FOSSIL POWER GROUP
PROJECT AUTHORIZATION SUMMARY

Capital Project (X) O&M Project ( )

Work Document Number: KIF259

Plant/Area: KINGSTON Unit: 00 Outage#: N/A Record Number: 96

Project Name: KIF--COAL UNLOADING AND BLENDING FACILITY

FPG Category: FUEL HANDLING

CPJ Category: Econ/Revenue

New( ) Revised (X) (for Requested Phase)

Approved Budget (Spend Plan)	21050	0	0	0	0	0	0	0	

REQUESTED APPROVAL FOR PHASE 3 — COST SUMMARY ($000)

PROJECT PHASE ACTIVITY SCHEDULE		Prior Yrs Actuals	2000	2001	2002	2003	2004	2005	2006	Future Years	Total Project
1 - Study	Start 02/03/1998	728	42	0	0	0	0	0	0	0	770
	Complete 12/04/1998										
2 - Design and LL Procurement	Start 12/11/1998	4275	6926	29	0	0	0	0	0	0	11230
	Complete 07/27/1999										
3 - Implementation (Incl. Retirement)	Start 04/30/1999	6108	14556	187	0	0	0	0	0	0	20851
	Complete 12/29/2000										
Total Project (Requested Approval)		11111	21524	216	0	0	0	0	0	0	32851

Project Benefit Summary

Net Present Value 70740 Profitability Index 4.549

Estimate of detail Items Included In costs above:
Estimate for Long Lead Procurement: 9323
Estimate for Retirement/Removal: 0

Explanation of Changes (Cost, Schedule, or Benefit revision)

This funding request ($690k) is due to the coal yard pump discharge piping installation. The total addition is made up of the following: 1) Replace discharge piping $275k, 2) Install new electrical feed to floating platform $65k. 3)Engineering and Engineering supt $81k. 4) Dredge pond to provide additional storage $100k. and 5)Controls, Float Switches, dewatering pump rental and partial dredging $169k.

PREVIOUS APPROVAL FOR PHASE 3 — COST SUMMARY ($000)

PROJECT PHASE ACTIVITY SCHEDULE		Prior Yrs Approval	2000	2001	2002	2003	2004	2005	2006	Future Years	Total Project
1 - Study	Start 02/03/1998	728	0	0	0	0	0	0	0	0	728
	Complete 12/04/1998										
2 - Design and LL Procurement	Start 12/11/1998	4275	6834	0	0	0	0	0	0	0	11109
	Complete 07/27/1999										
3 - Implementation (Incl. Retirement)	Start 04/30/1999	6108	14216	0	0	0	0	0	0	0	20324
	Complete 05/31/2000										
Total Project (Current Approval)		11111	21050	0	0	0	0	0	0	0	32161

Project Benefit Summary

Net Present Value 70740 Profitability Index 4.549

Estimate of detail Items Included In costs above:
Estimate of Long Lead procurement: 9323
Estimate of Retirement/Removal: 0

RECOMMENDED FOR APPROVAL

Joint Project Team Leader — Date 6/14/00

Plant Approval

Plant Manager — Date 6/14/00

FPEP Approval

FPEP Secretary — Date

Printed 06/14/2000 Time 15:10:42

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL UNLOADING AND BLENDING FACILITY	KIF259 Rev#: 2

I. PROJECT DESCRIPTION

ORGANIZATION

OWNER: FPG

LEAD: Yard Operations

LOCATION

LOC: Yard Operations

TECHNICAL CONTACT

NAME: Steve Brewster

PHONE: 751-3643

PROJECT CATEGORY

CATEGORY: ECONOMIC / REVENUE

PROGRAM CODE: No Program

START DATE: 2/3/1998

IN-SERVICE DATE: 12/9/2000

PROBLEM DEFINITION/REASON FOR IMPROVEMENT

The cost impact of the planned TVA Title IV SO2 compliance strategy must be minimized. Kingston must develop options to increase the potential for competitive fuel suppliers. The plants inability to receive unit trains into the yard increases transportation costs. Currently, plant personnel must shuttle cars approximately 6 miles from the Caney Creek yard to the plant. TVA is also responsible for maintenance of this 6 mile spur, requiring additional personnel and higher maintenance costs. To remain competitive in a deregulated market, Kingston must produce power at the lowest cost possible. Delivered fuel cost accounts for about 80% of Kingstons operating budget. To improve competitiveness and meet TVAs Title IV SO2 compliance strategy at minimal cost, Kingston must minimize fuel transportation costs and develop options to improve competition among the fuel suppliers.

PROJECT SCOPE

Design and construct a high capacity rapid discharge coal unloading and blending facility to efficiently handle direct throughput of unit trains supplying either eastern coals or PRB coals for blending. TVA and Norfolk Southern (NS) railroad will commit to a 10 year contract for the bulk of deliveries to the plant that will significantly reduce freight rates. In addition, TVA will upgrade and NS will maintain the existing access railroad to allow delivery of unit trains directly into the yard.

IMPACT/CONSEQUENCES OF DELAY

To minimize the cost impact of meeting the planned Title IV SO2 complinace strategy, this project needs to be completed as soon as possible. This will enable higher sulfur fuel supply contracts to be replaced as they expire with 1.2# coal contracts at greatly reduced freight rates. If this project is delayed 1 year, the NPV is reduced by $14,109k by not getting the benefit of reduced freight rates by $3.47/ton.

PROJECT PERFORMANCE MEASUREMENT

Achieve average freight rate for NS delivered coal of $5.96/ton (Kenova District rates including bottom dump cars) in FY 2000, while the projected freight rate for CSX delivered coal remains at about $9.51/ton for 1.2# SO2 coal. Additionally, yard operations O&M cost will be reduced by $200k per year, as they will no longer have to shuttle cars from Caney Creek yard to the plant, nor will they continue to be responsible for maintaining the railroad spur into the plant.

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL UNLOADING AND BLENDING FACILITY	KIF259 Rev#: 2

II. PROJECT ECONOMIC EVALUATION

COST

SUNK CAPITAL PROJECTS:	$11,111
SUNK O&M PROJECTS:	0
SUNK O&M BASE:	0
REMAINING COST:	$21,740
TOTAL COST:	$32,851
ESTIMATE TYPE:	Conceptual

ECONOMIC INDICATORS

NPV:	68,458.0
PI:	4.15
IRR:	61.0%
ORIGINAL PAYBACK:	3
SIMPLE PAYBACK:	2
BASE YEAR:	2000

	SUNK
Capital Projects:	11,111
O&M Projects:	0
Benefit:	0
O&M Base:	0

	OUT YEARS
Capital Projects:	0
O&M Projects:	0
Benefit:	0
O&M Base:	0

Year:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Capital Projects:	21,524	216	0	0	0	0	0	0	0	0
O&M Projects:	0	0	0	0	0	0	0	0	0	0
Benefit:	0	11,735	14,010	13,338	14,257	14,727	15,140	15,530	16,086	16,475
O&M Base:	0	0	0	0	0	0	0	0	0	0
Year:	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Capital Projects:	0	0	0	0	0	0	0	0	0	0
O&M Projects:	0	0	0	0	0	0	0	0	0	0
Benefit:	16,897	17,237	17,583	17,937	18,298	18,666	19,042	19,425	0	0
O&M Base:	0	0	0	0	0	0	0	0	0	0

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL UNLOADING AND BLENDING FACILITY	KIF259 Rev#: 2

II. PROJECT ECONOMIC EVALUATION (continued)

COST ASSUMPTIONS

COST ASSUMPTIONS	RISKS
1. Phase 1 Study Cost	Current forecast from PE on 4/20/99
2. Contract for unloader, conveying, and blending system	Current forecast
3. Transmission Group - 161kV Supply Connection	Current forecast
4. Power Supply	Current forecast)
5. Fire Protection contract	Current forecast
6. Rehabilitate existing spur	Current forecast)
7. Engineering Design and Field Support	Current forecast
8. Permitting	Current forecast
9. Balance of Plant Installation	Current forecast
10. Misc Plant support	Current forecast 4/24/99
11. Contingency	Current forecast
12. Coal yard Run-Off Discharge Piping $690k	Cost Estimate from Chattanooga estimating

BENEFIT ASSUMPTIONS

BENEFIT ASSUMPTIONS	RISKS
1.	NS to provide maintenance on existing spur (worth 4500k/year) partially offset by extra cost to TVA of providing 24 hr/day unloading staffing (estimated at $300k/year). Values are escalated bt 3.3%
2. Reduction in freight rates for rail coal deliveries	NS proposal to reduce Kenova District freight rates by $3.47/ton (including providing leased bottom dump cars). Reduction applied to annual burn forecast to calculate yearly savings (Values shown are for FY 2001 in $1,000).
3. NS has agreed to rebate $.25/ton on all deliveries from NS to offset 10% of project cost up to a maximum of $1,500k.	NS proposal was applied to burn forecast resulting in savings of $936k in FY 2000 and $564k in FY 2001 (Values shown are in $1,000).
4. Coal Yard Runoff Pond Benefits: Rent diesel pump/yr=101k, Replace HED pipe=40k, Risk of damage to facility=$3mX20% chance =$600k, Interim coal handling =$330k Total Benefits = $1071.	Acutal cost of renting pumps and vendor quote on piping. Other benefits are estimates from FES and HED.

CAPITAL PROJECT ECONOMIC ANALYSIS INPUT
KINGSTON FOSSIL PLANT
UNITS 5-9

PROJECT NAME	UNIT	PROJECT ID	ANALYSIS DATE
KIF--COAL UNLOADING AND BLENDING FACILITY (Coal Yard Pond Addition)	0	KIF259	18-Apr-99

PREPARED BY:					
NAME :	PAT NEWSOM	LOCATION :	LP2P-C	PHONE :	751-2379

BENEFIT INPUT SECTION

Prior Years Cost ($000'S): 29359

FISCAL YEAR	HEAT RATE IMPRVMNT BTU/KWH	EFOR FORCED OUTAGE HOURS	EFOR FORCED DERATING MW	EFOR FORCED DERATING HRS	EFOR MWHL	O&M SAVINGS IN ($ 000'S)	STATION SERVICE SAVINGS IN KWH	OTHER BENEFITS SAVINGS IN ($ 000'S)	OUTAGE REDCTNS OUTAGE HRS REDUCED	PROJECT COST ($000'S)
1999	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	3492
2001	0	0	0	0	0	200	0	11734.5	0	0
2002	0	0	0	0	0	206.6	0	14010	0	0
2003	0	0	0	0	0	213.4178	0	13338	0	0
2004	0	0	0	0	0	220.4605874	0	14257	0	0
2005	0	0	0	0	0	227.7357868	0	14727	0	0
2006	0	0	0	0	0	235.2510677	0	15140	0	0
2007	0	0	0	0	0	243.014353	0	15530	0	0
2008	0	0	0	0	0	251.0338266	0	16086	0	0
2009	0	0	0	0	0	259.3179429	0	16475	0	0
2010	0	0	0	0	0	267.875435	0	16897	0	0
2011	0	0	0	0	0	276.7153244	0	17237	0	0
2012	0	0	0	0	0	285.8469301	0	17583	0	0
2013	0	0	0	0	0	295.2798788	0	17937	0	0
2014	0	0	0	0	0	305.0241148	0	18298	0	0
2015	0	0	0	0	0	315.0899106	0	18666	0	0
2016	0	0	0	0	0	325.4878776	0	19042	0	0
2017	0	0	0	0	0	336.2289776	0	19425	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0

Contingency included in Project Estimate ($000'S): 0

CALCULATION AND BENEFIT VALUE SECTION

FISCAL YEAR	HEAT RATE BENEFIT IN ($ 000'S)	EFOR MWH IMPROVE IN ($ 000'S)	EFOR UNIT EFOR IMPACT	EFOR SYSTEM EFOR IMPACT	O&M SAVINGS IN ($ 000'S)	STATION SERVICE SAVINGS IN ($ 000'S)	OTHER BENEFITS SAVINGS IN ($ 000'S)	OUTAGE REDCTNS SAVINGS IN ($ 000'S)	BENEFIT VALUE* IN ($ 000'S)
1999	0	0	0.00%	0.000%	0	0	0	0	0
2000	0	0	0.00%	0.000%	0	0	0	0	0
2001	0	0	0.00%	0.000%	200	0	11,735	0	11,935
2002	0	0	0.00%	0.000%	207	0	14,010	0	14,217
2003	0	0	0.00%	0.000%	213	0	13,338	0	13,551
2004	0	0	0.00%	0.000%	220	0	14,257	0	14,477
2005	0	0	0.00%	0.000%	228	0	14,727	0	14,955
2006	0	0	0.00%	0.000%	235	0	15,140	0	15,375
2007	0	0	0.00%	0.000%	243	0	15,530	0	15,773
2008	0	0	0.00%	0.000%	251	0	16,086	0	16,337
2009	0	0	0.00%	0.000%	259	0	16,475	0	16,734
2010	0	0	0.00%	0.000%	268	0	16,897	0	17,165
2011	0	0	0.00%	0.000%	277	0	17,237	0	17,514
2012	0	0	0.00%	0.000%	286	0	17,583	0	17,869
2013	0	0	0.00%	0.000%	295	0	17,937	0	18,232
2014	0	0	0.00%	0.000%	305	0	18,298	0	18,603
2015	0	0	0.00%	0.000%	315	0	18,666	0	18,981
2016	0	0	0.00%	0.000%	325	0	19,042	0	19,367
2017	0	0	0.00%	0.000%	336	0	19,425	0	19,761
2018	0	0	0.00%	0.000%	0	0	0	0	0
2019	0	0	0.00%	0.000%	0	0	0	0	0
2020	0	0	0.00%	0.000%	0	0	0	0	0

ECONOMIC INDICATORS

NPV @ 15% : 76617 IRR : 355.52

PI @ 15% : 26.231 PAYBACK in YEARS : 2

5 YEAR PI @ 15% : 8.6015343

DEFERRAL EVALUATION

NPV of Deferral @ 15% : 67989

When deferred for : 18 months.

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL UNLODING AND BLENDING FACILITY (Coal Yard Pond Addition)	KIF259

PROJECT ECONOMIC EVALUATION

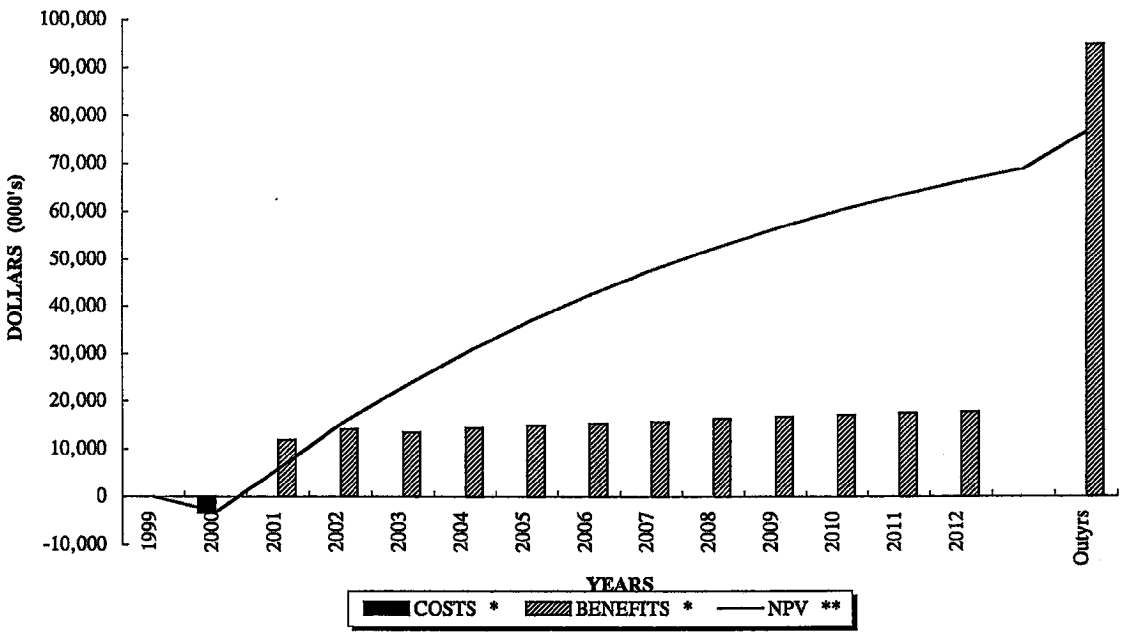
PROJECT COST

	Thousands of Dollars
SUNK COSTS:	29359
REMAINING COST:	3492
TOTAL COST:	32851
CONTINGENCY:	0

PROJECT ECONOMIC INDICATORS

NPV @ 15% :	76617	IRR:	355.52 %
PI @ 15% :	26.231	PAYBACK:	2 yrs

PROJECT CASH FLOW



YEARS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	0	Outyrs
COSTS *	0	-3492	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BENEFITS *	0	0	11935	14217	13551	14477	14955	15375	15773	16337	16734	17165	17514	17869	0	94945
NPV **	0	-3037	5987	15334	23083	30281	36746	42526	47682	52327	56463	60152	63425	66329	68905	76617

* Non-discounted Cash Flow

** Cumulative value of Present worth @ 15% Discount Rate

CAPITAL PROJECT BENEFIT ASSUMPTIONS
KINGSTON FOSSIL PLANT
UNITS 5-9

PROJECT NAME	UNIT	PROJECT ID	ANALYSIS DATE
F--COAL UNLODING AND BLENDING FACILITY (Coal Yard Pond Addition)	0	KIF259	18-Apr-99

BENEFIT ASSUMPTIONS:

1. Annual O&M reduction in yard operation. Norfork Southern (NS) to provide maintenance on existing spur (worth 4500k/yr), partially offset by extra cost to TVA of providing 24 hr/day unloading staffing (estimated at $300k/yr). Valus escalated 3.5%. Most probable is 200.

2. Reduction in freight rates for rail coal deliveries. NS proposal to reduce Kenova District freight rates by $3.47/ton (including providing leased bottom dump car). Reduction applied to annual burn forecast to calculate yearly savings (values shown are foe FY 2001 in $1,000). Most probable is 13430.

3. NS has agreed to rebate $.25/ton on all deliveries from NS to offset 10% of project cost up to a maximum of $1,500k. NS proposal was applied to burn forecast resulting in savings of $936k in FY 2000 and $564k FY 2001. Most probable vale is 1500.

4. Used long range Medium Burn forescast to project coal burn (average burn of 3,871,201 tons).

5. O&M savings provided by Clark Morris of $500k/yr due to reduced staffing and NS providing maintenance on the spur.

6. Assumed project cost of $20 million with NS contributing $1,5 million thru reduced rail rates of $.25/ton.

7. Fuel sving are based on an Eastern 1.2# coal supply.

8. Projected freight rate savings of $3.47/ton in 1998 dollars.

9. Assumed $500k for rehab of existing spur.

10. Assumed cost of additional staffing to maintain 24 unloading capability to be $300k in FY 1998 dollars.

11. Benefits from Coal Yard Runoff pond

Rent on portable diesel pump =	101k
Replace Temp. HED pipe	40k
Risk of damage 3mX20%=	600k
Interim Coal Handling=	330k
Total=	1071

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	[redacted] Rev#: 2

I. PROJECT DESCRIPTION

ORGANIZATION

OWNER: FPG

LEAD: Yard Operations

LOCATION

LOC: Kingston Fossil Plant

TECHNICAL CONTACT

NAME: Steve Weaver

PHONE: (423)751-3536

PROJECT CATEGORY

CATEGORY: ECONOMIC / REVENUE

PROGRAM CODE: No Program

START DATE: 5/15/2000

IN-SERVICE DATE: 12/9/2000

PROBLEM DEFINITION/REASON FOR IMPROVEMENT

Coal yard drainage basin overflows its banks during moderate rains of 1.75 inches/24 hrs. The water flows onto the coal starage area which will fill up the new underground coal live pile reclaim structure. The potential for this magnitude of rain is on the average 4.75 times per year, based on historical data. Settlement has reduced the capacity by at least 80%. Only one of the two pumps can be run at one time due to the deteriorated discharge piping. Power feeds are unreliable. Flooding in the new reclaim tunnels can occur shutting off the coal supply until dewatered. This flooding will damage the new motors, variable speed drive electronic circuitry, belt scales, and limit switches.

PROJECT SCOPE

Dredge pond to original storage capacity and enlarge pond to maximize capacity. Install a new 10 inch HDPE discharge pipe from pumps to ash pond (4200ft.), sleeve under railroad tracks and plant road. Install pump float switches for auto start/stop. Install a new power feed from new electrical equipment room through new reclaim tunnel, and a direct burial armored cable from end of tunnel to the pumps. Cable will be buried 5 feet deep and sleeved at road crossings.

IMPACT/CONSEQUENCES OF DELAY

Possible derating of all 9 units at Kingston and possible damage to coal handling equipment.

PROJECT PERFORMANCE MEASUREMENT

Will eliminate the possibility of flooding related damage to new coal handling equipment. Reduce/eliminate environmental impacts of pond overflow into river.

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	[redacted] Rev#: 2

II. PROJECT ECONOMIC EVALUATION

COST

SUNK CAPITAL PROJECTS:	$0
SUNK O&M PROJECTS:	0
SUNK O&M BASE:	0
REMAINING COST:	$690
TOTAL COST:	$690
ESTIMATE TYPE:	Conceptual

ECONOMIC INDICATORS

NPV:	269.0
PI:	1.41
IRR:	80.0%
ORIGINAL PAYBACK:	1
SIMPLE PAYBACK:	1
BASE YEAR:	2000

	SUNK
Capital Projects:	0
O&M Projects:	0
Benefit:	0
O&M Base:	0

	OUT YEARS
Capital Projects:	0
O&M Projects:	0
Benefit:	0
O&M Base:	0

Year:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Capital Projects:	474	216	0	0	0	0	0	0	0	0
O&M Projects:	0	0	0	0	0	0	0	0	0	0
Benefit:	0	1,071	0	0	0	0	0	0	0	0
O&M Base:	0	0	0	0	0	0	0	0	0	0
Year:	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Capital Projects:	0	0	0	0	0	0	0	0	0	0
O&M Projects:	0	0	0	0	0	0	0	0	0	0
Benefit:	0	0	0	0	0	0	0	0	0	0
O&M Base:	0	0	0	0	0	0	0	0	0	0

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	[redacted] Rev#: 2

II. PROJECT ECONOMIC EVALUATION (continued)

COST ASSUMPTIONS

COST ASSUMPTIONS	RISKS
1. HDPE Pipe Replacement. ($275k)	Based on HED Estimate
~~2. Install Electrical Feed. Route is still preliminary - protection from yard rolling equipment. ($65k)~~	~~Conceptual estimate from engineering~~
3. Dredge Pond. Best guess based on original contours. ($100k)	HED conceptual estimate.
4. Controls and float switches ($4k)	Based on actual costs of similar equipment.
5. Engineering Costs ($81k)	Engineering estimate
6. Pump rental and dredging ($165k)	Actual cost of renting similar construction pumps.
7. Total Project Cost $690k	

BENEFIT ASSUMPTIONS

BENEFIT ASSUMPTIONS	RISKS
1. Avoid rental of temporary pump and associated labor ($101k) and pipe replacement costs ($40k)	Based on actual cost of similar rental equipment and quote from piping vendor.
2. Avoid flooding new facility. Damage from flooding = $3.0m with 20% probability/yr. = $600k	Damage assessment by Roberts & Schaefer who built the facility.
3. Emergency Interim Coal Handling ($330k)	Yard Systems estimate

CAPITAL PROJECT ECONOMIC ANALYSIS INPUT
KINGSTON FOSSIL PLANT
UNITS 5-9

PROJECT NAME	UNIT	PROJECT ID	ANALYSIS DATE
COAL YARD RUNOFF POND - PIPING UPGRADE	1 THRU 9		

PREPARED BY:					
NAME :	Steve Weaver	LOCATION :	LP 2T-C	PHONE :	(423) 751-3536

BENEFIT INPUT SECTION

Prior Years Cost ($000'S): 0

FISCAL YEAR	HEAT RATE IMPRVMNT BTU/KWH	EFOR				O&M SAVINGS IN ($ 000'S)	STATION SERVICE SAVINGS IN KWH	OTHER BENEFITS SAVINGS IN ($ 000'S)	OUTAGE REDCTNS OUTAGE HRS REDUCED	PROJECT COST ($000'S)
		FORCED OUTAGE HOURS	FORCED DERATING MW	FORCED DERATING HRS	MWHL					
1999	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	474
2001	0	0	0	0	0	1071	0	0	0	216
2002	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0

Contingency Included in Project Estimate ($000'S): 0

CALCULATION AND BENEFIT VALUE SECTION

FISCAL YEAR	HEAT RATE BENEFIT IN ($ 000'S)	EFOR				O&M SAVINGS IN ($ 000'S)	STATION SERVICE SAVINGS IN ($ 000'S)	OTHER BENEFITS SAVINGS IN ($ 000'S)	OUTAGE REDCTNS SAVINGS IN ($ 000'S)	BENEFIT VALUE* IN ($ 000'S)
		MWH IMPROVE IN ($ 000'S)		UNIT EFOR IMPACT	SYSTEM EFOR IMPACT					
1999	0	0		0.00%	0.000%	0	0	0	0	0
2000	0	0		0.00%	0.000%	0	0	0	0	0
2001	0	0		0.00%	0.000%	1,071	0	0	0	1,071
2002	0	0		0.00%	0.000%	0	0	0	0	0
2003	0	0		0.00%	0.000%	0	0	0	0	0
2004	0	0		0.00%	0.000%	0	0	0	0	0
2005	0	0		0.00%	0.000%	0	0	0	0	0
2006	0	0		0.00%	0.000%	0	0	0	0	0
2007	0	0		0.00%	0.000%	0	0	0	0	0
2008	0	0		0.00%	0.000%	0	0	0	0	0
2009	0	0		0.00%	0.000%	0	0	0	0	0
2010	0	0		0.00%	0.000%	0	0	0	0	0
2011	0	0		0.00%	0.000%	0	0	0	0	0
2012	0	0		0.00%	0.000%	0	0	0	0	0
2013	0	0		0.00%	0.000%	0	0	0	0	0
2014	0	0		0.00%	0.000%	0	0	0	0	0
2015	0	0		0.00%	0.000%	0	0	0	0	0
2016	0	0		0.00%	0.000%	0	0	0	0	0
2017	0	0		0.00%	0.000%	0	0	0	0	0
2018	0	0		0.00%	0.000%	0	0	0	0	0
2019	0	0		0.00%	0.000%	0	0	0	0	0
2020	0	0		0.00%	0.000%	0	0	0	0	0

ECONOMIC INDICATORS

NPV @ 15% : 234 IRR : 80.38

PI @ 15% : 1.407 PAYBACK in YEARS : 1

5 YEAR PI @ 15% : 1.4070753

DEFERRAL EVALUATION

NPV of Deferral @ 15% : 0

When deferred for : Deferral not considered

KIF353 COAL YD RUNOFF PIPE.xls 06/13/2000

CALCULATION SECTION

PROJECT ID: 0

PAYBACK YEAR DISPLAY

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
COSTS	0	-474	-216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BENEFITS	0	0	1071	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRESENT VALUE	0	-412	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234

INITIAL GUESS: 0.5

If the IRR box displays the message "#NUM", change the initial guess number (in the box at left) either up or down until the "#NUM" is replaced by a number.

IRR: 80.38

NOTE: For this calculation to work, the first year total (CELL E42 or later cell in row 42) below must be a negative number. If the sum is not negative go to the ECONEVAL "BENEFIT INPUT SECTION" and adjust the benefits claimed in the first year downward until the total is negative.

ENTER PAYBACK YEAR: 1

Use the "COSTS" and "PRES VALUE" lines above (lines 9 & 11) . Identify the last year that has a cost in the "COST" line. Note that year as "Year 1" and number the years sequentially until a positive number appears in the "PRES VALUE" line. The counted number is to be entered in the "ENTER PAYBACK YEAR" box at left.
NOTE: This approach rounds all payback years up to the next whole year.

Remaining Cost in ($000's) * 690

* Sum of FY's 1999 - 2020.

Graph Out Year Cost in ($000's) * 0

Graph Out Year Benefits in ($000's) * 0

* Sum of FY's 2013 - 2020

COST TRANSPOSITION

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0	-474	-216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BENEFIT VALUE TRANSPOSITION

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0	0	1071	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL	0	-474	855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PRES WORTH FACTOR: 1 | 0.8696 | 0.7561 | 0.6575 | 0.5718 | 0.4972 | 0.4323 | 0.3759 | 0.3269 | 0.2843 | 0.2472 | 0.2149 | 0.1869 | 0.1625 | 0.1413 | 0.1229 | 0.1069 | 0.0929 | 0.0808 | 0.0703 | 0.0611 | 0.0531

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PW COSTS	0	-412	-163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PW BENEFITS	0	0	810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRESENT WORTH	0	-412	646	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

IRR CALC: 80.38

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CUMULATIVE PV	0	-412	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234

ECONOMIC INDICATORS

NPV @ 15% : 234

IRR : 80.38

I @ 15% : 1.407

PAYBACK in YEARS : 1

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
COAL YARD RUNOFF POND - PIPING UPGRADE	0

PROJECT ECONOMIC EVALUATION

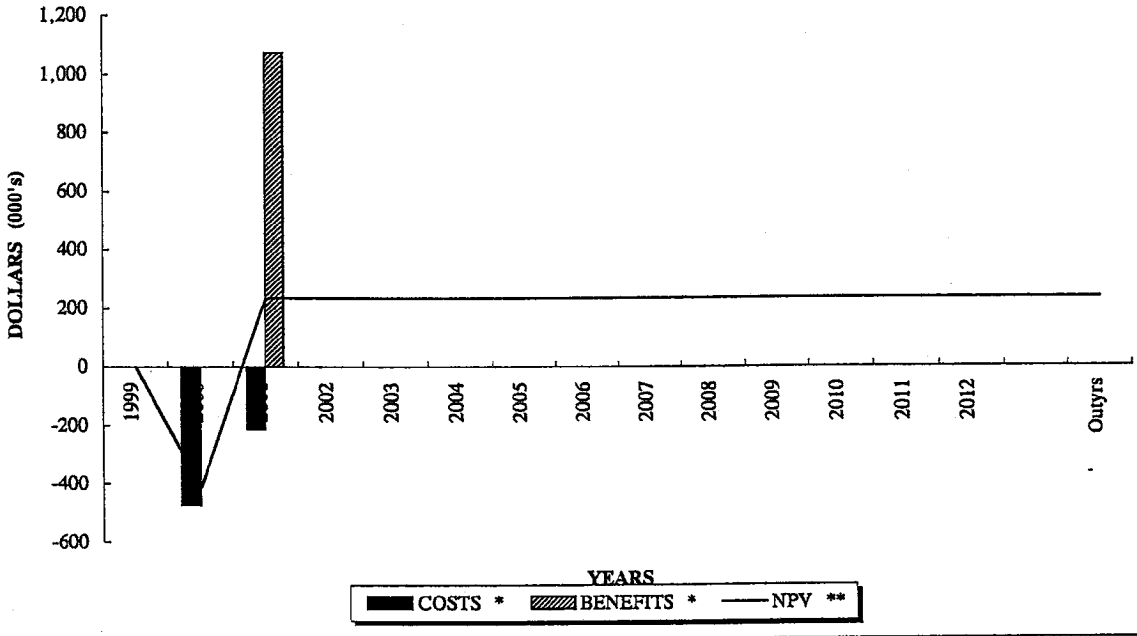
PROJECT COST

	Thousands of Dollars
SUNK COSTS:	0
REMAINING COST:	690
TOTAL COST:	690
CONTINGENCY:	0

PROJECT ECONOMIC INDICATORS

NPV @ 15% :	234	IRR:	80.38 %
PI @ 15% :	1.407	PAYBACK:	1 yrs

PROJECT CASH FLOW



YEARS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	0	Outyrs
COSTS *	0	-474	-216	0	0	0	0	0	0	0	0	0	0	0	0	0
BENEFITS *	0	0	1071	0	0	0	0	0	0	0	0	0	0	0	0	0
NPV **	0	-412	234	234	234	234	234	234	234	234	234	234	234	234	234	234

* Non-discounted Cash Flow

** Cumulative value of Present worth @ 15% Discount Rate

CAPITAL PROJECT BENEFIT ASSUMPTIONS
KINGSTON FOSSIL PLANT
UNITS 5-9

PROJECT NAME	UNIT	PROJECT ID	ANALYSIS DATE
COAL YARD RUNOFF POND - PIPING UPGRADE	1 THRU 9	0	00-Jan-00

BENEFIT ASSUMPTIONS:

The D0-Nothing Alternative considered in this evaluation the installation of a new pump discharge line from the CPRO Pond to the ash pond, rental of a diesel pump (5 times per year), pumping, and labor expenses, and dredging the CPRO Pond every 5 years. This incremenatl between this alternative and the project (Install new discharge piping, controls, etc. below). The new discharge line is necessary in both alternatives, and the dredging in both cases was considered.

The coal yard runoff basin (pond) is approximately 80% full of solids, which virtually eliminates the ponds' storage capacity for rain runoff from coal pile.

PROJECT: ALLTERNATIVE 2

In 1976 a pump house was constructed with a sump, pump & a fiberglass discharge line to replace the old cantilevered platform and pump. In 1994 a floating platform with two submersible pumps was instlalled near the old pump house and connected to the existing fiberglass discharge piping to replace the worn out pumps. The fiberglass pipe has deteriorated to the extent that only one pump can operate at a time. Also the underground electrical feed has deteriorated and has had several breaks causing interuption in pump operation. The existing pumps must be manually turned on & off.

This project consists of the following:

1	Replace the pump discharge piping from the floating platform to the ash pond with HDPE piping	$275,000
2	Install a new electrical feed through the reclaim tunnel to the floating platform.	$65,000
3	Engineering	$81,000
4	Dredge pond to provide additional storage capacity	$100,000
5	Controls, float switches	$4,000
	Pump Rental and Dredging	$165,000
	Total	$690,000

STATUS QUO:

The excavation for the new reclaim facility, now under construction, is near the coal yard runoff pond. On 4/29/99 the pond overflowed and flooded the excavation site during a rain which measured 1.75 inches over a 24 hour period. A rain of this size occurs on average 5 times per year at Kingston. The "STATUS QUO" alternative was not be considered as this will result in flooding of the new reclaim facility (BC-15, 16 &17) underground tunnels. Electronic equipment, variable speed drives, etc. will be located underground. Resulting damage of $3.0 million, AND interim coal handling cost of $330k-$500k.

DO-NOTHING:

The rental of a portable diesel pump is an alternative considered in this evaluation. The assumptions for this alternative are as follows:

1	Rent Portable diesel pump year round and labor.	$101,000
2	Replace HED temporary pipe	$40,000
3	Risk of damage to equipment $3.0 x 20% chance of failure. = $600k	$600,000
4	Interim coal handling = $330k	$330,000
	Total Benefits	$1,071,000

Kingston Fossil Plant Coal Yard Runoff Pond Piping Upgrade

PCN KIF353

June 1, 2000

Team Members:

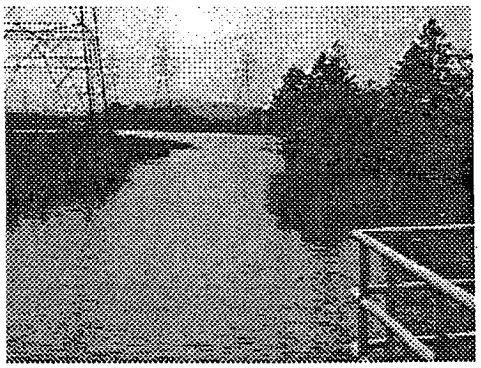
Cherie Minghini	(423) 751-6375
Clark Morris	(423) 751-3214
Scott Sims	(865) 717-2061
Mike Smith	(423) 751-6226
Steve Weaver	(423) 751-3536

Reason For Improvement

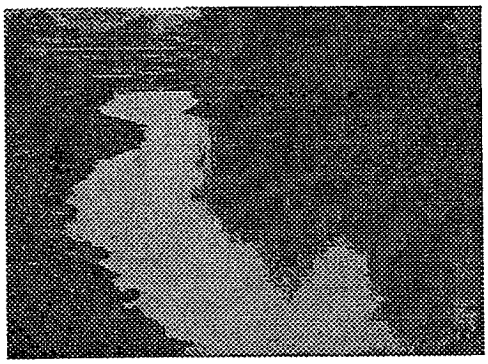
The new coal handling reclaim facility (under construction) flooded on April 29, 1999. The Coal Yard Runoff Pond is approximately 80% full of coal settlement, which leaves only 20% of storage capacity for rain runoff water. This excess drainage backs up onto the coal storage area.

Problem Definition

The rain on 4/29/99, measured 1.75 inches in a 24 hour period. The potential for this magnitude of rain is on average 4.75 (5) times per year, based on historical rain data.



(Picture of Coal Yard Runoff Pond After Rain)

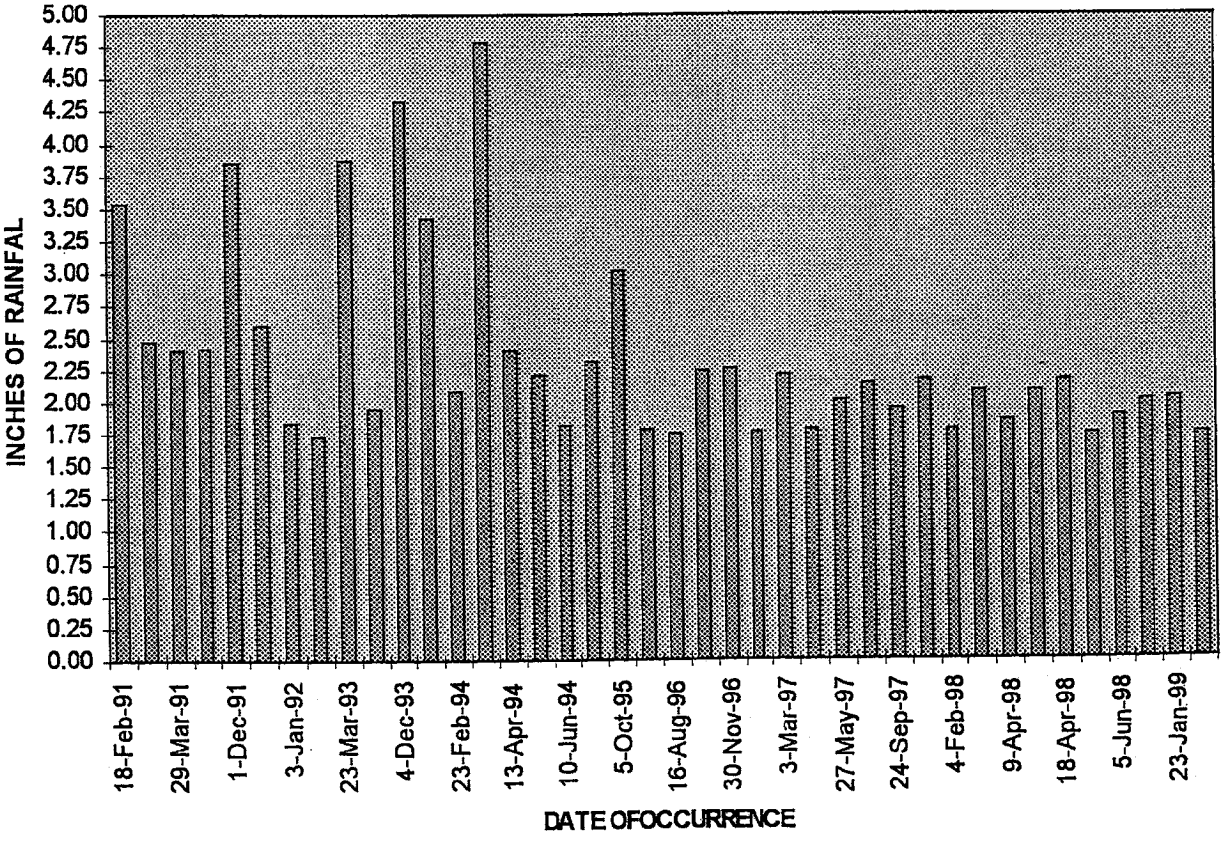


(Same Pond in Between Rain Events)

Problem Definition-Continued

Kingston Significant Rain Data

Date of Occurrence	Inches of Rain in 24 hrs	Date of Occurrence	Inches of Rain in 24 hrs
18-Feb-91	3.53	16-Aug-96	1.75
3-Mar-91	2.48	8-Nov-96	2.25
29-Mar-91	2.40	30-Nov-96	2.27
22-Nov-91	2.42	24-Jan-97	1.76
1-Dec-91	3.85	3-Mar-97	2.21
2-Dec-91	2.60	26-May-97	1.79
3-Jan-92	1.83	27-May-97	2.01
4-Oct-92	1.74	14-Jun-97	2.13
23-Mar-93	3.87	24-Sep-97	1.95
6-Aug-93	1.94	26-Oct-97	2.18
4-Dec-93	4.32	4-Feb-98	1.78
11-Feb-94	3.42	8-Mar-98	2.09
23-Feb-94	2.08	9-Apr-98	1.85
27-Mar-94	4.78	17-Apr-98	2.08
13-Apr-94	2.41	18-Apr-98	2.17
26-May-94	2.20	26-May-98	1.75
10-Jun-94	1.82	5-Jun-98	1.89
16-Jul-94	2.32	23-Jul-98	2.01
5-Oct-95	3.02	23-Jan-99	2.03
9-Jun-96	1.79	29-Apr-99	1.75



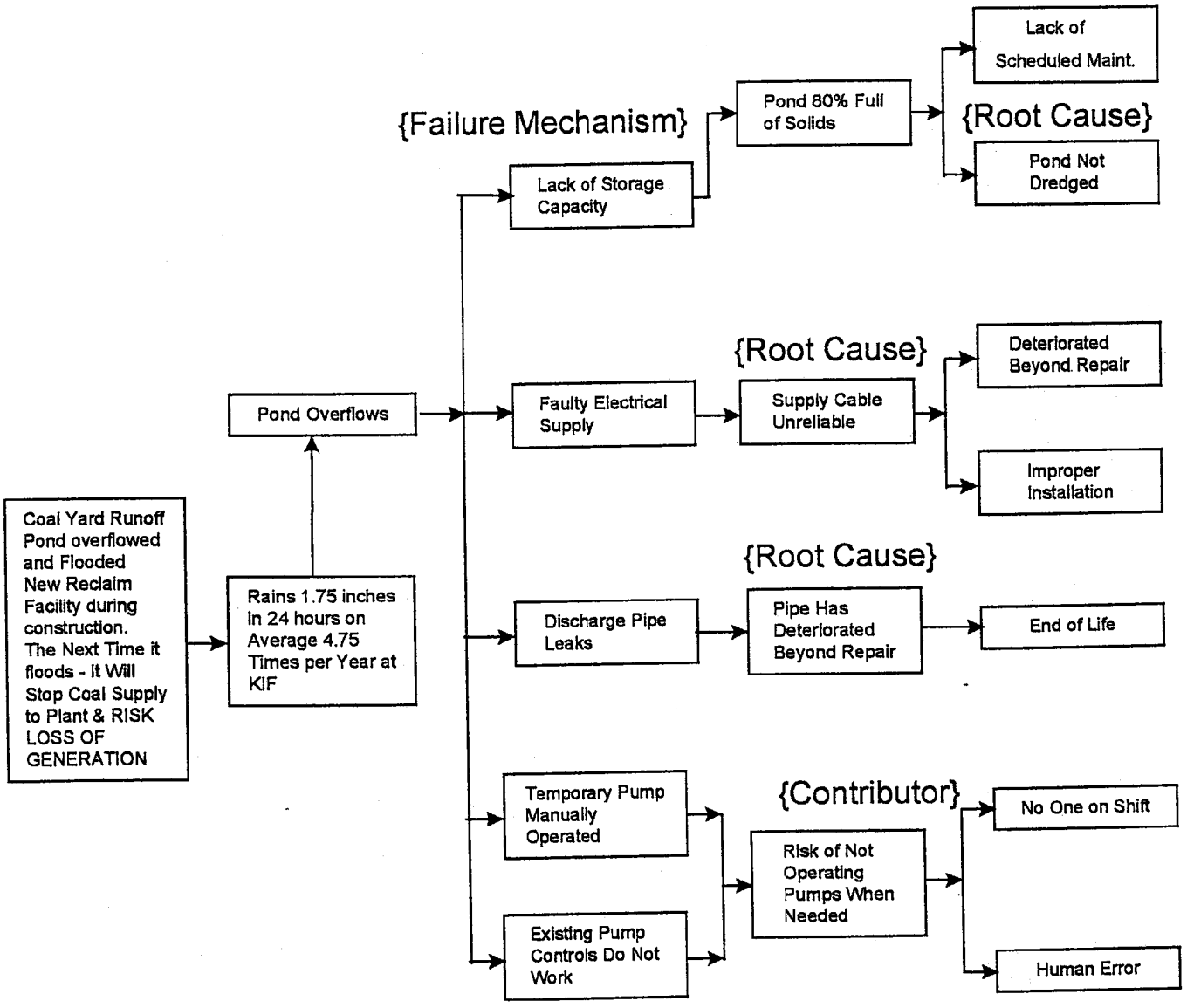
(Daily Rain Measurements by TVA, Sorted To Include Only 1.75" / 24 Hr. Rains)

Analysis

- Heavy rain falls have washed fine particles of coal from the Coal Storage Yard into the Coal Yard Runoff Pond decreasing the storage capacity of the pond to about 20% of the original volume.
- Deteriorated Fiberglass Discharge Piping could not handle the increased pressure of the two existing pumps operating simultaneously and
  - The Fiberglass Pipe has <u>now</u> been permanently severed for construction of new railroad loop track to the rail hopper, and is no longer usable.
  - Only one of the two existing pumps could be operated at a time, and could not keep up with the runoff.
- A temporary diesel pump and 14 inch discharge pipe is being used to assist in flood control. This pump & piping will be removed once the reclaim facility construction is complete, scheduled for fall of 2000.
- Presently the existing Pumps are connected to the temporary diesel pump discharge piping.
- The Existing Pumps' Electrical Power Feed is:
  - Deteriorated beyond repair,
  - Unreliable,
  - Permanently severed for construction of new railroad loop track to the rail hopper, and is no longer usable.
  - Trips breaker if both pumps operate at same time.
- The Coal Yard Runoff Pump Controls no longer work and the pumps must be manually turned on and off.
  - Human error could put the new reclaim facility at risk of flooding if pumps are not turned on when needed.

(Pictures Are Attempting to Show Relative Small Volume of Available Storage Capacity)

Analysis Continued



Solutions

Flooding of the new reclaim tunnels will shut off the supply of coal and risk the Loss of Generation. Funding for the following will significantly reduce risk:

- Dredge pond to original storage capacity and enlarge.
- Install a new 10" HDPE discharge pipe from pumps to ash pond (approx. 4200 ft.), sleeve under railroad tracks and main plant road.
- Install a new power feed from new electrical equipment room through new reclaim tunnel, and a direct burial armored cable from end of tunnel to the pumps. Cable will be buried 5 feet deep and sleeved at road crossings.
- Utilize two existing 1200 gpm pumps at existing pump platform. Both pumps will be able to run simultaneously.
- Install pump float switches for auto start/stop. This will eliminate most of the human error that could be involved with managing the pumps.

Projected Cost of Solution

• Install New 10" Discharge Piping	**260,000**
• Install New Electrical Feed to Existing Pumps	**75,000**
• Dredge Coal Yard Runoff Pond	**100,000**
• Install New Local Pump Controls	**5,000**
• Engineering	**75,000**
• Construction Partner Estimate	**10,000**
• Backcharge dredging, pipe and pump rental, labor, etc.	**$165,000**
• TOTAL	**$690,000**

Solutions Continued

Do Nothing Alternative

- If nothing is done to prevent flooding, the new multi-million dollar reclaim facility tunnels could flood, on average, 5 times per year shutting off the supply of coal to the powerhouse until the water and coal can be pumped out, and the following components dried, cleaned, inspected, repaired and/or replaced:
  - motors, variable speed drive, gear reducers, conveyor belt idlers, bearings
  - electronic circuitry, belt scales, limit switches
  - downtime 8 to 12 weeks

Cost

- Damage associated with the flooded reclaim facility tunnels, estimated by Roberts & Schaefer (R&S)

  $3,000,000

- Emergency interim coal handling operation to prevent or reduce derating of all 10 units will cost an additional amount as follows during the downtime:

  $330,000 to $500,000

Solutions Continued

Status Quo Alternative

- The present interim operation consists of using a portable diesel pump & above ground dredge pipe. The rental of a manually operated, portable diesel pump and pipe should not be an alternative considered in this evaluation. This option was put in place temporarily as a quick fix before a permanent fix was accomplished.

Risks

- Existing temporary diesel pump
  - Temporary pump will be removed at close of reclaim project.
  - Temporary above ground pipe is HED dredge pipe and could be removed as required by HED.
- Availability of rental pumps and piping
- Reliability
- Flooding when no one is on shift & human error
- Temporary routing of piping will cause damage to other areas of the reservation. The use of drain culverts to route pipe underneath railroad tracks and roads could cause wash out of track beds and/or pavement damage.
- Exposure of temporary above ground pipe is subject to damage from heavy equipment.

Costs

- The rental cost, fuel cost, labor cost for year round use:

  $101,280

- Cost of replacement dredge pipe for HED:

  $40,000

- Costs associated with risks of flooding are similar to the Do Nothing Alternative:
  - Damage associated with the flooded reclaim facility tunnels, estimated by Roberts & Schaefer (R&S):

    $3,000,000

  - Emergency interim coal handling operation to prevent or reduce derating of all 10 units will cost an additional amount as follows during the downtime:

    $330,000 to $500,000

Solution Matrix

	Possible Solutions	Barriers	Aids	Implement
1	Dredge Pond, Install new 10" Piping, Install new Power Feed & New Pump Controls	High Capital Cost, $850,000	Best Solution to prevent flooding & Avoid Loss of Power Generation	YES
2	Do Nothing Alternative, This option should NOT be Considered	Significant Certainty of Flooding Reclaim Facility an Average 5 Times per year, costing up to $3,000,000 for each flood to restore plus up to $500,000 for each emergency interim coal handling operation & possible deratings of all 10 units	No capital cost	No
3	Rent portable diesel pump	Not reliable, manually operated, risk of flooding when nobody is on shift, human error of neglecting to operate diesel pump, high O&M Costs of $101,280 per year, cost of $40,000 to replace HED dredge pipe. Use of temporary pipe routing risks the back up of water in other areas putting at risk the railroad tracks, roads, etc. Potential risk of flooding reclaim facility costing $3,000,000 for each flood to restore plus up to $500,000 for each emergency interim coal handling operation & possible deratings of all 10 units	No capital cost	No

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND PIPE UPGRADE
PROJECT SCOPE

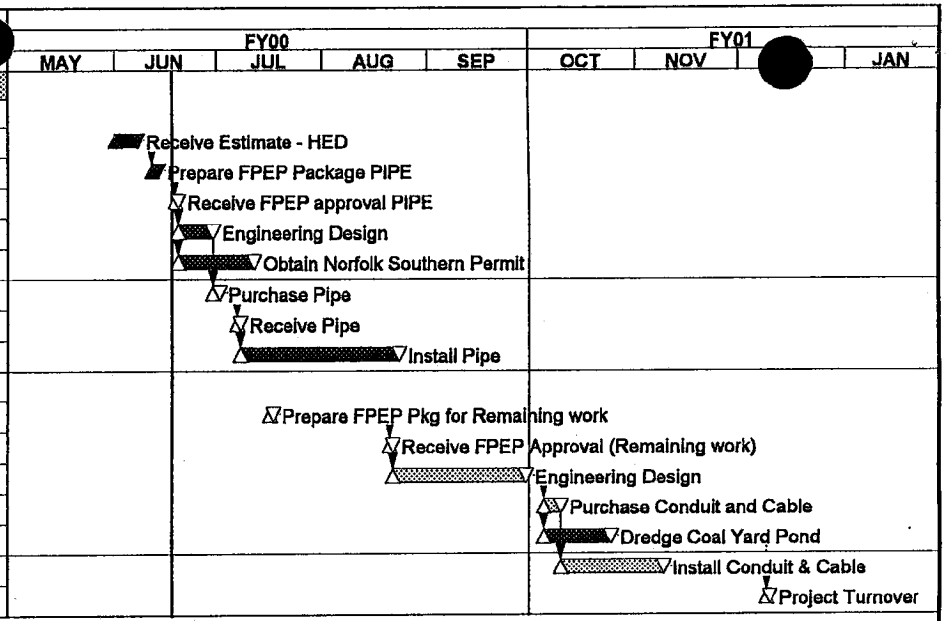
Background:

The existing coal yard runoff pond system can not handle a significant rainfall event and could cause the new coal handling reclaim facility to flood. Over the years, heavy rains have washed coal fines from the storage area into the pond. Storage has decreased to about 20% of the original volume. The existing fiberglass discharge piping and electrical power feed is deteriorated beyond repair, permanently severed, and is no longer usable. The existing pump controls do not work and the pumps are powered on and off manually.

The project will consist of installation of a new discharge pipeline to the ash pond. The coal yard pond will be dredged to original capacity and enlarged. An overflow spillway will be constructed. New electrical power feed, pump float switches, and warning enunciator will be installed to the existing pumps.

The construction of this project will be divided into two parts - Phase IIIA and IIIB. Phase IIIA will include installation of the pipeline from the coal yard runoff pond to the ash pond and removal and disposal of the existing pump platform.

SEC	Activity ID	Forecast Start	Forecast Finish	Target Finish	Rem Dur	Resource ID	Budget Quantity	Cost Acct	PSTA	
KIF353 COAL YARD PUMP DISCHARGING PIPING										
Piping										
	CXK20	01JUN00A	07JUN00A		0		0.00			PIP
	CXK	12JUN00A	13JUN00A		0		0.00			PIP
	CXK10	19JUN00*	19JUN00		1		0.00			PIP
	CXK30	20JUN00	29JUN00		10		0.00			PIP
	CXK60	20JUN00	11JUL00		22		0.00			PIP
	CXK40	30JUN00	01JUL00		2		0.00			PIP
	CXK50	07JUL00	07JUL00		1		0.00			PIP
	CXK70	08JUL00	23AUG00		47		0.00			PIP
Electrical Supply & Other										
	CXK80	17JUL00*	17JUL00		1		0.00			OTH
	CXK90	21AUG00*	21AUG00		1		0.00			OTH
	CX	22AUG00	29SEP00		39		0.00			OTH
	CXK110	05OCT00	09OCT00		5		0.00			OTH
	CXK130	05OCT00	24OCT00		20		0.00			OTH
	CXK120	10OCT00	08NOV00		30		0.00			OTH
	CX10	09DEC00	09DEC00		1		0.00			OTH



Project Start 01JAN89
Project Finish 09DEC00
Data Date 18JUN00
Run Date 13JUN00

Early Bar
Progress Bar
Critical Activity

FHEM:KIFY

Sheet 1 of 1

Tennessee Valley Authority

Fossil Engineering Schedule

KINGSTON FOSSIL PLANT

COAL YARD PUMP DISCHARGE PIPING

PCN KIF353

Current Phase:

WORK PACKAGE		SHORTCODE	CURRENT BUDGET ($ 000's) PY	FY00	FY01	TOTAL	ACTUAL COST AS OF JUN ($ 000's) PY	FY00	FY01	TOTAL	FORECAST ($ 000's) PY	FY00	FY01	TOTAL	Proj Var
PHASE 1			-	-		-	-			-	-	-	-	-	
KIF353A-0001	Parsons			29		29					-			-	
	FE Electrical			5		5					-			-	
	FE Civil			8		8					-			-	
						-					-			-	
						-					-			-	
	Total Phase 1		-	42		42	-	-		-	-	42	-	42	
PHASE 2						-									
KIF353B-0001	Fossil Engineering Civil		-	10	5	15	-	-		-	-	10	5	15	
KIF353B-0002	Fossil Engineering Elect.		-	10	-	10	-			-	-	10	-	10	
KIF353B-0003	Fossil Engineering -Parsons		-	15	-	15	-			-	-	15	-	15	
KIF353B-0004	Partner Estimate		-	7		7	-			-	-	7	-	7	
KIF353B-0005	Material- Pipe		-	35		35	-			-	-	35	-	35	
KIF353B-0006	Material-Cable Conduit/Float Switches		-	15	24	39	-			-	-	15	24	39	
			-			-	-			-	-	-	-	-	
			-			-	-			-	-	-	-	-	
	Total Phase 2		-	92	29	121	-	-		-	-	92	29	121	
PHASE 3						-									
KIF353C-0001	ENGINEERING SUPPORT		-	10	15	25	-			-	-	10	15	25	
KIF353C-0002	PARSON'S SUPPORT FOR PIPE		-	5		5	-			-	-	5	-	5	
KIF353C-0003	INSTALL CABLE & CONDUIT		-	-	30	30	-			-	-	-	30	30	
KIF353C-0004	HED INSTALL 10 INCH PIPE		-	160	20	180	-			-	-	160	20	180	
KIF353C-0004	HED DRILL AND BORE SLEEVES		-	-	60	60	-			-	-	-	60	60	
KIF353C-0005	HED EXCAVATE POND		-	-	62	62	-			-	-	-	62	62	
KIF353C-0006	PUMP RENTAL & DREDGING		-	165		165	-			-	-	165	-	165	
	Total Phase 3			340	187	527	-	-	-	0	-	340	187	527	
	TOTAL PROJECT		-	474	216	690	-	-	-	-	-	474	216	690	
										Forecast minus Budget	-	-			

Total Fossil Engg Actual -

Project Engineer: Cherie Minghini (751-6375)
Project Control Engineer: Mike Smith (751-6226
)

KIF353 COAL YARD RUNOFF POND.xls - Detailed Cost Sheet
06/13/2000 8:27 AM

FOSSIL POWER GROUP
PROJECT AUTHORIZATION SUMMARY

Capital Project (X) O&M Project ( ) Work Document Number: KIF353

Plant/Area: KINGSTON Unit: 00 Outage#: Record Number: 7630

Project Name: KIF--COAL YARD PUMP DISCHARGE PIPING

FPG Category: ENVIRONMENTAL COMPLIANCE

CPJ Category: New(X) Revised ( ) (for Requested Phase)

Approved Budget (Spend Plan)	0	0	0	0	0	0	0	0	

REQUESTED APPROVAL FOR PHASE 3A — COST SUMMARY ($000)

PROJECT PHASE ACTIVITY SCHEDULE		Prior Yrs Actuals	2000	2001	2002	2003	2004	2005	2006	Future Years	Total Project
1 - Study	Start 05/15/2000	0	42	0	0	0	0	0	0	0	42
	Complete 07/17/2000										
2 - Design and LL Procurement	Start 06/20/2000	0	92	29	0	0	0	0	0	0	121
	Complete 09/30/2000										
3 - Implementation (Incl. Retirement)	Start 07/10/2000	0	340	187	0	0	0	0	0	0	527
	Complete 12/09/2000										
Total Project (Requested Approval)		0	474	216	0	0	0	0	0	0	690

Project Benefit Summary

Net Present Value 234 Profitability Index 1.407

Estimate of detail Items Included In costs above:
Estimate for Long Lead Procurement: 0
Estimate for Retirement/Removal: 0

Explanation of Changes (Cost, Schedule, or Benefit revision)

This request is for Phase 1, Phase 2 and a portion of Phase 3 (Piping purchase and installation). A revised FPEP package will be submitted to obtain approval for remaining FY01 expenditures.

PREVIOUS APPROVAL FOR PHASE — COST SUMMARY ($000)

PROJECT PHASE ACTIVITY SCHEDULE		Prior Yrs Approval	2000	2001	2002	2003	2004	2005	2006	Future Years	Total Project
1 - Study	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
2 - Design and LL Procurement	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
3 - Implementation (Incl. Retirement)	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
Total Project (Current Approval)		0	0	0	0	0	0	0	0	0	0

Project Benefit Summary

Net Present Value 0 Profitability Index 0.000

Estimate of detail Items Included In costs above:
Estimate of Long Lead procurement: 0
Estimate of Retirement/Removal: 0

RECOMMENDED FOR APPROVAL

Cherie M Mungle — Joint Project Team Leader — 6/13/00 Date

Plant Approval

Roy J Galyon — Plant Manager — 6/13/00 Date

6/13

FPEP Approval

FPEP Secretary — Date

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	KIF353 Rev#: 2

I. PROJECT DESCRIPTION

ORGANIZATION

OWNER: FPG

LEAD: Yard Operations

LOCATION

LOC: Kingston Fossil Plant

TECHNICAL CONTACT

NAME: Steve Weaver

PHONE: (423)751-3536

PROJECT CATEGORY

CATEGORY: ECONOMIC / REVENUE

PROGRAM CODE: No Program

START DATE: 5/15/2000

IN-SERVICE DATE: 12/9/2000

PROBLEM DEFINITION/REASON FOR IMPROVEMENT

Coal yard drainage basin overflows its banks during moderate rains of 1.75 inches/24 hrs. The water flows onto the coal starage area which will fill up the new underground coal live pile reclaim structure. The potential for this magnitude of rain is on the average 4.75 times per year, based on historical data. Settlement has reduced the capacity by at least 80%. Only one of the two pumps can be run at one time due to the deteriorated discharge piping. Power feeds are unreliable. Flooding in the new reclaim tunnels can occur shutting off the coal supply until dewatered. This flooding will damage the new motors, variable speed drive electronic circuitry, belt scales, and limit switches.

PROJECT SCOPE

Dredge pond to original storage capacity and enlarge pond to maximize capacity. Install a new 10 inch HDPE discharge pipe from pumps to ash pond (4200ft.), sleeve under railroad tracks and plant road. Install pump float switches for auto start/stop. Install a new power feed from new electrical equipment room through new reclaim tunnel, and a direct burial armored cable from end of tunnel to the pumps. Cable will be buried 5 feet deep and sleeved at road crossings.

IMPACT/CONSEQUENCES OF DELAY

Possible derating of all 9 units at Kingston and possible damage to coal handling equipment.

PROJECT PERFORMANCE MEASUREMENT

Will eliminate the possibility of flooding related damage to new coal handling equipment. Reduce/eliminate environmental impacts of pond overflow into river.

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	KIF353 Rev#: 2

II. PROJECT ECONOMIC EVALUATION

COST

SUNK CAPITAL PROJECTS:	$0
SUNK O&M PROJECTS:	0
SUNK O&M BASE:	0
REMAINING COST:	$690
TOTAL COST:	$690
ESTIMATE TYPE:	Conceptual

ECONOMIC INDICATORS

NPV:	269.0
PI:	1.41
IRR:	80.0%
ORIGINAL PAYBACK:	1
SIMPLE PAYBACK:	1
BASE YEAR:	2000

	SUNK
Capital Projects:	0
O&M Projects:	0
Benefit:	0
O&M Base:	0

	OUT YEARS
Capital Projects:	0
O&M Projects:	0
Benefit:	0
O&M Base:	0

Year:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Capital Projects:	474	216	0	0	0	0	0	0	0	0
O&M Projects:	0	0	0	0	0	0	0	0	0	0
Benefit:	0	1,071	0	0	0	0	0	0	0	0
O&M Base:	0	0	0	0	0	0	0	0	0	0
Year:	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Capital Projects:	0	0	0	0	0	0	0	0	0	0
O&M Projects:	0	0	0	0	0	0	0	0	0	0
Benefit:	0	0	0	0	0	0	0	0	0	0
O&M Base:	0	0	0	0	0	0	0	0	0	0

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	KIF353 Rev#: 2

II. PROJECT ECONOMIC EVALUATION (continued)

COST ASSUMPTIONS

COST ASSUMPTIONS	RISKS
1. HDPE Pipe Replacement. ($275k)	Based on HED Estimate
2. Install Electrical Feed. Route is still preliminary - protection from yard rolling equipment. ($65k)	Conceptual estimate from engineering
3. Dredge Pond. Best guess based on original contours. ($100k)	HED conceptual estimate.
4. Controls and float switches ($4k)	Based on actual costs of similar equipment.
5. Engineering Costs ($81k)	Engineering estimate
6. Pump rental and dredging ($165k)	Actual cost of renting similar construction pumps.
7. Total Project Cost $690k	

BENEFIT ASSUMPTIONS

BENEFIT ASSUMPTIONS	RISKS
1. Avoid rental of temporary pump and associated labor ($101k) and pipe replacement costs ($40k)	Based on actual cost of similar rental equipment and quote from piping vendor.
2. Avoid flooding new facility. Damage from flooding = $3.0m with 20% probability/yr. = $600k	Damage assessment by Roberts & Schaefer who built the facility.
3. Emergency Interim Coal Handling ($330k)	Yard Systems estimate

CAPITAL PROJECT ECONOMIC ANALYSIS INPUT
KINGSTON FOSSIL PLANT
UNITS 5-9

PROJECT NAME	UNIT	PROJECT ID	ANALYSIS DATE
COAL YARD RUNOFF POND - PIPING UPGRADE	1 THRU 9		

PREPARED BY:					
NAME :	Steve Weaver	LOCATION :	LP 2T-C	PHONE :	(423) 751-3536

BENEFIT INPUT SECTION

Prior Years Cost ($000'S): 0

FISCAL YEAR	HEAT RATE IMPRVMNT BTU/KWH	EFOR FORCED OUTAGE HOURS	EFOR FORCED DERATING MW	EFOR FORCED DERATING HRS	EFOR MWHL	O&M SAVINGS IN ($ 000'S)	STATION SERVICE SAVINGS IN KWH	OTHER BENEFITS SAVINGS IN ($ 000'S)	OUTAGE REDCTNS OUTAGE HRS REDUCED	PROJECT COST ($000'S)
1999	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	474
2001	0	0	0	0	0	1071	0	0	0	216
2002	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0

Contingency Included in Project Estimate ($000'S): 0

CALCULATION AND BENEFIT VALUE SECTION

FISCAL YEAR	HEAT RATE BENEFIT IN ($ 000'S)	EFOR MWH IMPROVE IN ($ 000'S)		EFOR UNIT EFOR IMPACT	EFOR SYSTEM EFOR IMPACT	O&M SAVINGS IN ($ 000'S)	STATION SERVICE SAVINGS IN ($ 000'S)	OTHER BENEFITS SAVINGS IN ($ 000'S)	OUTAGE REDCTNS SAVINGS IN ($ 000'S)	BENEFIT VALUE* IN ($ 000'S)
1999	0	0		0.00%	0.000%	0	0	0	0	0
2000	0	0		0.00%	0.000%	0	0	0	0	0
2001	0	0		0.00%	0.000%	1,071	0	0	0	1,071
2002	0	0		0.00%	0.000%	0	0	0	0	0
2003	0	0		0.00%	0.000%	0	0	0	0	0
2004	0	0		0.00%	0.000%	0	0	0	0	0
2005	0	0		0.00%	0.000%	0	0	0	0	0
2006	0	0		0.00%	0.000%	0	0	0	0	0
2007	0	0		0.00%	0.000%	0	0	0	0	0
2008	0	0		0.00%	0.000%	0	0	0	0	0
2009	0	0		0.00%	0.000%	0	0	0	0	0
2010	0	0		0.00%	0.000%	0	0	0	0	0
2011	0	0		0.00%	0.000%	0	0	0	0	0
2012	0	0		0.00%	0.000%	0	0	0	0	0
2013	0	0		0.00%	0.000%	0	0	0	0	0
2014	0	0		0.00%	0.000%	0	0	0	0	0
2015	0	0		0.00%	0.000%	0	0	0	0	0
2016	0	0		0.00%	0.000%	0	0	0	0	0
2017	0	0		0.00%	0.000%	0	0	0	0	0
2018	0	0		0.00%	0.000%	0	0	0	0	0
2019	0	0		0.00%	0.000%	0	0	0	0	0
2020	0	0		0.00%	0.000%	0	0	0	0	0

ECONOMIC INDICATORS

NPV @ 15% : 234 IRR : 80.38

PI @ 15% : 1.407 PAYBACK in YEARS : 1

5 YEAR PI @ 15% : 1.4070753

DEFERRAL EVALUATION

NPV of Deferal @ 15% : 0

When deferred for : Deferral not considered

CALCULATION SECTION **PROJECT ID: 0**

PAYBACK YEAR DISPLAY

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
COSTS	0	-474	-216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BENEFITS	0	0	1071	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRESENT VALUE	0	-412	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234

INITIAL GUESS: 0.5

If the IRR box displays the message "#NUM", change the initial guess number (in the box at left) either up or down until the "#NUM" is replaced by a number.

IRR: 80.38

NOTE: For this calculation to work, the first year total (CELL E42 or later cell in row 42) below must be a negative number. If the sum is not negative go to the ECONEVAL "BENEFIT INPUT SECTION" and adjust the benefits claimed in the first year downward until the total is negative.

ENTER PAYBACK YEAR: 1

Use the "COSTS" and "PRES VALUE" lines above (lines 9 & 11). Identify the last year that has a cost in the "COST" line. Note that year as "Year 1" and number the years sequentially until a positive number appears in the "PRES VALUE" line. The counted number is to be entered in the "ENTER PAYBACK YEAR" box at left.
NOTE: This approach rounds all payback years up to the next whole year.

Remaining Cost in ($000's) *
690

* Sum of FY's 1999 - 2020.

Graph Out Year Cost in ($000's) *	Graph Out Year Benefits in ($000's) *
0	0

* Sum of FY's 2013 - 2020

COST TRANSPOSITION

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0	-474	-216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BENEFIT VALUE TRANSPOSITION

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0	0	1071	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL	0	-474	855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PRES WORTH FACTOR	1	0.8696	0.7561	0.6575	0.5718	0.4972	0.4323	0.3759	0.3269	0.2843	0.2472	0.2149	0.1869	0.1625	0.1413	0.1229	0.1069	0.0929	0.0808	0.0703	0.0611	0.0531

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PW COSTS	0	-412	-163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PW BENEFITS	0	0	810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRESENT WORTH	0	-412	646	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

IRR CALC: 80.38

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CUMULATIVE PV	0	-412	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234	234

ECONOMIC INDICATORS

NPV @ 15%: 234 IRR: 80.38

I @ 15%: 1.407 PAYBACK in YEARS: 1

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
COAL YARD RUNOFF POND - PIPING UPGRADE	0

PROJECT ECONOMIC EVALUATION

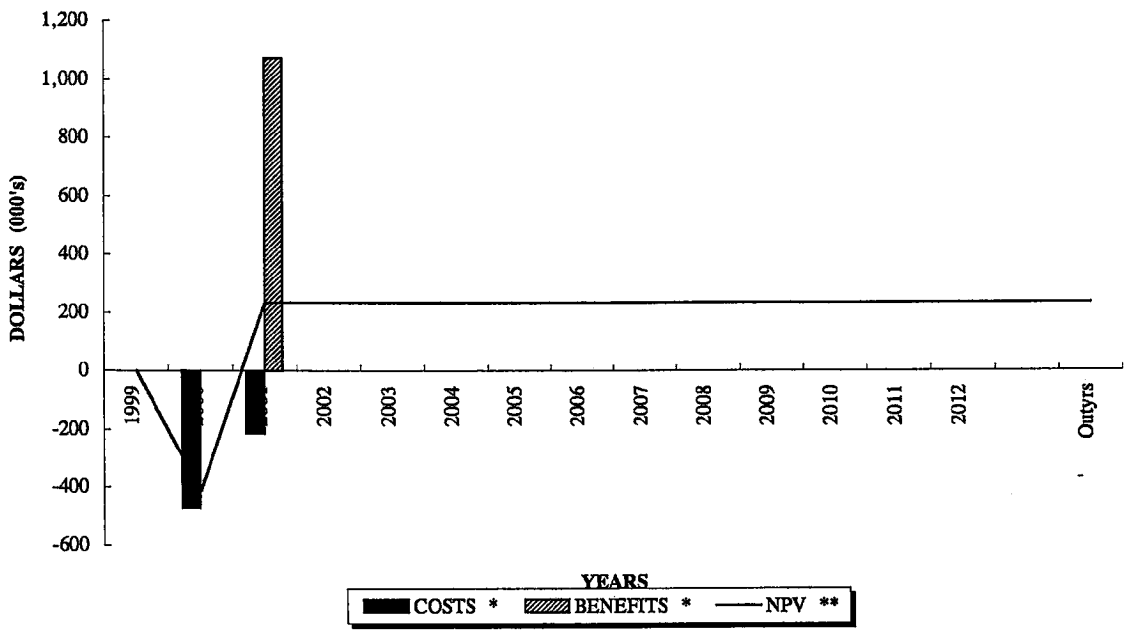
PROJECT COST

	Thousands of Dollars
SUNK COSTS:	0
REMAINING COST:	690
TOTAL COST:	690
CONTINGENCY:	0

PROJECT ECONOMIC INDICATORS

NPV @ 15% :	234	IRR:	80.38 %
PI @ 15% :	1.407	PAYBACK:	1 yrs

PROJECT CASH FLOW



YEARS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	0	Outyrs
COSTS *	0	-474	-216	0	0	0	0	0	0	0	0	0	0	0	0	0
BENEFITS *	0	0	1071	0	0	0	0	0	0	0	0	0	0	0	0	0
NPV **	0	-412	234	234	234	234	234	234	234	234	234	234	234	234	234	234

* Non-discounted Cash Flow

** Cumulative value of Present worth @ 15% Discount Rate

CAPITAL PROJECT BENEFIT ASSUMPTIONS
KINGSTON FOSSIL PLANT
UNITS 5-9

PROJECT NAME	UNIT	PROJECT ID	ANALYSIS DATE
COAL YARD RUNOFF POND - PIPING UPGRADE	1 THRU 9	0	00-Jan-00

BENEFIT ASSUMPTIONS:

The D0-Nothing Alternative considered in this evaluation the installation of a new pump discharge line from the CPRO Pond to the ash pond, rental of a diesel pump (5 times per year), pumping, and labor expenses, and dredging the CPRO Pond every 5 years. This incremenatl between this alternative and the project (Install new discharge piping, controls, etc. below). The new discharge line is necessary in both alternatives, and the dredging in both cases was considered.

The coal yard runoff basin (pond) is approximately 80% full of solids, which virtually eliminates the ponds' storage capacity for rain runoff from coal pile.

PROJECT: ALLTERNATIVE 2

In 1976 a pump house was constructed with a sump, pump & a fiberglass discharge line to replace the old cantilevered platform and pump.

In 1994 a floating platform with two submersible pumps was instlalled near the old pump house and connected to the existing fiberglass discharge piping to replace the worn out pumps. The fiberglass pipe has deteriorated to the extent that only one pump can operate at a time. Also the underground electrical feed has deteriorated and has had several breaks causing interuption in pump operation. The existing pumps must be manually turned on & off.

This project consists of the following:

1	Replace the pump discharge piping from the floating platform to the ash pond with HDPE piping	$275,000
2	Install a new electrical feed through the reclaim tunnel to the floating platform.	$65,000
3	Engineering	$81,000
4	Dredge pond to provide additional storage capacity	$100,000
5	Controls, float switches	$4,000
	Pump Rental and Dredging	$165,000
	Total	$690,000

STATUS QUO:

The excavation for the new reclaim facility, now under construction, is near the coal yard runoff pond. On 4/29/99 the pond overflowed and flooded the excavation site during a rain which measured 1.75 inches over a 24 hour period. A rain of this size occurs on average 5 times per year at Kingston. The "STATUS QUO" alternative was not be considered as this will result in flooding of the new reclaim facility (BC-15, 16 &17) underground tunnels. Electronic equipment, variable speed drives, etc. will be located underground. Resulting damage of $3.0 million, AND interim coal handling cost of $330k-$500k.

DO-NOTHING:

The rental of a portable diesel pump is an alternative considered in this evaluation. The assumptions for this alternative are as follows:

1	Rent Portable diesel pump year round and labor.	$101,000
2	Replace HED temporary pipe	$40,000
3	Risk of damage to equipment $3.0 x 20% chance of failure. = $600k	$600,000
4	Interim coal handling = $330k	$330,000
	Total Benefits	$1,071,000

Kingston Fossil Plant
Coal Yard Runoff Pond Piping Upgrade
PCN KIF353

June 1, 2000

Team Members:

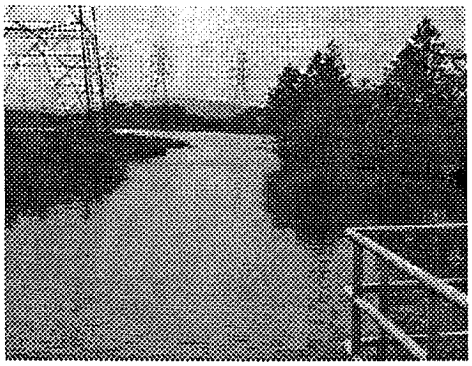
Cherie Minghini	(423) 751-6375
Clark Morris	(423) 751-3214
Scott Sims	(865) 717-2061
Mike Smith	(423) 751-6226
Steve Weaver	(423) 751-3536

Reason For Improvement

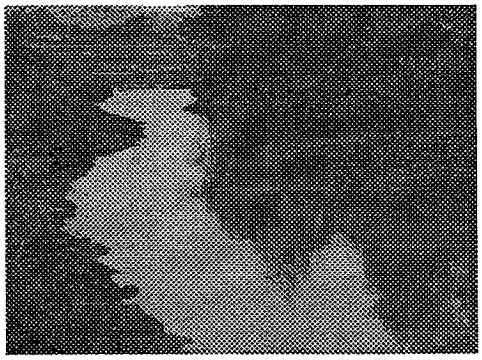
The new coal handling reclaim facility (under construction) flooded on April 29, 1999. The Coal Yard Runoff Pond is approximately 80% full of coal settlement, which leaves only 20% of storage capacity for rain runoff water. This excess drainage backs up onto the coal storage area.

Problem Definition

The rain on 4/29/99, measured 1.75 inches in a 24 hour period. The potential for this magnitude of rain is on average 4.75 (5) times per year, based on historical rain data.



(Picture of Coal Yard Runoff Pond After Rain)

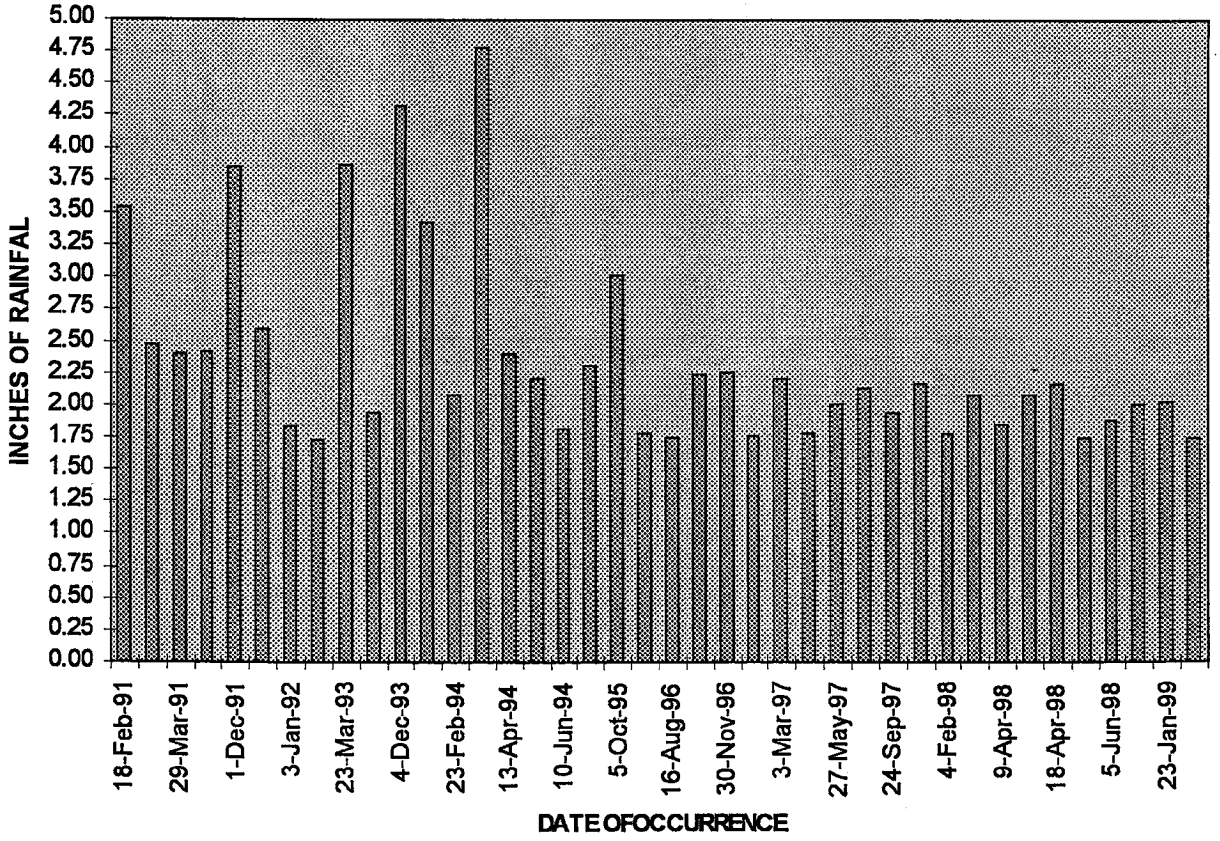


(Same Pond in Between Rain Events)

Problem Definition-Continued

Kingston Significant Rain Data

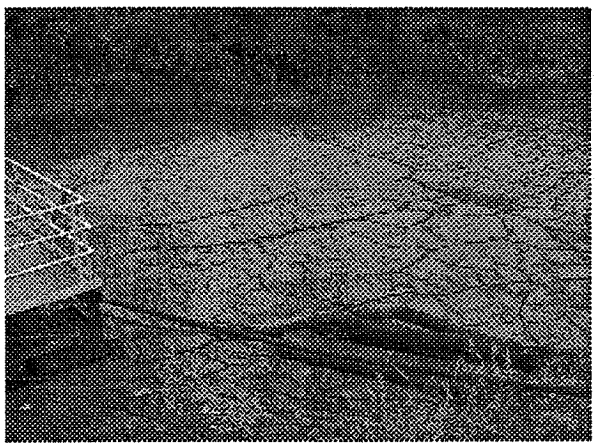
Date of Occurrence	Inches of Rain in 24 hrs	Date of Occurrence	Inches of Rain in 24 hrs
18-Feb-91	3.53	16-Aug-96	1.75
3-Mar-91	2.48	8-Nov-96	2.25
29-Mar-91	2.40	30-Nov-96	2.27
22-Nov-91	2.42	24-Jan-97	1.76
1-Dec-91	3.85	3-Mar-97	2.21
2-Dec-91	2.60	26-May-97	1.79
3-Jan-92	1.83	27-May-97	2.01
4-Oct-92	1.74	14-Jun-97	2.13
23-Mar-93	3.87	24-Sep-97	1.95
6-Aug-93	1.94	26-Oct-97	2.18
4-Dec-93	4.32	4-Feb-98	1.78
11-Feb-94	3.42	8-Mar-98	2.09
23-Feb-94	2.08	9-Apr-98	1.85
27-Mar-94	4.78	17-Apr-98	2.08
13-Apr-94	2.41	18-Apr-98	2.17
26-May-94	2.20	26-May-98	1.75
10-Jun-94	1.82	5-Jun-98	1.89
16-Jul-94	2.32	23-Jul-98	2.01
5-Oct-95	3.02	23-Jan-99	2.03
9-Jun-96	1.79	29-Apr-99	1.75



(Daily Rain Measurements by TVA, Sorted To Include Only 1.75" / 24 Hr. Rains)

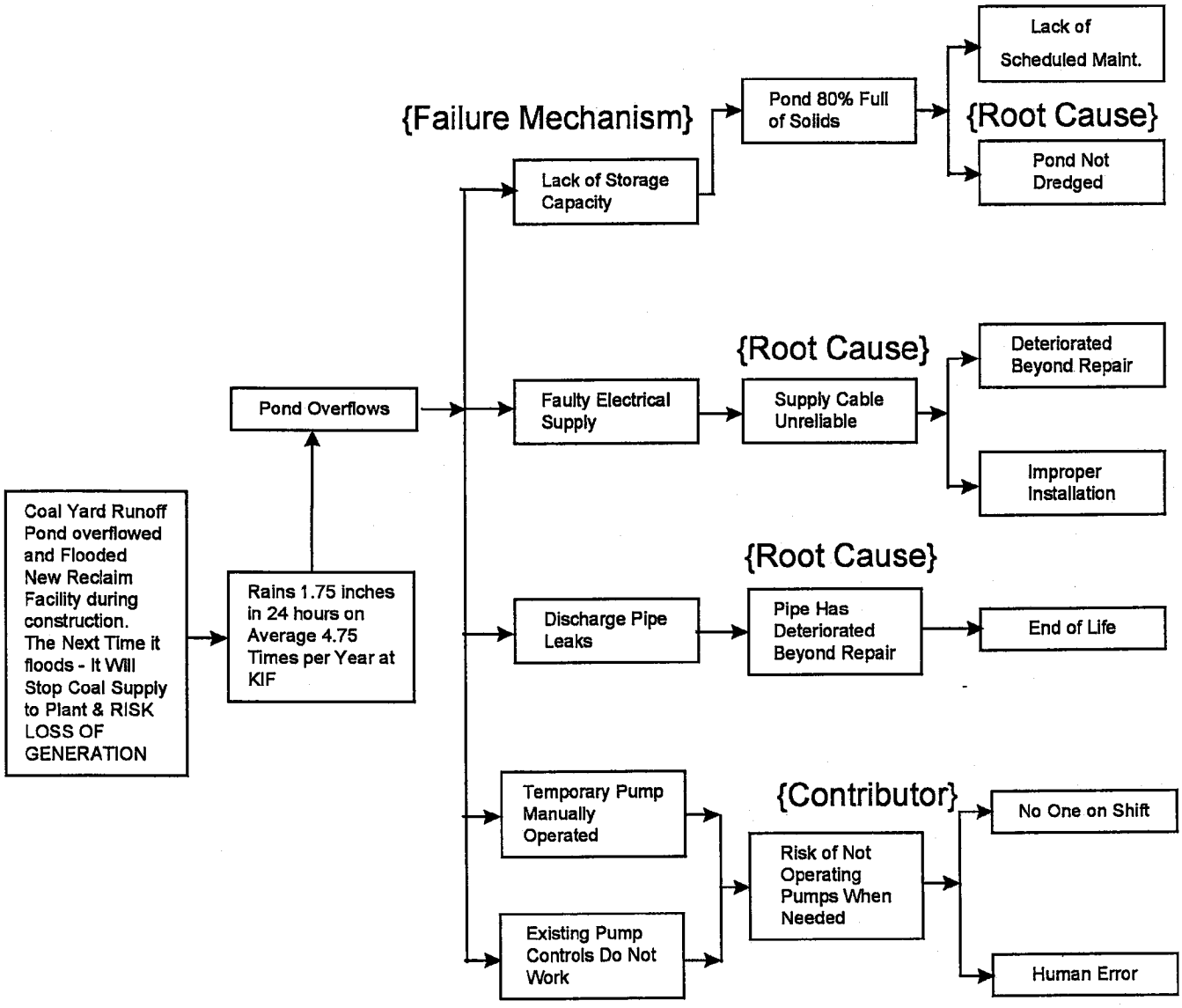
Analysis

- Heavy rain falls have washed fine particles of coal from the Coal Storage Yard into the Coal Yard Runoff Pond decreasing the storage capacity of the pond to about 20% of the original volume.
- Deteriorated Fiberglass Discharge Piping could not handle the increased pressure of the two existing pumps operating simultaneously and
  - The Fiberglass Pipe has now been permanently severed for construction of new railroad loop track to the rail hopper, and is no longer usable.
  - Only one of the two existing pumps could be operated at a time, and could not keep up with the runoff.
- A temporary diesel pump and 14 inch discharge pipe is being used to assist in flood control. This pump & piping will be removed once the reclaim facility construction is complete, scheduled for fall of 2000.
- Presently the existing Pumps are connected to the temporary diesel pump discharge piping.
- The Existing Pumps' Electrical Power Feed is:
  - Deteriorated beyond repair,
  - Unreliable,
  - Permanently severed for construction of new railroad loop track to the rail hopper, and is no longer usable.
  - Trips breaker if both pumps operate at same time.
- The Coal Yard Runoff Pump Controls no longer work and the pumps must be manually turned on and off.
  - Human error could put the new reclaim facility at risk of flooding if pumps are not turned on when needed.



(Pictures Are Attempting to Show Relative Small Volume of Available Storage Capacity)

Analysis Continued



Solutions

Flooding of the new reclaim tunnels will shut off the supply of coal and risk the Loss of Generation. Funding for the following will significantly reduce risk:

- Dredge pond to original storage capacity and enlarge.
- Install a new 10" HDPE discharge pipe from pumps to ash pond (approx. 4200 ft.), sleeve under railroad tracks and main plant road.
- Install a new power feed from new electrical equipment room through new reclaim tunnel, and a direct burial armored cable from end of tunnel to the pumps. Cable will be buried 5 feet deep and sleeved at road crossings.
- Utilize two existing 1200 gpm pumps at existing pump platform. Both pumps will be able to run simultaneously.
- Install pump float switches for auto start/stop. This will eliminate most of the human error that could be involved with managing the pumps.

Projected Cost of Solution

• Install New 10" Discharge Piping	**260,000**
• Install New Electrical Feed to Existing Pumps	**75,000**
• Dredge Coal Yard Runoff Pond	**100,000**
• Install New Local Pump Controls	**5,000**
• Engineering	**75,000**
• Construction Partner Estimate	**10,000**
• Backcharge dredging, pipe and pump rental, labor, etc.	**$165,000**
• TOTAL	**$690,000**

Solutions Continued

Do Nothing Alternative

- If nothing is done to prevent flooding, the new multi-million dollar reclaim facility tunnels could flood, on average, 5 times per year shutting off the supply of coal to the powerhouse until the water and coal can be pumped out, and the following components dried, cleaned, inspected, repaired and/or replaced:
  - motors, variable speed drive, gear reducers, conveyor belt idlers, bearings
  - electronic circuitry, belt scales, limit switches
  - downtime 8 to 12 weeks

Cost

- Damage associated with the flooded reclaim facility tunnels, estimated by Roberts & Schaefer (R&S)

  $3,000,000

- Emergency interim coal handling operation to prevent or reduce derating of all 10 units will cost an additional amount as follows during the downtime:

  $330,000 to $500,000

Solutions Continued

Status Quo Alternative

- The present interim operation consists of using a portable diesel pump & above ground dredge pipe. The rental of a manually operated, portable diesel pump and pipe should not be an alternative considered in this evaluation. This option was put in place temporarily as a quick fix before a permanent fix was accomplished.

Risks

- Existing temporary diesel pump
  - Temporary pump will be removed at close of reclaim project.
  - Temporary above ground pipe is HED dredge pipe and could be removed as required by HED.
- Availability of rental pumps and piping
- Reliability
- Flooding when no one is on shift & human error
- Temporary routing of piping will cause damage to other areas of the reservation. The use of drain culverts to route pipe underneath railroad tracks and roads could cause wash out of track beds and/or pavement damage.
- Exposure of temporary above ground pipe is subject to damage from heavy equipment.

Costs

- The rental cost, fuel cost, labor cost for year round use:

  $101,280

- Cost of replacement dredge pipe for HED:

  $40,000

- Costs associated with risks of flooding are similar to the Do Nothing Alternative:
  - Damage associated with the flooded reclaim facility tunnels, estimated by Roberts & Schaefer (R&S):

    $3,000,000

  - Emergency interim coal handling operation to prevent or reduce derating of all 10 units will cost an additional amount as follows during the downtime:

    $330,000 to $500,000

Solution Matrix

	Possible Solutions	Barriers	Aids	Implement
1	Dredge Pond, Install new 10" Piping, Install new Power Feed & New Pump Controls	High Capital Cost, $850,000	Best Solution to prevent flooding & Avoid Loss of Power Generation	YES
2	Do Nothing Alternative, This option should NOT be Considered	Significant Certainty of Flooding Reclaim Facility an Average 5 Times per year, costing up to $3,000,000 for each flood to restore plus up to $500,000 for each emergency interim coal handling operation & possible deratings of all 10 units	No capital cost	No
3	Rent portable diesel pump	Not reliable, manually operated, risk of flooding when nobody is on shift, human error of neglecting to operate diesel pump, high O&M Costs of $101,280 per year, cost of $40,000 to replace HED dredge pipe. Use of temporary pipe routing risks the back up of water in other areas putting at risk the railroad tracks, roads, etc. Potential risk of flooding reclaim facility costing $3,000,000 for each flood to restore plus up to $500,000 for each emergency interim coal handling operation & possible deratings of all 10 units	No capital cost	No

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND PIPE UPGRADE
PROJECT SCOPE

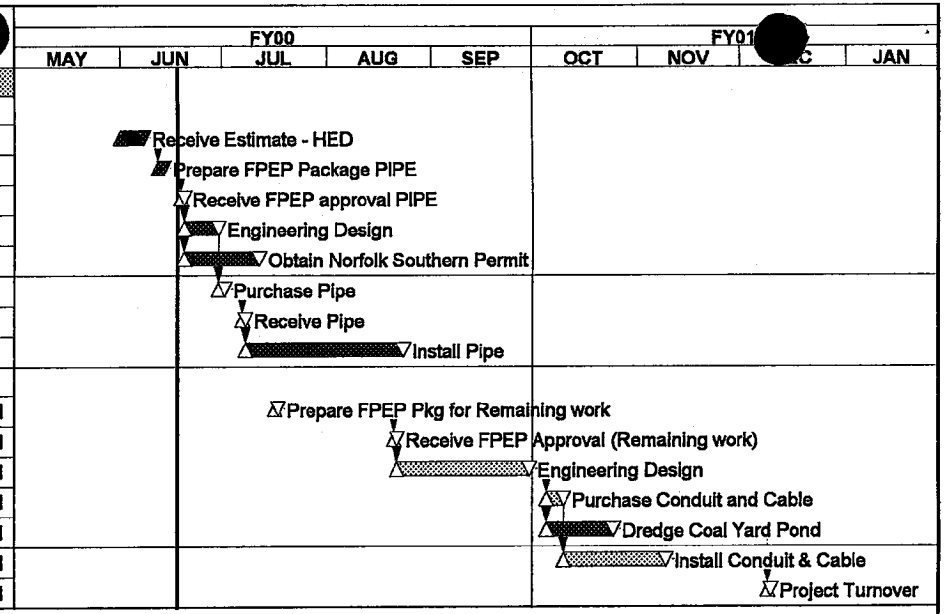
Background:

The existing coal yard runoff pond system can not handle a significant rainfall event and could cause the new coal handling reclaim facility to flood. Over the years, heavy rains have washed coal fines from the storage area into the pond. Storage has decreased to about 20% of the original volume. The existing fiberglass discharge piping and electrical power feed is deteriorated beyond repair, permanently severed, and is no longer usable. The existing pump controls do not work and the pumps are powered on and off manually.

The project will consist of installation of a new discharge pipeline to the ash pond. The coal yard pond will be dredged to original capacity and enlarged. An overflow spillway will be constructed. New electrical power feed, pump float switches, and warning enunciator will be installed to the existing pumps.

The construction of this project will be divided into two parts - Phase IIIA and IIIB. Phase IIIA will include installation of the pipeline from the coal yard runoff pond to the ash pond and removal and disposal of the existing pump platform.

SEC	Activity ID	Forecast Start	Forecast Finish	Target Finish	Rem Dur	Resource ID	Budget Quantity	Cost Acct	PSTA	
KIF353 COAL YARD PUMP DISCHARGING PIPING										
Piping										
	CXK20	01JUN00A	07JUN00A		0		0.00			PIP
	CXK	12JUN00A	13JUN00A		0		0.00			PIP
	CXK10	19JUN00*	19JUN00		1		0.00			PIP
	CXK30	20JUN00	29JUN00		10		0.00			PIP
	CXK60	20JUN00	11JUL00		22		0.00			PIP
	CXK40	30JUN00	01JUL00		2		0.00			PIP
	CXK50	07JUL00	07JUL00		1		0.00			PIP
	CXK70	08JUL00	23AUG00		47		0.00			PIP
Electrical Supply & Other										
	CXK80	17JUL00*	17JUL00		1		0.00			OTH
	CXK90	21AUG00*	21AUG00		1		0.00			OTH
	CX	22AUG00	29SEP00		39		0.00			OTH
	CXK110	05OCT00	09OCT00		5		0.00			OTH
	CXK130	05OCT00	24OCT00		20		0.00			OTH
	CXK120	10OCT00	08NOV00		30		0.00			OTH
	CX10	09DEC00	09DEC00		1		0.00			OTH



Project Start 01JAN89
Project Finish 09DEC00
Data Date 18JUN00
Run Date 13JUN00

Early Bar
Progress Bar
Critical Activity

FHEM:KIFY

Sheet 1 of 1

Tennessee Valley Authority

Fossil Engineering Schedule

KINGSTON FOSSIL PLANT

COAL YARD PUMP DISCHARGE PIPING

PCN KIF353

Current Phase:

WORK PACKAGE		SHORTCODE	CURRENT BUDGET ($ 000's) PY	FY00	FY01	TOTAL	ACTUAL COST AS OF JUN ($ 000's) PY	FY00	FY01	TOTAL	FORECAST ($ 000's) PY	FY00	FY01	TOTAL	Proj Var
PHASE 1			-	-		-	-			-	-	-	-	-	
KIF353A-0001	Parsons			29		29					-			-	
	FE Electrical			5		5					-			-	
	FE Civil			8		8					-			-	
						-					-			-	
						-					-			-	
	Total Phase 1		-	42		42	-	-		-	-	42	-	42	
PHASE 2						-									
KIF353B-0001	Fossil Engineering Civil		-	10	5	15	-	-		-	-	10	5	15	
KIF353B-0002	Fossil Engineering Elect.		-	10	-	10	-			-	-	10	-	10	
KIF353B-0003	Fossil Engineering -Parsons		-	15	-	15	-			-	-	15	-	15	
KIF353B-0004	Partner Estimate		-	7		7	-			-	-	7	-	7	
KIF353B-0005	Material- Pipe		-	35		35	-			-	-	35	-	35	
KIF353B-0006	Material-Cable Conduit/Float Switches		-	15	24	39	-			-	-	15	24	39	
			-			-	-			-	-	-	-	-	
			-			-	-			-	-	-	-	-	
	Total Phase 2		-	92	29	121	-	-		-	-	92	29	121	
PHASE 3						-									
KIF353C-0001	ENGINEERING SUPPORT		-	10	15	25	-			-	-	10	15	25	
KIF353C-0002	PARSON'S SUPPORT FOR PIPE		-	5		5	-			-	-	5	-	5	
KIF353C-0003	INSTALL CABLE & CONDUIT		-	-	30	30	-			-	-	-	30	30	
KIF353C-0004	HED INSTALL 10 INCH PIPE		-	160	20	180	-			-	-	160	20	180	
KIF353C-0004	HED DRILL AND BORE SLEEVES		-	-	60	60	-			-	-	-	60	60	
KIF353C-0005	HED EXCAVATE POND		-	-	62	62	-			-	-	-	62	62	
KIF353C-0006	PUMP RENTAL & DREDGING		-	165		165	-			-	-	165	-	165	
	Total Phase 3			340	187	527	-	-	-	0	-	340	187	527	
	TOTAL PROJECT		-	474	216	690	-	-	-	-	-	474	216	690	
											Forecast minus Budget	-	-		

Total Fossil Engg Actual -

Project Engineer: Cherie Minghini (751-6375)
Project Control Engineer: Mike Smith (751-6226
)

KIF353 COAL YARD RUNOFF POND.xls - Detailed Cost Sheet
06/13/2000 8:27 AM

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KINGSTON FOSSIL PLANT - COAL YARD RUNOFF POND - PIPING UPGRADE	KINGSTON FY: 2001 R#: 0

I. PROJECT DESCRIPTION

PROJECT LOCATION / CSC:	ORGANIZATION	
	OWNER	LEAD
	FPG	KINGSTON

TECHNICAL CONTACT	SPONSORED BY
NAME: STEVE WEAVER	NAME: SCOTT SIMS
PHONE: (423) 751-3536	PHONE: (423) 717-2061
LOCATION: LP 2T-C	LOCATION: KINGSTON

PROJECT CATEGORY

Economic & Regulatory

(**ECONOMIC**, CUSTOMER, **REGULATORY**, BOARD, BLANKET)

REASON FOR IMPROVEMENT (Consequences of not doing)

Coal yard drainage basin overflows its' banks during moderate rains of 1.75 inches/24 hrs. The water flows onto the coal storage area which will fill up the new underground coal live pile reclaim structure (under construction). The potential for this magnitude of rain is on average 4.75 times per year, based on historical rain data.

PROBLEM DEFINITION

Settlement has reduced the capacity of the drainage basin (pond) by at least 80%. Only one of the two pumps can be operated at a time due to deteriorated discharge piping. Pump must be manually turned on/off. The electrical power feed is deteriorated beyond repair. Flooding the new reclaim tunnels will shut off the supply of coal until it can be pumped out, and the new motors, variable speed drive electronic circuitry, belt scales, limit switches are dried, cleaned inspected repaired and/or replaced, resulting in emergency hauling of coal by pan scrapers to the rotary car dumper, and possible derating of all 10 units, if nothing is done (status quo).

PROJECT SCOPE

Dredge pond to original storage capacity and enlarge if possible. Install a new 10" HDPE discharge pipe from pumps to ash pond (4200 ft.), sleeve under railroad tracks and plant road. Install pump float switches for auto start/stop. Install a new power feed from new electrical equipment room through new reclaim tunnel, and a direct burial armored cable from end of tunnel to the pumps. Cable will be buried 5 feet deep and sleeved at road crossings.

IMPACT OF DELAY TO NEXT AVAILABLE IMPLEMENTATION WINDOW

Possible derating of all 10 units at KIF

HOW WILL THE ACHIEVEMENT OF CLAIMED BENEFITS BE MEASURED FOR THIS PROJECT?

1. No disruption to the new coal reclaim facility operation from potential flooding from runoff pond overflow..
2. No derating of units resulting from flooding of new reclaim facility.
3. Avoid additional coal handling costs associated with flooding of new reclaim facility.
4. No environmental impacts (REE'S) of pond overflow into river

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
NGSTON FOSSIL PLANT - COAL YARD RUNOFF POND - PIPING UPGRADE	FY: 2000 R#: 0

II. PROJECT ECONOMIC EVALUATION

PROJECT COST

	Thousands of Dollars
SUNK COST:	$0
REMAINING COST:	$0
TOTAL COST:	$379,000 (includes contingency)
CONTINGENCY:	*$27,000*
FORECAST:	*$0*

PROJECT ECONOMIC INDICATORS

NPV:	@15%	IRR:	%
PI:	@ 15%	PAYBACK:	yrs.

PROJECT CASH FLOW

Costs: FY2001

This project consists of the following:

1 Replace the pump discharge piping from the floating platform to the ash pond with HDPE piping	$150,000
2 Install a new electrical feed through the reclaim tunnel to the floating platform.	$125,000
3 Engineering	$25,000
4 Dredge pond to provide additional storage capacity, 16K cu. yd.=3000K gallons	$50,000
5 Controls, float switches	$2,000
Contingency	$27,000
	Total $379,000

SUNK			OUT YEARS
Cost:	0	Cost Benefits + Non-Discounted Cash Flow (1,000s)	Cost: 0
Benefit:	0	Cumulative NPV Calculated @ 15% from 1999	Benefit: 0

Year:	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Cost:										
Benefit:										
Cum NPV:										
Year:	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Cost:										
Benefit:										
Cum NPV:										

4/15/99

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
	FY: 2001 R#: 0

II. PROJECT ECONOMIC EVALUATION (continued)

COST ASSUMPTIONS

Cost Assumptions	CL L/M/H	Basis for Confidence Level (CL)	Sensitivity/Range Low	Most Probable	High

BENEFIT ASSUMPTIONS

Benefit Assumptions	CL L/M/H	Basis for Confidence Level (CL)	Sensitivity/Range Low	Most Probable	High

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
	FY: 2001 R#: 0

III. PROGRAM PLAN

IV. PROJECT COORDINATION

SHOULD THIS PROJECT BE LINKED TO ONE OR MORE OTHER PROJECTS?

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
	FY: 2001 R#: 0

V. REGULATORY

(If this Project is not a Requirement, Commitment, or Nuclear Safety, skip this page.)

THIS PROJECT IS A

SOURCE OF REQUIREMENT, COMMITMENT, NUCLEAR SAFETY (Provide specific references)

WHAT IS THE PENALTY FOR NON-COMPLIANCE (Financial, Legal, Political)?

DOES THIS PROJECT TOTALLY RESOLVE THIS ISSUE?

YES: X NO: If NO, list other projects required

DOES THIS PROJECT RESOLVE OTHER ISSUES?

YES: If YES, identify the issue(s) NO: X

THIS PROJECT MUST BE FUNDED THIS YEAR?

YES: [ ] If YES, Why? NO: [X]

This project must be completed by: [ ] (Date)

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
[redacted]	FY: 2001 R#:

VI. BOARD / STRATEGIC

WHO DIRECTED?

WHEN?

WHY (Tie to Strategic Directive)?

[redacted]

THIS PROJECT MUST BE FUNDED THIS YEAR?

YES : If YES, Why? NO: X

This project must be completed by: (Date)

[redacted]