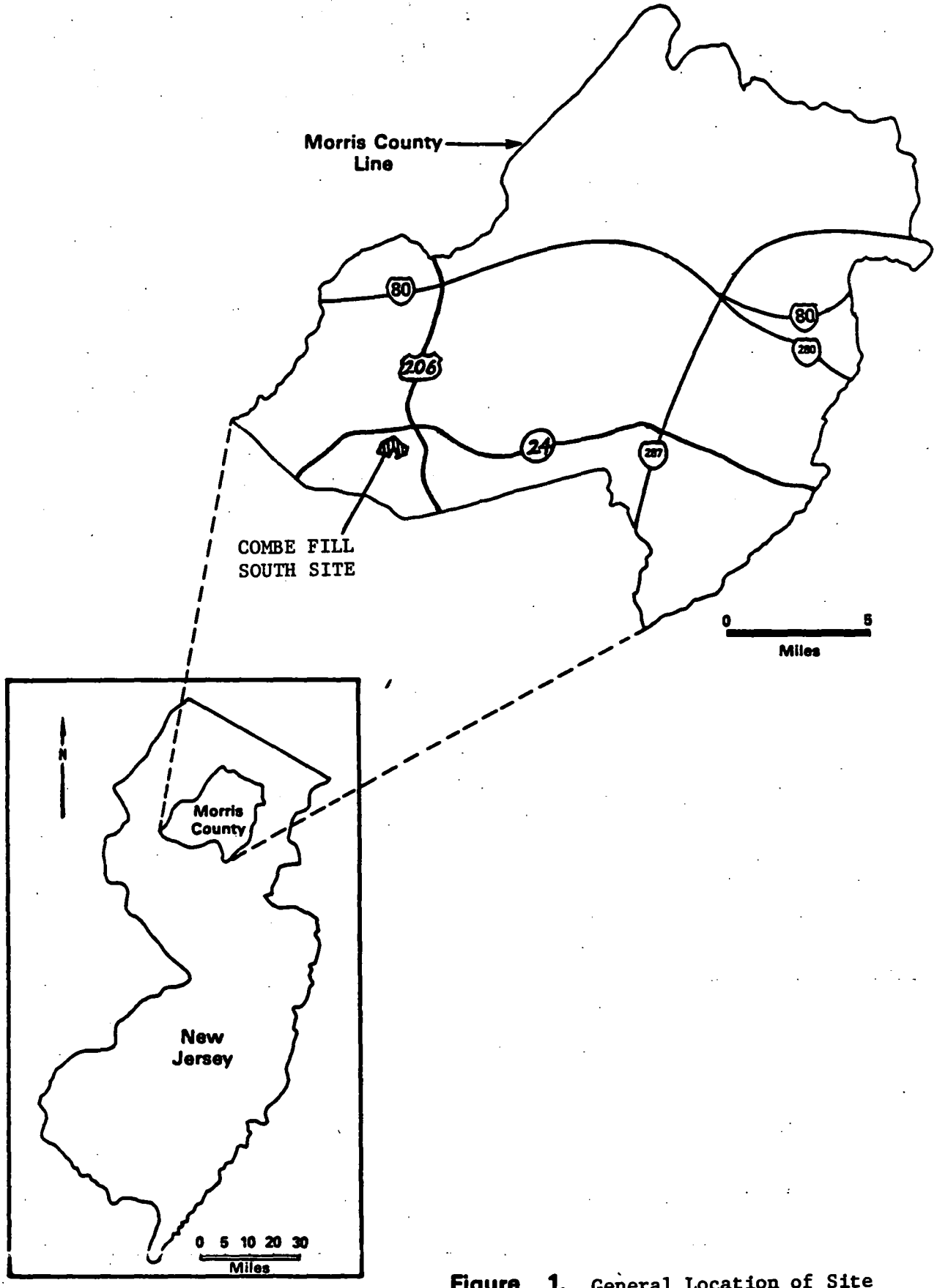
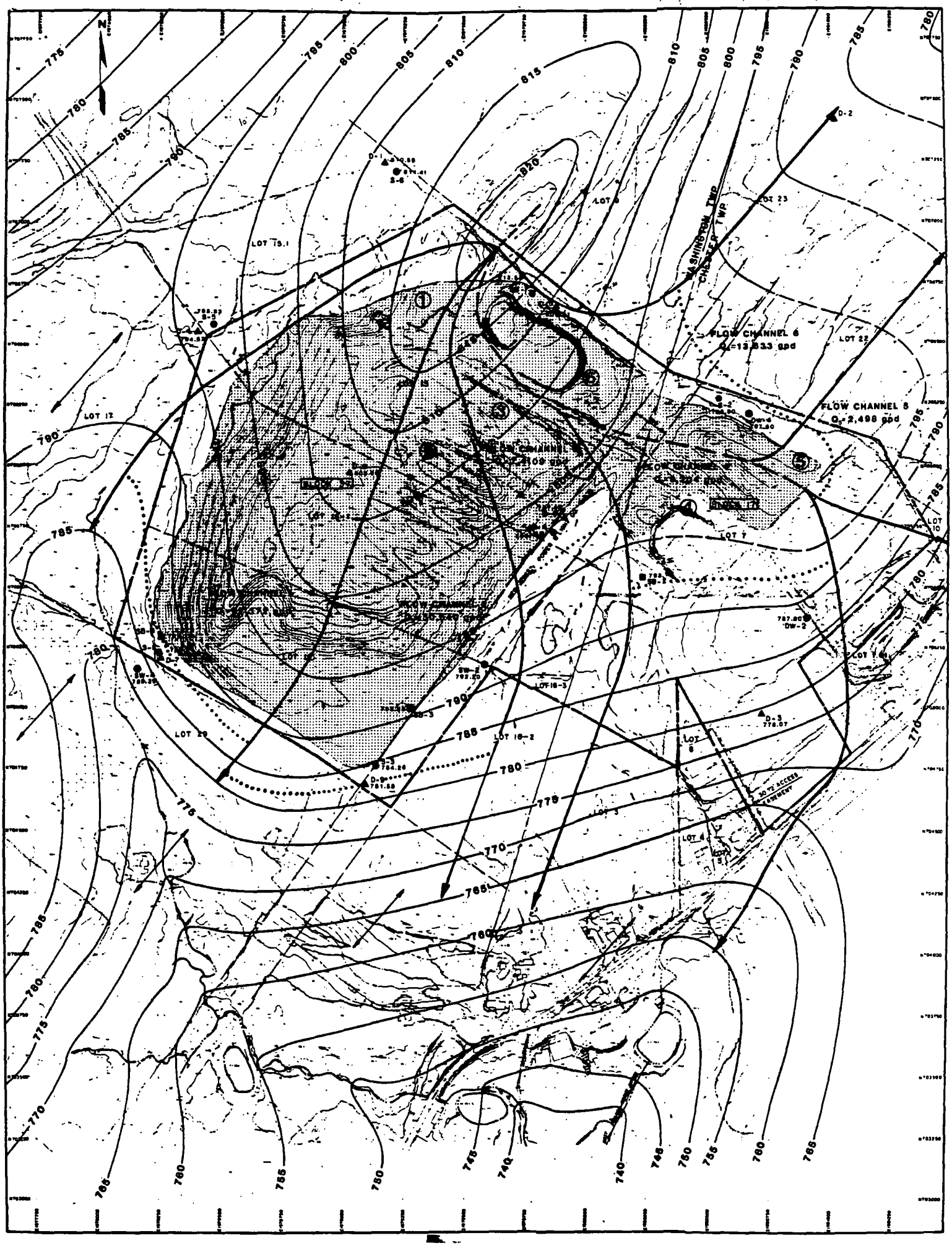
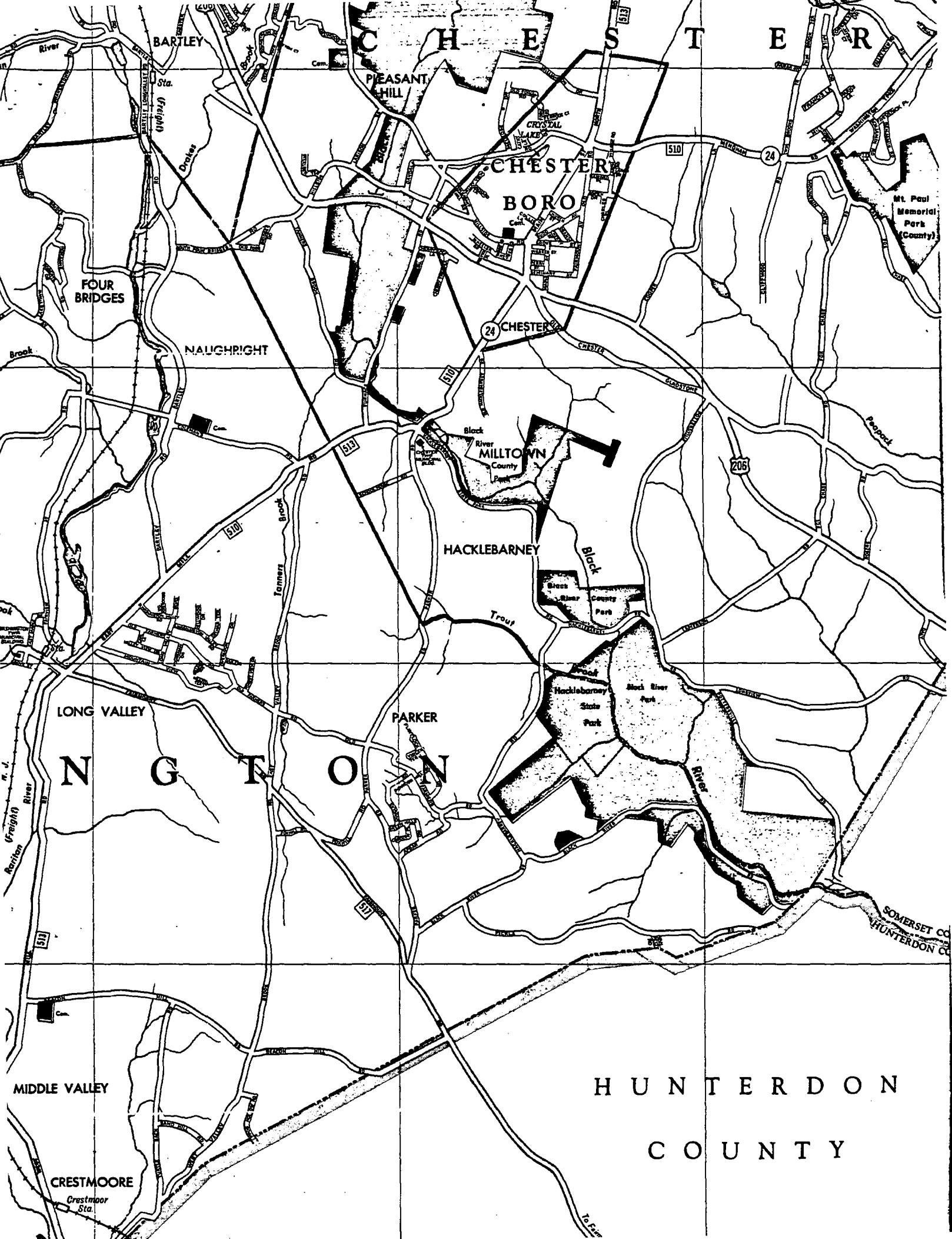
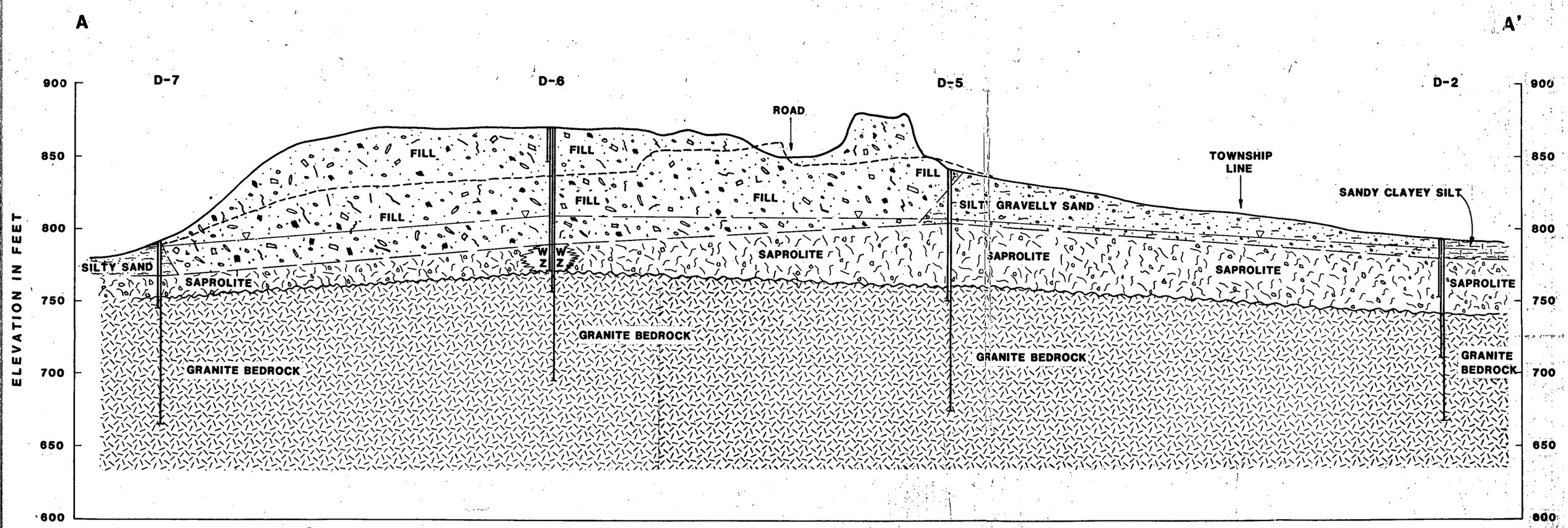
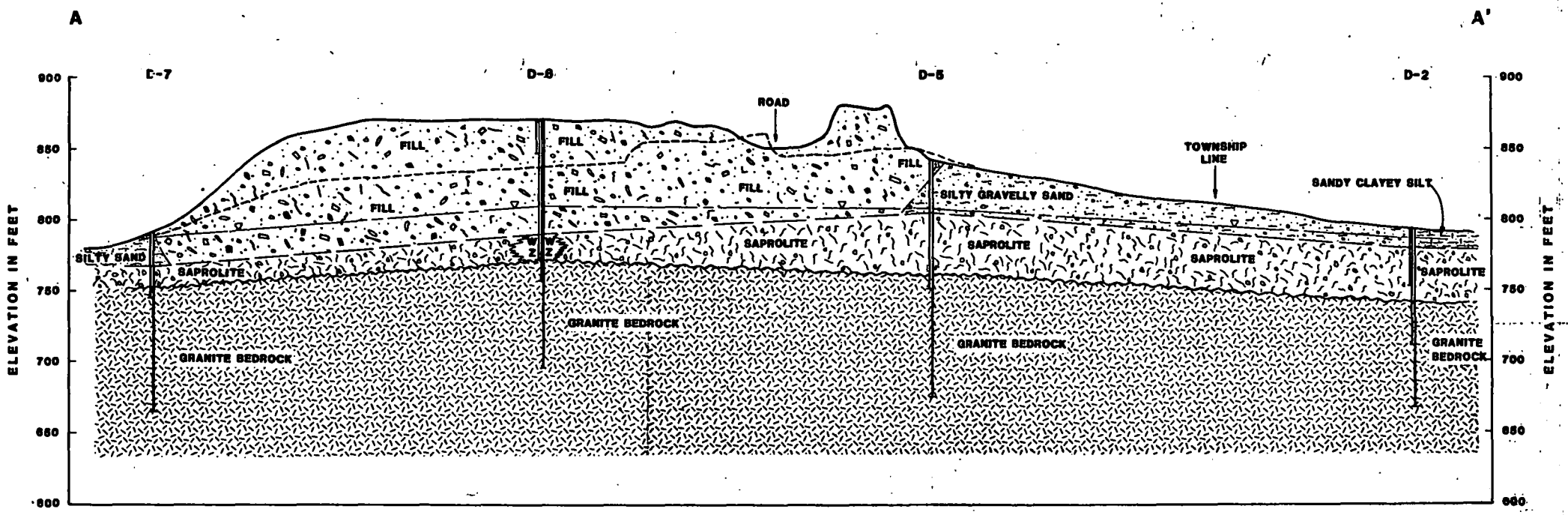


Figure 1. General Location of Site


N
FLOW CHANNEL 6
Q=13,533 gpd
FLOW CHANNEL 5
Q=2,498 gpd
WASHINGTON TWP
CHESTER TWP
LOT 23
LOT 22
LOT 12
LOT 7
LOT 10
LOT 8
LOT 4
LOT 5
LOT 19
LOT 18-2
LOT 18-3
D-2
D-3
DW-2
30 FT. ACCESS EASEMENT


C H E S T E R
BARTLEY
PLEASANT HILL
CRYSTAL LAKE
CHESTER BORO
Mt. Paul Memorial Park (County)
FOUR BRIDGES
NAUGHRIGHT
CHESTER
MILLTOWN
County Park
HACKLEBARNEY
Black River County Park
Hacklebarney State Park
Black River Park
LONG VALLEY
PARKER
N G T O N
MIDDLE VALLEY
CRESTMOORE
Crestmoor Sta.
SOMERSET CO
HUNTERDON CO
H U N T E R D O N
C O U N T Y
Drakes Brook
Tanners Brook
Trout Brook
Peapack Brook
Raritan River
Black River
Freight
Sta.
Cem.
510
513
24
206
517


A
A'
D-7
D-6
D-5
D-2
ROAD
TOWNSHIP LINE
SANDY CLAYEY SILT
FILL
FILL
FILL
FILL
FILL
FILL
SILT
GRAVELLY SAND
SILTY SAND
SAPROLITE
SAPROLITE
SAPROLITE
SAPROLITE
SAPROLITE
W Z
W Z
GRANITE BEDROCK
GRANITE BEDROCK
GRANITE BEDROCK
GRANITE BEDROCK
ELEVATION IN FEET
900
850
800
750
700
650
600

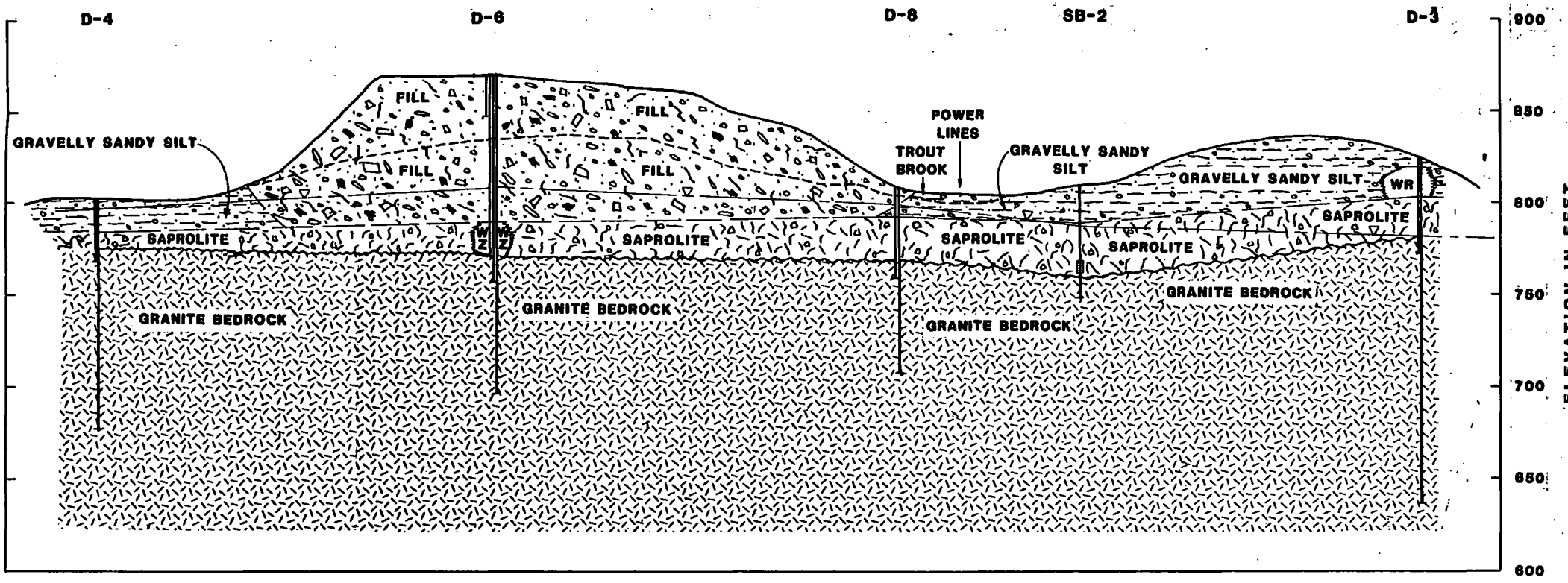

A
A'
D-7
D-8
D-5
D-2
ROAD
TOWNSHIP LINE
FILL
FILL
FILL
FILL
FILL
FILL
SILTY GRAVELLY SAND
SANDY CLAYEY SILT
SILTY SAND
SAPROLITE
SAPROLITE
SAPROLITE
SAPROLITE
SAPROLITE
GRANITE BEDROCK
GRANITE BEDROCK
GRANITE BEDROCK
GRANITE BEDROCK
ELEVATION IN FEET
900
850
800
750
700
650
600

SECTION A-A'

SECTION B-B

C

C'



SECTION C-C'

LEGEND

PRESENT GROUND SURFACE

ORIGINAL GROUND SURFACE

WATER TABLE

SCALE: VERTICAL 1"=200'
HORIZONTAL 1"=50'

COMBE
SOUTH L

CROSS SECTIONS

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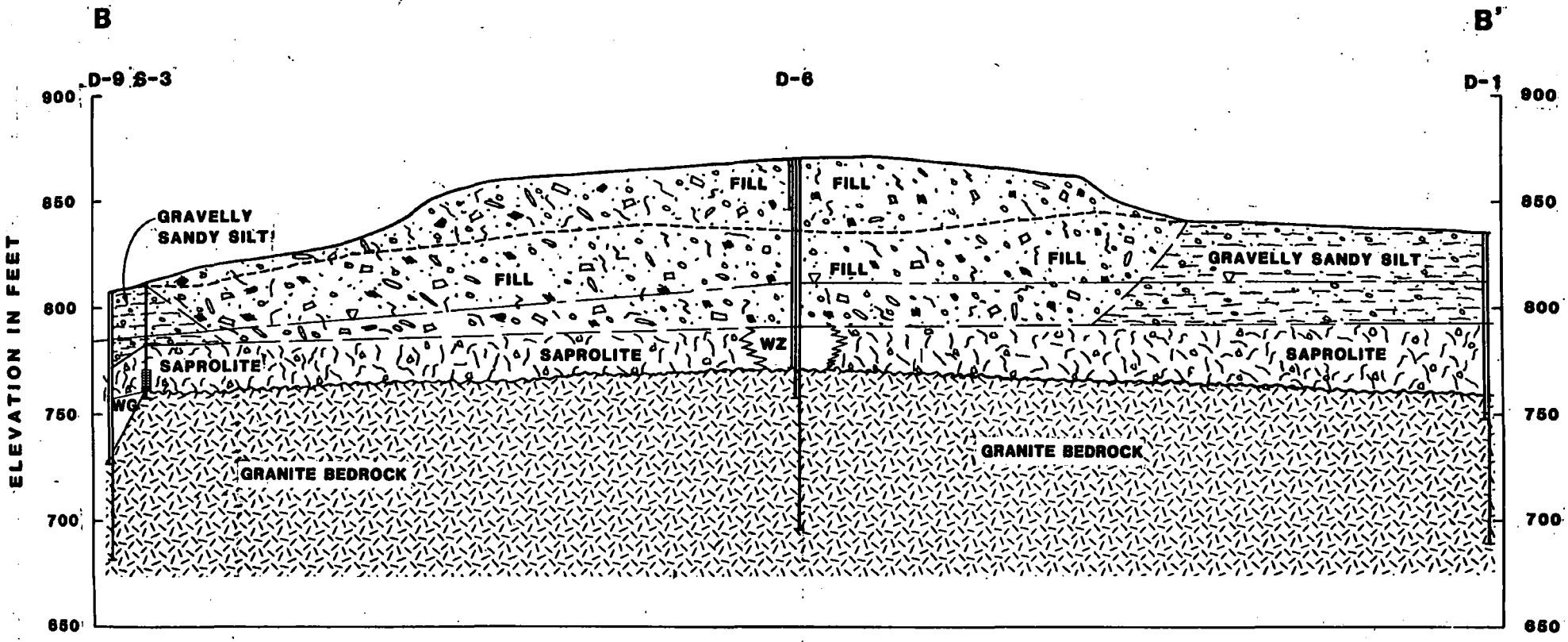
Environmental Science & E

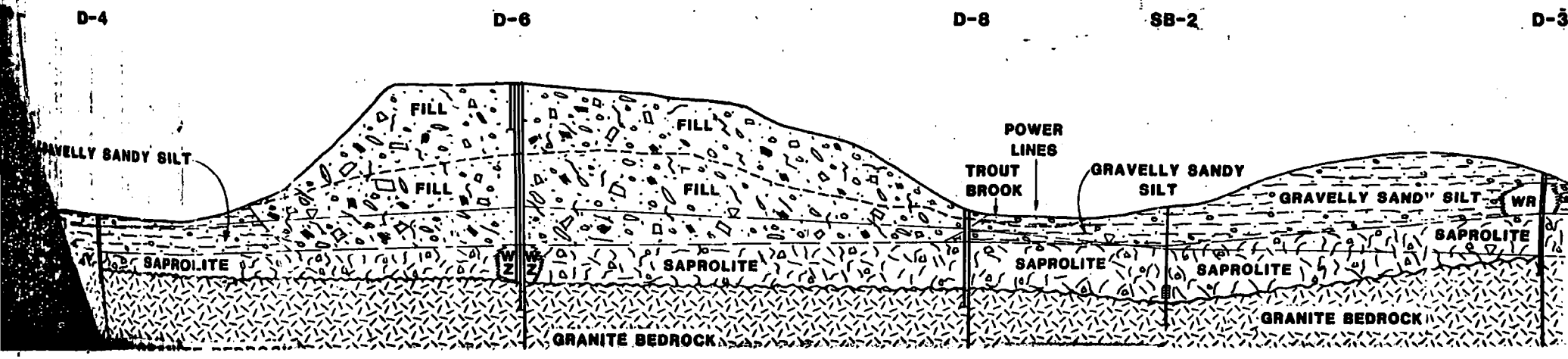
Pearl River, New

drawn DLB	approved
checked	date 11-1-85

r. e. wright
earth resou
middletown


B
B'
D-9
S-3
D-6
D-1
900
850
800
750
700
650
ELEVATION IN FEET
GRAVELLY SANDY SILT
FILL
SAPROLITE
WZ
WG
GRANITE BEDROCK

SECTION B-B'


D-4
D-6
D-8
SB-2
D-3
FILL
GRAVELLY SANDY SILT
SAPROLITE
WZ
GRANITE BEDROCK
POWER LINES
TROUT BROOK
WR

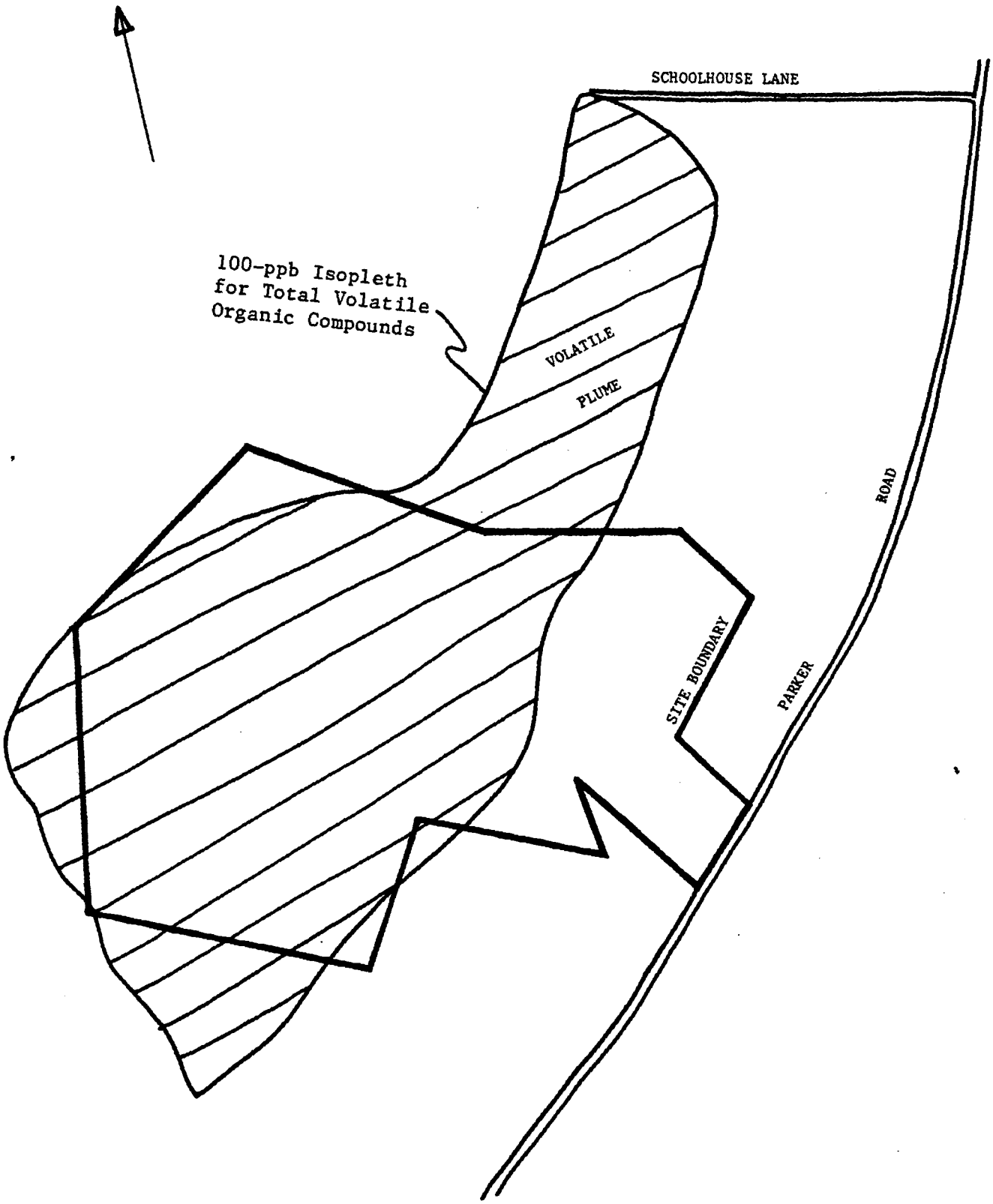

SCHOOLHOUSE LANE
100-ppb Isopleth
for Total Volatile
Organic Compounds
VOLATILE
PLUME
SITE BOUNDARY
PARKER
ROAD

Figure 4.

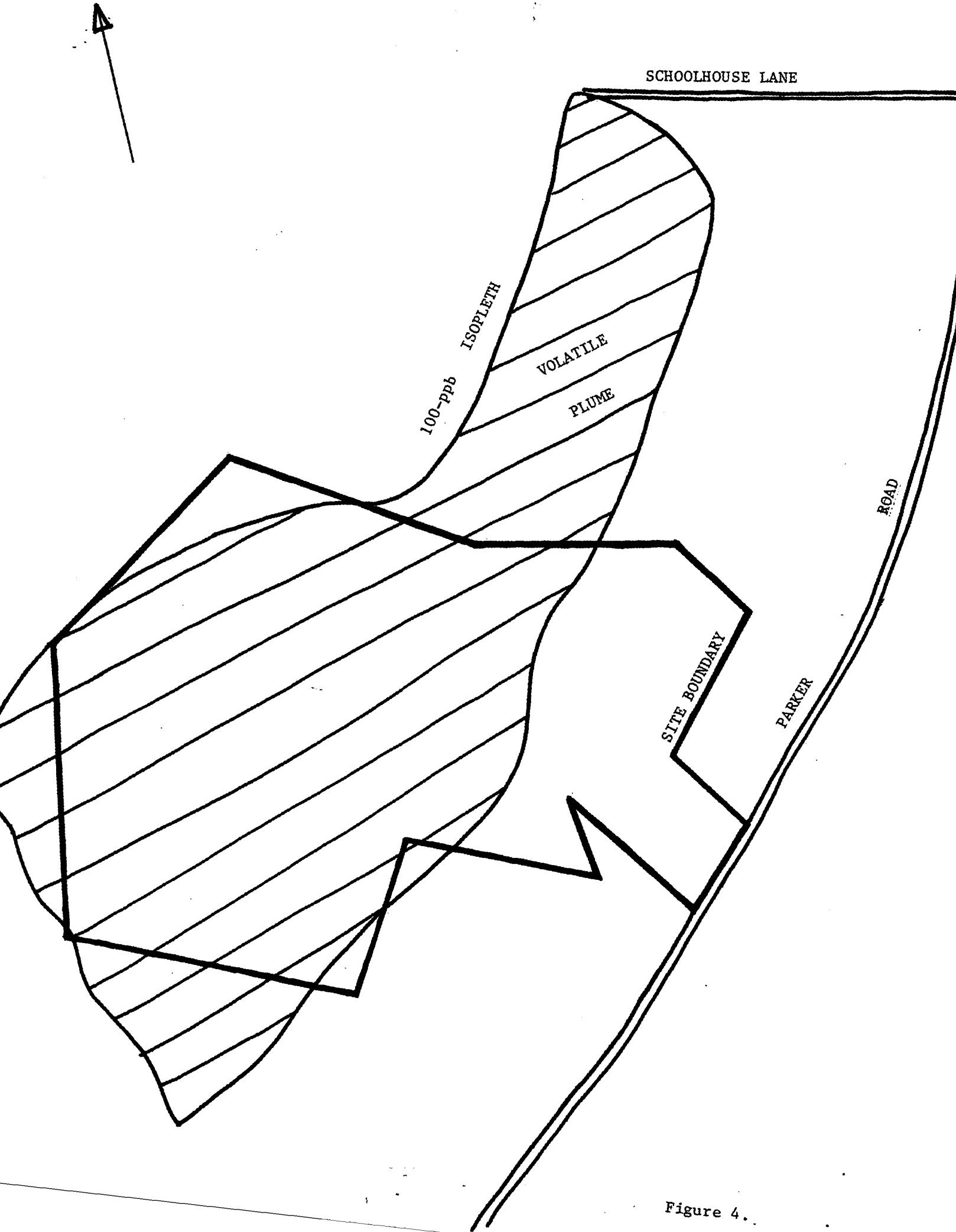
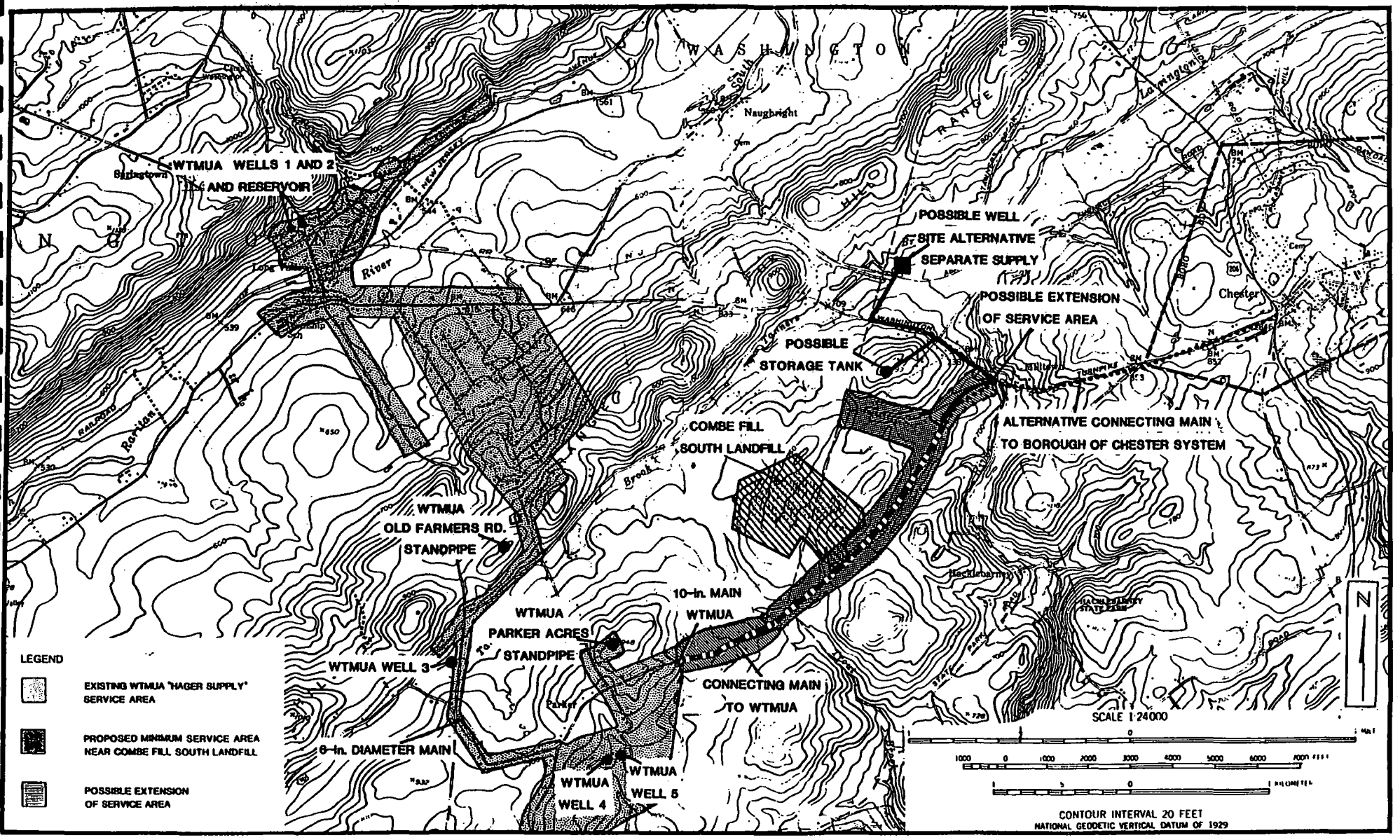

SCHOOLHOUSE LANE
100-ppb ISOPLETH
VOLATILE
PLUME
SITE BOUNDARY
PARKER
ROAD

Figure 4.

COMBE FILL SOUTH LANDFILL WATER SUPPLY ALTERNATIVES



COMBE FILL SOUTH LANDFILL WATER SUPPLY ALTERNATIVES

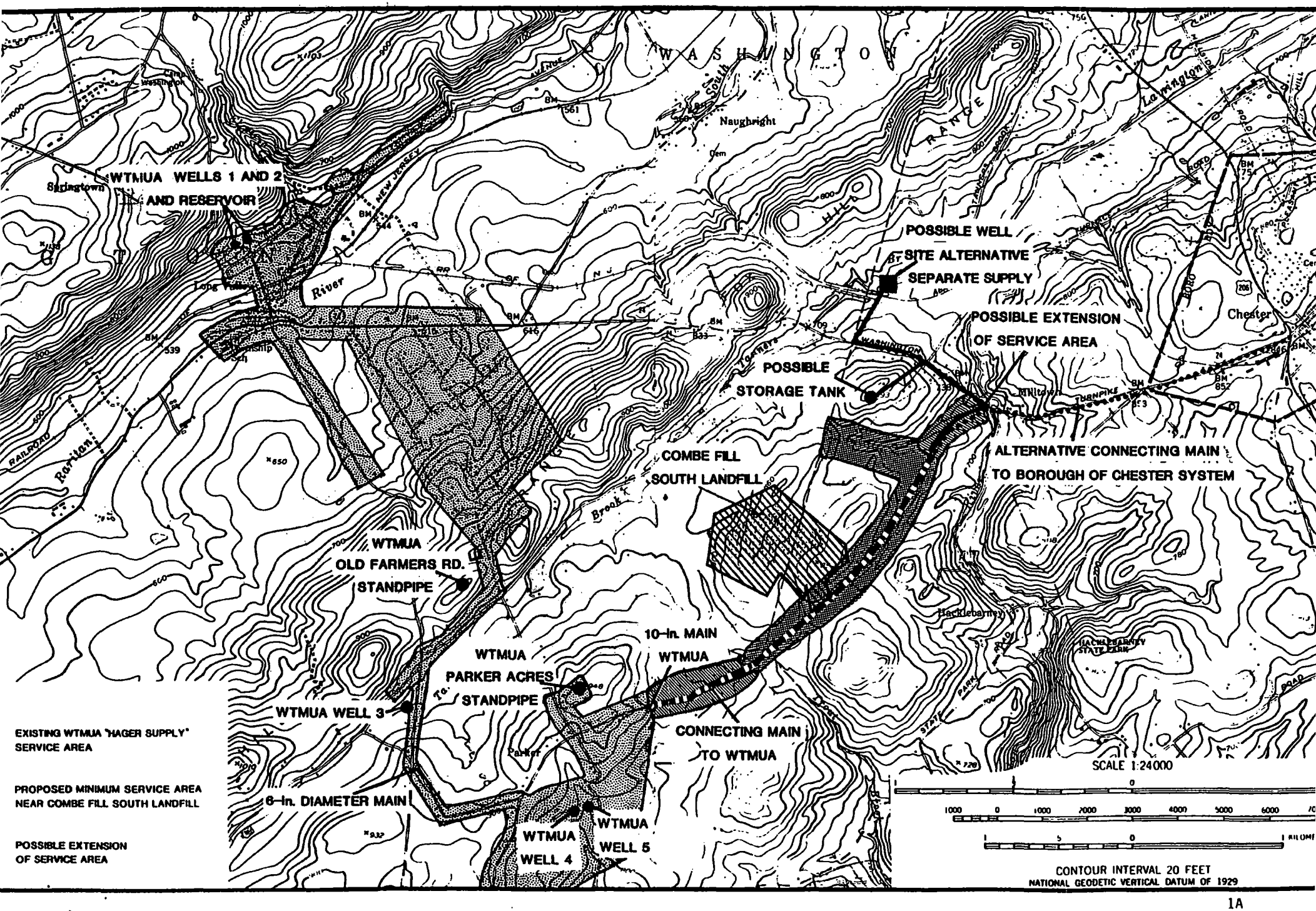


TABLE 8

COMPONENTS OF REMEDIAL ALTERNATIVES

COMBE FILL SOUTH LANDFILL

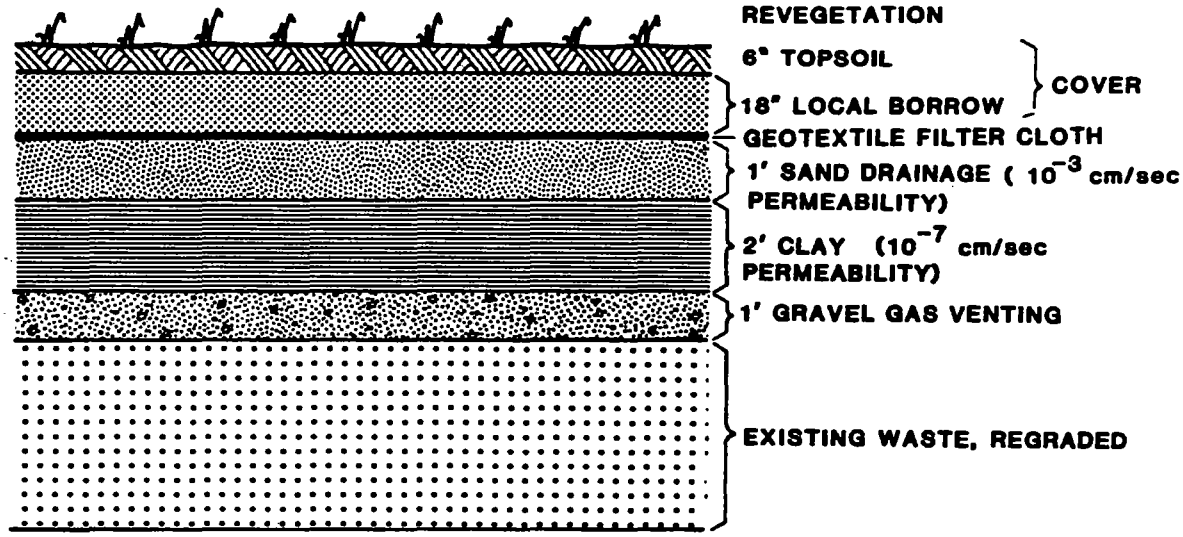
COMPONENT	1 NO ACTION	2 NEW RCRA LANDFILL	3 ACHIEVE FEDERAL STANDARDS A	3 ACHIEVE FEDERAL STANDARDS B	3 ACHIEVE FEDERAL STANDARDS C	MODIFIED C-VERSION D	4 EXCEED STANDARDS	5 ACHIEVE BUT NOT STANDARDS A	5 SOME ALL STANDARDS B
1. Alternate water supply	X	X	X	X	X	X	X	X	X
2. Security fencing	X	X	X	X	X	X	X	X	X
3. Well installation	X	X	X	X	X	X	X	X	X
4. Environmental monitoring	X	X	X	X	X	X	X	X	X
5. Creation of on-site RCRA landfill		X							
6. Access road(s)		X	X	X	X	X	X	X	X
7. Grading, filling, and general site preparation		X	X	X	X	X	X	X	X
8. Multi-layered, terraced cap									
A. With clay		X	X	X	X	X	X	X	
B. No clay									X
9. Gas venting									
A. Passive									
1. Trench			X	X					X
2. Pipe vents					X			X	
B. Active		X				X	X		
10. Gas treatment		X				X	X		
11. Surface water controls		X	X	X	X	X	X	X	X
12. Leachate collection trench		X	X	X		X	X		X
13. Shallow aquifer pumping		X			X	X			
14. Deep aquifer pumping									
A. Northeast flow path				X	X				
B. All flow paths							X		
15. Ground water barrier wall									
A. Circumferential								X	
B. Upgradient							X		
16. On-site treatment and disposal of ground-water/leachate									
A. With discharge to Trout Brook			X	X	X	X			X
B. With discharge to Black River							X		

Figure 7.

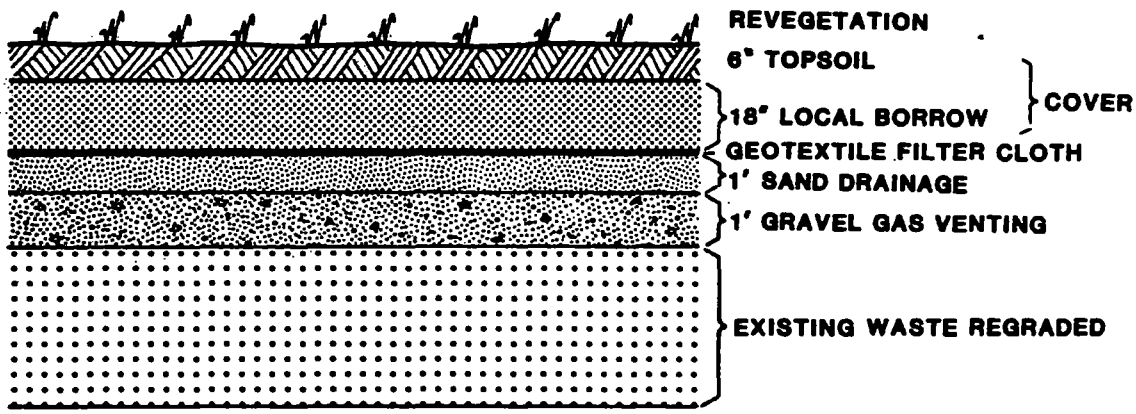
obsolete?

CAP
SECTION VIEWS[a]

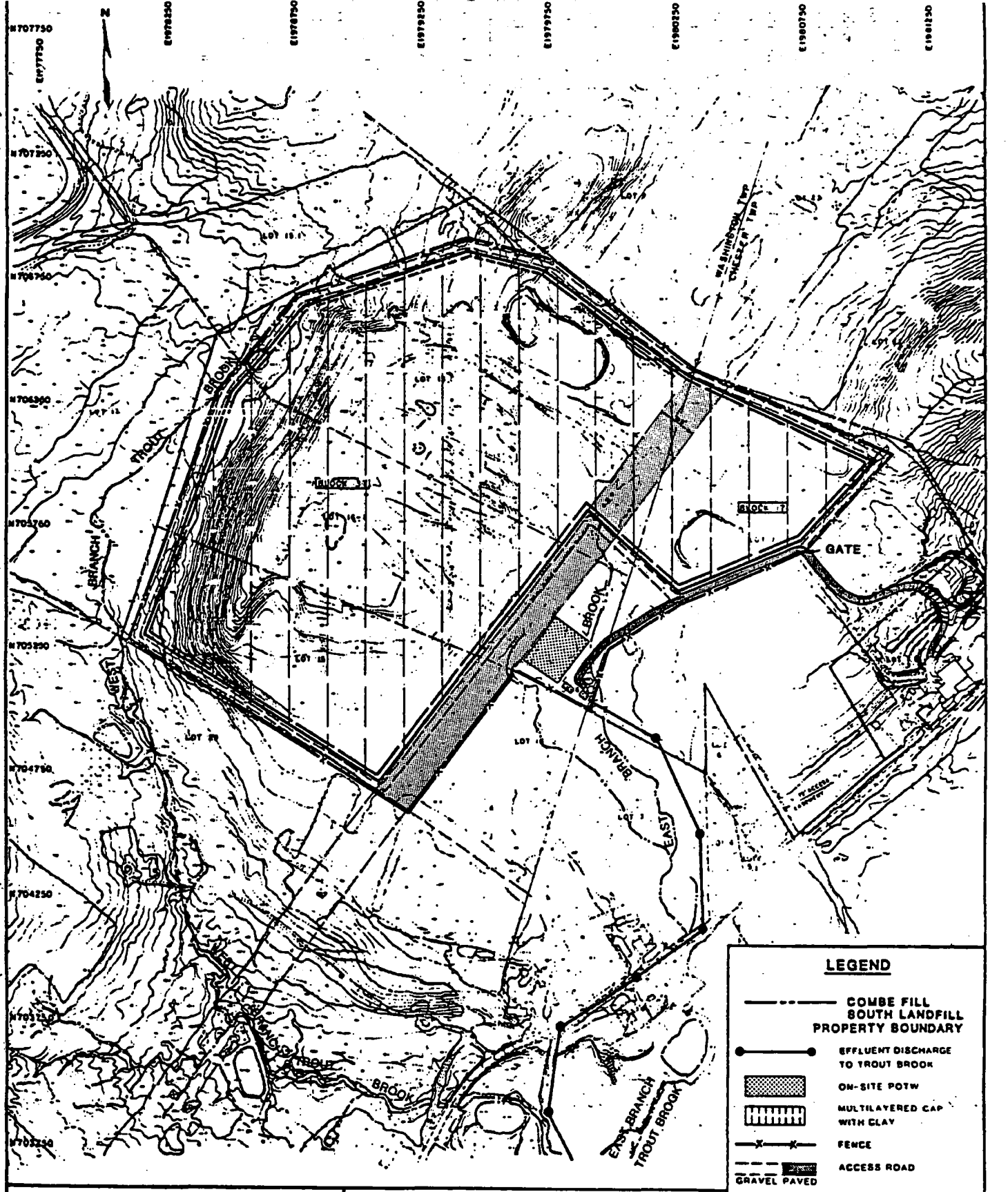
CLAY CAP



CLAYLESS CAP



[a] NOT TO SCALE



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Environmental Science & Engineering Consultants
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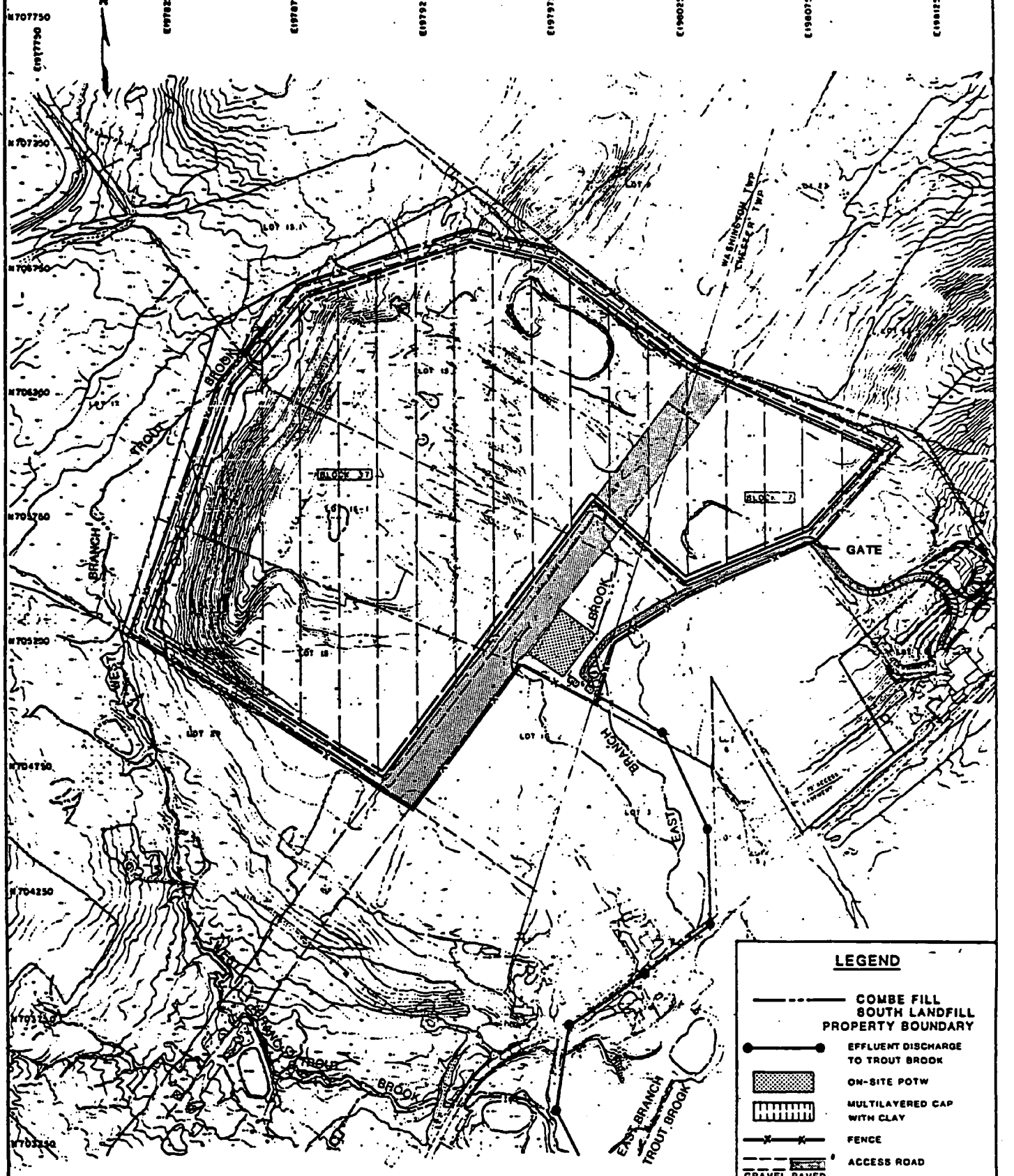
COMBE FILL SOUTH LANDFILL
REMEDIAL INVESTIGATION/
FEASIBILITY STUDY

r. e. wright associates, inc.
earth resources consultants

SCHEMATIC PLAN VIEW
ALTERNATIVE No. 3A
ACHIEVE STANDARDS WITH CAP,
TRENCH, AND TREAT

FIGURE 4-1



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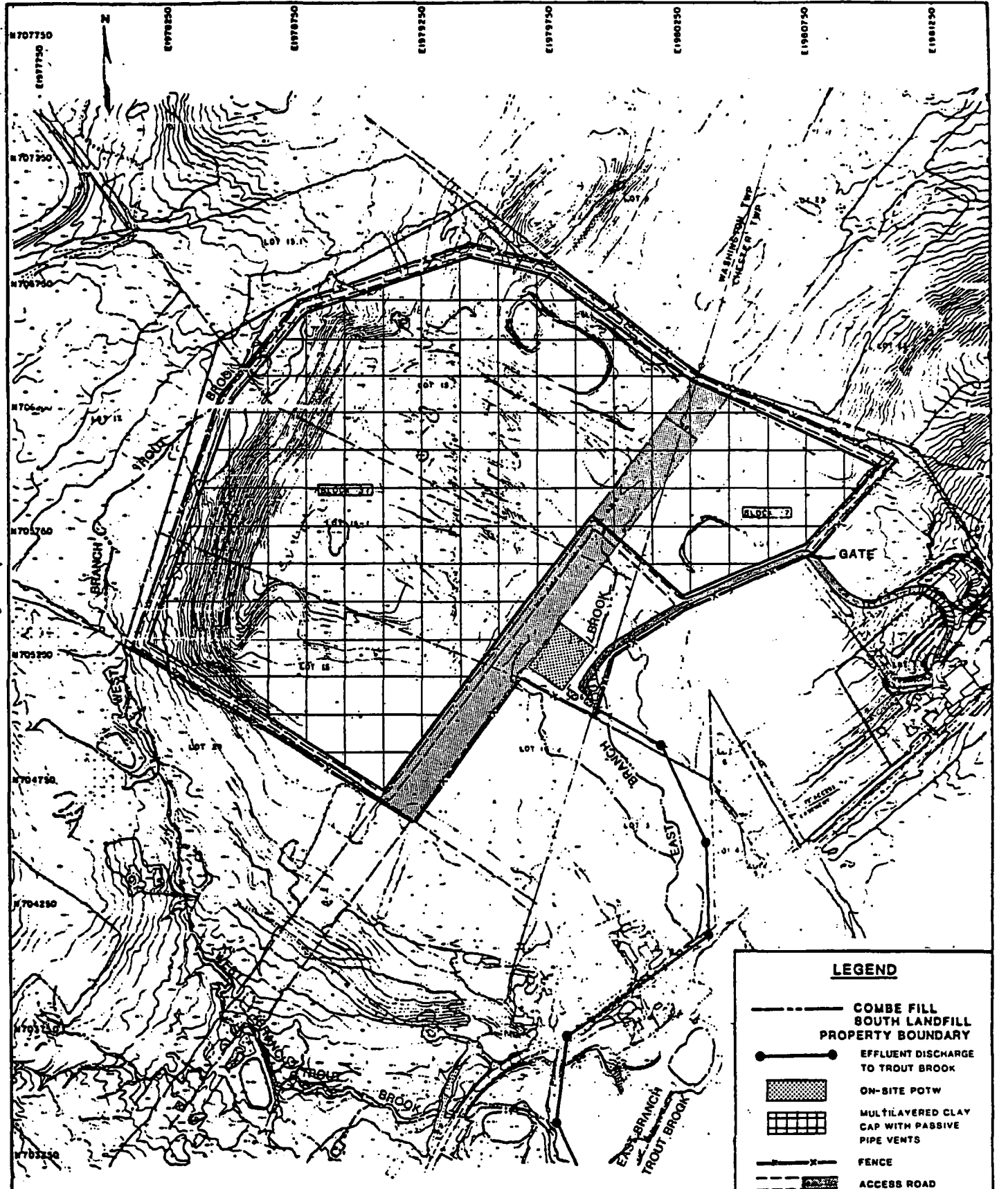
earth resources consultants

SCHEMATIC PLAN VIEW
ALTERNATIVE No. 3B
ACHIEVE STANDARDS WITH CAP,
TRENCH, DEEP PUMP, AND TREAT

FIGURE 4-7



LEGEND

- COMBE FILL SOUTH LANDFILL PROPERTY BOUNDARY
- EFFLUENT DISCHARGE TO TROUT BROOK
- ON-SITE POTW
- MULTILAYERED CLAY CAP WITH PASSIVE PIPE VENTS
- FENCE
- ACCESS ROAD
- GRAVEL PAVED
- EXACAVATED WASTES MOVED TO MAIN AREAS UNDER CAP

400 0 400
Scale in feet

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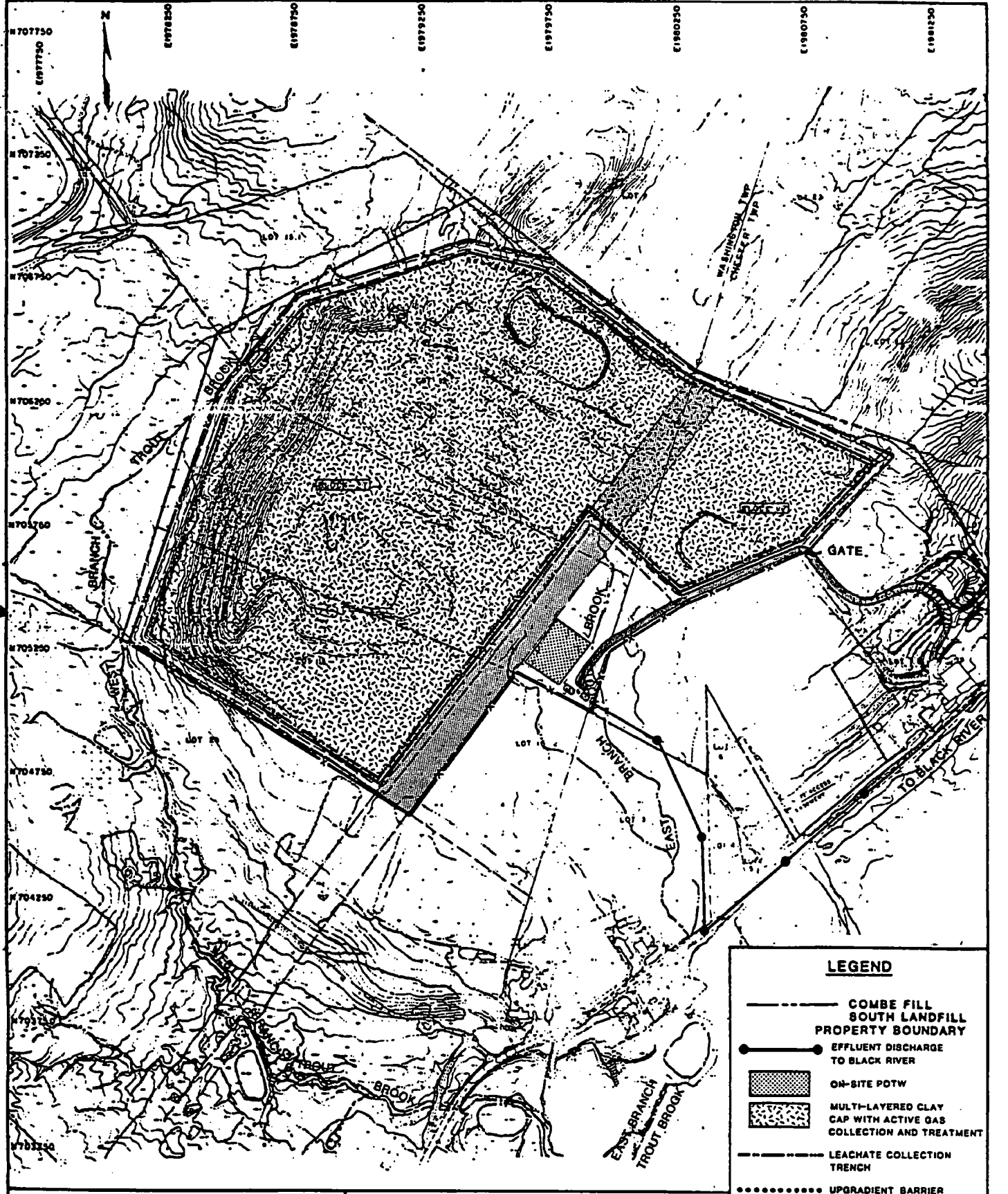
earth resources consultants

SCHEMATIC PLAN VIEW
ALTERNATIVE No. 3C
ACHIEVE STANDARDS WITH CAP,
SHALLOW AND DEEP PUMP, AND TREAT

FIGURE 4-8



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Environmental Science & Engineering Consultants
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Pearl River, New York 10965

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REMEDIAL INVESTIGATION/
FEASIBILITY STUDY

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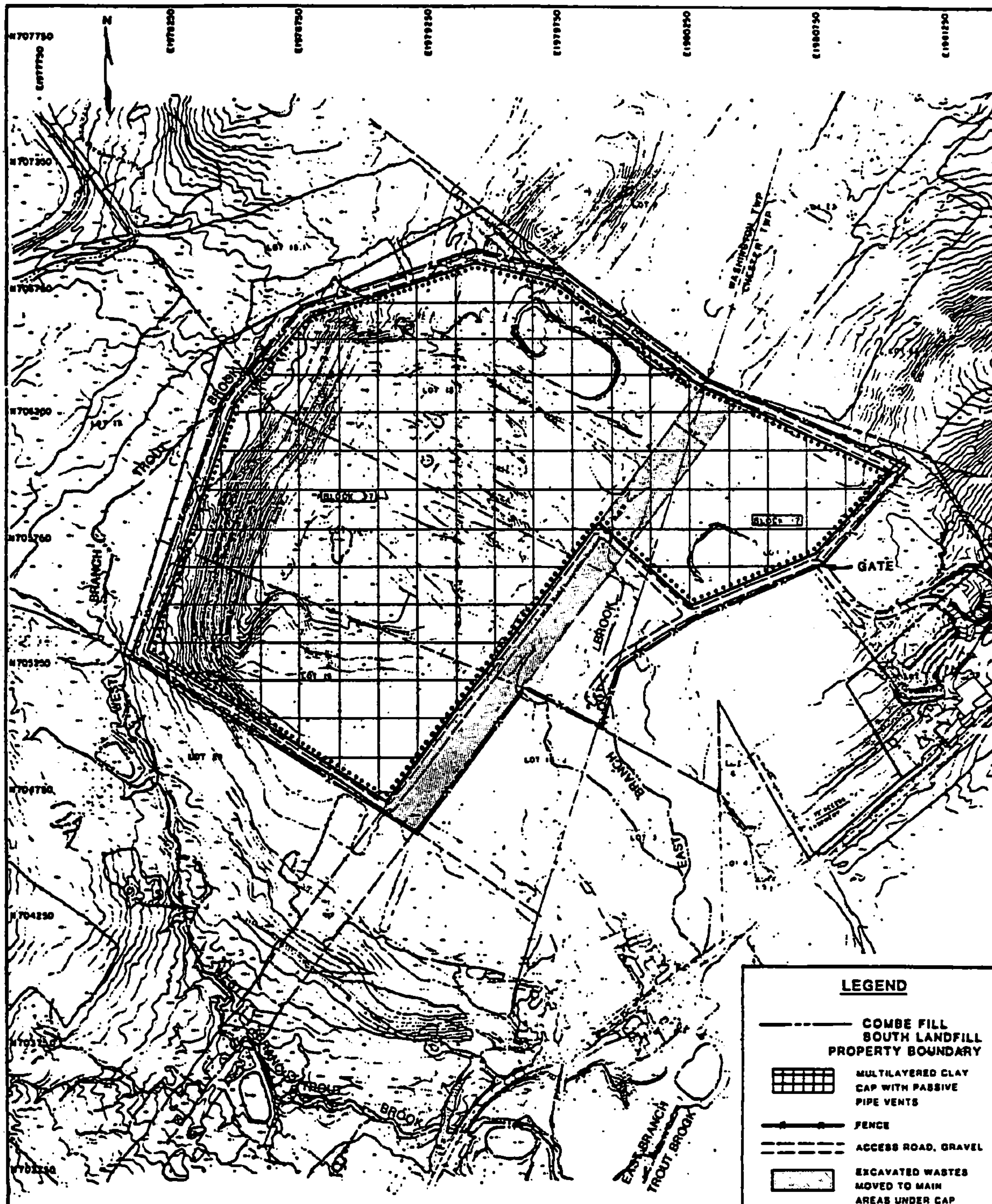
earth resources consultants

SCHEMATIC PLAN VIEW
ALTERNATIVE No. 4
EXCEED STANDARDS

FIGURE 4-9



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One Blue Hill Plaza
Pearl River, New York 10965

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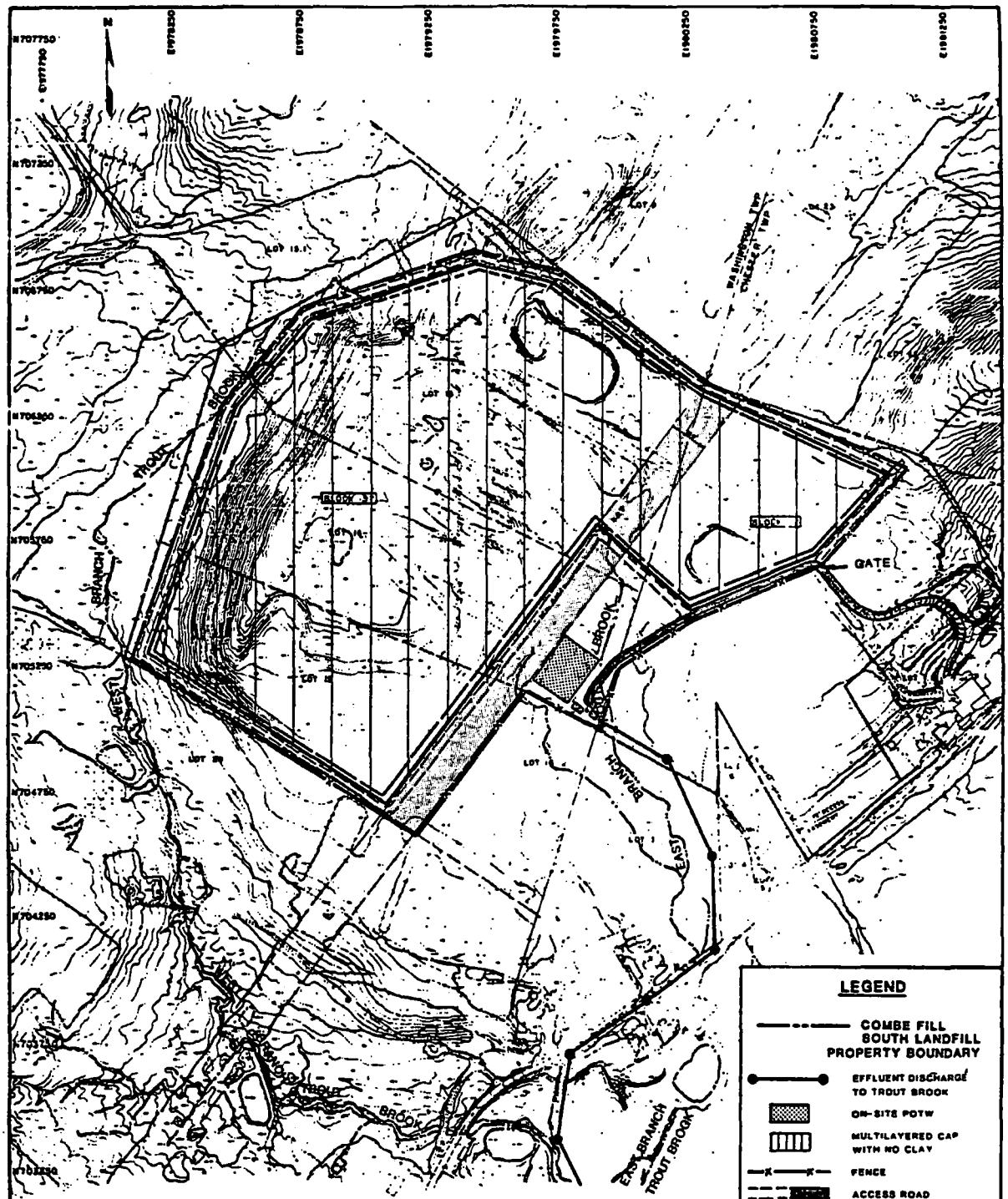
SCHEMATIC PLAN VIEW
ALTERNATIVE No. 5A
ACHIEVE SOME BUT NOT ALL
STANDARDS WITH CAP AND
CIRCUMFERENTIAL BARRIER

400 0 400
Scale in feet

FIGURE 4-10



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FEASIBILITY STUDY

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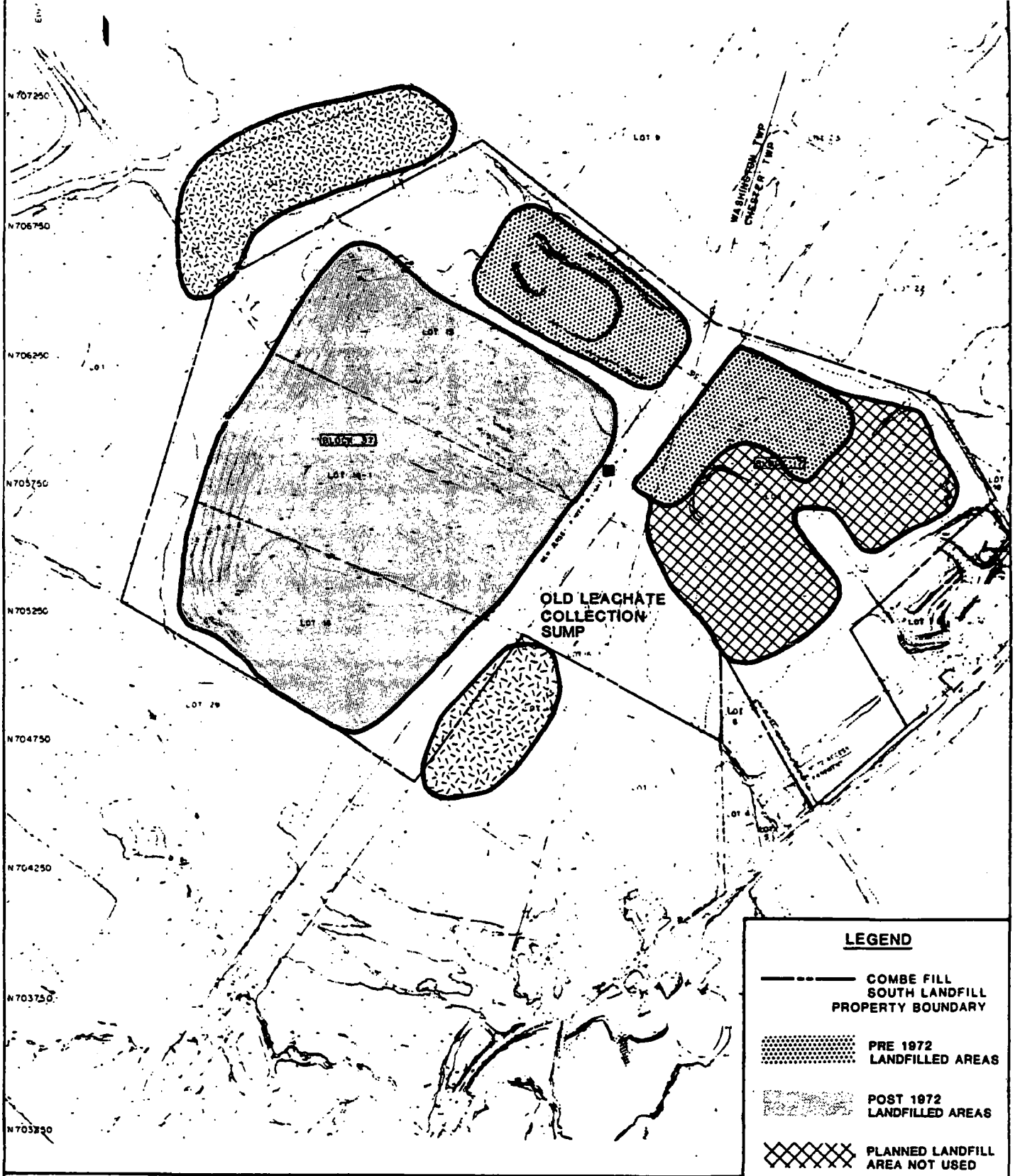
earth resources consultants

SCHEMATIC PLAN VIEW
ALTERNATIVE 5B
ACHIEVE SOME BUT NOT ALL
STANDARDS WITH CLAYLESS CAP,
TRENCH AND TREAT

FIGURE 4-11



LEGEND

- COMBE FILL SOUTH LANDFILL PROPERTY BOUNDARY
- PRE 1972 LANDFILLED AREAS
- POST 1972 LANDFILLED AREAS
- PLANNED LANDFILL AREA NOT USED
- POSSIBLE DISPOSAL AREA

400 0 400
Scale in feet

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COMBE FILL SOUTH LANDFILL REMEDIAL INVESTIGATION/ FEASIBILITY STUDY

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earth resources consultants
harrisburg pennsylvania

APPROXIMATE LANDFILL ACTIVITY AREAS

FIGURE 1-4

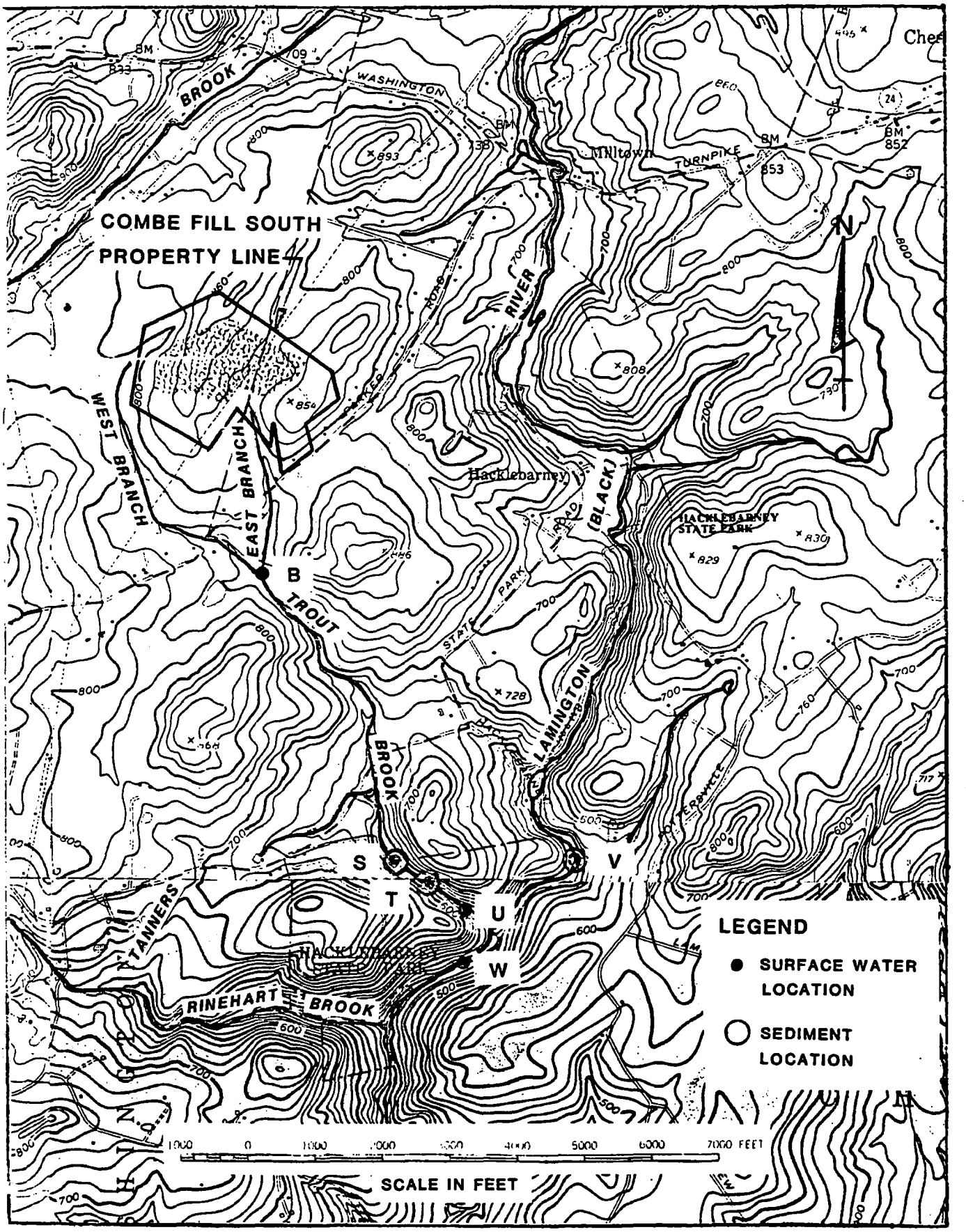
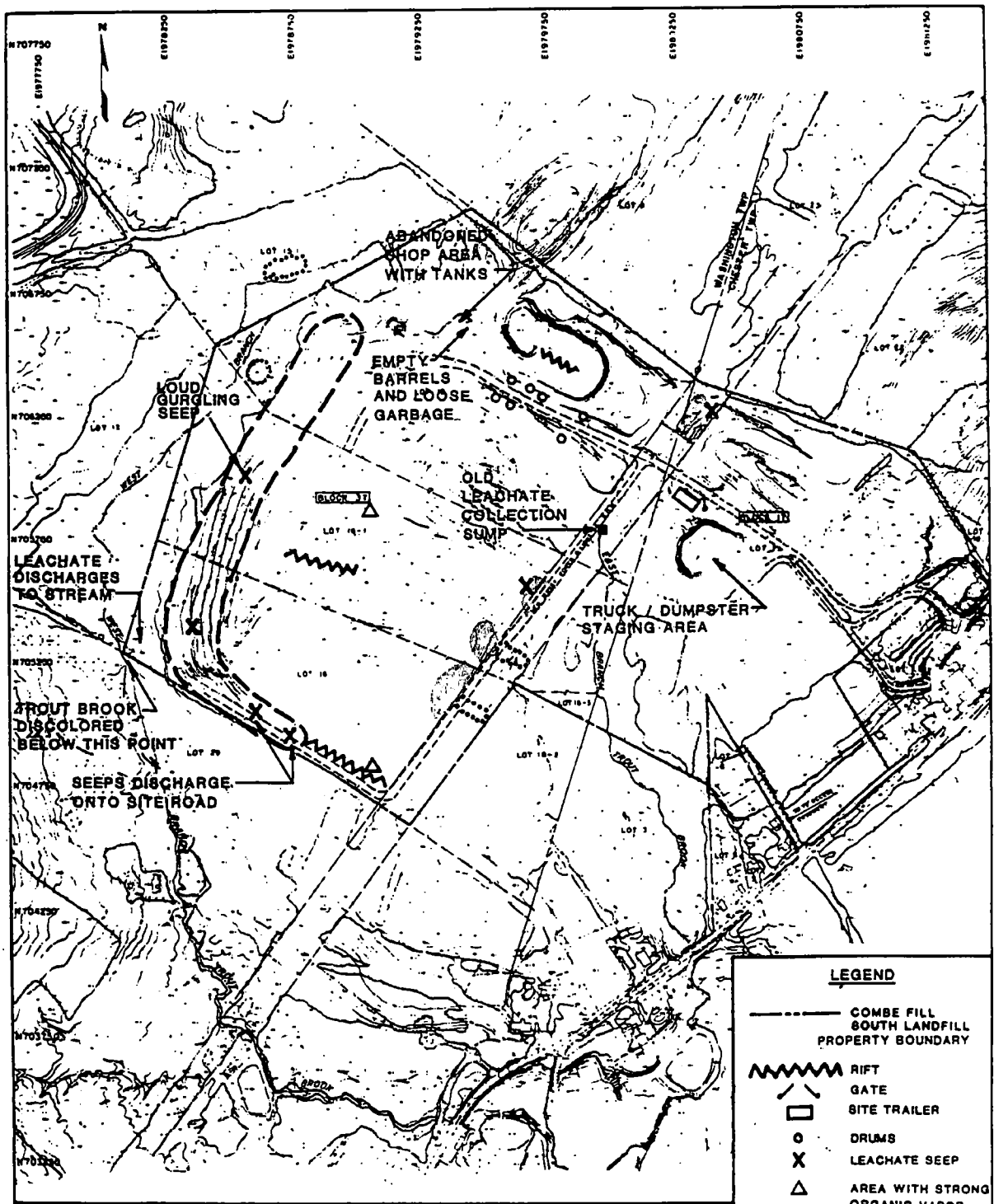


FIGURE 5-7

COMBE FILL SOUTH LANDFILL RI/FS

LOCATION OF SAMPLING STATIONS

FOR PREVIOUS SURFACE WATER / SEDIMENT DATA



LEGEND

- COMBE FILL SOUTH LANDFILL PROPERTY BOUNDARY
- RIFT
- GATE
- SITE TRAILER
- DRUMS
- LEACHATE SEEP
- AREA WITH STRONG ORGANIC VAPOR
- SWAMP AREA
- STANDING WATER
- AREA OCCUPIED BY NUMEROUS SEEPS

400 0 400

Scale in feet

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COMBE FILL SOUTH LANDFILL
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SITE PHYSICAL DESCRIPTION

FIGURE 1- 2

TABLE 4-2

PRINCIPAL APPLICABLE FEDERAL REGULATIONS

Combe Fill South Landfill

FEDERAL REGULATION	ISSUES
1. National Environmental Policy Act (NEPA)	Full and adequate consideration of environmental issues and adequate consideration of alternatives. Adequate opportunity for public participation.
2. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	Actions taken in response to release of hazardous substances shall be in accordance with National Contingency Plan (NCP) of Section 311 of the Clean Water Act (CWA).
3. National Contingency Plan (NCP 1985)	Subpart F - Hazardous Substance Response. Definition of appropriate remedial action. Remedial actions must be consistent with permanent remedy to prevent or minimize the release of hazardous substances, pollutants, or contaminants so they do not migrate to cause substantial danger to present or future public health, welfare, or the environment.
4. Resource Conservation and Recovery Act (RCRA 1984)	Subtitle C - Hazardous Waste Management; particulary those sections defining closure and post-closure technological monitoring requirements.

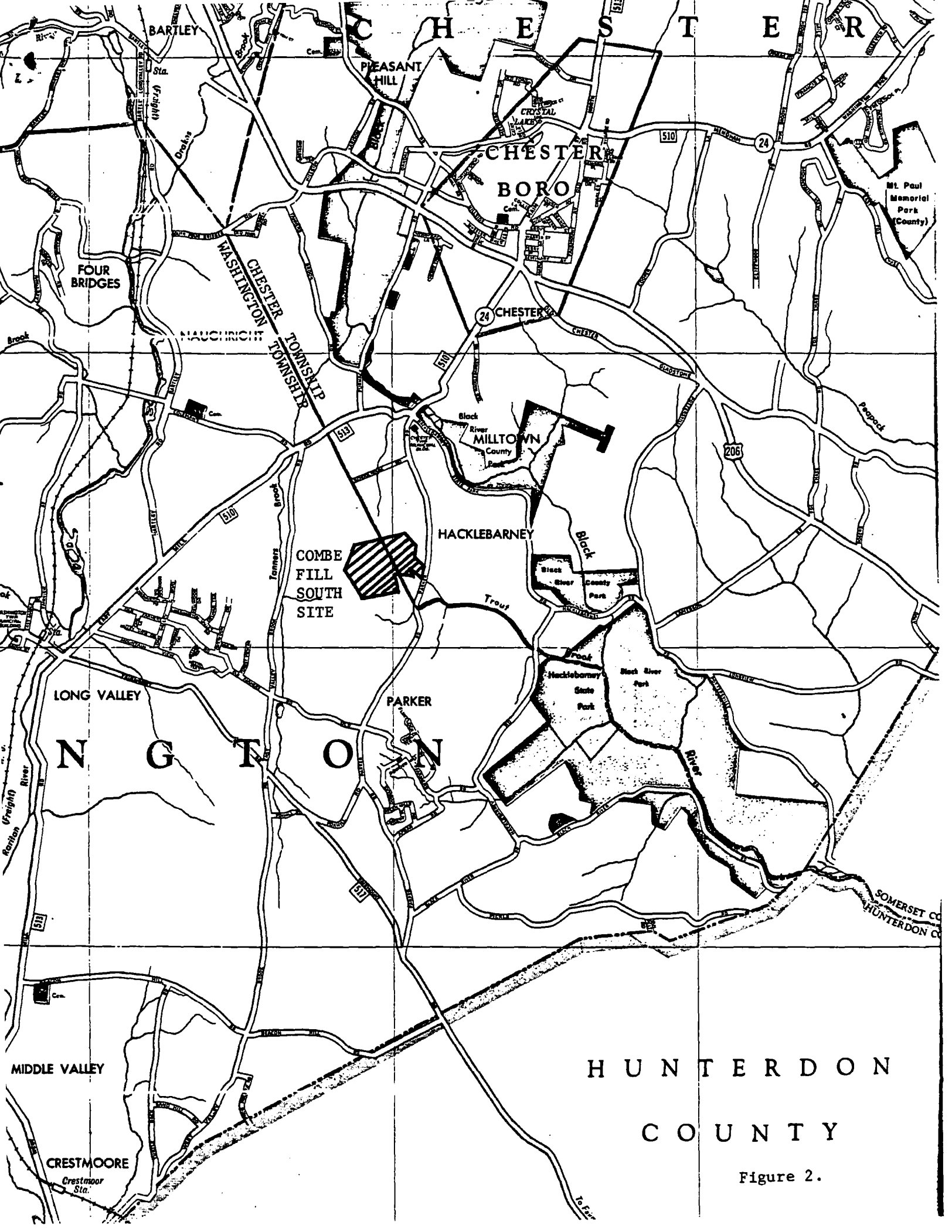
C H E S T E R
BARTLEY
PLEASANT HILL
CRYSTAL LAKES
CHESTER BORO
Mt. Paul Memorial Park (County)
FOUR BRIDGES
WASHINGTON TOWNSHIP
CHESTER TOWNSHIP
NAUCHIRIGHT
CHESTER
MILLTOWN
Black River County Park
HACKLEBARNEY
COMBE FILL SOUTH SITE
Black River County Park
Hacklebarney State Park
Black River Park
LONG VALLEY
PARKER
N G T O N
MIDDLE VALLEY
CRESTMOORE
Crestmoor Sta.
SOMERSET CO
HUNTERDON CO
H U N T E R D O N
C O U N T Y

Figure 2.

TABLE 1

CHEMICALS OF CONCERN

COMBE FILL SOUTH LANDFILL

	Concentration Range (ppb)	
	Shallow Aquifer	Deep Aquifer
Benzene	64.7/80.2	16.9-252
Chlorobenzene	18.2-30.3	9.88/10.8
Ethylbenzene	ND or BMDL	11.7/34.2
Toluene	68.2/1370	1140
Chloroform	57.5	82.6-209
Methylene chloride	4.44-56.0	5.92-176
Trichloroethylene	4.04	2.72-56.8
Tetrachloroethylene	ND or BMDL	5.58-14.3
1,1-dichloroethane	51.4/65.2	6.41-30.2
Chloroethane	62	22.5/74.3
1,4-dichlorobenzene	10.1/39.4	14.2
1,2-dichlorobenzene	7.25/9.77	1.92/5.58
1,2-dichloroethane	6.1	4.54-40.5
Trans-1,2-dichloroethylene	8.02	5.40-47.5
Nickel (ppm)	0.02/0.03	0.02

ND = Not Detected
BMDL = Below Method Detection Limit

Figure 6.

COMBE FILL SOUTH LANDFILL WATER SUPPLY ALTERNATIVES

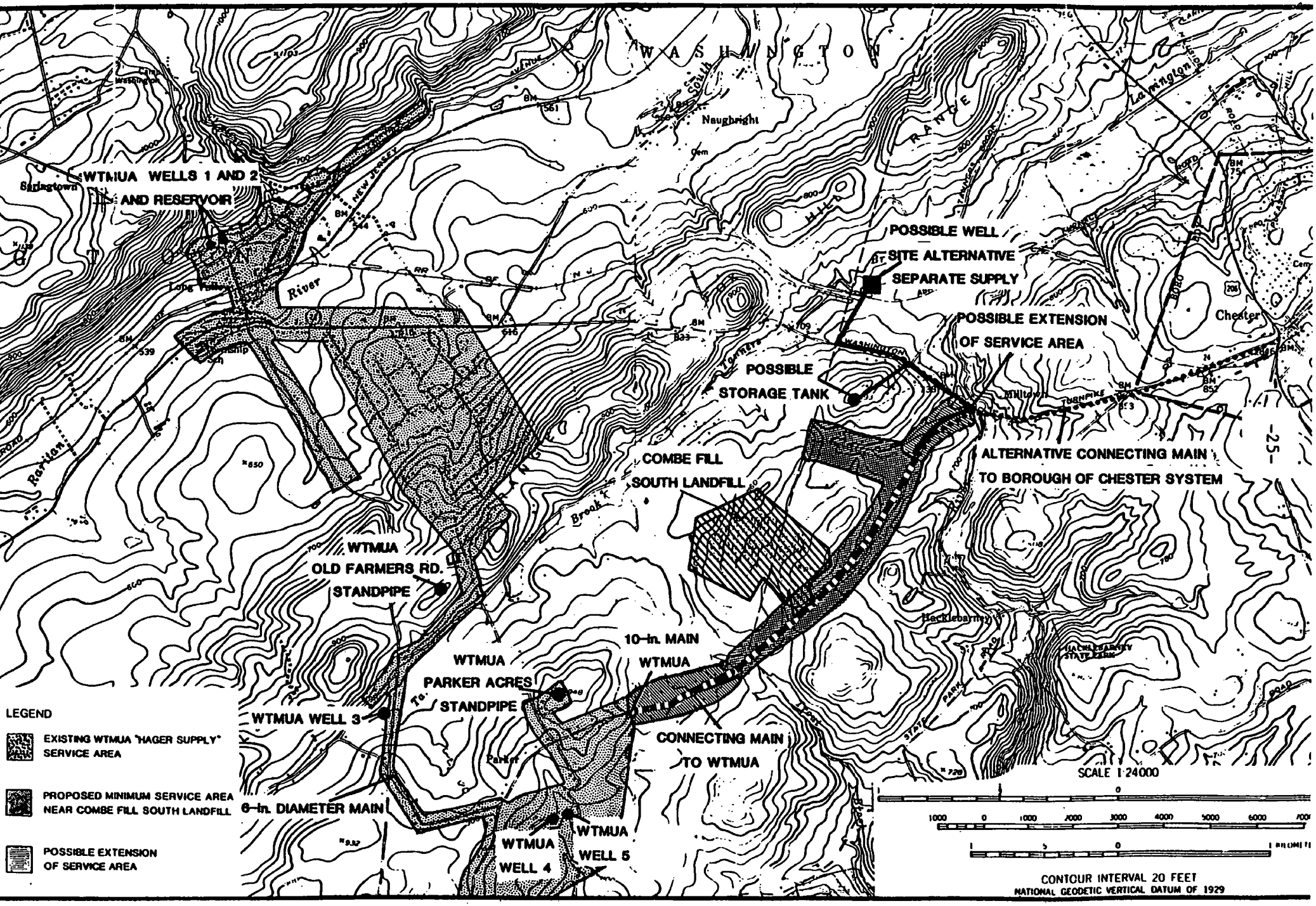

TABLE 6

COMPARISON OF PRESENT WORTH FOR EACH ALTERNATIVE

ALTERNATIVE	DESCRIPTION	CAPITAL COST ($)	O&M PRESENT WORTH ($)	TOTAL PRESENT WORTH ($)
1	No Action	1,142,000	1,202,872	2,344,872
2	New RCRA Landfill	216,926,000	4,034,713	220,960,713
3A	Cap, Trench, & Treat	61,695,000	3,282,823	64,977,823
3B	Cap, Trench, Deep Pump, & Treat	61,806,000	3,424,220	65,230,220
3C	Cap, Shallow & Deep Pump, & Treat	42,682,000	4,498,841	47,180,841
3D	Cap, Extensive Shallow Pump, & Treat	43,740,700	5,671,720	49,412,420
4	Cap, Extensive Deep Pump, Barrier Wall, & Treat	64,263,000	6,350,735	70,613,735
5A	Cap, Localized Deep Pump, Barrier Wall, & Treat	54,255,000	2,441,567	56,696,567
5B	Clayless Cap, Trench, & Treat	52,807,000	3,440,818	56,247,818

Present worth is calculated based on an interest rate of 10% and a 30 year project duration.