VAVY

# FY 19 POLLUTION ABATEMENT PROGRAM FY 19 MILITARY CONSTRUCTION PROJECT DATA

7. PROJECT NUMBER

2, DATE 24 Aug 84

3. INSTALLATION AND LOCATION
MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA 28542
PROGRAM ELEMENT 6. CATEGORY CODE

4. PROJECT TITLE
REFUSE BURNING
SUPPLEMENTAL STEAM PLANT

821-09 P-822

42,000

8. PROJECT COST (\$000)

ITEM	U/M	QUANTITY	COST	COST (\$000)
FACILITY CONTINGENCY TOTAL CONTRACT COST SUPERVISION, INSPECTION, AND OVERHEAD (10%) TOTAL REQUEST TOTAL REQUEST (ROUNDED) EQUIPMENT PROVIDED FROM OTHER APPROPRIATIONS	LS LS LS LS LS LS			35,876 3,588 39,464 2,171 41,635 42,000 124

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Provide a one story Refuse Burning Supplemental Steam Plant, of Brick Vencer over masonry block, structural steel framing, reinforced concrete slab and pile foundation. Includes site improvements, access roads and pavements, and utilities.

#### 11. REQUIREMENTS

PROJECT: This Steam Plant will provide corrective measures for relieving the existing and potential Pollution Abatement problems associated with landfill operations. It will prolong the life of existing landfills and improve management techniques and controls. It provides a Refuse Burning Supplemental Steam Plant for Camp Geiger and MCAS(H) New River.

REQUIREMENT: Utilization of solid waste from Marine Corps Base, Camp Lejeune, N.C., and MCAS Cherry Point will eliminate costly expansion of facility landfills and/or procurement of new sites. This Plant will reduce oil requirements for steam generation at Camp Geiger, and Marine Corps Air Station (H), New River.

CURRENT SITUATION: Current landfill operations at Marine Corps Base, Camp Lejeune, N.C., and MCAS Cherry Point will require extensive improvements to contain estimated increases in solid waste disposal. Existing landfills used by the local military bases and surrounding muncipalities are rapidly being filled to capacity. Attempts at obtaining other approved landfills have met with opposition from the public. Sites available either cannot meet environmental requirements or are infeasible due to cost and distances from prospective users. Existing landfills have been monitored and some

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PREVIOUS EDITIONS MAY BE USED INTERNALLY
UNTIL EXHAUSTED

PAGE NO. 1 of 3

1. COMPONENT NAVY

POLLUTION ABATEMENT PROGRA

FY 19 88 MILITARY CONSTRUCTION PROJECT DATA

2. DATE

24 Aug 84

3. INSTALLATION AND LOCATION
MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA 28542

4. PROJECT TITLE

REFUSE BURNING SUPPLEMENTAL STEAM PLANT

5. PROJECT NUMBER

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#### 11. Continued

were found to have pollutants. Constant corrections are being made. This project will enhance the environment by eliminating further need for disposal of solid waste in landfills. It further will enable landfill operators to tighten controls in the proper usage of existing landfills. Steam is generated using costly fossil fuel with the present value cost for 25 years operation of \$86.5 million dollars.

IMPACT IF NOT PROVIDED: A feasibility study titled "Solid Waste and Wood Burning and Co-Generation Options" dated 19 October 1982 projected that the current landfill at MCAS Cherry Point would be exhausted by the year 1992. It assumed that U.S. Forest land (Croatan Forest) would be utilized beginning that year. The "Solid Waste Management Master Plans" for MCAS Cherry Point and MCB Camp Lejeune dated 1977, revealed the present existing landfill at Camp Lejeune has an additional suitable adjacent area of approximately 20 acres that can be utilized until the year 2000. However, impermeable liners are necessary to prevent leachate from further contaminating ground water. A system of wells are monitoring ground water quality at present and corrective measures are being taken. Stricter control measures will have to be implemented to prevent additional contamination. This project will make it possible for the current landfills at both activities to dispose of inert and oversize waste for the life of the project, based on 25 years.

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2. DATE 24 Aug 84

NAVY

3. INSTALLATION AND LOCATION

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542

4. PROJECT TITLE

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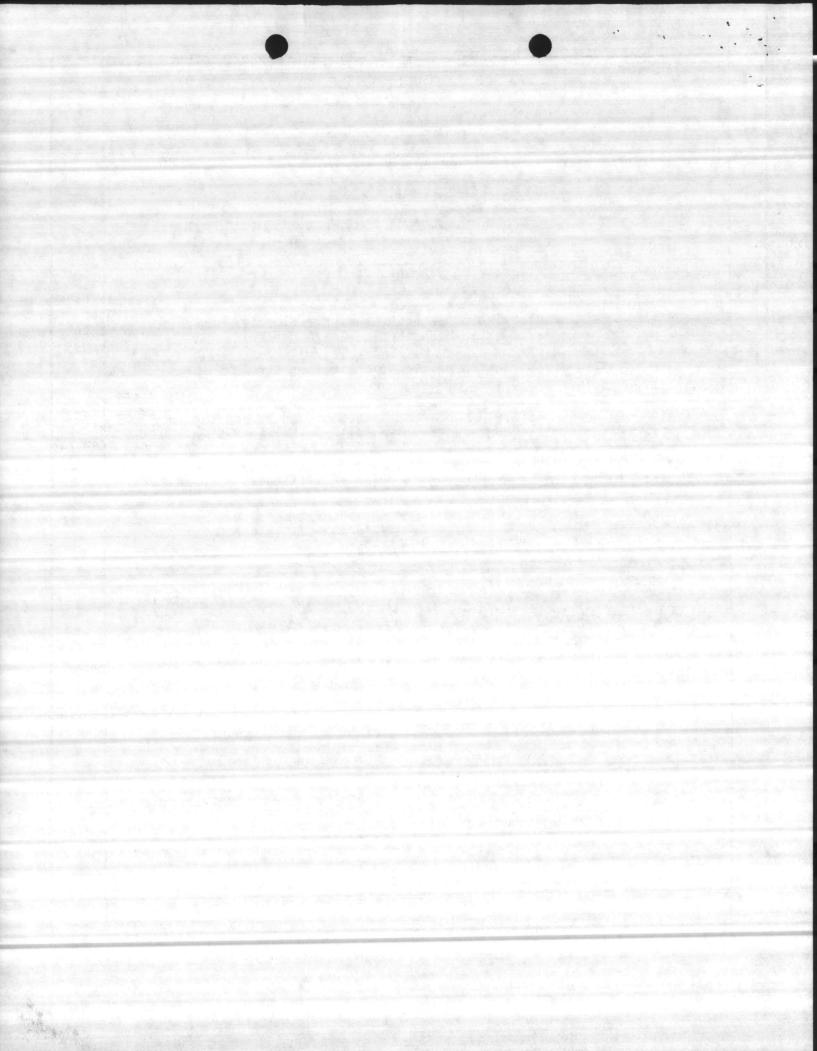
P-822

REFUSE BURNING SUPPLEMENTAL STEAM PLANT

### SPECIAL CONSIDERATIONS

- 1. <u>Pollution Abatement Requirement</u>: Will be identified by the environment impact review and incorporated into the design of this facility.
- 2. Flood Hazard Evaluation: Requirements of Executive Order No. 11296 (Flood Hazards) are not applicable.
- 3. <u>Environmental Impact</u>: The project Environmental Impact Assessment will be written and processed through the local EIA Review Board.
- 4. Fallout Shelter Construction: Fallout shelter protection is not incorporated in this project.
- 5. <u>Design for Accessibility of Physically Handicapped Personnel:</u>
  Provisions for physically handicapped personnel are not incorporated in this project.
- 6. Use of Air Conditioning: Ceiling "U" factors will be made to conform with DOD 4270.1-M.
- 7. Preservation of Historical Sites and Structures: This project does not directly or indirectly affect a district, site, building, structure, jobject, or setting which is listed in the National Register or otherwise possesses a significant quality of American history.
- 8. "New Start" Criteria for Commercial or Industrial Activities Program (OMB Circular A-76): Not applicable.

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POLLUTION ABATEMENT PROGRAM
FY 19 88 MILITARY CONSTRUCTION PROJECT DATA

3. INSTALLATION AND LOCATION

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542

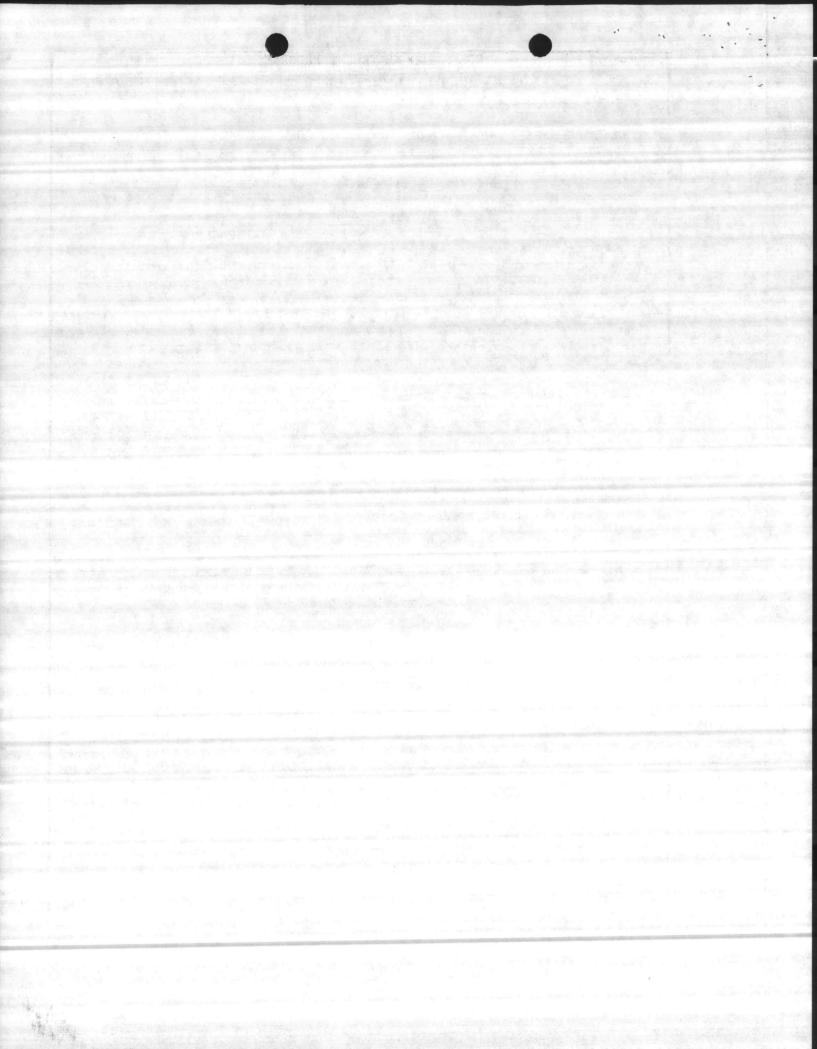
4. PROJECT TITLE

REFUSE BURNING SUPPLEMENTAL STEAM PLANT

P-822

#### FACILITY STUDY

- 1. Project: This Steam Plant will provide corrective measures for relieving the existing and potential Pollution Abatement problem associated with landfill operations. It prolongs the life of existing landfills and will improve management techniques and controls. It further provides a positive means to reduce the cost of steam production for Marine Corps Base, Camp Lejeune, North Carolina (Camp Geiger) and MCAS (H) New River. Also, this project will generate electricity which will defer energy consumption and be a positive impact on energy reduction efforts.
- 2. Current and Planned Future Workload with regard to this project:
  This project will generate steam and electricity for schools, administrative facilities at Camp Geiger and MCAS (H) New River. The facilities and their demand for energy are expected to continue as a necessary requirement throughout the life of the project.
- 3. Description of Proposed Construction:
- a. Type of Construction: This project will provide a permanent facility with a 25 year life span.
- b. Replacement: Boiler Plant G-650 may be shut down pending actual Refuse Burning Supplemental Steam Plant efficiency and generating capabilities.
  - c. Description of work to be done:
- (1) Primary Facility: Provide a permanent solid refuse burning supplemental steam plant.
- (2) Energy Conservation: This project will save 414,777 MBTU's of energy per year.
- (3) Collateral Equipment: Requirements will be determined during preliminary design procedures.
- (4) Supporting Facilities: This project will provide a Refuse Burning Supplemental Steam Plant that will relieve steam generating requirements for G-650 and AS-4151 steam plant during the summer months.
- 4. Cost Estimate: Costs as shown on enclosure (3) were derived from the Solid Waste and Wood Waste Burning and Co-Generation Study as accomplished by J. E. Sirrine Company for year 1986. Enclosure (4), Cost Summary Design Analysis (FY-87) is escalated to 1988 as shown on DD Form 1391.



FY 19 88 MILITARY CONSTRUCTION PROJECT DATA

24 Aug 84

3. INSTALLATION AND LOCATION

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542

4. PROJECT TITLE

5. PROJECT NUMBER

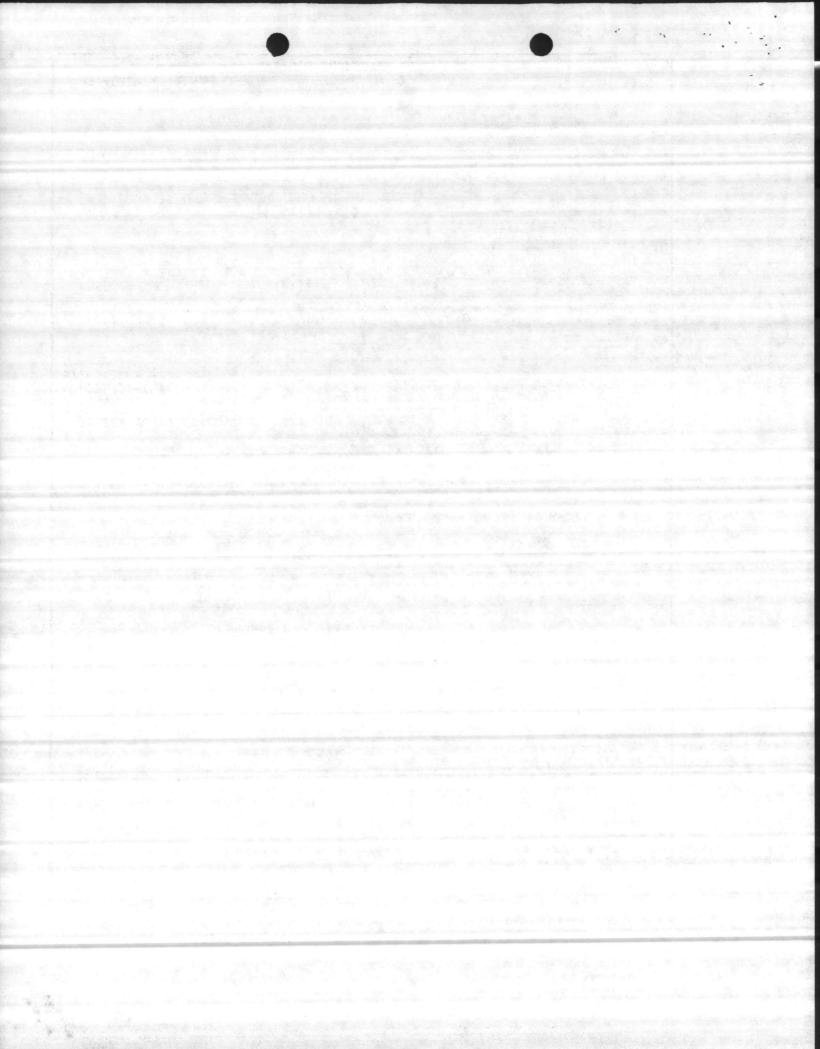
REFUSE BURNING SUPPLEMENTAL STEAM PLANT

P-822

### Justification for Project and Scope of Project:

#### Justification for Project:

- (1) Project: Corrects potential Pollution Abatement Problems, prolongs the life of existing landfills and eliminates the immediate need for procuring new sites. Provides a Refuse Burning Supplemental Steam Plant for Camp Geiger and MCAS (H) New River capable of burning solid waste and producing 30,200 lb/hr steam and 725KW of electricity during the initial
- (2) Requirement: Utilization of solid waste from Marine Corps Base, Camp Lejeune, NC, and MCAS Cherry Point will eliminate costly expansion of facility landfills and/or procurement of new sites. This Steam Plant will reduce energy requirements for steam generation for Marine Corps Base, Camp Lejeune, NC and Marine Corps Air Station (H) New River.
- (3) Current Situation: Current landfill operations at Marine Corps Base, Camp Lejeune, NC and MCAS Cherry Point will require extensive improvements to contain estimated increases in solid waste disposal. Existing landfills used by the local military bases and surrounding municipalities are rapidly being filled to capacity. Attempts at obtaining other approved landfills have met with opposition from the public. Sites available either cannot meet environmental requirements or are infeasible due to cost and distances from prospective users. Existing landfills have been monitored and some were found to have pollutants. Constant corrections are being made. This project will enhance the environment by eliminating further needs for disposal of solid waste in landfills. It further will enable landfill operators to tighten controls in the proper usage of existing landfills. Steam is generated using costly fossil fuel with the present value cost for 25 years operation of \$86.5 million dollars.
- (4) Impact if not Provided: A feasibility study titled "Solid Waste and Wood Burning and Co-Generation Options" dated 19 October 1982 projected that the current landfill at MCAS Cherry Point would be exhausted by the year 1992. It assumed that U. S. Forest land (Croatan Forest) would be utilized beginning that year. The "Solid Waste Management Master Plans" for MCAS Cherry Point and MCB Camp Lejeune dated 1977, revealed the present existing landfill at Camp Lejeune has an additional suitable adjacent area of approximate 20 acres that can be utilized to at least the year 2000. However, impermeable liners are necessary to prevent leachate from further contaminating ground water. A system of wells are monitoring ground water quality at present and corrective measures are being taken. Stricter control measures will have to be implemented to prevent additional contamination. This project will make it possible for the current landfills at



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## POLLUTION ABATEMENT PROGRAM FY 19 88 MILITARY CONSTRUCTION PROJECT DATA

2. DATE

24 Aug 84

3. INSTALLATION AND LOCATION

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542

4. PROJECT TITLE

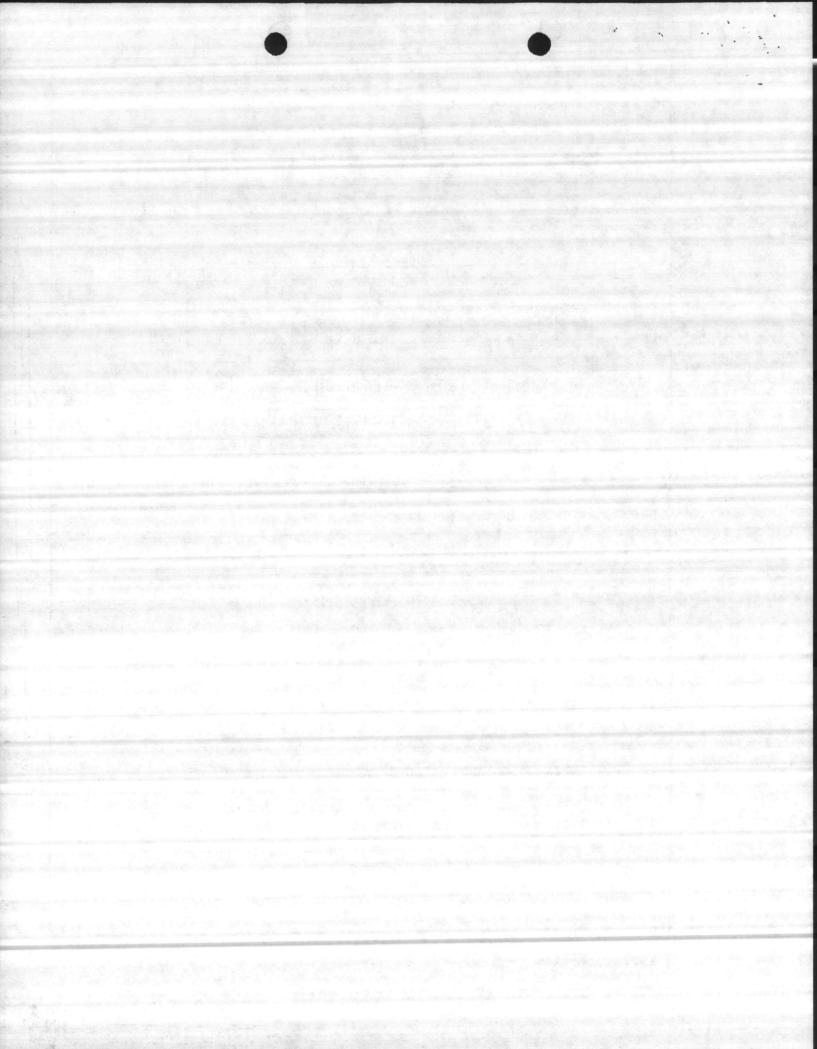
5. PROJECT NUMBER

REFUSE BURNING SUPPLEMENTAL STEAM PLANT

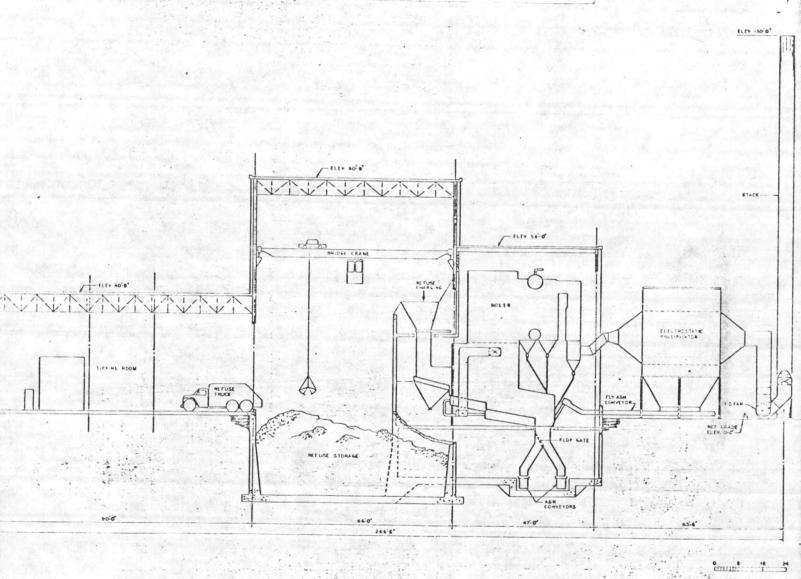
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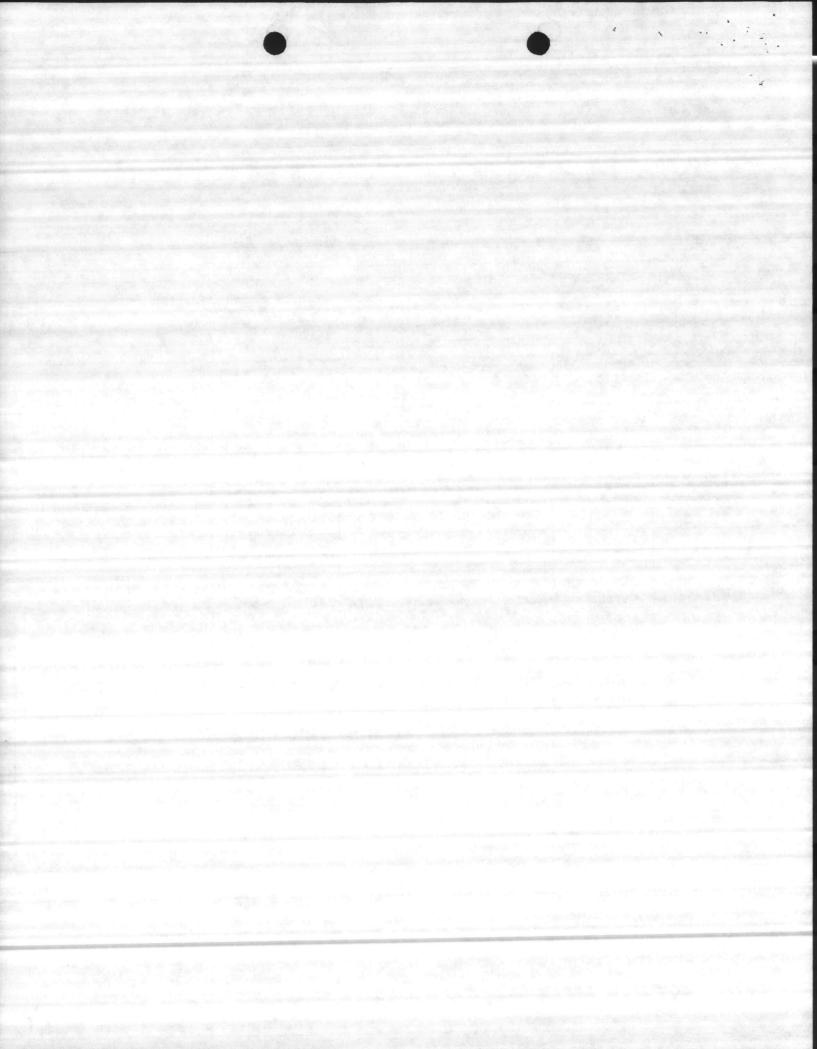
both activities to dispose of inert and oversize waste for the life of the project, based on 25 years.

- b. Justification for Scope of Project: This project will correct and alleviate pollution abatement problems associated with landfill operations, improve management of existing facilities, and have a significant impact in energy requirements for steam generation at Camp Geiger and MCAS (H) New River. It will greatly enhance this Command's ongoing attempt at energy conservation and pollution abatement controls.
- 6. Equipment Provided from Other Appropriations: \$124,419 will be required for purchase of a truck and disposal containers in support of this facility.
- 7. Common Support Facilities: This project will supplement steam generating requirements of steam plant G-650 and AS-4151.
- 8. Effect on Other Resources: An increase in manpower to facilitate operation of this plant will be required and consists of the following:
  - 4 Crane Operators WG-8
  - 4 Boiler Operators WG-7
  - 4 Boiler Mechanics WG-10
  - 3 Supervisors WS-7
- 9. Siting of the Project: See Enclosure (1)
- 10. Other Graphic Presentations, including Photographs: See Enclosure (2).
- 11. Economic Analysis: An ECIP economic analysis has been made with support documentation. See Enclosure (3).
- 12. Environmental Impact: An Environmental Impact Assessment will be written and processed through the local Environmental Impact Assessment Review Board.
- 13. Quantitative Data: Not applicable.
- 14. Additional Information: A cost summary design analysis (FY-87) dated 29 March 1983, prepared by NAVFACENGCOM, Atlantic Division, Norfolk, VA is attached as Enclosure (4).

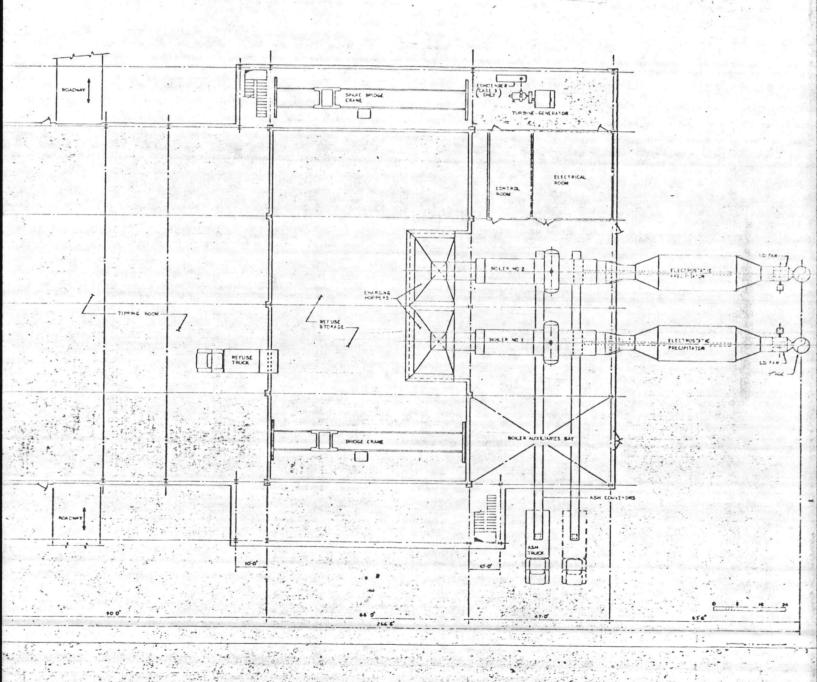


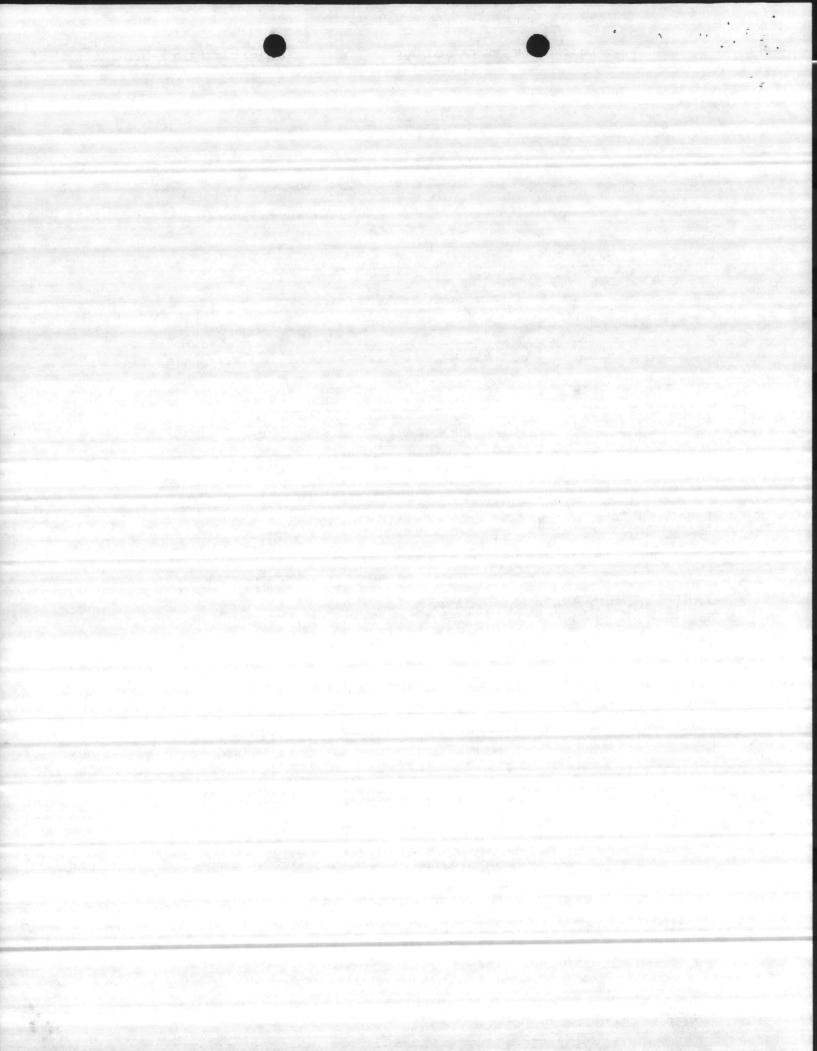
# P-822 REFUSE BURNING SUPPLEMENTAL STEAM PLANT





P-822 REFUSE BURNING SUPPLEMENTAL STEAM PLANT

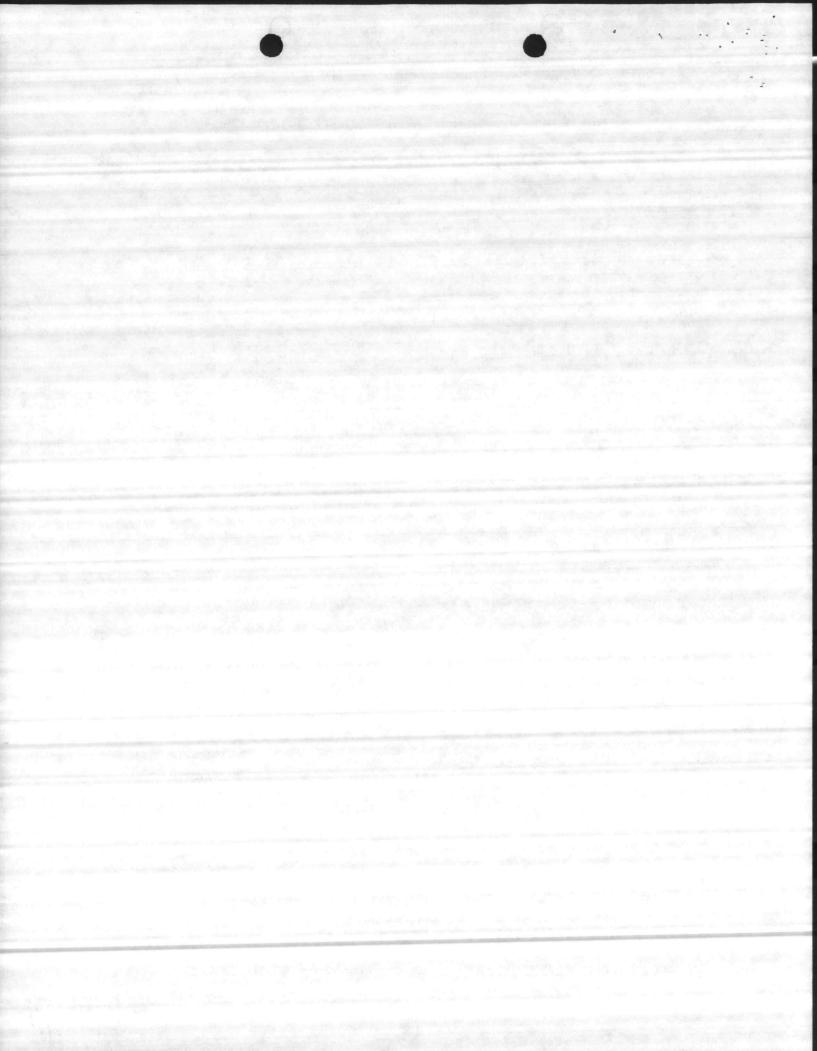




6. DISCOUNTED SAVINGS RATIO (IF ( 1 PROJECT DOES NOT QUALIFY) (SIR)=(5-1F)=

5. TOTAL NET DISCOUNTED SAVINGS (2F5+3C)

\$87,080,504



#### SUMMARY

### LIFE CYCLE COST ANALYSIS

Information utilized inthis analysis was obtained from the Solid Waste and Wood Waste Burning and Coal - Generation Study as provided by LANTNAVFAC-ENGCOM. The study pertaining to Co-Generation is attached as supporting documentation.

#### I. INVESTMENT:

Construction Cost SIOH Design Cost

\$21,824,415 1,200,342 1,223,906

#### II. ENERGY SAVINGS

### Co-Generation Plant

- a. Usage (Page VI-14) (3,402,000 KWH/year) X (.0116 MBTU/KWH) = \$39,463 MBTU
- b. Resources Generated (Page VI-17) (640 KW/HR + 790 KW/HR) = 715 KW/HR Average 2

(715 KW/HR X (8,760 HRS) = 6,263,400 KWH/Year (6,263,400 KWH) (.0116 MBTU/KWH) = + \$72,655 MBTU

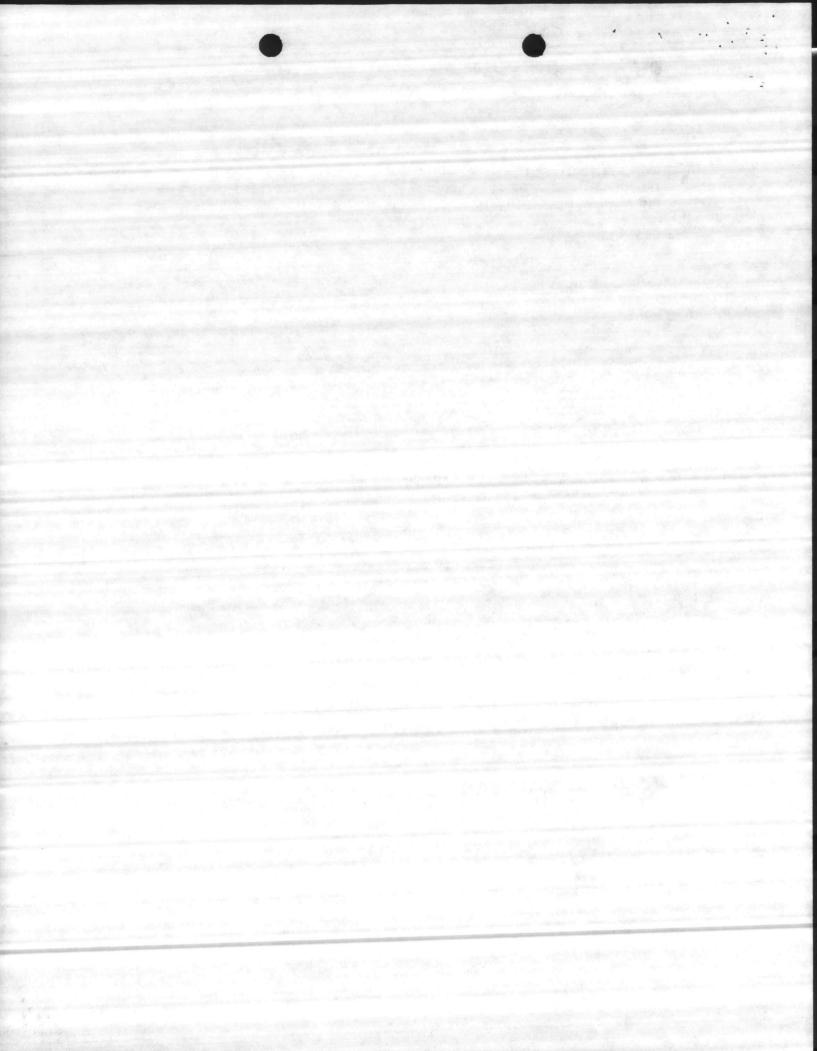
### Oil-Fired Plants '(Status Quo)

a. Usage (Page VI-25) (38.99 MBTU/HR + 48.13 MBTU/HR) = 43.56 MBTU/HR Average

 $(43.56 \text{ MBTU/HR}) \times (8,760 \text{ HR/Year}) = 381,586 \text{ MBTU/Year}$ 

### III. ENERGY COSTS

- a. Electricity  $(.03434 \text{¢/KW}) \div (.0116 \text{ MBTU/KW}) = \$2.9603/\text{MBTU} \$2.96 X 1.13 X 1.13 X 1.13 X 1.13 X 1.13 = \$5.45/\text{MBTU}$
- b. Fuel Oil (Page VI-25) \$11.48/MBTU



IV. Non-Energy (Annual) Costs

(Recurring) Pages VI-18 and VI-26)

### Co-Generation

### Oil-Fired Boilers (Status Quo)

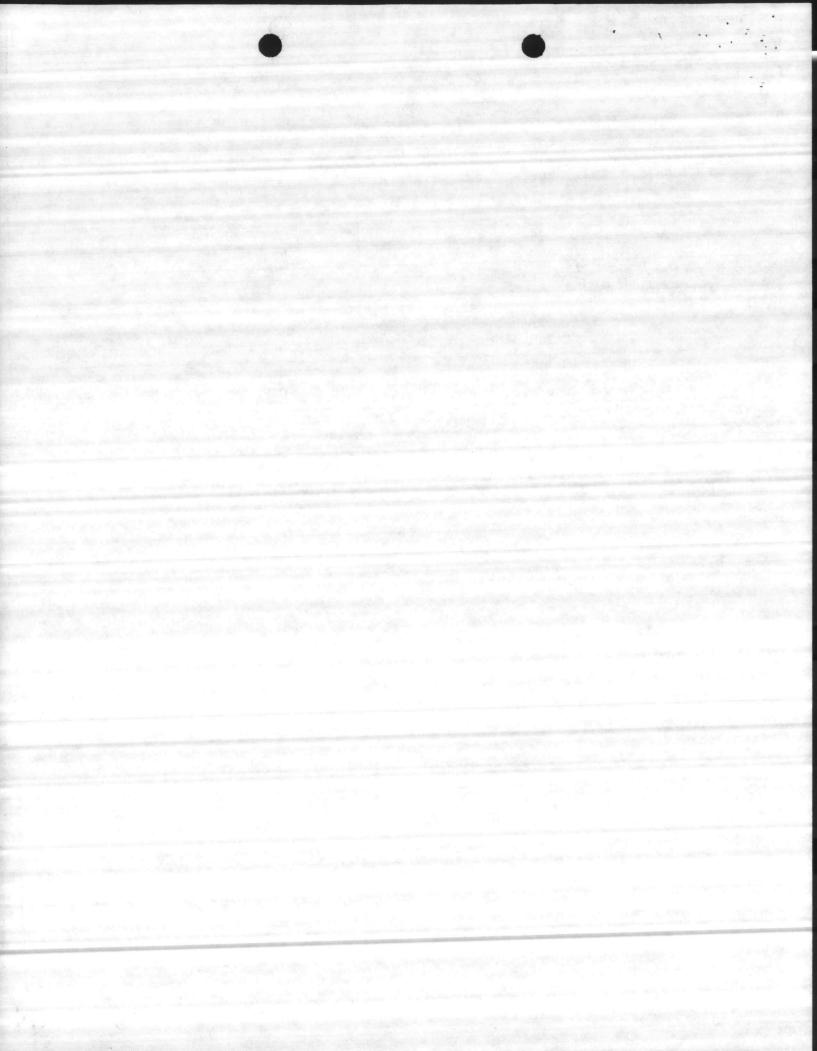
Labor	\$437,951	CP Development	\$124,556
Maintenance	241,018	CL Development	458,529
Trash Transfer	345,527	CP Maintenance	18,310
Ash Disposal	17,951	CL Maintenance	29,508
TOTAL	\$1,042,447	TOTAL	\$630,903

Net Non-Energy Annual Costs:

\$1,042,447 - \$630,903 = \$411,543

### V. Non-Recurring Costs

a. Co-Generation Plant - Plant overhaul (Page VI-13)\$65,658/Year every 5 years.

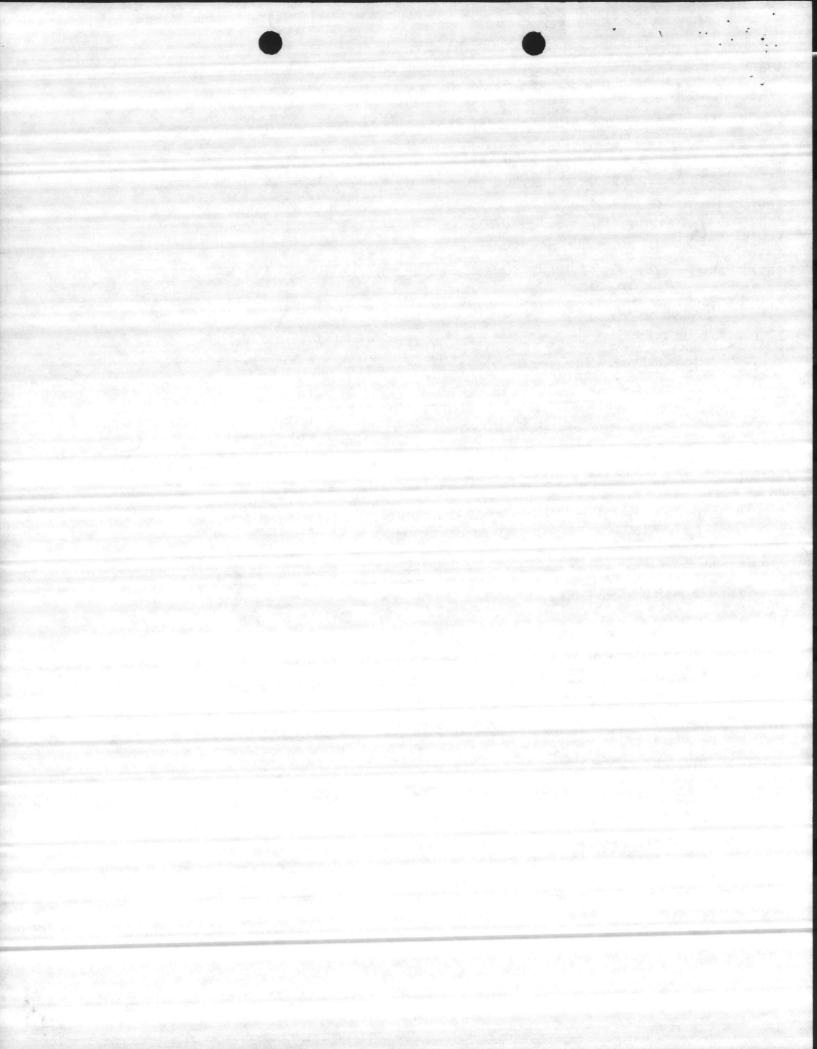


## Cost Estimate

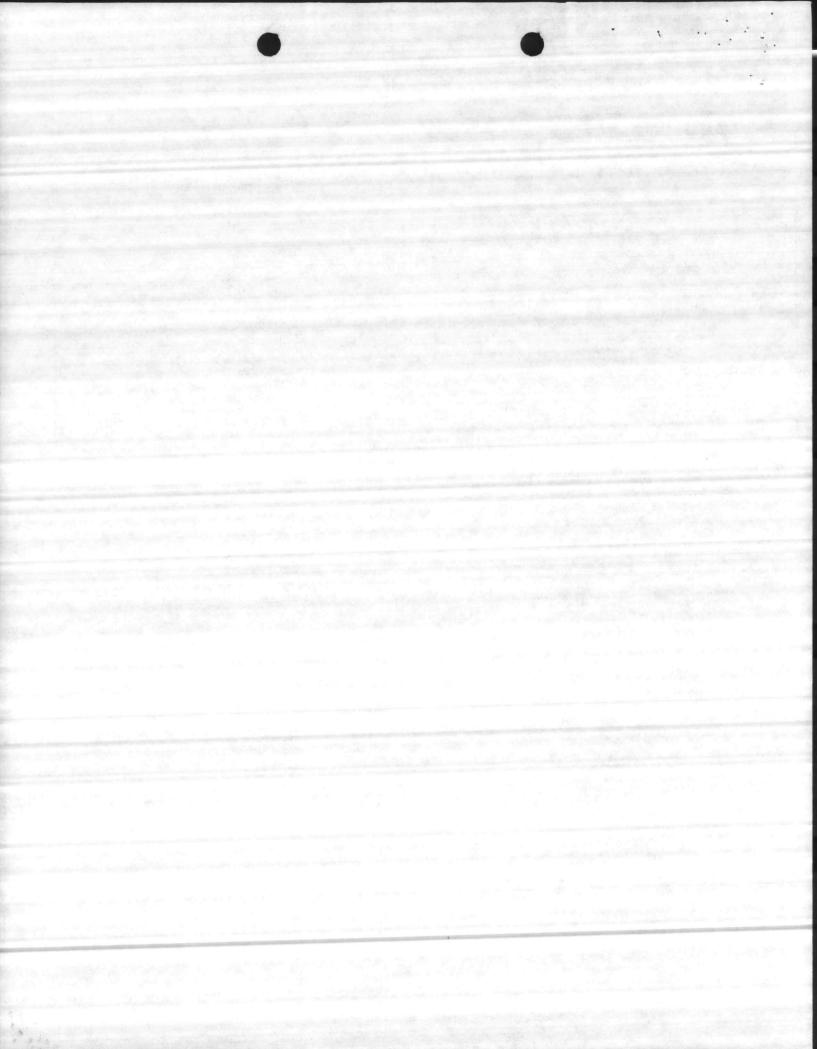
## DEPARTMENT DIRECT COST SUMMARY

# CASE 2 - BACK PRESSURE TURBINE

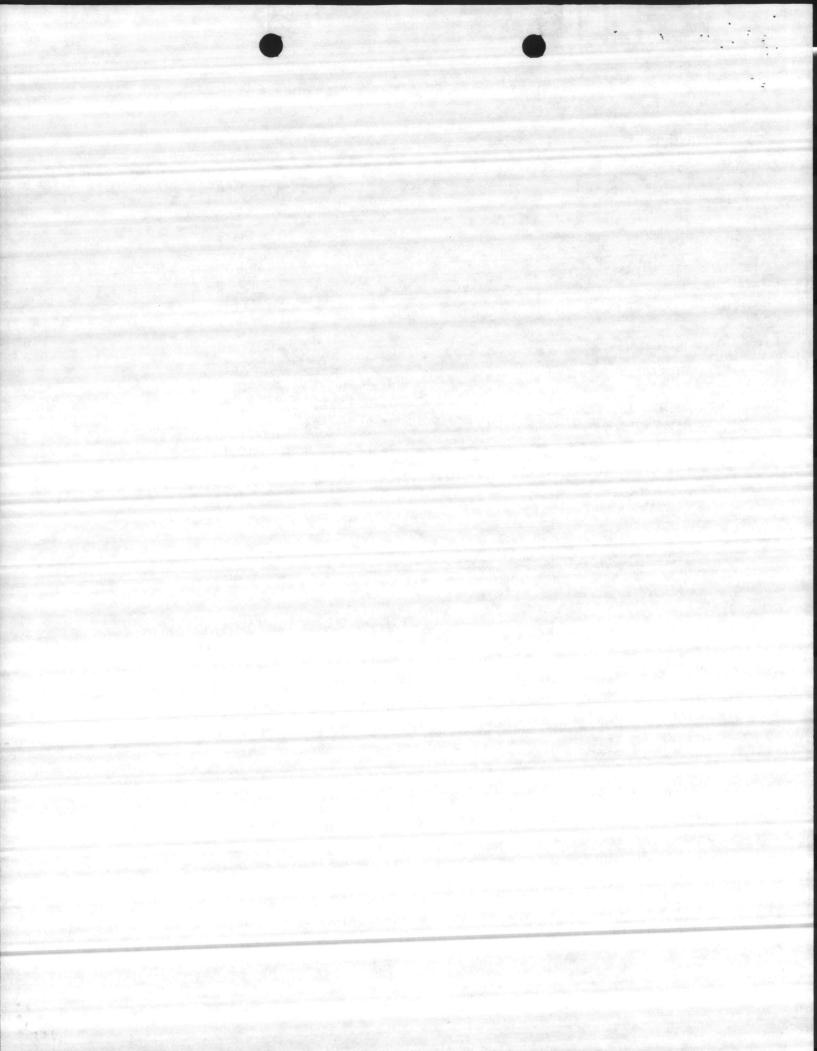
Equipment \$	8,984,000	
Equipment Erection	170,600	
Equipment Foundations and Other Costs	294,400	
Buidings & Structures	3,700,000	
Electrical Installation Cost	463,000	
Instrumentation Installation Cost	250,000	
Piping Cost	2,246,000	
Area Cost	380,000	
SUBTOTAL CONSTRUCTION COST		\$ 16,488,000
SIOH @ 5.5% (Supervision, inspection & overhead)		906,800
Contingency 0 10%		1,739,500.
TOTAL CONSTRUCTION COST		\$ 19,134,300



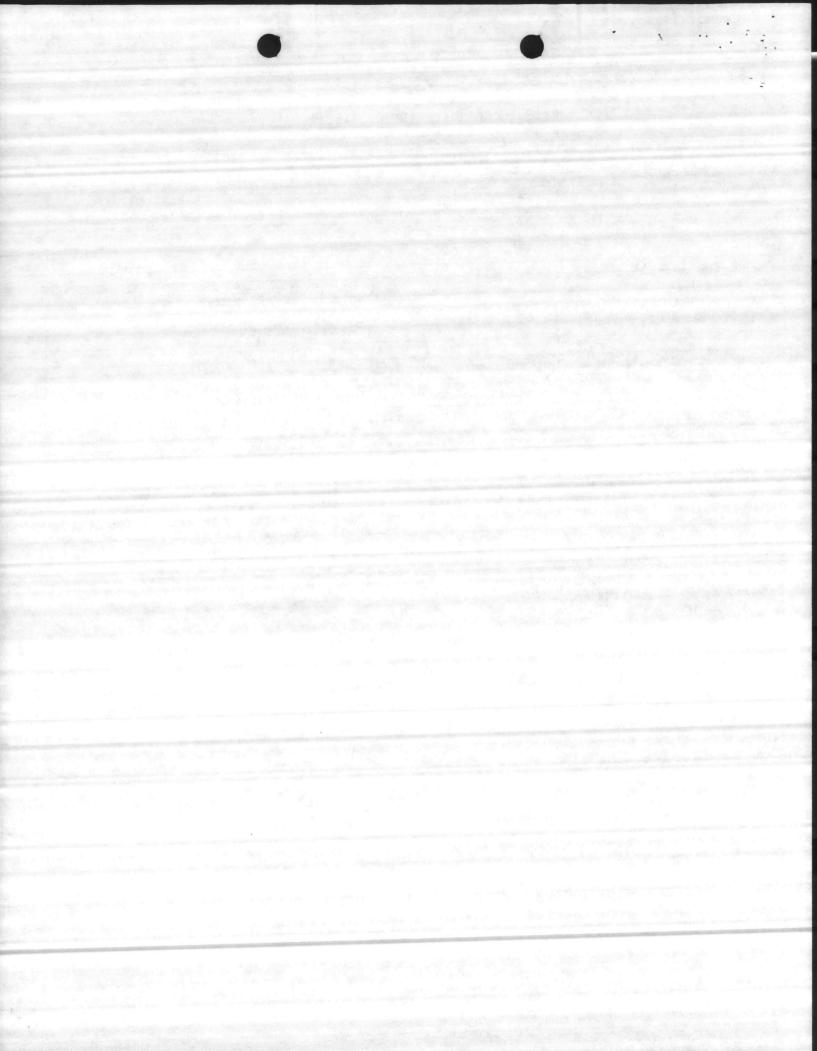
EQUIPME	NT LIST				
CASE 2					Equip. Supports
Ite	m Description	Motor HP-RPM	Equipment	Equipment Erection	Platforms and Other Costs
			\$	\$	\$
	Ter, 100 T/D Maximum Input 600 PSIG 725°F Unit No. 1		2,750,000	w/Equipment	w/Bldg. Cost
	Coupling		Incl.	w/Equipment w/Equipment	4,000
	Controls Motor	50	Incl.	w/Equipment	
	Intake Silencer	30	Incl.	w/Equipment w/Equipment	
2 0					
3. Com	bustion Controls		Incl.	w/Equipment	
4. Boi	ler Breeching		Incl.	w/Equipment	w/Bldg.
5. Eco	nomizer		Incl.	w/Equipment	w/Bldg.
6. Sto	ker	10	Incl.	w/Equipment	w/Boiler
7. I.D	. Fan		Incl.	w/Equipment	7,000
	Coupling		Incl.	w/Equipment	
	Fluid Drive	7.5	Incl.	w/Equipment	
	Motor .	75	Incl.	w/Equipment	
8. Pre No.	cipitator 1		600,000	w/Equip. Co	st_ 20,000
	twork -				
	Precip., Fan, Stack w/Insulation		45,000	D&E	65,000
10. Exp	ansion Joints		12,000	2,000	N/A
11. Iso	lation Damper	5	28,000	2,000	Incl.
*	ler, 100 T/D Maximum Input 600 PSIG 725°F Unit No. 2	•	2,750,000	w/Equip. Co	st w/Bldg.
13. F.D	. Fan		Incl.	Incl.	4,000
	oupling.		Incl.	Incl.	Incl.
	ontrols	The state of	· Incl.	Incl	- Incl.
	otor	50	incl.	Incl.	Incl.
	ntake Silencer		. Incl.	Incl.	Incl.



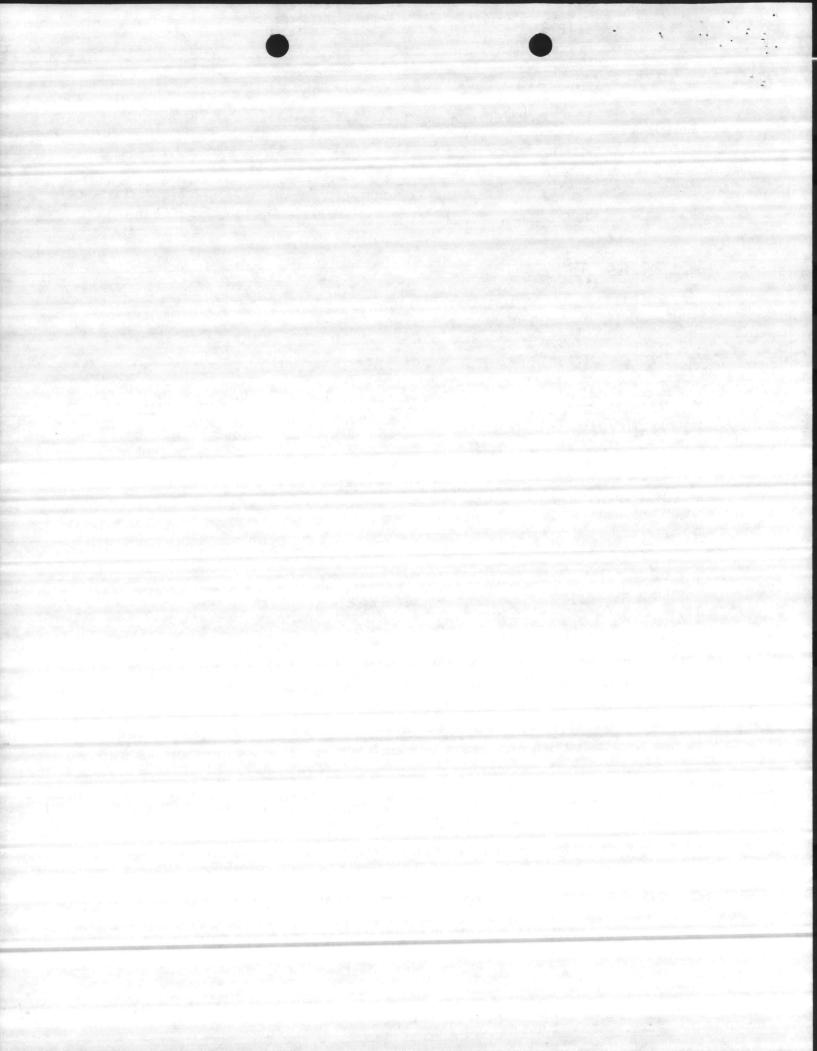
EQUIPMENT LIST CASE 2		Motor		Equipment	Equip. Supports Platforms and
Item Description			Equipment \$	Erection \$	Other Costs \$
14. Combustion Controls			Incl.	Incl.	
15. Boiler Breeching			Incl.	Incl.	w/Bldg.
6. Economizer			Incl.	Incl.	w/Bldg.
.7. Stoker		i0	Incl.	Incl.	w/Boiler'
18. I.D. Fan Coupling Fluid Drive Motor		75	Incl. Incl. Incl. Incl.	Incl. Incl. Incl. Incl.	7,000
19. Precipitator No. 2	,		600,000	Incl.	20,000
20. Ductwork - To Precip., Fan, Sta w/Insulation	c <b>k</b>		45,000	D&E	65,000
21. Expansion Joints			12,000	2,000	N/A
22. Isolation Damper		5	28,000	2,000	N/A
23. Ash Handling System		80 (Total)	575,000	Incl.	w/Bldg.
24. Overhead Crane - 5 T Control Cab Grapple Bridge Motor Trolley Motor Hoist Motors (2)	on	15 10 10 (Ea)	375,000 Incl. Incl. Incl. Incl. Incl. Incl.	50,000	w/Bldg.
25. Spare Crane Control Cab Grapple Bridge Motor Trolley Motor Hoist Motors (2)		15. 10 10 (Ea)	375,000 Incl. Incl. Incl. Incl. Incl. Incl.	50,000	w/Bldg.
26. Deaerator		Solve Danger (1933)	30,000	2,000	1,500
27. Blow-Off Tank		erica de la composición dela composición de la composición de la composición de la composición de la composición dela composición de la composición de la composición dela composición dela composición de la composición dela composición de la composición de la composición dela compos	5,000	1,000	100
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CASI	IPMENT LIST E 2  Item Description	Motor HP-RPM	Equipment \$	Equipment Erection	Equip. Supports Platforms and Other Costs
28.	Continuous Blowdown		17,000	2,500	5,00
	System Flash Tank Heat Exchanger Valves		Incl. Incl. Incl.	Incl. Incl. Incl.	
29.	Condensate Tank		15,000	1,000	100
30.	Condensate Transfer Pump Motor	10	3,000 Incl.	50 <b>0</b> 50 <b>0</b>	200
31.	Air Compressor Air Receiver	25	6,000 Incl.	500	200
32.	Air Compressor Air Receiver	25	6,000 Incl.	500	200
33.	Air Dryer		3,000	200	100
34.	Stack - Dual Wall (2) 150' x 9'-0" Dia.		310,000	Incl.	90,000
35.	Raw Water Booster Pump . Motor	20	3,000 Incl.	500 Incl.	100 Incl.
36.	Raw Water Booster Pump Motor	20	3,000 Incl.	500	100
37.	Feedwater Treatment Equipment	30 Total	70,000	8,000	1,000
38.	Boiler Feed Pumps (2) Motor	2 @ 75	16,000 Incl.	1,000 Incl.	1,000 Incl.
39.	Boiler Feed Pump Turbine	•	8,000 12,000	500 Incl.	500 Incl.
40.	Chemical Feed Equipment	2 0 5	10,000	800	300



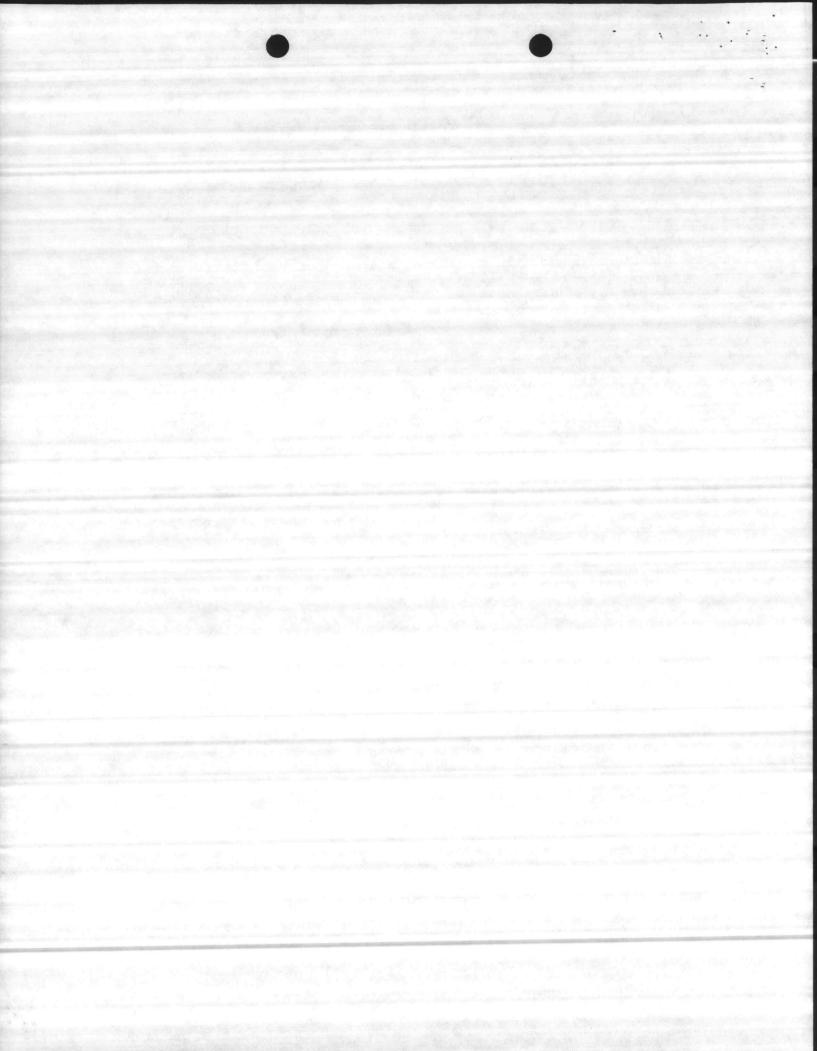
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CAS	IPMENT LIST E 2  Item Description	Motor HP-RPM	Equipment	Equipment Erection	Equip. Supports Platforms and Other Costs
		<i>j</i>	\$	\$	\$
41.	Camp Geiger Condensate Transfer Pump Motor	30	7,000 Incl.	500 200	100 Incl.
42.	Air Station Condensate Transfer Pump Motor	50	7,000 Incl.	500 200	100 Incl.
43.	Condensate Collection Tank Pump Motor	10	15,000 3,000 Incl.	500 200 Incl.	200 100 Incl.
44.	No. 2 Oil Storage Tank & Pump 10,000 Gallon	5	25,000	500	500
45.	. HVAC Equipment	20	15,000	Incl.	500
	Turbine Generator 900 KW Nominal Output 12,470 Volt Generator 1175 KVA Rating		200,000	40,000	4,800
	TOTAL, Equipment		\$8,984,000	\$170,600	\$294,400



## CASE 2

47.	Bui	ldings	and	Structures
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	Structural Steel Excavation and Backfill Refuse Pit and Basement Mat Piling Roof Deck and Roofing Walls and Siding Intermediate Floors Stairs, Doors and Drains Miscellaneous Steel and Grating Support Steel and Miscellaneous	\$	880,000 445,000 690,000 365,000 86,000 190,000 270,000 89,000 160,000 135,000 390,000	
	TOTAL, Building and Structures	\$	3,700,000	
48.	Electrical Building Lighting Electrical Equipment & Wiring		63,000 400,000	
	TOTAL, Electrical	\$	463,000	THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAM
49.	Instrumentation	\$	250,000	
50.	Piping Boiler Plant Export Steam & Condensate Return Lines		870,000 1,376,000	
	TOTAL, Piping	. \$	2,246,000	
51.	Area Area Road Paving	\$	130,000 250,000	A STATE OF THE STA
	TOTAL, Area	\$	380,000	



### CASE 2

### DESIGN ANALYSIS COMPUTATIONS

JANUARY 1982

(Present Value = 1986 Dollars)

## ALTERNATIVE A - Refuse-Burning Plant

- 1. Investment Cost
  - a. Refuse-Burning Plant Capital Costs (from equipment list)

Construction

\$16,488,000

Escalated to April 1985

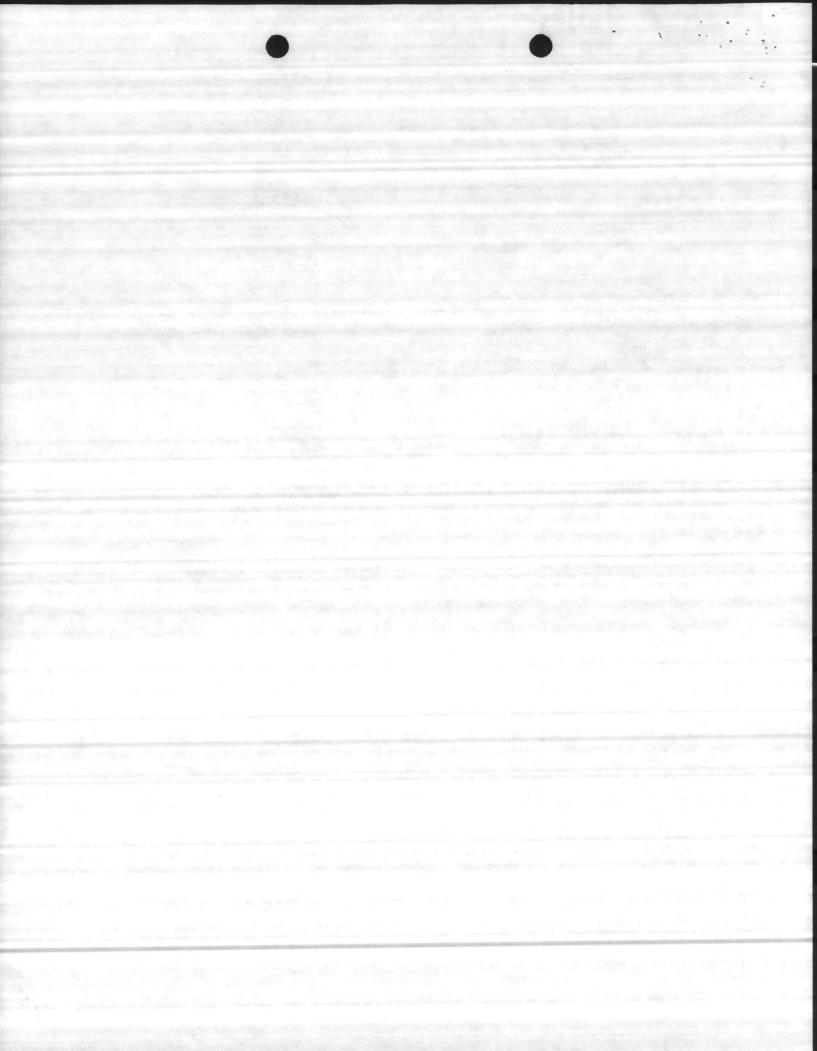
 $$16,488,000 \times \frac{2167}{1870} = $19,106,682$ 

Escalated to FY86 10% Discount (2% differential) \$19,106,682 X 1.0384 = \$19,840, 378

Total Escalated Cost Contingency @ 10% S.I.O.H. @ 5.5%

\$19,840,378 1,984,037 1,200,342

TOTAL 23,024,757



Engineering @ 6% = \$989,280

Escalated to April 1984

\$989,280 X  $\frac{2066}{1870}$  == \$1,092,969

Escalated to FY-86

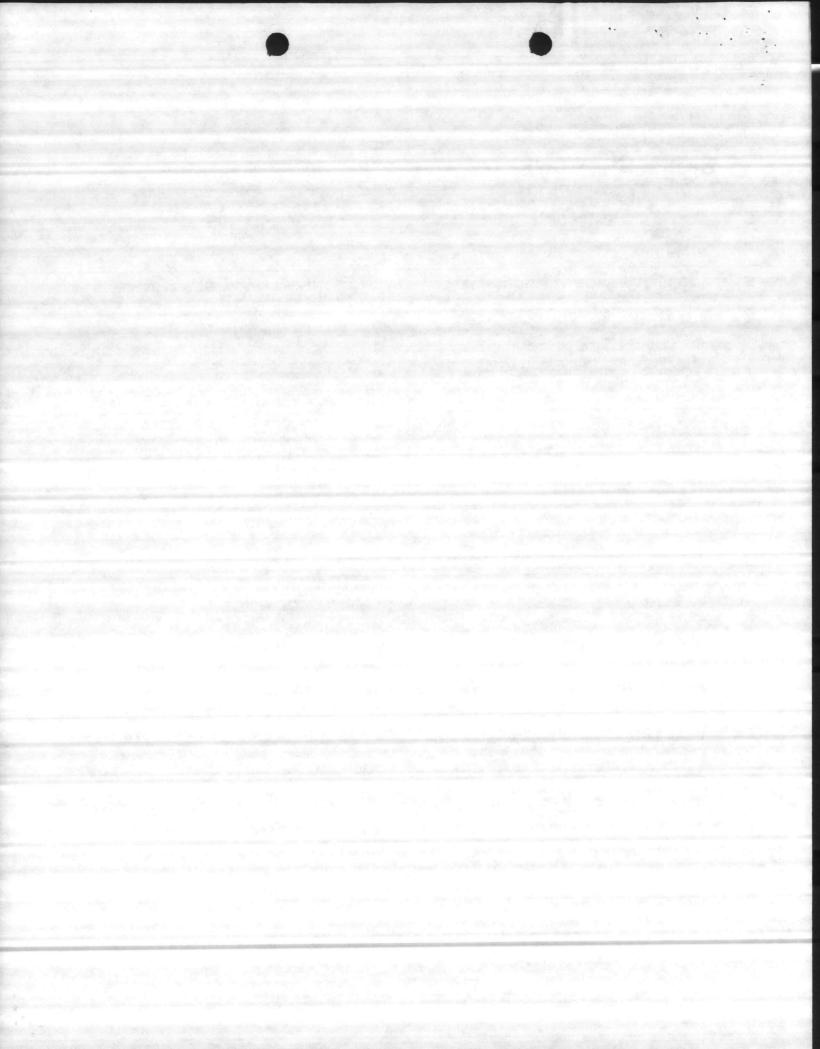
10% Discount (2% differential)

\$1,092,969 X 1.1198 = \$1,223,906

Total Present Value Construction & Engineering

\$23,024,757 +1,223,906

TOTAL \$24,248, 663

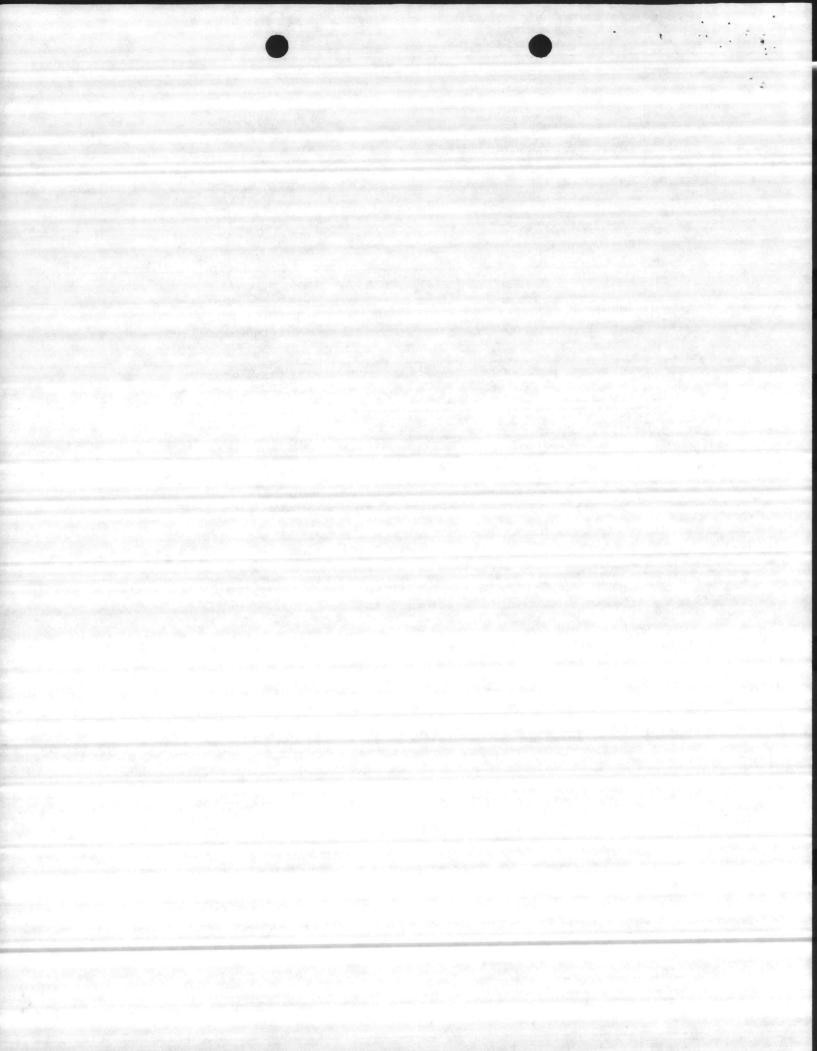


## b. Capital Costs for Ash Disposal

Investment for truck (\$70,000) and disposal containers (\$26,000) \$96,000 in years 1,9, 17

Escalated to Oct. 1986 \$96,000 X 2317 = \$118,947

10% Discount (2% differential) year 1 .963 Present Value	\$114,545
10% Discount (2% differential) year 9 .526 Present Value	\$ 62,566
10% Discount (2% differential) year 17 .288 Present Value	34,256
Total Present Value Ash Disposal Investment	\$211,367



#### 2. Recurring Costs

#### a. Annual Boiler Plant Labor Costs

- 4 Crane Operators (WG-8) @ \$9.98/hr. (incl. benefits)
- 4 Boiler OPerators (WG-7) @ 9.43/hr. (incl. benefits) 4 Boiler Mechanics (WG-10) @ 11.09/hr. (incl. benefits)
- 3 Supervisors (WS-7) @ \$12.78/hr. (incl. benefits)

Unescalated Labor Cost

 $(4 \times 9.98 \times 2080) + (4 \times 9.43 \times 2080) + (4 \times 11.09 \times 2080)$  $+ (3 \times 12.78 \times 2080) = $333,508$ 

Labor escalated to Oct. 1986

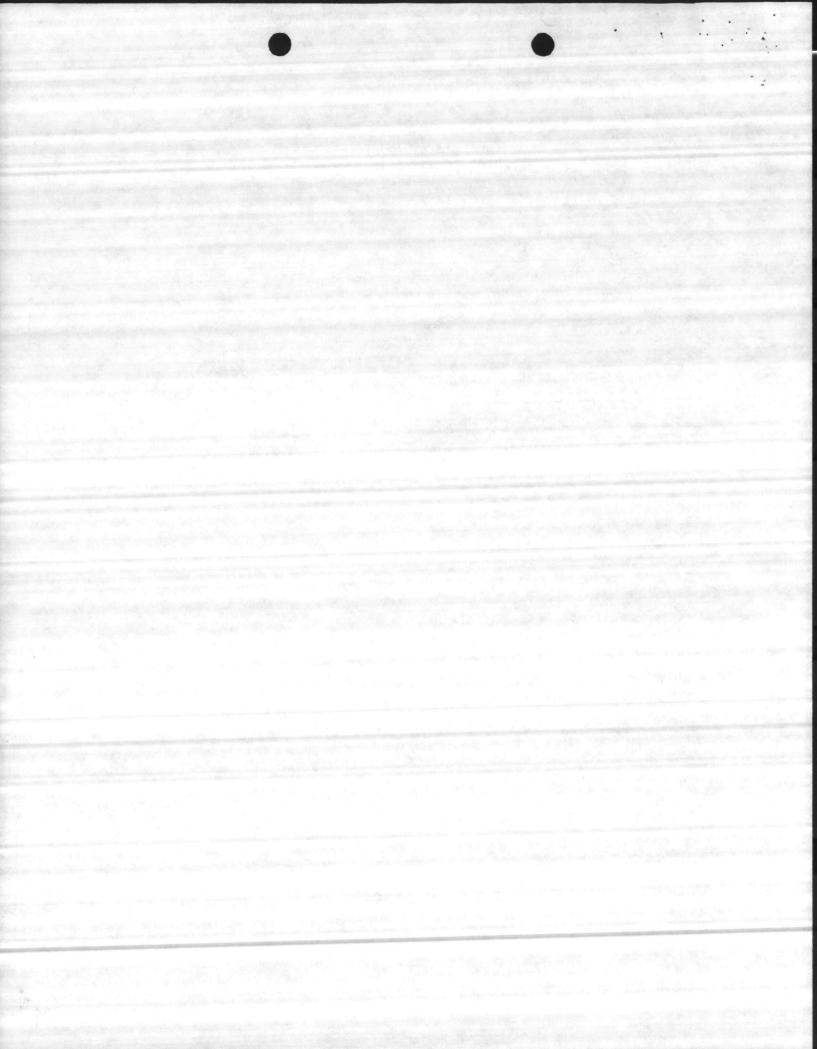
FY82 FY83 FY84 FY85 FY86  $$333,508 \times 1.056 \times 1.056 \times 1.056 \times 1.056 \times 1.056 = 437,951$ 

10¢ Discount (0% differential)

9.524

Present Value Labor Cost

\$4,171,048



### b. Annual Boiler Maintenance Cost

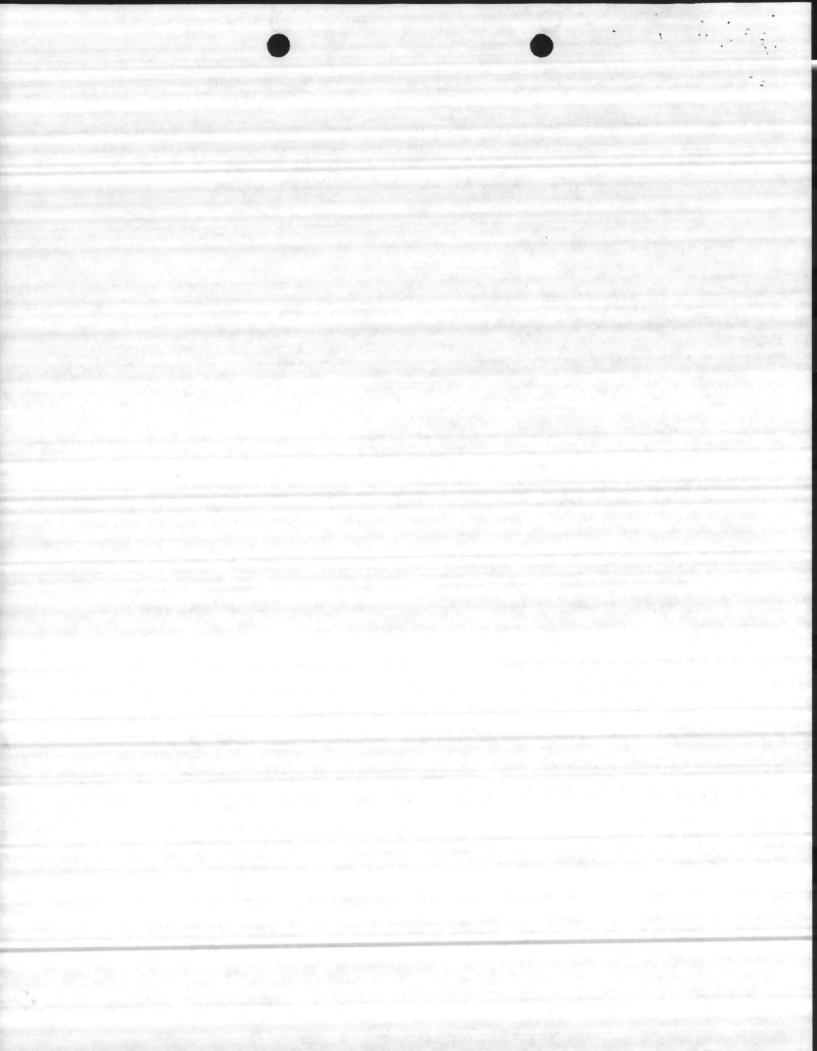
ITEM	INSTALLED COST (\$ X 10 <sup>3</sup> )	MAINT. FACTOR	COST (\$ X 10 <sup>3</sup> )
Boilers & Fans	3,250	0.025	81.25
Precipitators	1,200	0.015	18.00
Ducts & Stack	245	0.010	2.45
Ash Handling	575	0.025	14.38
Pumps	33	0.015	0.50
Water Treatment	37	0.020	.74
Building	3,400	0.005	17.00
Internal Piping	740	0.005	3.70
Export Piping	1,376	0.010	13.76
Cranes	850	0.020	17.00
Electrical Instrumentation	538	0.020	10.76
Turbine Generator	200	0.020	4.00
Total Unesc	alated Maintenance		183.54

Maintenance escalated to Oct. 1986

Fy 82 Fy 83 Fy 84 Fy 85 Fy 86 \$183,540 x 1.056 x 1.056 x 1.056 x 1.056 x 1.056 = \$241,018

10% Discount (0% differential) 9.524

Present Value Maintenance Costs \$2,295,459



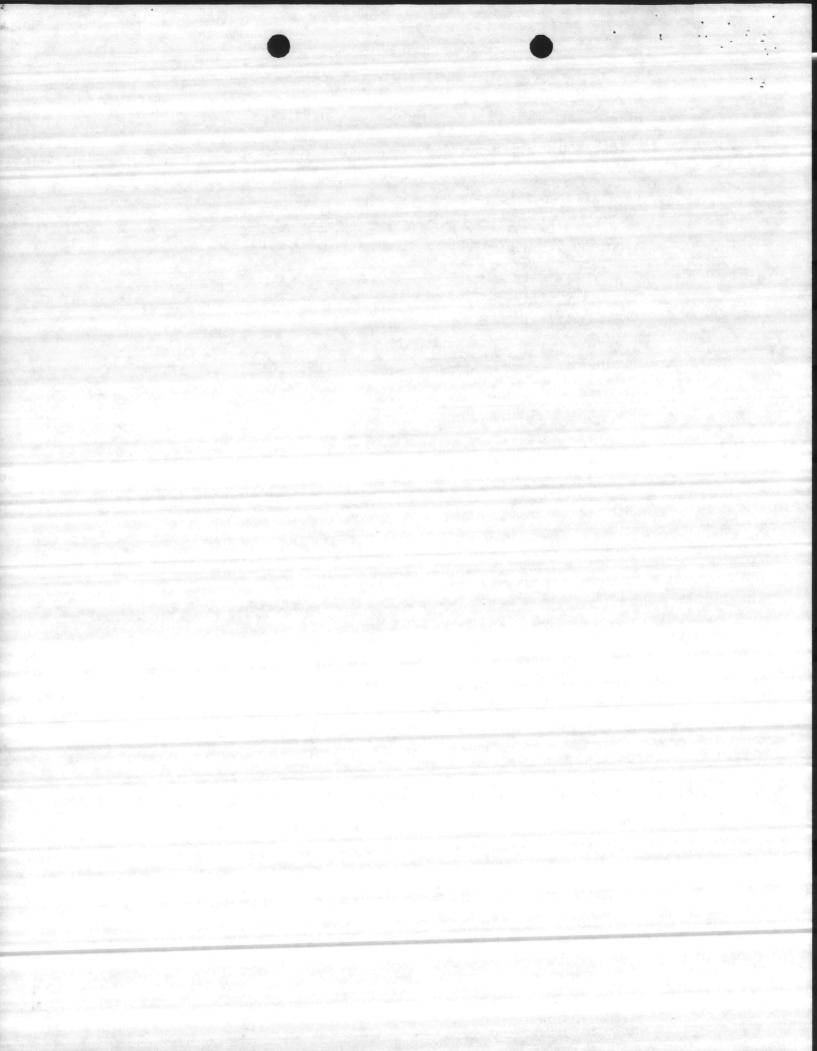
## c. Plant Overhaul

\$ 50,000 every 5 years

Escalated to Oct. 1986.

257.00	세계에 어떤 경험을 보는 나무있다. 1854													
			Fy 82		Fy 83		Fy 84		Fy 85		Fy 86	4		h
\$	50,000	X	1.056	=	\$65,658									

나이가 그 경험하다 살아 없어야 한다면 하다는 것이 되었다. 그 아이는 그는 그 그 그 그 없는 그 것이다.		
10% Discount (0% differential) year 5 Present Value Overhaul Cost	.652	\$ 42,809
10% Discount (0% differential) year 10 Present Value Overhaul Cost	.405	\$ 26,591
10% Discount (0% differential) year 15 Present Value Overhaul Cost	.251	\$ 16,480
10% Discount (0% differential) year 20 Present Value Overhaul Cost	.156	\$ 10,242
Total Present Value Overhaul Costs		\$ 96,122



# Annual Incremental Electrical Costs

Annual Incremental	Electric	al Costs	EFFECTIVE POWER
DO	WER (KW)	USE FACTOR	88
SERVICE PO		0.8	
Pumping Power*	110		30
	20	1.0	18 17 L
Crane Operation	30	Secret Constitution	320
Crane open	400	0.8	
Precipitators	400	0.8	48
그 그는 것 같아지다니게 얼마나라 하셨다.	60		486 KW
Ash Handling		TOTAL	since a reduction
			. I cince a leudo

Feedwater pumping is not included since a reduction in existing feedwater pumping will be realized. Adjustment is made for higher pressure feedwater. \* NOTE:

Annual Demand Cost Increase 486 KW X \$ 73.598/KW = \$ 35,769/yr.

486 KW X 7000 hrs/yr. = 3,402,000 KWh/yr. Annual KWH Increase

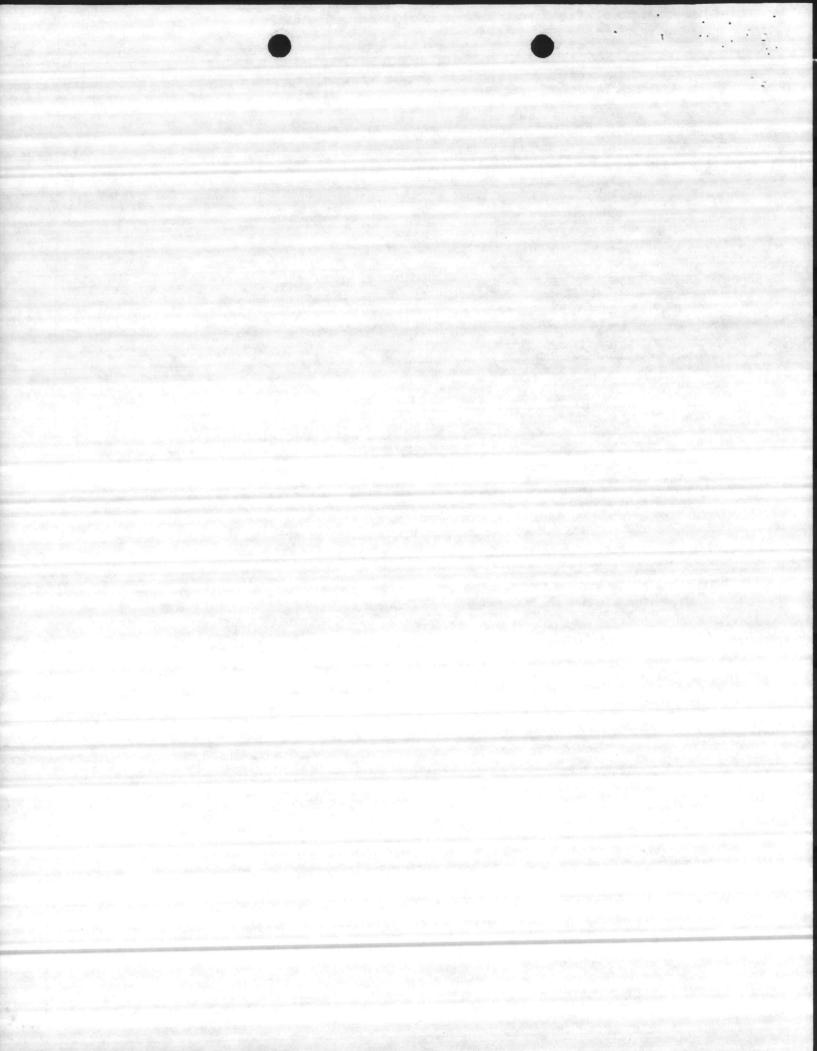
3,402,000 KWh/hr. X \$ .02726/KWh = \$ 92,738/yr. Annual Dollar Increase per KWH

Total Annual Increase Electrical Cost \$ 35,769 + \$ 92,738 = \$ 128,507

Escalated to Oct. 1986 FY82 FY83 FY84 FY85 FY86 \$128,507 X 1.13 X 1.13 X 1.13 X 1.13 X 1.13 = \$236,765

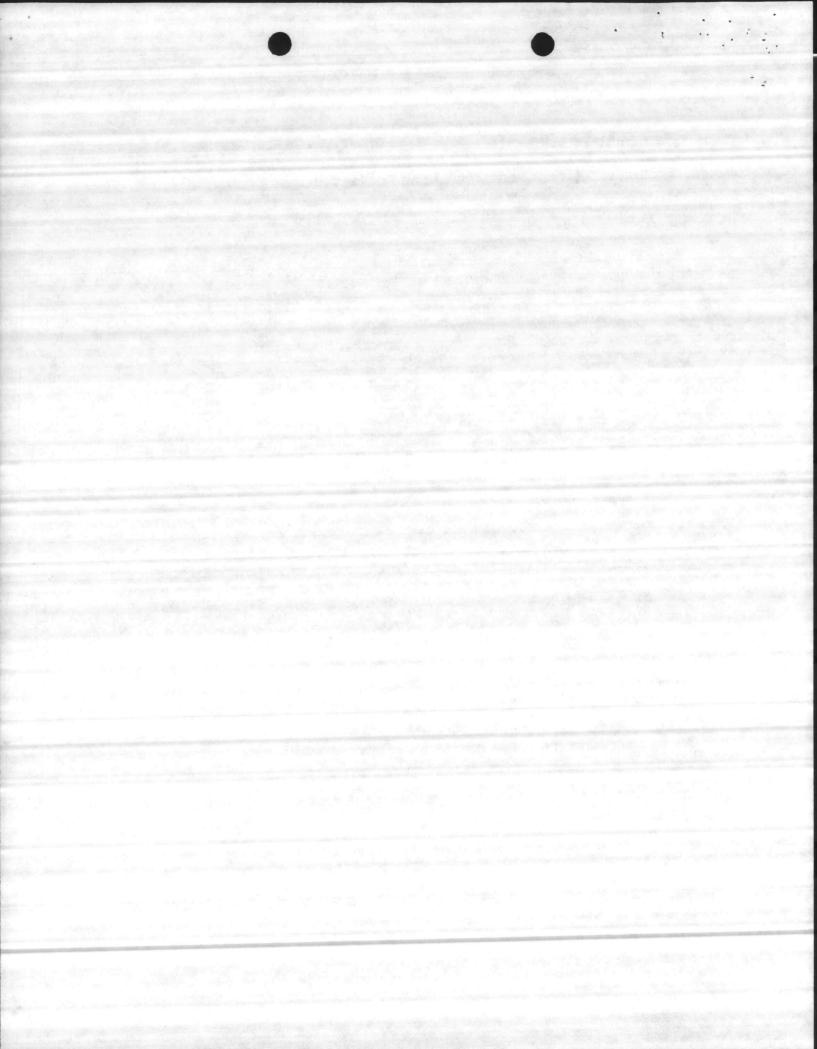
10% Discount (7% differential)

\$4,273,386 Present Value Incremental Electrical Cost



e. Annual Trash Transfer Cost from Cherry Point to Lejeune

Yr. of Op.				10% Discount		
		Tons/yr. \$/yr.		(0% differential)	Present Value	
1986	1	15,538	\$ 265,699	.954	\$ 253,477	
	2	15,793	270,060	.867	234,142	
	3	16,048	274,420	.788	216,243	
	4	16,303	278,781	.717	199,886	
1990	5	16,558	283,141	.652	184,608	
	6	16,813	287,502	.592	170,201	
	7	17,068	291,862	.538	157,022	
	8	17,323	296,223	.489	144,853	
	9	17,578	300,583	.445	133,759	
	10	17,833	304,944	.405	123,502	
	11	18,088	309,304	.368	113,824	
	12	18,343	313,665	.334	140,764	
	13	18,598	318,025	.304	96,679	
	14	18,853	322,386	.276	88,978	
2000	15	19,108	326,746	.251	82,013	
	16	19,363	331,107	.228	- 75.492 -	
	17	19,618	335,467	.208	69,777	
	18	19,873	339,823	.189	64,227	
	19	20,128	344,188	.172	59,200	
	20	20,383	348,549	.156	54,373	
	21	20,638	352,909	.142	50,113	
	22	20,893	357,270	.129	46,087	
	23	21,148	361,630	.117	42,310	
	24	21,403	365,991	.107	39,161	
2010	25	21,658	370,351	.097	35,924	
Total!	Doscont Val	uo Transfa-	Cost		\$2,840,615	
IULAI I	riesent val	ue Transfer	COST			



# f. Annual Ash Disposal Cost

				(0% differential)	Present Value
Yr.	of Op.	1982 \$*	1986 \$*	The second secon	\$ 16,109
1986	1 2 3	\$ 13,702 13,756 13,862	\$ 16,886 16,952 17,083	.954 .867 .788 .717	14,698 13,461 12,296
1990	4 5 6 7	13,916 14,022 14,075 14,128	17,150 17,280 17,346 17,411 18,424	.652 .592 .538 .489	11,267 10,268 9,367 9,009 8,227
2000	8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	14,950 15,003 15,110 15,163 15,216 15,269 15,323 15,376 15,429 15,535 15,588 15,642 15,748 15,802 15,855 15,908 16,014	18,489 18,621 18,686 18,752 18,817 18,884 18,949 19,014 19,145 19,210 19,277 19,407 19,474 19,539 19,605 19,735	.445 .405 .368 .334 .304 .276 .251 .228 .208 .189 .172 .156 .142 .129 .117 .107	7,541 6,876 6,263 5,720 5,212 4,756 4,335 3,982 3,630 3,315 3,027 2,765 2,520 2,293 2,111 1,920
2010	25	16,067	19,800		

Total Present Value Ash Disposal Cost

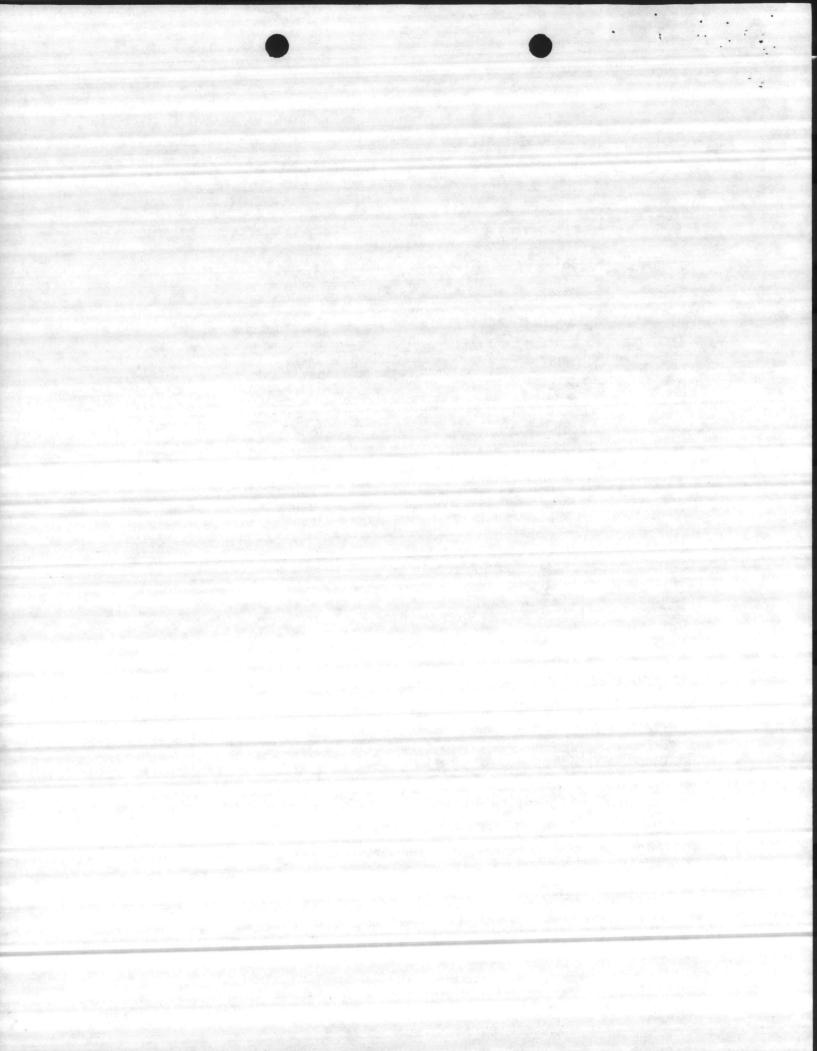
\* Escalation from 1982 to 
$$1986 = \frac{2317}{1880} = 1.2324$$

Ash - 80 lbs/cf. 30% moisture

Ash Disposal - 5 days per week

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\$ 170,968



### . 3. Benefits -

Revenues generated from sales of electricity to CP&L

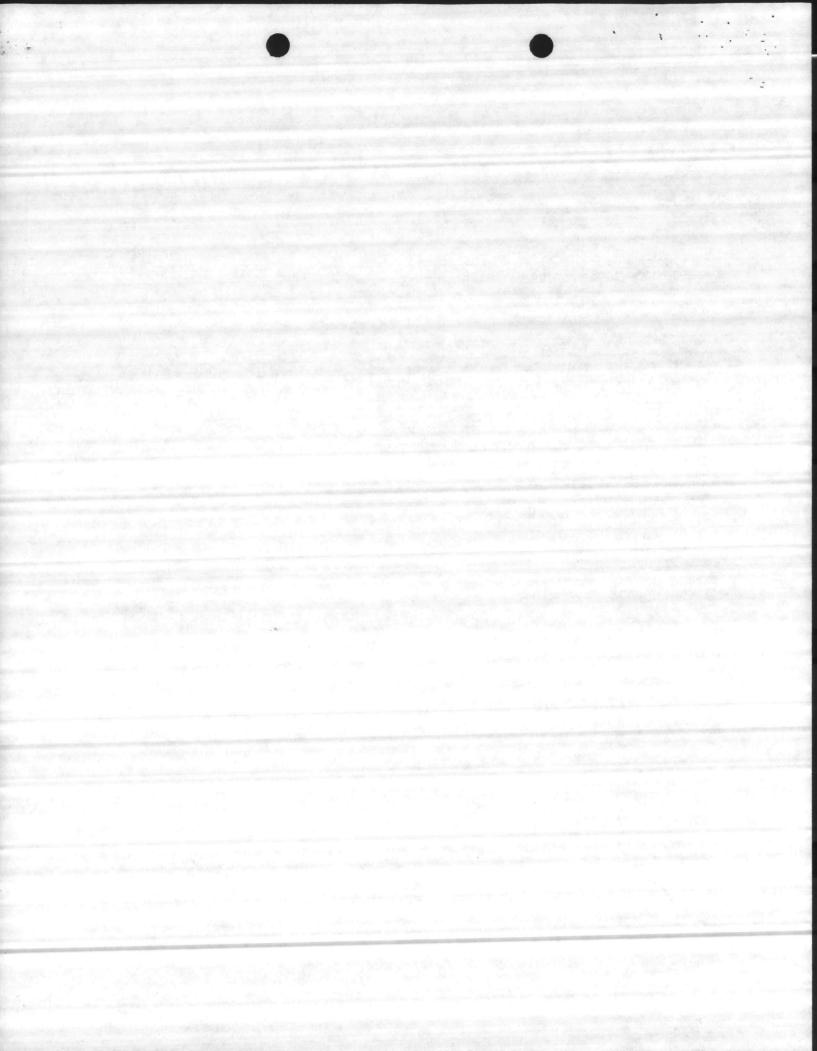
Year	Av. Kw/hr Generated	*Net Revenue Jan. 1982 \$	** Oct, 1986 \$	10% Discount (7% differential)	Present Value
1986 200 <b>0</b>	Generated  1 640 2 646 3 655 4 660 5 670 6 674 7 680 8 685 9 690 10 700 11 705 12 710 13 715 14 720 15 725 16 731 17 74 18 74 19 75 20 75 21 76 22 77 23 77	\$232,640 234,821 238,092 239,910 243,545 244,999 247,180 248,998 250,815 254,450 256,268 258,085 259,902 261,720 263,538 265,355 268,990 270,808 272,625 276,260 279,895 281,712	** Oct, 1986 \$  \$428,624 432,642 438,669 442,019 448,716 451,395 455,413 458,763 462,110 468,808 472,157 475,505 478,853 482,202 485,552 488,899 495,597 498,946 502,294 508,991 513,009 515,688 519,036 525,735	.986 .959 .933 .908 .883 .859 .836 .813 .791 .769 .748 .728 .708 .688 .670 .651 .634 .616 .600 .583 .567 .552	\$ 422,623 414,904 409,278 401,353 396,216 387,748 380,725 372,974 365,529 360,513 353,174 346,168 339,028 331,755 325,320 318,273 314,208 307,351 301,376 296,742 290,876 284,660 278,722 274,434 268,774
2010	76	285,348 287,165	529,083	.508	to 540 704

Total Present Value Electricity Renvenues Benefit \$8,542,724

FY82 FY83 FY84 FY85 FY86 1.13 X 1.13 X 1.13 X 1.13 X 1.13 = 1.842435

<sup>\*</sup> Source: CP&L Schedule CSP-3B effective 9-24-82 Variable Energy Credit and 10-Year Capacity Credit

<sup>\*\*</sup>Escalation from Jan. 1982 to Oct. 1986 =



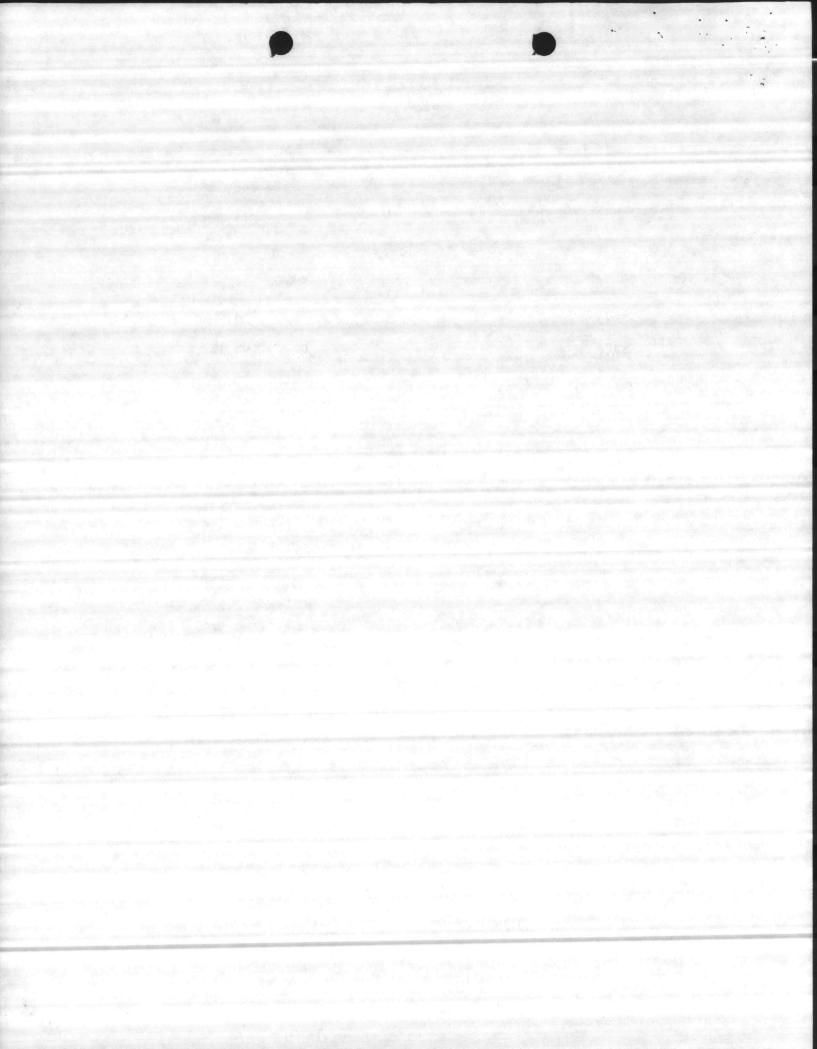
# Summary Sheet Alternative 2A - Total Present Value

Discount Factor 9.524

Uniform Annual Cost

Investment Cost	
Boiler Plant	\$24,248,663
Ash Disposal	211,367
Recurring Costs	
Labor	4,171,048
Maintenance	2,295,459
Plant Overhaul	96,122
Incremental Electrical	4,273,386
Trash Transfer	2,840,615
Ash Disposal	170,968
Total Present Value Cost	\$38,307,628
Less Present Value Benefits Sale of Electricity	8,542,724
Net Present Value Alterantive 2A	\$29,764,904

\$ 3,125,252



# ALTERNATIVE B - Incremental Cost of Refuse Landfills at Cherry Point and Camp Lejeune

#### 1. Investment Costs

a. Incremental Cost of Landfill - Cherry Point

Capital Cost \$298,704 (1977) in year 5

Escalated to Oct 86 \$298,704 X 2317 = \$510,772 1355

10% Discount (2% differential) year 5 .712

Present Value Capital Cost \$363,669

Capital Cost \$36,000 (1977) in years 8, 16, 23

Escalated to Oct. 1986 \$36,000 X 2317 = \$61,558 1355

10% Discount (2% differential) year 8 .568

Present Value Capital Cost \$ 34,965

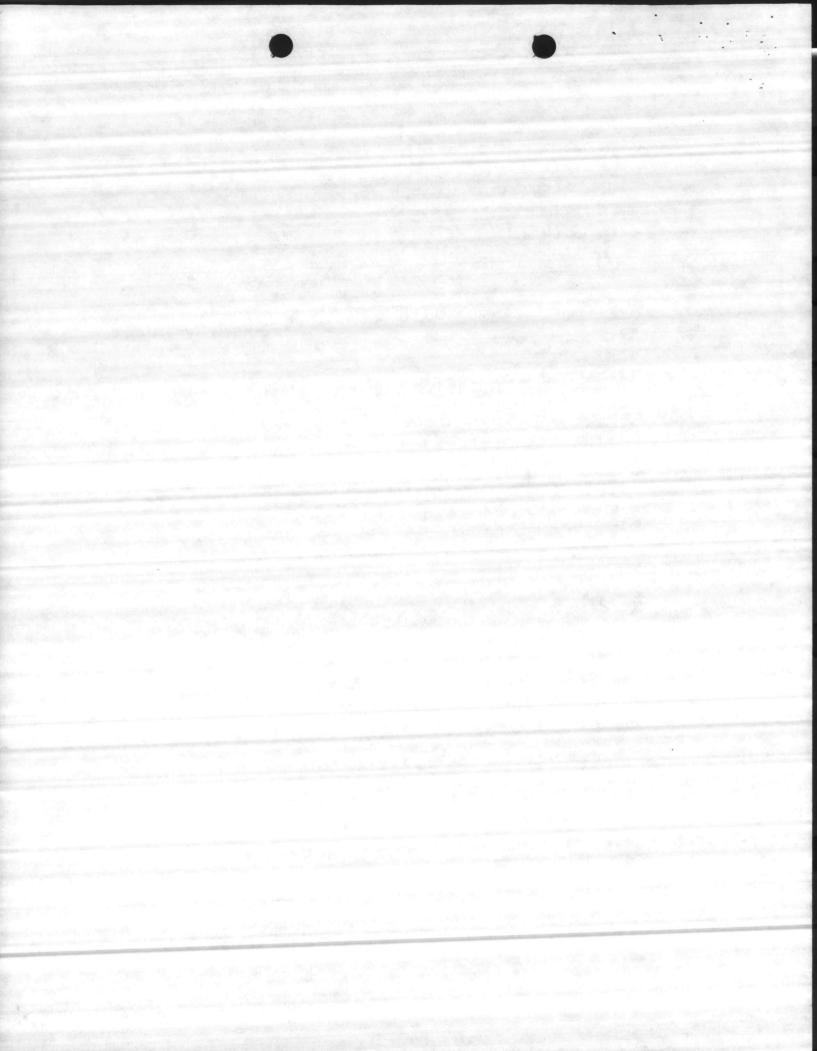
10% Discount (2% differential) year 16 .310

Present Value Capital Cost \$ 19,082

10% Discount (2% differential) in year 23 .183

Present Value Capital Cost \$ 11,265

Total Present Value Capital Costs - Cherry Point \$428,981



b. Existing Boiler Plant Replacement/Upgrading Cost

Camp Geiger Capital Cost \$2,000,000 (1982\$) in 1989

Escalated to Oct. 1986  $$2,000,000 \times \frac{2317}{1880} = $2,464,893$ 

10% Discount (2% differential) year 2 .893

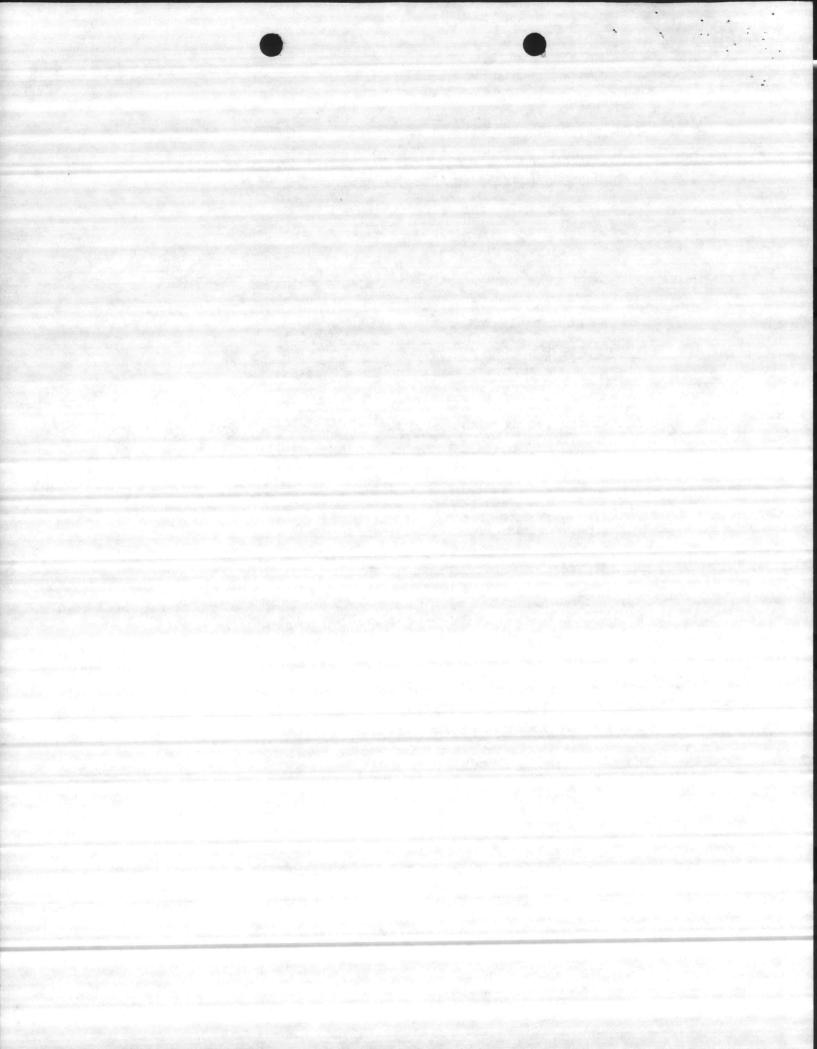
Present Value Capital Cost \$2,201,150

Air Station Capital Cost \$2,000,000 (1982) in 1996

Escalated to Oct. 1986  $$2,000,000 \times \frac{2317}{1880} = $2,464,893$  10% Discount (2% differential) year 10 .488

Present Value Capital Cost \$1,202,867

Total Present Value Replacement Costs \$3,404,017

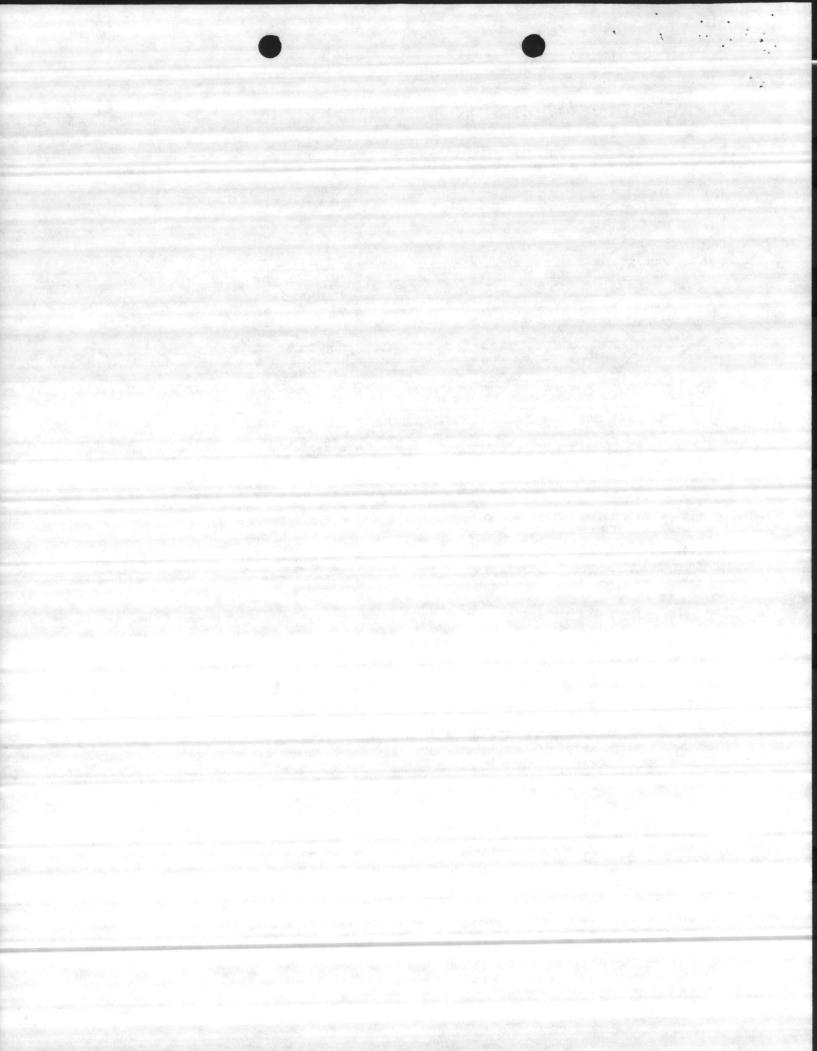


Jal Incremental Landfill Development Cost - Cherry Point

la1	Incremental Land,	10	% Discount	11)	Prese	ent Value
p.	56,000 95, 56,896 97, 57,792 98 60,438 103 61,334 104 62,230 106 63,126 107	7\$* (2% c	0.963 0.893 0.828 0.768 0.712 0.660 0.612 0.568 0.526 0.488 0.453	<u>(1)</u>	\$	87,788 82,775 78,019 73,542 69,270 65,223 63,248 59,571 55,972 52,676 49,592 46,623
33990011223324	64,918 111 65,814 113 66,710 116 67,606 11 68,502 11 70,294 12 71,190 13 72,086 13 72,982 13 73,878 1 74,774 1 75,670 1	,007 2,539 4,071 5,604 7,136 8,668 0,200 1,732 23,264 24,796 26,328 27,861 29,393	0.420 0.389 0.361 0.335 0.310 0.288 0.267 0.247 0.229 0.213 0.197 0.183 0.170			43,778 41,180 38,727 36,312 34,176 32,093 30,068 28,227 26,582 24,887 23,398 21,997 20,555
	Poví	Jonment Cost	- Cherry	Point	- 100	\$1,100,275

al Present Value Development Cost -

on from 1977 to 1986 =  $\frac{2317}{1355}$  = 1.70996

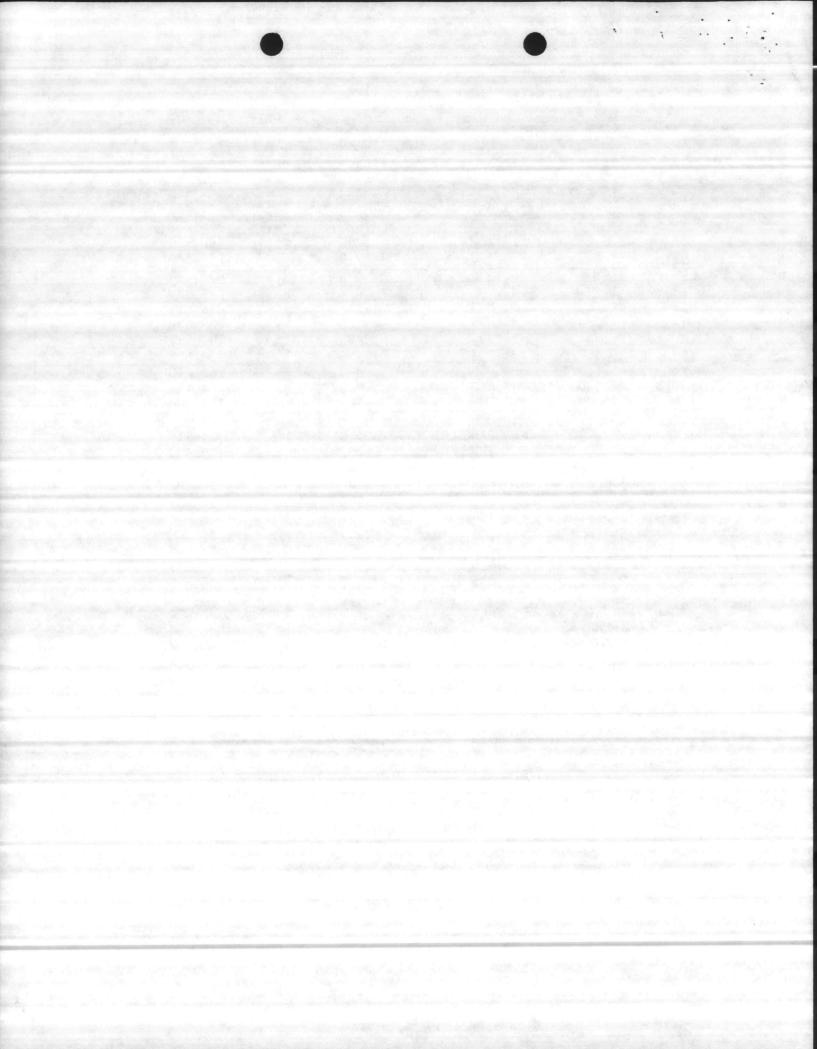


#### b. Annual Incremental Landfill Development Cost - Camp Lejeune

Yr. of	0p.	1977\$*	1987\$*	10% Discount (2% differential)	Present Value
1986	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	\$215,809 217,609 219,157 220,956 222,505 224,304 223,732 225,532 227,331 228,879 230,679 230,107 231,906 233,706 233,706 233,134 234,933 236,481	368,960 372,037 374,684 377,760 380,408 383,484 382,506 385,583 388,659 391,305 394,383 393,405 399,558 396,480 399,558 398,580 401,656 404,302	.963 .893 .828 .768 .712 .660 .612 .568 .526 .488 .453 .420 .389 .361 .335	\$ 355,308 332,229 310,238 290,119 270,850 253,099 234,093 219,011 204,434 190,957 178,655 165,230 154,231 144,240 133,524 124,513
2010	17 18 19 20 21 22 23 24	238,281 240,080 241,629 243,428 242,856 244,655 246,204 248,003	407,379 410,455 413,103 416,179 415,201 418,277 420,925 424,001	.288 .267 .247 .229 .213 .197 .183 .170	116,439 108,770 101,382 94,601 88,646 81,795 76,545 71,557 66,568
2010	23		,		

Total Present Value Development Costs - Camp Lejeune - \$4,367,034

<sup>\*</sup> Escalation from 1977 to 1986 =  $\frac{2317}{1355}$  = 1.70966



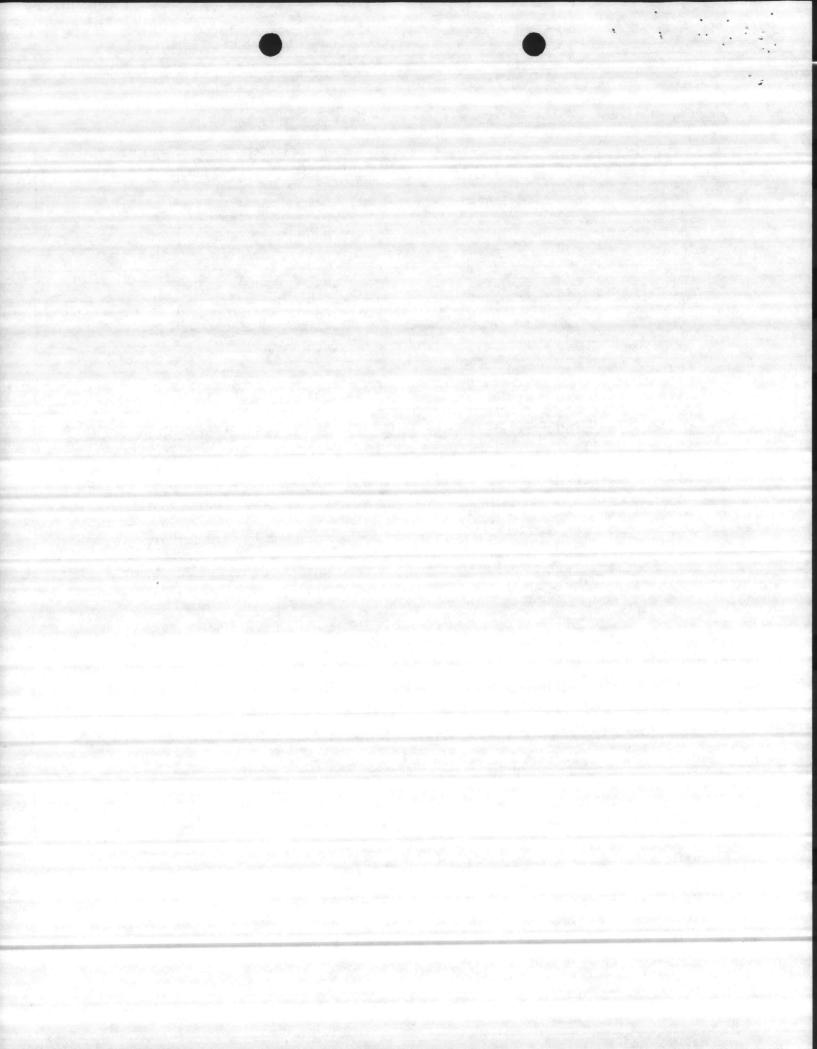
#### c. Annual Incremental Landfill Maintenance Cost - Cherry Point

Year Y	r. of Op.	1977\$*	1986\$*	10% Discount (0% differential)	Present Value
1986	1	\$ 9,520	\$ 16,278	.954	\$ 15,530
	2	9,680	16,552	.867	14,350
		9,840	16,826	.788	13,258
1.	4	10,000	17,099	.717	12,260
	5	10,160	17,373	.652	11,327
	6	10,230	17,492	.592	10,355
n Night of the second of the s	7	10,480	17,920	.538	9,6413
	8	10,640	18,194	.489	8,8965
	9	10,800	18,467	.445	8,218)
	10	10,960	18,741	.405	7,5903
	11	11,120	19.014	,368	6,9975
	12	11,280	19,288	.334	6,4423
	13	11,440	19,561	.304	5,946
	14	11,600	19,835	.276	5,474
2000	15	11,760	20,109	.251	5,047
	16	11,920	20,382	.228	4,6473
	17	12,080	20,656	.208	4,296
	18	12,240	20,929	.189	3,955
	19	12,400	21,203	.172	3,647 3,350
	20	12,560	21,477	.156	3,088
	21	12,720	21,750	.142	
	22	12,880	22,024	.129	2,841
	23	13,040	22,297	.117	2,415
0010	24	13,200	22,571	.107	2,215
2010	25	13,360	22,845	.097	2,213

Total Present Value Maintenance Costs - Cherry Point \$174,393

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<sup>\*</sup> Escalation from 1977 to 1986 =  $\frac{2317}{1355}$  = 1.70966

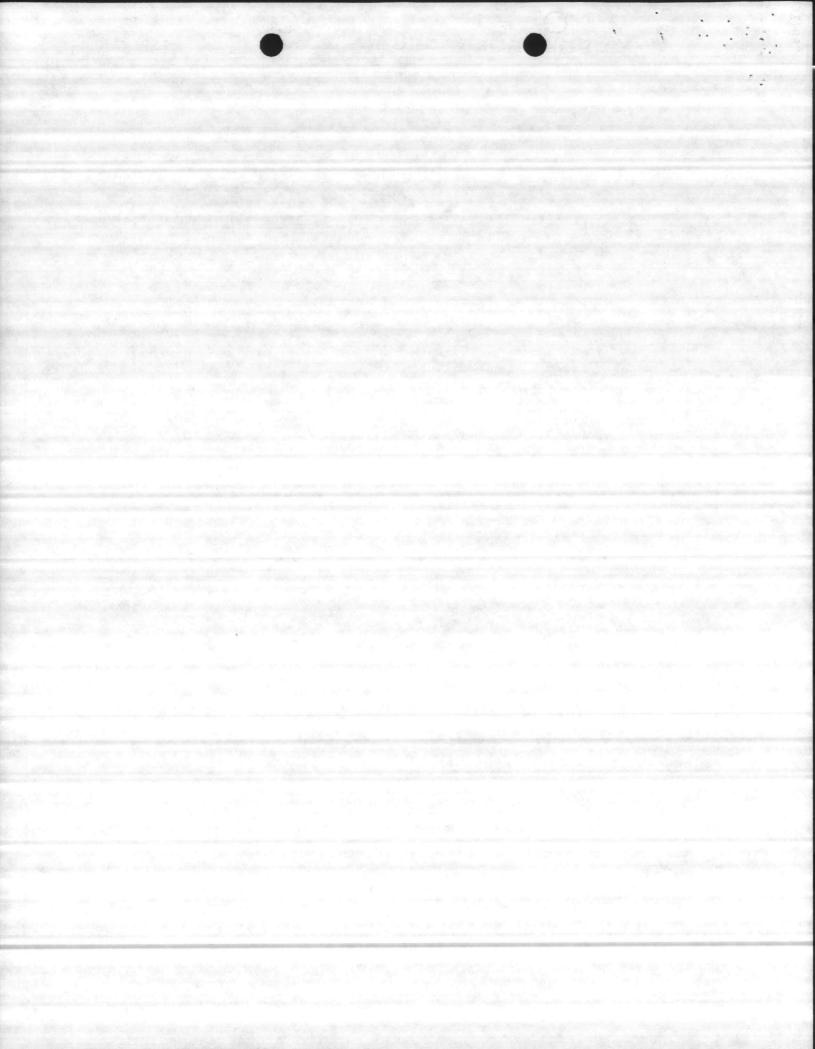


### d. Annual Incremental Landfill Maintenance Cost - Camp Lejeune

				10% Discount				
Yr	of Op.	1977\$*	1986\$*	(0% differential)	Present Value			
1986	1 2 3 4 5	16,597 16,715 16,853 16,971 17,108	28,145 28,380 28,582 28,818 29,019 29,254	.954 .867 .788 .717 .652 .592	\$ 26,851 24,605 22,522 20,662 18,920 17,318			
2000	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	17,064 17,202 17,339 17,457 17,594 17,551 17,688 17,825 17,781 17,919 18,037 18,174 18,311 18,429 18,567 18,523 18,660 18,778 18,915	29,178 29,414 29,649 29,850 30,085 30,011 30,211 30,480 30,404 30,640 30,842 31,076 31,311 31,512 31,748 31,673 31,907 32,109 32,343	.538 .489 .445 .405 .368 .334 .304 .276 .251 .228 .208 .189 .172 .156 .142 .129 .117 .107	15,698 14,383 13,193 12,089 11,071 10,023 9,184 8,412 7,631) 6,9863 6,415 5,873 5,385 4,916 4,508 4,085 3,733 3,435 3,435 3,137			

Total Present Value Maintenance Costs - Camp Lejeune \$281,035.

\* Escalation from 1977 to 1986 =  $\frac{2317}{1355}$  = 1.70966



1bs steam/hr MMBtu/hr \$/hr \$/yr  Year tons/day tons/hr.  128	X \$12.99/MMBtu** X 8760 hrs/yr X discount facto  1bs steam/hr.  31,093 31,336 31,822	Displaced Oil Input MMBtu/hr. 38:99 39.30	= \$/h = \$/y = pre \$/hr. \$ 444.87	r	\$/yr. (8%	0% Discount differential)	
Year tons/day tons/hr.  128 5.33 . 129 5.38 . 3 131 5.46 . 4 132 5.50 . 5 134 5.58 . 6 135 5.62	31,093 31,336	0il Input MMBtu/hr. 38:99 39.30	\$ 444.87		\$/yr. (8%		
128 5.33 129 5.38 3 131 5.46 4 132 5.50 5 134 5.58 6 135 5.62	31,093 31,336	38:99 39.30				Land Y	
7       136       5.67         8       137       5.71         9       138       5.75         10       140       5.83         11       141       5.88         12       142       5.92         13       143       5.96         14       144       6.00         15       145       6.04         16       146       6.08         148       6.17       6.21         19       150       6.25         20       152       6.33         21       153       6.38         22       154       6.42         23       155       6.46         24       157       6.54         25       158       6.58	32,065 32,551 32,794 33,037 33,280 33,522 34,008 34,251 34,494 34,737 34,980 35,223 35,466 35,952 36,194 36,438 36,923 37,166 37,409 37,652 38,138 38,381	39.90 40.21 40.82 41.12 41.43 41.73 42.04 42.65 42.95 43.26 43.56 43.86 44.17 44.47 45.08 45.39 45.69 46.61 46.91 47.22 47.82 48.13	448.02 454.86 458.40 465.35 468.77 472.30 475.72 479.26 486.21 489.63 493.16 496.58 500.00 503.54 506.96 513.91 517.46 520.87 527.82 531.35 534.77 538.30 545.15 548.68		\$3,893,697 3,924,655 3,984,573 4,015,531 4,076,448 4,106,407 4,137,365 4,167,324 4,198,282 4,259,199 4,289,158 4,320,116 4,350,075 4,380,035 4,410,992 4,440,952 4,501,869 4,532,826 4,562,786 4,623,703 4,654,661 4,684,620 4,715,578 4,775,496 4,806,454	991 973 955 938 921 904 888 871 856 840 825 810 795 781 766 752 739 725 712 699 687 674 662 650 638	\$3,858,654  3,818,689  3,805,267  3,766,568  3,754,409  3,712,192  3,673.980  3,629,739  3,593,729  3,577,727  3,538,556  3,499,294  3,458,310  3,420,807  3,378,820  3,339,595  3,326,881  3,286,299  3,248,703  3,231,968  3,197,752  3,157,434  3,121,712  3,104,072  3,066,517

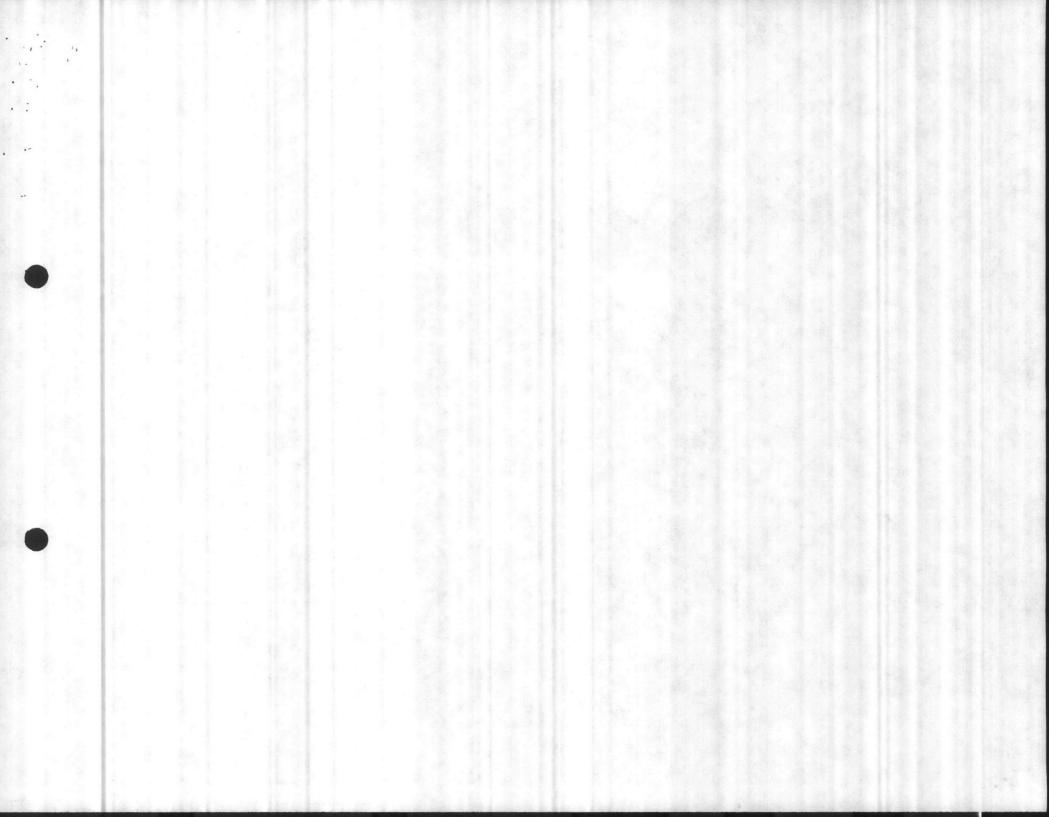
\* Includes blowdown and feedwater heating

\*\* Includes Camp Geiger Plant Efficiency

\*\*\* \$5.92 (Jan. 82) escalated to Oct. 87

Fy82 Fy83 Fy84 Fy85 Fy86

\$5.92 X 1.14 X 1.14 X 1.14 X 1.14 X 1.14 = 11.40



# Summary Sheet Alternative 2B - Total Present Value

Investment Costs								
Cherry Point Capital Costs	\$: 428,981							
Boiler Plant Replacement Cost	3,404,017							
Recurring Costs								
Cherry Point Development	1,186,279							
Camp Lejeune Development	4,367,034							
Cherry Point Maintenance	174,393							
Camp Lejeune Maintenance	281,035							
Fuel Oil	\$86,567,674							
Total Present Value Alternative 2B	96,409,413							
Discount Factor 9.524								
Uniform Annual Cost	10,122,785							

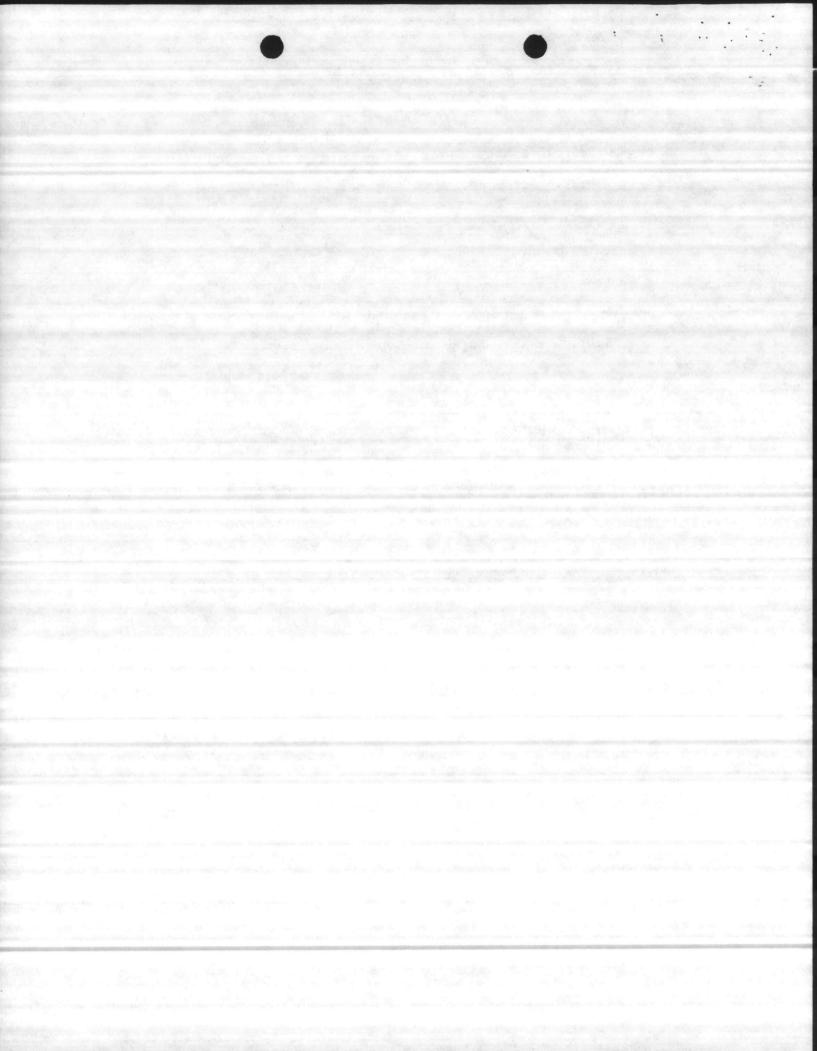
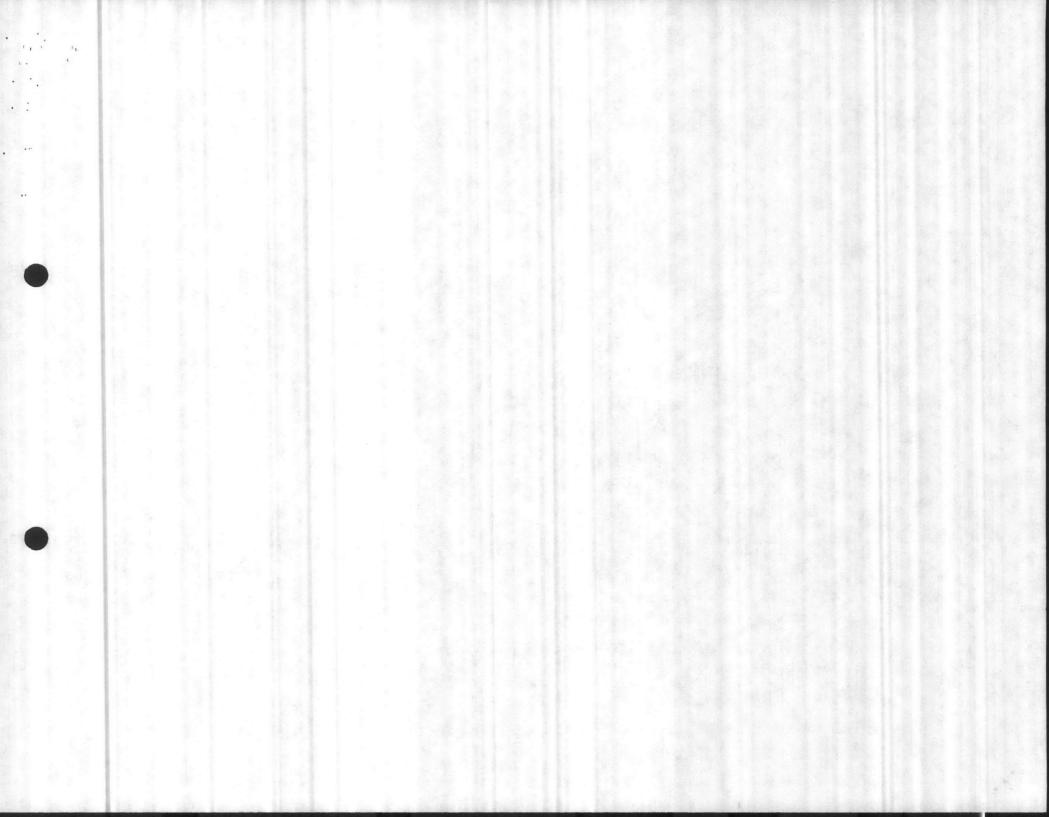


TABLE 1
COST SUMMARY
DESIGN ANALYSIS (FY 87)
DIFFERENTIAL INFLATION

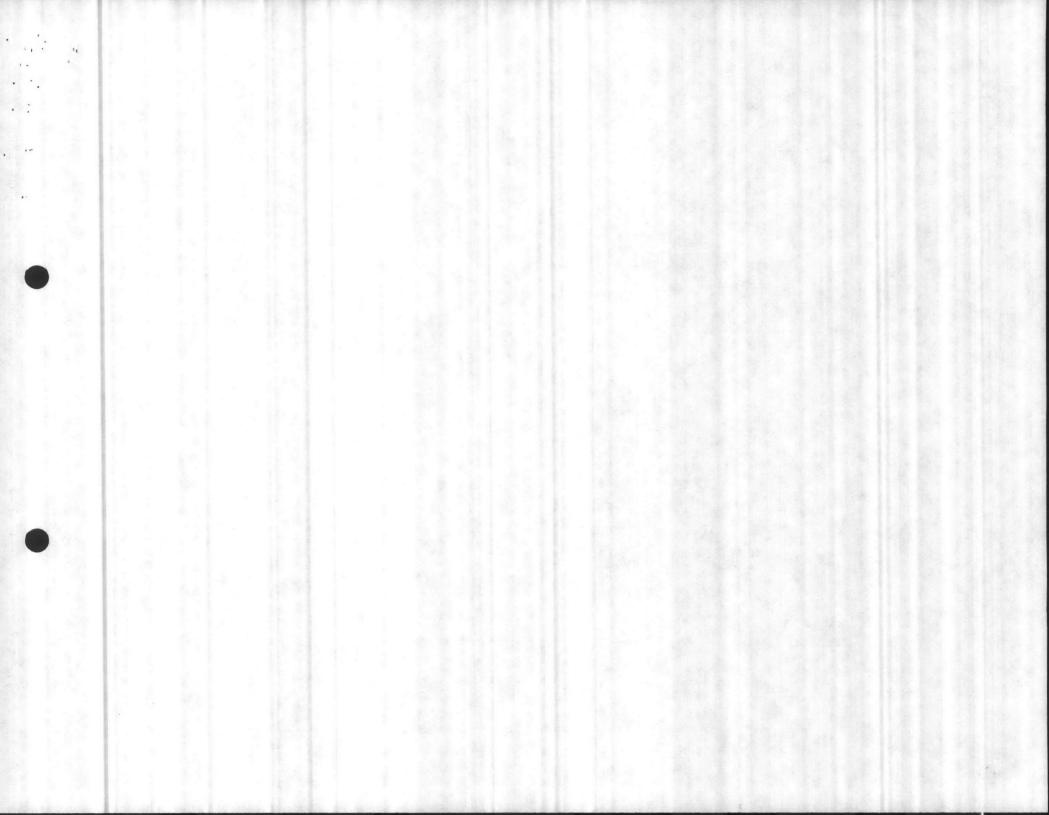
	Construction Costs (1982 \$)	Total Project Cost Present Value	Total Refuse Plant Savings	Uniform Annual Cost	Annual Refuse Plant Savings
**Case 1A- Refuse-fired plant producing steam only	15;468,300	*37,728,035	78,850,695	3,961,400	8,279,157
Case 1B- Incremental cost of landfill for refuse and oil for steam	1 1 10 10 10 10 10 10 10 10 10 10 10 10	116,579,069	<u>-</u>	12,240,557	
		Par est			
**Case 2A- Refuse-fired plant producing steam and	19,134,300	34,027,792	74,348,706	3,572,847	7,806,458
electricity with a backpressure turbine, sell elect				A A	,
Case 2B- Incremental cost of landfill for refuse and oil for steam	-	109,376,498	_	11,484,303	1,1,4,
Case 3A- Refuse-fired plant producing electricity	. 19,134,300	38,868,016	1 7	4,081,060	-
with a back pressure turbine, use elect on base		10°			
Case 3B- Incremental cost of a landfill for refuse and oil for steam	-	109,376,498	70,508,482	7,403,243	7,403,242
*Escalated to April 1	988 = 37,728,035	x 1.046 = 39,46	3,525 Say 39,4	164,000	

<sup>\*\*</sup>Case 2A is shown as lowest project cost. However, Case 1A was recommended by NAVFACENGCOM, Norfolk, VA.



# TABLE I COST SUMMARY DESIGN ANALYSIS (FY87) NO DIFFERENTIAL INFLATION

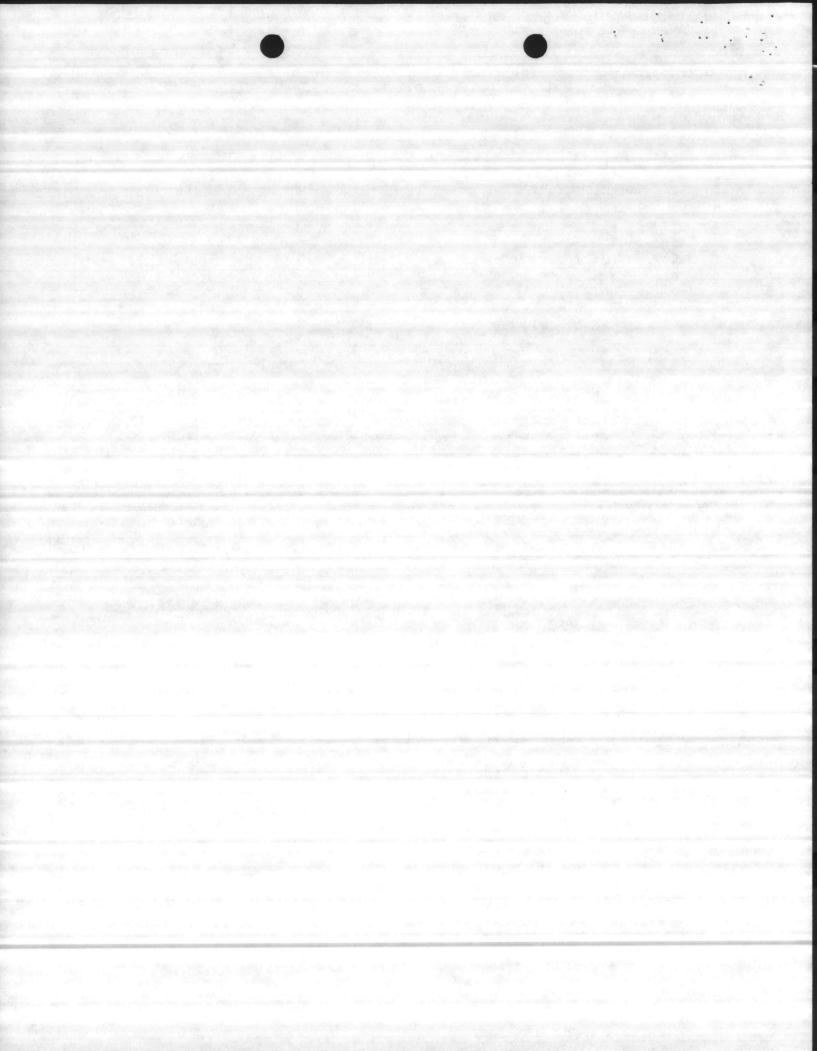
		Construction Costs (1982 \$ )	Total Project Cost Present Value	Total Refuse Plant Savings	Uniform Annual cost	Annual Refuse Plant Savings
	use-fired plant ducing steam	15,468,300	35,634,955	24,081,669	3,741,595	2,528,524
Ca 1B - Inc	remental cost of dfill for refuse oil for steam		59,716,624	<u>-</u>	6,270,120	
· pro ele bac	use-fired plant ducing steam and ctricity with a kpressure turbine, l elect	19,134,300	36,446,074	19,978,502	3,826,761	2,097,700
lan	remental cost of dfill for refuse oil for steam		56,424,576		5,924,462	\ \text{\rec}
pro with tur	use-fired plant ducing electricity h a backpressure bine, use elect base	14,134,300	38,930,007	17,494,569	4,087,569	1,836,893
· a 1	remental cost of andfill for refuse oil for steam	-	56,424,576	-	5,924,451	:



									1
	. Econorii	C ANALYSIS	03/29/83			FAGE	1	10 <b>8</b> 2	-
	. ;								1
CAMP LE	EJEUNE CII	GENERATION .							-
-ECONON11	LIFE:	25							
DISCOUN	T RATE:	10					id m-x-i	 	
ALTERNA	TIVE:								
CAS	E 1 ALTER	NATIVE A				L 4		 	-
FROJE	CT YEARS		ZAUNNA		FV	FV.			
START	FINISH	ITEM -	COST	DIFF	FACTOR	COST		 	-
_ 0	0	INVESTMENT .	22,798,246	O	1,000_	22,798,246_		 	
0	0	INVESTHENT	238,225	0	1.000	238,225		- Alleria Million	- 54
1	25	LAPOR	462,476	0	.5.524	4,404,474		 	
1	25	HAINTENANCE	248,969	0	9.524	2:371:101			
1	25	INC ELECT	245,527	O	9.524	2,338,321.			
0	0	TRASH TRANS	3,290,806	0	1.000	3,290,806			
0	0.	- ASH DISF -	193.781	0	_1.000_	193,781_			
				IATOT		75 . 171 . 055			

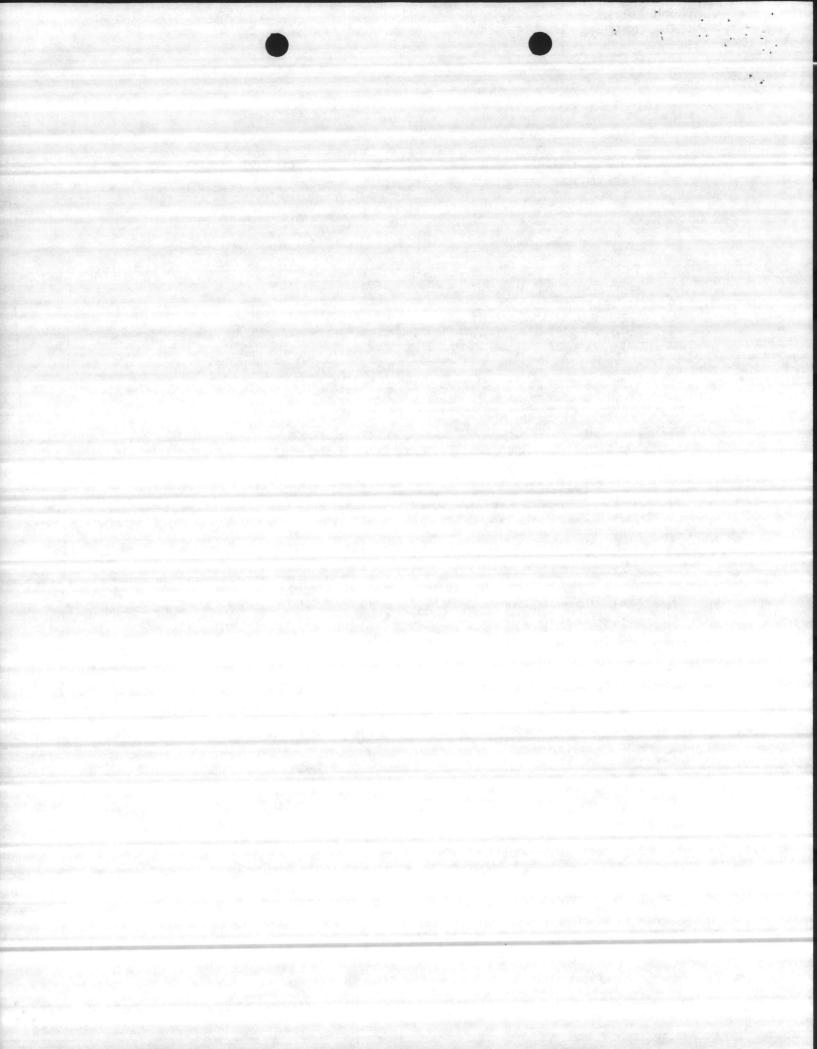
TOTAL

35,634,955

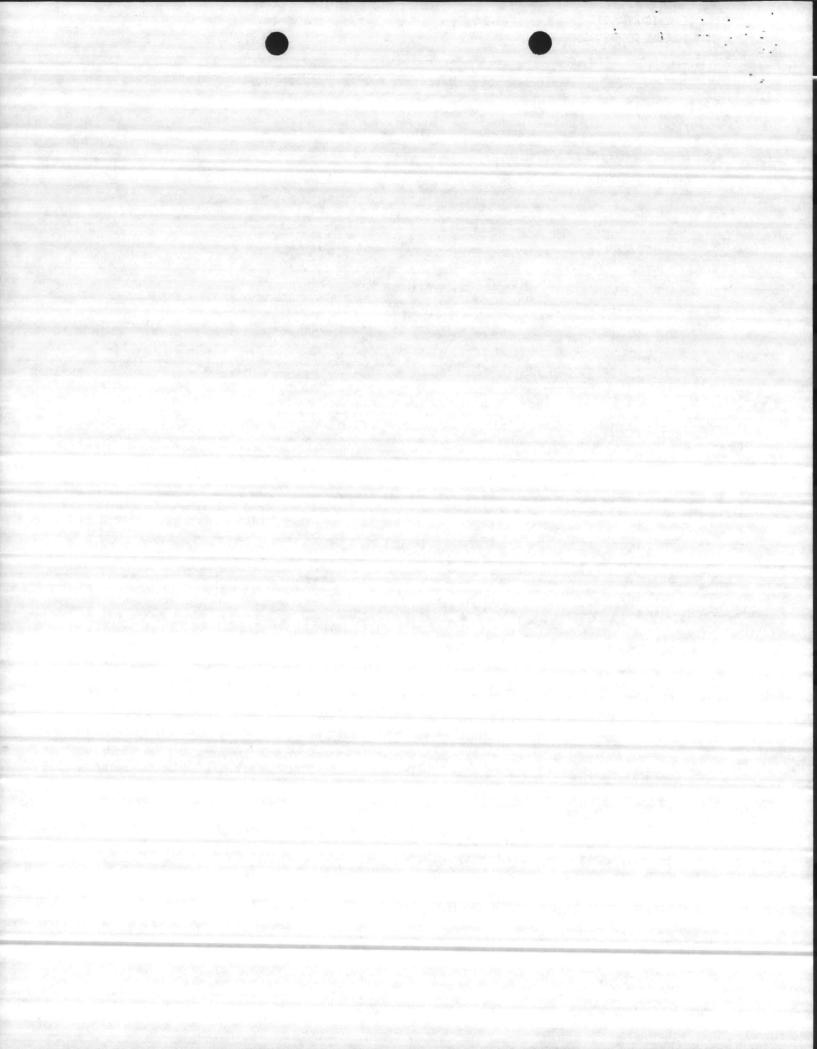


. . ECOMONIC ANALYSIS . CAMP LEUFUNE COSENERATION ECONOMIC LIFE: 25 DISCOUNT RATE: 10 " ALTERNATIVE: ... CASE 1 ALTERNATIVE R

	CT YEARS	MATIVE R	ANNUAL		FV	FV			
TART	FINISH	ITEh	COST -	DIFF	FACTOR	COST		/-	
0	0	LANDFILL INVST	456,534	0	1.000	496,934	7. 10	-	
. 0	0	PLANT UPCRADE.	3,857,028	0 .	_1.000_	3,857,028_			
0	0	LAND INVST CP	1,374,128	0	1.000	1,374,128	100		
0	0	LAND INVST LEJ	5,053,651	0	1.000-	-5,053,651_			
0	0	LAND HAINT CP	119,295	0	1.000	119,295		3.5	
0	0	LAND KAINT LEJ	325,577	0	1.000	- 325,577-		A STATE OF THE STATE OF	
1	0	FUEL	4,739,018	0	0.954	4.520,183			
- 2	0	FUEL	-4,776,042	0_	0.867	-4,141,362-			
3	0	FUEL	4,850,089	0	0.788	3,823,245			
. 4	0	FUEL.	4,837,113	0_	0.717	3,502,209_			
5	0	FUEL	4,961,160	0	0.651	3,232,056			
6	0	FUEL	4,998,193	0_	0.592_	2,960,169			- Wagler - Tillering
7	0	FUEL	5,035,207	0	0.538	2,710,997			
8	0	FUEL	5,072,230	0	0.489	2,482,664	100	-	College College
9	0	FUEL	5,109,254	0	0.445	2:273:442	in the state of th		
10-	0	FUEL	- 5,183,301	0	0.405_	2,096,719_		51	
11	0	FUEL	5,220,325	. 0	0.368	1,919,723			
12.	. 0	FUEL	- 5,257,348-	0-	0.334	_1,757,580_			
13	0	FUEL .	5,294,372	0	0.304	1,609,052			
_14 -	0	-FUEL	5,331,396 _	0	_ 0.276_	1,473,004_			<u> </u>
15	0	FUEL	5,368,419	0	0.251	1,348,394			
16	0	FUEL	- 5,405,442 -	- 0	. 0.228	-1.234,266-			
17	0	FUEL .	5,479,490	0	0.208	1,137,431			
18 -	0 .	FUEL	5,516,513 -	0.	0.189_	_1,041,015			
19	0	FUEL	5,553,537	0	0.172	952,729		A CONTRACTOR OF THE PARTY OF TH	
20 -	0	-FUEL	5,627,584-	0	- 0.156-	£77,465_			
21	0	FUEL-	5,664,608	0	0.142	803,127			
22 -	0	FUEL.	. 5,701,631	_ 0	0.129_	734,887			
23	0	FUEL .	5,738,655	. 0	0.117	672,418			
	0.	FUEL = -	5,812,702	0.	0.107_	619,176			
_25_	0	FUEL	5,849,726_		0.097	565,473	Par 2- 10	active engine	The section of the



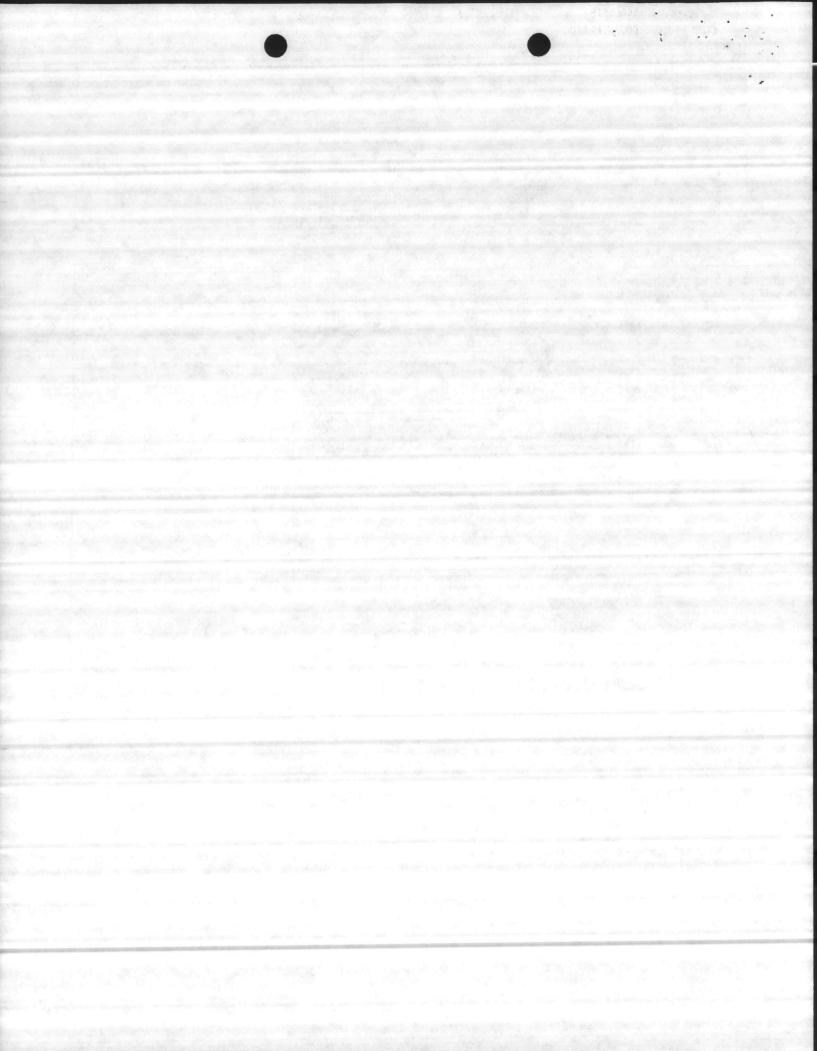
	CAS	E 2 AL	TERNATIVE A					2 124 1		
	START	FINIS		ANNUAL COST -	DIFF	- PV FACTOR	FV	·		
	0	0	INVESTMENT	28,201,512	ō	1.000	28,201,512	of 0.1860 L		
	1	25	LAROR	238:225	0	1,000	238,225			
	1	25		462,476	0		4.404,474	Maria 1		
	0	0	KAINTENANCE	254,515 .	0		-2:423:919			
	1	25	PLANT OVH	101,516	0	1,000	101,516			
	Ô	0	THE LLLE!	267,545	0	9.524	2.548.013-			
		0	TRASH TRANSASH DISP	3,290,806	0	1.000	3:290:806			
	1	0	ELECT REV	193,781	0		193,781			
	2		- ELEC REV	484,345 CR	0	0.954	461,979 CR			er miller state for
	3	0	ELEC REV	488,886 CR.			423,918_CR_			
	4	0	ELEC_REV	495,697 CR	0	0.788	390,749 CR	-15 Jacob - Int		je se secondo
	5	0	ELEC REV	499,481_CR_	_0_	0.717	357.938 CR			
	6	0	ELEC REV	507,049 CR	0	0.651	330,329 CR	Parks - Lan	Proceedings	
	7	0	ELEC REV	510,076_CR_	0_	0.592	302,052 CR			
	8-	0		514,617 CR	0		277,074 CR	PLS .	- 1	2000年2月1日
	9	0	- ELEC VEA	518,401-CR	0_	-0.489	253,737_CR			
	10	-0-	ELEC REV	522,185 CR	0	0.445	232,354 CR	1.0		
	11		- ELEC- REV	- 529,752 CR-	-0-	0,405	214:292-CR			
	12	0	ELEC REV	533,536 CR	0	0.368				
	13	-0-	ELEC REV	537,320-CR-	-0-	-0.334-	196,202 CR			
	- 14	0	ELEC REV	541,104 CR	0	0.304	-179,631 CR			
	15	. 0	- ELEC REV	544,888 CR	The state of the state of	-0.276	164,451 CR			
	16	0	ELEC REV	548,672 CR	0	0.251	- 150,546-CR			
	17		ELEC REV	5521456.CR		0.228	137,810 CR			
	18	0	ELFC REV	560,024 CR	0	0.208	-126,146 CR-		THE PERSON NAMED IN	
The state of	19	0	ELEC REV	563,808.CR	_0	0.189	116,249 CR			200
	20_	Ber Control of the	ELEC REV	567,592 CR	0	0.172	106,395 CR			
	21		ELEC REV	575:160 CR :		0.156	97:372 CR 89:700 CR			
	22		ELEC REV	579,701 CR		0.142	82,189 CR			
	23	0	ELEC REV	582,728 CR		0.129	75,108 CR			
	_24		ELEC REV	586,512 CR		0.117	68,723 CR		4	Tree with
	25	C	ELEC_REV_	524,080 CK		0.107	63,282 CR			
	23	U	ELEC REV	597,864 CR		0.097	57,895 CR	Maria de la companya del companya de la companya de la companya del companya de la companya de l		



•	-		C ARALYSIS	(3/29/83			FASE	4	•
			E COSPNERATION			7		<b></b>	
	ECONOMIC		25 .						
	THU003111-		10	the second second	325.7				
	ALTERNAT1	Total Control							
			HATIVE B .						
	PERDUECT			ANNUAL		FV	PV		A man work of the
	START	FINISH	ITEh	COST -	DIFF-	FACTOR	COST-		
_	0	. 0	LANDFILL JHVST.	496,934	0	1.000	456,534		
	0	0	PLANT UPGRADE	3,857,028	0	1.000	3,857,028		
	0	0	LAND INVST CP	1,374,128	. 0	1,000_	1:374,128		
	0	0	LAND INVST LEJ	5,053,651	0	1.000	5,053,651		
	0	0	LAND MAINT CP	119,295	0	1.000	119,295		
	0	0	LAND MAINT LEJ	325,577	0_	1,000	325:577		
	1	0	FUEL	4,436,884	0	0.954	4.232.001		
	2	0	FUEL	4:471:547	. 0	0.867	3.877,331_		
	3	0	FUEL	4,540,873		0.788	3,579,495		
	4	- Q ·-	FUEL	-4,575,537			3,278,927		
	5	0	FUEL	4,644,863	0	0.651	3,026,007		
		0	_FUEL	4,679,526	0	0.592	2,771,445		
	7	0	FUEL	4,714,189	0	0.538	2,538,158		
	8 -	0 .	.FUEL	4,748,852	0	_0.489_	_2:324:383_		
	9	0	FUEL	4,783,516	0	0.445	2:128:500		
	10	0 -	. FUEL	4,852,842	0	0.405	1,963,043		
	11	Q	FUEL	4,887,505	0	0.358	1,797,332		
	12	0	_FUEL	4,322,168_	0	_0.334_	1,444,941		
	13	0	FUEL	4,956,831	0	0.304	1,506,468		
	14-	0	FUEL -	4,991,494	0 .	0.276-	-1.379.093		·
	15	0	FUEL	5,026,157	0	0.251	1:262:427		
	16	0 -	FUEL	5,030,821 _	0	0.228	1,155,576		
	17	0	FUEL.	5,130,147	0	0.208	1:064,915		
	18	_ Q	-FUEL	5,164,810	0_	0.189	974,846		
	19	0	FUEL	5,199,473	0	0.172	891,988		
	20	0 -	FUEL.	5,268,800	- 0	0.156	821,710		
	21	0	FUEL.	5,303,463	0	0.142	751,924		
	22	Q	- FUEL	5,338,126 -	0	0.129	683,035		.,
	23	0	FUEL .	5,372,789	0	0.117	629,548		T. 1 T. 1
:	24	0	FUEL	-5,442,115 -	0-	-0.107-	579,701-		
	25	0	FUEL	5,478,778	0	0.097	530,357	075-7	
					*****		51 101 571		The second secon

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- - TOTAL -- - - 56:424:576 ---



	SISTINAL DE CONDII.			03/29/83			thick b				
			THE COREMETATION			***					
٠. ٠	ECONOM1							7.			
	DISCOUN "ALTERNA		10								
•			ERNATIVE A								
4		CT YEAR		ANNUAL	3	FV	PV PV				
	START		H - ITEK		DIFF	FACTOR			. 27		
	ואחוים	1 1111 3	77211		1.111	THUTUR					
	0.	_ 0	INVESTMENT	28.201.512	0	1.000	28,201,512		and the second		
	0	0	INVESTHENT	238,225	0	1.000	238,225				
	1	25	LARDR -	452,476	0	9.524	4.404.474				
	1	25	MAINTENANCE	254,515	0	5.524	2:423:519				
	0	0	PLANT OVH	101,516	0	1.000_	101,516				
	1	25	INC ELECT	267,545	0	9.524	2.548.013	all the second			
_	0	0	JRASH TRANS	3,290,806	0 _	1,000	3,290,806				
	0	0	ASH DISP	193,781	0	1.000	193,781				
1.2	1_	O	- ELEC SAV .	241,606 CR.	0	0.954					
	2	0	ELEC SAV	243,872 CR	. 0	0.867	211,464 CR				
	3	0	_ ELEC SAV	247,269-CR	0	-0.789	194,918 CR	AP SUBJECT OF			
	4	0	ELEC SAY	249,157 CR	Q	0.717	178,551 CR				
	5	0	ELEC_SAV	252,932_CR	0_	0.651	154,7/8 CR		Marie Profes		
	6	0	ELEC SAV	254,442 CR	0	0.592	150,693 CR				
	7-	_ 0.	ELEC SAV	255,707- CR-	0	_0.538	138,213_CR		a suggest a significa		
	8	0	ELEC SAV	258,594 CR	0	0.489	126,571 CR				
	9_	0	ELEC SAV	260,482 CR-	0	- 0.445	115,905-CR				
	10	0	ELEC SAV	264,257 CR	0	0.405	106,895 CR				
	11	0	ELEC- SAV	266:145-CR-	-0	-0.368-	57+872-CR		- 3		
	12	0	ELFC SAV	268,032 CR	0	0.334	89,605 CR				
	- 13	0	- ELEC SAV	269,920 CR	0	0.304	82,033 CR				
	14	0	ELEC SAV	271,807 CR	0	0.276	75:097 CR				
Marin ya L	15	0	-ELEC SAV	273,695 CR	Q-	-0.251	68,744 CR				
	16_	0_	ELEC. SAY	275,582 CR	0	0,228	62,925_CR				
	17	0	ELEC SAV	279,357 CR	0	0.208	57,988 CR		ile il in Hillow the colony		
	18	- 0	- ELEC SAV	281,245 CR		- 0.189-					
	4.0	CONT. A. C. P.	F1 F2								

0 0.172

-0 -- 4.129

0 0.117

0.142

0.097

286,908 CR . . 0 - 0.156 -

296,345 CK .... 0 .. 0.107\_

0

0

48,572 CR

40,945 CR

37-446 CR

34,281 CR

31,567 CR.

28,880 CR

-44,745 CR--

.~

283,133 CR

290,683-CR-

292,570 CR

298,233 CR

283,795 CR

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20

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25

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ELEC SAV

ELEC SAV

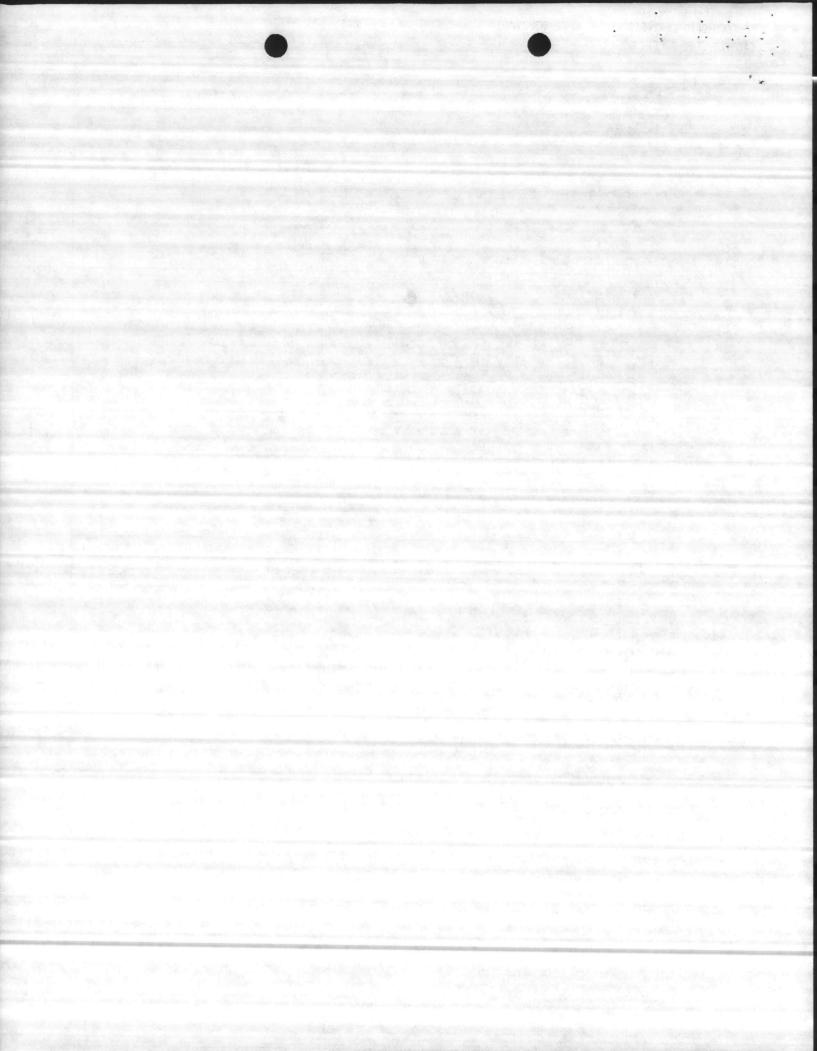
-ELEC SAV-

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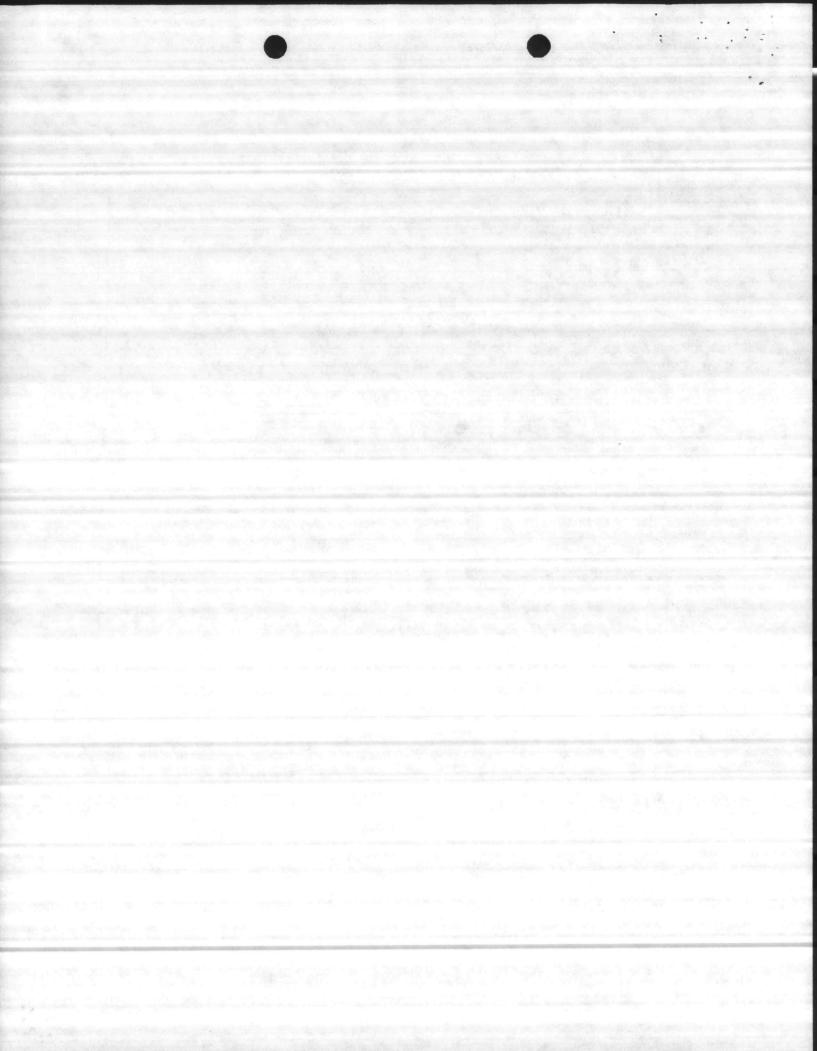
- ELEC SAV



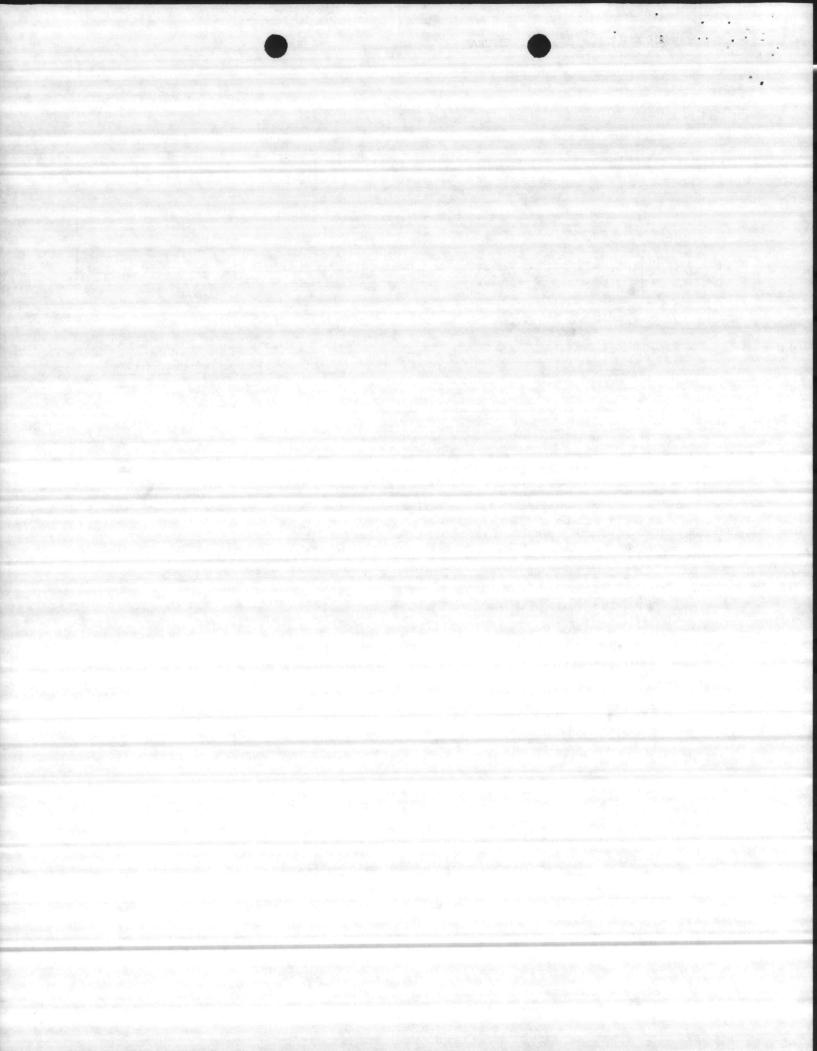
			C ANALYSIS .	03/29/83			176E	<i>t</i>		1.
	. CHKP	-LEJEU	E COGENERATION		-			-		
•	ECONOMIC	IFE:	25							
	DI SCOUNT	FATE:	10							1
	ALTERNATI	VE:								
	CASE	3 ALTE	RHATIVE R -							
	PROJECT			ANNUAL		FV	FV.			- 1
	START	FINISH	1TEM	COSI	_DIFF	_ROIDAT.		Garal au	-	
							407 074			9 2 200
	0	0	LANDFILL INVST	4961934_		1.000_	496,934			
	0	0	PLANT UPCRADE	3.857.028	0	1.000	3,857,028			
	0	0	. LAND INVST CP -				_1,374,128			
	0	0	LAND INVST LEJ	5,053,651		1.000	5,053,651			200
		0	-LAND MAINT CP-	119.295	¢	-1-050	119,295	The state of the s		arce
	0	0	LAND HAIRT LEJ	325,577	0	1.000	325,577			
	1 -	0 -	_FUEL	. 4,436,884.	0		_4,232,001			
	2	0	FUEL	4,471,547	0	0.837	3,877,331			
_	3	0	-FUEL	4,540,873	0	0.788-	3,579,495		The second second	
	4	0	FUEL	4,575,537	0	0.717	3,278,927			
	5	_ 0_	-FUEL	-4,644,863	· · · · · · · · · · · · · · · · · · ·	-0.651-	-3.026.007-			EF-LANCE.
	6	0	FUEL	4,679,526	0	0.592	2:771:445			
		0	FUEL	4.714.189-	-0-	0.538-			DEL SEL SEL	788
	8	0	FUEL	4,748,852	0	0.489	2,324,383			
	9	0	— FUEL	4,783,516	-0	-0.445-	-2-128-500-			
	10	0	FUEL	4,852,842	0	0.405	1,963,043			
	11	0	FUEL	4,897,505	0_	0.368	1,797,332			
	12	0	FUEL	4,322,168	0	0.334	1,444,941			
	13	. 0 -	FUEL	4,956,831	0_	0.304_				
	14	0.	FUEL	4,991,494	0		1,379,093			
	15	0 .	FUEL	5,026,157	O_	0.251_				
	16	0	FUEL	5,060,821	0	0.228	1,155,576			
	17	0_	FUEL	5,130,147	0					
	18	0	FUEL.	5,164,810	0					
	19_	0	FUEL	5,199,473	0_	_0.172				
	20	0	FUEL	5,268,800	0					
	21 _	_ 0	FUEL	5,303,463	0	0.142				
	22	0	FUEL	5,333,126	0	0.129				
	23 -	0-	FUEL	5,372,789-	0	0.117				
	24	0	FUEL	5,442,115	0	0.107	579,701	Commercial Section		
	27	^		5.476.778	0	0.097	530,357-	Mary - Park		

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TOTAL 56,424,576



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, ,	•	ECOMONI	C ANALYSIS .	03/28/8	3		FAGE	<u> </u>
	" CAKE L	EJEUNE CO	GENERATION					
- 5	EC-DHOH	C LIFE:	25					 
	DISCOUR	TE:	10					
	AL TERNA	ATIVE:				·		 
	283	SE 1 ALTER	NATIVE A					
	FROJE	ECT YEARS		ANNUAL .		FV	y4	 January et en
	START	FIMISH	ITEH	COST	DIFF	FACTOR	COST	
	0	0	INVESTHENT	22,758,246	0	1.000 22,7	98,246	
	0	0	INVESTMENT	238,225	. 0	1.000 2	38,225	
	1	25	LARDR	462,476	0	9.524 4.4	04-474	
	1	25	MAINTEHANCE	248,969	0.	9.524 2,3	71,101	
	1	25	INC ELECT	245,527	7	18.049 4:4	31.401	
	0	0	_TRASH_TRANS	3,290,806_	0_	_ 1.000 3:2	303.08	And the second of the second of
	- 0	0	ASH DISP	193:781	0	1,000	93,781	



SS/28/83 CAMP LEJEUNE COSEMERATION ECONOMIC LIFE: 25 . DISCOUNT RATE: \* ALTERNATIVE: CASE 1 ALTERNATIVE R PROJECT YEARS ANNUAL FU FU. -FINISH - ITEM START - -- COST - DIFF FACTOR --- COST - .. \_\_\_\_O\_\_\_ LANDFILL INVSI. \_\_\_ 496,934 \_ \_\_\_ O. \_\_1.000\_\_ 496,534 PLANT UPGRADE 3,857,028 1.000 3,857,028 LAND INUST CP 1,374,128 1.000 -1:374:128 --0 LAND INVST LEJ 5,053,651 0 1.000 5.053,651 LAND HAINT CP --- 119.295 -- 0 1.000 ... ... 119,295 LAND HAINT LEJ 325,577 0 1.000 325,577 FUEL\_\_\_\_ 4,739,018 2 \_ 0,991 4:695,801 2 FUFI 4,776,042 8 0.973 4.646,442 FUEL. 4:850:089 8\_\_0.955\_ 4.632,689 FUEL. 4,887,113 8 0.938 4.583,180 O\_\_\_FUEL 4,961,160 8 \_\_ 0.921 \_\_ 4.568.029 FUEL 4,598,183 8 0.904 4,518,443 FUEL 5,035,207 8 0.888 4.469.151 FUEL 5,072,230 8 0.871 4,420,158 O -- FUEL 5,109,254 ---- 8- 0.856-4.371,469 10 FUEL 5,183,301 8 0.840 4.354.190 - 11---FUEL - 5.220,325 8 \_ 0.825 \_ 4,305,559 12 FUEL 5,257,348 8 0.810 4:257:257 13-- FUFL 5,294,372 8 \_ 0.795 \_ 4.209,288 14 FUEL. . 5,331,396 3 0.781 4.161.656 15 FUEL . . - . 5,368,419 ... . 8 0.766 \_ . 4,114,364. 16 FUEL 5,405,442 8 0.752 4.067,416 - 17 - FUEL . 5,479,490 - . 8 0.739 \_ 4,048,169 18 FUEL 5,516,513 8 0.725 4.001,421 -19 FUEL. 5,553,537\_ 8 -- 0.712 -- 3.955,035 20 FUEL 5,627,584 8 - 0.699 3.934,900 21 0 FUEL 5,664,608 \_\_\_ 8\_ 0.687 \_\_ 3,888,774 22 FUEL 5,701,631 8 0.674 3.843,023 -- 23

--- TOTAL

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5,738,655 ----8---0.662-3,797,651-

8 0.650 3.776.714

8 0.638 3,731,665

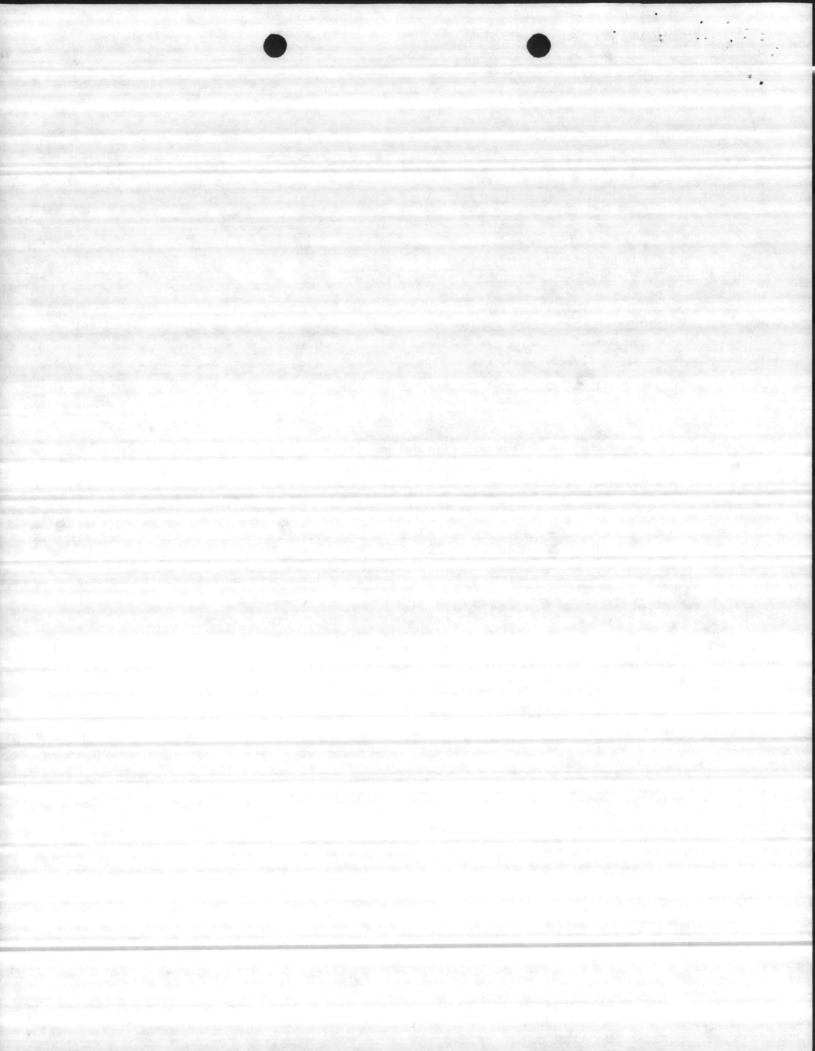
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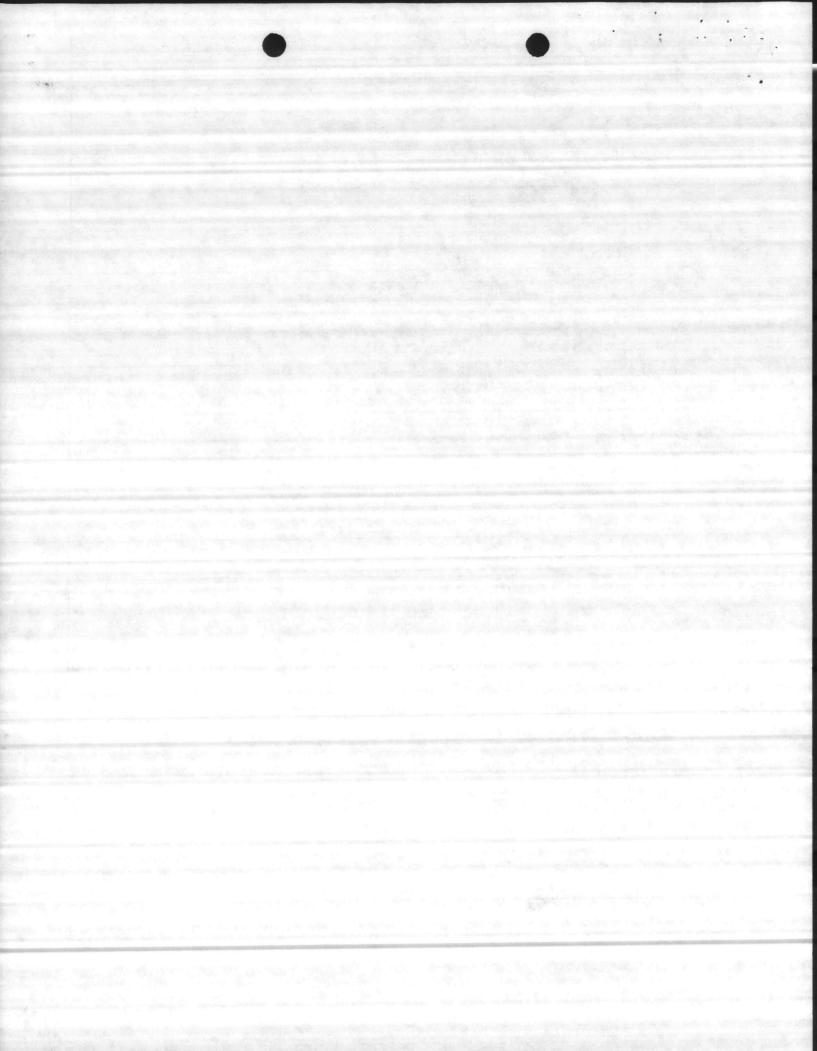
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116,579,069



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•	ALTERNAT.	IVE:												1
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	PROJEC	T YEARS		ANNUAL			FV	FV -	•					1
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	1		LAROR	462,476				4.404.474		7	: T			
	1	25	MAINTENANCE	254,515		0	9.524	2,423,919						
	0	0	PLANT DVH	101,516		0 -		101,516.						
	1	25	INC ELECT	267,545		7	18.049	4.828,793						
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	1	Q	ELECT REV				0.591	469,037		I See Yo	E. Ber		4,00	
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19 PA 20		0	ELEC REV	510:076		7		438,126		•		10000	4	
	7 —	0	ELEC REV	- 514,617			0.836							
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	10	. 0	ELEC REV	529,752		7	0.769	407,381						
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	14	0	ELEC REV	544,888			0.688							
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	17	0	ELEC-REV	560,024		7	_ 0.634			100	Parket Par	the said	3.4	
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	19	0	ELEC REV	567,592	CR.	7_	0.600	318 0 318	_81_8	£ _ F,	A			
	20	0	ELEC REV	575:160	33 (	. 7	0.583	335,450	CR					
	21_	0	. ELEC REV	579,701		7_	0.567			-	Territory (Section)			
	22	0	ELEC REV	- 582,728	CR CR	7	0.552	321,579	LE					
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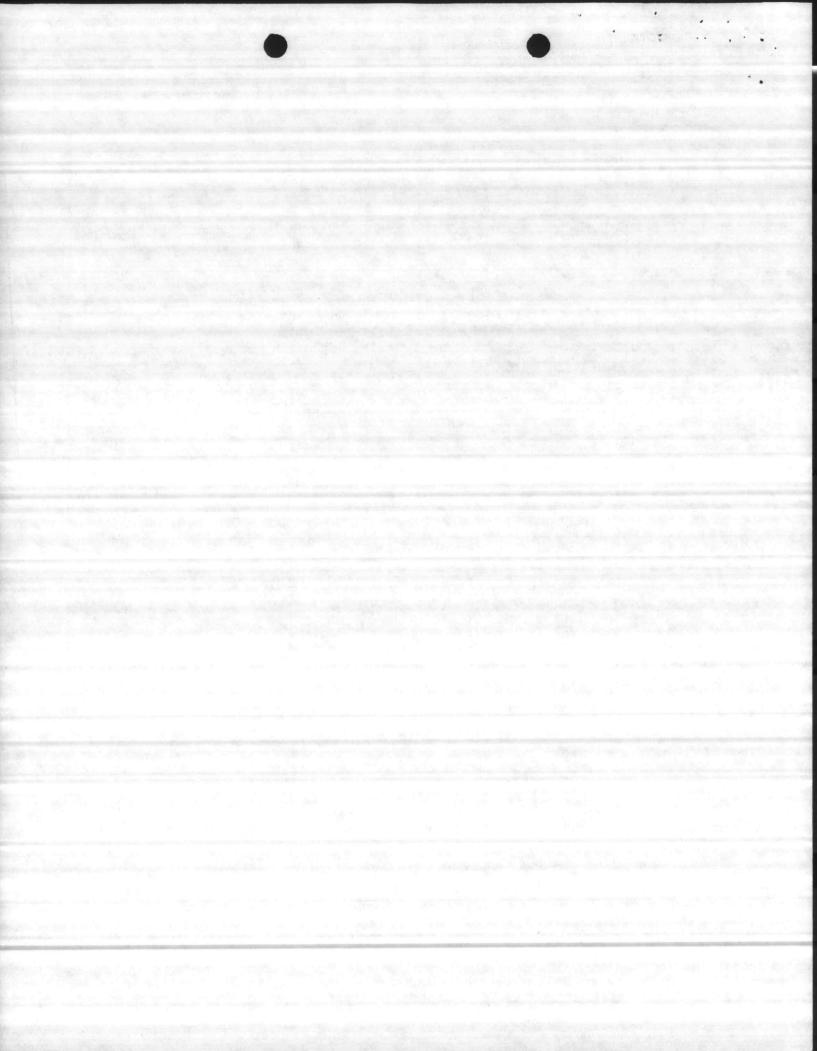
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CAMP LEJEUNE COGENERATION "ECONOMIC LIFE: 25 --DISCOUNT RATE: 10 ALTERNATIVE: CASE 2 ALTERNATIVE B . . . ANNUAL ---- FV . . . . . . PU\_ PROJECT YEARS START FINISH ITEM COST DIFF FACTOR LANDFILL INVST 496,934 0 1.000 496,934 .\_ 0.\_ 1.000\_\_3.857.028 ... \_... PLANT UPGRADE 3,857,028 0 1.000 1:374:128 LAND INVST CF 1,374,128 LAND INVST LEJ 5,053,651 0 1.000 5.053,651 LAND HAINT CP \_\_\_\_\_ 119:295 0\_\_1,000\_\_119,295 LAND HAINT LEJ 325,577 0 1,000 325,577 FUEL 4:436:884 ...8 .. 0.991 --- 4.396.422-FUEL 4,471,547 8 0.973 4.350,209 FUEL --- 4,540,873 .. 8 --- 0.955 -- 4.337.333-FUEL 4,575,537 8 0.938 4.290,981 FUEL - -4.644.863 -0.921 4.276.796 FUEL 4.679,526 8 0,904 4.230,372 0 -. 8. 0.888\_\_4,184,222\_\_ FUEL . 4,714,189 FUEL 4,748,852 0.871 4.138,352 8 0.856 ... 4.092,768 .... 9 -FUEL. 4,783,516 10 FUEL 4,852,842 8 0.840 4:076:591 FUEL 4,887,505 \_. \_\_ \_\_8 \_\_0.825 \_\_4,031,060\_ \_11\_\_ FUEL 4,322,168 8 0.810 3:499,973 12 - 13 ----0 FUEL - 4,956,831 0.795--3,940,926----14 FUEL 4,991,494 0.781 3.896.331 8 FUEL 5,026,157 8 0.766 - 3.852,054-15 -FUEL 5,060,821 8 0.752 3.808,100 16 FUEL . 17-5,130,147----8--0,739-3,790,079-FUEL 5,164,810 8 0.725 3,746,312 18 FUEL . 5,199,473 8 0.712 . 3:702:883 --. 19- -FUEL 5,268,800 20 8 0.659 3.684.032 O FUEL --5,303,463 . . 8 0.687. 3,640,846 ... 21 22 FUEL 5,338,126 8 0.674 3:598:013 FUEL-23 5,3/2,789\_\_\_\_8\_.0.662\_\_3,555,533. 24 O FUEL 5,442,115 8 0.650 3,535,931 0 - FUEL . . - - 5:476:778 8 0.638 \_\_3:493:753

TOTAL

109,376,498



. ECONOMIC ANALYSIS CAMP LEJEUNE COGENERATION - ECONOMIC LIFE: 25

. DISCOUNT RATE: 10

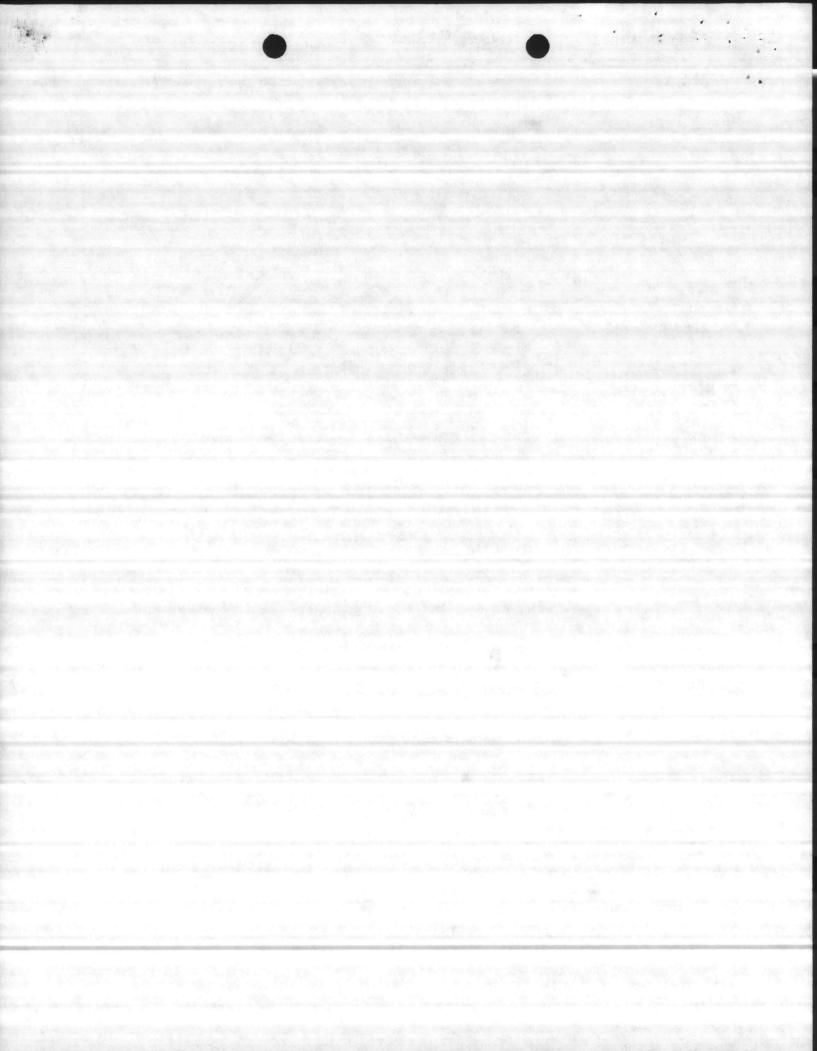
ALTERNATIVE:

CASE 3 ALTERNATIVE A

FROJ	ECI YE	ARS	ANKUAL: PU	
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1	25		7,024 7,4(4,4/4	
0	0	PLANT DVH	254,515 0 9.524 2,423,919	
1_	25	INC ELECT	101,516 0 1.000 101,516	
0	0	TRASH TRANS	7 200 200 7 18.049 4.828.793	
0	0		3,270,808 0 1.000 3,290,806	
1	0	ELEC SAV	193,781 01,000 193,791	
2	0-		241,606 CR 7 0.986 279,204 CD	
3		LLILO DAY-		
4	0	ELEC SAV	247,269 CR 7 0.933 230,740 CD	
5	Transport Live	ELEC_SAV	249,157. CR 7 0.908 224,190 CD	
6	0	ELEC SAV	252,932 CR 7 0,883 227,745 CD	Elizabeth Company
7	0 -		254,442 CR 7 0.859 218,551 CR	
	0	ELEC SAV	256,707 CR 7 0.836 214,483 CR	
9	0-		258,594 CR 7 0.813210,167 CR	
	0	ELEC SAV	260,482 CR 7 0.791 205,928 CR	
10	0-	TITE DAY	264,257-CR 7 0.769 203,214-CR	
11	0.	ELEC SAV	211 115 00	
.12	. 0	ELEC SAV	219 072 00	
13	0	ELEC SAV	2/0.020 CD	
- 14	0	ELEC SAV	אל טריינייני	
15	0	FLEC_SAV	277.105 CD -	1
16	0	ELEC SAV	235 500 JUSTATS LK	1
- 17	0	ELEC SAV	275, 582 CR 7 0.651 179,525 CR	
18	0	ELEC SAV	2771337 CR 7 0.6341771021-CR	
- 19	0	ELEC SAV	7 0.616 173,357 CR	
20	0	ELEC SAV	2631133 LR - 7 - 0.600 169,761-CR	
21	0_	-ELEC-SAY	2001908 LR 7 0.583 147.777 CD	
22	0	ELEC SAV		
23	0 .		290,683 CR 7 0.552 160,417 CD	
24	0		2721370 CR - 7 - 0.537 - 157.051 cp	
25	0	ELEC SAV	2701345 UR 7 0.522 154.379 CD	
		TELE SHY	298,233 CR 7 0.508 - 151,478 CR	

TOTAL

38,868,016



CAHP LEJEUNE COGENERATION

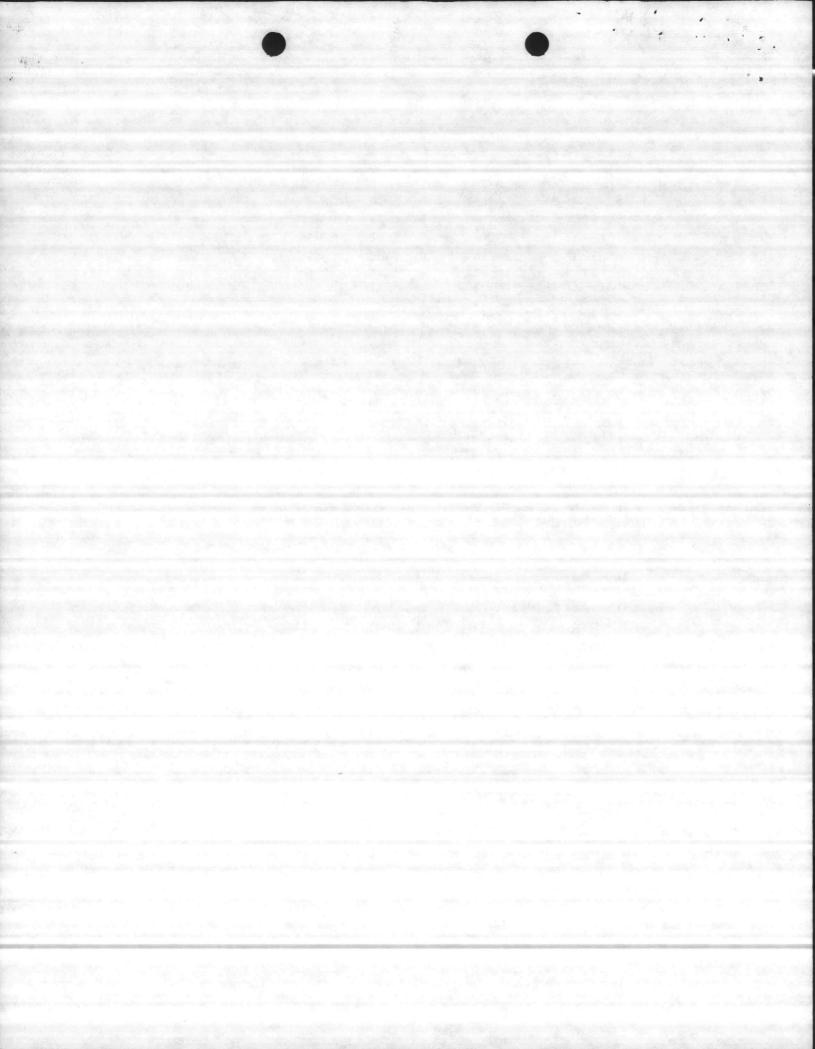
ECONOMIC LIFE: 25
DISCOUNT RATE: 10

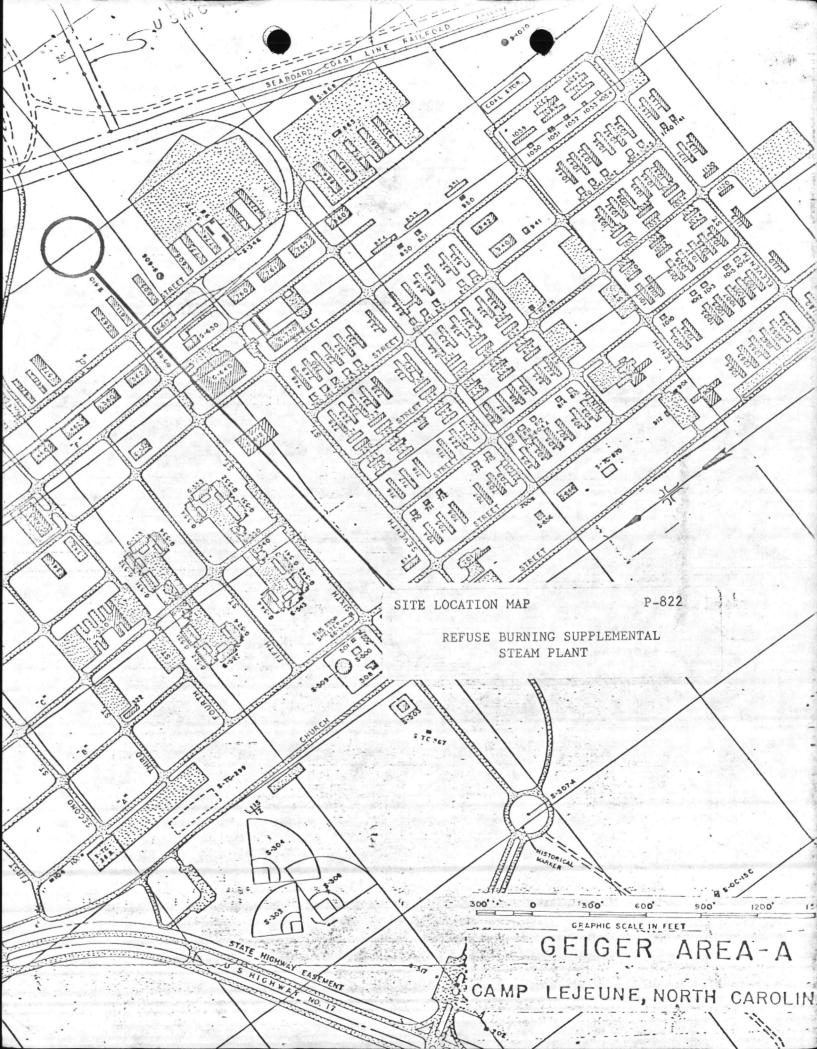
ALTERNATIVE:

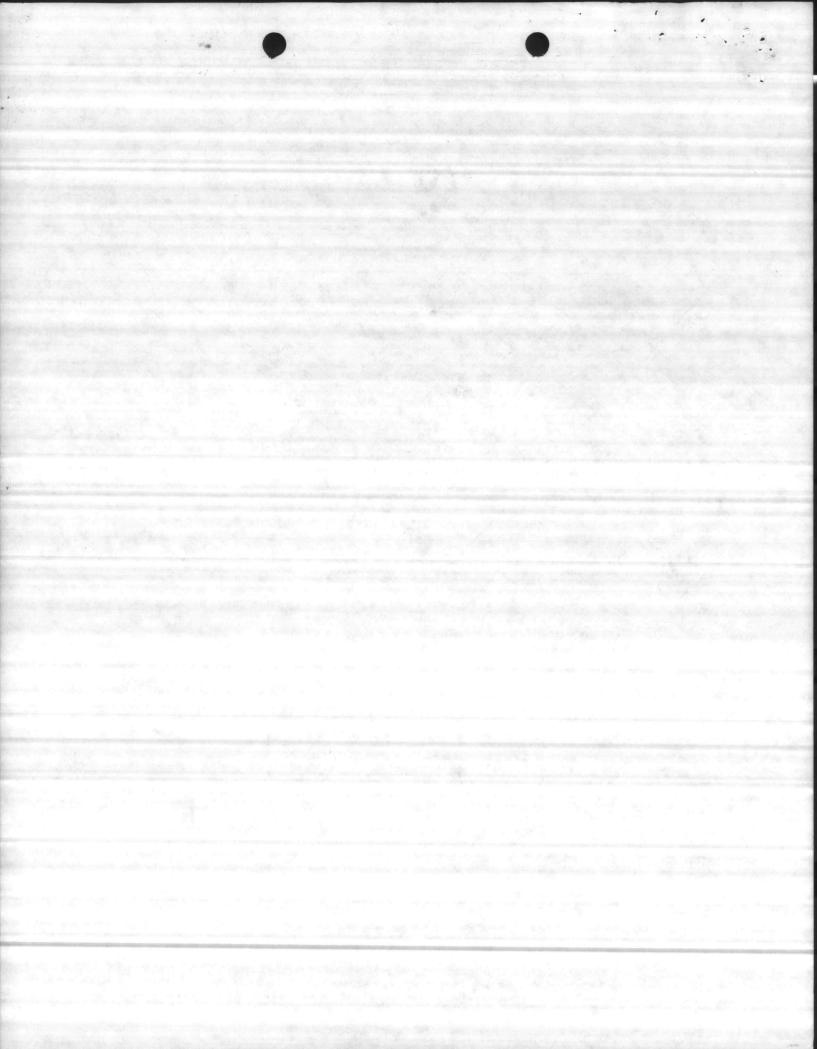
CASE 3 ALTERNATIVE R

	T YEARS.	NATIVE R	ANNUAL		_V.	£V · ·			
START	FINISH	ITEM -	COST	DIFF	FACTOR	COST			
. 0	0	LANDFILL INVST	496,934	0	1.000	496,934			
0	. 0	PLANT UFGRADE	3,857,028	0		3,857,028_			
0	0	LAND INVET OF	1,374,128	0	1,000	1,374,128			
0 -	- 0	- LAND INUST- LEJ	5.053.651 .	0_	1.000	_5,053,651_			
0	0	LAND HAINT CP	119.295	0	1.000	119,295			
0	Q.	LAND HAINT LEJ	- 325,577	Q	.1.000	325,577			
1	0	FUEL	4,435,884	. 8	0.991	4.396,422			
2	0 -	FUEL	-4,471,547	8	-0.973-	4.350,209-			
3	0	FUEL	4,540,873	8	0.955	4.337,333			
4-	0	-FUEL	-4,575,537-	8-	-0.930-	4:290:581-	And the Control of th		
5	0	FUEL	4,644,863	8	0.921	4.276.796			
6	0	_ FUEL · ·	-416791526-	8_	_0.904_	_4.230.372_			
7	0	FUEL .	4,714,189	8	0.888	4.184,222		w and	
3 -	0	- FUEL	4,748,852 -	8_		4,139,352_		Acres A Seal Residence	
9	0	FUEL .	4,783,516	8	0.856	4.092,768			
10_	0-	FUEI	4,852,842	8_		4.026,591		Y (4)	
11	0	FUEL	4,887,505	8	0.825	4.031,060			
12	_ 0		4,322,168_		0.810_	3,495,973			
13	0 .	FUEL -	4,956,831		0.795	3,940,926			
_ 14	0	FUEL , ,	419911494 _		0.781	_3,296,331 _			
15	Ó	FUEL.	5,026,157	8	0.766	3.852.054			
16	0	FUEL	5,060,821	8		3,808,100_			
17	0	FUEL	5,130,147	8	0.739	3,790,079	7 377		
18 -	_ 0	FUEL -	5,164,810	8		3,746,312			
19	0	FUEL -	5,199,473	8	0.712	3,702,883			
20 -	0	- FUEL -=-	5,268,800	8.	0.699				
21	0	FUEL	5,303,463	. 8	0.687	3,640,846			
22		_ FUEL	5,338,126_	8	0.674-				
. 23	0	FUEL	5,372,789	8	- 10 T A	3,555,533			
24	0		- 5,442,115		Name of the Association of	3,535,931_			Steel and Section
25	0	FUEL	5,476,778	8	0.638	3,493,753			
				TOTAL	· Control of the cont	100 771 100			

-







1. COMPONENT

## FY 19 6 MILITARY CONSTRUCTION PROJECT DATA

2. DATE 7 JAN 83

NAVY 3. INSTALLATION AND LOCATION

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA 28542

FACILITY ENERGY IMPROVEMENT

8. PROJECT COST (\$000) 5. PROGRAM ELEMENT 6. CATEGORY CODE 7. PROJECT NUMBER \$23,000 821-09 P-822

9 COST ESTIMATES

ITEM	U/М	QUANTITY	COST	(\$000)
FACILITY ENERGY IMPROVEMENT	LS	-	-	19,840
CONTINGENCY	LS	- 1	<u> </u>	1,984
TOTAL CONTRACT COST	LS		-	21,824
SUPERVISION, INSPECTION, AND OVERHEAD	LS	-	) 4 <b>-</b> 3	1,200
TOTAL REQUEST	LS	6 - <del>-</del>	7	23,024
TOTAL REQUEST (ROUNDED)	LS	-	Land = 1.00	23,000
EQUIPMENT PROVIDED FROM OTHER APPROPRIATIONS	LS	aldrado <del>s</del> t. 70.00	-	118,947
		100		

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Provide a Co-Generation Plant capable of burning solid waste and producing 30.2001b/hour steam and 725KW of electricity during the initial year.

#### 11. REQUIREMENT

PROJECT: Provide Co-Generation Plant for Camp Geiger and MCAS (H) New River. REQUIREMENT: The Co-Generation Plant will reduce energy requirements for steam generation for Marine Corps Base, Camp Lejeune, N. C. and Marine Corps Air Station (H), New River. Further, utilization of solid waste from Marine Corps Base, Camp Lejeune, N. C. and MCAS (H) Cherry Point will eliminate costly expansion of facility landfills.

CURRENT SITUATION: Steam is generated using costly fossil fuel with the present value cost for 25 years operation of \$86.5 million dollars. Current landfill operations at Marine Corps Base, Camp Lejeune, N. C. and MCAS Cherry Point will require extensive improvements to contain estimated increases in solid waste disposal.

IMPACT IF NOT PROVIDED: The activity will not be able to avail itself

of the energy savings offered by this project.

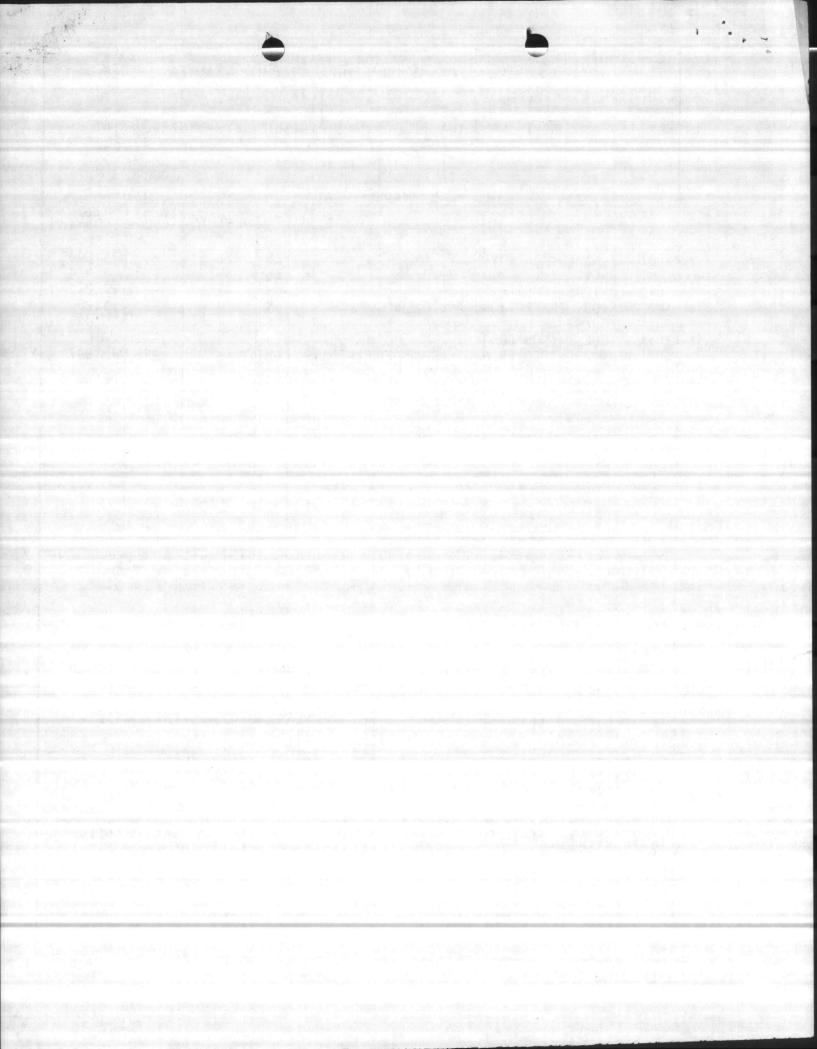
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PREVIOUS EDITIONS MAY BE USED INTERNALLY UNTIL EXHAUSTED

PAGE NO. 1 of 2

\$U.S. GOVERNMENT PRINTING OFFICE: 1979-603-076,3959 2-1



ENERGY CONSERVATION INVESTMENT PROGRAM
FY 19 86 MILITARY CONSTRUCTION PROJECT DATA

3. INSTALLATION AND LOCATION
MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542

4. PROJECT TITLE
FACILITY ENERGY IMPROVEMENT

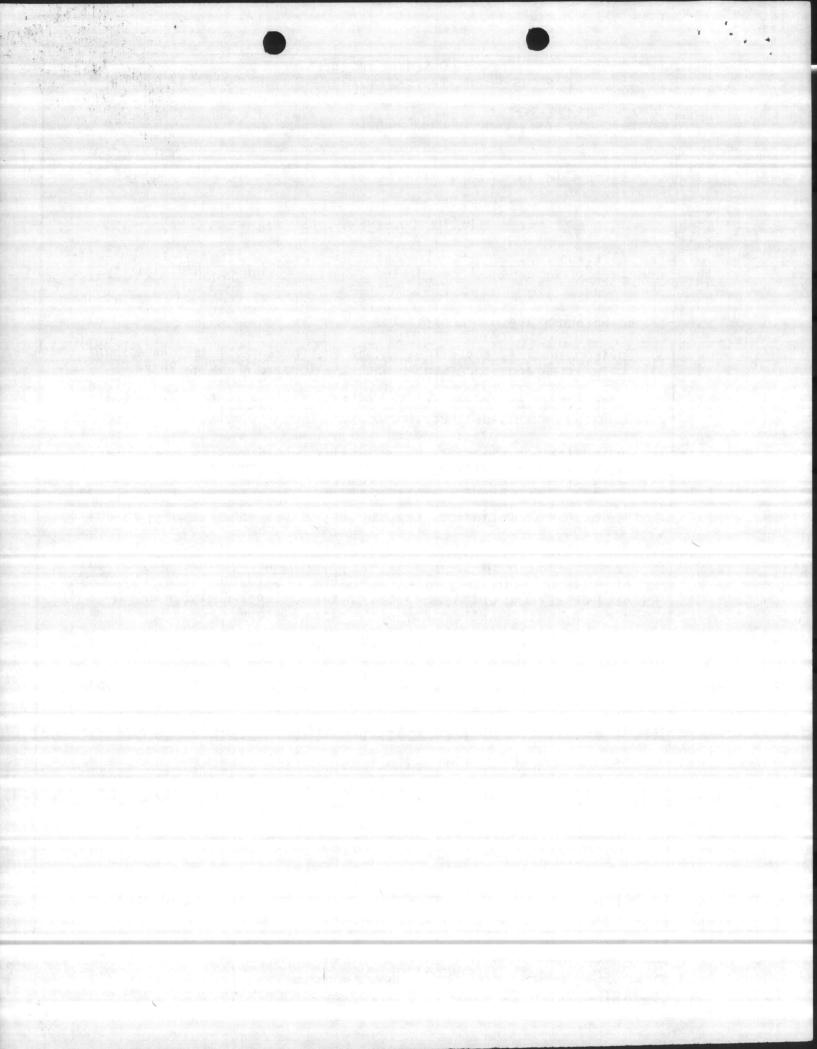
2. DATE
7 JAN 83

5. PROJECT NUMBER
P-822

### SPECIAL CONSIDERATIONS

- 1. Pollution Abatement Requirement: Will be identified by the environment impact review and incorporated into the design of this facility.
- 2. Flood Hazard Evaluation: Requirements of Executive Order No. 11296 (Flood Hazards) are not applicable.
- 3. Environmental Impact: The project Environmental Impact Assessment will be written and processed through the local EIA Review Board.
- 4. Fallout Shelter Construction: Fallout shelter protection is not incorporated in this project.
- 5. Design for Accessibility of Physically Handicapped Personnel: Provisions for physically handicapped personnel are not incorporated in this project.
- 6. Use of Air Conditioning: Ceiling "U" factors will be made to conform with DOD 4270.1-M.
- 7. Preservation of Historical Sites and Structures: This project does not directly or indirectly affect a district, site, building, structure, jobject, or setting which is listed in the National Register or otherwise possesses a significant quality of American history.
- 8. "New Start" Criteria for Commercial or Industrial Activities Program (OMB Circular A-76): Not applicable.

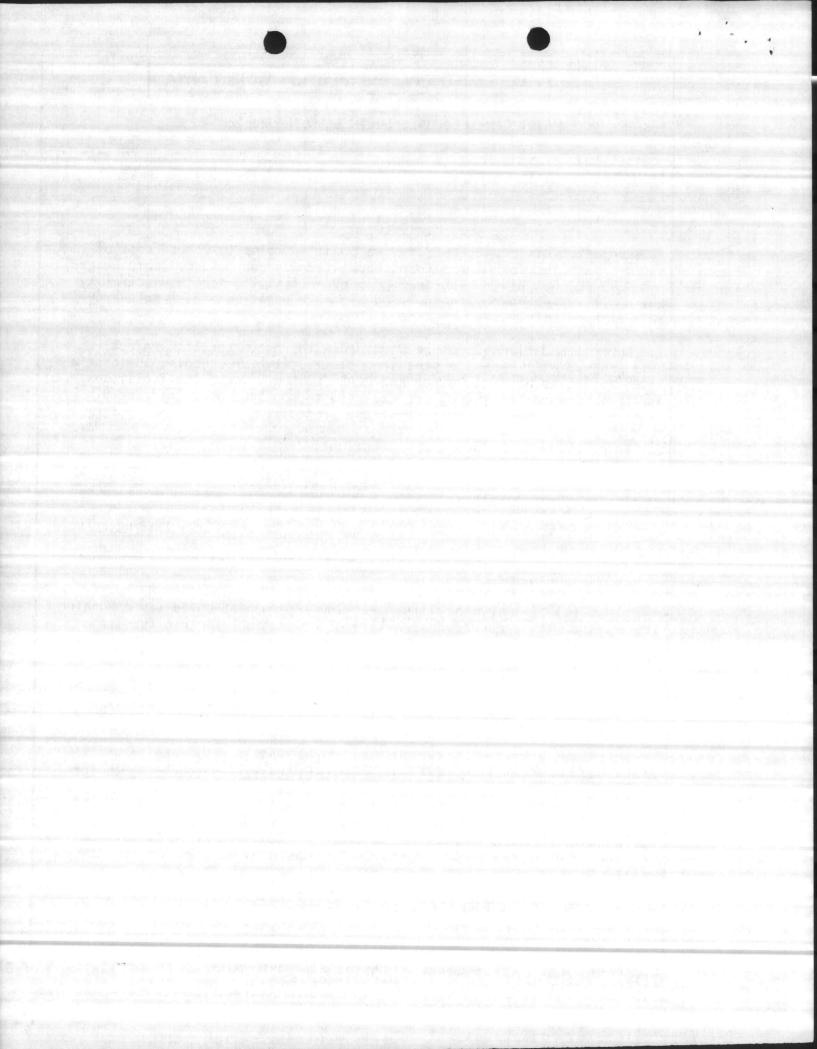
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NAVY	FY 1986 MILITARY CONSTRUCTION PROJECT	DATA	7 JAN 83		
MARINE CORPS	BASE, CAMP LEJEUNE, NORTH CAROLINA 28542				
4. PROJECT TITLE  FACILITY ENERGY IMPROVEMENT			5. PROJECT NUMBER		

#### FACILITY STUDY

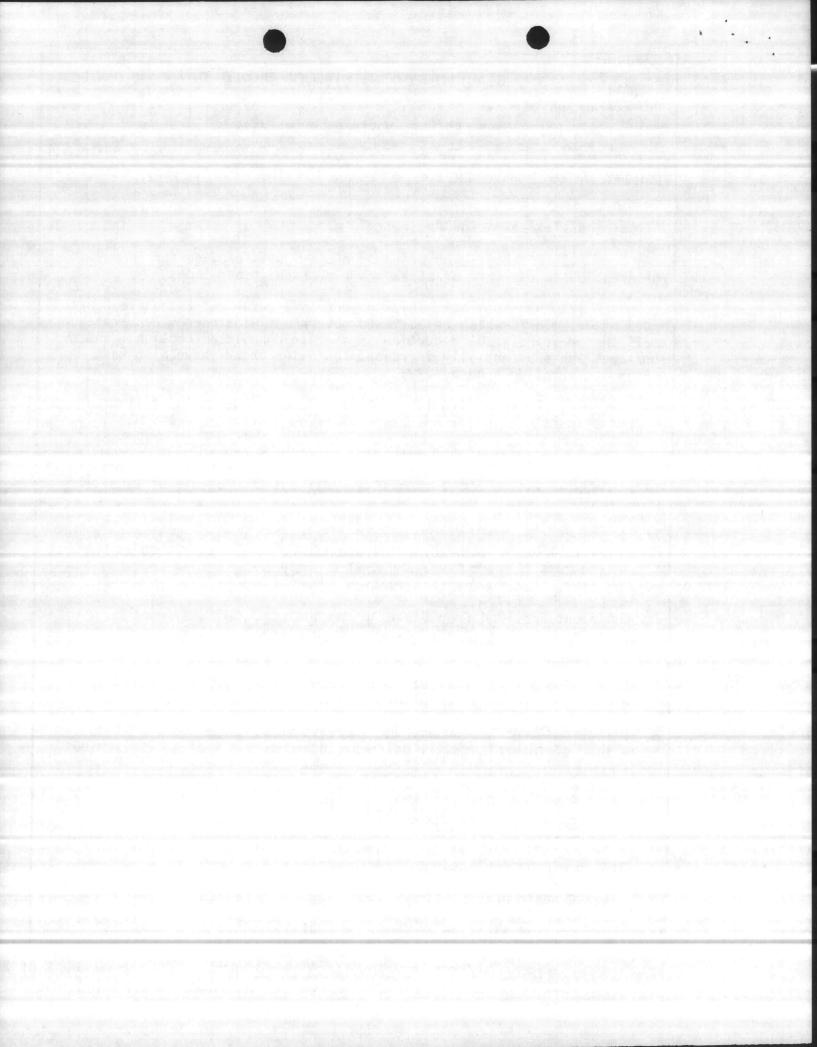
- 1. <u>Project</u>: This project provides a positive means to reduce cost of steam production for Marine Corps Base, Camp Lejeune, N. C. (Camp Geiger) and MCAS (H) New River. Further this project will generate electricity which will defer energy consumption and be a positive impact on energy reduction efforts.
- 2. Current and Planned Future Workload with regard to this project:
  This project will generate steam and electricity for schools, administrative facilities at Camp Geiger and MCAS (H) New River. The facilities and their demand for energy are expected to continue as a necessary requirement throughout the life of the project.
- 3. Description of Proposed Construction:
- a. Type of Construction: This project will provide a permanent facility with a 25 year life span.
- b. Replacement: Boiler Plant G-650 may be shut down pending actual co-generation plant efficiency and generating capabilities.
  - c. Description of work to be done:
- (1) Primary Facility: Provide a permanent solid waste burning steam plant with secondary capability of generating electricity.
- (2) Energy Conservation: This project will save 414,777 MBTU's of energy per year.
- (3) <u>Collateral Equipment</u>: Requirements will be determined during preliminary design procedures.
- (4) Supporting Facilities: This project will provide a co-generation plant that will relieve steam generating requirements for G-650 and AS4151 steam plant during the summer months.
- 4. <u>Cost Estimate</u>: Costs were derived from the Solid Waste and Wood Waste Burning and Co-Generation Study as accomplished by J. E, Sirrine Company. Costs were escalated to FY-86 vice FY-87 as submitted by the study.
- 5. Justification for Project and for Scope of Project:



1. COMPONENT	FY 19_86 MILITARY CONSTRUCTION PROJECT D	ATA 7 JAN 83
MARINE CORPS	BASE, CAMP LEJEUNE, NORTH CAROLINA 28542	ř
4. PROJECT TITLE FACILITY ENE	RGY IMPROVEMENT	5. PROJECT NUMBER P-822

### a. Justification for Project:

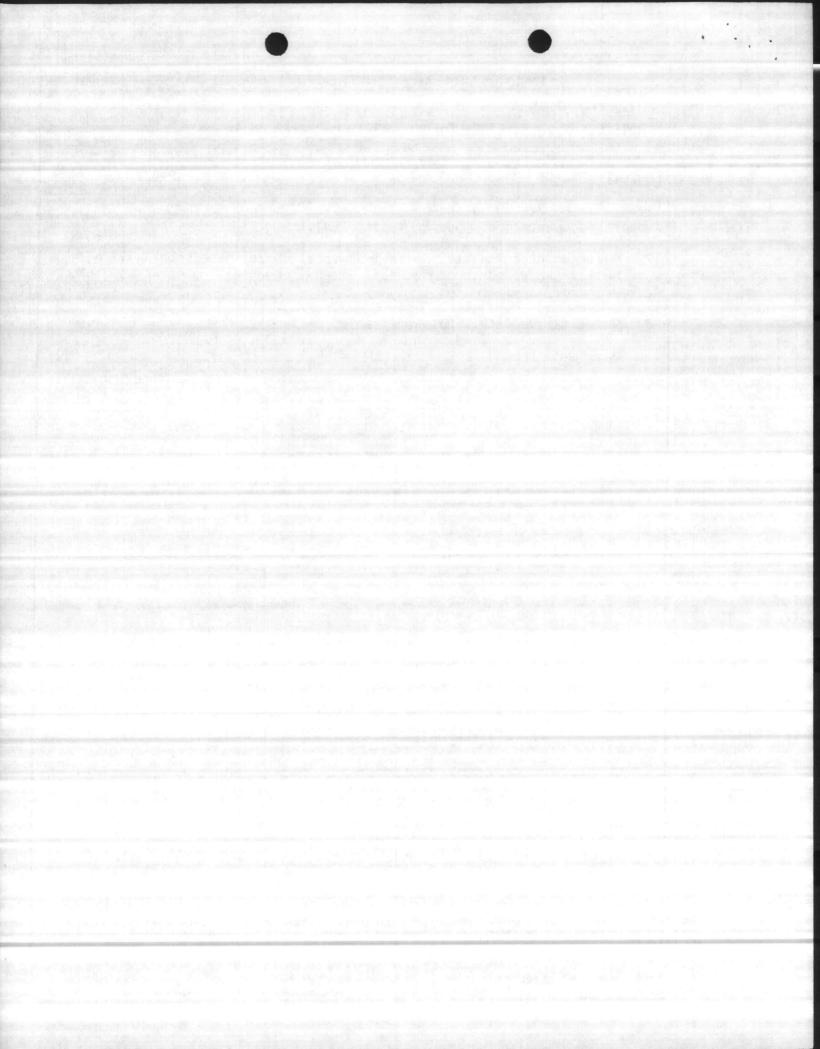
- (1) Project: The proposed project will provide for energy conservation in the form of steam and electrical generation.
- (2) Requirement: This project is a result of Executive Order 12003 of July 1977, which established government wide energy conservation goals that require a 20% reduction in average annual comsumption. Energy shortages and substantially increased costs for energy have also made energy conservation a necessity.
- (3) Current Situation: Current steam generation utilizes expensive fossil fuels for operation of steam plants G-650 and AS-4151.
- (4) Impact if Not Provided: Continued operation of steam plants utilizing expensive fuels. Further the continued impact of solid waste disposal will mandate expensive modifications to current landfill oeprations.
- Justification for Scope of Project: This project will have a significant impact in energy requirements for steam generation at Camp Geiger and MCAS (H) New River and will greatly enhance this Commands ongoing attempt at energy conservation.
- 6. Equipment Provided from Other Appropriations: \$118,947 will be required for purchase of a truck and disposal containers in support of this facility.
- Common Support Facilities: This project will supplement steam generating requirements of steam plant G-650 and AS-4151.
- 8. Effect on Other Resources: An increase in manpower to facilitate operation of this plant will be required and consists of the following:
  - 4 Crane Operators WG-8
  - 4 Boiler Operators WG-7
  - 4 Boiler Mechanics WG-10
  - 3 Supervisors WS-7
- 9. Siting of the Project: See Enclosure (1).
- 10. Other Graphic Presentations, including Photographs: See Enclosure (2).
- 11. Economic Analysis: An ECIP economic analysis has been made with



NAVY	FY 19 86 MILITARY CONSTRUCTION PROJECT DATA	7 JAN 83
3. INSTALLATION	AND LOCATION  S BASE, CAMP LEJEUNE, NORTH CAROLINA 28542	
4. PROJECT TITLE	[5 PBOJ	ECT NUMBER
FACILITY EN	ERGY IMPROVEMENT P-8	22
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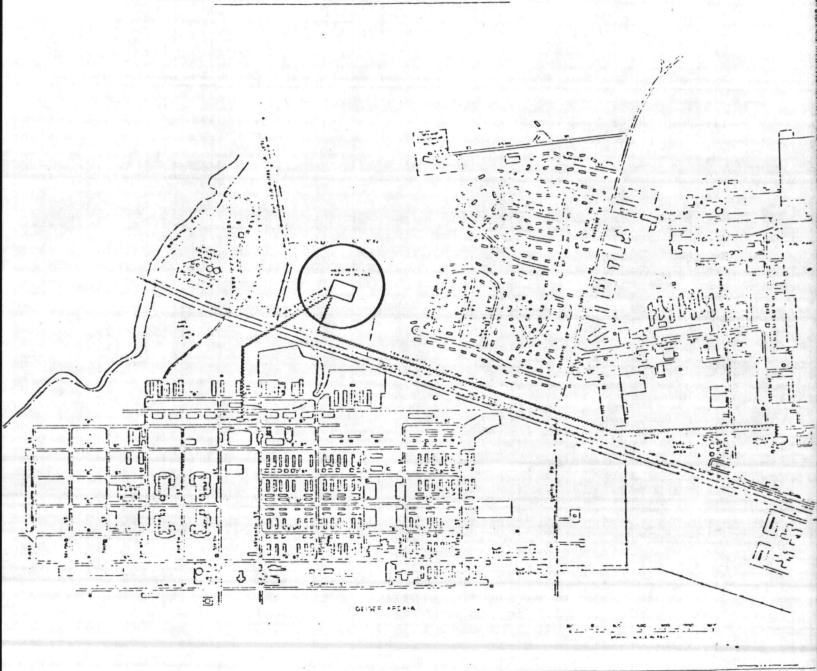
support documentation. See Enclosure (3).

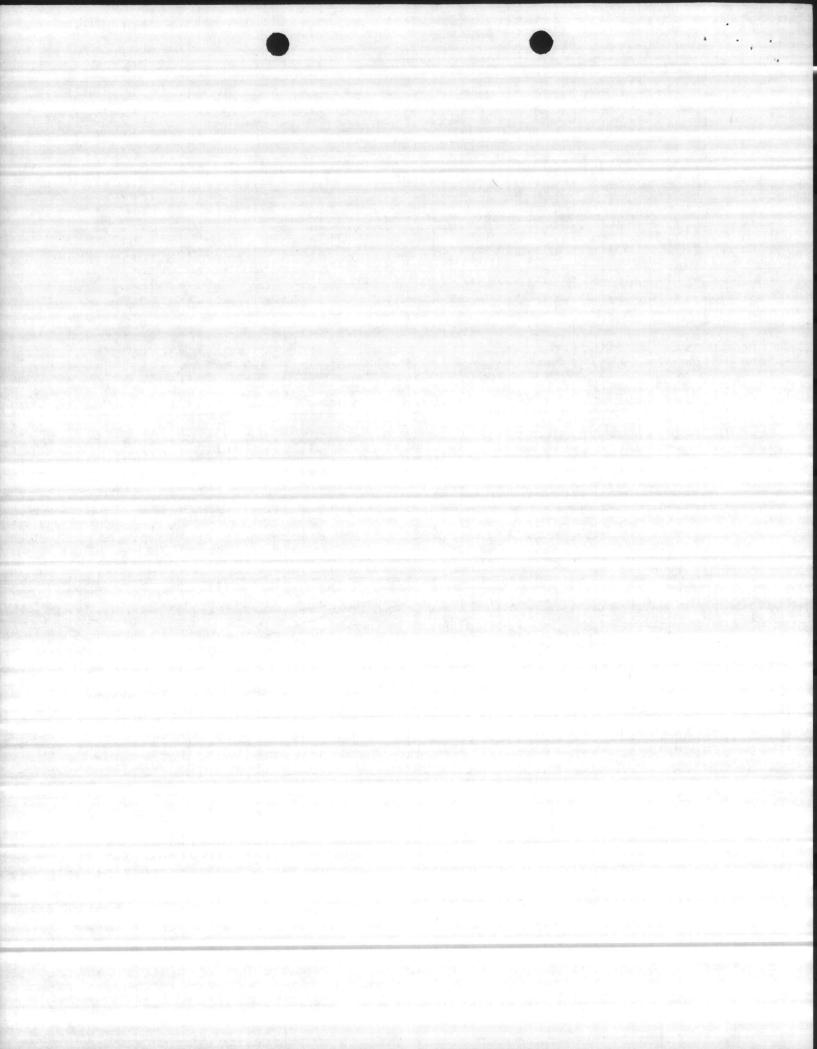
- 12. Environmental Impact: An Environmental Impact Assessment will be written and processed through the local Environmental Impact Assessment Review Board.
- 13. Quantitative Data: Not applicable.



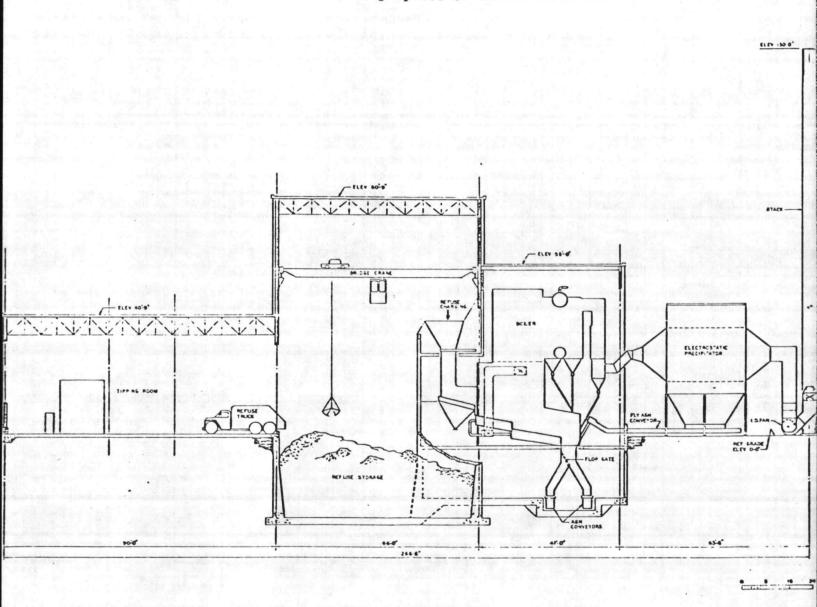
#### SITE LOCATION MAP

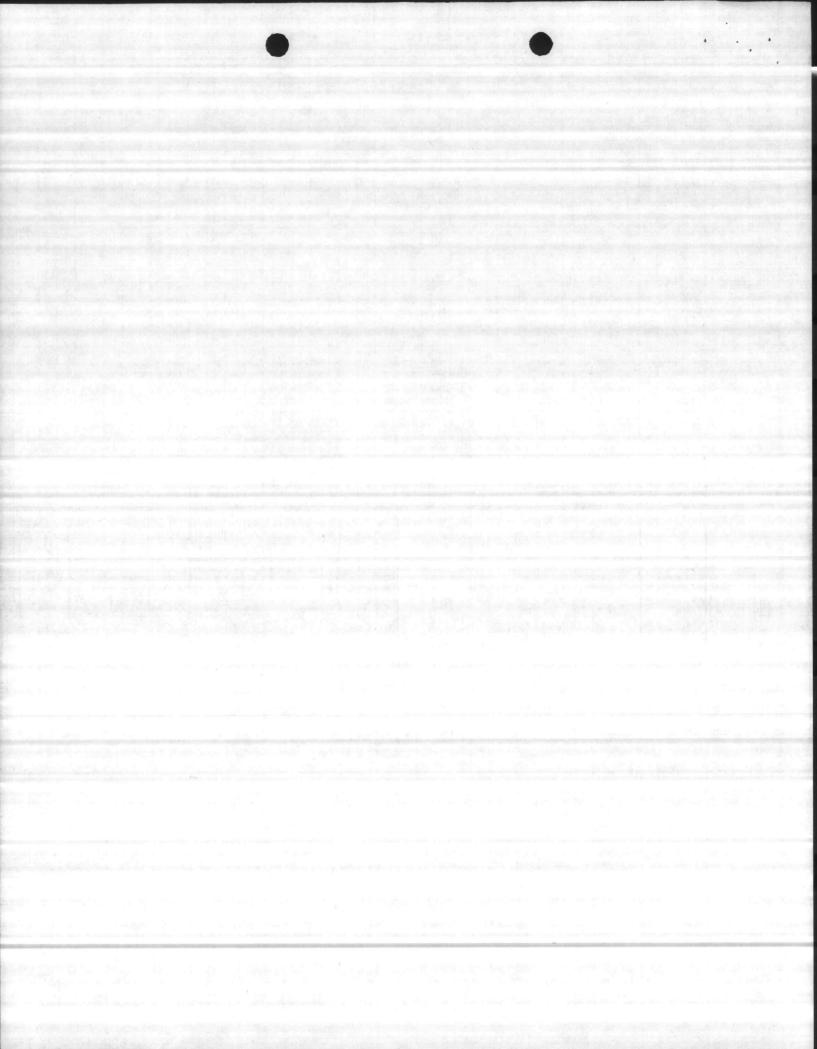
### P-822, proposed CO-GENERATION PLANT



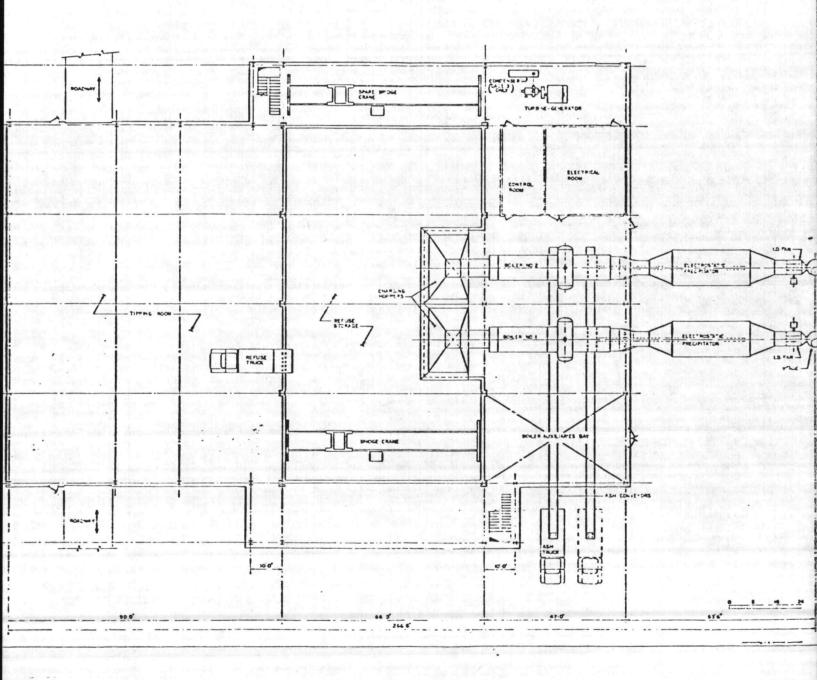


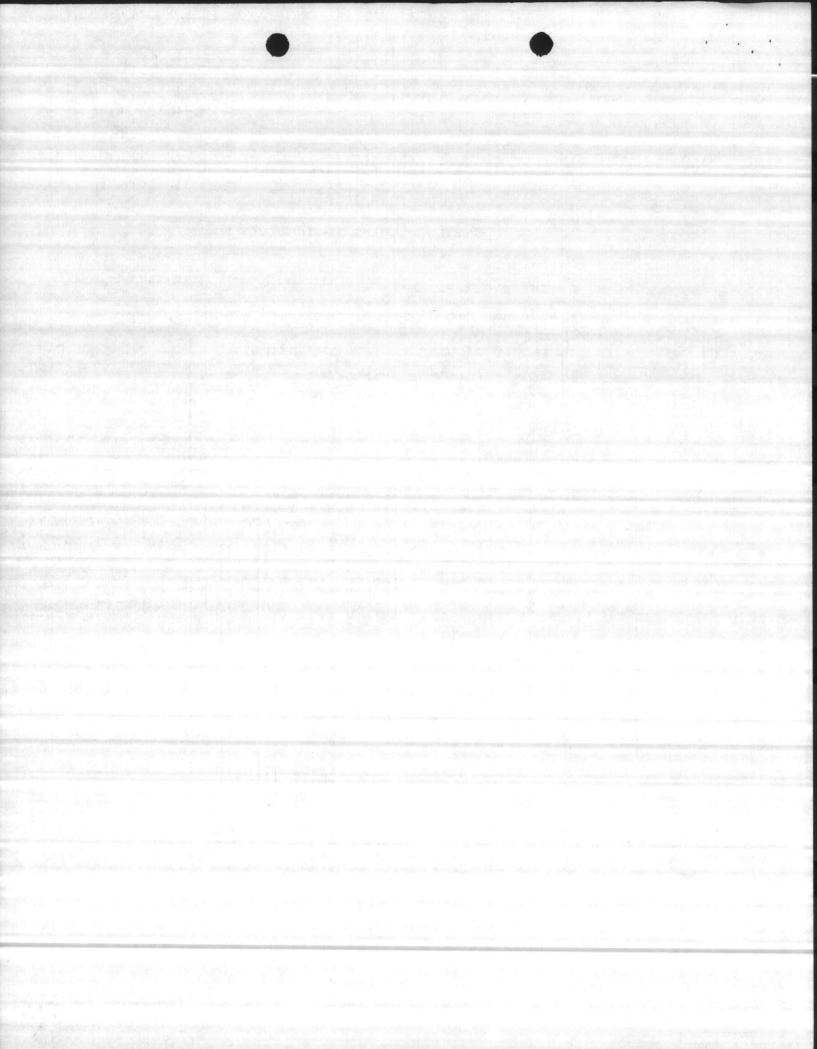
P-822, proposed CO-GENERATION PLANT





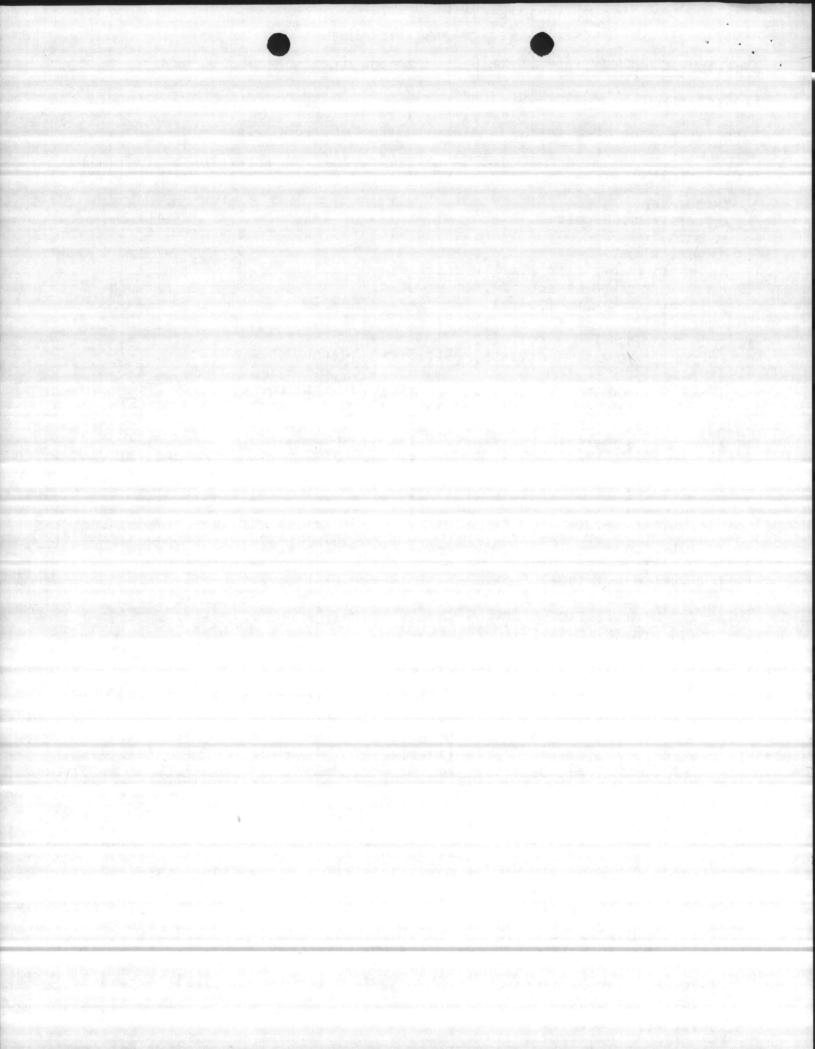
P-822, proposed CO-GENERATION PLANT





# LIFE CYCLE OUST ANALYSIS SUPMARY EFFICY CONSERVATION INVESTMENT POSEAM (ECIP)

LOCATION: MCB, CAMP LEJEUNE, NORTH CAROLINGION HO.	PROJECT NUMBER P-822
PROJECT TITLE FACILITY ENERGY IMPROVEMENT	FISCAL YEAR 1986
	DICITY :
DISCRETE PORTION RAME CO- GENERATION OF STEAM AND ELECT	RICITY.
ARALYSIS DATE ECONOMIC LIFE _25 YEARS I	PREPARED BY V. MARSHBURN
1. INVESTMENT	
A. CONSTRUCTION COST	\$ 21,824,415 \$ 1,200,342
B. SIOH	\$ 1,223,906
C. DESIGN COST D. ENERGY CREDIT CALC (1A+1B+1C)X.9	\$ 21,823,796
E. SALVAGE VALUE OF EXISTING EQUIPMENT	-\$
F. TOTAL INVESTMENT (1D-1E)	\$ <u>21,823,796</u>
2. ENERGY SAVINGS (+) / COST (-) . ANALYSIS DATE ANNUAL SAVINGS, UNIT COST & DISCOUNT	ED SAVINGS
	그래요요 하다면 생님, 그는 사람이 얼마나 나를 하다.
COST SAVINGS ANNUAL \$ DIS	COUNT DISCOUNTED
FUEL \$/HBTU(1) HBTU/YR(2) SAVINGS(3) FA	CTOR(4) SAVINGS(5)
A 5 15 6 00 100 6 100 006 10	040 \$ 3 264 991
A. ELEC \$ 5.45 B. DIST \$ 11.48 381,586 \$ 4,380,607 20	05 \$87.831.170
C. RESID \$\$	\$
D. HG \$	\$
E. COAL \$	\$
¥ TOTAL 414,778 \$ 4,561,503	>\$91,096,161
F. TOTAL 414,770 . \$ 4,501,500	
3. HON ENERGY SAVINGS (+) / COST(-)	
A ANNUAL PECURRING (+/-)	\$ - 411,543
(1) DISCOUNT FACTOR (TABLE A) 9.524	
(2) DISCOUNTED SAVING/COST (3A X 3A1)	<b>\$</b> -3,919,535
- way arguaring civings(1) / cost(-)	
B. HON RECURRING SAVINGS(+) / COST(-)  ITEM SAVINGS(+) YEAR OF DISCOUNT	DISCOUNTED SAY-
COST (-)(1-). OCCURRENCE(2) FACTOR(3)	INGS(+) COST(-)(4)
\$ 65,658 5652	42,809
\$ 65,658 10 .405	\$ 26,591
\$ 65,658 15 .251 \$ 65,658 20 .156	\$ 16,480 \$ 10,242
u	\$ -96,122
e. TOTAL \$ 262,632	
C. TOTAL HON ENERGY DISCOUNTED SAVINGS(+) / COST(	-) $(3.42+3564)$ \$ $-4,015,657$
그 가장에 먹는 이 바이 나를 내려가 되는 것이 없는데 그렇게 되었다.	
D. PROJECT HON ENERGY QUALIFICATION TEST	<b>\$</b> 30,061,733
(1) 25% HAX NON ENERGY CALC (2F5 % .33) - # IF 3D1 IS = OR > 3C CO TO ITEM 4	
b IF 3D1 IS < 3C CALC SIR = (2F5+3D1)	-1F=
c IF 3DIb IS - > 1 GO TO ITEH 4	
d IF 3D1b IS < 1 PROJECT DOES NOT QUALIFY	ilippare religija, migras ja sa karas i Masaraji indika aasaan sa ja para Arraji resabilija ja Karas sa ja
4. FIRST YEAR DOLLAR SAVINGS 2F3+3A+(3B1d - YEARS EC	ONORIC LIFE) \$ 631,462
4. FIRST YEAR DULLAK SAVINGS 213+3A+(3DIG - 1EAKS EC	
5. TOTAL NET DISCOUNTED SAVINGS (2F5+3C)	\$87,080,504
J. IUIND III.	



#### SUMMARY

#### LIFE CYCLE COST ANALYSIS

Information utilized inthis analysis was obtained from the Solid Waste and Wood Waste Burning and Coal - Generation Study as provided by LANTNAVFAC-ENGCOM. The study pertaining to Co-Generation is attached as supporting documentation.

#### I. INVESTMENT:

Construction Cost	\$21,824,415
SIOH	1,200,342
Design Cost	1,223,906

#### II. ENERGY SAVINGS

#### Co-Generation Plant

- a. Usage (Page VI-14) (3,402,000 KWH/year) X (.0116 MBTU/KWH) = \$39,463 MBTU
- b. Resources Generated (Page VI-17)
  (640 KW/HR + 790 KW/HR) = 715 KW/HR Average
  2

(715 KW/HR X (8,760 HRS) = 6,263,400 KWH/Year (6,263,400 KWH) (.0116 MBTJJ/KWH) = + \$72,655 MBTU

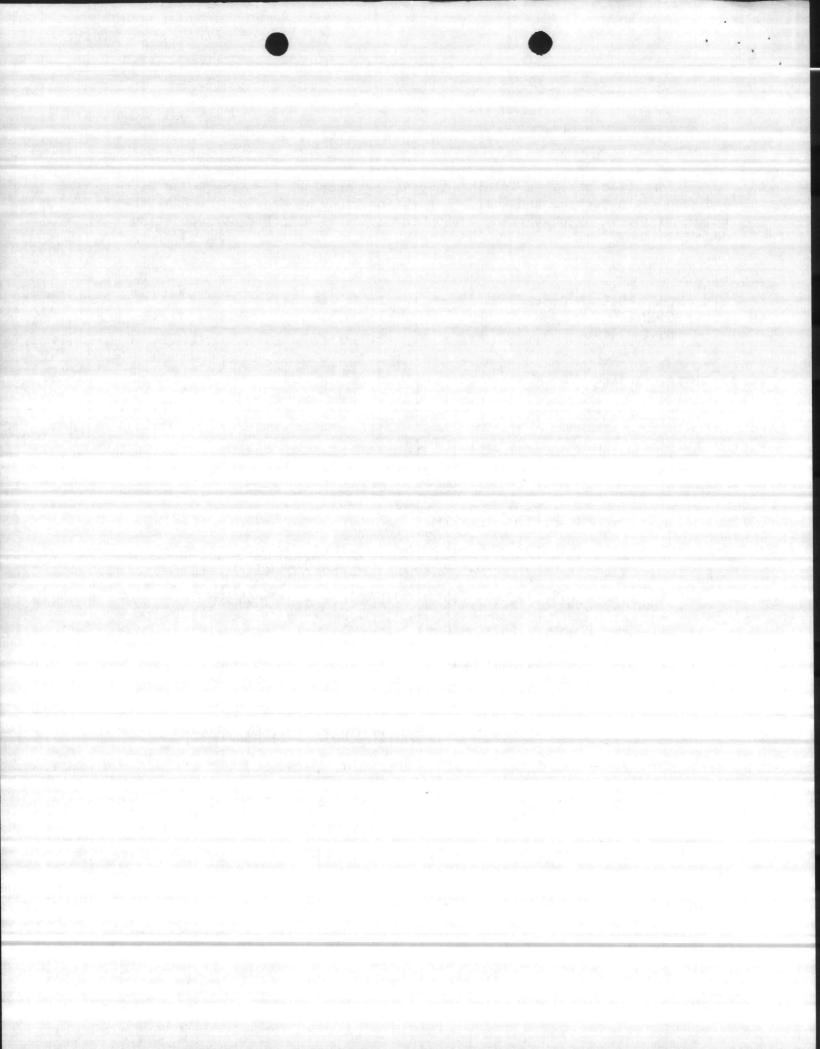
### Oil-Fired Plants (Status Quo)

a. Usage (Page VI-25) (38.99 MBTU/HR + 48.13 MBTU/HR) = 43.56 MBTU/HR Average 2

(43.56 MBTU/HR) X (8,760 HR/Year) = 381,586 MBTU/Year

### III. ENERGY COSTS

- a. Electricity (.03434¢/KW) ÷ (.0116 MBTU/KW) = \$2.9603/MBTU \$2.96 X 1.13 X 1.13 X 1.13 X 1.13 = \$5.45/MBTU
- b. Fuel Oil (Page VI-25) \$11.48/MBTU



### IV. Non-Energy (Annual) Costs (Recurring) Pages VI-18 and VI-26)

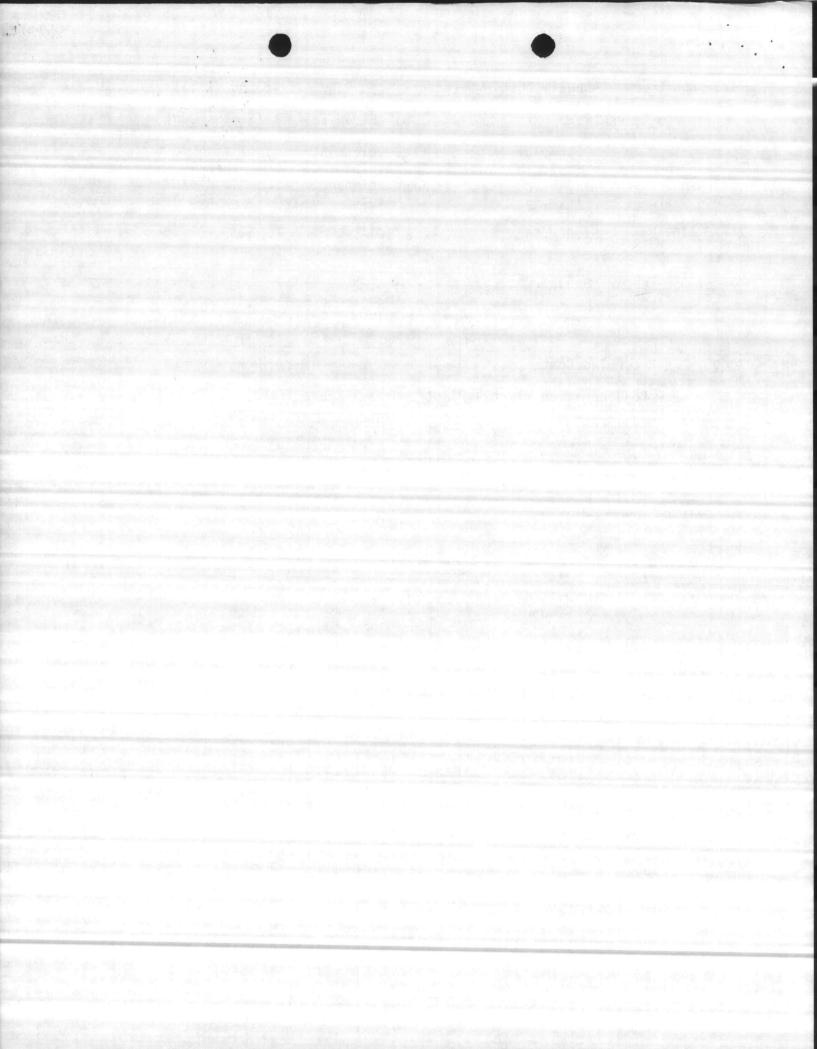
#### Oil-Fired Boilers (Status Quo) , Co-Generation \$124,556 \$437,951 CP Development Labor 458,529 Maintenance 241,018 CL Development 345,527 Trash Transfer CP Maintenance 18,310 17,951 CL Maintenance 29,508 Ash Disposal TOTAL \$630,903 TOTAL \$1,042,447

Net Non-Energy Annual Costs:

\$1,042,447 - \$630,903 = \$411,543

### V. Non-Recurring Costs

a. Co-Generation Plant - Plant overhaul (Page VI-13) \$65,658/Year every 5 years.

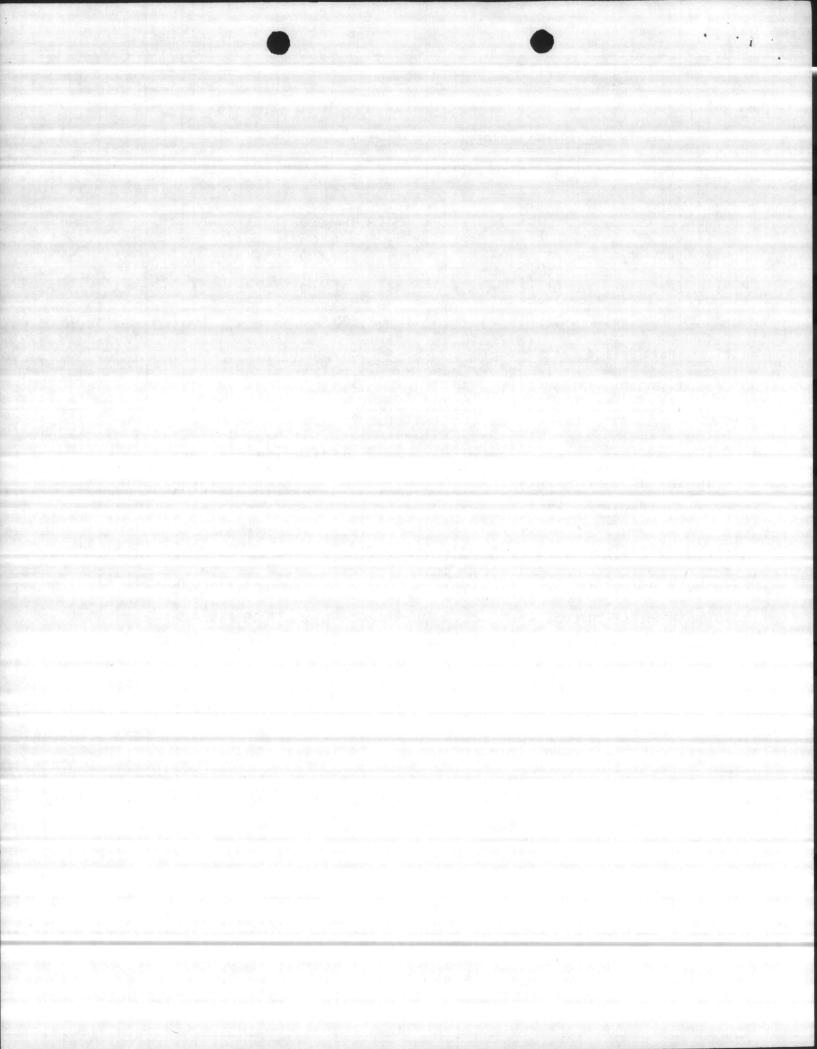


# Cost Estimate

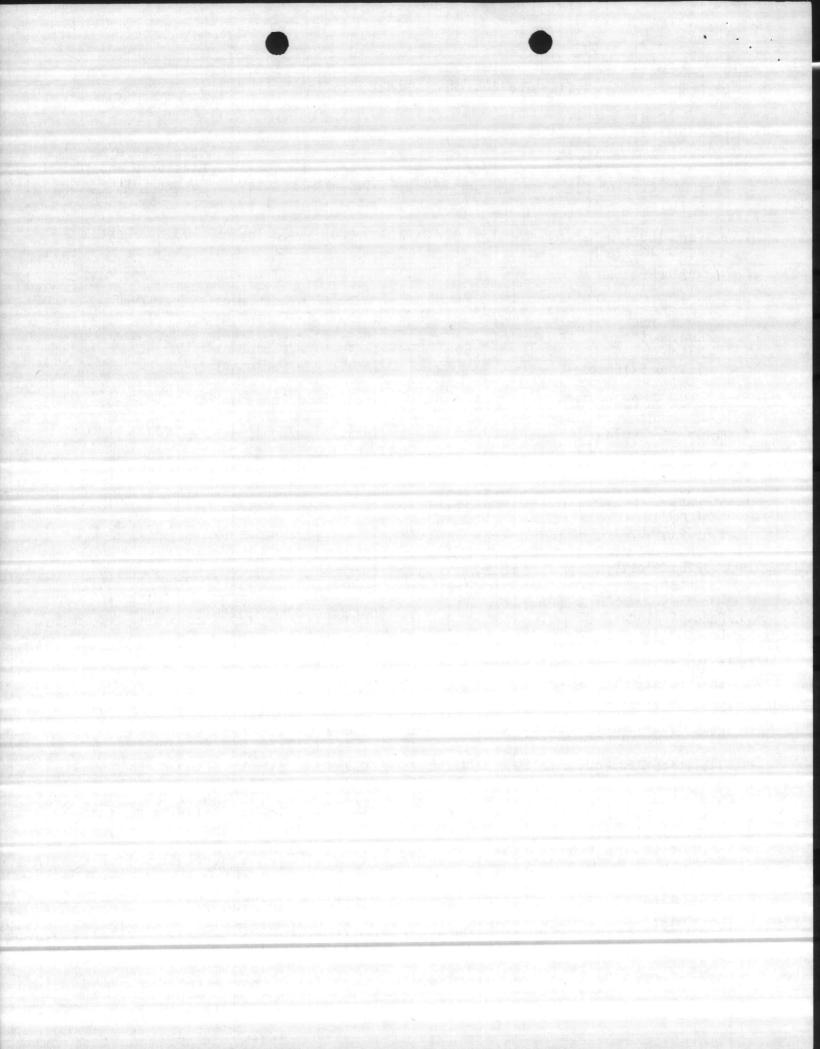
### DEPARTMENT DIRECT COST SUMMARY

### CASE 2 - BACK PRESSURE TURBINE

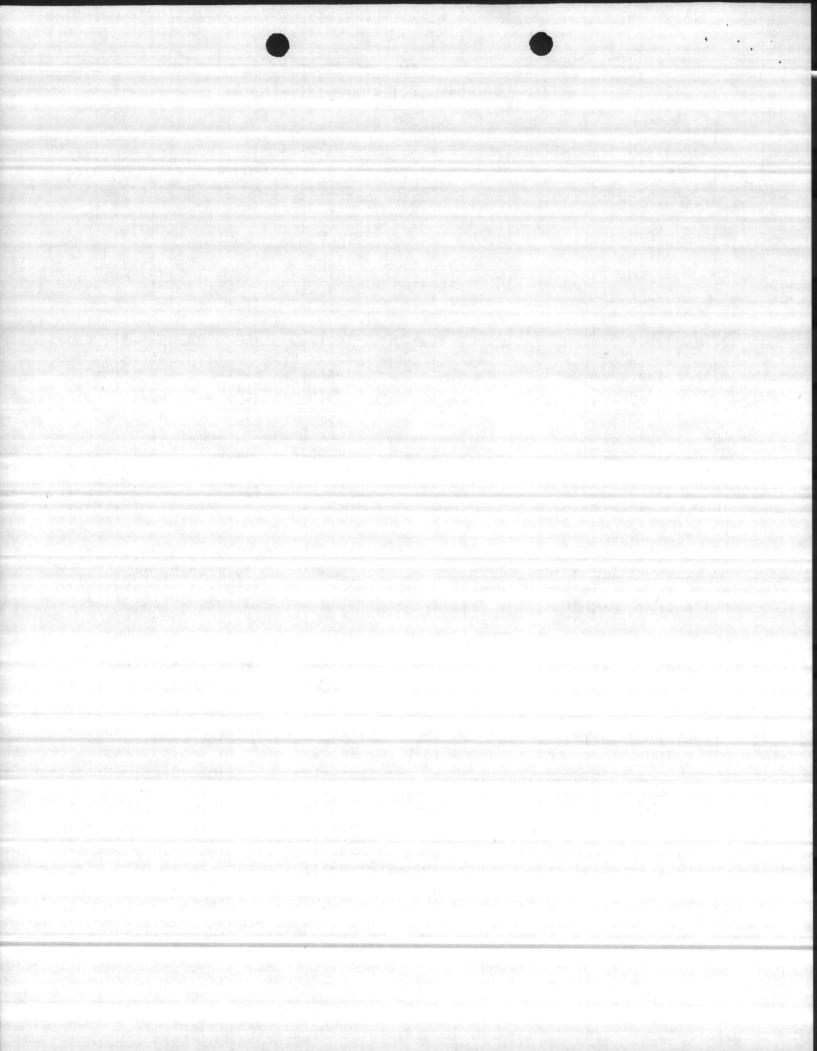
Equipment	\$ 8,984,000	
Equipment Erection	170,600	
Equipment Foundations and Other Costs	294,400	
Buidings & Structures	3,700,000	
Electrical Installation Cost	463,000	
Instrumentation Installation Cost	\250,000	
Piping Cost	2,246,000	
Area Cost	380,000	
SUBTOTAL CONSTRUCTION COST		\$ 16,488,000
SIOH @ 5.5% (Supervision, inspection & overhead)		906,800
Contingency @ 10%		1,739,500
TOTAL CONSTRUCTION COST		\$ 19,134,300



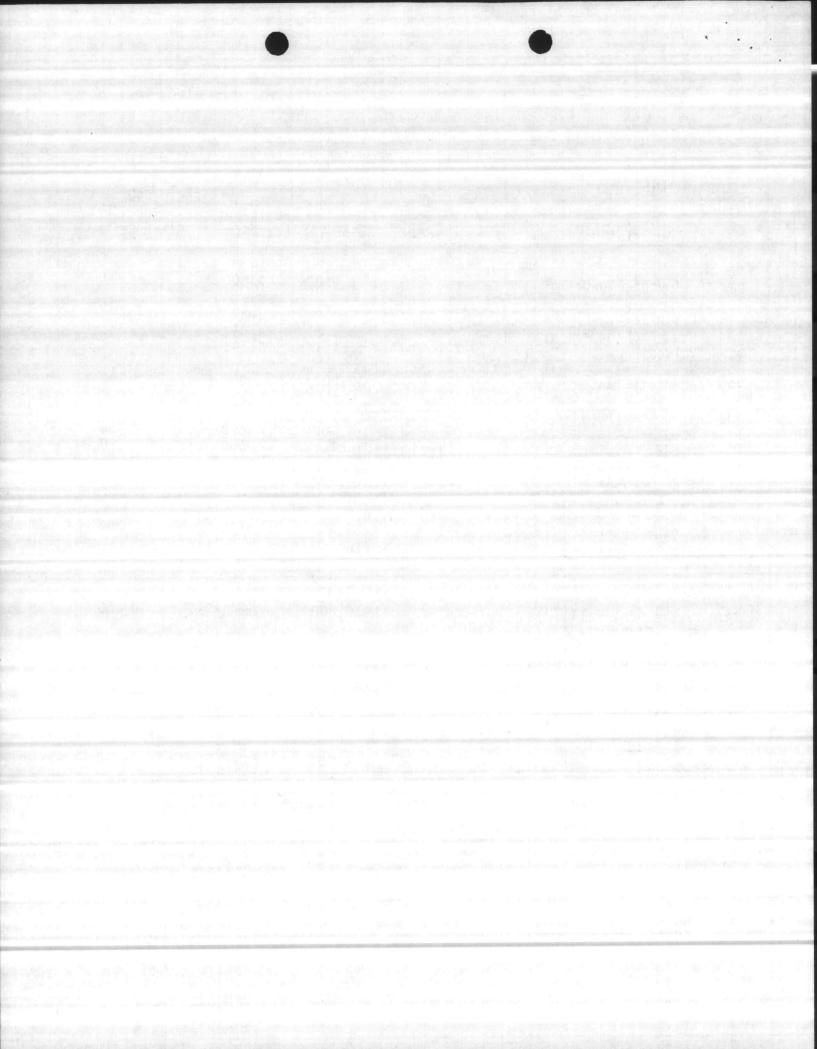
_	UIPMENT LIST				quip. Supports
CF	Item Description	Motor HP-RPM	Equipment	Equipment Erection	Platforms and Other Costs
		A part to a	\$	\$	\$
	. Boiler, 100 T/D Maximum Input 600 PSIG 725°F Unit No. 1		2,750,000	w/Equipment	w/Bldg. Cost
	Coupling Controls	50	Incl. Incl. Incl. Incl.	w/Equipment w/Equipment w/Equipment w/Equipment	4,000
	Motor Intake Silencer	30	Incl.	w/Equipment	
	3. Combustion Controls		Incl.	w/Equipment	
	. Boiler Breeching		Incl.	w/Equipment	w/Bldg.
	5. Economizer		Incl.	w/Equipment	w/Bldg.
	5. Stoker	10	Incl.	w/Equipment	w/Boiler
	7. I.D. Fan Coupling Fluid Drive Motor	75	Incl. Incl. Incl. Incl.	w/Equipment w/Equipment w/Equipment w/Equipment	7,000
	8. Precipitator No. 1		600,000	w/Equip. Co	st 20,000
	9. Ductwork - To Precip., Fan, Stack w/Insulation		45,000	D&E	65,000
1	O. Expansion Joints		12,000	2,000	N/A
1	1. Isolation Damper	5	28,000	2,000	Incl.
1	2. Boiler, 100 T/D Maximum Input 600 PSIG 725°F Unit No. 2		2,750,000	w/Equip. Co	st w/Bldg.
1	3. F.D. Fan		Incl.	Incl.	4,000 Incl.
	Coupling		Incl.	Incl.	Incl.
	Controls	50	Incl.	Incl.	Incl.
	Motor Intake Silencer	30	Incl.	Incl.	Incl.
	THEARE STICHEET				



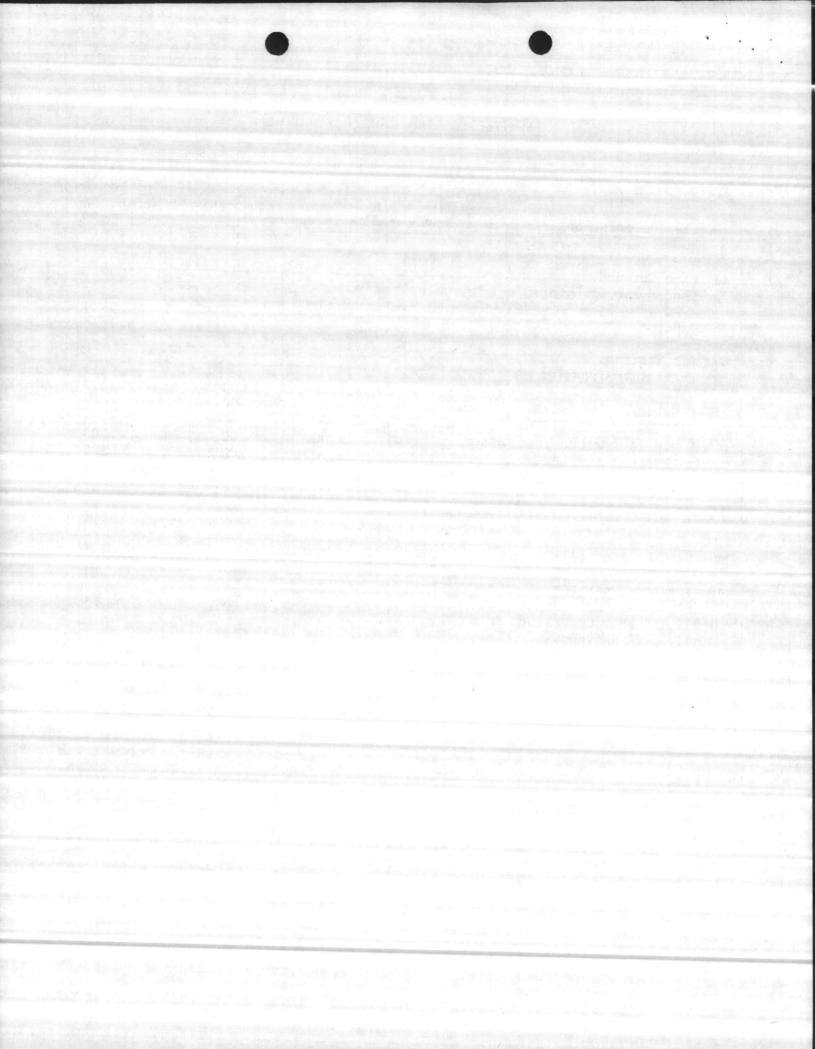
EQUIPMENT LIST CASE 2	Motor		Equipment	Equip. Supports Platforms and
Item Description	HP-RPM	Equipment \$	Erection \$	Other Costs \$
14. Combustion Controls		Incl.	Incl.	
15. Boiler Breeching		Incl.	Incl.	w/Bldg.
16. Economizer		Incl.	Incl.	w/Bldg.
17. Stoker	10	Incl.	Incl.	w/Boiler
18. I.D. Fan Coupling Fluid Drive Motor	75	Incl. Incl. Incl. Incl.	Incl. Incl. Incl. Incl.	7,000
19. Precipitator No. 2		600,000	Incl.	20,000
20. Ductwork - To Precip., Fan, Stack w/Insulation		45,000	D&E	65,000
21. Expansion Joints		12,000	2,000	N/A
22. Isolation Damper	5	28,000	2,000	N/A
23. Ash Handling System	80 (Tota	1) 575,000	Incl.	w/Bldg.
24. Overhead Crane - 5 Ton Control Cab Grapple Bridge Motor Trolley Motor	15 10 10 (Ea)	375,000 Incl. Incl. Incl. Incl. Incl. Incl.	50,000	w/Bldg.
Hoist Motors (2)  25. Spare Crane Control Cab Grapple Bridge Motor Trolley Motor Hoist Motors (2)	15 10 10 (Ea)	375,000 Incl. Incl. Incl. Incl.	50,000	w/Bldg.
26. Deaerator		30,000	2,000	1,500
27. Blow-Off Tank		5,000	1,000	100
021882	eller der die en de legen Kanan state en gewonen			



EQUIPMENT LIST  CASE 2  Item Description	Motor HP-RPM	Equipment \$	Equipment Erection	Equip. Supports Platforms and Other Costs
28. Continuous Blowdown		17,000	2,500	500
System Flash Tank Heat Exchanger Valves		Incl. Incl. Incl.	Incl. Incl. Incl.	
29. Condensate Tank	er (	15,000	1,000	100
30. Condensate Transfer Pump Motor	10	3,000 Incl.	500 500	200 200
31. Air Compressor Air Receiver	25	6,000 Incl.	500	200
32. Air Compressor Air Receiver	25	6,000 Incl.	500	200
33. Air Dryer		3,000	200	100
34. Stack - Dual Wall (2) 150' x 9'-0" Dia.		310,000	Incl.	90,000
35. Raw Water Booster Pump . Motor	20	3,000 Incl.	500 Incl.	100 Incl.
36. Raw Water Booster Pump Motor	20	3,000 Incl.	500	100
37. Feedwater Treatment Equipment	30 Total	70,000	8,000	1,000
38. Boiler Feed Pumps (2) Motor	2 @ 75	16,000 Incl.	1,000 Incl.	1,000 Incl.
39. Boiler Feed Pump Turbine		8,000 12,000	500 Incl.	500 Incl.
40. Chemical Feed Equipment	2 @ 5	10,000	800	300



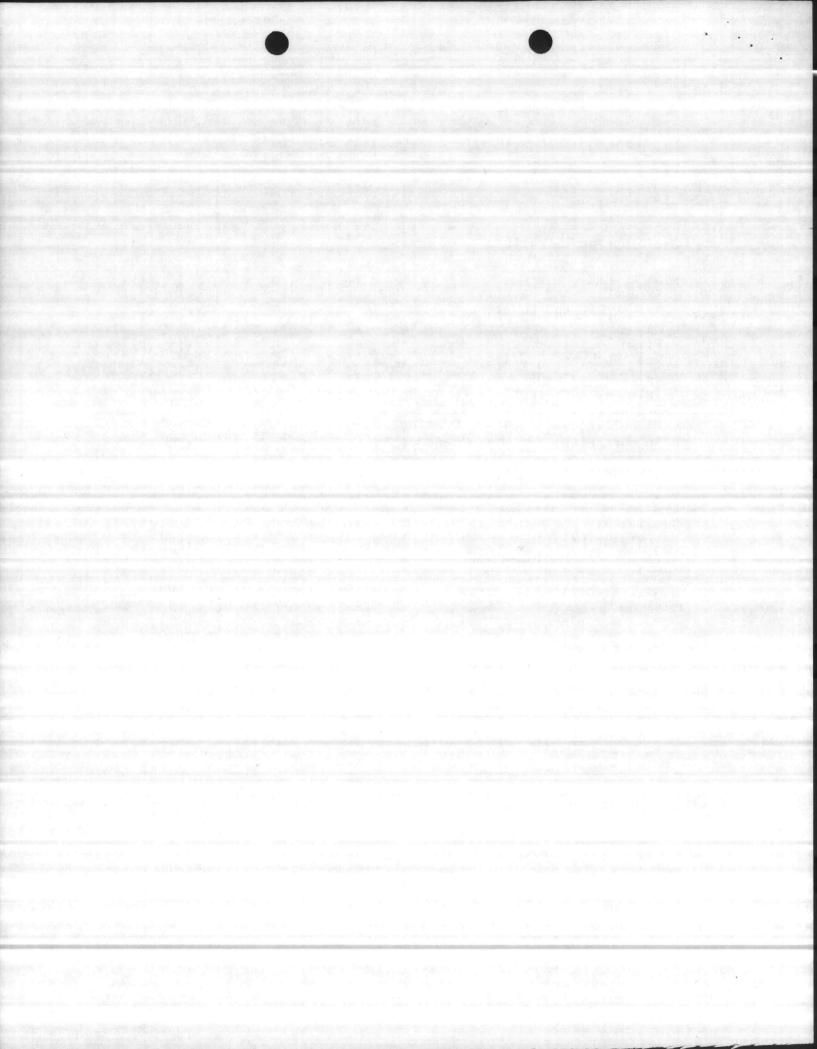
EQUIPMENT LIST  CASE 2  Item Description	Motor HP-RPM	Equipment	Equipment Erection	Equip. Supports Platforms and Other Costs
Trem bescription		\$	\$	\$
41. Camp Geiger Condensate Transfer Pump Motor	30	7,000 Incl.	500 200	100 Incl.
42. Air Station Condensate Transfer Pump Motor	50	7,000 Incl.	500 200	100 Incl.
43. Condensate Collection Tank Pump Motor	10	15,000 3,000 Incl.	500 200 Incl.	200 100 Incl.
44. No. 2 Oil Storage Tank & Pump 10,000 Gallon	5	25,000	500	500
45. HVAC Equipment	20	15,000	Incl.	500
46. Turbine Generator 900 KW Nominal Output 12,470 Volt Generator 1175 KVA Rating		200,000	40,000	4,800
TOTAL, Equipment		\$8,984,000	\$170,600	\$294,400



### CASE 2

47.	Buil	dings	and	Structures
-----	------	-------	-----	------------

	Structural Steel Excavation and Backfill Refuse Pit and Basement Mat Piling Roof Deck and Roofing Walls and Siding Intermediate Floors Stairs, Doors and Drains Miscellaneous Steel and Grating Support Steel and Miscellaneous	\$ 880,000 445,000 690,000 365,000 86,000 190,000 270,000 89,000 160,000 135,000 390,000
	TOTAL, Building and Structures	\$ 3,700,000
43.	Electrical Building Lighting Electrical Equipment & Wiring	63,000 400,000
	TOTAL, Electrical	\$ 463,000
49.	Instrumentation	\$ 250,000
50.	Piping Boiler Plant Export Steam & Condensate Return Lines	870,000 1,376,000
	TOTAL, Piping	\$ 2,246,000
51.	Area Area Road Paving	\$ 130,000 250,000
	TOTAL, Area	\$ 380,000



### CASE 2

#### DESIGN ANALYSIS COMPUTATIONS

JANUARY 1982

(Present Value = 1986 Dollars)

#### ALTERNATIVE A - Refuse-Burning Plant

#### 1. Investment Cost

Refuse-Burning Plant Capital Costs (from equipment list)

Construction

\$16,488,000

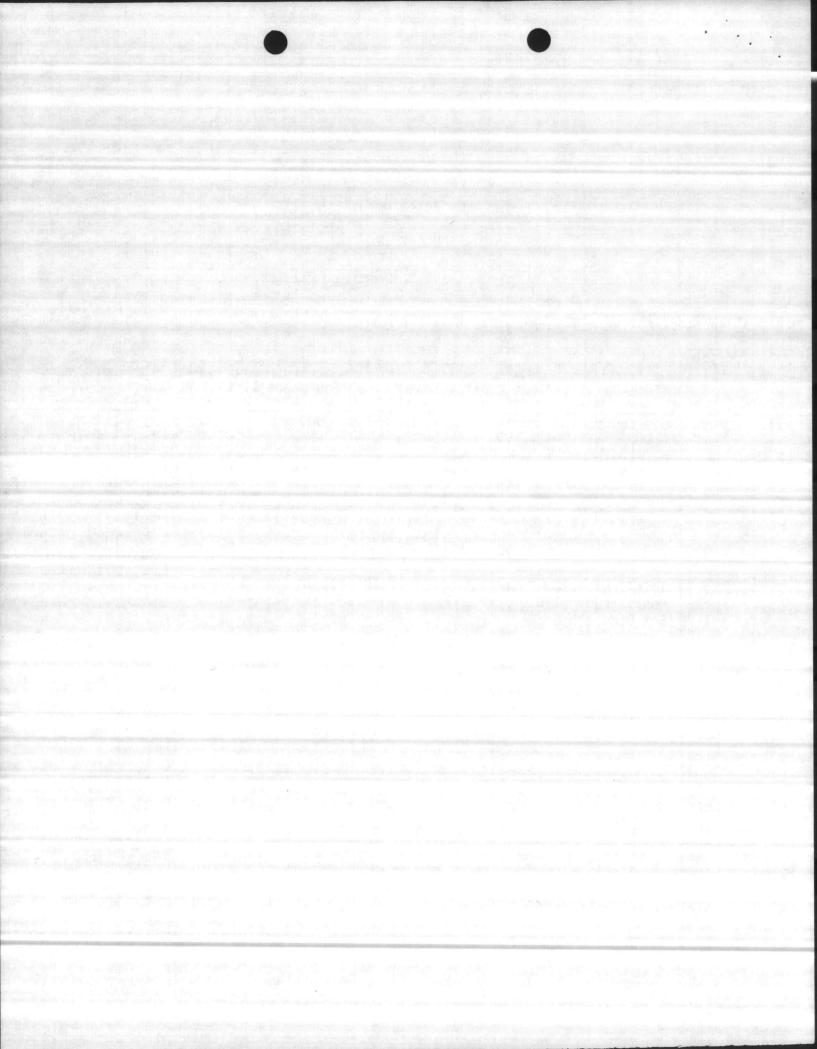
Escalated to April 1985

 $$16,488,000 \times \frac{2167}{1870} = $19,106,682$ 

Escalated to FY86 10% Discount (2% differential) \$19,106,682 X 1.0384 = \$19,840, 378

Total Escalated Cost Contingency @ 10% S.I.O.H. @ 5.5% \$19,840,378 1,984,037 1,200,342

TOTAL 23,024,757



Engineering @ 6% = \$989,280

Escalated to April 1984

 $$989,280 \times \frac{2066}{1870} = $1,092,969$ 

Escalated to FY-86

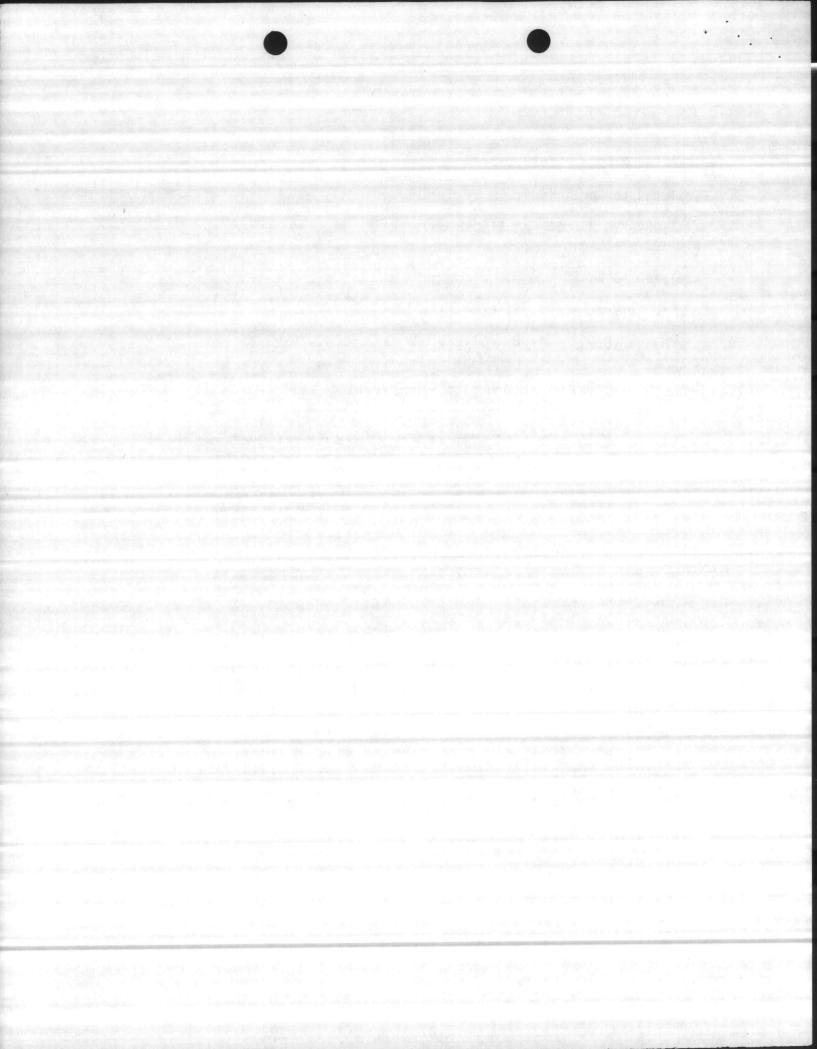
10% Discount (2% differential)

\$1,092,969 X 1.1198 = \$1,223,906

Total Present Value Construction & Engineering

\$23,024,757 +1,223,906

TOTAL \$24,248, 663

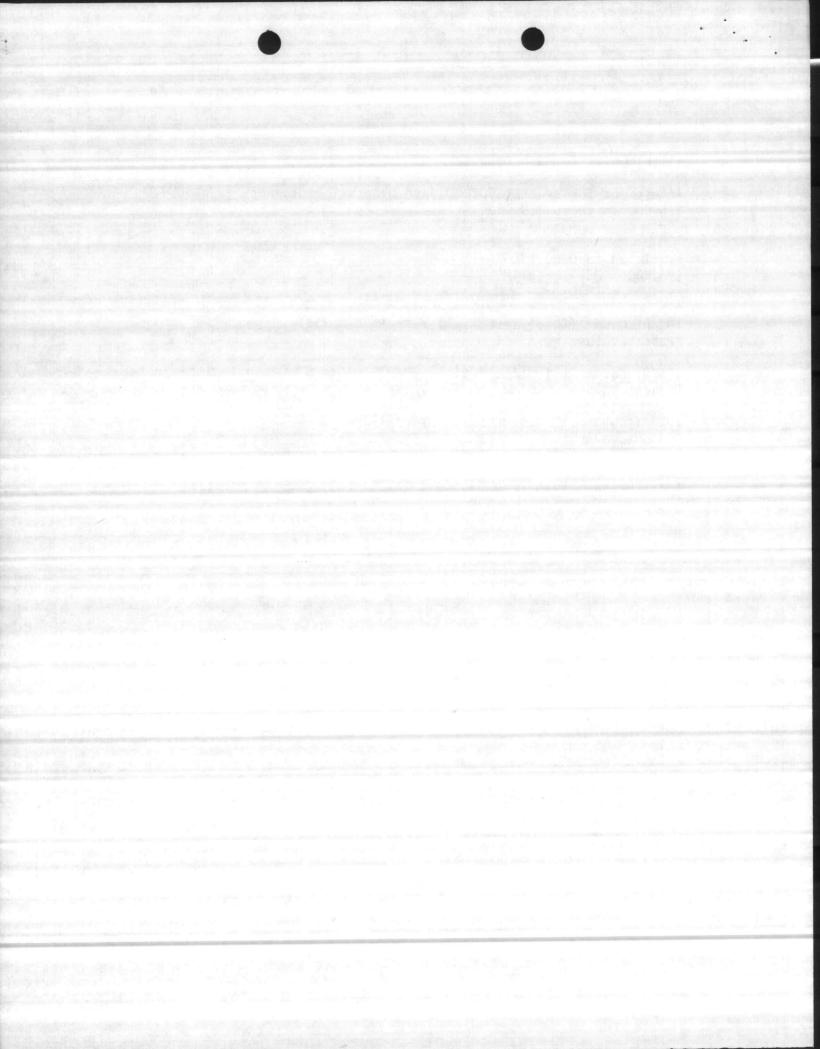


### b. Capital Costs for Ash Disposal

Investment for truck (\$70,000) and disposal containers (\$26,000) \$96,000 in years 1,9, 17

Escalated to Oct. 1986 \$96,000 X 2317 = \$118,947 1870

The state of the s	
10% Discount (2% differential) year 1 .963 Present Value	\$114,545
10% Discount (2% differential) year 9 .526 Present Value	\$ 62,566
10% Discount (2% differential) year 17 .288 Present Value	34,256
Total Present Value Ash Disposal Investment	\$211,367



#### 2. Recurring Costs

Annual Boiler Plant Labor Costs

```
4 Crane Operators (WG-8) @ $9.98/hr. (incl. benefits)
4 Boiler OPerators (WG-7) @ 9.43/hr. (incl. benefits)
```

4 Boiler Mechanics (WG-10) @ 11.09/hr. (incl. benefits)

3 Supervisors (WS-7) @ \$12.78/hr. (incl. benefits)

Unescalated Labor Cost

 $(4 \times 9.98 \times 2080) + (4 \times 9.43 \times 2080) + (4 \times 11.09 \times 2080)$  $+ (3 \times 12.78 \times 2080) = $333,508$ 

Labor escalated to Oct. 1986

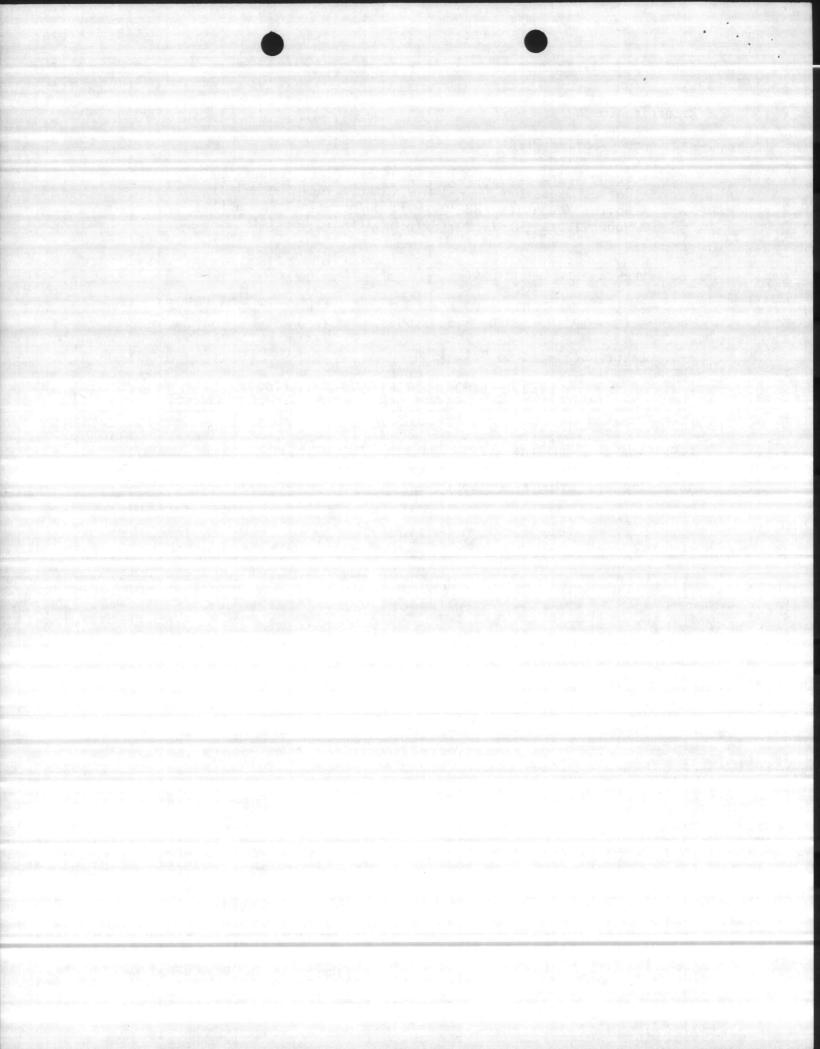
FY85 FY86 FY84 FY82 FY83  $333,508 \times 1.056 \times 1.056 \times 1.056 \times 1.056 \times 1.056 = 437,951$ 

10¢ Discount (0% differential)

9.524

Present Value Labor Cost

\$4,171,048



#### b. Annual Boiler Maintenance Cost

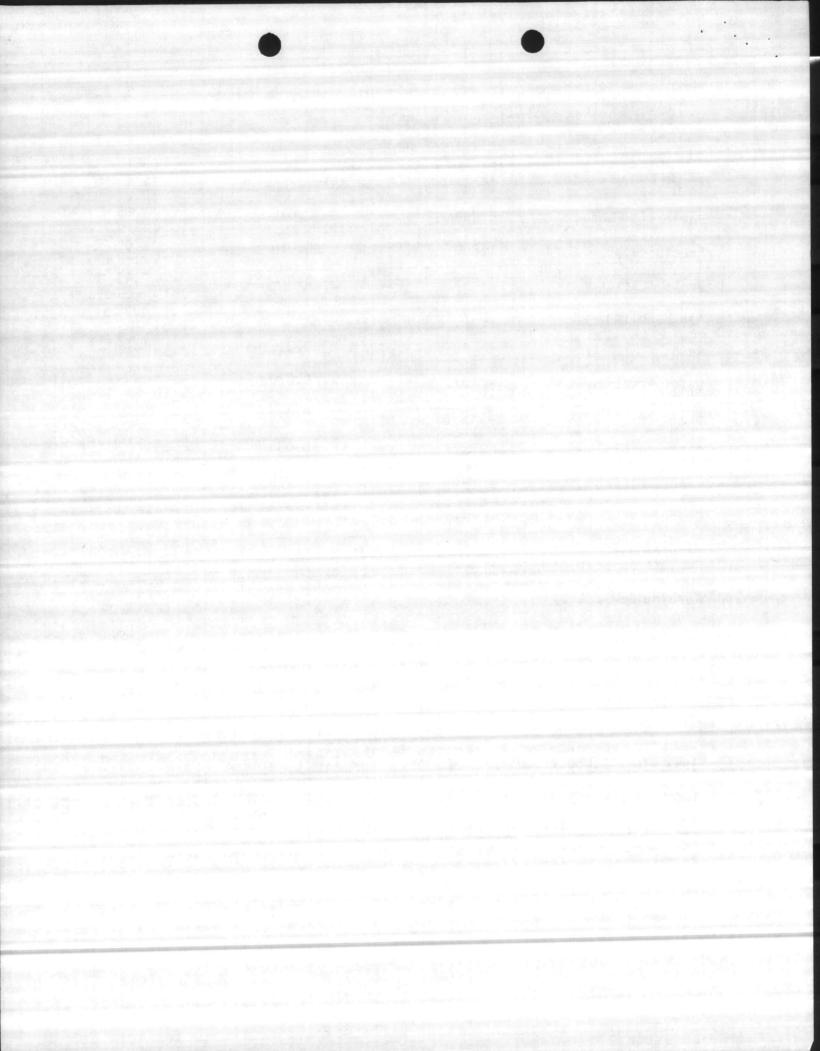
ITEM	INSTALLED COST (\$ X 10 <sup>3</sup> )	MAINT. FACTOR	(\$ X 10 <sup>3</sup> )
Boilers & Fans	3,250	0.025	81.25
Precipitators	1,200	0.015	18.00
Ducts & Stack	245	0.010	2.45
Ash Handling	575	0.025	14.38
Pumps	33	0.015	0.50
Water Treatment	37	0.020	.74
Building	3,400	0.005	17.00
Internal Piping	740	0.005	3.70
Export Piping	1,376	0.010	13.76
Cranes	850	0.020	17.00
Electrical Instrumentation	538	0.020	10.76
Turbine Generator	200	0.020	4.00
Total Unes	calated Maintenance		183.54

Maintenance escalated to Oct. 1986

Fy 82 Fy 83 Fy 84 Fy 85 Fy 86 \$183,540 x 1.056 x 1.056 x 1.056 x 1.056 x 1.056 = \$241,018

10% Discount (0% differential) 9.524

Present Value Maintenance Costs \$2,295,459



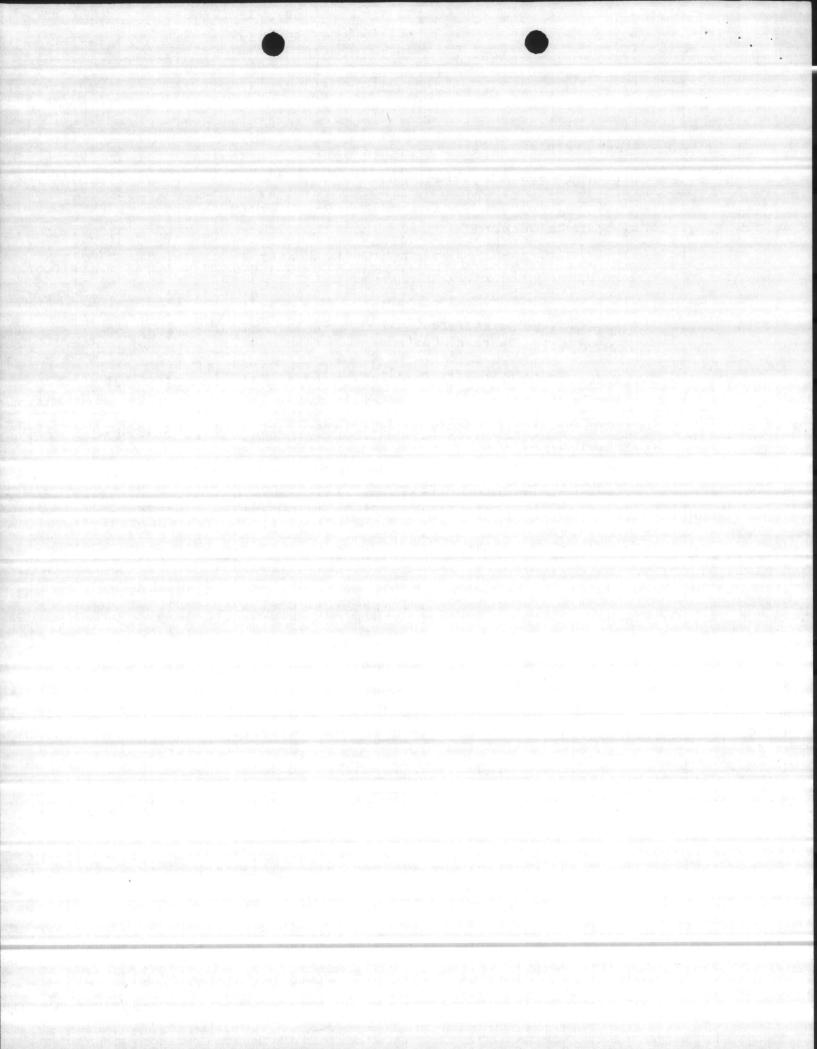
#### c. Plant Overhaul

\$ 50,000 every 5 years

Escalated to Oct. 1986

Fy 82 Fy 83 Fy 84 Fy 85 Fy 86 \$ 50,000 x 1.056 x 1.056 x 1.056 x 1.056 = \$65,658

10% Discount (0% differential) year 5 Present Value Overhaul Cost	.652	\$ 42,809
10% Discount (0% differential) year 10 Present Value Overhaul Cost	.405	\$ 26,591
10% Discount (0% differential) year 15 Present Value Overhaul Cost		\$ 16,480
10% Discount (0% differential) year 20 Present Value Overhaul Cost	.156	\$ 10,242
Total Present Value Overhaul Costs		\$ 96,122



## d. Annual Incremental Electrical Costs

SERVICE	POWER (KW)	USE FACTOR	EFFECTIVE POWER
Pumping Power*	110	0.8	88
Crane Operation	30	1.0	30
Precipitators	400	0.8	320
Ash Handling	60	0.8	48
		TOTAL	486 KW

\* NOTE: Feedwater pumping is not included since a reduction in existing feedwater pumping will be realized. Adjustment is made for higher pressure feedwater.

Annual Demand Cost Increase 486 KW X \$ 73.598/KW = \$ 35,769/yr.

Annual KWH Increase 486 KW X 7000 hrs/yr. = 3,402,000 KWh/yr.

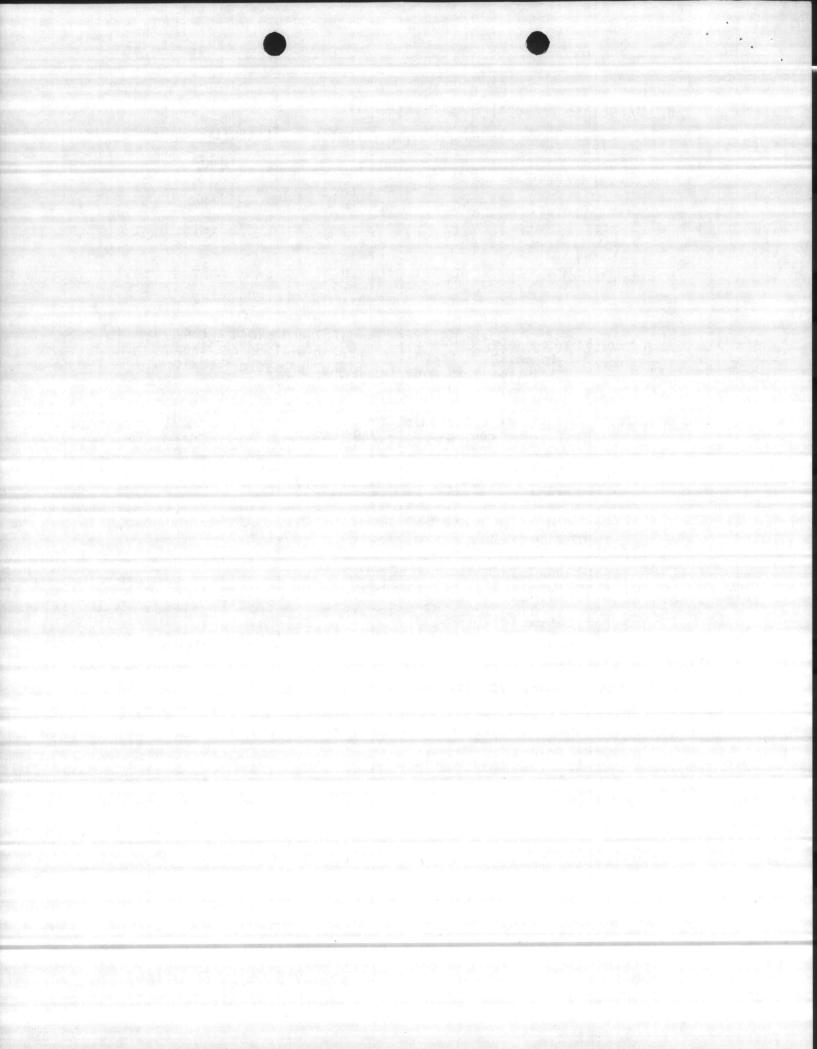
Annual Dollar Increase per KWH 3,402,000 KWh/hr. X \$ .02726/KWh = \$ 92,738/yr.

Total Annual Increase Electrical Cost \$ 35,769 + \$ 92,738 = \$ 128,507

Escalated to Oct. 1986 FY82 FY83 FY84 FY85 FY86 \$128,507 X 1.13 X 1.13 X 1.13 X 1.13 X 1.13 = \$236,765

10% Discount (7% differential) 18.049

Present Value Incremental Electrical Cost \$4,273,386

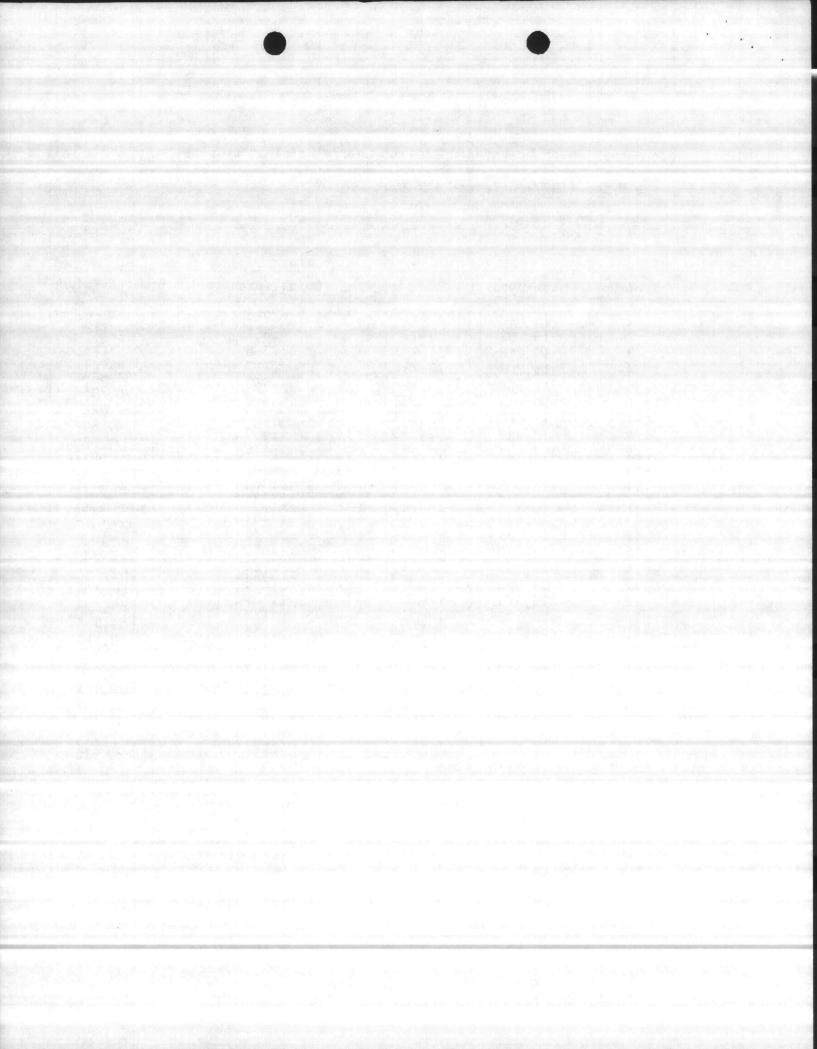


e. Annual Trash Transfer Cost from Cherry Point to Lejeune \$10/ton (1977) escalated to Oct. 1986  $\$10 \times \frac{2317}{1355} = \$17.10$ 

	Yr. of Op.	Tons/yr.	\$/yr.	10% Discount (0% differential)	Present Value
1986	1	15,538	\$ 265,699	.954	\$ 253,477
1300	2	15,793	270,060	.867	234,142
	3	16,048	274,420		216,243
	4	16,303	278,781	.717	199,886
1990	5	16,558	283,141	.652	184,608
1330	6	16,813	287,502	.592	170,201
	. 7	17,068	291,862	.538	157,022
	8	17,323	296,223	.489	144,853
	9	17,578	300,583	.445	133,759
	10	17,833	304,944	.405	123,502
		18,088	309,304	.368	113,824
	11 12	18,343	313,665	.334	140,764
	13	18,598	318,025	.304	96,679
		18,853	322,386	.276	88,978
0000	14 15	19,108	326,746	.251	82,013
2000			331,107	.228	75.492
	16	19,363	335,467	.208	69,777
	17	19,618	339,823	.189	64,227
	18	19,873	344,188	.172	59,200
	19	20,128	348,549	.156	54,373
	20	20,383	352,909	.142	50,113
	21	20,638	357,270	.129	46,087
	22	20,893	361,630	.117	42,310
	23	21,148	365,991	.107	39,161
0010	24	21,403	370,351	.097	35,924
2010	25	21,658	370,331	.037	

Total Present Value Transfer Cost

\$2,840,615



# f. Annual Ash Disposal Cost

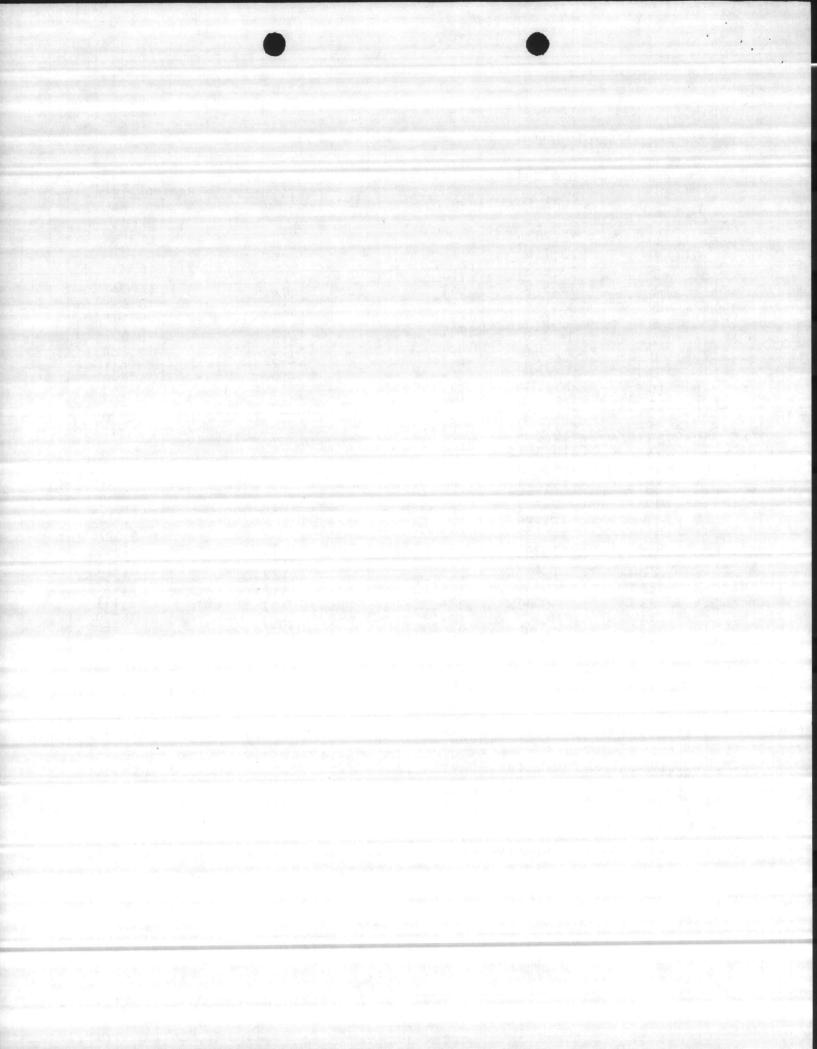
Yr.	of Op.	1982 \$*	1986 \$*	10% Discount (0% differential)	Pre	sent Value
1986 .	1 2 3 4	13,756 13,862 13,916	\$ 16,886 16,952 17,083 17,150 17,280	.954 .867 .788 .717	\$	16,109 14,698 13,461 12,296 11,267
1990	5 6 7 8 9 10 11 12 13	14,022 14,075 14,128 14,950 15,003 15,110 15,163 15,216 15,269 15,323	17,346 17,411 18,424 18,489 18,621 18,686 18,752 18,817 18,884	.592 .538 .489 .445 .405 .368 .334 .304		10,268 9,367 9,009 8,227 7,541 6,876 6,263 5,720 5,212 4,756
2000	15 16 17 18 19 20 21 22 23 24	15,376 15,429 15,535 15,588 15,642 15,748 15,802 15,855 15,908 16,014	18,949 19,014 19,145 19,210 19,277 19,407 19,474 19,539 19,605 19,735 19,800	.251 .228 .208 .189 .172 .156 .142 .129 .117 .107		4,335 3,982 3,630 3,315 3,027 2,765 2,520 2,293 2,111 1,920
2010	25	16,067	19,000		\$	170,968

Total Present Value Ash Disposal Cost

\* Escalation from 1982 to  $1986 = \frac{2317}{1880} = 1.2324$ 

Ash - 80 lbs/cf. 30% moisture

Ash Disposal - 5 days per week



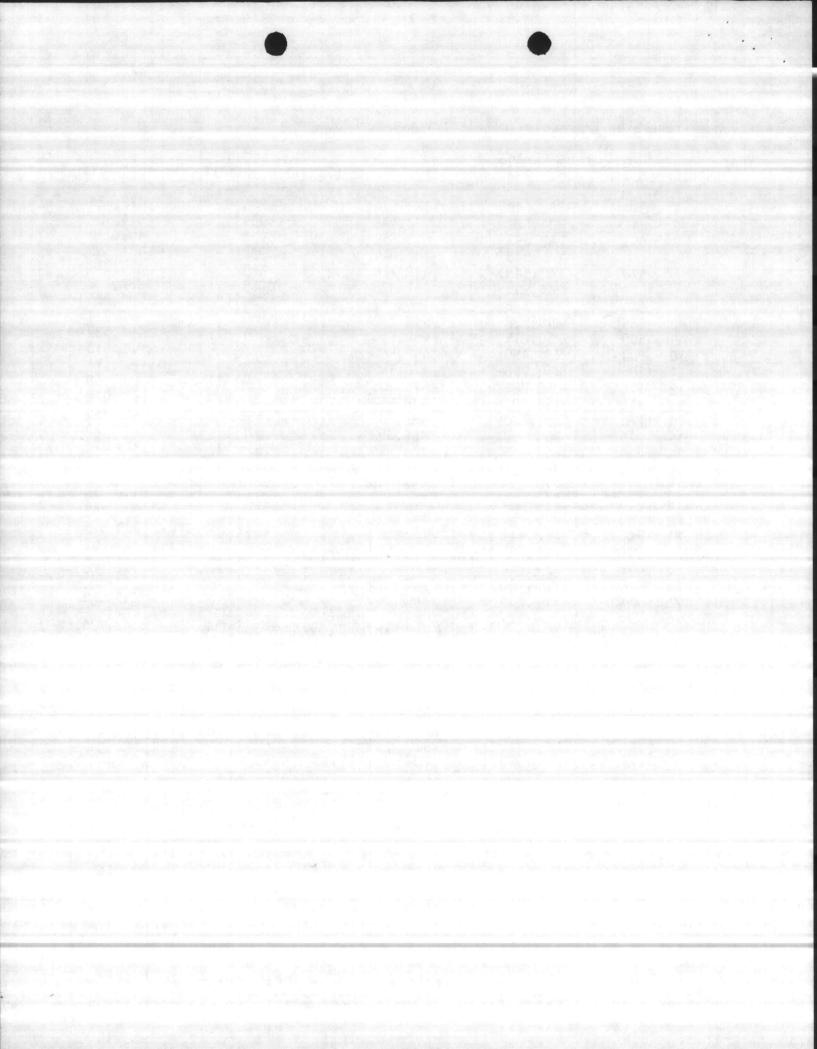
3. Benefits Revenues generated from sales of electricity to CP&L

Year	Av. k Gener	The second secon	*Net Revenue Jan. 1982 \$	** Oct, 1986 \$	<pre>10% Discount (7% differential)</pre>	Present Value
3000				\$428,624	.986	\$ 422,623
1986	1	640	\$232,640	432,642	.959	414,904
	2	646	234,821	438,669	.933	409,278
	3	655	238,092	442,019	.908	401,353
	4	660	239,910	448,716	.883	396,216
	5	670	243,545	451,395	.859	387,748
	6	674	244,999	455,413	.836	380,725
	/	680	247,180	458,763	.813	372,974
	8	685	248,998	462,110	.791	365,529
	9	690	250,815	468,808	769	360,513
	10	700	254,450		.748	353,174
	11	705	256,268	472,157	.728	346,168
	12	710	258,085	475,505	.708	339,028
	13	715	259,902	478,853	.688	331,755
	14	720	261,720	482,202	.670	325,320
2000	15	725	263,538	485,552	.651	318,273
	16	730	265,355	488,899	.634	314,208
	17	740	268,990	495,597	.616	307,351
	18	745	270,808	498,946	.600	301,376
	19	750	272,625	502,294	.583	296,742
	20	750	276,260	508,991		290,876
	21	766	278,441	513,009	.567	284,660
	22	770	279,895	515,688	.552	278,722
	23	775	281,712	519,036	.537	274,434
	24	785	285,348	525,735	.522	268,774
2010	25	790	287,165	529,083	.508	200,114
			Total Present V	alue Electricity	Renvenues Benefit	\$8,542,724

<sup>\*</sup> Source: CP&L Schedule CSP-3B effective 9-24-82 Variable Energy Credit and 10-Year Capacity Credit

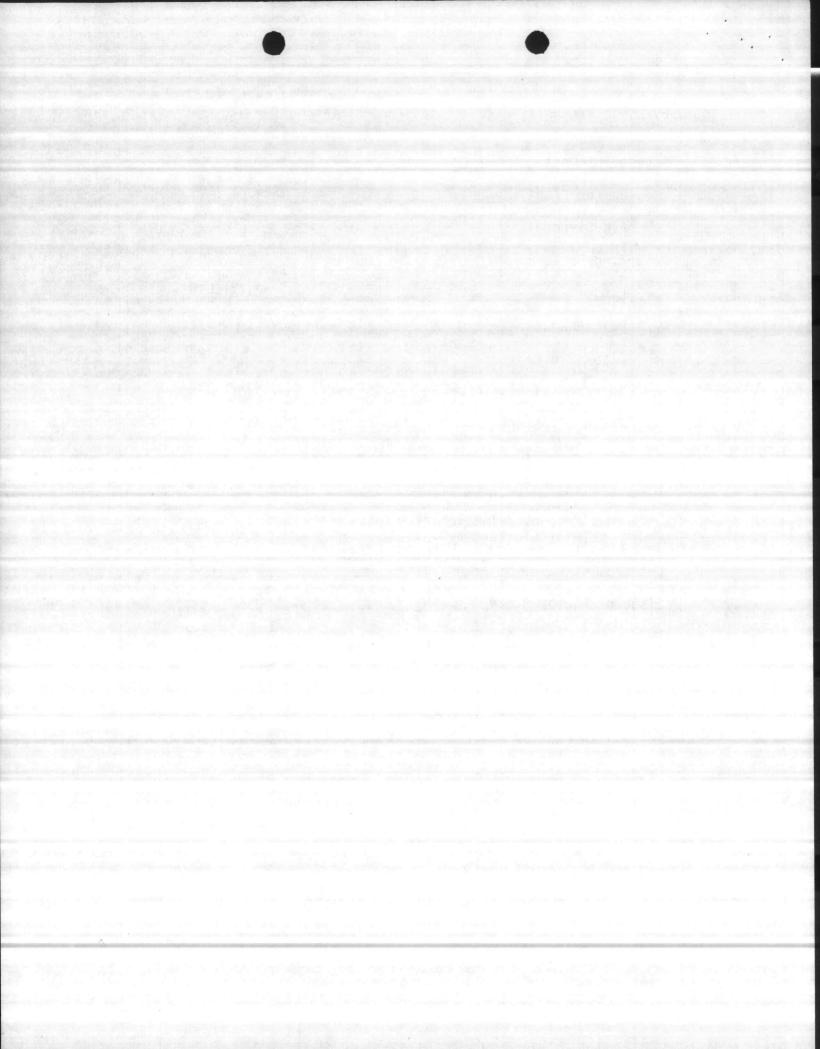
FY82 FY83 FY84 FY85 FY86 1.13 X 1.13 X 1.13 X 1.13 = 1.842435

<sup>\*\*</sup>Escalation from Jan. 1982 to Oct. 1986 =



# Summary Sheet Alternative 2A - Total Present Value,

Investment Cost	
Boiler Plant	\$24,248,663
Ash Disposal	211,367
Recurring Costs	
Labor	4,171,048
Maintenance	2,295,459
Plant Overhaul	96,122
Incremental Electrical	4,273,386
Trash Transfer	2,840,615
Ash Disposal	170,968
Total Present Value Cost	\$38,307,628
Less Present Value Benefits Sale of Electricity	8,542,724
Net Present Value Alterantive 2A	\$29,764,904
Discount Factor 9.524	
Uniform Annual Cost	\$ 3,125,252
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# ALTERNATIVE B - Incremental Cost of Refuse Landfills at Cherry Point and Camp Lejeune

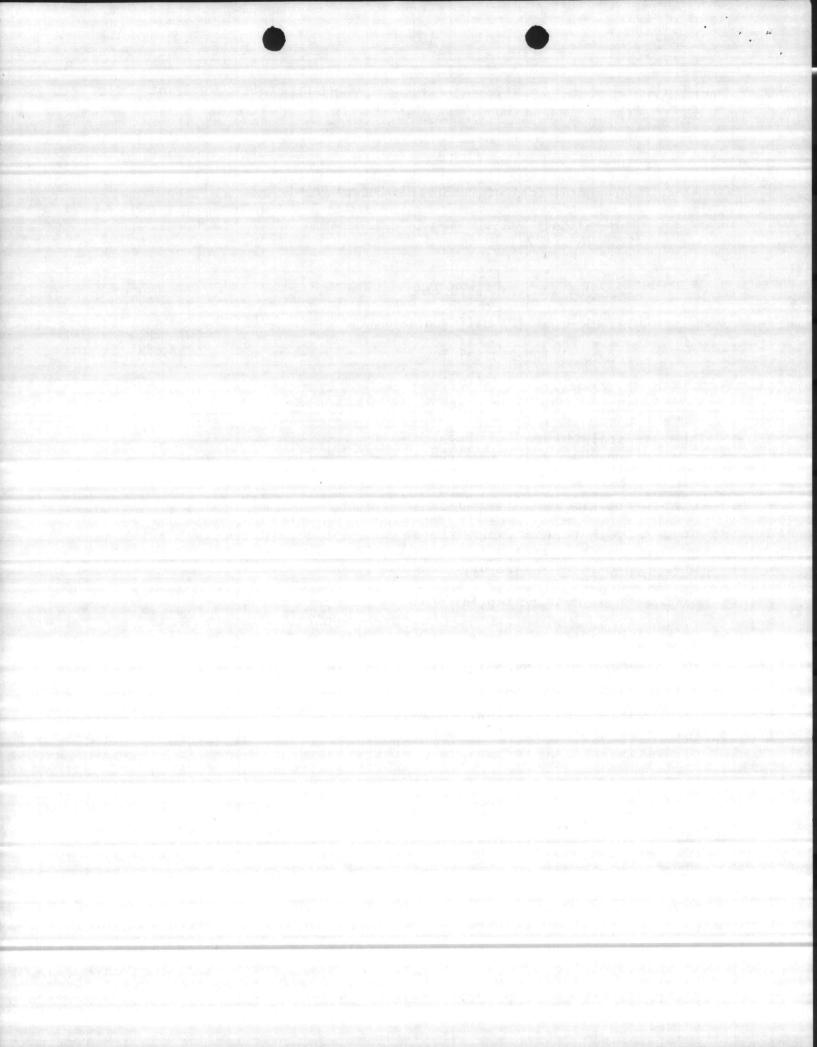
#### 1. Investment Costs

a. Incremental Cost of Landfill - Cherry Point

Total Present Value Capital Costs - Cherry Point

Capital Cost \$298,704 (1977) in year 5 Escalated to Oct 86  $$298,704 \times 2317 = $510,772$ 10% Discount (2% differential) year 5 .712 \$363,669 Present Value Capital Cost Capital Cost \$36,000 (1977) in years 8, 16, 23 Escalated to Oct. 1986  $$36,000 \times 2317 = $61,558$ .568 10% Discount (2% differential) year 8 \$ 34,965 Present Value Capital Cost 10% Discount (2% differential) year 16 .310 \$ 19,082 Present Value Capital Cost 10% Discount (2% differential) in year 23 .183 \$ 11,265 Present Value Capital Cost

\$428,981



b. Existing Boiler Plant Replacement/Upgrading Cost

Camp Geiger Capital Cost \$2,000,000 (1982\$) in 1989

Escalated to Oct. 1986 \$2,000,000 X  $\frac{2317}{1880}$  = \$2,464,893

10% Discount (2% differential) year 2 .893

Present Value Capital Cost \$2,201,150

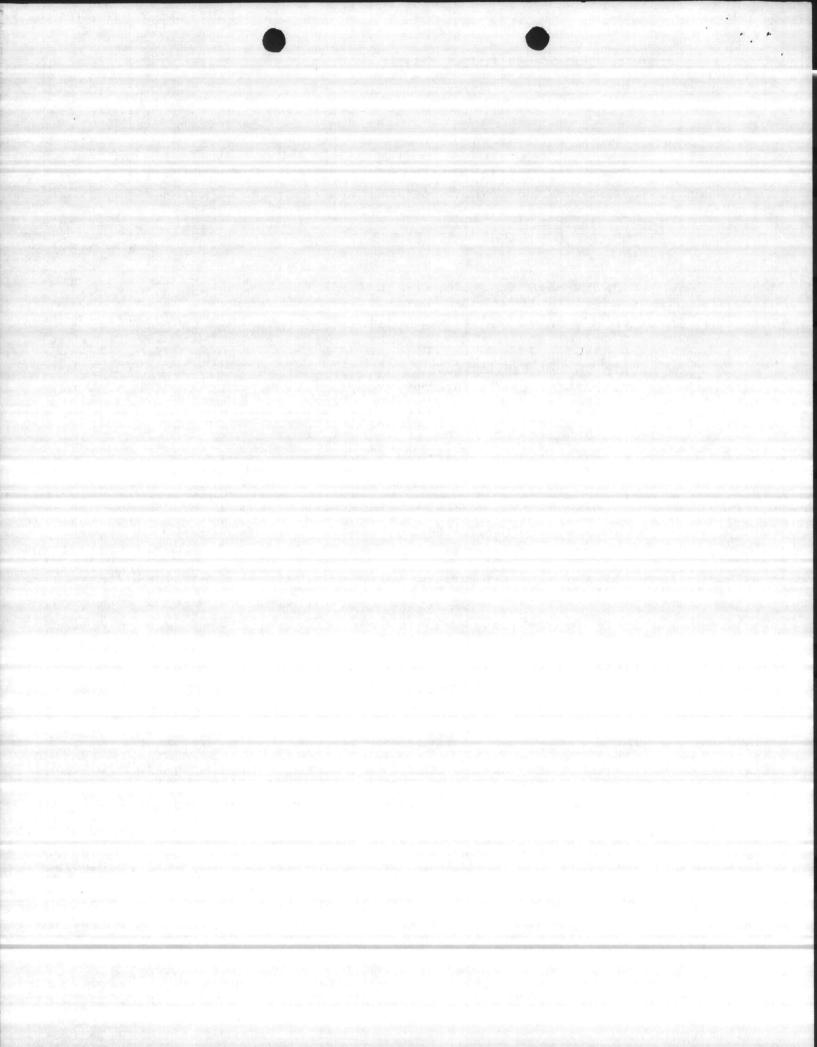
Air Station Capital Cost \$2,000,000 (1982) in 1996

Escalated to Oct. 1986 \$2,000,000 X <u>2317</u> = \$2,464,893

10% Discount (2% differential) year 10 .488

Present Value Capital Cost \$1,202,867

Total Present Value Replacement Costs \$3,404,017



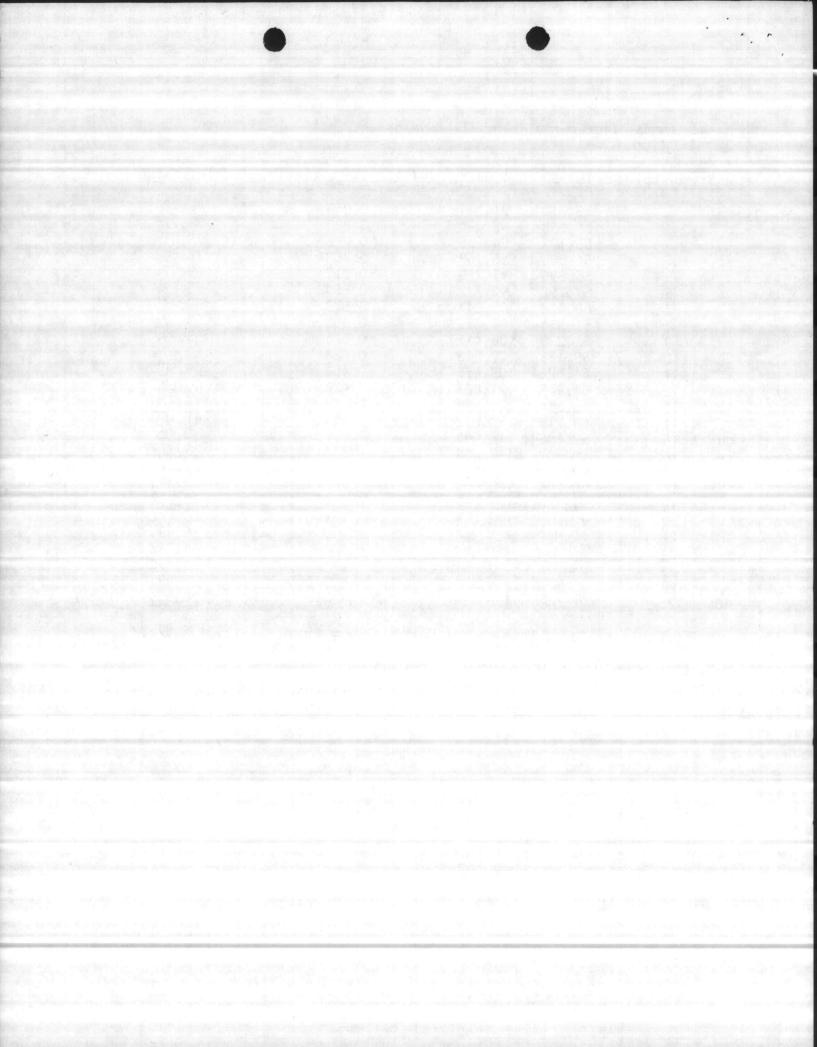
#### 2. Recurring Costs

a. Annual Incremental Landfill Development Cost - Cherry Point

Year Yr	r. of Op.	1977\$	1987\$*	10% Discount (2% differential)	Pre	sent Value
1986	1	53,312	91,161	0.963	\$	87,788
1300	2	54,208	92,694	0.893		82,775
	3	55,104	94,226	0.828		78,019
	4	56,000	95,758	0.768		73,542
	5	56,896	97,290	0.712		69,270
	6	57,792	98,822	0.660		65,223
	7	60,438	103,347	0.612		63,248
	8	61,334	104,879	0.568		59,571
	9	62,230	106,411	0.526		55,972
	10	63,126	107,943	0.488		52,676
	11	64,022	109,475	0.453		49,592
	12	64,918	111,007	0.420		46,623
	13	65,814	112,539	0.389		43,778
	14	66,710	114,071	0.361		41,180
2000	15	67,606	115,604	0.335		38,727
2000	16	68,502	117,136	0.310		36,312
	17	69,398	118,668	0.288		34,176
	18	70,294	120,200	0.267		32,093
	19	71,190	121,732	0.247		30,068
	20	72,086	123,264	0.229		28,227
	21	72,982	124,796	0.213		26,582
	22	73,878	126,328	0.197		24,887
	23	74,774	127,861	0.183		23,398
	24	75,670	129,393	0.170		21,997
2010	25	76,566	130,924	0.157		20,555
	T 1 1 D	ant Value D	ovolopmont	Cost - Cherry Point	\$	1,186,279

Total Present Value Development Cost - Cherry Point \$1,186,27

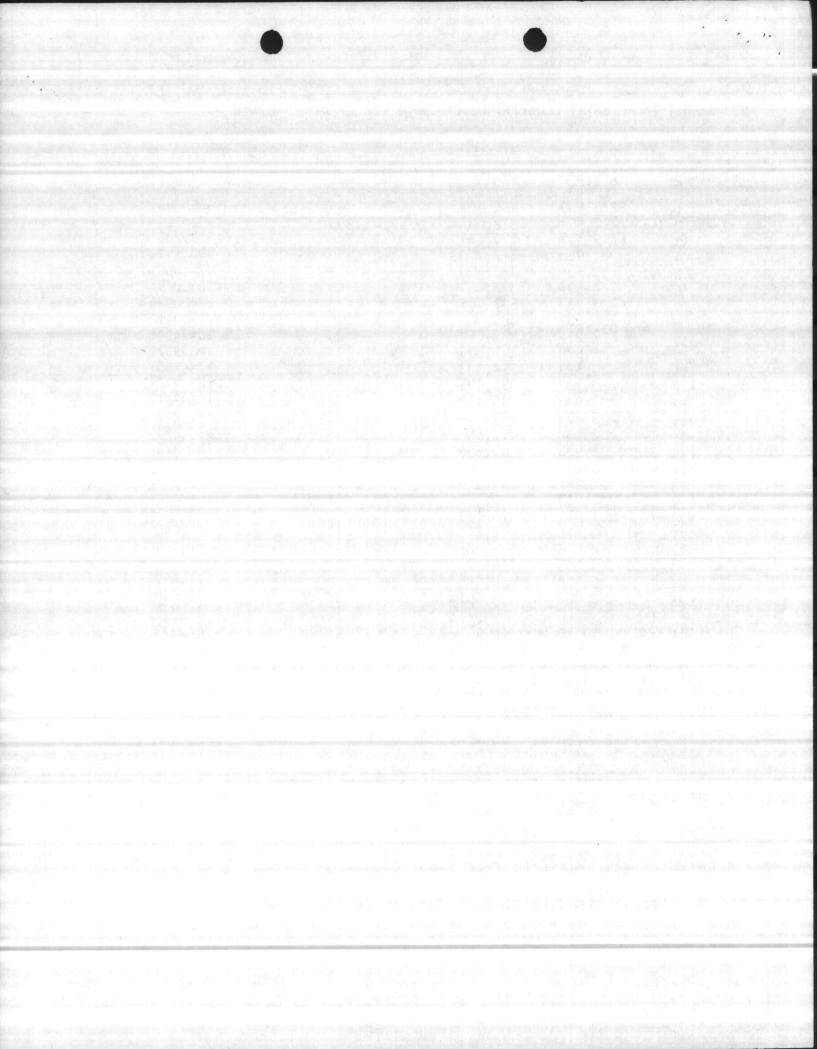
<sup>\*</sup>Escalation from 1977 to 1986 =  $\frac{2317}{1355}$  = 1.70996



# Annual Incremental Landfill Development Cost - Camp Lejeune

Yr. of	Op.	1977\$*	1987\$*	10% Discount (2% differential)	Pr	esent Value
1986	1	\$215,809	368,960	.963	\$	355,308
1300	2	217,609	372,037	.893		332,229
	3	219,157	374,684	.828		310,238
	4	220,956	377,760	.768		290,119
	5	222,505	380,408	.712		270,850
	6	224,304	383,484	.660		253,099
140000	7	223,732	382,506	.612		234,093
	8	225,532	385,583	.568		219,011
	9	227,331	388,659	.526		204,434
	10	228,879	391,305	.488		190,957
	11	230,679	394,383	.453		178,655
	12	230,107	393,405	.420		165,230
	13	231,906	396,480	.389		154,231
	14	233,706	399,558	.361		144,240
2000	15	233,134	398,580	.335		133,524
2000	16	234,933	401,656	.310		124,513
	17	236,481	404,302	.288		116,439
	18	238,281	407,379	.267		108,770
	19	240,080	410,455	.247		101,382
	20	241,629	413,103	.229		94,601
	21	243,428	416,179	.213		88,646
	22	242,856	415,201	.197		81,795
	23	244,655	418,277	.183		76,545
	24	246,204	420,925	.170		71,557
2010	25	248,003	424,001	.157		66,568.
То	tal Pr	resent Value D	evelopment	Costs - Camp Lejeune	\$	4,367,034

Escalation from 1977 to 1986 =  $\frac{2317}{1355}$ 

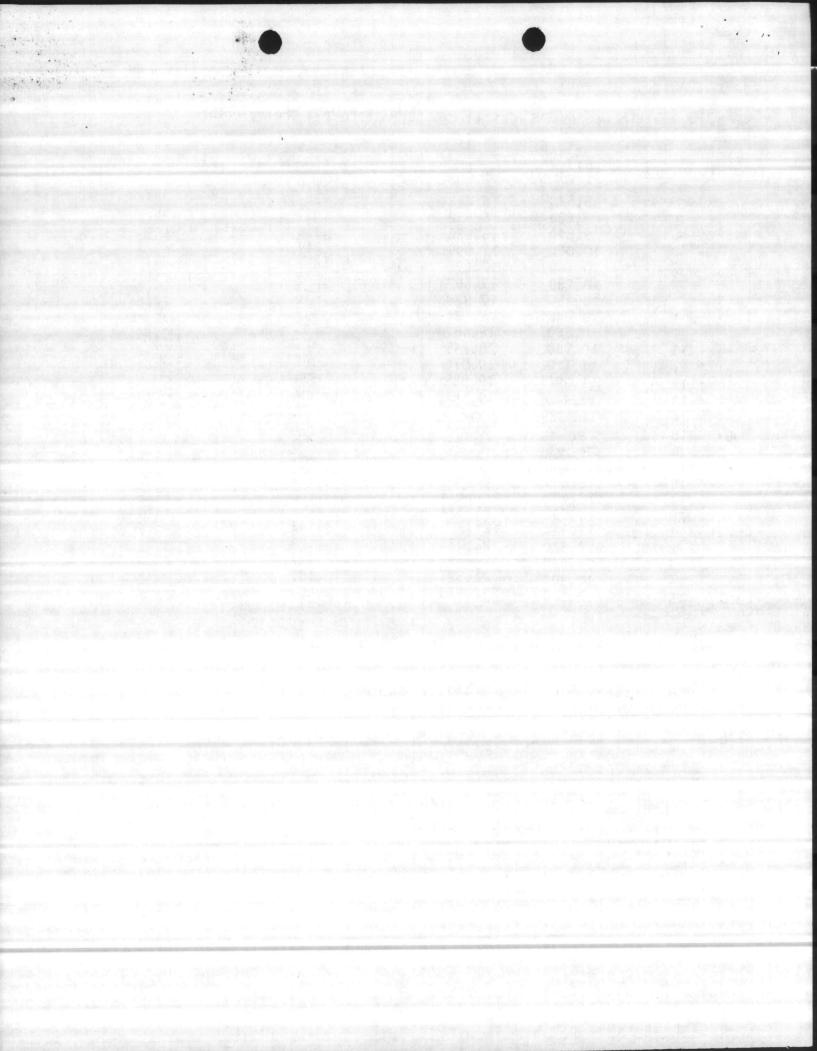


## c. Annual Incremental Landfill Maintenance Cost - Cherry Point

Year Yr. of Op.	1977\$*	1986\$*	(0% differential)	Present Value
	\$ 9,520	\$ 16,278	.954	\$ 15,530
1986 2	9,680	16,552	.867	14,350
3	9,840	16,826	.788	13,258
Ž	10,000	17,099	.717	12,260
5	10,160	17,373	.652	11,327
6	10,230	17,492	.592	10,355
7	10,480	17,920	.538	9,6413
8	10,640	18,194	.489	8,896
ĝ	10,800	18,467	.445	8,218
10	10,960	18,741	.405	7,590
11	11,120	19.014	.368	6,997
	11,280	19,288	.334	6,442
12	11,440	19,561	.304	5,946
13		19,835	.276	5,474
14	11,600	20,109	.251	5,047
2000 15	11,760	20,382	.228	4,647
16	11,920	20,656	.208	4,296
17	12,080	20,929	.189	3,955
18	12,240	21,203	.172	3,647
19	12,400	21,477	.156	3,350
20	12,560	21,750	.142	3,088
21	12,720	22,024	.129	2,841
22	12,880	22,297	.117	2,608
23	13,040	22,571	.107	2,415
24	13,200	22,845	.097	2,215
2010 25	13,360	22,043		\$174 393

Total Present Value Maintenance Costs - Cherry Point

Escalation from 1977 to 1986 =  $\frac{2317}{1355}$  = 1.70966

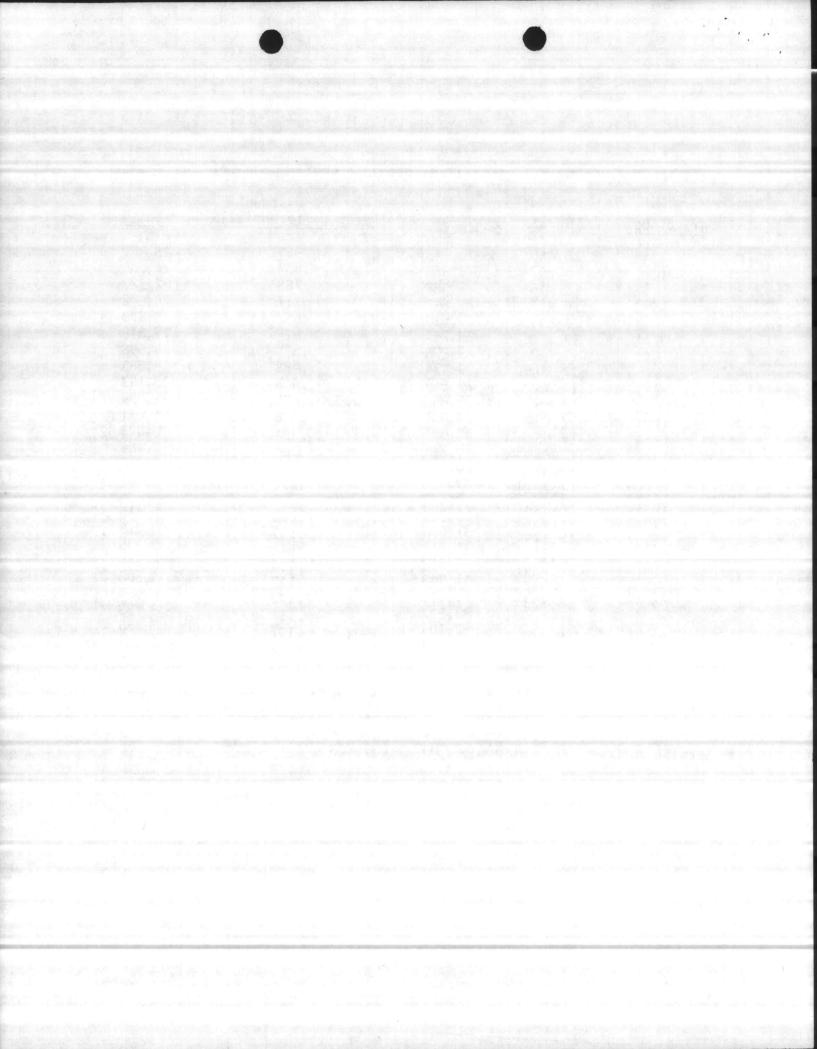


## d. Annual Incremental Landfill Maintenance Cost - Camp Lejeune

Υr	. of Op.	1977\$*	1986\$*	10% Discount (0% differential)	Present Value
		\$ 16,460	\$ 28,145	.954	\$ 26,851
1986	1	16,597	28,380	.867	24,605
	2 3	16,715	28,582	.788	22,522
	3	16,853	28,818	.717	20,662
	4	16,971	29,019	.652	18,920
	5	17,108	29,254	.592	17,318
	6	17,064	29,178	.538	15,698
	,	17,202	29,414	.489	14,383
	8	17,339	29,649	.445	13,193
	10	17,457	29,850	.405	12,089
	11	17,594	30,085	.368	11,071
		17,551	30,011	.334	10,023
	12	17,688	30,211	. 304	9,184
	13	17,825	30,480	.276	8,412
	14	17,781	30,404	.251	7,631
2000	15	17,919	30,640	.228	6,986
	16	18,037	30,842	.208	6,415
	17	18,174	31,076	.189	5,873
	18	18,311	31,311	.172	5,385
	19 20	18,429	31,512	.156	4,916
	21	18,567	31,748	.142	4,508
	22	18,523	31,673	.129	4,085
	23	18,660	31,907	.117	3,733
		18,778	32,109	.107	3,435
2010	24 25	18,915	32,343	.097	3,137
To	tal Presen	t Value Main	tenance Costs	- Camp Lejeune	\$281,035

Total Present Value Maintenance (

Escalation from 1977 to 1986 =  $\frac{2317}{1355}$  = 1.70966

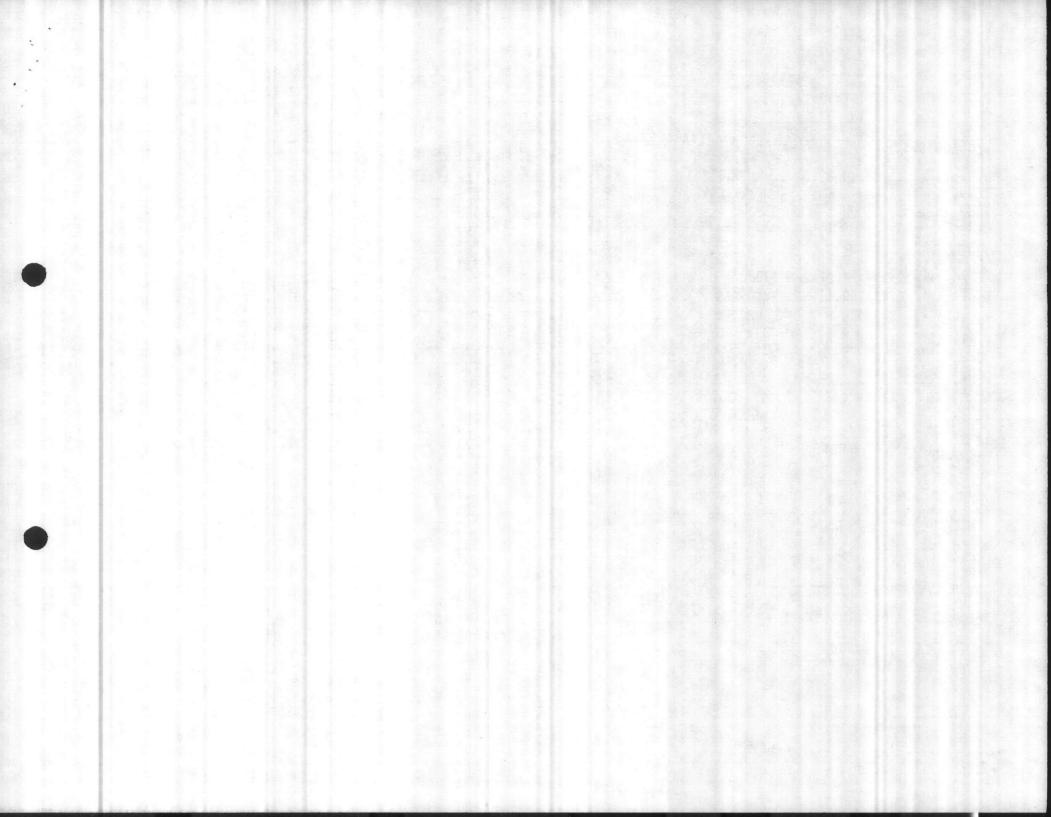


tons/	/hr trash steam/hr u/hr	rash burned	- 24 hours/day X 5830 lb. stea X 1254 Btu/lb** X \$12.99/MMBtu* X 8760 hrs/yr X discount fact	**	= equival = MMBtu/h = \$/hr = \$/yr = present		10% Discount	1 1	Page 27 of
Year	- tons/day	tons/hr.	lbs steam/hr.	Displaced Oil Input MMBtu/hr.	\$/hr.	\$/yr. (8	3% differential)	Present \$3,858,654	Value
1986 1 2 3 4 1990 5 6 7 8 9 10 11 12 13 14	128 129 131 132 134 135 136 137 138 140 141 142 143	5.33 5.38 5.46 5.50 5.58 5.62 5.67 5.71 5.75 5.83 5.88 5.92 5.96 6.00	31,093 31,336 31,822 32,065 32,551 32,794 33,037 33,280 33,522 34,008 34,251 34,494 34,737 34,980 35,223	38.99 39.30 39.90 40.21 40.82 41.12 41.43 41.73 42.04 42.65 42.95 43.26 43.86 43.86 44.17	\$ 444.87 448.02 454.86 458.40 465.35 468.77 472.30 475.72 479.26 486.21 489.63 493.16 496.58 500.00 503.54 506.96	\$3,893,697 3,924,655 3,984,573 4,015,531 4,076,448 4,106,403 4,137,369 4,167,324 4,198,28 4,259,19 4,289,15 4,350,07 4,350,07 4,380,03 4,410,99 4,440,95	973 955 938 921 7 904 5 888 4 871 2 856 9 840 8 825 6 810 5 795 5 781 2 766	3,818,689 3,805,267 3,766,568 3,754,409 3,712,192 3,673,980 3,629,739 3,593,729 3,577,727 3,538,556 3,499,294 3,458,310 3,420,807 3,378,820 3,339,595	
2000 15 16 17 18 19 20 21 22 23 24 2010 25	145 146 148 149 150 152 153 154 155 157	6.04 6.08 6.17 6.21 6.25 6.33 6.38 6.42 6.46 6.54	35,466 35,952 36,194 36,438 36,923 37,166 37,409 37,652 38,138 38,381	44.47 45.08 45.39 45.69 46.30 46.61 46.91 47.22 47.82 48.13	513.91 517.46 520.87 527.82 531.35 534.77 538.30 545.15 548.68	4,501,86 4,532,82 4,562,78 4,623,70 4,654,60 4,684,6 4,715,5 4,775,4 4,806,4 ent Value Fue	739 .725 .725 .36 .712 .33 .699 .61 .687 .20 .674 .78 .662 .96 .650 .54 .638	3,326,881 3,286,299 3,248,703 3,231,968 3,197,753 3,157,434 3,121,713 3,104,07 3,066,51	22 22 7

<sup>\*</sup> Includes blowdown and feedwater heating

<sup>\*\*</sup> Includes Camp Geiger Plant Efficiency \*\*\* \$5.92 (Jan. 82) escalated to Oct. 87

Fy82 Fy83 Fy84 Fy85 Fy86 \$5.92 X 1.14 X 1.14 X 1.14 X 1.14 X 1.14 = 11.40

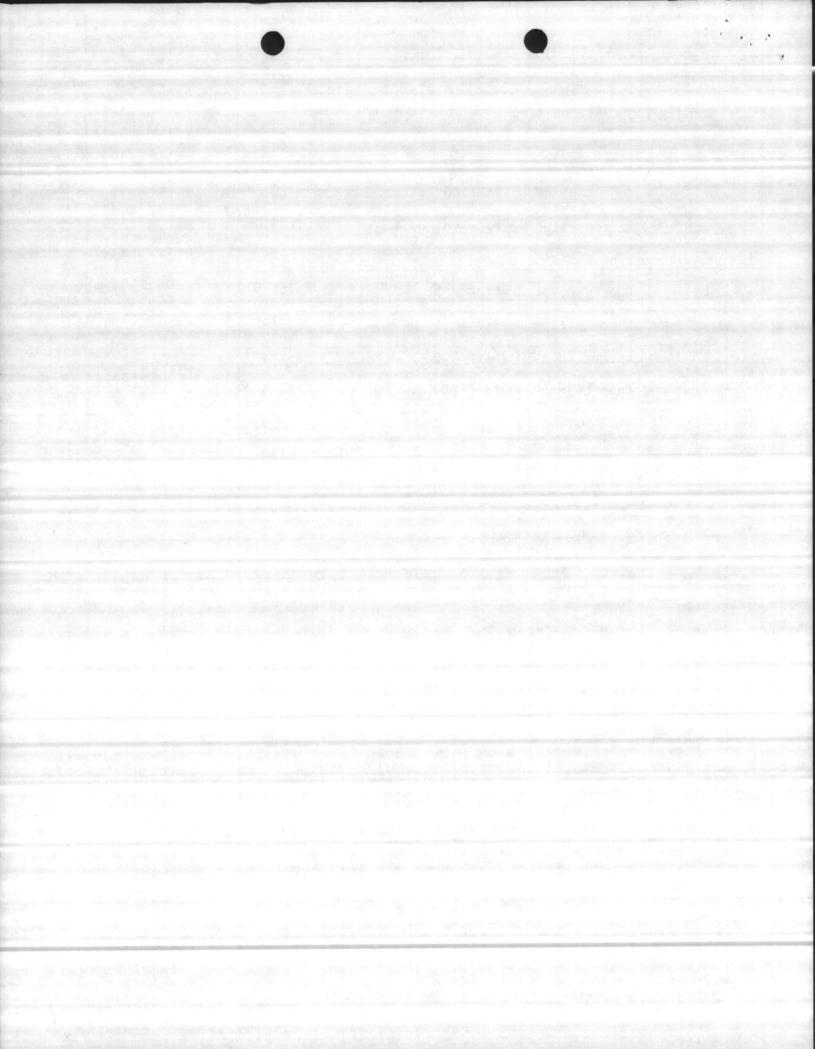


### Summary Sheet Alternative 2B - Total Present Value

Uniform Annual Cost

Investment Costs	
Cherry Point Capital Costs	\$ 428,981
Boiler Plant Replacement Cost	3,404,017
Recurring Costs	
Cherry Point Development	1,186,279
Camp Lejeune Development	4,367,034
Cherry Point Maintenance	174,393
Camp Lejeune Maintenance	281,035
Fuel Oil	\$86,567,674
Total Present Value Alternative 2B	96,409,413
Discount Factor 9.524	

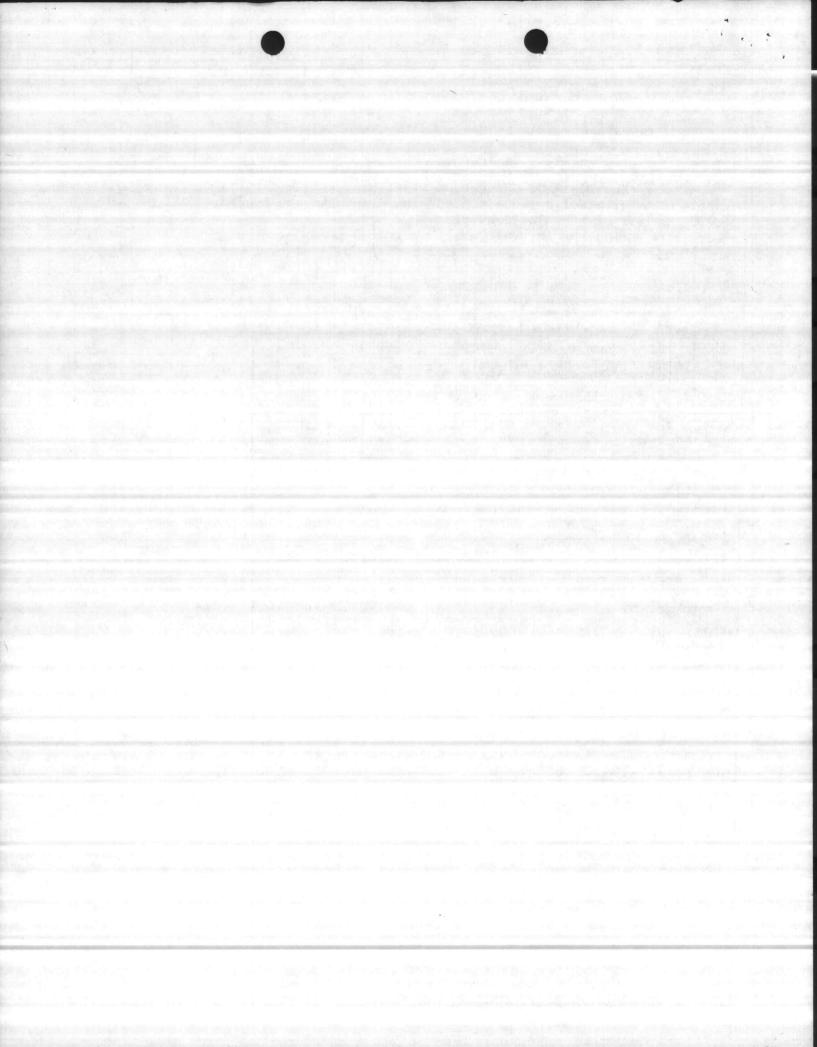
10,122,785



REQUEST FOR PROJECT SITE APPROVAL

1 10 10 10 10 L	. 70		
PROJECT NUMBER	ACTIVITY UIC		
P-822	67001		

	1069 (		UIP	DS OF 50			P-822_			67001
CO	""AN	DAN	OF T	HE MARINE CORPS (CODE LFF-1)		1 1				(4700
	MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542									
	CITE			E AND PROJECT TITLE .		TYPE OF F	UNDING	COST (\$000	))	PROGRAM YEA
				FACILITY ENERGY IMPROVEMENTS		MCC		23,00	0	FY-86
FOR USE BY REQUESTE	capable of burning solid waste & producing Investme 30,200 lbs/hour of steam & 725KW of					This is an FY-86 Energy Conservation ent Program (ECIP) project.  By Fixed none and vixnoiure,  DATE				
	TYP! Si	E OF	MAF LOC	ation (encl 1) DATE - R. E.	2	ARLSON,	CDR, C	CEC, USN		7 JAN 198
-		The same		ANALYSIS PUBLIC  (Place a check ( ) in box apposite each tiem Y = Yes; N = No. N4 = N	C W	NORKS O		ne de la companya de La companya de la co	o virgi	ECE.VFL
	Y	IN	NA.	PROJECT SITING CONSIDERATION	Y	N NA	PR	OJECT SITING	CONSIDE	F47.C*
	& COMPATIBLE WITH ACTIVITY PLANNED DEVELOPMENT GOALS					3 COMPLIE	S WITH THE	FOLLOW!	NG CA.TERIA	
		1	1	DEMONSTRATES SOUND PLANNING PRINCIPLES	(1) AMMUNITIO				EXPLO	SIVES
	-	1000		C MEETS MINIMUM PLANNING AND SITING CRITERIA	4.13	(2) ELECTROMA			AGNETIC RADIATION	
SECTION B HOMC REVIEW AND ANALYSIS							(3) AIRFIELD SAFETY			
							(4) NO:	SE INTENSIT	Y	
			111111:11				(5) FIR	E PROTECTIO	)N	
	COMPATIBLE WITH ACTIVITY MASTER PLAN (Check appropriate box)  IDENTICAL  NOT SHOWN BUT CONSISTENT							OWN AND IN		
				ENT BUT CONSISTENT				409 150 516	DATE	
	CP	-	DESB	T.FICATION'S PEQUESTED ICHECK!  CNO NAVSEA NAVELEX NAVAIR	071	HER				
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EVIE	H.									
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NIC.										



#### SITE LOCATION MAP

#### P-822, proposed CO-GENERATION PLANT

