _____ <i>Name of Supplier</i>	4. _____ <i>Name of Supplier</i>
_____	_____
<i>Address</i>	<i>Address</i>
_____	_____
<i>Gallons per day purchased</i>	<i>Gallons per day purchased</i>

Attach additional listing if necessary.

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V. REPORTING OF ACTUAL WATER WITHDRAWAL

KRS 151.160 requires that permit holders report actual water withdrawals to the Department. At present, special forms are sent to permit holders in January and July for reporting withdrawals for the previous six months.

Please provide the name and address of the contact person to be in charge of reporting actual withdrawals to the Department and to whom the special report forms are to be sent.

Contact Person _____ Title _____

Address _____

Telephone _____

How will withdrawal rates be measured? Metered _____ Calculated _____ Estimated _____

If calculated or estimated, describe method used: _____

Anticipated accuracy of withdrawal rate measurement (check one)

Excellent
(within 5% of actual rate)

Good
(accurate within 5-10% of actual rate)

Fair
(accurate within 10-25% of actual rate)

Poor
(contains more than 25% error)

Name of person preparing application _____

Title _____

Signature _____ Date _____

If application is prepared by a consultant or other person independent of the business, municipality, company, etc., requesting permit, please provide contact information below:

Name of consulting company or other entity

Address

Telephone

If approved, who do you wish the permit be mailed to: _____
You *Your Client*

EXHIBIT XI-E

WATER SUPPLY

KEY DECISIONS REACHED

<u>Decision</u>	<u>Rank*</u>	<u>Date</u>	<u>Alternatives</u>	<u>Rationale for Decision</u>
Use Ranney Collection System	2	06/82	Draw water direct from River	Cost effectiveness See Fluor Report #10

MAJOR ACCOMPLISHMENTS/MILESTONES COMPLETED

<u>Description</u>	<u>Date</u>	
	<u>Initiated</u>	<u>Completed</u>
Ranney Well Study	Mid 81	6/82

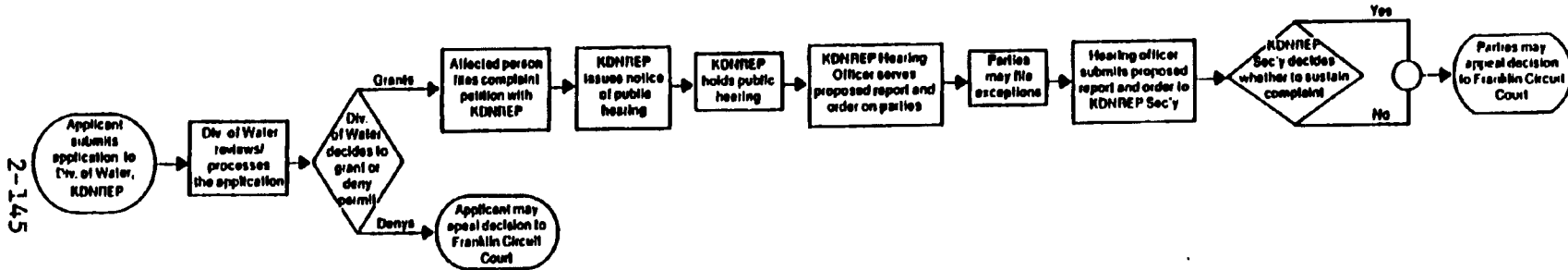
FUTURE MILESTONES/MASTER SCHEDULE

<u>Description</u>	<u>Phase 1</u>	<u>Date</u>	
		<u>Initiate</u>	<u>Deadline</u>
File for Water Withdrawal Permit		5/82	7/82

- * 3-Absolute
- 2-Preliminary (pending additional input/information)
- 1-Operational (little to no support)

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EXHIBIT XI-F



Kentucky Water Withdrawal Permit Program

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EXHIBIT XI-G

WATER SUPPLY

MAJOR CONTACTS

<u>Company & Address</u>	<u>Individual</u> *	<u>Title/Position</u>	<u>Telephone</u>
Kentucky Department for Natural Resources and Environmental Protection	Valarie Wickstrom	Permit Coordinator	502/564-2150

* KEY CONTACT

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EXHIBIT XI-H

WATER SUPPLYMAJOR REFERENCE DOCUMENTS*

<u>Item</u>	<u>Description</u>	<u>Author</u>	<u>Date</u>	<u>Location</u>	<u>Utility**</u>
Regulatory Compliance Plan		Radian	1/82	Central Files	3
Ranney Well Final Report		Ranney	6/82	Central Files	3
Structural Development Study #10 Ranney Water System vs. In- Take Structure		Fluor	6/82	Central Files	3

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* Reports, maps papers, reference/research groups, schedules
** Utility 3-very important, 2-useful, 1-questionable value

XII

LAND MANAGEMENT

Prepared by: William M. Scriber - Resources Coordinator
Linda Rathbun - Manager, Project Development

1.0 INTRODUCTION

1.1 SCOPE OF WORK

The objective of the Land Management Program was to provide the Tri-State Synfuels Project with a contiguous tract of land of adequate size to support a world scale synthetic fuels plant.

1.2 OBJECTIVES AND GOALS

The identification and optioning of a suitable land tracts for the plant in the Illinois Coal Basin was the primary objective of the Land Management Program. There were several other objectives, which are identified below, that when completed would have led to the attainment of the overall goal of securing a plant site for the project.

- o Identify a single large property tract well suited for commercial development both geographically and logistically.
- o Negotiate a purchase option for the single large property tract.
- o Determine the additional land needs, if any, to complete the total plant land requirements.
- o Negotiate a purchase option for the additional land required.
- o Determine that a clear title can be developed for all property to be purchased.

1.3 WORK EFFORTS

Exhibit XII-A provides a list of those involved in the Land Management Program at one time or another. The list includes only those assigned to the Tri-State project and support personnel provided by Texas Eastern and Texas Gas.

EXHIBIT XII-A
 LAND MANAGEMENT PROGRAM
PROJECT PERSONNEL

<u>Tri-State</u>			
<u>Name</u>	<u>Title</u>	<u>Dates of Service</u>	<u>Area of Responsibility</u>
P. M. Anderson	Proj. Director	05/80 - 06/82	KDOE contacts/negotiate AEP Option
M. D. Burke	Asst. Proj. Dir.	12/80 - 06/82	KDOE contacts/negotiate AEP Option
L. S. Rathbun	Proj. Devel. Mgr.	07/81 - 05/82	Overall management for program
W. M. Scriber	Resource Coord.	01/81 - 06/82	Coordinate AEP Option correspondence, title search program, survey program, property access permits, identify private property requirements, airport relocation study
R. W. Fincher	Project Engineer	07/81 - 06/82	Determine permit requirements, review survey work and private land requirements

<u>Texas Eastern Support</u>			
<u>Name</u>	<u>Title</u>	<u>Area/Type Assistance</u>	<u>Role*</u>
R. F. Wornson	Gen. Attorney	Development, review and negotiation of AEP options also airport relocation study contract	2
R. A. Lawhon	Sr. Attorney	Review of title opinions, review AEP options, review private option agreement	2
M. C. Haas	Attorney	Development of airport relocation contract	2

<u>Texas Gas Support</u>			
<u>Name</u>	<u>Title</u>	<u>Area/Type Assistance</u>	<u>Role*</u>
J. W. MacKenzie	General Counsel	Legal assistance in development and advise on AEP option agreements and private option agreements	2
O. Chappell	Landman	Secured all property access agreements, settled damage claims assisted with field work	3

* 3-Key
 2-Impact but on "as required basis"
 1-Occasional use

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EXHIBIT XII-B
 LAND MANAGEMENT PROGRAM
ESTIMATED EXPENDITURES FOR WORK AREA

<u>Major Areas</u>	<u>Expenditures 2/6/81-6/15/82</u>		<u>To Complete Phase I</u>
	<u>Budget</u>	<u>Actual</u>	<u>Estimate</u>
Airport Relocation Study G. R. Bandy & Associates			
Title Opinions (Cubbage & Thomason)			
Property Survey (Morley & Associates)			
Boehl Stopher Graves & Deindoerfer (review & consulting)			
Curative Work			

* Possibly too low.

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1.4 ESTIMATED COSTS AND MANPOWER

The main cost involved in the Land Management Program was the amount of \$ paid by the Kentucky Department of Energy to the American Electric Power Company for a purchase option agreement for a large tract of land to be used as a basis for the plant site. This amount was to be reimbursed to the KDOE by Tri-State at the time when Tri-State actually assumed title to the property. Other costs associated with the Land Management Program can be found in Exhibit XII-B.

2.0 SUMMARY

2.1 HISTORY

2.1.1 Work Plan

The following items describe key elements in the Land Management Program Work Plan:

- o KDOE to secure purchase option for plant site from AEP.
- o Develop title opinions, and boundary surveys as part of obtaining a clear title to the AEP property.
- o Provide access permits for the AEP property tracts, lease holders and private property owners so a soil and water analysis program could be conducted in the plant site area.
- o Determine what additional private property will be needed to support the plant site.
- o KDOE to negotiate purchase options for the required private property tracts.
- o Begin activities that would ultimately lead to the relocation of the Henderson City/County Airport.
- o Maintain activities necessary to provide transportation access to the plant site by both rail and water.

2.1.2 Description of Work Completed

During the period of time from June 1981 until June 1982, several packages of work were completed by Tri-State personnel, KDOE personnel and other firms which were directed to provide services for Tri-State's Land Management Program. The following subheadings are synopses of the more important work packages.

2.1.2.1 KDOE/AEP Property Purchase Option Agreement - Negotiations to develop an option agreement for the American Electric Power property in west Henderson County Kentucky began in late 1980. Tri-State's interests in the property were represented by Mr. David Drake and Mr. Ron Sanders who were on the staff of the Kentucky Department of Energy. Through a previous agreement the KDOE had agreed to take the lead on behalf of Tri-State for any land optioning activities in Kentucky. AEP's negotiating effort was headed by Mr. W. J. Prochaska, General Counsel in the company's New

York office. Several draft documents were exchanged between both parties and were reviewed by Tri-State personnel as well as both Texas Eastern and Texas Gas legal personnel. The negotiations were not only for the AEP property near Geneva which was to be used for plant siting but also approximately 600 acres near the community of Zion which was to provide a site for the relocation of the Henderson City/County Airport. The airport relocation is necessitated by the proximity of the airport to the proposed plant site. Option negotiations were brought to a close upon the signing of the Plant Site Option Agreement and the Substitute Airport Site Option Agreement on August 24, 1981 by the KDOE and AEP.

2.1.2.2 Access Permits to Property - Beginning in mid 1981 a program was initiated to provide access to both AEP and private property tracts for the purpose of conducting hydrological, aerial, geotechnical, archaeological and property boundary survey work programs. Property access permits were signed by private property owners, AEP lease holders and AEP tenants. Mr. Oscar Chappell of Texas Gas was instrumental in seeing that all the necessary permits were signed and any settlement was made to the individuals for damages occurring during execution of the various work programs.

2.1.2.3 Title Search Program - Following the signing of the AEP option agreements, a program was initiated to verify that a clear property title was obtainable for the various AEP property tracts. The firm of Cabbage and Thomason in Henderson, Kentucky was used to develop the title opinions. The effort was headed by Mr. Benjamin C. Cabbage and his title opinions were briefly reviewed by the firm of Boehl Stopher Graves & Deindorfer in Louisville, Kentucky and then forwarded to Tri-State for distribution to both Texas Eastern and Texas Gas legal departments. Mr. Cabbage, as directed by Tri-State, concentrated his work on those AEP tracts south of Highway 136 and the community of Geneva. Title work was initiated in this area due to the siting of the plant on those tracts. A summary of those tracts on which title opinions were written can be found in Exhibit XII-T. Title exceptions were identified by Mr. Cabbage, but a curative action program was never initiated due to budgetary constraints and cancellation of the project. Copies of the title opinions can be found in the Tri-State files and in the individual tract files returned to the Kentucky Department of Energy.

2.1.2.4 Property Survey Program - In support of the Title Search Program was necessary to verify that legal property descriptions of the AEP tracts could be verified by a field survey. Following a competitive bidding process, Fluor awarded the property survey work contract to the firm of Morley and Associates in Evansville, Indiana. As the survey firm began the work as specified per the contract it was

EXHIBIT XII-C
LAND MANAGEMENT PROGRAM

KEY DECISIONS REACHED

<u>Decision</u>	<u>Rank*</u>	<u>Date</u>	<u>Alternatives</u>	<u>Rationale for Decision</u>
Sign KDOE/AEP Option Agreement	3	08-24-81	New Site Continue Negoti- ations	New site would delay project and AEP was not flexible in option terms
Large amount of land required for solid waste disposal (full size plant)	3	3rd quarter 1981	Satellite sites optioned later	Provides 1 disposal site for major portion of plant life
Reduction in solid waste land requirement	3	1st quarter 1982	Continue with full site	Less coal consumption
Title work on AEP tracts south of Highway 136	3	4th quarter 1981	Title work on all AEP tracts	Tracts south of Highway 136 are critical to have clear title due to location of plant
Title work on AEP Zion site	3	4th quarter 1981	No title work	Tracts essential to relocation of Airport

* 3-Absolute
2-Preliminary (pending additional input/information)
1-Operational (little to no support)

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discovered that rather than 54 tracts to be surveyed it would be necessary to survey 88 tracts. When this problem was discovered, it had become apparent the project was soon to be terminated. To avoid rebidding the contract or over running the contract dollar amount, Morley and Associates was directed to complete field work on 88 tracts but the only drawings and written opinions, as specified in the contracts, were to be completed for those tracts south of Highway 136. This revision to the directions in the contract allowed the work to be completed per the budget amount.

2.1.2.5 Henderson City/County Airport Relocation Study - As the initial step in the relocation of the Henderson City/County Airport (due to its current proximity to the plant site) Tri-State had agreed to fund a relocation and design study. The firm of G. R. Bandy & Associates was chosen to perform this study which would provide an evaluation of available sites, a forecast of air traffic growth and preliminary design of the new airport. This relocation study was completed in June 1982.

2.1.2.6 Private Land Requirements - Land additions to the optioned AEP property from private individuals would be necessary to provide siting for plant facilities such as solid waste disposal, coal storage, conveyor right-of-way to solid waste disposal area and an optional barge terminal on the Ohio River. The needed private property tracts have been identified and the Kentucky Department of Energy was to begin the negotiation process with the property owners to develop a purchase option document in April or May 1982. The KDOE had taken the first step in the optioning process by having appraisals of each property tract made.

2.1.3 Key Decisions Reached

Exhibit XII-C provides a review of the critical decisions that were made pertaining to the Land Management Program. The one most important decision was agreement by all parties on the terms and conditions of the purchase option agreements for the AEP property tracts. Other decisions involved the determination of the amount of land required to support the plant size and directives for the title search program.

2.1.4 Major Accomplishments/Milestones

Several major accomplishments were made in the Land Management Program from mid 1981 until April 1982. Exhibit XII-D provides a review of the more significant accomplishments, with the signing of the purchase option agreement for the AEP property likely being the most significant.

EXHIBIT XII-D
LAND MANAGEMENT PROGRAM

MAJOR ACCOMPLISHMENTS/MILESTONES COMPLETED

<u>Description</u>	<u>DATE</u>	
	<u>Initiated</u>	<u>Completed</u>
Option agreements for AEP properties signed by KDOE and AEP	10/80	08/81
Identification of Private Land Requirements	4th qtr. 81	02/82
Completion of Airport Relocation Study	07/81	05/82
Completion of title opinions on portion of AEP tracts	10/81	03/82
Completion of survey on portion of AEP tracts	01/82	05/82

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2.1.5 Major Problems

Two major problems have developed that fall into the area of responsibility of the Land Management Program. The first problem is the reluctance of the Henderson City/County Airboard to view the Zion property as an acceptable site for the relocation of the current airport. This opinion by the Airboard was caused by the permitting and construction of a radio tower Northwest of the Zion airport site. It was the Airboard's opinion, that the construction of the radio tower would present an operational problem to aircraft navigation. Several expert opinions, including the FAA, the Kentucky Airport Zoning Commission and G. R. Bandy, have indicated that the radio tower will pose no problem to the operation of aircraft; the only exception being that if ever a crosswind runway is constructed at the Zion site, then the relocation of the radio tower must be considered. G. R. Bandy was directed to complete the airport relocation study using the Zion site as primary location for the new airport.

The other significant problem occurring was encountered shortly after the Cooperative Agreement was signed early in 1981. The Illinois Central Gulf Railroad (ICG) crosses the optioned AEP property and it was assumed the ICG would provide rail service to the plant. In the second quarter 1981 it was learned that the ICG had filed for abandonment of a 90 mile section of track which would include the track at the proposed plant site. This filing was made to the Interstate Commerce Commission and upon request by Tri-State the filing was amended to exclude the track to the plant site and retain it as side trackage. It was later learned that the remainder of the track to be abandoned was purchased by a subsidiary of R. L. Burns Corp. in Evansville, Indiana. As the situation remains, any railroad providing transportation to or from the plant would have to pass over ICG's tracks.

Of lesser concern but also of potential problem is the lack of mineral ownership by Tri-State on the property site. It has been determined that the majority of coal and mineral rights are owned by Peabody Coal. This matter must be resolved when the project is revitalized.

2.1.6 Challenge

Historically the major challenges of the Land Management Program have involved the coordinating and controlling of various work efforts (access permits, title searches, boundary surveys and relations with private property owners), all being performed on and around the plant site area in Henderson county, from the Tri-State Project office in Houston.

2.1.7 Consultant/Contractor Review

Exhibits XII-E-1 through XII-E-3 provide reviews for those contractors or firms providing services for Tri-State's Land Management Program. The firms were responsible for the following work:

- o Cabbage & Thomason - Title opinions for AEP property tracts
- o G. R. Bandy & Associates - Airport Relocation Study
- o Morley & Associates - Property survey and opinion

2.2 CURRENT STATUS

2.2.1 Current Work Activities

Several work efforts were ongoing at the time of termination of the Tri-State Project. The most significant project was the beginning of the optioning process for the private property required to support the plant land requirements. A draft of a private property option agreement was being reviewed by both Tri-State and KDOE personnel; at the time of termination the parties had not reached final agreement on the document.

A joint meeting between Tri-State and KDOE was needed to review the findings of KDOE's private property appraisal program, develop strategy for private property option negotiations and a final recommendation by Tri-State regarding the required private tracts.

Other work activities important to the Land Management Program were the revised estimates from Fluor and Radian indicating that the private land east of Trigg Turner Road would not be required for the solid waste disposal site with the new 1/4 to 1/3 size plant. Also, there would likely be some reduction in private land requirements in the coal storage area although property owners in that area may not be willing to sell only a portion of their land.

2.2.2 Key Decisions Pending

During the months of April and May 1982, had the Tri-State Project not been terminated, several discussions important to the Land Management Program would have had to be made and are summarized below:

- o Development of a private property purchase option agreement and initiation of the optioning process.

EXHIBIT XII-E-1
LAND MANAGEMENT PROGRAM
CONSULTANT/CONTRACTOR REVIEW

Firm: Cubbage & Thomason (law firm preparing AEP title opinions)

Individuals/Positions: Benjamin C. Cubbage, Jr. - Attorney

Statement of Scope: Develop title opinions for AEP real property tracts

Dates of Service: 10/81 through 03/82

Reports Prepared (dates): Prepared title opinions for each AEP property tract as specified

Decisions Impacted: No decision based upon report results due to termination of project

Budgeted \$ to date:

Actual \$ to date: \$

Future Budget/Estimate: \$

Performance appraisal:

Future recommendations:

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EXHIBIT XII-E-2
LAND MANAGEMENT PROGRAM
CONSULTANT/CONTRACTOR REVIEW

Firm: G. R. Bandy & Associates

Individuals/Positions: Gerry R. Bandy - President

Statement of Scope: The subject firm entered into a contract which was to assist in the relocation of the Henderson City/County Airport. The scope includes airport requirements, site selection, environmental assessment, airport plans and financial plans.

Dates of Service: 07/81 through 05/82

Reports Prepared (dates): Henderson City/County Airport Master Plan

Decisions Impacted: Location of the new Henderson City/County Airport

Budgeted \$ to date: \$

Actual \$ to date: \$

Future Budget/Estimate:

Performance appraisal:

Future Recommendations:

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EXHIBIT XII-E-3
LAND MANAGEMENT PROGRAM
CONSULTANT/CONTRACTOR REVIEW

Firm: Morley & Associates

Individuals/Positions: James Q. Morley - President
Lee A. McClellan - Associate

Statement of Scope: Verification or re-establishment of property boundaries for transfer of real property.

Dates of Service: 01-82 through 05-82

Reports Prepared (dates): Reports and drawings supportive of AEP real property tracts

Decisions Impacted: No decisions based upon report results due to termination of project

Budgeted \$ to date: \$

Actual \$ to date:

Future Budget/Estimate: \$

Performance appraisal:

Future Recommendations:

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- o Initiation of a curative action program to resolve title exceptions identified by Cubbage & Thomason.
- o Authorization for survey work to begin at the Zion Airport Relocation site.
- o Implementation of a Phase 2 title search program for the remaining AEP property tracts and the additional private tracts.
- o Begin negotiations to develop terms and conditions leading to the relocation of the Henderson City/County Airport.

2.2.3 Major Strengths/Weaknesses

Important strengths supporting the Land Management Program were:

- o Support and assistance by the Kentucky Department of Energy.
- o Large tract of land (AEP) under option.
- o Support by land owners surrounding the plant site for industrial and economic development.

The primary weakness of the program resulted from the Tri-State responsibility of controlling and coordinating various work efforts in Henderson, Louisville and Owensboro, Kentucky, Irvine, California and Evansville, Indiana from the Houston, Texas office.

2.2.4 Demobilization

Following the notice of termination of the Tri-State Project the demobilization of the Land Management Program was initiated in primarily four areas.

- o Private land owners in the plant site area and the KDOE were notified of the project termination.
- o Morley & Associates was directed to complete Phase I of their contract as indicated in Section 3.7 of this report.
- o G. R. Bandy was directed to complete the Airport Relocation Study using the optioned AEP Zion site property as the preferred location for the new airport.
- o Soil and Material Engineers was directed to remove and fill all ground water monitoring wells (Exhibit XII-F)

EXHIBIT XII-F

▼ FLUOR EP

REPLY TO:
P.O. BOX C-11844
SANTA ANA, CALIFORNIA 92711

May 4, 1982

RECEIVED

Contract No: 835504

MAY 11 1982

SUBJECT: Tri-State Synfuels Project
Groundwater Monitoring Well
Removal
No. FITI-0104

MICHAEL D. BURKE

Tri-State Synfuels Company
Irvine, California 92714

Attention: Mr. R. A. Jones, Jr.
Resident Manager

Gentlemen:

Soil and Material Engineers estimate the cost of removal for the ground monitoring wells will be \$2,500.00 (see attached correspondence). After authorization, Soil and Material Engineers will require two days for mobilization and three days to complete closure of the wells.

Please signify your approval to proceed with this effort by signing below.

Very truly yours,


J. W. Kruse
Project Director

^{OK}
JWK:AKC:je
Attachment

Approved

Date

cc: Mr. M. D. Burke, Tri-State Synfuels Co., Houston, TX w/att
Mr. M. H. Kelley, Texas Gas Synfuels Corp., Owensboro, KY w/att

MDB Distribution (5/11/82):

O. D. Adams
J. S. Christopher
J. M. Hossack
Centr. Files

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29 April 1982

TRI-STATE SYN FUELS COMPANY

PROJECT DESIGN TEAM
P.O. BOX C11944 - SANTA ANA, CALIFORNIA 92711
TELEPHONE: (714) 966-5791 • TELEX: 15-2294 • TWX: 910-595-256

April 27, 1982

To: Dr. Dan Marks/Soil & Material Engineers

Subject: Ground Water Monitoring Wells

Please quote based on these specifications supplied by our Client.

No.: TIFI-0168/LC.CO.1.5.3

W. Jack Buckamier
Project Contracts Mgr.
Fluor Engineers and Constructors, Inc.
Advanced Technology Division

Attention: Mr. John W. Kruse
Advanced Technology Division

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Dear Mr. Kruse:

The groundwater monitoring wells installed by Soil and Material Engineers under contract 835504-0-K001 need to be removed. Please obtain a quote from Soil and Material Engineers to perform this work.

Soil and Material Engineers quote should be based on removal of nine (9) original wells plus three additional wells installed in the ash disposal area. Soil and Material Engineers should sever the casing a minimum of four (4) feet below grade. The remaining casing should be filled with sand. The top four (4) feet should be filled with top soil. There must be no future subsidence as a result of a well having previously existed.

RAJ:RWF:rg

APR 27 '82			
Contract 835504	Revise	Handle	Copy
Subcontract			✓
Construction			
Cost/Sched			
Eng. Mgr.			
Process			
Structural			✓
Vessels			
Mechanical			
Piping			
Electrical			
Control Sys			
Environ.			
Area Equip.			✓
IPC			✓

Rafp
R. A. Jones, Jr.

APR 27 '82			
Contract 835504	Revise	Handle	Copy
V.P.-ATD			
GM Proj. G.S.			
Director			
Cost. Sched.			
Engine'g			
Acq. Plan'g			
Procurement			
Mgr. Process			
Subcontract			
Legal			
Sales			
RF			
File			✓



SOIL & MATERIAL ENGINEERS INC. ENGINEERING-TESTING-INSPECTION

3109 Spring Forest Road, Box 58069, Raleigh, NC 27658-8069, Phone (919) 872-2880

148-82

April 30, 1982

RECEIVED

MAY 3 - 1982

ATD CONTRACTS DEPT.

Fluor Engineers and Constructors, Inc.
Post Office Box C-11944
Santa Ana, California 92711

Attention: Mr. Jack Buckamier

Reference: Abandonment of Monitoring Wells
Tri-State Synfuels Project Site
Henderson, Kentucky

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Gentlemen:

Soil & Material Engineers, Inc. is pleased to have an opportunity to again be of service to your organization. It is our understanding the existing groundwater monitoring wells installed at the Tri-State Synfuels Projects site are to be abandoned (if not being utilized by local farmers as a water supply) in such a manner as to prevent farm equipment and plows from hitting the abandoned well casing.

As we discussed last week, we would suggest that the following procedure be utilized to abandon the unused wells: 1) excavate around the well to a depth of 3 to 4 feet below the surface; 2) break or cut the casing off at the bottom of the excavation; 3) fill the casing with sand or gravel to prevent development of a pothole or sinkhole as a result of material loss; and 4) refill the excavated hole with moderately compacted material previously removed.

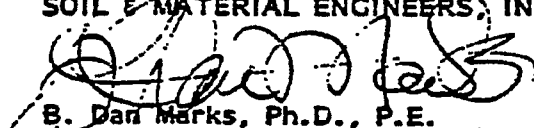
Soil & Material Engineers, Inc. proposes to accomplish the well abandonment program by sending an engineer familiar with the site and well locations to the site to supervise the previously mention procedure. It is anticipated that a total of three days may be required to accomplish this task. Based upon this schedule, Soil & Material Engineers, Inc. has estimated the cost of abandonment will be approximately \$2,500.00. The cost estimate is based upon the engineer's time and travel expenses and the cost of a backhoe rented locally and mobilized to the site. Soil & Material Engineers, Inc. can initiate this project on a verbal authorization within two days notice to proceed.

Fluor Engineers and Constructors, Inc.
April 30, 1982
Page 2

Again, we appreciate your cooperation and the opportunity to assist you. If there are questions concerning this proposal, please contact us at your convenience.

Very truly yours,

SOIL & MATERIAL ENGINEERS, INC.



B. Dan Marks, Ph.D., P.E.
Chief Engineer

BDM/ya

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~~LUAS~~
~~VLSR~~



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TRI-STATE SYN FUELS COMPANY

PROJECT DESIGN TEAM
P.O. BOX C-1844 - SANTA ANA, CALIFORNIA 92711
TELEPHONE: (714) 966-5791 - TELEX: 18-2194 - TWX: 910-595-256

RECEIVED
MAY 11 1982
MICHAEL D. BURKE

May 4, 1982
Subject: Ground Water
Monitoring Wells
No.: PC.EN.1.2

MDB Distribution (5/11/82):

Texas Gas Transmission Corp
3200 Frederica Avenue
Owensboro, Kentucky 42301

O. D. Adams
J. M. Hossack
Central Files

Attention: Mr. Dean Jones

Dear Mr. Jones:

Roger Fincher presented me with plans which you and he suggested we follow to resolve which, if any, of the subject wells should be left in place. The key plan actions he presented are:

- . Contact AEP to assess AEP's interest in ownership and liability for any retained wells.
- . Prepare ownership and liability transfers for AEP execution.
- . Contact private land owners with wells on their property.
- . Obtain ownership and liability transfers from private land owners.
- . Release Soil and Material Engineers to backfill wells which remain Tri-State's liability.

Following my discussions with Mr. Fincher we have concluded that it is not practical for Tri-State Irvine to contact AEP or private land owners. Likewise, we understand that Texas Gas is not interested in pursuing such contacts. It is therefore our plan to instruct Soil and Material Engineers to fill in all wells as soon as possible.

Our current plan is to release Soil and Material Engineers on May 12, 1982. Soil and Material Engineers quoted \$2500 to remove all wells.

Bob

R. A. Jones, Jr.

2.3 FUTURE

2.3.1 Milestones/Master Schedule

Exhibit XII-G provides a list of activities that were to occur through 1984. Primarily the activities were concerned with the procurement of private land, obtaining clear titles to all property and the relocation of the Henderson City/County Airport.

2.3.2 Work Program

As a minimum level work program Tri-State should maintain contact with the KDOE for the purpose of monitoring the status of the AEP option agreements. KDOE has agreed to maintain the option agreements through the remainder of the first two year period. Prior to the first expiration period Tri-State will need to inform the KDOE of their position in regards to further project development.

2.3.3 State of Readiness

To maintain a state of readiness anticipating that energy and economic conditions will cause the project to be reactivated, Tri-State should maintain property tract files with the current opinions from both the Title Search Program (Section 3.6) and the Property Survey Program (Section 3.7). Copies of these files should be located at Tri-State Houston offices, Cabbage and Thomason's offices in Henderson, Kentucky and possibly the KDOE would also want to maintain a copy.

2.3.4 List of Tasks

There are several items that need to be addressed immediately if the Tri-State Project is reactivated using the present proposed site for the plant location.

- o Insure that option agreements for AEP property are maintained; also address whether to extend option or purchase property.
- o Obtain clear title to plant site property tracts.
- o Begin the optioning process for private property.
- o Initiate negotiations for relocation of the Henderson City/County Airport.

2.3.5 Long Lead Time Activities

The long lead activities would involve the resolution of title exceptions identified by Cabbage and Thomason and the negotiation process involved in obtaining options on private

land. Likewise the relocation of the Henderson City/County Airport would require at least 18 months to two years from the beginning of negotiations until the completion of the new airport construction.

2.3.6 Future Staffing

Initially as title work is in process and additional private property options are being developed (working with KDOE), one to two professional level people will be required to administer and coordinate the Land Management Program. Additional assistance will be required for legal and engineering services and advise (airport relocations).

3.0 DETAIL REVIEW OF LAND MANAGEMENT PROGRAM WORK PLAN

3.1 PLANT SITE SELECTION

The project plant site was selected after a thorough evaluation of twelve potential sites in southern Illinois and western Kentucky. The list of twelve sites was reduced to five primary and secondary sites and further evaluated based upon the following criteria:

- o sufficient acreage under limited ownership;
- o ample water availability;
- o large coal reserves within a 50 to 100 mile radius;
- o accessible by navigable waterway, railroad and highway;
- o suitable solid waste disposal area; and,
- o acceptability of surrounding area air quality status.

Items that strongly influenced the ultimate selection of the Henderson County site near Geneva were: the vast coal reserves in the surrounding area; an adequate supply of water from the Ohio River; the large tract of land owned by American Electric Power; the ownership of nearby natural gas and liquid pipelines by the Project partners; and, the assistance received by the Commonwealth of Kentucky.

The large tract of land controlled by AEP provided a cornerstone section of property for the Project and was available for option. AEP in the mid-to late 1960's had purchased approximately 54 individual tracts of land with intentions of constructing a large electric power plant on the site. The power plant project was never advanced to the construction stage and much of the land continued to be used for the cultivation of beans and corn. In addition to the property, AEP had purchased for the plant site approximately nine tracts of land near the community of Zion in central Henderson County providing a site for the relocation of the Henderson City-County Airport which is currently adjacent to the main plant site and would have to be moved prior to the construction of any major industrial facility on this site.

3.2 PLANT SITE PROPERTY REQUIREMENTS

The initial plant design for a full scale Sasol type plant assuming a barge terminal for coal receipts, 28 days of live

coal storage and 60 days dead storage required. The full size plant would have required approximately 4,000 to 5,000 acres of land. The range allows for varying degrees of buffer property around the plant site. Following the January, 1982 decision to change the plant size and process to Mobil/MTG, Fluor was requested to provide a new estimate of land needed to support the revised plant. Reductions in the number of acres required occurred mainly in the areas of solid waste disposal, coal storage and barge site property which was eliminated.

The revised plant reflecting a size change to 1/4 to 1/3 of the full size plant was estimated to require approximately 3,000 to 4,000 acres with the high side of this range providing ample buffer area around the plant. Exhibit XII-H provides an analysis of the land requirements by intended usage.

3.3 KDOE/AEP PROPERTY PURCHASE OPTION AGREEMENT

As mentioned in the Plant Site Selection Section, American Electric Power owns a large tract of land on which Tri-State was to direct the initial optioning effort which was headed up by the Kentucky Department of Energy. Negotiations between KDOE and AEP started in late 1980 and ultimately resulted in a signed Plant Site Option Agreement and a Substitute Airport Site Option Agreement on August 24, 1981. Various parties involved in the negotiation effort at one time or the other were KDOE, AEP, Tri-State, Texas Eastern Legal department, Texas Gas Legal department and the Louisville law firm of Boehl, Stopher, Graves & Deindoerfer. As previously indicated there are two agreements both having a two year life with a provision for extension for an additional two year period.

The Plant Site Option Agreement covered property totaling approximately 6,351 acres; of this, approximately 4,770 acres lie north of Geneva and Highway 136 which are outside of the main process area and in a flood prone area.

In the event Tri-State eventually took title to the AEP property several alternatives were developed to either utilize or dispose of the property north of Highway 136. They are as follows:

EXHIBIT XII-H

TEXAS 
EASTERN

INTEROFFICE CORRESPONDENCE

TO: Distribution*

CO/DIV: Synfuels

FROM: W. M. Scriber

DATE: January 14, 1982

SUBJECT: Current Land Requirements for Plant

The attached exhibit identifies the current land requirements for the plant. The circled number is roughly equivalent to the 3,500 acres mentioned in the Tri-State Synfuels fact sheet prepared by Mr. de Leon.

Although a reference is not made to the 4,770 surplus AEP acres north of Geneva in the exhibit, this property is available for sale or trade.

Bill

WMS/ca
attachment

*P. M. Anderson
M. D. Burke
J. S. Christopher
A. de Leon
M. N. Kelley
L. S. Rathbun

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**TEXAS 
EASTERN**

INTEROFFICE CORRESPONDENCE

TO: O. D. Adams
CO/DIV: Synfuels
FROM: J. S. Christopher *JSC*
DATE: February 8, 1982
SUBJECT: Solid Waste Disposal Area

Using a 1/4-size plant coal consumption rate of 10,000 tons/day of 20% ash coal, it appears that the tracts of land east of Trigg-Turner Road will not be necessary. The following calculation's are used to arrive at this conclusion:

ASH: (10,000 TPD) x (20% ash content) x (340 days/year) = 680,000 tons/year
FGD Sludge: = 120,000 tons/year
800,000 tons/year
(or 0.22×10^8 cubic feet/year)

TOTAL VOLUME: (0.22×10^8 cu. ft./year) x (30 years) + (20% conting.¹) =
 7.92×10^8 cu. ft. (¹ contingency includes stripped plant site soil)

According to Radian data, the original prime solid waste disposal area (Site E) contains 7.26×10^8 cubic feet of available volume for a level fill. This would require a fill to slightly above level, which is probably acceptable.

Before this analysis is considered definitive, I would like to have Radian's more detailed analysis.

cc: M. D. Burke
Kirk Holland (Radian)
M. N. Kelley
L. S. Rathbun
File

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TRI-STATE SYNFUELS
PROPERTY REQUIREMENT ESTIMATE

<u>Process Area</u>	- - - - Acres - - - -
AEP	1,005
Airport	100
Pierce	110
Buley	280
S. Pritchett	<u>161</u>
	1,656
<u>Coal Storage</u>	
I. Pritchett	751
<u>Waste Disposal</u>	
Crenshaw	580
Williams	125
Crowder	134
P. Phelps	60
Bumpus	10
Hope	6
H. Phelps	352
Duncan	<u>133</u>
	1,400
<u>Main Process Area</u>	(3,807)
Rail Corridor (AEP)	576
Barge Terminal (Henderson S & G)	50
Conveyor Corridor for Waste (Sandefur)	<u>171</u>
	797

TRI-STATE PROPERTY REQUIREMENT

4,604

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WMS
01/14/82

3.4 PLANT SITE PRIVATE PROPERTY REQUIREMENTS

In addition to the AEP property there was a significant amount of private property needed to complete the land requirements for a full size Sasol type plant. Private acreage was needed to complete the plant process area, coal storage areas, barge terminal site and the solid waste disposal area. The following list identifies the property owners and the acres they control categorized by intended utilization:

o Plant Process and Coal Storage

Owner

Acres

o Barge Terminal Area

o Waste Disposal Corridor

o Solid Waste Disposal Area

TOTAL PRIVATE ACRES

3,053

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Following the January 1982 decision to reduce the size of the plant and to change to the Mobil/MTG process there was an associated reduction in the number of acres required from private property owners. Approximately 600 acres were eliminated from the solid waste area, the barge site was removed from the overall plant design and the number of acres required for coal storage could similarly be reduced, as less feedstock was required.

Four sites were initially considered along the Ohio River which would provide an acceptable location for development of a barge terminal to receive water-borne coal and to ship products. Two of the sites considered were already commercially developed having a small tank farm and grain elevator in operation. A third rather large tract was owned by individuals opposed to the Project and not interested in selling their property. The fourth site was owned by a small group of individuals who had bought the property as an investment and who would consider reselling the land. The group is represented by _____ and further comments can be noted in Exhibit XII-I.

In late January 1982, Tri-State representatives visited with many of the private property owners identified previously. As would be expected, the owners were reluctant to sell their property and relocate to another area. However they almost consistently stated that they were interested in any type of industry locating in Henderson County that would stimulate the economy and provide a solid base for employment. Further details of the individuals visited and their comments are provided in Exhibit XII-I. As with the property option agreement developed with AEP, the Kentucky Department of Energy was likewise to head up the process of developing private property appraisals and securing the options the option agreements for the purchase of private property. The KDOE had commissioned State approved property appraisers to place a value on the private property tract. This effort had been completed but never reviewed with Tri-State. The negotiations between KDOE and the private property owners were scheduled to begin in April or May of 1982. A draft of a private property option agreement had been developed but was never finally agreed to by the KDOE and Tri-State Synfuels. An agreed upon draft was an item of priority to be followed up by the visits to the private property owners by the KDOE.

The Kentucky Department of Energy was also most helpful in developing a demographic/socioeconomic profile of the community of Geneva which lies adjacent to the plant site. As can be seen from Exhibit XII-J, the study was oriented toward determination of the type and age of structures, status of occupants (own vs lease/rent), and an estimated value of the property and structures. This study was to

Distribution*
February 9, 1982
Page 2

- In an effort to maintain communications with the families I will be informing them of any change in this schedule and providing information about the project in general.

A detailed review of comments from each family is available and will be provided to Mr. Bruce Williams for his use.

Bill

WMS/ca

*P. M. Anderson
M. D. Burke
O. A. Chappell
A. de Leon
M. N. Kelley
L. S. Rathbun
W. N. Shoff

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Attachment 1
Observations from Meetings between
Private Land Owners and W. Scriber and O. Chappell
on January 27 & 28, 1982

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WMS
02/09/82

MEMORANDUM

TO: David D. Drake
Mickey Jones

FROM: Bruce Williams *BW*

DATE: February 16, 1982

SUBJECT: A Brief Demographic/Socioeconomic
Profile of the City of Geneva in
Henderson County

As per your request and that of the Tri-State Synthetic Fuels project, Oscar Chappell of the Texas Gas Transmission Company and I have tried to compile some information on the town of Geneva in possible preparation for acquiring property there. We have identified some 51 parcels of land comprising approximately 85.8 acres. In order to not arouse any undue publicity or suspicion amongst the local townspeople, we were somewhat limited in our ability to gather data. However, Mr. Chappell did gather significant amounts of data from his general knowledge of the area and from certain public documents such as tax roles and deed books. The following four charts should give a good basic description of the Geneva area and can probably be helpful in determining the best way to approach the local population in the event it becomes necessary for us to acquire this land.

*** LAND USE ***

The first chart shows the general plot layout of Geneva. Each numbered plot represents a separately owned piece of land. As you can see in chart number 1, the majority of the total 85 acres are small farming plots or residential plots. This is represented by the yellow areas on the map. The commercial property is represented by the red striped area and as you can see there is very little commercial property and most of this consists of one small general store type operation and the headquarters of a local soy bean farm operation. Plots 4, 5, 6, and 11 are owned by the two churches represented in Geneva, the Pentecost Church and the Geneva Methodist Church. Plot 11 and Plot 5 are the church buildings themselves, whereas plots 4 and 6 are the parsonages for each church. The green areas are basically unoccupied land or land that contains only a trailer.

*** OWNERSHIP & RESIDENTIAL STATUS ***

The second chart shows the distribution of these parcels by the ownership and residential status. The dark blue portions show plots that have permanent residences on them, whereas the red sections are pieces of land which are owned by individuals but are either vacant or have renters or other than permanent housing such as a trailer. Parcels 1, 2, 3, 29, 32, and 33 are all owned by the Franklin Real Estate Company which, as you know, holds the title to the AEP site so these shouldn't give us much trouble. The main residential areas are those running directly along Kentucky 136. The houses represented on lots 7, 8, 9, 10, 38, and 49 are those of the long-time residents of Geneva. These people will probably be the most difficult to relocate.

*** VALUE OF PARCELS & DWELLINGS ***

The third chart shows the approximate value of the parcels as taken from local tax roles. In certain cases estimates were made of the value and in some cases estimates were simply not available due to the nature of the property. As you can see, once again the majority of the expensive homes are located right around the intersection of 136 and directly in the center of Geneva. Some of the larger outlying tracts do contain homes of fairly significant value. Bear in mind that the values noted here are mainly for the buildings located on the property with rough estimates of the land value.

*** APPROXIMATE AGE OF DWELLINGS OR BUILDINGS ***

The final chart shows the approximate age of the buildings located on these parcels. Once again we see a concentration of the newer buildings located directly on Kentucky 136. The average age of the structures located on all Geneva tracts is approximately 34 years. A very small portion of dwellings are under ten years old. Plots 18, 19, and 45 have recently undergone remodeling and no new value for the property was included in chart #3. The green area represents land which either contains a church building, is vacant, or there is no available data on the age of the structures. This would also include lots with mobile homes.

*** CONCLUSIONS ON THE RELOCATION OF GENEVA ***

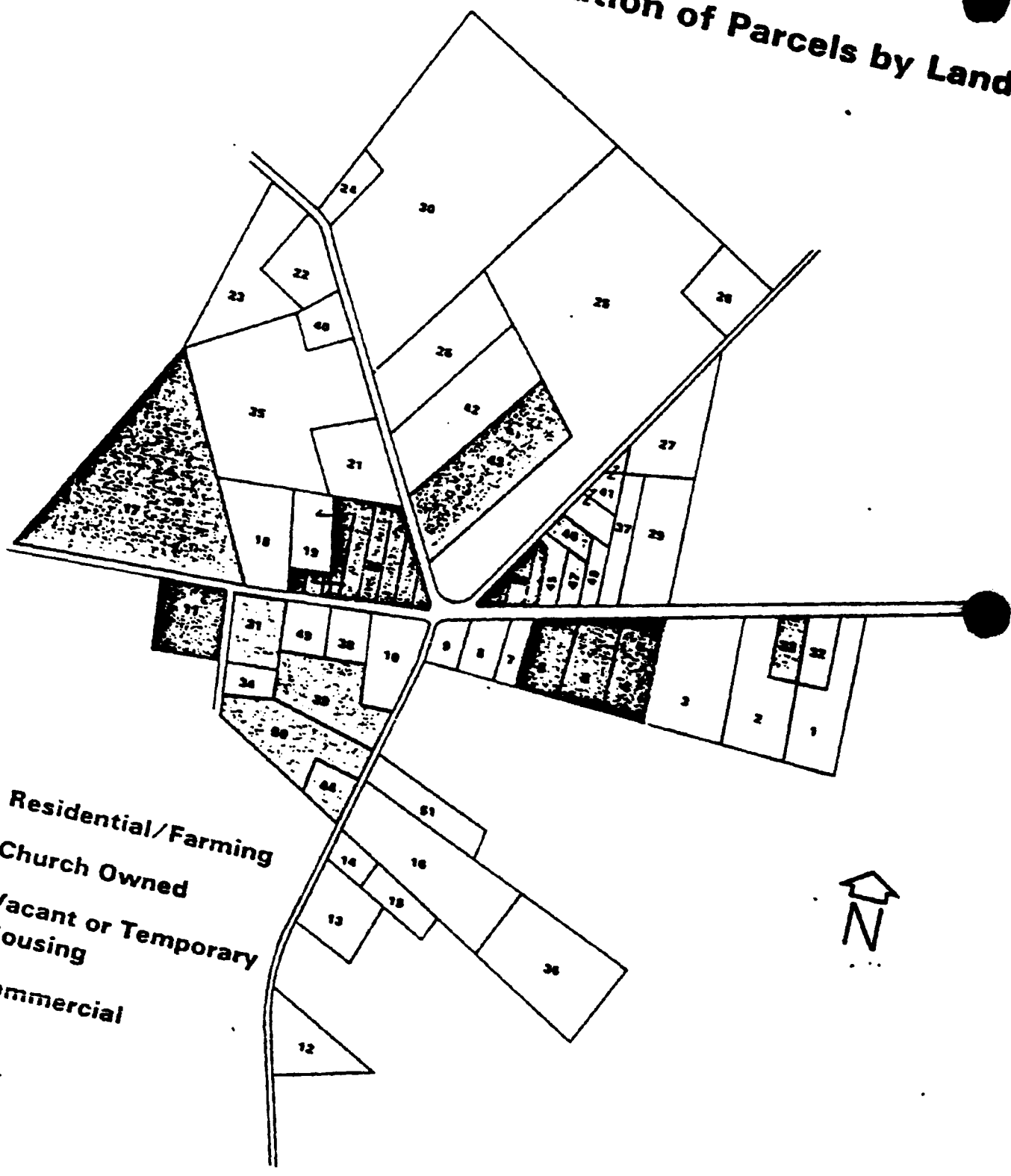
Drawing conclusions from the information we have been able to gather, I do not see the problem of acquiring the Geneva area as insurmountable. A good deal of the property is rented already. Certain large tracts are already owned by the real estate companies. The main stumbling block may be with the church property, with the Southard Farms operation, and with some of the long-time residents that live at the junction of 136 directly in the center of the tract. We are talking a total value of around \$650,000 excluding the church property and omitting some of the value of the land. If we add in the estimated cost of \$5,000 per acre for the land, we are looking at a total figure of around a million dollars for all the property involved in the Geneva area. Since the Geneva area appears to be comprised mainly of shorter term residents and rented property, I don't believe we would run into the same kind of problems that we would face in a longer term, more established community.

Bear in mind that we did not have the chance, nor did we deem it appropriate, to interview any of the locals to get a better idea of their feelings toward some proposed moved. If the project proceeds on schedule, it will become necessary at some time to get a better feel for the general attitude of the population of Geneva toward relocation.

I think the conclusion of this brief study would be that we are looking at approximately a million dollars worth of property, a population that would probably be amenable to a relocation given a decent price with the possible exception of the church facilities and four or five of the long-term residents of Geneva. I do not, however, believe that relocation would be that great a problem to the project.

gk

Distribution of Parcels by Land Use

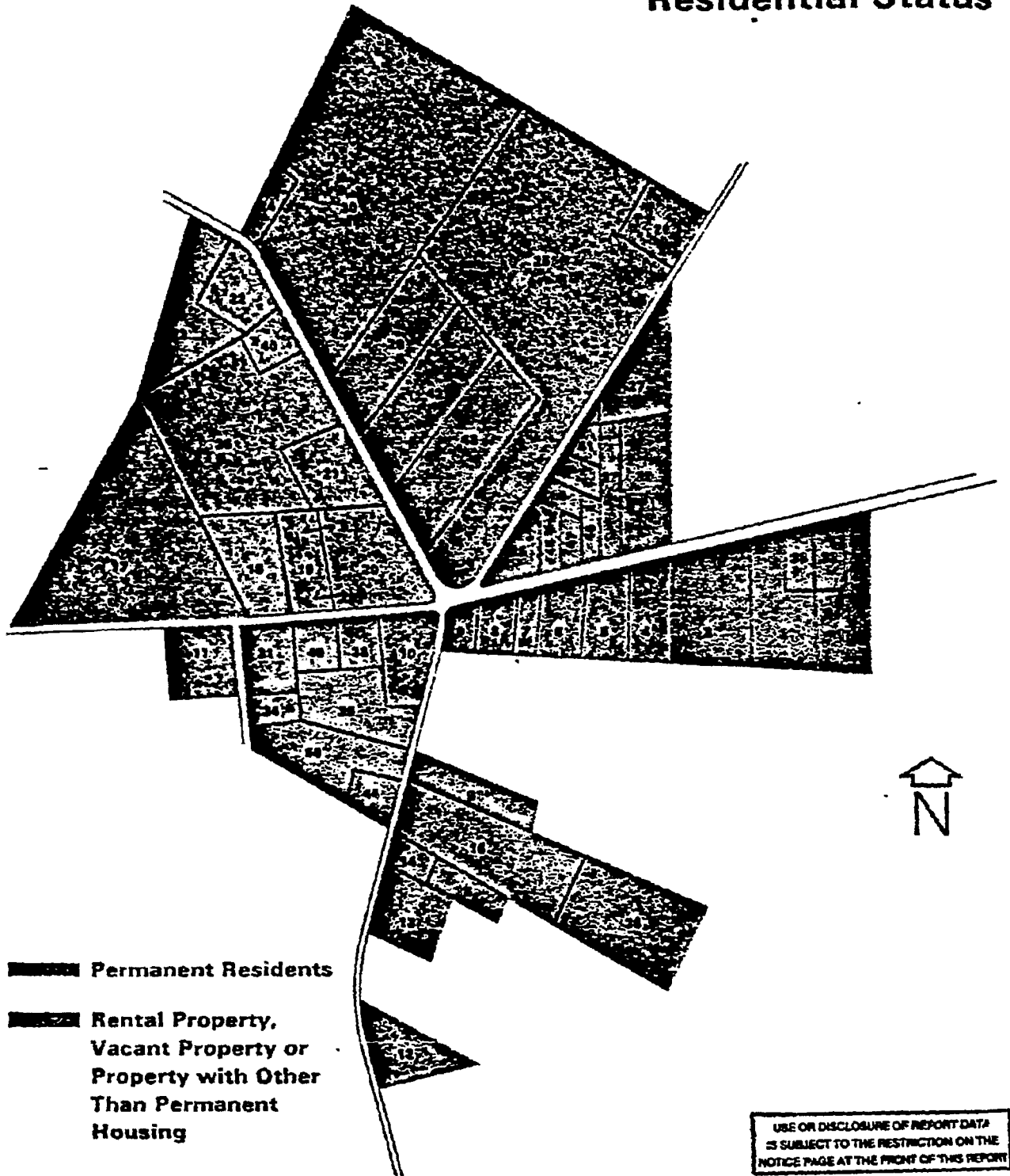


- Residential/Farming
- Church Owned
- Vacant or Temporary Housing
- Commercial

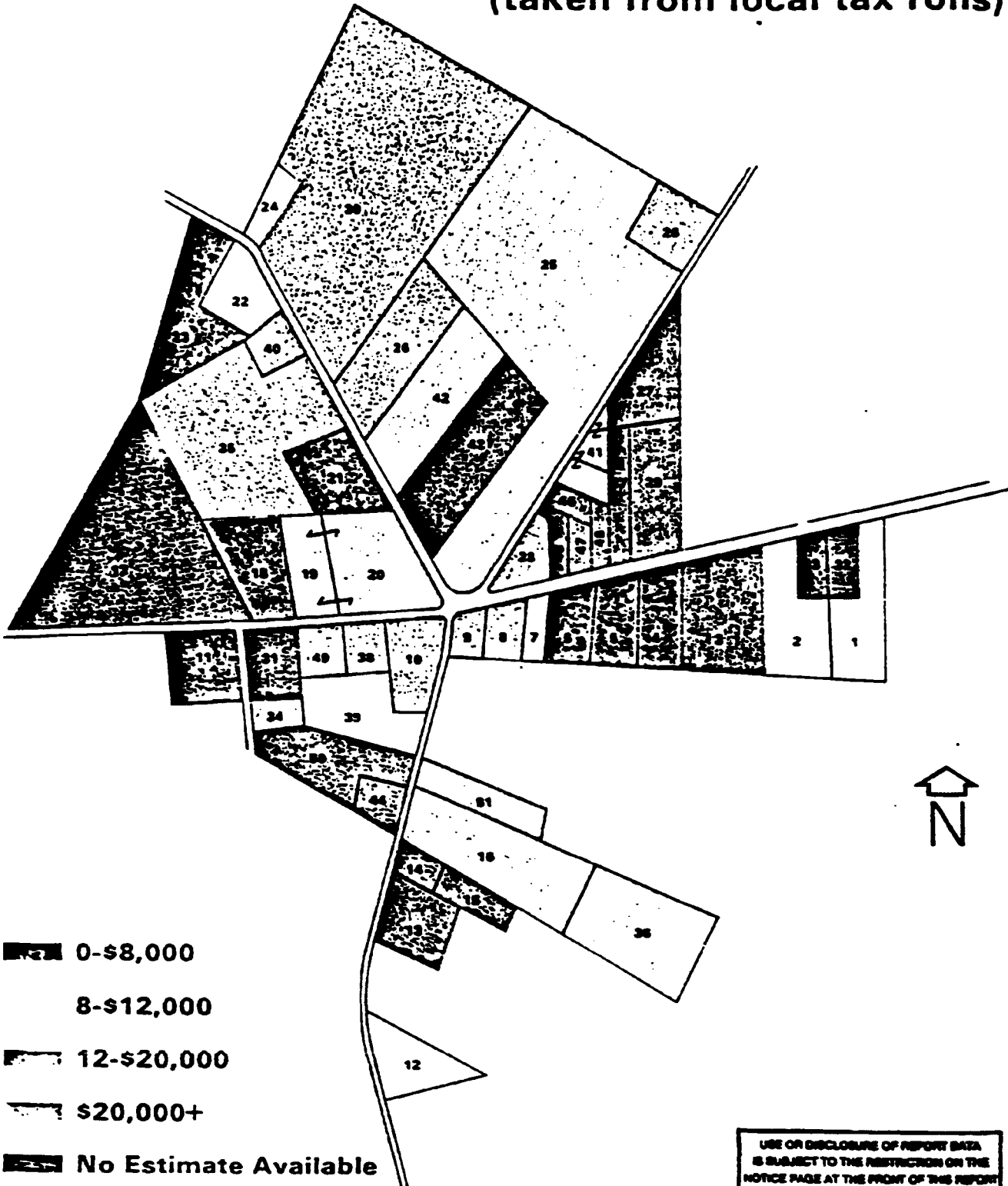


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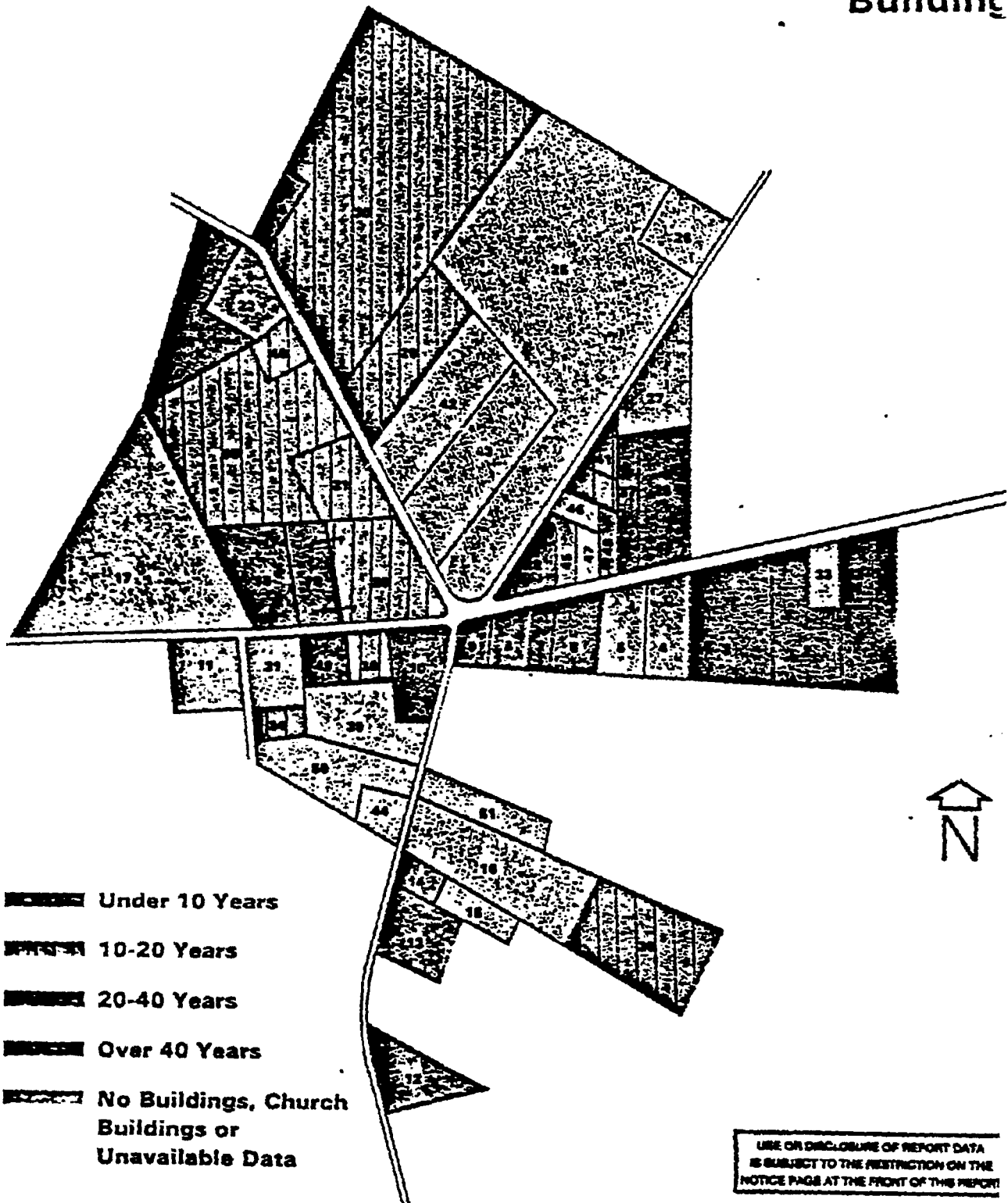
Distribution of Parcels by Ownership & Residential Status



Distribution of Parcels by Approximate Tax Value (taken from local tax rolls)



Distribution of Parcels by Approximate Age of Building



assist in determining the complexity and cost of relocating the population of the community of Geneva.

3.5 AIRPORT RELOCATION STUDY

As was mentioned in an earlier Section, the Henderson City-County Airport lies in an area that was used for the main process area for the plant and this necessitates the relocation of the airport. Tri-State has always agreed to fund the relocation of the airport to another location in Henderson County as did American Electric Power when their intentions were to construct a power plant at the site. The tract of land near the community of Zion was purchased by AEP specifically for the airport relocation. Tri-State had agreed to develop an airport that would be "equal to or better than the existing airport" at the time of construction of the Tri-State plant, see Exhibits XII-R and XII-L.

Part of the airport relocation plans called for Tri-State to provide an airport relocation master plan. This master plan would provide an evaluation of the suitable airport sites in Henderson County, a forecast of aviation demand, drawings of a proposed airport, and other airport related items. Following competitive bids, the contract for the master plan was awarded to G. R. Bandy and Associates for the amount of \$40,000. The contract was signed on July 24, 1981 (copy in Tri-State files) and completed in May, 1982. A copy of the study is attached as Exhibit XII-M.

During the development of the airport relocation master plan a potential problem developed due to a 939 foot radio tower being permitted and erected near Hebbardsville which is north of the Zion site. It became the position of the Henderson City-County Airboard (controlling body of the airport chaired by Mr. R. B. Preston) that the new radio tower would impose operational problems for aircraft using the airport at the Zion site and therefore, the Zion site was not an acceptable new airport site. Contrary to the airboards opinion the FAA, the Kentucky Airport Zoning Commission and G. R. Bandy all have stated the tower would pose no problem to aircraft that may use the Zion site. It should be noted however, that if a crosswind runway is ever considered for development at the Zion site its development will be limited by the tower (see Exhibit XII-N).

3.6 PROPERTY TITLE SEARCH PROGRAM

The proof of clear title to those property tracts south of Highway 136 was considered essential for the continuation of plant development and financing. For these reasons, Tri-State authorized the law firm of Cabbage and Thomason, located in Henderson, to conduct the title examination of the

EXHIBIT XII-L

HENDERSON CITY-COUNTY AIR BOARD

P. O. BOX 20

HENDERSON, KENTUCKY 42420

May 13, 1980

Mr. Arthur Nicholson
Energy Consultant to
Kentucky Department of Energy
P. O. Box 11888
Lexington, Kentucky 40578

Dear Art:

Following up on my conversation yesterday, I am pleased to set forth some of the general terms and considerations involved in the proposed exchange of the Henderson City-County Airport property with a facility to be constructed by the American Electric Power Service Corporation. Briefly, our agreement with AEP was as follows:

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EXHIBIT XII-M

Airport Relocation Study

Note: At the time when this Project Review Report was completed, the Airport Relocation Study had not been received from G. R. Bandy & Associates. Upon receipt the Airport Relocation Study will be catalogued in the Tri-State files.

EXHIBIT XII-N

G. R. BANDY & ASSOCIATES, INC.

636 MADISON AVE.
COPPIN BUILDING - SUITE 605
COVINGTON, KENTUCKY 41011
(606) 431-8594

March 15, 1982

Mr. W. M. Scriber
Resources Coordinator
Tri-State Synfuels Company
P. O. Box 2521
Houston, Texas 77001

Subject: Tri-State Synfuels Project
Airport Master Planning
AMTH - 0013

Dear Mr. Scriber:

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AEP property tracts including the Zion site tracts which had been optioned. This effort was headed up by Mr. Benjamin Cabbage and was in progress from October, 1981 through March, 1982. The property tracts were assigned a priority and Mr. Cabbage was directed to concentrate his efforts on those tracts of land south of Highway 136 as was, by plant design, to be the main process area for the plant. A clear title to these property tracts was essential. Also, Mr. Cabbage was directed to examine those tracts at the Zion site as they were critical to the relocation of the Henderson City-County Airport. During the course of the title examination Mr. Cabbage also developed opinions on the privately held tracts of ^{All} of the opinions on the following tracts are included in the Tri-State files and can be identified by tract number on Exhibit XII-O.

AEP Tract Numbers

Private Tract Numbers

A portion of the title opinion process was to identify exceptions to a clear title. Mr. Cabbage had developed exceptions for each title and set forth the conditions necessary for resolutions of these title exceptions through curative actions. A program to cure these title exceptions was in order and is a necessary step that must be pursued to clear title to the individual tracts of land.

3.7 PROPERTY SURVEY PROGRAM

An important part of the Tri-State Land Management Program was the verification of the boundary descriptions of both AEP and private property land tracts. These individual tract surveys were necessary to confirm that property descriptions could be verified by actual field survey and would assist in developing clear title to the property.

This work was handled as a subcontract of Fluor and the bid package was divided into survey work for AEP tracts (Exhibit XII-P), private tracts (Exhibit XII-Q), and confirmation of aerial survey contour maps. Following a

EXHIBIT XII-0

Exhibit XII-0 is considered confidential information by The American Electric Power Company. A review of this Exhibit will require written permission from AEP.

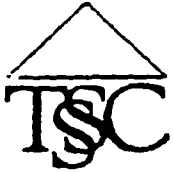


EXHIBIT XII-P

M. D. Burke
L. S. Rathbun
W. M. Scriber
TS File

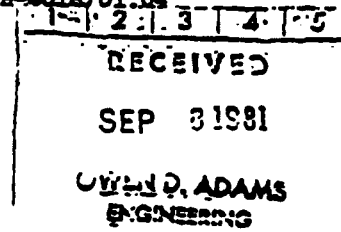
TRI-STATE SYN FUELS COMPANY

September 2, 1981

Subject: Property Boundary
Survey

No.: TITH-0018/01.04

To: O. D. Adams
From: R. A. Jones, Jr.



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R. A. Jones, Jr.
R. A. Jones, Jr. *dec*
Resident Manager

RAJ:RFK:rg

EXHIBIT XII-Q

competitive bidding process, the contract was awarded to Morley and Associates of Evansville, Indiana on January 18, 1982 (contract copy in Tri-State Files).

Morley and Associates obtained the property descriptions from the AEP tract files maintained at the law offices of Cabbage and Thomason in Henderson, Kentucky. As the firm began their field work it was discovered there were 88 individual parcels of AEP land that required surveying rather than the 47 tracts which formed the basis for the bid. The reason for this misunderstanding lies in the fact that an AEP tract map did not identify the individual land parcels making up the tracts shown on the AEP map. These parcels were discovered by Morley and Associates as they began comparing property descriptions in the title abstract to the AEP tract map. In order to resolve this problem and remain within the contract dollar amount Morley and Associates was directed to complete all work per the contract on AEP tracts south of Highway 136 and complete only the field work on those tracts north of Highway 136 (Exhibit XII-R).

At the time when bids were requested, the AEP-Zion property tracts were not included in the bid package

The timing on these activities was early March 1982 following the downsizing of the plant and it had become apparent that the entire solid waste disposal area for a full size plant would no longer be required to support a 1/4 to 1/3 size plant. Exhibit XII-Q indicates that the survey bid for the private property included land to support a full size plant and an exchange of property in the solid waste for the Zion tracts seemed feasible. This idea was explored with both the Tri-State-Irvine engineering team and Morley and was deemed to be acceptable by all parties (see Exhibit XII-S). Due to the termination of the project the private property portion (now to include the Zion tracts) of the survey contract with Morley and Associates was cancelled.

3.8 EXHIBIT SUMMARY OF AEP PROPERTY TRACTS

Exhibit XII-T provides a summary of the activities completed on the AEP tracts of land in regards to the development of title opinions and survey work.

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EXHIBIT XII-R

TEXAS 
EASTERN

INTEROFFICE CORRESPONDENCE

TO: R. A. Jones

CO/DIV: Synfuels

FROM: W. M. Scriber

DATE: March 29, 1982

SUBJECT: Fluor Contract No. 835504-0-K005-Morley & Associates
Ref. No. THTI-0046

As you are aware Roger Fincher and I met on March 24 with James Morley and Lee McClellan of Morley & Associates to discuss the additional number of property parcels that were found during the examination of the property descriptions.

Bill

WMS/ca

xc: O. D. Adams
P. M. Anderson
M. D. Burke
R. Fincher
M. N. Kelley
L. S. Rathbun

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EXHIBIT XII-S

TEXAS 
EASTERN

INTEROFFICE CORRESPONDENCE

TO: M. D. Burke

CO/DIV: Synfuels

FROM: W. H. Scriber

DATE: March 19, 1982

SUBJECT: Zion Site Survey Work

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EXHIBIT XII-T

Status of Tri-State Land Program
AEP/Franklin Realty Property

<u>AEP Tract Number</u>	<u>Number of Parcels</u>	<u>Property Survey</u>		<u>Title Opinions</u>
		<u>Field Work Complete</u>	<u>Drawings Complete</u>	
A-1	1			
A-2	1			
A-3	1			
A-4	1			
A-5	2			
A-6	1			
A-7	1			
A-8	1			
A-9	1			
A-10	1			
A-11	1			
A-12	3			
A-13	1			
A-14	3			
A-17	3			
A-18	2			
A-22	3			
1	1			
2	1			
4	2			
5	1			
6 & 7	1			
8	1			

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<u>AEP Tract Number</u>	<u>Number of Parcels</u>	<u>Property Survey Field Work Complete</u>	<u>Drawings Complete</u>	<u>Title Opinions</u>
9	1			
9A	1			
10	1			
11	1			
12	4			
15	2			X
16	1			
17	1			
18	1			
23	2			
23A	1			
26	1			
27	4			
28	1			
30	1			
31	3			
B-2	2			X
B-3	1			X
C-1	1			
C-4	1			
C-5	1			
C-36	5			
C-63	1			X
C-66	2			X

<u>AEP Tract Number</u>	<u>Number of Parcels</u>	<u>Property Survey Field Work Complete</u>	<u>Drawings Complete</u>	<u>Title Opinions</u>
D-1	1			
D-2	1			X
D-4	1			X
D-5	3			X
D-14	1			X
D-34	6			X
D-37	1			
Z-1	1			X
Z-3	1			X
Z-4	1			X
Z-5	1			X
Z-6	2			X
Z-11	1			X
Z-7	1			X
Z-8	1			X
G-17	1			X
B-1	1			X
D-35	1			X
<u>Private Tracts</u>				
C-67 (J. Pierce)				X
C-68 (J. Builey)				X
D-3 (J. Builey)				X

EXHIBIT '1-U

LAND MANAGEMENT PROGRAM

MAJOR CONTACTS

<u>Company & Address</u>	<u>Individual</u> *	<u>Title/Position</u>	<u>Telephone</u>
<u>American Electric Power</u> P. O. Box 18, Bowling Green Station New York, New York 10004	W. J. Prochaska*	Asst. Gen. Counsel	212-440-9000
P. O. Box 487, Canton OH 41701	R. H. Walters	Dir. Land Management	216-452-5721
Henderson, Kentucky 42420	Charles Scates	Property Supervisor	502-533-9262
<u>Cubbage & Thomason</u> P. O. Box 17, Henderson, KY 42420	B. C. Cubbage, Jr.*	Attorney	502-827-5635
P. O. Box 17, Henderson, KY 42420	D. H. Thomason	Attorney	502-827-5635
<u>Boehl Stopher Graves & Deindoerfer</u> Louisville Trust Bank Bldg. 1 Riverfront Plaza, Louisville, Kentucky 40202	J. K. Streepey*	Attorney	502-589-5980
<u>Morley & Associates</u> 605 S.E. Seventh Street Evansville, IN 47713	J. Q. Morley L. A. McClellan	President Associate	812-464-9585 812-464-9585
<u>G. R. Bandy & Associates</u> 636 Madison Ave. - Coppin Bldg. Suite 605, Covington, KY 41011	G. R. Bandy*	President	606-431-8594
<u>Kentucky Department of Energy</u> P. O. Box 11888 Iron Works Pike, Lex., KY 40511	B. D. Williams	Unknown	606-252-5535

*KEY CONTACT

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EXHIBIT XII-V
TE SYNFUELS CENTRAL FILES
Critical/Important Items

<u>File</u>		<u>Date</u>
<u>Number</u>		
<u>CONTRACTS/AGREEMENTS</u>		
F-1.1	TE - TG Partnership Agreement	02-05-81
F-1.2	Tri-State/Commonwealth Agreement	05-18-81
F-1.3.1	AEP Plant Site Option Agreement	08-24-81
F-1.3.2	AEP Substitute Airport Site Option Agreement	08-24-81
F-1.4.1	Assignment of Plant Site Option Agreement (Draft)	12-09-81
F-1.4.2	Assignment of Substitute Airport Site Option Agreement (Draft)	12-09-81
F-1.5.1	Short Form - Plant Site Option Agreement	08-24-81
F-1.5.2	Short Form - Substitute Airport Site Option Agreement	08-24-81
F-1.6	Private Property Option Agreement (Draft)	03-10-82
F-1.7	Airport Master Planning Study Agreement	07-24-81
F-1.8	Property Surveying Contract	01-18-82

CORRESPONDENCE/NOTES

F-2.1	AEP Property	
F-2.1.1	Tract Files - Individual (Includes Access Permits, Title Opinions, Survey Results)	
F-2.1.2	Miscellaneous Correspondence	
F-2.2	Private Property	
F-2.2.1	Tract Files - Individual (Includes Access Permits, Title Opinions, Survey Results)	
F-2.2.2	Miscellaneous Correspondence	
F-2.3	Correspondence with G. R. Bandy (Airport Relocation Study)	
F-2.4	Correspondence with KDOE, R. Preston (Airboard), various attorneys concerning Radio Tower Issue	
F-2.5	Correspondence Concerning Legal Property Survey	

EXHIBIT 11-W
LAND MANAGEMENT PROGRAM

MAJOR REFERENCE DOCUMENTS*

<u>Item</u>	<u>Description</u>	<u>Author</u>	<u>Date</u>	<u>Location</u>	<u>Utility**</u>
Plant Site Option Agreement	KDOE option for AEP Property	KDOE/AEP	08/24/81	TS File Rm	3
Alternate Airport Site Option Agrmt.	KDOE option for AEP Property	KDOE/AEP	08/24/81	TS File Rm	3
Airport Master Planning Study Contract	Planning study contract for relocation of Henderson City/County Airport	Tri-State	07/24/81	TS File Rm	3
Survey Contract	Survey of real property for boundary verification	Fluor	01/18/82	TS File Rm	3
Title Opinions and Survey Maps	Title opinions of individual property tracts and boundary survey maps	B. C. Cabbage J. Q. Morley	various	TS File Rm (tract files)	3
Private Property Option (Draft never agreed to by KDOE & TS)	Document to be used by KDOE to option private property	KDOE	various	TS File Rm	2
Maps of property ownership		various	---	TS File Rm	2
Airport Relocation Study	Planning study for relocation of Henderson City/County Airport	G. R. Bandy & Associates	06/82	TS File Rm	3

* Reports, maps papers, reference/research groups, schedules
 ** Utility 3 - very important, 2 - useful, 1 - questionable value

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I

XIII

Economic Analysis

Prepared by: Robert E. Honeyman - Project Analyst
Judy F. Kochel - Project Planning Coordinator
James M. Hossack - Project Planning & Control
Manager

1.0 INTRODUCTION

Economic analyses of the Tri-State Project were prepared on a continual basis throughout the project's life to assess financial viability. Initially a relatively simple computer program, GEM, was used for economic analysis. During 1981 the transition to the more complex SEEM program permitted more precise analysis.

Various economic analyses were used within the Project Team to help optimize the form of the project and also to communicate with the management at Texas Eastern, Texas Gas, the DOE and the SFC.

It was primarily because the project did not look financially attractive in early 1982 that it was difficult to attract additional partners or to secure SFC support, both of which were necessary if the project was to continue. Accordingly, the project was terminated in the first half of 1982 for economic rather than technical reasons.

1.1 SCOPE OF WORK

The primary tasks were to evaluate the project's financial attractiveness and to find an optimal size and process configuration. The results then had to be tailored so that they addressed, respectively, project staff, Texas Eastern management, Texas Gas management, the DOE and the SFC. Each analysis had three stages:

1. Data collection
2. Data processing
3. Interpretation and presentation of results.

1.1.1 Data Collection

Input data came from several sources. Fluor, the engineering contractor for the Tri-State project, provided information specific to the plant. This information included estimates of such items as capital expenditures, operating costs, and production rates and volumes.

Unit coal costs were estimated by project staff based on price quotations from potential suppliers. Chem Systems, Inc. generated a forecast of product prices as part of a market study commissioned by Tri-State. Texas Eastern's Corporate Planning Division regularly supplied the project with macro-economic forecasts of interest rates and inflation rates.

1.1.2 Data Processing

The Synfuels Economic Evaluation Model (SEEM) was used to process all the available information. SEEM is a large computer program designed to handle over 12,000 pieces of data. A specific format was necessary for entering the data into the computer; this made SEEM somewhat difficult to manage. However, the output from SEEM was invaluable.

This output included cash flow statements, income statements, balance sheets, capital expenditure summaries, and discounted cash flow rates of return.

1.1.3 Interpretation and Presentation of Results

Economic analysis were prepared for two different audiences. One audience consisted of members of the project team. Analyses were prepared to help determine the best process/product slate and plant size and to help evaluate engineering alternatives. Most of these results were based on relative IRR rankings.

The second major audience was the senior management of Texas Eastern and Texas Gas, the DOE, SFC and potential partners. These analyses illustrated the sensitivity of the project IRR to changes in such things as product prices, coal costs, operating rates, and different financial structures or SFC support levels.

1.2 MAJOR OBJECTIVES & GOALS

The major goals were to help define a plant which would yield the best financial results at an acceptable level of risk and to demonstrate the plant's sensitivity to changes in the outside environment. Numerous alternatives had to be evaluated, including:

o Process Configuration

- Fischer-Tropsch
- SNG/Methanol
- SNG/MTG
- SNG
- Sulfur or no sulfur
- Styrene or ethylene
- Sized coal or Krupps/Kopper gasifiers
- Barge dock or no barge dock

- o Plant size
 - Full size
 - 70%
 - 50%
 - 25%

- o Financial Structure
 - 40% equity
 - 25% equity
 - SFC loan guarantees
 - SFC price supports

Different risks were evaluated. Technical risks were incorporated in contingency estimates. Other risks, caused by changes in the external environment, were evaluated through sensitivity studies. These studies looked at possible changes in product prices, coal prices, operating costs, interest rates, launch curves, construction costs, operating rates, and construction completion dates.

It was necessary to report findings and conclusions to the different groups mentioned earlier. Each audience required an analysis which contained only relevant information. Clarity and conciseness were of major importance.

1.3 KEY INDIVIDUALS

Key individuals and key organizations are listed in Exhibit XIII-A.

1.4 ESTIMATED EXPENDITURES

Estimated expenditures for economic analysis is summarized in Exhibit XIII-B.

EXHIBIT XIII-A
PROJECT PERSONNEL

Tri-State

<u>Name</u>	<u>Title</u>	<u>Dates of Service</u>	<u>Area of Responsibility</u>
M. White	Manager	-8/80	Economics
J. C. Hejl	Coordinator	-9/80	Economics
J. M. Conaway	Manager	8/80-7/81	Economics, model definition, management presentation
J. F. Kochel	Coordinator	10/80-5/82	Economic evaluations, model definition, sensitivity analysis, presentations
R. E. Honeyman	Analyst	7/81-5/82	Economics, sensitivities model verification
J. M. Hossack	Manager	10/81-5/82	Identification and evaluation of alternative case studies and management presentation of the results.

XIII-A (continued)

Texas Eastern Support

<u>Name</u>	<u>Title</u>	<u>Area/Type Assistance</u>	<u>Role</u>
Allen Dishongh (2)	Supervisor	Computer Service/ Programming SEEM	Coordinator
John Summers (2)	Supervisor	Computer Service/ Programming SEEM	Coordinator
Camilla Muriby (3)	Lead Programmer	Computer Service/ Programming SEEM	Design and Programming
Nancy Hamff (3)	Senior Programmer	Computer Service/ Programming SEEM	Design, Programming, and Maintenance
Mary Dawkins (1)	Programmer	Computer Service/ Programming SEEM	Model Reports
John Callahan (2)	Tax Attorney Supervisor	Federal Tax/ Interpretation of new tax status	Advisor
Larry McGowen (1)		State Tax/ Kentucky taxes	Advisor

Texas Gas Support

<u>Name</u>	<u>Title</u>	<u>Area/Type Assistance</u>	<u>Role</u>
Larry Elliott (1)	Manager	State Tax/ Kentucky tax structure impact assistance	Interpretation of Kentucky tax code and review of proposed modifi- cations.

- 3 - Key
- 2 - Impact but on "as required basis"
- 1 - Occasional Use

EXHIBIT XIII-B

Estimated Expenditure for Economic Analysis
(000's)

<u>Major Area</u>	<u>Expenditures</u>		<u>Estimated Total for all of Phase I</u>
	<u>02/06/81</u>	<u>06/15/82</u>	
	<u>Budget*</u>	<u>Actual</u>	
Development of SEEM model	\$ 61	\$ 57	\$ 80
Computer operating costs	14	—**	175
Salaries, overhead, travel, etc.	<u>125</u>	<u>125</u>	<u>300</u>
Total	<u>\$200</u>	<u>\$182</u>	<u>\$555</u>

*Estimated - actual Tri-State budget did not segregate economic analysis costs from Financing costs.

**Actual costs incurred not known; no invoice received or anticipated for computer operating costs through May, 1982.

2.0 SUMMARY AND HIGHLIGHTS

2.1 HISTORY

2.1.1 Description of Work Plan

The following activities constituted the Phase I work plan for economic analysis. The plan starts with work done after the feasibility study and goes through the end of Phase I.

- o Develop SEEM. Work progressed from early 1980 through early 1982. Early work involved basic definition of the model. As programming took place, definition of specific functions, such as calculating cash flows, became necessary. SEEM was delivered in several stages. Each stage had to be verified and tested.
- o Determine process and location. Work took place during the final quarter of 1981. Flour produced estimates for four basic process alternatives - Fischer-Tropsch, SNG/Methanol, SNG/MTG, and SNG. Also, estimates were made using a Wyoming coal in a Wyoming location for two of the processes - SNG/MTG and SNG/Methanol. Additional estimates were made for those two processes using a Wyoming coal in a Kentucky location. All alternatives were analyzed.
- o Determine size. Work took place during the last quarter of 1981 and the first quarter of 1982. The table shows the sizes that were evaluated for the different alternatives.

Size Determination

<u>Process</u>	<u>Size</u>				
	<u>100%</u>	<u>75%</u>	<u>70%</u>	<u>50%</u>	<u>25%</u>
F-T	X			X	
MTG	X		X	X	X
Methanol	X	X			
SNG	X	X			

- o Determine financial structure. Work took place during the second quarter of 1982. At issue was how much leveraging could the project support, both in terms of possible loan default and in terms of debt capacity. The choice was between using 40% equity, 25% equity and 13% equity.
- o Determine SFC support. Work took place during the second quarter of 1982 but is ongoing. SFC would allow up to \$3 billion in assistance to any one synfuels plant. The assistance could be in the form

of loan guarantees and/or price supports. An attempt was made to determine the most favorable, yet acceptable, support proposal that could be presented to the SFC.

- o Sensitivity analysis. The work effort was continuous and is ongoing. Areas which were highly sensitive to changes had to be identified. The areas which were examined most closely included product prices, capital expenditures, operating costs, operating rates, interest rates, coal costs, and delays in start of construction.
- o Evaluate the external environment. The work effort was continuous and is ongoing. Projections had to be made for items such as interest rates and inflation rates. These were included in economic analyses even though not specific to the project.
- o Determine best gasifier. The work effort took place during the second quarter of 1982. Fluor, in conjunction with Sohio, conducted a study based on 70% sized methanol plant. The study compared three different gasifiers - Lurgi, Texaco, and Westinghouse.
- o Ongoing work included optimizing the plant design, designing the best possible SFC support package, evaluating the outside environment for changes, and conducting sensitivity studies on all major variables.

2.1.2 Description of Work Completed, Key Decisions and Major Accomplishments

- o At the time Phase I began, the only economic model available to the project was GEM - the General Economic Model. GEM was a good model for a utility company because it could be used in cost-of-service applications. It had several drawbacks for the Tri-State Project which made development of a new model necessary. GEM had trouble computing investment tax credits correctly. It had trouble calculating long-term debt. Only one depreciation rate could be used. Only one capital expenditure per year was permitted. GEM allowed only one product. As a result, GEM required hours of hand calculation. And then the computer turnaround was slow.

The decision was made to create a model specifically designed to model a synfuels plant in order to correct GEM's drawback and to eliminate excessive hand calculating. The result, SEEM, was far more flexible than GEM. SEEM allowed many different

depreciation schedules, many different products. SEEM allowed many different depreciation schedules, many different products. SEEM allowed easy tax changes to conform to current tax laws. Short-term financing and long-term financing were no longer a problem. In short, SEEM was far more flexible and had far more breadth than GEM.

However, turnaround was still a problem in SEEM. Although it could handle a large amount of detail in any way that the user wanted, SEEM was still slow. This meant that management's spur-of-the-moment ideas couldn't be analyzed without a 24-hour delay.

- o One of the most critical economic analysis work products was the determination of the preferred process. As shown on Exhibit XIII-C-1 various F-T alternatives were compared with methanol/SNG, MTG/SNG, and SNG product slates. The results for both full size and reduced size (70-75%) versions of these alternatives are shown on Exhibit XIII-C-2 and XIII-C-3. It was clear that the F-T alternatives were the least attractive financially. SNG was most attractive but was rejected because of the uncertainty of SFC support for a non-transportation fuel product. SNG/MTG was the next most attractive. This process was adopted in preference to SNG/Methanol because of better profitability and because of a more established market for gasoline than for methanol.
- o Exhibit XIII-C-4 details studies evaluating the probable effect of a Wyoming location and the effect of a Wyoming coal used in Kentucky. While a Wyoming location/coal looked financially attractive, it was agreed to pursue the Kentucky location/coal alternative because of the difficulties of moving coal, the uncertain western market, water availability and timing effects caused by a relocation of the project. Nevertheless, it was important to discover that a western alternative would likely be significantly more profitable than a comparable Kentucky plant. The results of that study are summarized in Exhibit XIII-C-5.
- o Plant size was reduced from full size to "1/4" size primarily to reduce the debt to the point at which the \$3 billion SFC support level could guarantee all loans, but also to make the partnership search more likely to succeed. The financial effect of this downsizing is shown on Exhibit XIII-C-6.

Exhibit XIII C-1

TRI-STATE SYNTHOL COMPANY
Process Alternates
Summary of Cases

CASE NUMBER	1	2	3	4	5	6	7	8
DOWNSTREAM PROCESSING	Synthol	Synthol	Synthol	Synthol	Synthol	NaOH + SNG	HTG + SNG	SNG
PRODUCT SLATE	Per Feasibility Study	Per Feasibility Study	Per Feasibility Study	Per Feasibility Study	Revised See Detailed Listing	NaOH + SNG +Lurgi Products	Gasoline + SNG + LPG +Lurgi Products	SNG +Lurgi Products
GASIFIERS	Lurgi	Lurgi	Lurgi & Krupp	Lurgi & Krupp	Lurgi	Lurgi	Lurgi	Lurgi
SIzed COAL TO LURGI	2" x 1/4"	2" x 1/8"	2" x 1/8"	2" x 1/4"	2" x 1/4"	2" x 1/4"	2" x 1/4"	2" x 1/4"
LURGI CAPACITY, PER GASIFIER MM ³ /HR	46,000	33,000	46,000	46,000	46,000	46,000	46,000	46,000
LURGI AVAILABILITY	80%	80%	80%	80%	80%	80%	80%	80%
EXCESS FINES TO	Sales	Sales	Krupp	Krupp	Sales	Sales	Sales	Sales
GAS PRODUCTION	1.2 MM MM ³ /HR To Synthol	1.2 MM MM ³ /HR To Synthol	1.2 MM MM ³ /HR To Synthol	1.2 MM MM ³ /HR To Synthol	1.2 MM MM ³ /HR To Synthol	Same Volume of Pure Gas From Rectisol as Case 3	Same Volume of Pure Gas From Rectisol as Case 3	Same Volume of Pure Gas From Rectisol as Case 3
PERCENT FINES	50	50	50	40	50	50	50	50

Exhibit XIII C-2

PROCESS ALTERNATIVE COMPARISON

	UPDATED FEASIBILITY STUDY FISCHER-TROPSCH		DERATED Lurgi GASIFIER		F-T WITH KRUPP 50% FINES		F-T WITH KRUPP 40% FINES		OPTIMIZED F-T	
	CASE 1	CASE 1R	CASE 2	CASE 2R	CASE 3	CASE 3R	CASE 4	CASE 4R	CASE 5	CASE 5R
THEMAL EFFICIENCY (%)										
NET COAL CONSUMPTION (BT/D)	36,100	18,000	36,100	18,000	32,400	16,200	33,200	16,600	36,100	18,000
PRICE/T 1980\$	33	33	30	30	30	30	30	30	33	33
PRODUCT SLATE:										
- GAS (MMCF/D)	151	76	151	76	120	60	137	68	148	74
- LIQUID FUELS (BPD)	25,600	12,800	25,500	12,800	26,500	13,250	26,000	13,000	24,500	12,250
- CHEMICALS (TPD)	2,230	1,065	2,230	1,115	1,935	970	1,970	985	2,385	1,190
CAPITAL EXPENDITURES (billion)										
- 1980	\$ 4.8	2.9	4.9	2.9	5.0	2.9	4.9	2.9	5.0	2.9
- INCURRED	10.4	6.2	10.5	6.2	10.7	6.2	10.5	6.2	10.8	6.2
- NET CAPITAL	8.7	5.3	8.8	5.2	9.0	5.3	8.8	5.3	9.0	5.3
REVENUE (billion in 1993)	\$ 3.1	1.6	3.1	1.6	2.8	1.4	3.0	1.5	3.6	1.8
IRR:										
- 40% EQUITY										
- ALL EQUITY										

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Exhibit XIII C-3

PROCESS ALTERNATIVE COMPARISON

	OPTIMIZED F-T		SNG/METHANOL		SNG/MTG			SNG	
	CASE 5	CASE 5R	CASE 6	CASE 6R	CASE 7	CASE 7R	CASE 7RX	CASE 8	CASE 8R
THERMAL EFFICIENCY (%)									
NET COAL CONSUMPTION (ST/D)	36,100	18,000	33,200	24,900	33,400	23,900	23,800	30,500	22,900
PRICE/T 1980 \$	33	33	33	33	33	33	33	33	33
PRODUCT SLATE:									
- SNG (MMSCFD)	148	74	154	116	151	106	106	341	256
- LIQUID FUELS (BPD)	24,500	12,250	65,800	49,400	35,500	24,800	24,800	5,900	4,500
- CHEMICALS (TPD)	2,385	1,190	1,110	835	1,110	780	780	1,060	790
CAPITAL EXPENDITURES (BILLION)									
- 1980	\$ 5.0	2.9	3.6	2.9	3.9	2.9	2.6	3.6	2.8
- INCURRED	10.8	6.2	7.7	6.1	8.4	6.2	5.4	7.7	6.0
- NET CAPITAL	9.0	5.3	6.5	5.2	7.1	5.3	4.6	6.5	5.2
REVENUE (BILLION IN 1993)	\$3.6	1.8	2.6	2.0	3.0	2.1	2.1	2.9	2.1
IRR:									
- 40% EQUITY									
- ALL EQUITY									

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Exhibit XIII C-4

Tri-State Synfuels Company
Process Alternatives
Summary of Cases

Case Number	9	10	11	12	
Downstream Processing	MeOH + SNG	MeOH + SNG	'MTG' + SNG	'MTG' + SNG	
Product Slate	MeOH + SNG + Lurgi Products	MeOH + SNG + Lurgi Products	'MTG' + SNG LPG + Lurgi Products	'MTG' + SNG + LPG + Lurgi Products	
Plant Location	Kentucky	Wyoming	Kentucky	Wyoming	
Coal Source	Wyoming	Wyoming	Wyoming	Wyoming	
Gasifiers	Lurgi	Lurgi	Lurgi	Lurgi	
Sized Coal to Lurgi	2" x 1/4"	2" x 1/4"	2" x 1/4"	2" x 1/4"	
Lurgi Capacity, per Gasifier Nm ³ /Hr					
Lurgi Availability					
Gas Production	Same Volume of Pure Gas Ex. Rectisol As Case 3	Same Volume of Pure Gas Ex. Rectisol As Case 3	Same Volume of Pure Gas Ex. Rectisol As Case 3	Same Volume of Pure Gas Ex. Rectisol As Case 3	

Notes:

1. Zero Input/Export of Power
2. Fluor will report the quantity of fines required to support the complex.
3. Mobil 'MTG' gasoline shall have a maximum of 2 wt% durene.

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PROCESS ALTERNATIVE COMPARISON

	SNG/ METHANOL KY/KY CASE 6	SNG/MTG KY/KY CASE 7	SNG/METHANOL WY/KY CASE 9	WY/WY CASE 10	SNG/MTG WY/KY CASE 11	WY/WY CASE 12
THERMAL EFFICIENCY (%)						
NET COAL CONSUMPTION (ST/D)	33,200	33,400	36,200	36,200	36,300	36,300
PRICE/T 1980 \$	33	33	27.75	6.60	27.75	6.60
PRODUCT SLATE:						
- SNG (MMSCFD)	154	151	165	165	162	162
- LIQUID FUELS (BPD)	65,800	35,500	64,800	64,800	39,300	39,300
- CHEMICALS (TPD)	1,110	1,110	300	300	295	295
CAPITAL EXPENDITURES (billion)						
- 1980	\$ 3.6	3.9	3.1	3.5	3.3	3.8
- INCURRED	7.7	8.4	6.4	7.4	6.9	7.9
- NET CAPITAL	6.5	7.1	5.5	6.3	5.9	6.7
REVENUE (billion in 1993)	\$2.6	3.0	2.7	2.5	3.1	3.0
IRR:						
- 40% EQUITY						
- ALL EQUITY						

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Exhibit XIII C-6

TRI-STATE PROJECT SCALE COMPARISON

	CASE 7 Full-sized MTG	CASE 7R 70%-sized MTG	CASE 13 "Quarter"-sized MTG
Net Coal Consumption			
- Short Tons Per Day	33,400	23,900	8,200
- Million Tons Per Year	12.2	8.7	3.0
- Price Per Ton (1982)	\$38	\$38	\$38
Thermal Efficiency			
Product Slate			
- SNG (MMSCFD)	151	105	37
- Gasoline (BPD)	37,400	24,800	9,300
- Chemicals (TPD)	1,110	780	260
- Memo: BOED	55,000	39,000	15,500
Capital Expenditures (Billion)			
- 1980 Dollars	\$4.0	\$3.0	\$1.4
- 1982 Dollars	4.8	3.6	1.7
- Incurred Dollars	7.9	5.8	2.8
- Net Capital to be Financed	6.6	5.0	2.5
Revenue (Billion, 1993)			
Operating & Maintenance (Billion, 1993)	\$2.9	\$2.0	\$0.7
Coal Cost	1.1	0.8	0.3
IRR:			
- 25% Equity			
- All Equity			

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- o Flour attempted to optimize Case 7R (reduced size SNG/MTG) with Cases 7R1-7R7. These cases are detailed in Fluor's 27A report and the results are summarized on Exhibit XIII-D. None resulted in a significant improvement over the base case, Case 7R.
- o Exhibit XIII-E, "Tri-State Synfuels Company SNG-MTG Case 13 Economic Analysis", details the results of the Tri-State base plan, including sensitivity to external changes (interest rate, inflation, etc.) and to internal changes (capital expenditures, operating rate, etc.).
- o Sohio funded a study completed by Fluor comparing the Tri-State project with Lurgi, Texaco and Westinghouse gasification. The details of the study are in the Tri-State files; the results are summarized on Exhibit XIII-F. Westinghouse appears more thermally and financially attractive than Texaco, which in turn appears more thermally and financially attractive than Lurgi.
- o The financial structure debt/equity ratio was revised from 60/40 to 75/25 when it became clear that the SFC/financial community would accept a lower equity percentage. This obviously increased the return on the partners' equity.
- o An effort was made to identify reasonable SFC loan guarantee/price support assumptions. The results of this work are included in the project synopsis submitted to the SFC on May 18, 1982 and summarized on Exhibit XIII-G. Much work remains to be done in this area.

2.1.3 Major Problems and Solutions

The problems with SEEM might have been avoided if available computer programs from outside vendors had been more fully investigated. For example, a consulting company in Boston - Temple, Barker, & Sloan - owns a model which is nearly as flexible and as broad as SEEM. Indeed, that model will perform risk simulation on many variables. However, their model has a turnaround measured in seconds, not hours. The cost of this program would have been in the range of \$25,000 to \$50,000.

Throughout the early part of the project, problems were encountered in understanding the engineering estimates of capital costs, product flows, feedstock volumes, and coal costs and product prices. These problems were resolved only after much time was spent communicating with various people associated with the project. Such problems can be avoided by carefully assessing the analyst's needs and creating forms

Exhibit XIII E

TRI-STATE SYNFUELS COMPANY

SNG-MTG

CASE 13

ECONOMIC ANALYSIS

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INTRODUCTION

Tri-State Synfuels Project is expected to require an incurred investment of \$2.8 billion. The preliminary engineering was done by Fluor Engineers and Constructors, Inc. The plant will gasify coal using dry bottom Lurgi gasifiers. Downstream, this gas will be converted to a synthetic natural gas (SNG) and methanol. A process designed by Mobil Corporation will then convert the methanol into gasoline.

The following pages detail the assumptions underlying Schedule I and the Economic Feasibility Analysis of this project.

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BREAKDOWN OF PLANT INVESTMENT
(\$MM)

Direct Field Costs (January, 1902 \$)	
Process	\$ 275
Utilities	259
Offsites	<u>229</u>
Total Direct Field Costs	\$ 763
Indirect Office	470
Contingency	247
Other	<u>272</u>
Total Estimate	\$1,752
Inflation	740
Capitalized Interest	<u>333</u>
Incurred Investment	<u>\$2,825</u>
Tax Shield	<u>(358)</u>
Net Capital Required	<u>\$2,467</u>

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CAPITAL EXPENDITURE TIMING
(\$MM)

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>Total</u>
Direct Field Cost (1982 dollars)	\$ 67	\$ 203	\$ 293	\$ 200	\$ 763
Contractor Charges & Contingency (1982 dollars)	63	189	276	189	717
Other (1982 dollars)	<u>25</u>	<u>8</u>	<u>103</u>	<u>56</u>	<u>272</u>
Total Plant Estimates	\$ 155	\$ 400	\$ 752	\$ 445	\$1,752
Inflation	36	132	329	243	740
Capitalized Interest	<u>8</u>	<u>39</u>	<u>110</u>	<u>176</u>	<u>333</u>
Total Expenditures (incurred dollars)	<u>\$ 199</u>	<u>\$ 571</u>	<u>\$1,191</u>	<u>\$ 864</u>	<u>\$2,825</u>

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CAPITAL EXPENDITURES

The capital expenditures estimates have been prepared by Fluor Engineers, Sasol, Ltd., and Tri-State personnel; they are expressed here in instantaneous, January 1, 1982 dollars. Early estimates were developed using Sasol II as a base. Subsequent work, such as the South African coal test, has resulted in far greater accuracy in areas such as coal consumption and product output.

The plant should require 3 1/2 - 4 years to build with construction beginning in the second quarter of 1984. Schedule II indicates the expected timing of the construction expenditures.

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TAX SAVINGS DURING CONSTRUCTION
(\$MM Incurred)

<u>Source</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>Total</u>
Investment Tax Credit	\$ 15	\$ 48	\$ 76	\$ 56	\$195
Energy Tax Credit	2	8	--	9	19
Interest	<u>4</u>	<u>17</u>	<u>48</u>	<u>75</u>	<u>144</u>
Total	<u>\$ 21</u>	<u>\$ 73</u>	<u>\$124</u>	<u>\$140</u>	<u>\$358</u>

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TAXES AND FINANCING

The partners in Tri-State will have in excess of one-third of a billion dollars in federal tax savings available to them during the construction period. Nearly \$200 million will come from 10% Investment Tax Credit for which some 80% of the expenditures will qualify.

Another \$20 million will come from the 10% Energy Tax Credit (ETC). The ETC amount would be ten times greater were the project to forego Synthetic Fuels Corp. (SFC) Loan Guarantees.

Interest paid during construction will yield another \$150 million in tax savings. This tax reduction of over \$350 million will reduce the financing requirement to \$2.5 billion.

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SOURCES OF INVESTMENT FUNDS
(\$MM Incurred)

<u>Source</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>Total</u>
Debt	\$ 133	\$ 374	\$ 800	\$ 543	\$1,850
Equity	45	124	267	181	617
Tax Savings	<u>21</u>	<u>73</u>	<u>124</u>	<u>140</u>	<u>358</u>
Total Investment	<u>\$ 199</u>	<u>\$ 571</u>	<u>\$1,191</u>	<u>\$ 864</u>	<u>\$2,825</u>

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DEBT AND FINANCING

13% of the \$2.0 billion required to build the plant will come from federal tax savings. Of the balance, 75% will come from federally guaranteed long-term debt. The rest of the required funds will be provided by the partners in tri-State.

The debt is expected to carry interest charges of 12% both during and beyond construction. During construction, interest will be treated as a current expense for tax purposes; it will be capitalized on the project's books as part of the asset basis.

The debt will be made available as it is needed during construction. It will be paid off in equal retirements of principal over 20 years following the start of operations. The timing of the debt draw-down is detailed in Schedule IV.

The \$1.8 billion in debt will be guaranteed by the Synthetic Fuels Corp. No provisions have been made for price supports in this study.*

There is some risk associated with the tax savings. If the plant fails to go into production, the project would lose all \$214 million in tax credits, increasing the partners' exposure to \$931 million.

*The formal SFC submission was based on a different set of economic assumptions and included provisions for \$3 billion in price supports.

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INTEREST AND INFLATION RATES

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985 & Beyond</u>
Interest	12%	12%	12%	12%	12%	12%
GNP†	9.0%	9.1%	6.6%	6.2%	6.7%	6.5%
Construction Cost*	4.4%	2.2%	1.4%	1.5%	1.4%	1.4%
Operating Cost*	1.0%	1.0%	1.0%	1.0%	1.0%	-
Feedstock*	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Chemicals & Catalysts*	1.0%	1.0%	1.0%	1.0%	1.0%	-

*Rates of inflation in excess of GNP rate of inflation.

†Source, February 22, 1982 Corporate Economic Forecast

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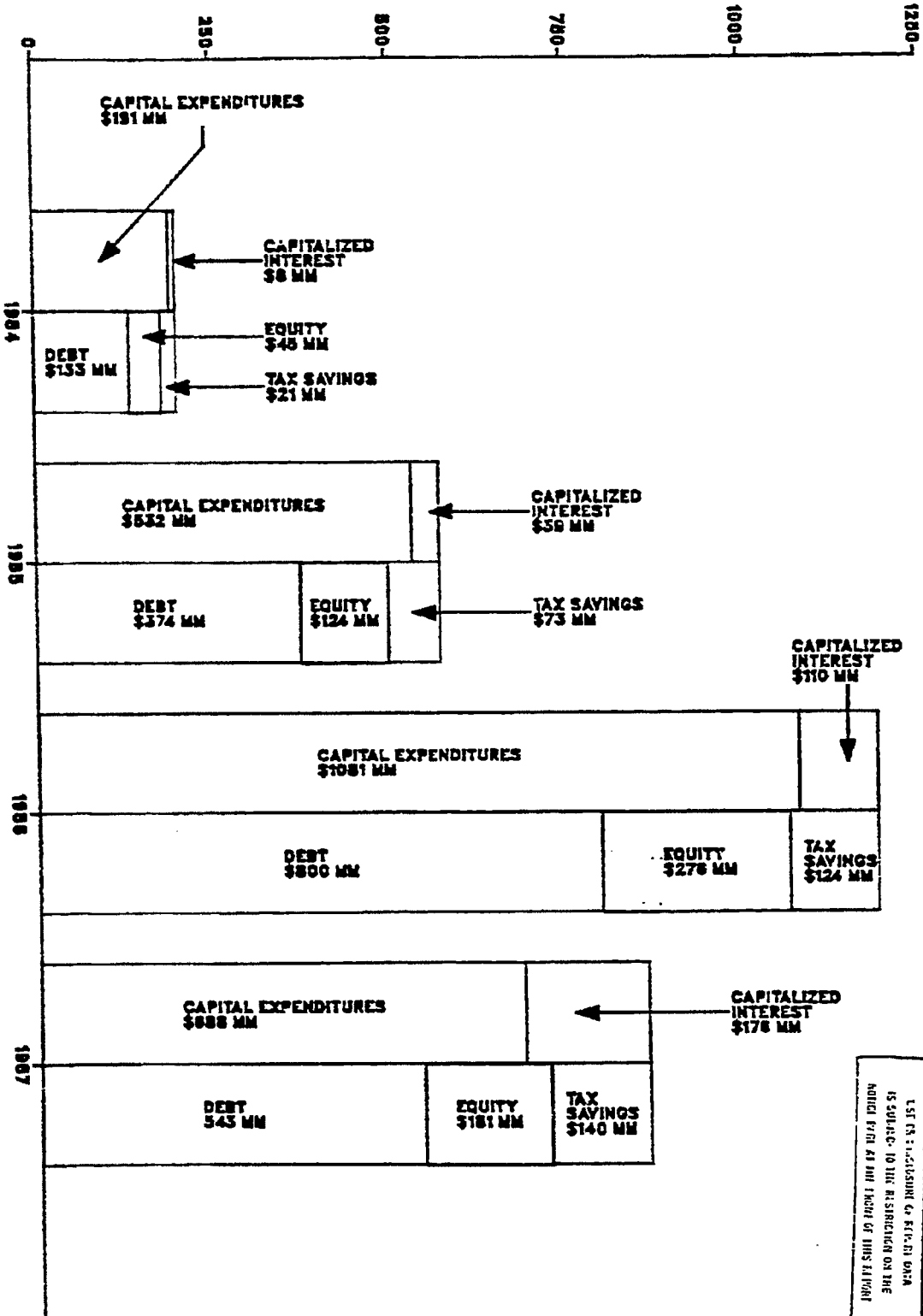
INFLATION

The inflation and interest rates shown in Schedule V are consistent with projections made by the Corporate Planning Division of Texas Eastern Corporation. These forecasts assume that prices will rise less rapidly in the future than they have in the recent past. After 1985, it is expected that the GNP price deflator will increase only 6.5% per year. Between now and 1985, the rate of price inflation will slow from last year's rate of 9.1%.

Construction costs are expected to rise more rapidly than prices in other sectors of the economy. In 1980, construction costs grew 4.4% faster than the GNP price deflator. Between now and 1985, construction costs should grow at a real rate of 1%-2% per year. After 1985, the real growth component is expected to increase by a little less than 1 1/2% per year.

Operating costs are also expected to rise somewhat more quickly than the GNP price deflator. But by 1985, little difference in these two inflation rates is anticipated.

\$Millions



SOURCES AND USES
CAPITAL EXPENDITURES

USE OF FINANCING & REVENUE
IS SUBJECT TO THE RESTRICTION ON THE
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SOURCES & USES OF FUNDS DURING CONSTRUCTION

Schedule VI presents a graphic representation of the project cash flow during the construction period. The bars on the left show the breakdown of the costs of building the plant. The bars on the right represent the sources of project funding.

Only 27% of total capital expenditures are made prior to 1986, the bulk of the expenditures occurring in 1986 and 1987. Tax benefits provide 13% of project financing.

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