STRUCTURAL DEVELOPMENT STUDY NO. 28

Solid Waste Disposal Study

March 15, 1982

1.5 SOLID WASTE DISPOSAL STUDY

Table of Contents

SOLID WASTE DISPOSAL STUDY

1.S.1.0 SCOPE OF WORK

This study evaluates the feasibility of using solid waste disposal sites P,A or a combination of P and A based on estimated solid waste volumes ranging from 50 x 10^6 to 150 x 10^6 cubic yards.

1.1 The solid waste disposal sites P,A,B,C and D are defined in Appendix D, Radian Corporation Memorandum Number T0505. Sites B,C and D were found to be inadequate; thus, they were not included in this study.

1.2 Estimated solid waste volumes are based on data, as shown in Appendix(s) A,B,C and D.

1.3 The waste pile elevation, as a function of waste volume, is plotted in figure 5. The waste pile elevations are based on maintaining the existing topography. Waste pile elevations have been tabulated in Table II for various waste volumes. Figures 2 through 4 show profiles through the proposed ash piles and thus illustrate the aesthetic desireability of each possibility.

1.4 Conveyor ROW from plant site to ash disposal site

1.S.2.0 RECOMMENDATION

2.1 The elevation at the top of the waste pile is of primary concern and should be evaluated from an aesthetic point of view. On that basis, Fluor recommends the following:

WASTE VOLUME	RECOMMENDED SITE (S)
0 to 50 x 10^6 CY	P
50 to 100 x 10^6 CY	A
100 to 150 x 10^6 CY	P + A

2.2 The Conveyor from the ash handling area should be south to disposal site "A" and then West to Site "P" as shown on Appendix E.

SOLID WASTE DISPOSAL STUDY

1.5.3.0 COMMENTS

3.1 Fluor anticipates a need for substantial quantities of imported fill during site preparation of the proposed plant site. Borrowing of suitable fill from the waste disposal site would provide the necessary fill and simultaneously reduce the height of the waste pile(s) in direct proportion to borrowed quantities.

3.2 The solid waste site should be lined with a suitable material to prevent degradation of groundwater. In addition, a sub-drainage system should be installed to monitor the filtration.

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TABLE I
SOLID WASTE QUANTITIES

UNIT	COMPOSITION (WT % ARE FOR CASE I U.O.N.)	SPECIFIC VOLUME LBS/CF	TONS/DAY CASE I APP. A	TONS/DAY CASE II NOTE 1 APP. B	TONS/DAY CASE III NOTE 2 APP. B	TONS/DAY CASE IV NOTE 4 APP. C	VOLUME CY/DAY CASE I	VOLUME CY/DAY CASE II	VOLUME CY/DAY CASE III	VOLUME CY/DAY CASE IV
SYNTHOL CATALYST & GASIFIER	GASIFIER ASH-9.12%	50	2064	3816 △1	6922	5092	3058	5653 △1	10255	7455
BOILER	BOILER HEAVY ASH 18.5% BOILER FLY ASH 81.5%	35 35	683	1496	2892	890	1446	3166	5697	1884
ENVIRON-MENTAL SYSTEMS	4-5% SLURRY TO ASH HANDLING	62.4	22	22	22	21.6	26	26	26	26
SCRUBBER	H_2O 28.93 WT % Na_2SO_3 0.52 WT % Na_2SO_4 2.55 WT % $CaSO_4$ 41.22 WT % FLY ASH 25.78 WT %	85	2527 △1	2527 △1	2527 △1	2527 △1	2202 △1	2202 △1	2202 △1	2202 △1
					TOTAL VOLUME PER DAY		6732	11047	18180	10867
VOLUME 25 YEAR PLANT LIFE △1							57.2×10^6 CY	93.9×10^6 CY	154.5×10^6 CY	92.4×10^6 CY
VOLUME STRIPPING OF PROPOSED PLANT SITE DURING SITE PREPARATION (UPPER 1.0')							3.4×10^6 CY	3.4×10^6 CY	3.4×10^6 CY	3.4×10^6 CY
TOTAL VOLUME - SOLID WASTE △1							61×10^6 CY	97×10^6 CY	158×10^6 CY	96×10^6 CY

NOTES:

1. FOR CASE II : BOTH GASIFIER AND BOILER AT 18.24% ASH, ALL ELSE BEING EQUAL.
2. FOR CASE III : BOTH GASIFIER AND BOILER AT 32.94% ASH, ALL ELSE BEING EQUAL.
3. REFER TO APPENDIX A & B FOR DATA BASIS.
4. FOR CASE IV : SEE APPENDIX C.

TEXAS-STATE SYNFUELS COMPANY
INDIRECT COAL LIQUEFACTION
WESTERN KENTUCKY

FLUOR
CALCULATIONS and SKETCHES

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TABLE II
SOLID WASTE PILE ELEVATIONS

SITE	ACRES	SOLID WASTE VOLUME (CY)	TOP OF PILE ELEV (SEE FIG 2)
P	977	50×10^6	464
		75×10^6	490
A	1280	50×10^6	450
		75×10^6	464
		100×10^6	477
P + A	2257	75×10^6	445
		100×10^6	456
		125×10^6	464
		150×10^6	474

NOTE:
FOR CONVENIENCE, WASTE PILE ELEVATIONS HAVE BEEN TABULATED IN THIS TABLE II FOR SOLID WASTE. VOLUMES RANGE FROM 50×10^6 - 150×10^6 CUBIC YARDS

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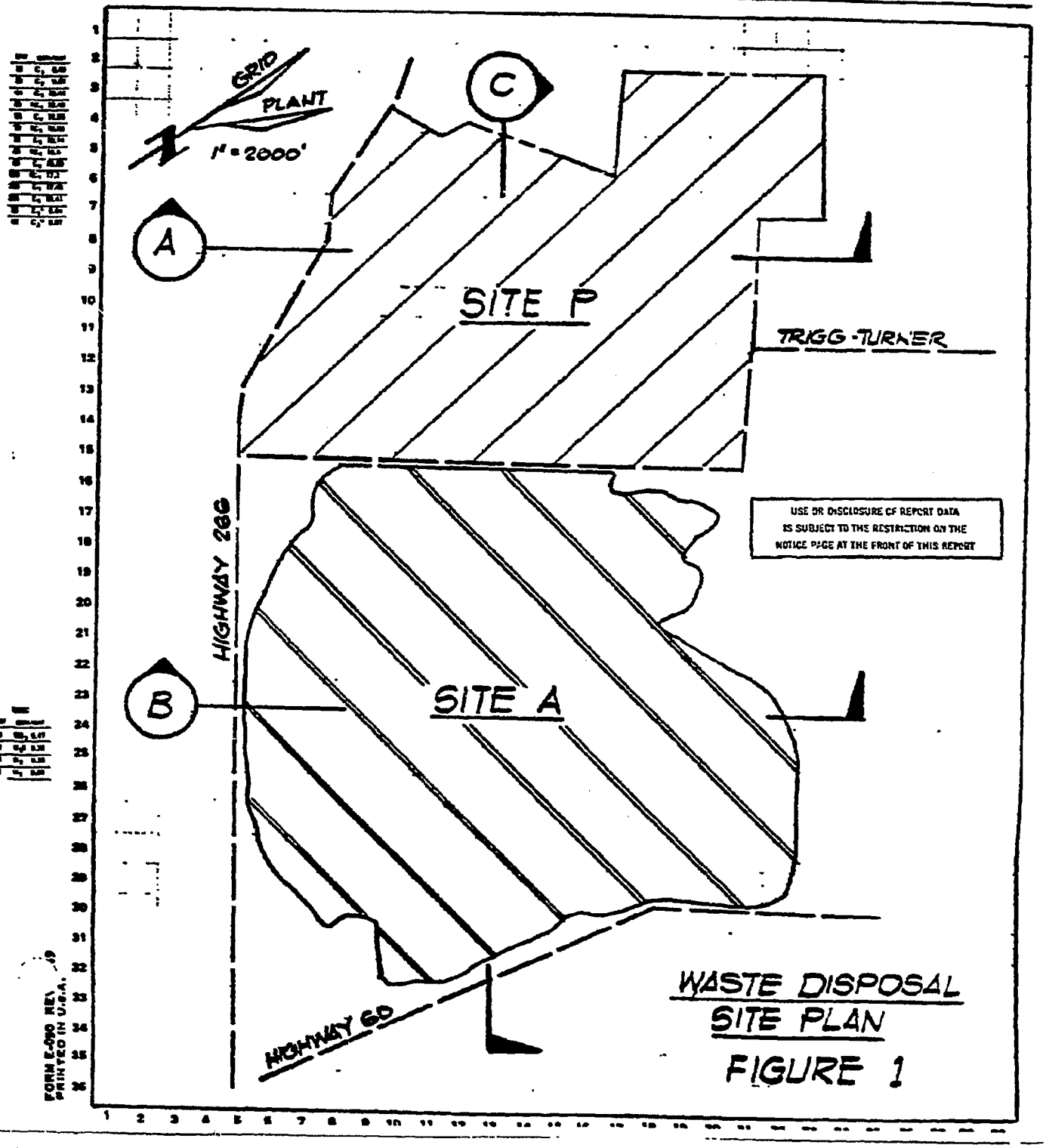
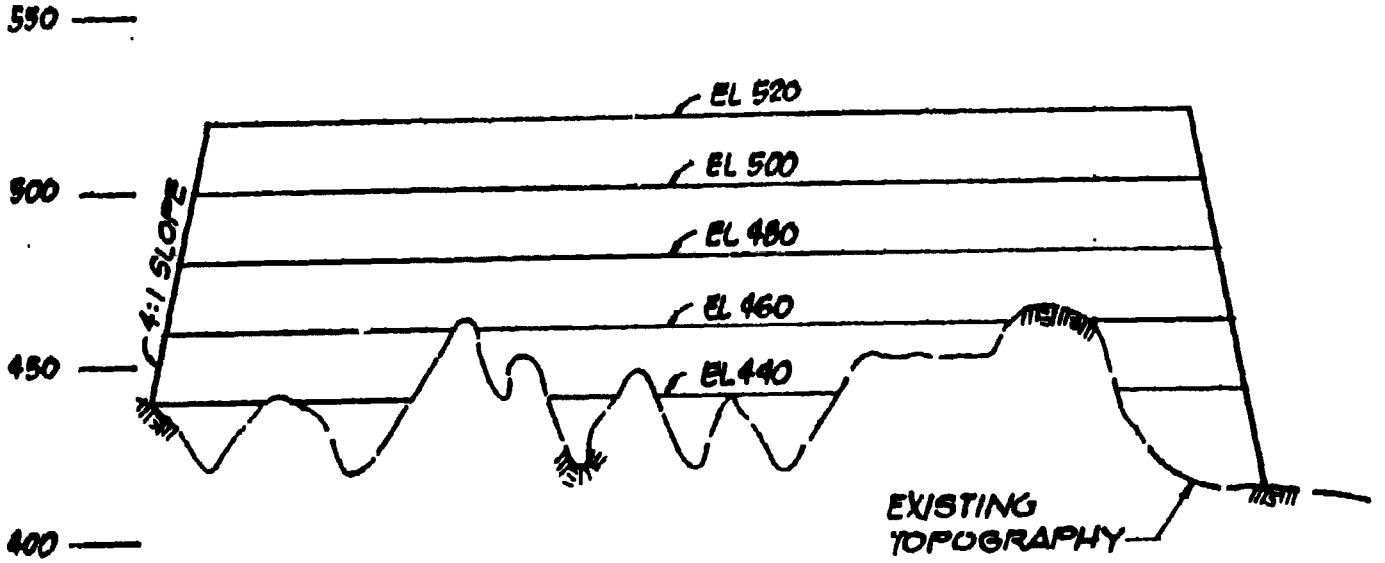


WASTE DISPOSAL
SITE PLAN

FIGURE 1



PROFILE OF SITE P AT SECTION A

NOTES:

1. SCALE: HORIZ 1" = 1000' VERT 1" = 50'
2. REFER TO FIGURE 5 FOR VARIATIONS IN WASTE PILE ELEVATIONS AS A FUNCTION OF SOLID WASTE VOLUME.

FIGURE 2

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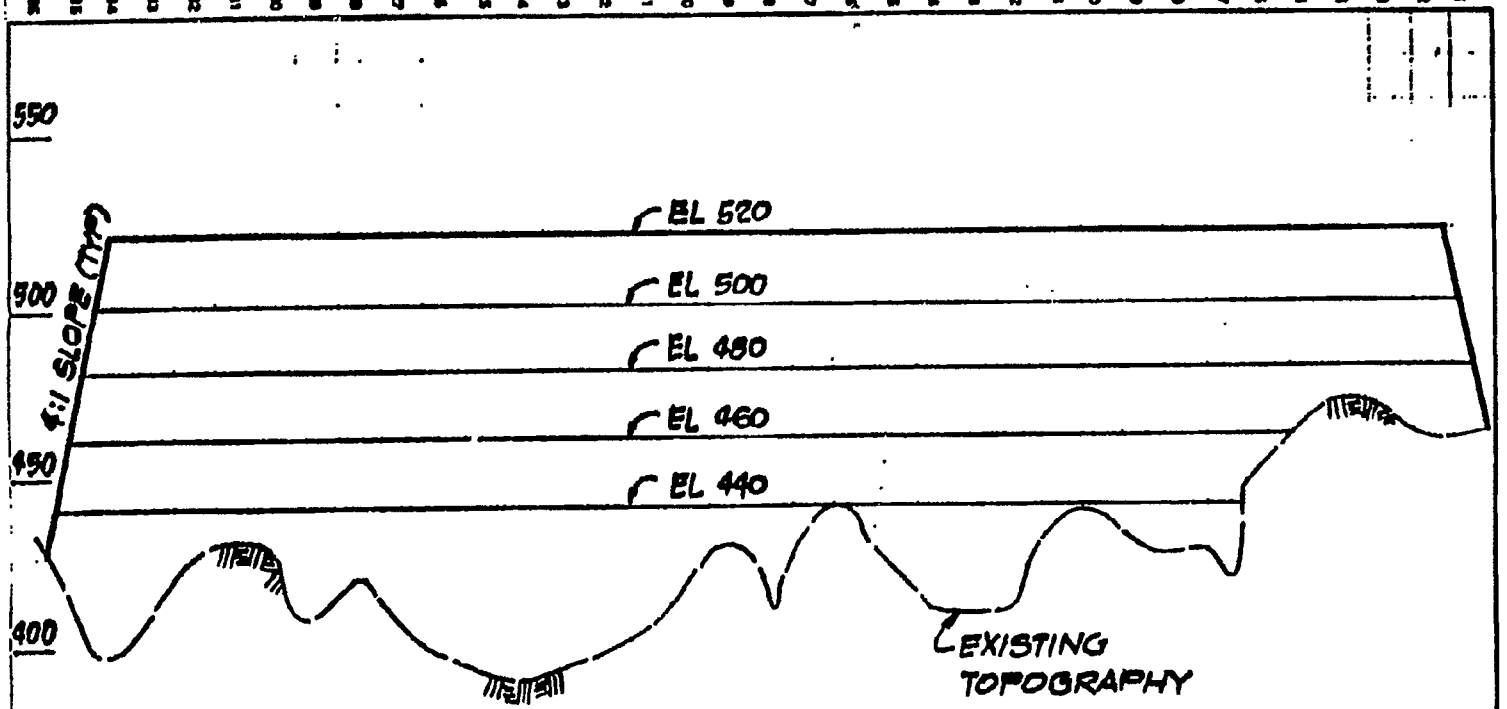

PROFILE OF SITE A AT SECTION B

NOTES:

1. SCALE = HORIZ 1" = 1000', VERT 1" = 50'.
2. REFER TO FIGURE 5, FOR VARIATIONS IN WASTE PILE ELEVATIONS AS A FUNCTION OF SOLID WASTE VOLUMES.

FIGURE 3

TRI-STATE SYNFUELS COMPANY
INDIRECT COAL LIQUEFACTION
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FLUOR

CALCULATIONS and SKETCHES

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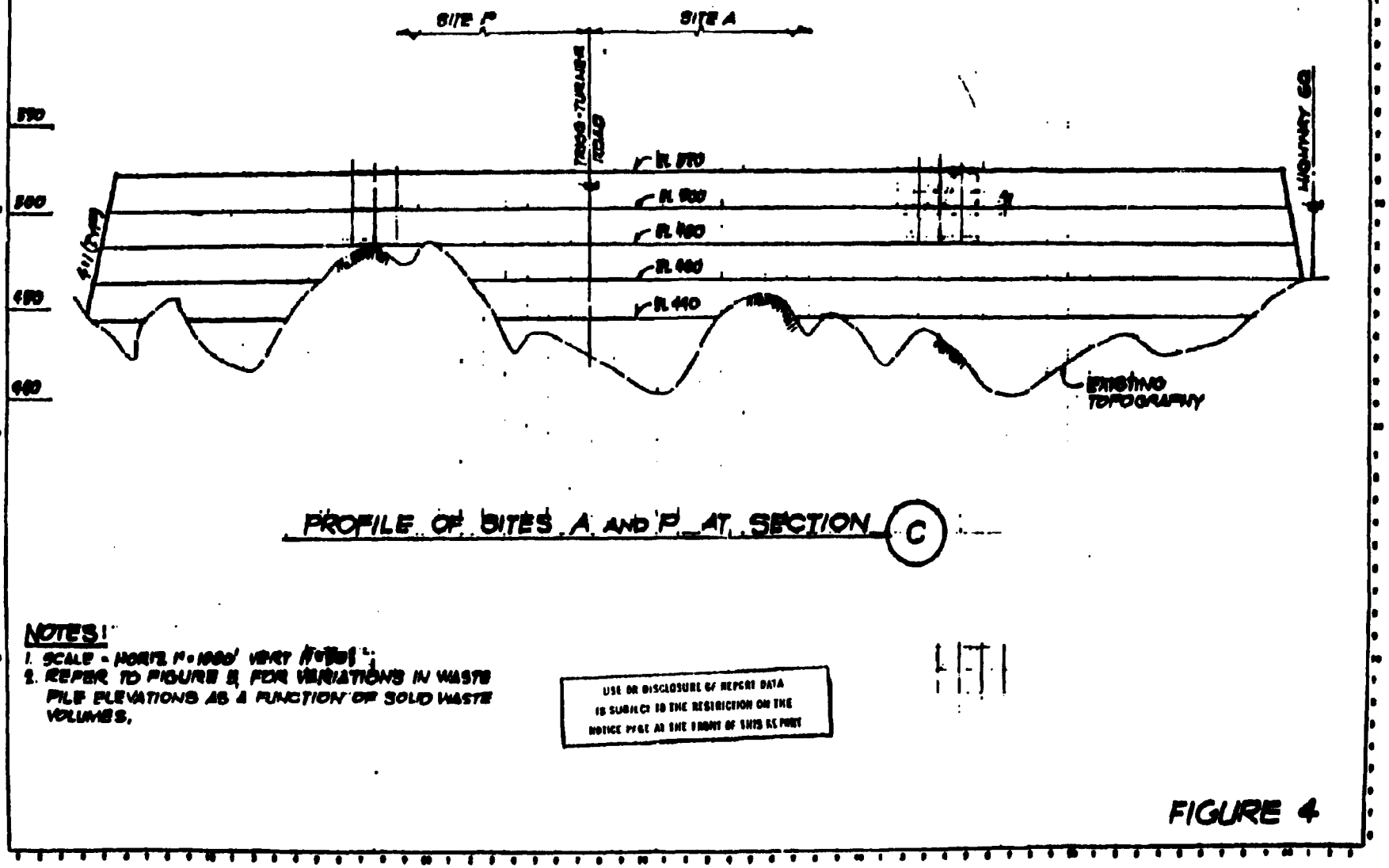


PROFILE OF SITES A AND F AT SECTION (C)

NOTES:
1. SCALE - HORIZ 1" = 1000' VERT 1" = 100'.
2. REFER TO FIGURE 5 FOR VARIATIONS IN WASTE PILE ELEVATIONS AS A FUNCTION OF SOLID WASTE VOLUMES.

FIGURE 4

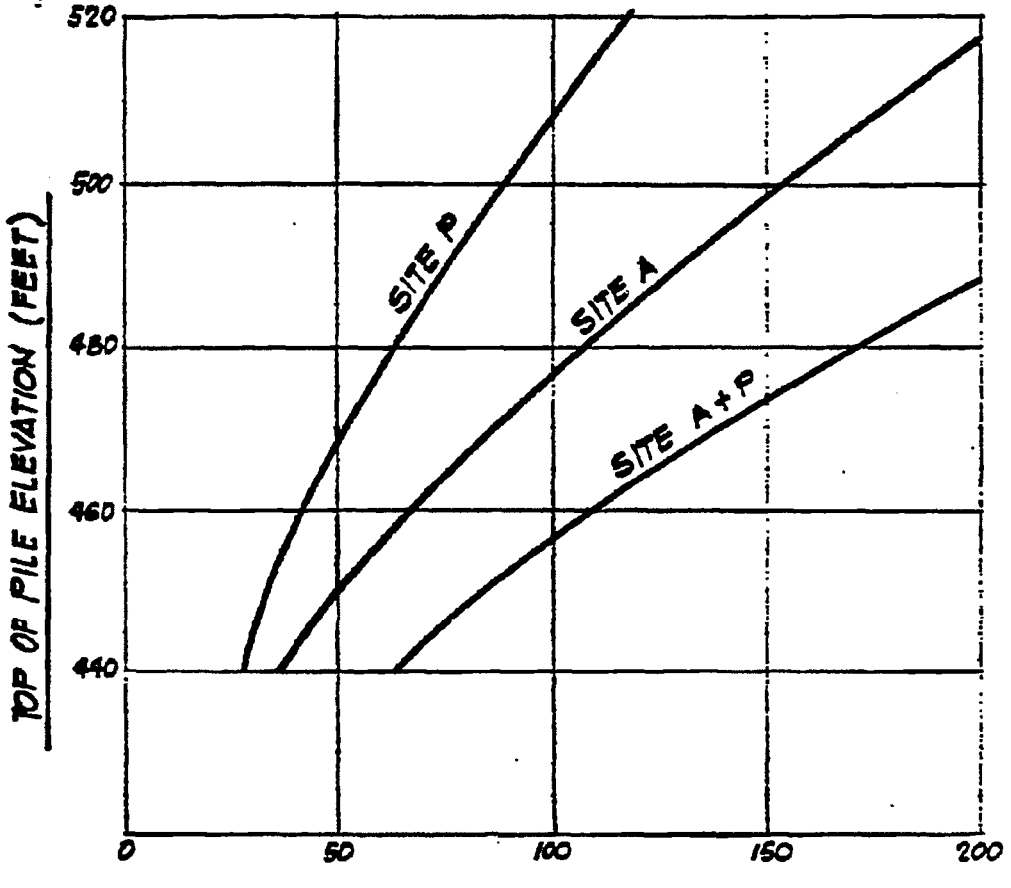


FIGURE 5

Solid Waste Disposal Study

1.54.0 Scope of Work - Develop Site P

This study establishes preliminary design criteria and guidelines for the development of a solid waste disposal site at site P.

4.1 Offsite surface-water (rainfall) shall be diverted to existing natural water course(s). Off site surface-water shall not be permitted onto the disposal site, see Fig. 4.1.

4.2 On site surface water shall be diverted to a sedimentation pond. Depending upon test results this water will be either discharged into existing natural water course(s) or pumped back to the plant site for treatment, i.e. oily-water pond. See Fig. 4.1.

4.3 The land fill plan showing final configurations, elevations, contours, cross-sections,...etc., will have to be shown at various periods in time, i.e. 5 years, 10 years,...30 years, see Fig. 4.1 and Fig. 4.2.

4.4 A detailed Geotechnical/Hydrogeologic Investigation is required as defined in Volume XII, Section 12.10.2

4.5 Final design of the ash/sludge mix (by Radian) will have to be completed prior to the design of the leachate control system. ~~system.~~ Design of the leachate control system will require a specification for the liner, design of the layered fill, allowable slope for the ash/sludge mix,...etc.

4.6 An operation plan will have to be developed to include a conveyor system, compaction, site development, environmental criteria (KRS chapter 224) and runoff control procedures.

4.7 An inspection/action plan will have to be developed for the water montoring system defining a required action depending on a given quality of water.

4.8 Plot plans and environmental permits will have to be generated/obtained, see appendix B and C.

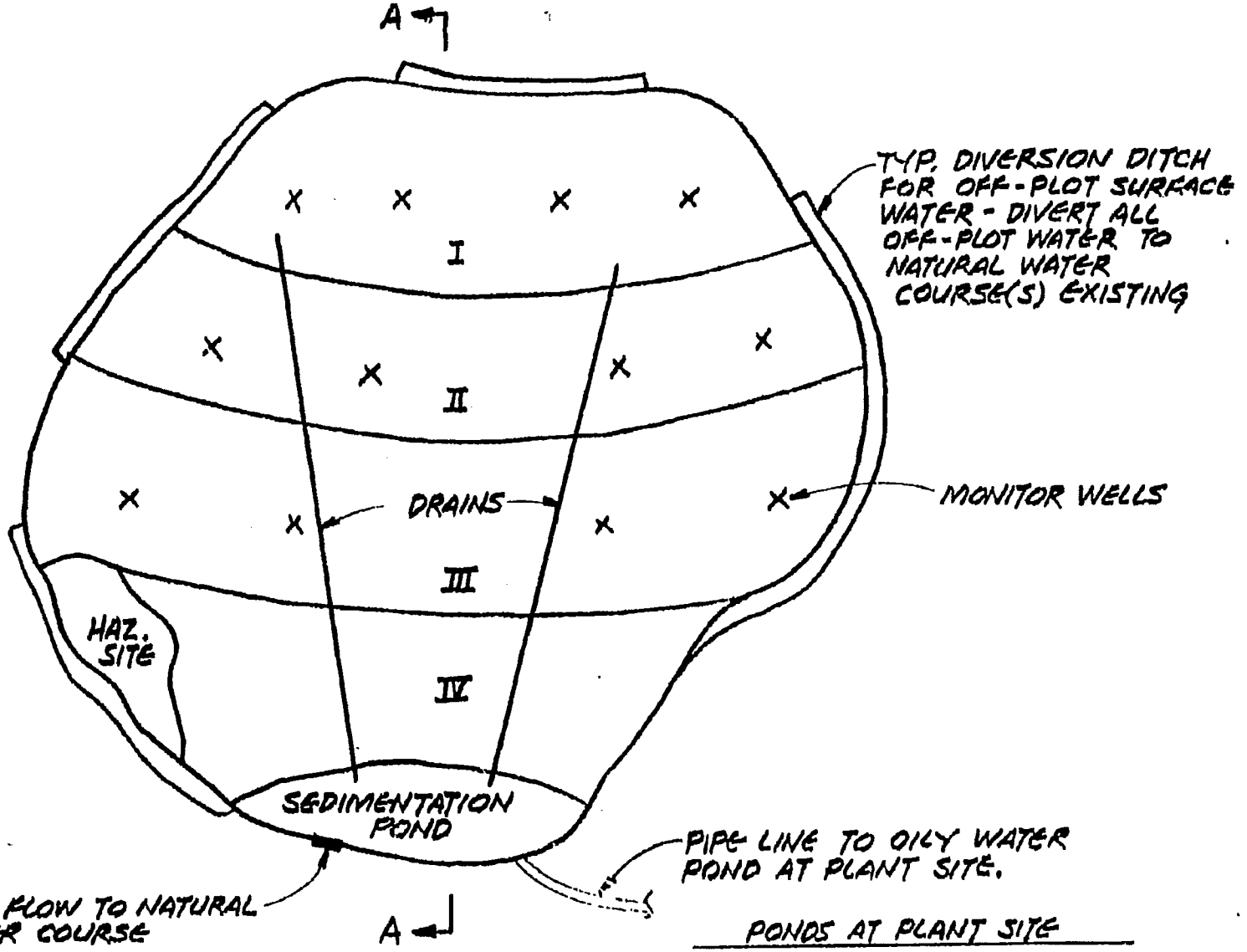
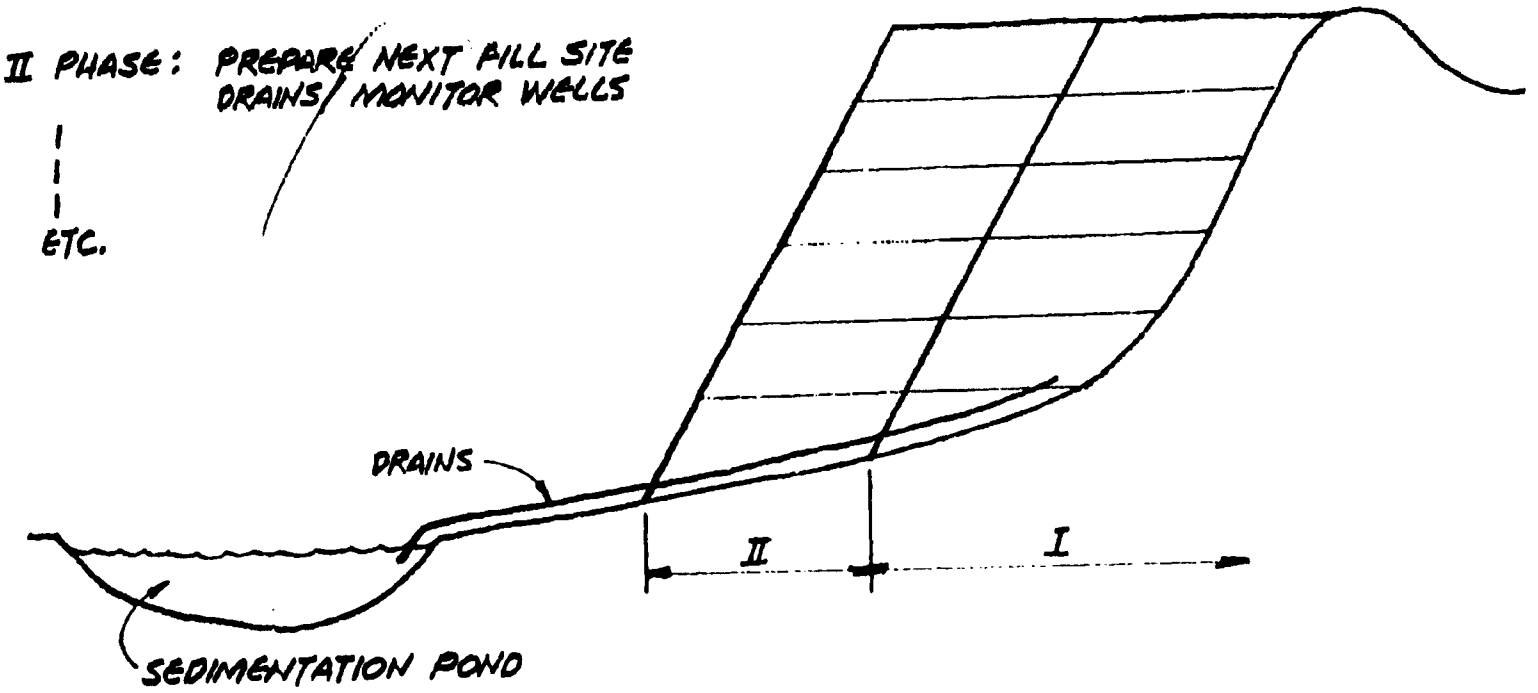


FIG. 4.1

I. PHASE: PREPARE INITIAL FILL SITE (CLAY LINER $P = 10^{-9}$)
INSTALL DRAINS / MONITOR WELLS
CONSTRUCT ALL OFF PLOT DIVERSION CHANNELS
CONSTRUCT PIPE LINE TO PLANT SITE
HAZ. SITE (IF ANY)

II PHASE: PREPARE NEXT FILL SITE
DRAINS / MONITOR WELLS

ETC.



SECTION A-A

FINAL CLOSURE OF SITE: COVER
REVISED SEDIMENT POND FOR DRAINS ONLY
SURFACE DRAINS

FIG. 4.2

APPENDIX A

MEMORANDUM FROM RADIAN NUMBER TO505

APPENDIX A

RADIAN

T0505

214-062-12-03

14 September 1981

M E M O R A N D U M

TO: Lee Wilson

FROM: Kishore Ajmera (KTA)

SUBJECT: Summary of Preliminary Assessment of Prime and Alternate Solid Waste Disposal Areas

Please find attached a revised summary (Table 1 and 2) of preliminary assessment of prime (P) and alternate solid waste disposal areas A, B, C, and D as shown on the maps. The following notes apply to the attached summary.

- The calculations are very approximate.
- The available disposal volumes were calculated assuming no excavations and a reasonable level of fill. The reasonable level of fill is that estimated level of fill where the topography of the valley is optimized such that the use of retaining structures at the perimeter of the sites is minimized. The calculated volumes represent the quantities of wastes which can be filled in the valleys at the areas under consideration.
- The total required volume for disposal of wastes is approximately 18.25×10^6 cft. The total required volume was estimated using waste quantities as given in Enrivonmental Proposal to U.S. DOE for TSSP.

SITE	CAPACITY
P	[illegible]
A	40.0
TOTAL	67.3 [illegible]

The suitability of waste disposal areas was considered only with respect to soils, ecology, and geology. The comments for suitability for soils, ecology, and geology were provided by respective work-package leaders.

The preliminary assessment of waste disposal areas indicate that the Prime Site is not adequate to take care of wastes for a period of 30 years.

Initial findings indicate that the Prime Site and Site A (adjacent to the Prime Site) together have adequate capacity to handle wastes over a 30 year period. The remaining sites must be filled to a level exceeding the reasonable fill level in order for the site to contain the wastes for a period of 30 years.

It is recommended that a detailed study be performed to select and define suitability of solid/hazardous waste disposal site(s) from all environmental considerations for TSSP.

KTS/tls
Attachment

cc: W. H. Holland - 4
W. R. Menzies - 5
T. J. Wolterink - 7
S. A. Gavande - 7
T. A. Settergren - 7
J. V. Perino - 7
J. L. Machin - 7
H. W. Balentine - 4
D. D. Harner - 7
Fran Hudnall (File) - 7

RADIAN

TABLE 1. TRI-STATE SYNFUELS PROJECT PRELIMINARY ASSESSMENT OF WASTE DISPOSAL AREAS

Disposal Site	Area of Site (Acres)	Available Disposal Volume [1] (cft)	Approximate Distance From Plant Site [2] (Miles)	Suitability for Geology [3]	Soils [4]	Ecology
Prime Site (P)	977 [5]	7.26×10^8	2.5	Good	Good	Good unless contamination of ground water in the stream should contaminate local aquatic communities.
Subsite P_1	372	3.42×10^8	3.0			
Subsite P_2	66	$.637 \times 10^8$	2.5			
Subsite P_3	83	$.804 \times 10^8$	3.0			
Subsite P_4	107	1.00×10^8	2.0			
Subsite P_5-A_3	167	1.40×10^8	3.0			
Site A	1288	10.9×10^8	3.0	Fair	Fair to poor	Fair [6]
Subsite A_1	643	7.02×10^8	2.5			
Subsite A_2	645	3.87×10^8	3.0			
Site B	1260	22.2×10^8	4.0	Poor	Good	Poor to fair; immediately upstream of Sloughs Management area; relatively small area; permanent stream.
Site C	490	3.83×10^8	4.0	Fair	Fair	Fair [6]
Subsite C_1	337	3.22×10^8	3.5			
Subsite C_2	153	$.611 \times 10^8$	4.0			
Site D	620	4.84×10^8	8.0	Good	Fair to poor	Fair [6]

1/ Available disposal volume is calculated assuming no excavation at the sites and a reasonable level of fill. It is the volume the valleys at the sites would hold. Required disposal volume for nonhazardous wastes without any consideration for buffer provision is approximately 18.25×10^8 cu. ft.

2/ The distances are straight line distances from plant site and not along the roads.

3/ The suitability is defined mainly on the basis of topography and a qualitative assessment of unconsolidated surficial deposits. Will require additional study for definite recommendation.

4/ The suitability is based on soil and site characteristics such as soil texture, permeability, depth to bedrock and to seasonal water table, stoniness, flood hazard, and material stability.

5/ The area of Site P is the area delineated by property lines and is greater than the sum of the subsites located within area P.

6/ Insufficient delineation and accessibility to determine the site suitability; will require additional study to rank these.

14 September 1981

RADIAN
CORPORATION

TABLE 2. TRI-STATE SYNFUELS PROJECT
PRELIMINARY ASSESSMENT OF WASTE DISPOSAL AREAS

Disposal Site	Area of Site (Acres)	Available Disposal Volume 1/ (cft)	Reasonable Level of Fill (Feet Above AMSL)	Additional Fill Requirement (18.25×10^8 (cft) − Available Disposal Volume (cft)) 2/	Remarks
Prime Site (P) 3/	977	7.26×10^8 26.9×10^6 cy	452	11.0×10^8	Fill level must be raised above the estimated reasonable fill level to an elevation of 495 feet in order for the required disposal volume to be contained at the site. Additional height required = 43 feet.
Site (A) 4/	1288	10.9×10^8 40.4×10^6 cy	435	7.35×10^8	Fill level must be raised above the estimated reasonable fill level to an elevation of 460 feet in order for the required disposal volume to be contained at the site. Additional height required = 25 feet.
Site (P & A)	2432	18.16×10^8 67.3×10^6 c.y.	444	—	Site can contain disposal requirement at the estimated reasonable fill level.
Site (B)	1260	22.2×10^8	450	—	Site can contain disposal requirement at the estimated reasonable fill level.
Site (C) 5/	490	3.83×10^8	440	14.4×10^8	Fill level must be raised above the estimated reasonable fill level to an elevation of 491 feet in order for the required disposal volume to be contained at the site. Additional height required = 51 feet.
Site (D)	620	4.84×10^8	450	13.4×10^8	Fill level must be raised above the estimated reasonable fill level to an elevation of 500 feet in order for the required disposal volume to be contained at the site. Additional height required = 50 feet.

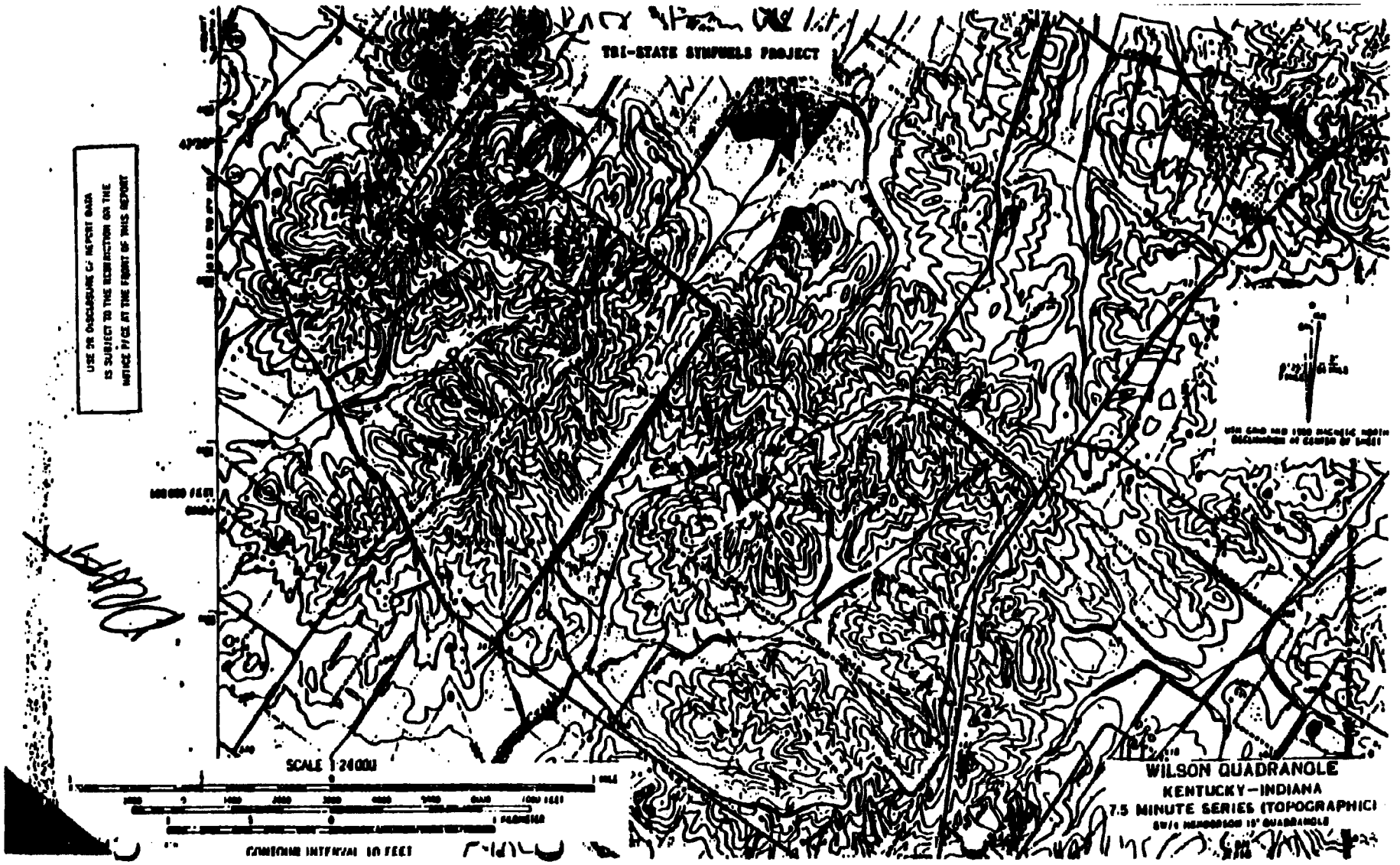
1/ Available disposal volume is calculated assuming no excavation at the sites and a reasonable level of fill below the highest natural elevation of the fill area.

2/ Required fill volume.

3/ Prime Site (P) = Subsite (P_1) + Subsite (P_2) + Subsite (P_3) + Subsite (P_4) + Subsite (A_3-P_4)

4/ Site (A) = Subsite (A_1) + Subsite (A_2)

5/ Site (C) = Subsite (C_1) + Subsite (C_2)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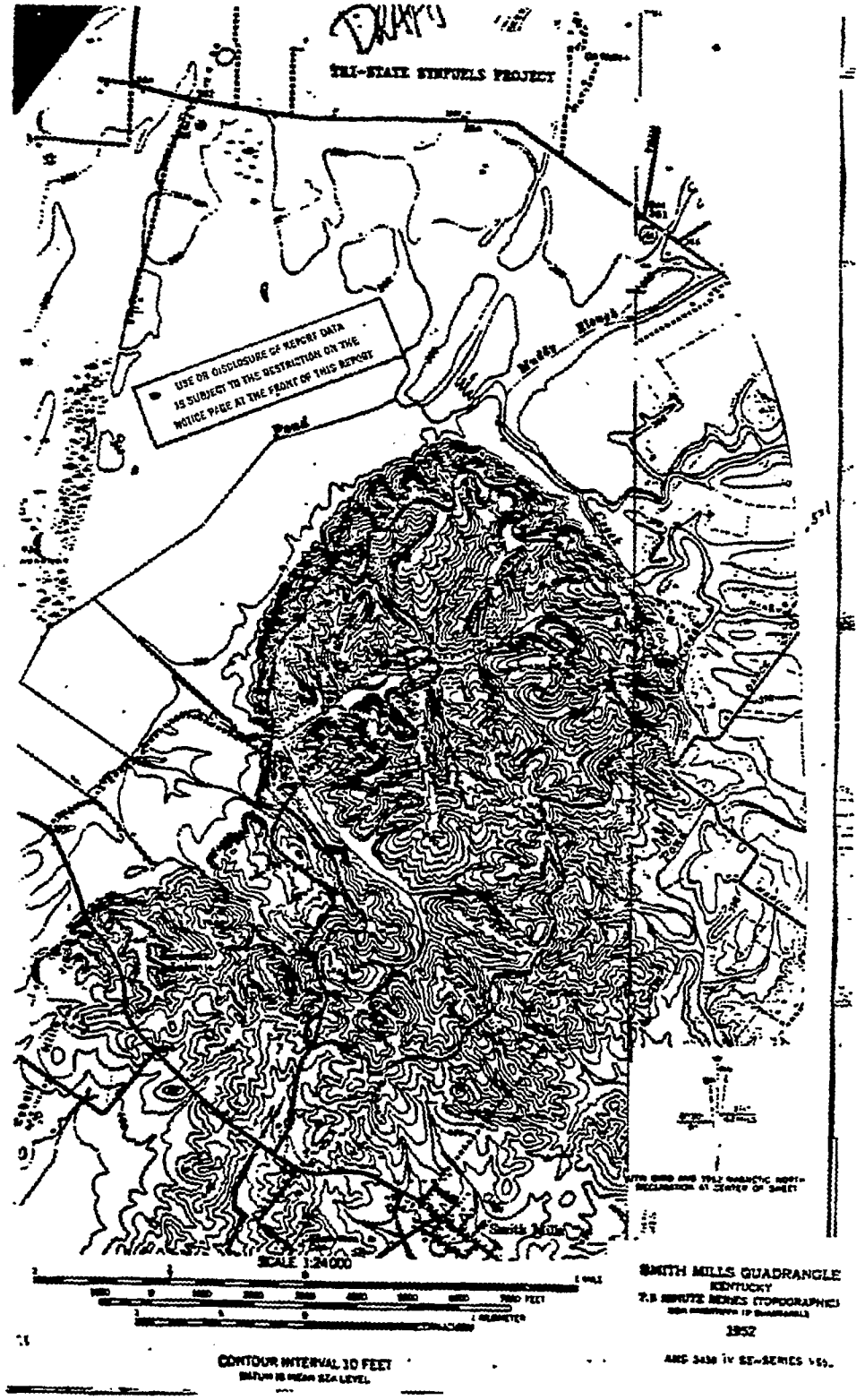
CONTOUR INTERVAL 10 FEET
WILSON QUADRANGLE
KENTUCKY—INDIANA
7.5 MINUTE SERIES (TOPOGRAPHIC)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Pond
Windy Ridge
Smith Mills
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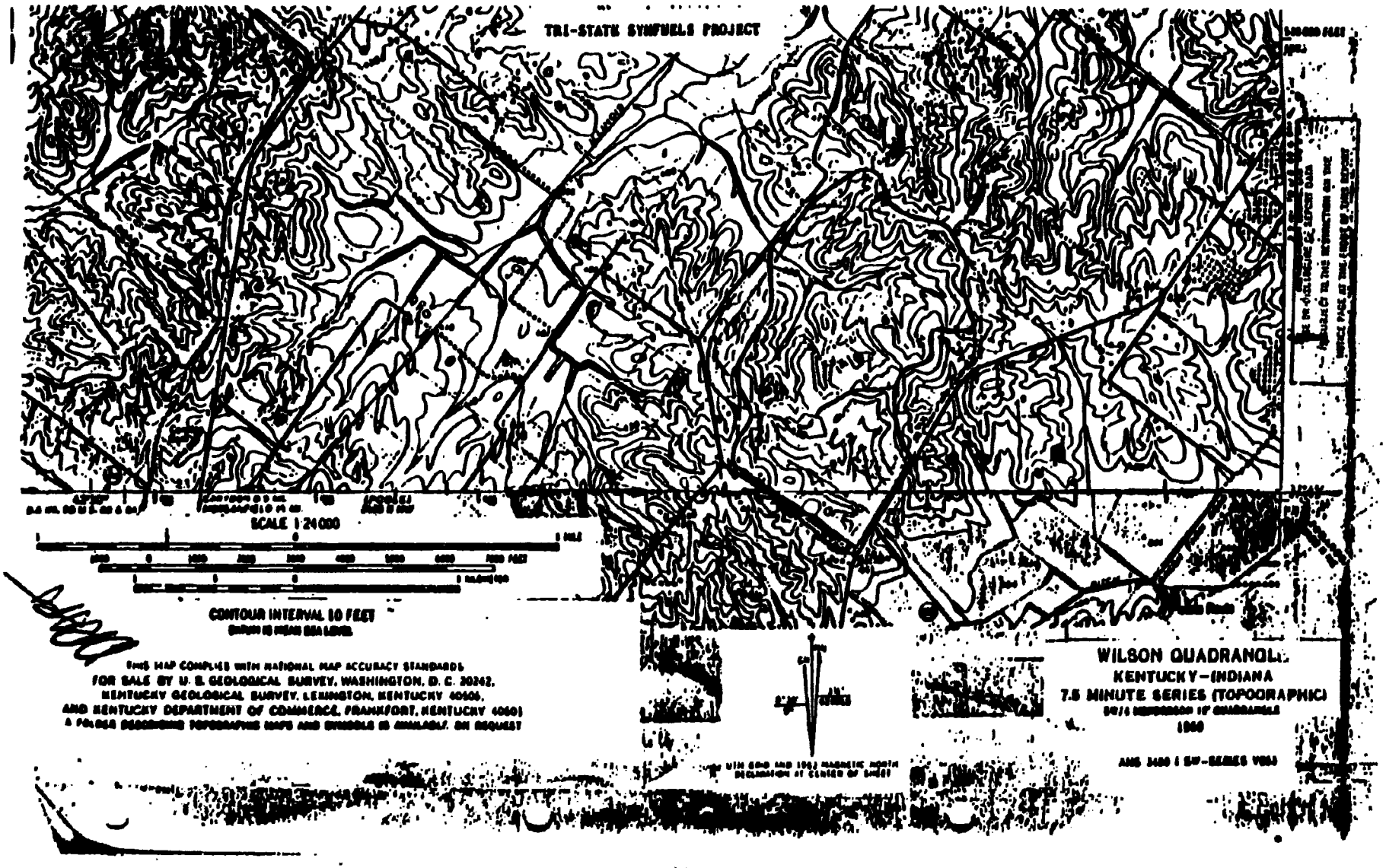
SMITH MILLS QUADRANGLE
KENTUCKY
7.5 MINUTE SERIES (TOPOGRAPHIC)
1952


TRI-STATE SYNFUELS PROJECT
SCALE 1:24000
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THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
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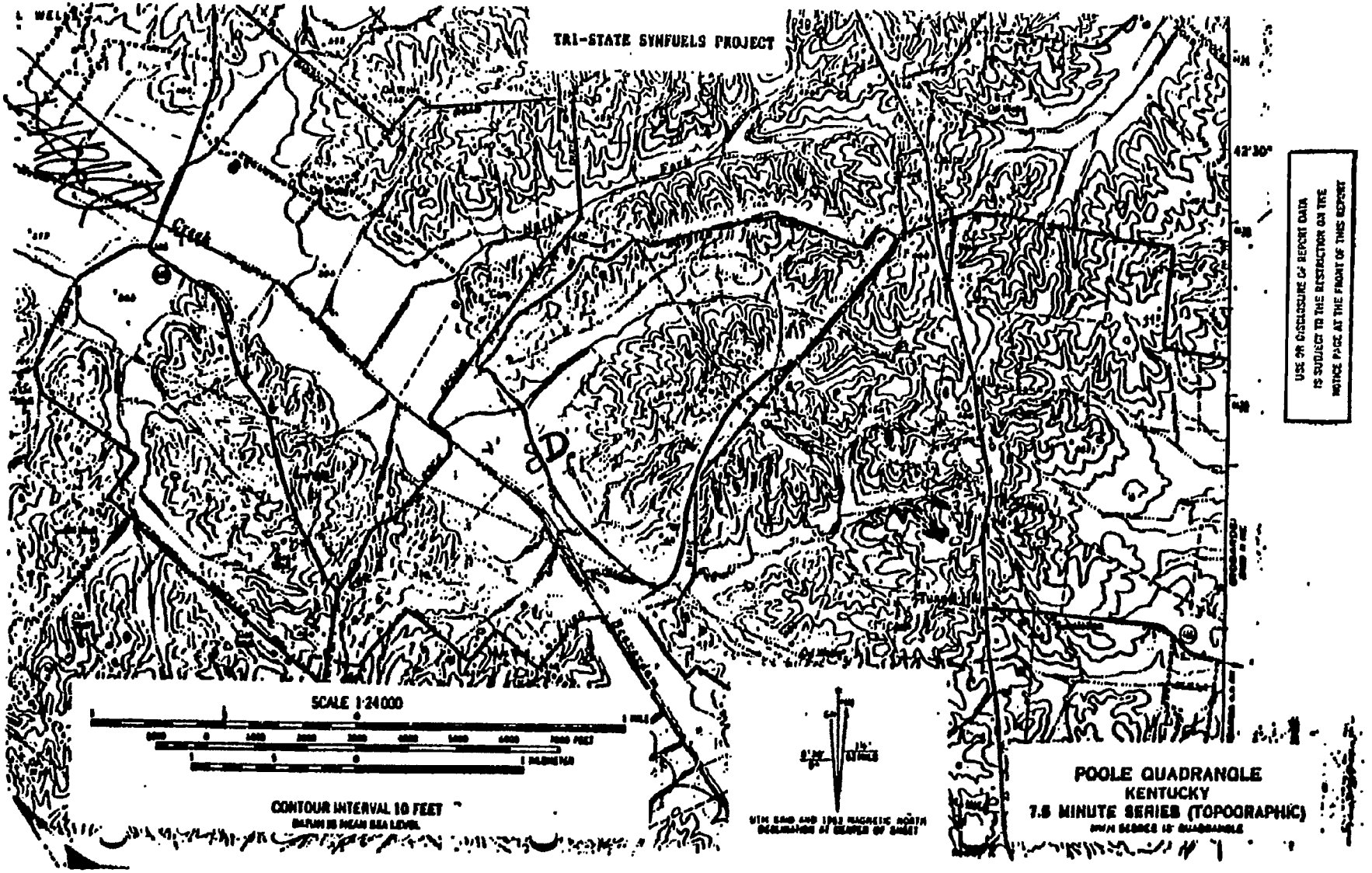
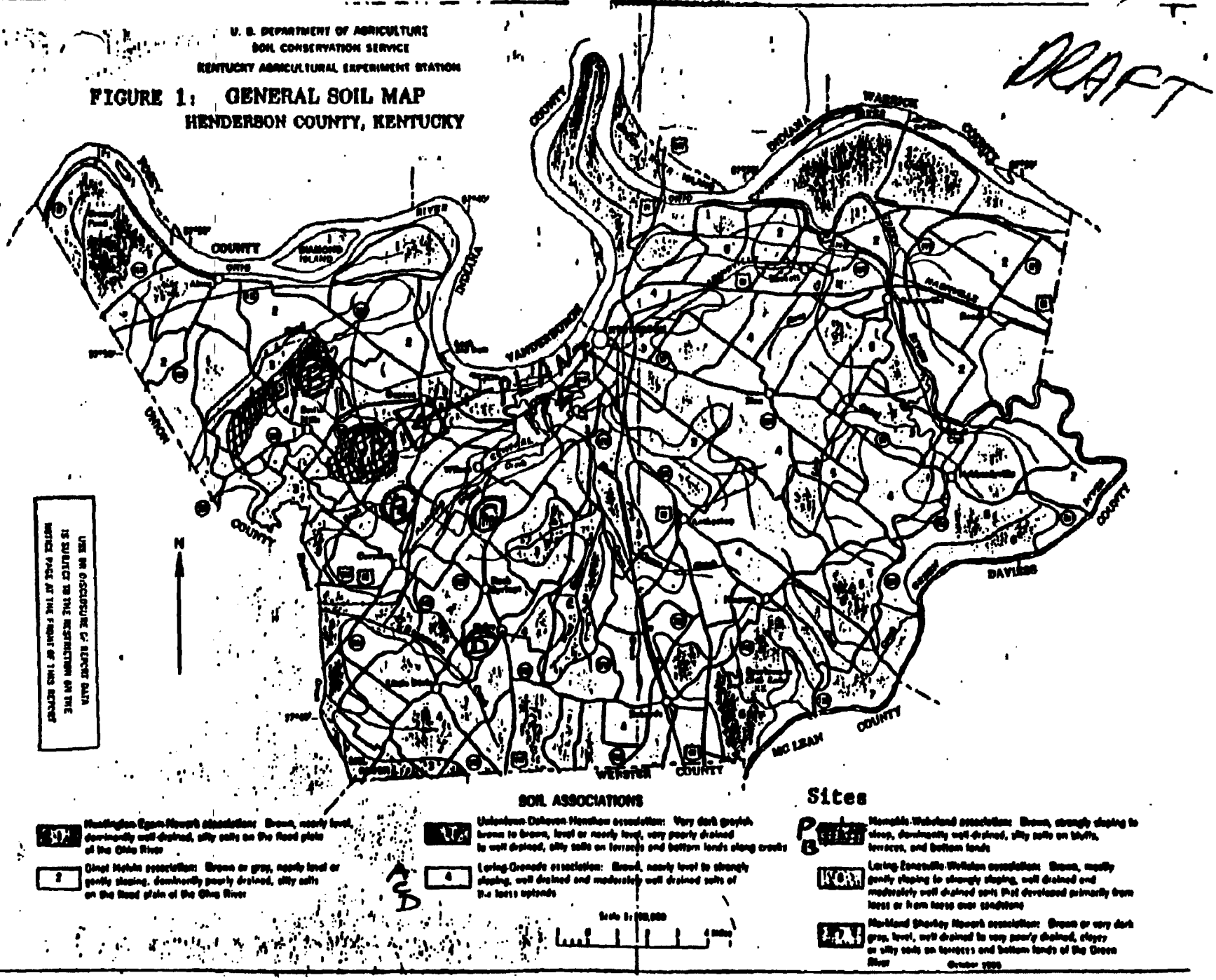
KENTUCKY GEOLOGICAL SURVEY, LEXINGTON, KENTUCKY 40506,
AND KENTUCKY DEPARTMENT OF COMMERCE, FRANKFORT, KENTUCKY 40601
WILSON QUADRANGLE
KENTUCKY-INDIANA
7.5 MINUTE SERIES (TOPOGRAPHIC)
1960


TRI-STATE SYNFUELS PROJECT
SCALE 1:24000
CONTOUR INTERVAL 10 FEET
POOLE QUADRANGLE
KENTUCKY
7.5 MINUTE SERIES (TOPOGRAPHIC)

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
KENTUCKY AGRICULTURAL EXPERIMENT STATION

FIGURE 1: GENERAL SOIL MAP
HENDERSON COUNTY, KENTUCKY

DRAFT



APPENDIX B

SOLID WASTE MANAGEMENT

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APPENDIX B

TRI-STATE SYNFUELS PROJECT
Solid Waste Management

Summary of Effort for Major Elements of Conceptual Plan For Hazardous or Non-Hazardous Waste Landfill Requiring Radian/Fluor Interface

1. Front End Work

- Prepare design basis
- Meet with Fluor to discuss design basis
- Prepare memorandum of understanding for schedule and contents of conceptual plan

2. Site Development Plan

- Prepare basic plans showing
  - access to site and interior roads
  - outline of the landfill
  - the general sequence of landfilling (phasing)
  - locations of buildings and/or structures
  - explanatory notes
  - plans for screening the site from public view
  - information on existing and final elevations

3. Ground Water Effort

- Access geologic hazards such as seismic activity at the site

- Description of surface and subsurface geology at the site
- Description of ground-water resources and hydrologic characteristics of the site
- Estimate quality of leachate
- Preliminary design of leachate control system, if any
- Schematic drawings of leachate control system, if any
- Information on liner design
- Ground-water monitoring plan
- Explanatory notes

4. Surface Water Effort

- Establish whether or not the site is in 100-year floodplain
- Description of surface water resources of the site
- Description of surface water control system during and after construction of site
- Design criteria for surface water control system at the site
- Schematic drawings of surface water control system

- Explanatory notes
- Water balance calculations

5. Operation and Closure Plan

- Personnel and equipment required for operation
- Security, site access control, screening traffic control and safety
- Sequence of site development--roads, ditches, berms, retaining ponds, buildings
- Fire prevention and control
- Control of disposing within designated areas
- Control of windblown material if any
- Dust control for roads
- Vector control if any
- Compaction and cover procedures
- Monitoring for leachate if any
- Posting of signs
- Wet-weather operation

- Inspection and maintenance of completed portions of site during the active life and after closure
- Final contour information
- Description of cover procedures
- Description of reclamation
- Explanatory notes

APPENDIX C

NONHAZARDOUS WASTE CONCEPTUAL PLAN

RADIAN CORPORATION

APPENDIX C

TRI-STATE SYNFUELS
SOLID WASTE MANAGEMENT PLAN

Nonhazardous Waste Conceptual Plan

Items to be Considered in the Conceptual Plan	Possible Additional Considerations During Detailed Design, Plans and Specifications
1. Floodplains	
• Establish whether or not the proposed disposal site is located within the 100-year floodplain.	
2. Endangered Species	
• Establish whether or not the proposed site will cause or contribute to the taking of any endangered species.	
3. Surface-Water Run-on and Runoff Control Systems	
• Provide a description of the surface-water resources of the area.	• Design and size diversion channels, dikes, berms and sedimentation ponds for design storm (materials - structures).
• Provide schematic drawings of surface-water control systems.	• Provide plans (drawn to scale) of all surface-water control systems.
• Provide design criteria for surface-water control systems (e.g., 10-year, 24-hour design storm).	• Specify materials of construction for surface-water control structures.
• Provide various suggestions for the more detailed engineering design (construction materials, etc.).	• ~~Final~~ DETAIL design of sedimentation ponds for removal of suspended sediments as required in NPDES permit.
• Provide schematic plans for sedimentation ponds.	• Provide detailed drawings (drawn to scale) of valley-fill landfill showing final configuration, elevations, contours, etc.
• Provide schematic drawings of final configuration of valley-fill landfill (approximate amount of waste and final configuration is determined).	

(continued)

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Nonhazardous Waste Conceptual Plan (Continued)

Items to be Considered in the Conceptual Plan	Possible Additional Considerations During Detailed Design, Plans and Specifications
4. Ground-water, Hydrologic Characteristics, Leachate Control System	
• Assess geologic hazards such as seismic activity, stability and Karstic weathering.	• Conduct detailed geotechnical investigation to allow Radian to determine soil suitability and geologic characteristics.
• Provide a description of surface and subsurface geology.	4 DETAIL
• Provide a description of ground-water resources and hydrologic characteristics of the area.	• [illegible]l design leachate control system including design specifications, system hydraulics and materials of construction (if leachate control system is required).
• Provide results of batch leachate studies to determine potential quality of leachate.	• Provide plans (drawn to scale) and specifications of leachate control system (if required).
• Provide plan for detailed geotechnical investigation of proposed site.	• Provide specifications for liner and liner emplacement (if required).
• Provide preliminary design of leachate control system (if leachate quality is poor enough to require control).	
• Provide schematic drawings of leachate control system (if required).	
• Design liner for site (if required).	
5. Application of Waste to Land Used for Food-Chain Crops	
• Establish whether or not waste will be applied to land used for the production of food-chain crops.	
6. Disease Vectors	
• Establish whether or not the site will attract disease vectors.	

(continued)

Nonhazardous Waste Conceptual Plan (Continued)

Items to be Considered in the Conceptual Plan	Possible Additional Considerations During Detailed Design, Plans and Specifications
7. Air	
• Establish whether or not the site will engage in open burning of waste.	
8. Safety and Gas Mitigation Control	
• Establish whether or not the site is a safety hazard due to the possibility of fires, methane gas production, increased bird strike to aircraft and whether or not public access to the site is controlled.	
9. Compatibility of Waste	
• Establish the compatibility of wastes (fly ash, bottom ash, FGD sludge, etc.) for codisposal. Need angle of Repose A-1 from Jacobs	• ~~Finalize~~ Approval disposal plan for wastes (consider mixing ratios, strength and stability of mixed waste, slope stability and chemical stabilization).
10. Climatic Conditions	
• Provide a description of prevailing climatic conditions in the area (e.g., winds, rainfall, average temperature, etc.).	• Prior to final design of site, this section should be reviewed (i.e., climatic conditions are important considerations in the design of such items as surface-water control systems, and leachate collection systems and also for operational design items such as frequency of road watering for dust control).
11. Operational Plan	
• Provide preliminary operational plan for the disposal site (consider cost of operation, conveyor system for waste transport, hauling of waste at the site).	• Provide detailed plan of operation for disposal site (consider any changes and such items as equipment requirements, transport of waste to the site, design of conveyor system, hauling of waste at the site, compaction requirements, etc.). Must meet environmental requirements of KRS Chapter ~~24~~ 224

(continued)

RADIAN

Nonhazardous Waste Conceptual Plan (Continued)

Items to be Considered in the Conceptual Plan	Possible Additional Considerations During Detailed Design, Plans and Specifications
11. Operational Plan (Continued)	
• Establish operating stages for site development.	PREPARE • ~~Finalize~~ each operational stage for site in more detail (consider slope stability, loading strength of each lift, run-on and runoff control procedures during operation, etc.).
12. Inspection Plan	
• Develop plan to inspect equipment and materials to ensure compliance with scheduled operational plan and state of Kentucky environmental performance standards (include schedule of inspection and list of items to be inspected).	PREPARE • ~~Finalize~~ a detailed inspection plan based on detailed designs of site and final operational plan.
13. Closure Plan	
• Develop a closure plan for disposal site based on state of Kentucky environmental performance standards. • Develop list of possible end uses of site.	• Develop detailed design for final site configuration. • Choose cover material (consider erodibility, stability, porosity, permeability, slope, length of run of slope, etc.). Just prior to site closure: • Decide on final end use of site based on surrounding land uses. • Choose plant species for final cover (depending on end use). • Inspect lifts, dikes, berms, and channels for structural integrity. • Release financial responsibility funds. • Record notice in property deed of nature of waste disposed of on property. • Check Kentucky regulations for additional requirements.

TSS

(continued)

RADIAN CORPORATION

Nonhazardous Waste Conceptual Plan (Continued)

Items to be Considered in the Conceptual Plan	Possible Additional Considerations During Detailed Design, Plans and Specifications
14. Postclosure Maintenance	
Develop postclosure maintenance and monitoring plan of site structures and area water resources in accordance with state of Kentucky environmental performance standards.	Develop postclosure maintenance and monitoring plan in more detail based on final design of site. Ensure that postclosure maintenance and monitoring is carried out.*

1. This table is not meant to represent a scope of work but rather represents an interface of work between Tri-State, Fluor and Radian.

2. The sections Floodplains, Endangered Species, Application of Waste to Food-Chain Crops, Disease Vectors, Air, Safety and Gas Mitigation Control are all assumed to be not applicable. Therefore, it is assumed that no additional considerations will be necessary.

References:

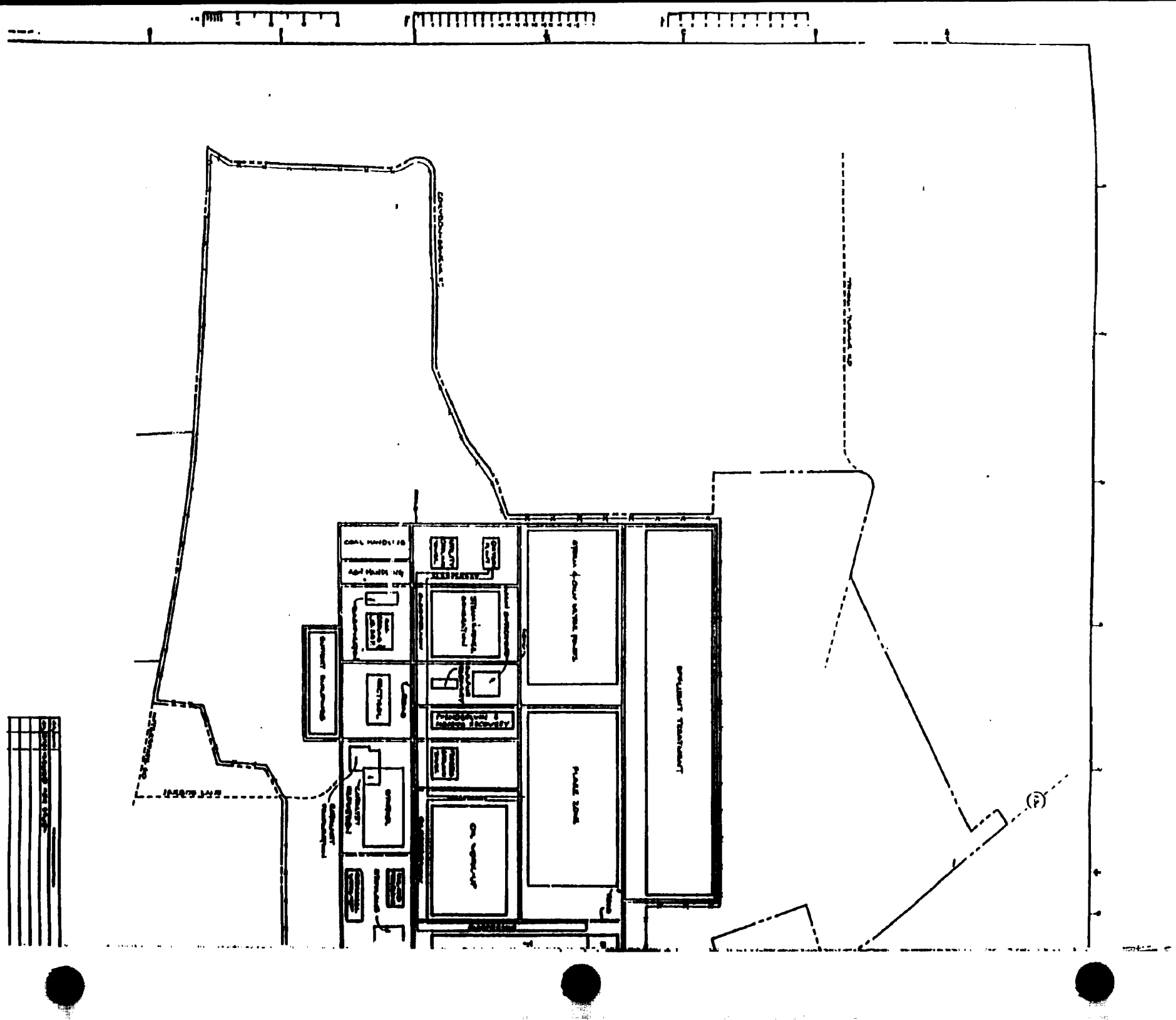
Environmental Protection Agency, 1980. Classifying Solid Waste Disposal Facilities, A Guidance Manual. SW-828 EPA No. 68-01-4767.

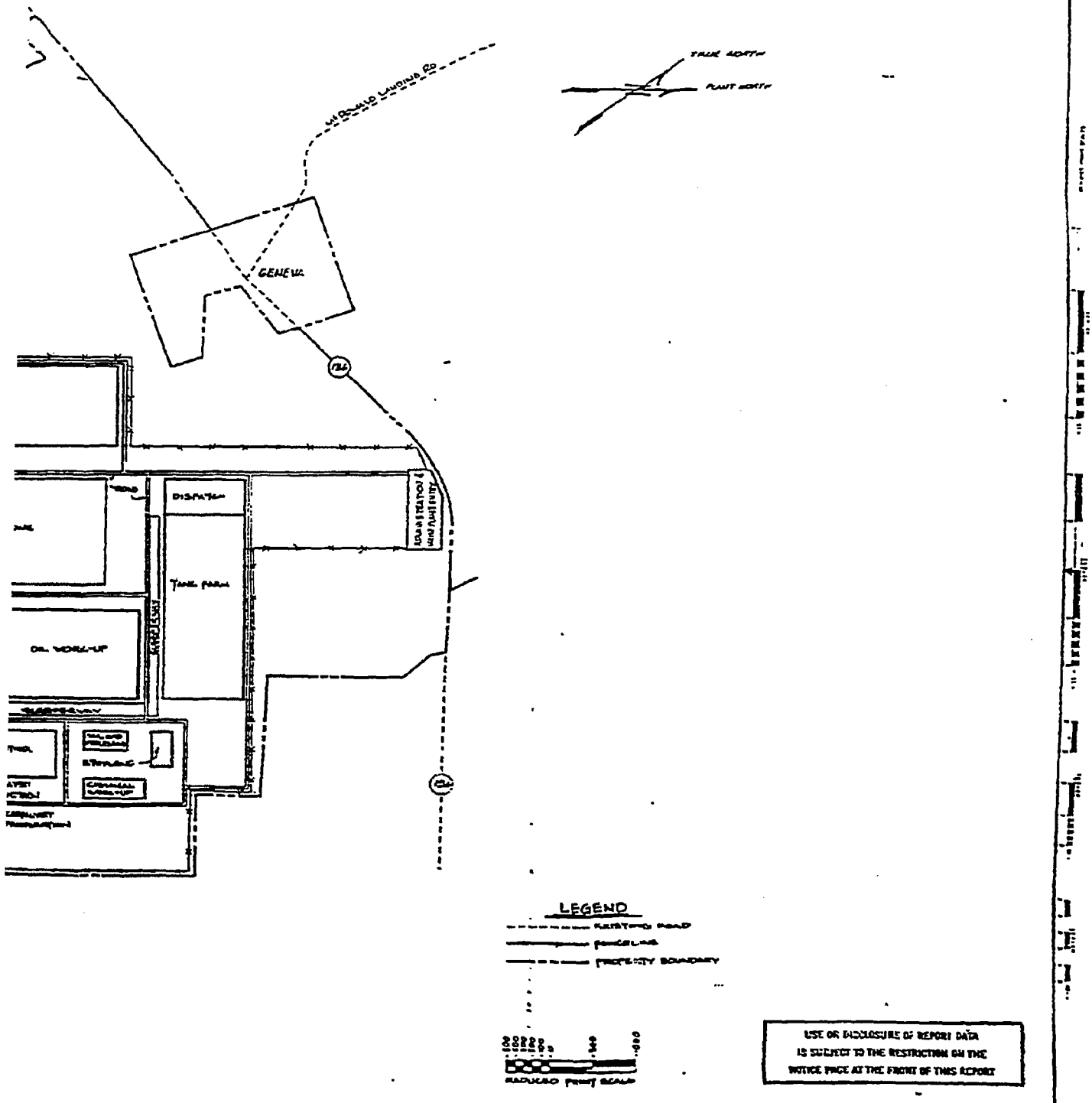
Administrative Register of Kentucky, January, 1982, KDNREP 401 KAR 2:095.

40 C.F.R.; 45 Fed. Reg. (May 17, 1980)

KTA, RJY
3/9/82

* Tri-State must ensure that post closure maintenance and monitoring will be carried out.





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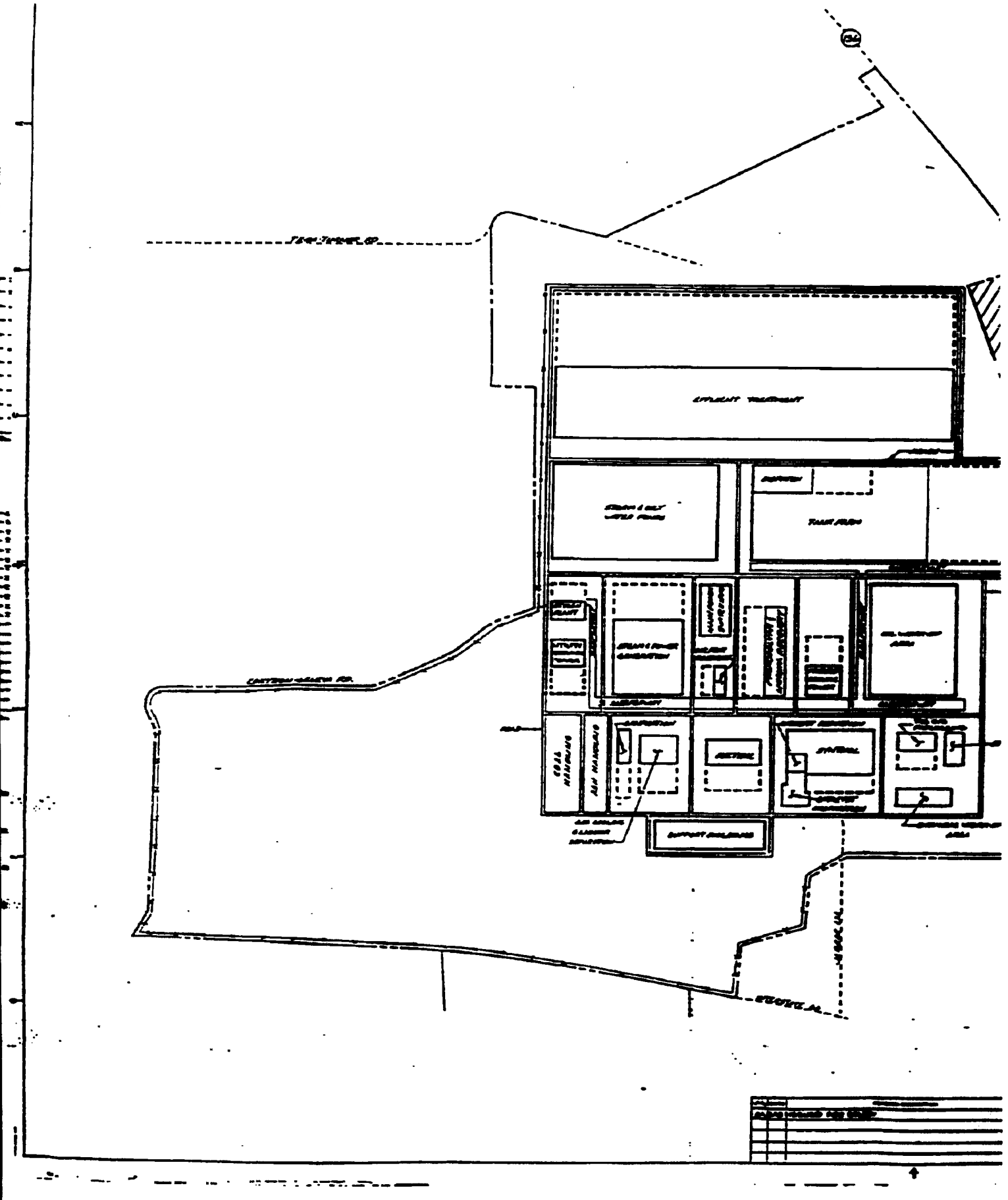
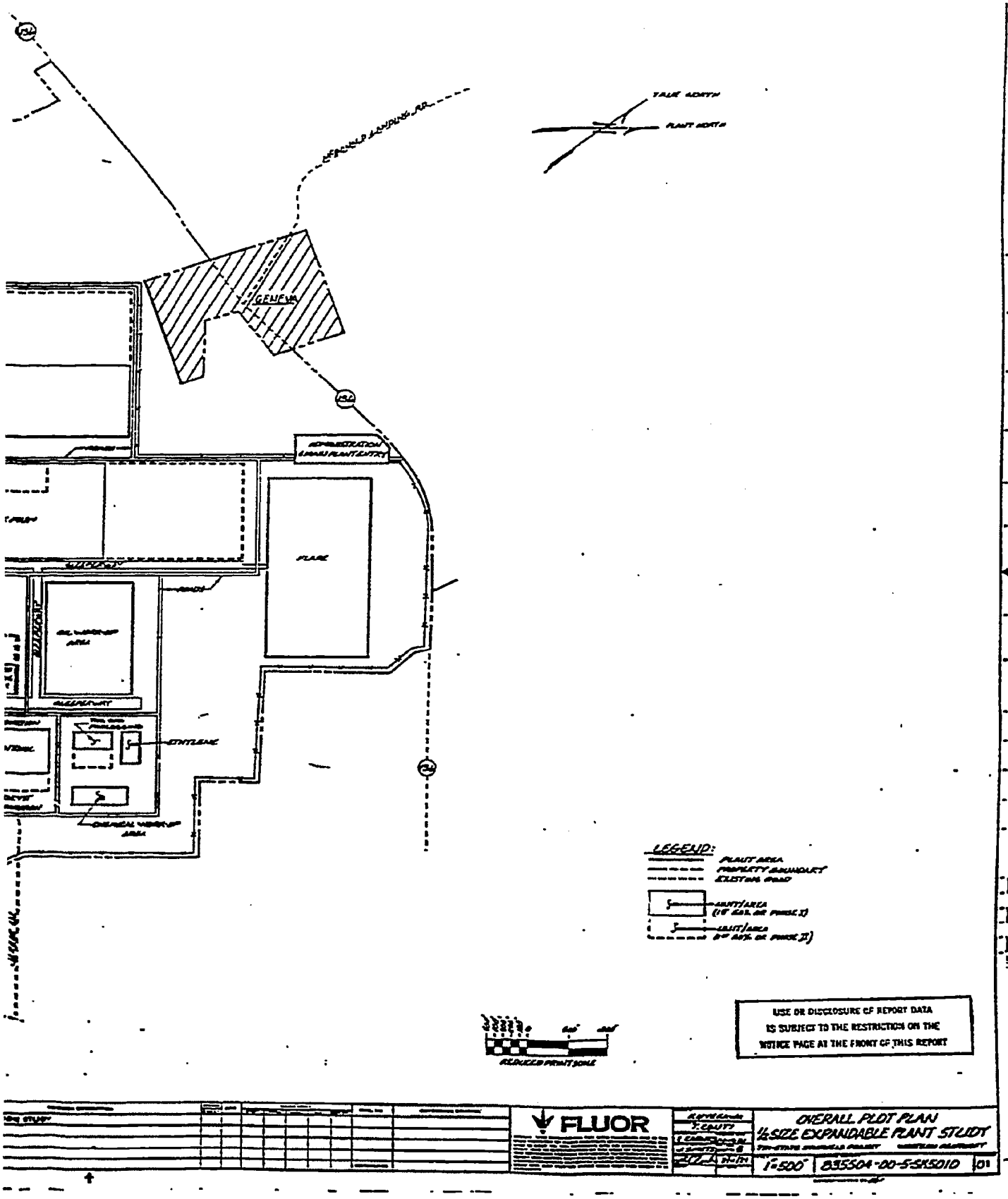
FLUOR

OVERALL PLOT PLAN
½-SIZE PLANT STUDY

TRI-STATE SYNFUELS PROJECT

DRAWING NO. 885804-00-S-SK5011





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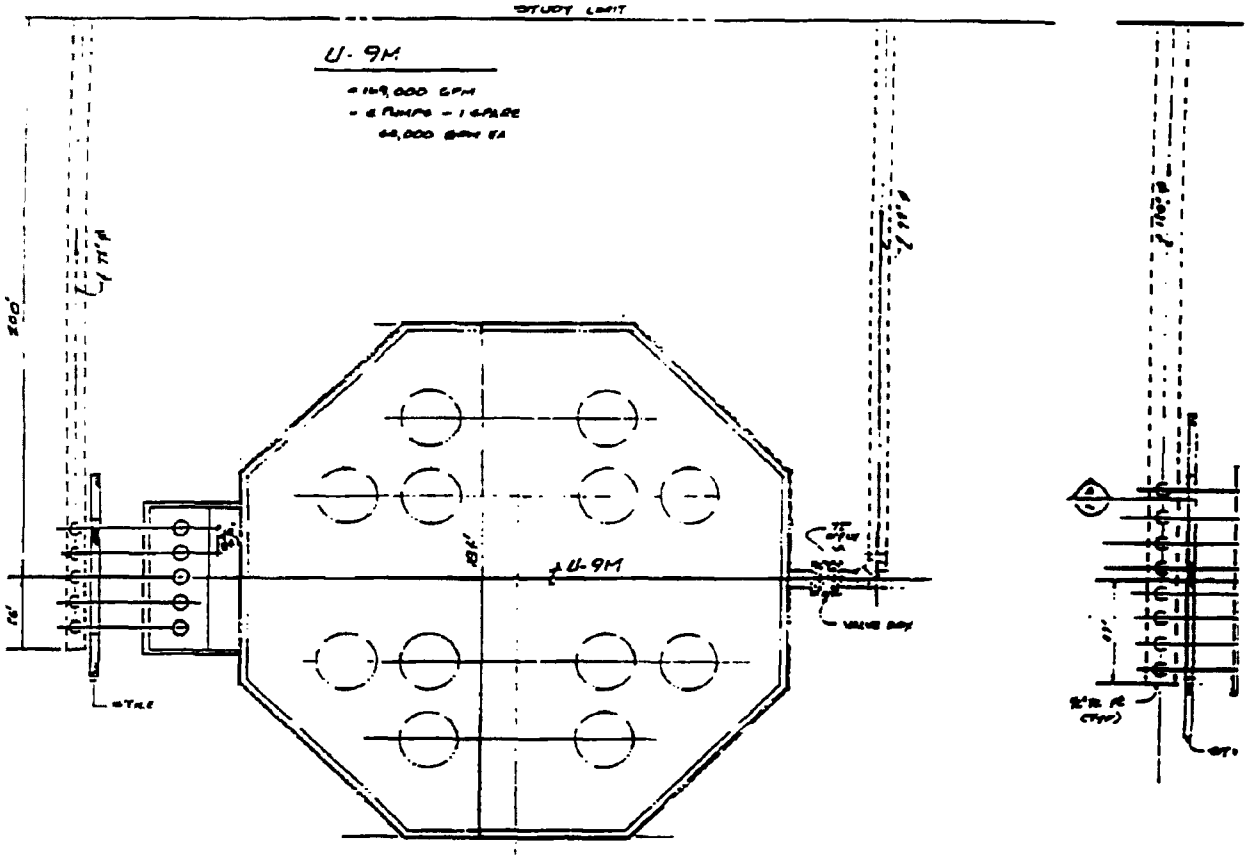
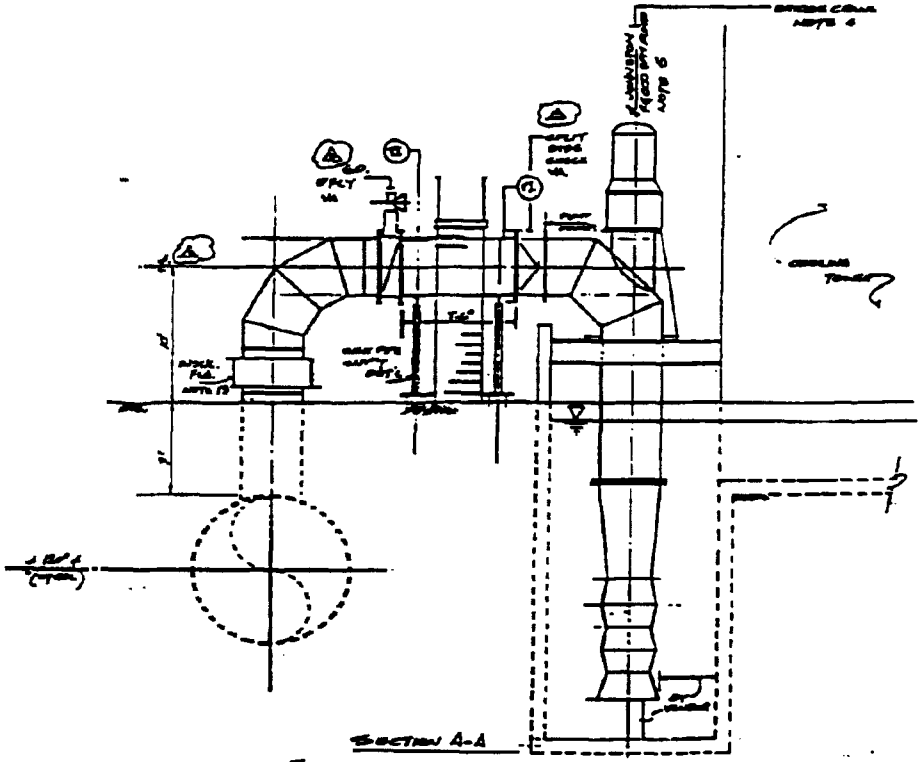
FLUOR

OVERALL PLOT PLAN
½ SIZE EXPANDABLE PLANT STUDY

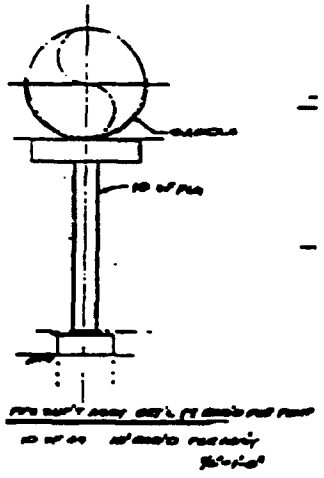
1"=500' | 835504-00-S-SK5010 | 01

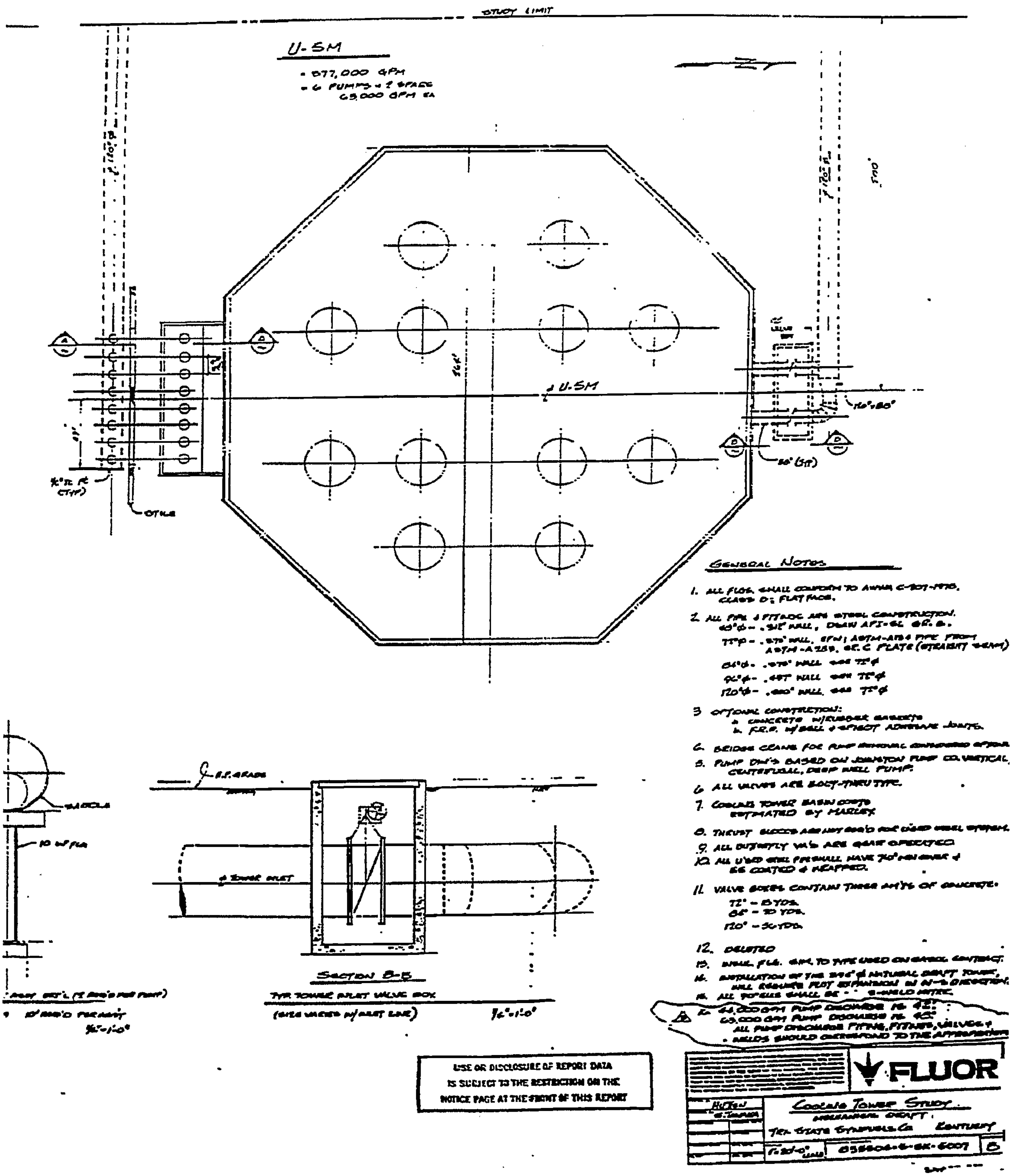




TYPICAL @ PUMP DISCHARGE

3/8" = 1'-0"





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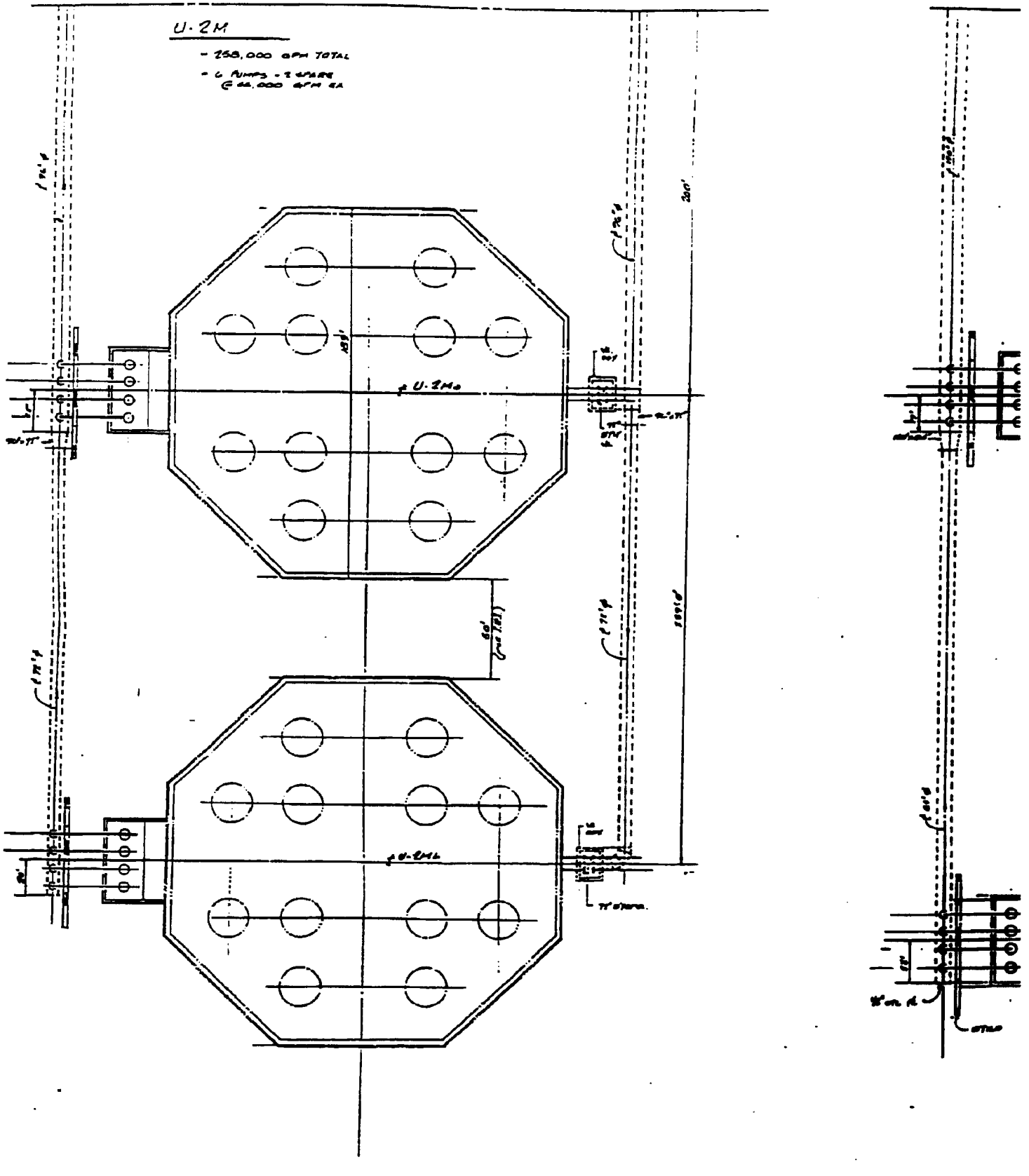
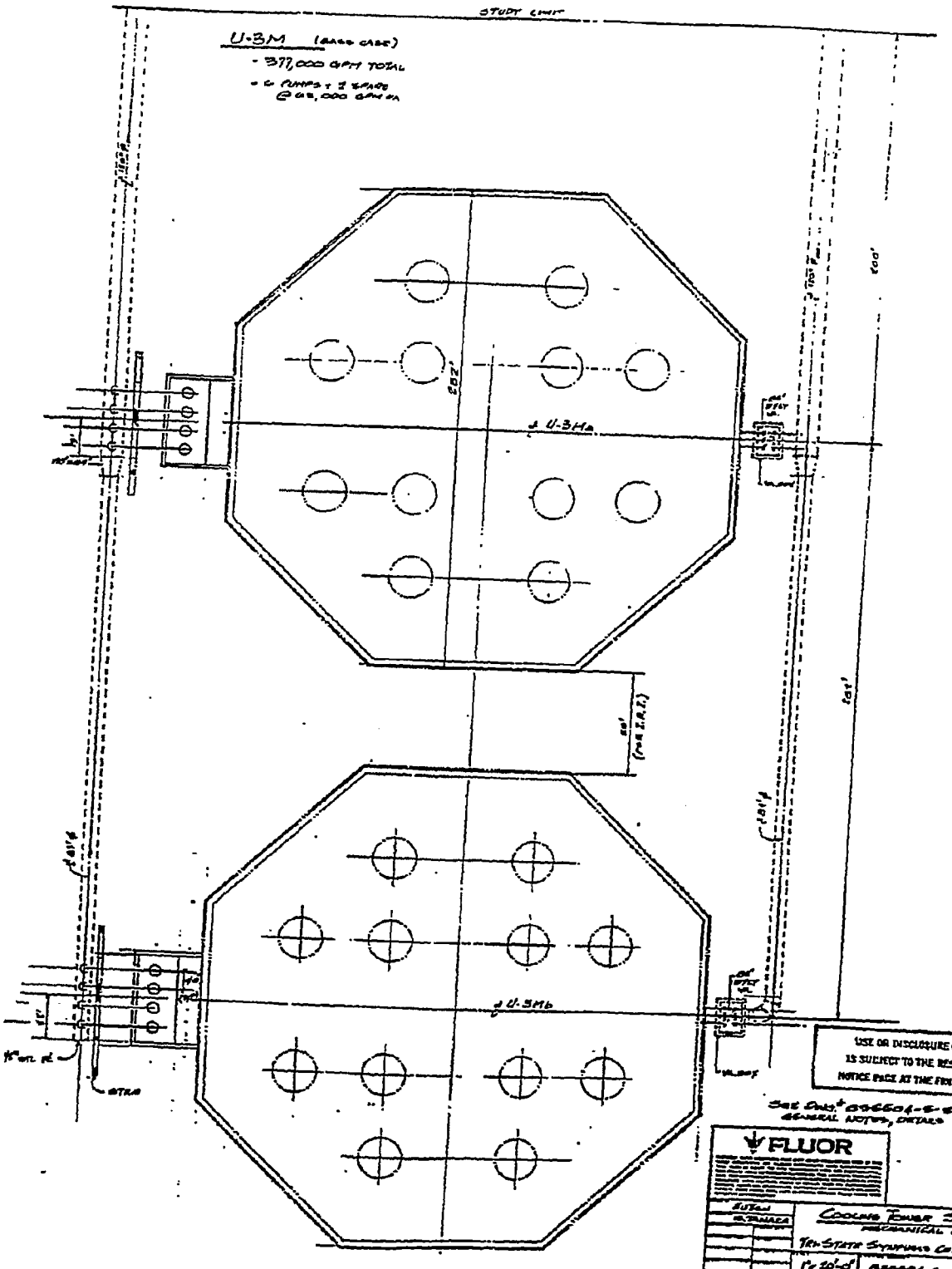

U-2M
- 258,000 GPM TOTAL
- 6 PUMPS - 2 SPARE @ 43,000 GPM EA
℄ U-2M0
℄ U-2M1
50' (2nd TIER)
30'


STUDY LIMIT
U-3M (BASE CASE)
- 377,000 GPM TOTAL
- 6 PUMPS + 1 SPARE @ 63,000 GPM EA
U-3Ma
U-3Mb
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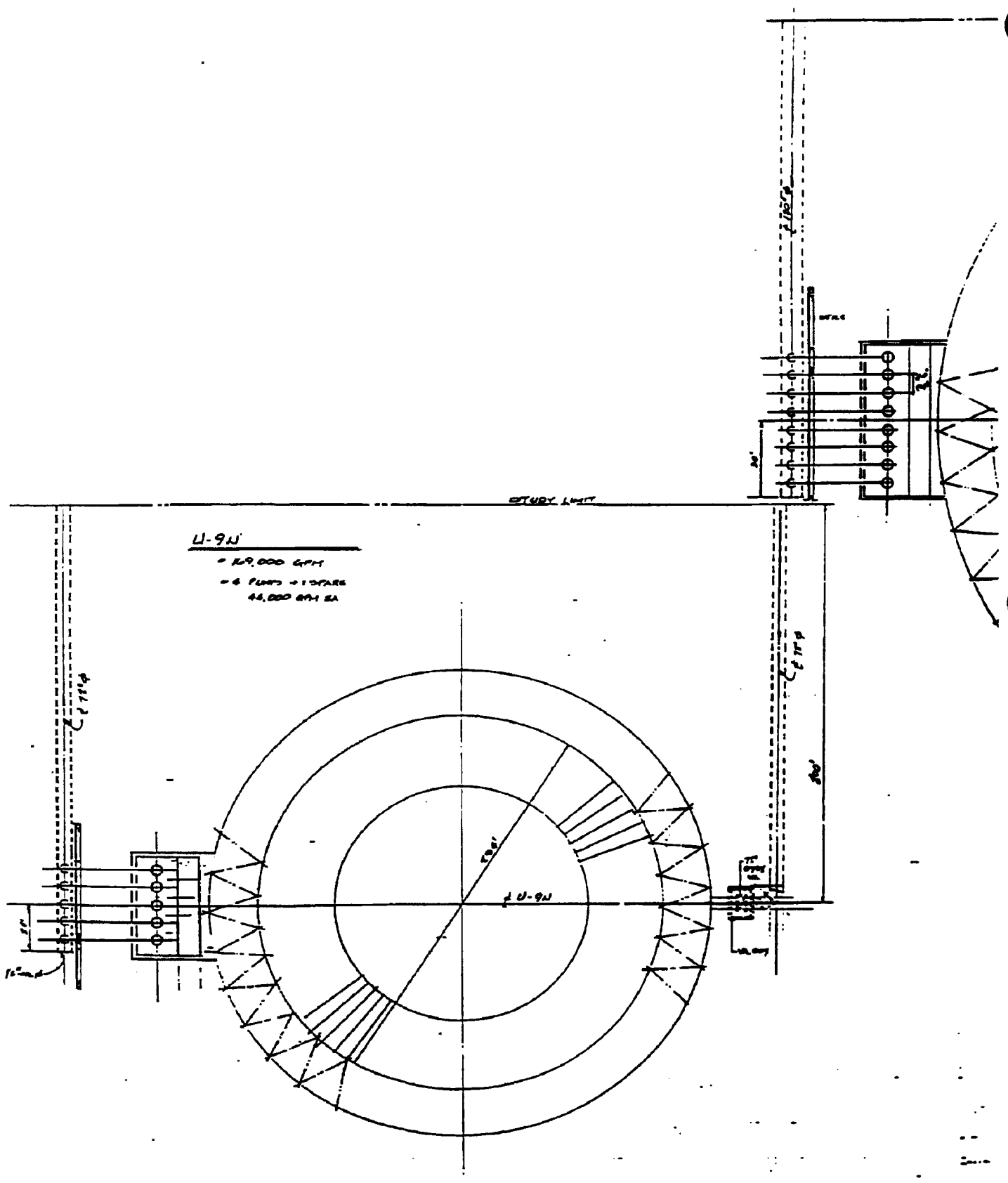
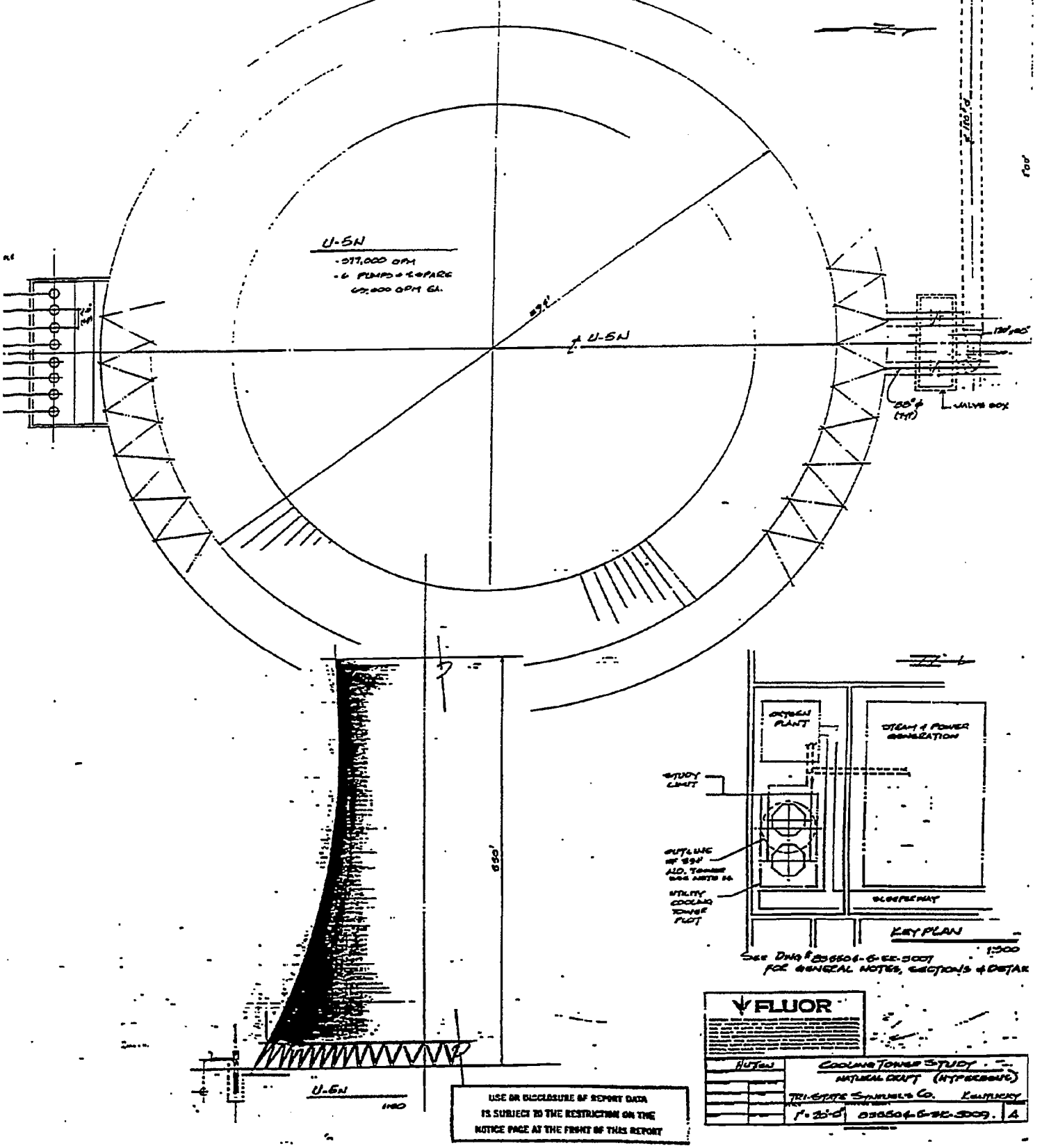
FLUOR
COOLING TOWER STUDY
MECHANICAL DRAFT
TRI-STATE SYNFUELS CO. KENTUCKY


STUDY LIMIT
U-9N
= 129,000 GPM
= 6 PUMPS + 1 STAND
46,000 GPM EA
℄ U-9N


STUDY LIMIT
U-5N
-377,000 GPM
-6 PUMPS + 1 SPARE
62,800 GPM EA.
U-5N
VALVE BOX
OXYGEN PLANT
STEAM & POWER GENERATION
STUDY LIMIT
UTILITY COOLING TOWER PLOT
KEY PLAN
1:500
U-5N
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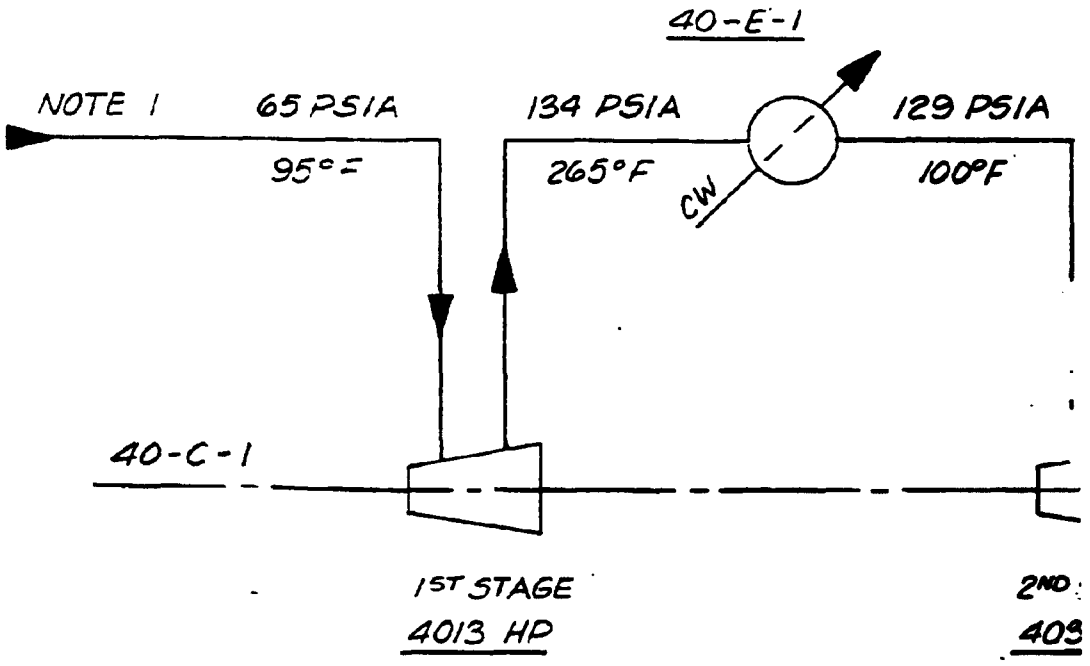
NOTICE PAGE AT THE FRONT OF THIS REPORT
FLUOR
HUTCH
COOLING TOWER STUDY
NATURAL DRAFT (HYPERBOLIC)
TRI-STATE SYNFUELS CO. KENTUCKY
1" = 25'-0"
836504-G-EC-3009.
4

40-C-1
N_2 COMPRESSOR
20,479 HP TOTAL

40-E-1
1ST INTERCOOLER
10.00 MM BTU/HR

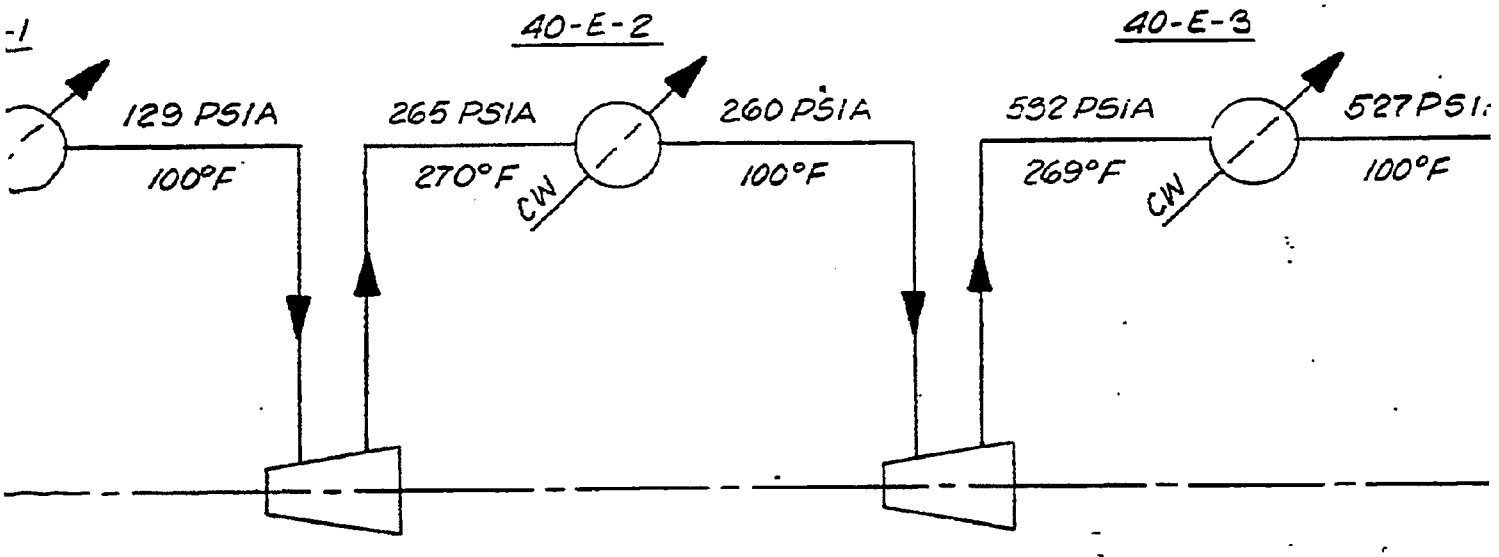


0-E-1
TERCOOLER
) MM BTU/HR

40-E-2
2ND INTERCOOLER
10.45 MM BTU/HR

40-E-3
3RD INTERCOOLER
10.59 MM BTU/HR

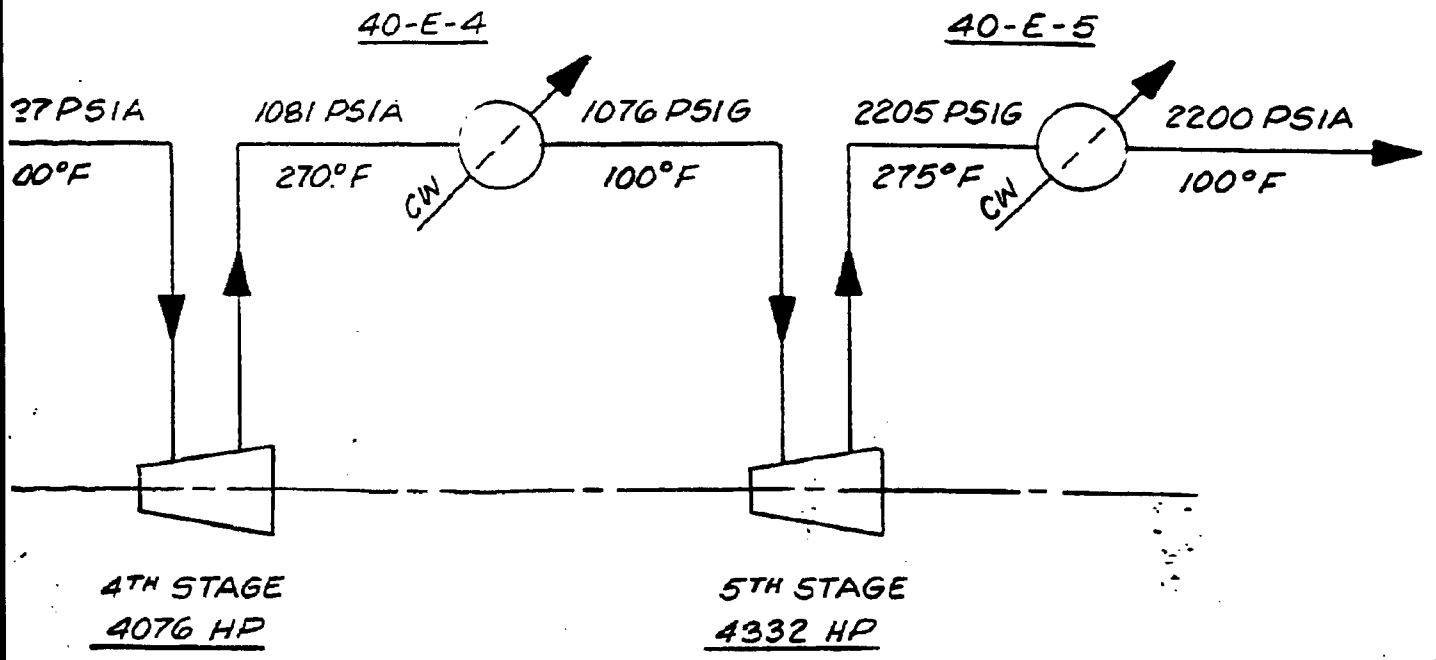
4



NOTE:

1. FEED IS 87,320 Nm^3/HR (8,582
OF 99.99% PURE N_2 CONTAING i
MAX. FROM 4 OPERATING AIR S
PLANTS.

40-E-4	40-E-5
4TH INTERCOOLER	AFTERCOOLER
11.02 MM BTU/HR	12.04 MM BTU/HR



8,588.60 * MOL/HR)
AING 100 ppm O_2
AIR SEPARATION

TRI-STATE SYNFUELS PROJECT

T. KING	NITROGEN COMPRESSION FOR
D. CRACKNELL	ENCHANCED OIL RECOVERY
NONE	STUDY-18

SA
8-14-

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