# Kingston Fossil Plant Decision Matrix

Pond or Peninsula?

January 27th, 2005

Plant Managers Conference Room

10 AM – 11:30 AM

?
Pond
Peninsula

# Presentation of Decision Matrix Agenda

- How We Got Here & Where We Are
- Basis for Matrix
- Presentation of Options
- Presentation of Option Costs
- Summary of Present Worth by Option
- Engineering Recommendation
- Path Forward

# How We Got Here & Where We Are

- Initial Look at Peninsula for Gypsum Only
  - Plant Manager's Concerns for this Area
  - and Request to Revisit a Pond Only Option (JPT)
- Blowout – November 2003
  - Interim Cell Decision
  - Permit Package Required by DSWM
  - TVA took this opportunity to do the engineering and permitting required for a Lateral Expansion utilizing the remaining capacity in the pond complex. This expansion included all wastes in all forms.
- Part II Permit Package Submitted in June 2004

# How We Got Here & Where We Are

- Peer Review
  - Questions Raised by Yard Regarding Complexity of Operation
- Results of Peer review
  - Continue Permit Application As Is
  - Even More Flexibility Added to Maintain Gypsum & Ash Separately in Pond Option
  - Strengthened our Argument for Not Having a Liner

# Where We Are

## IT'S DECISION TIME.....

Decision Needed for Gypsum Disposal

- ✓ Gypsum Production Begins in 2009
- ✓ Permit Process for Peninsula Option must begin now to have a facility in-place when Gypsum is produced

# Basis for Matrix

This is the "Given and Assumed" Portion of the Problem

Ash Production Per Year (2003 numbers):

398,000 CY Fly Ash

77,600 CY Bottom Ash

Provided by Missy Hedgecoth:

Gypsum Production Per Year:

327,360 CY

Provided by FGD Team – Based on Calculation using a 2.8# Coal (Average) Burn – Assumes No Marketing Success

# Basis for Matrix

Gypsum Production Begins in 2009

Twenty-Five Year Window – 2005 Present Worth Value (PWV)

Closure Cost are NOT included for any option since all options provide in excess of 25 years capacity

Dry Fly Ash Conversion Cost – Includes a $2,000,00 deduction that assumes the electrical power cost would be absorbed by the scrubber project.

Since the in pond option is at the 50% design stage and the peninsula option is at the Phase 1 stage, a 5% delta in contingencies has been added to the peninsula option to "level the playing field" between the pond and peninsula options.

# Basis for Matrix

## Operations Assumptions:

Gypsum Delivery Costs are assumed as equal between the Pond Option and the Peninsula Option – Evidenced by the similar distance and height pumped.

O&M cost for Gypsum in Pond Options are higher to account for more complex operation

- Greater effort in maintaining rim ditches, additional engineering support and surveying costs, etc.
- O&M Costs have been reviewed and confirmed by HED (Larry Radford)

# Basis for Matrix

**Peninsula Options Include:**

**Assumed cost of $ 500,000 (2005 dollars) for Karst Mitigation**

**Must be an Assumption – Exact Cost will not be known until construction is completed**

**Assumed cost of $250,000 (2005 dollars) for Stream Mitigation**

**Based on 1300 linear feet of impact and a "in lieu of" fee of $200/ft of impact per TDEC guidance**

# Presentation of Options

- There are Four Major Options included in this Matrix. For the purpose of comparison of options the cost for a liner in the pond (if required by TDEC) is omitted since it may be required for the lateral expansion of the dredge cell even if no gypsum is placed there. This decision is outside TVA's control. Gypsum disposal on the peninsula assumes a clay liner.
- As stated earlier, all options provide in excess of the required 25 years capacity.

# Option 1

**Wet Ash in Pond – Gypsum on Peninsula**

- Includes Fix for Swan Pond Road
- Dredge Cells are Operational for the Next 25 Years
- Dry Fly Ash Conversion is Not Required During the 25 year Evaluation Period (Beyond 2029)

# Option 2

## Dry Ash in Pond – Gypsum on Peninsula

**For Study Purposes**

- No Fix for Dredge Cells on Swan Pond Required
- Gypsum Rim Ditching on Peninsula
- Dry Fly Ash Conversion Assumed to Occur in 2005

# Option 3

## Wet Ash in Pond – Gypsum in Pond

- Includes Fix for Swan Pond Road
- Assumes Combined Dredge Cell/Gypsum Rim Ditch Operation in Pond
- Dry Fly Ash Conversion is Required in 2016

# Option 4

**Dry Ash in Pond – Gypsum in Pond**

**For Study Purposes**

- **No Fix for Dredge Cells on Swan Pond Required**
- **Dry Fly Ash Conversion Assumed to occur in 2005**

# Presentation of Option 1 Costs

## Wet Ash in Pond – Gypsum on Peninsula

Details are in the Appendixes

| | |
|---|---|
| Capital Costs (PWV) | $ 13,121,862 |
| O&M Cost (PWV) | $ 10,629,977 |
| Total Present Worth | $ 23,751,838 |

# Presentation of Option 2 Costs

## Dry Ash in Pond – Gypsum on Peninsula

| | |
|---|---|
| Capital Costs (PWV) | $ 38,447,448 |
| O&M Cost (PWV) | $ 17,512,694 |
| Total Present Worth | $ 55,960,142 |

Details are in the Appendixes

# Presentation of Option 3 Costs

## Wet Ash in Pond – Gypsum in Pond

| | |
|---|---|
| Capital Costs (PWV) | $ 16,896,059 |
| O&M Cost (PWV) | $ 13,270,679 |
| Total Present Worth | $ 30,166,737 |

Details are in the Appendixes

# Presentation of Option 4 Costs

## Dry Ash in Pond – Gypsum in Pond

| | |
|---|---|
| Capital Costs (PWV) | $ 33,952,770 |
| O&M Cost (PWV) | $ 19,096,939 |
| Total Present Worth | $ 53,049,709 |

Details are in the Appendixes

# Summary of Present Worth by Option

| Option 1 | Option 2 | Option 3 | Option 4 |
|---|---|---|---|
| Wet Ash in Pond – Gypsum on Peninsula | Dry Ash in Pond – Gypsum on Peninsula | Wet Ash in Pond – Gypsum in Pond | Dry Ash in Pond – Gypsum in Pond |
| Present Worth $23,751,838 | Present Worth $55,960,142 | Present Worth $30,166,737 | Present Worth $53,049,709 |

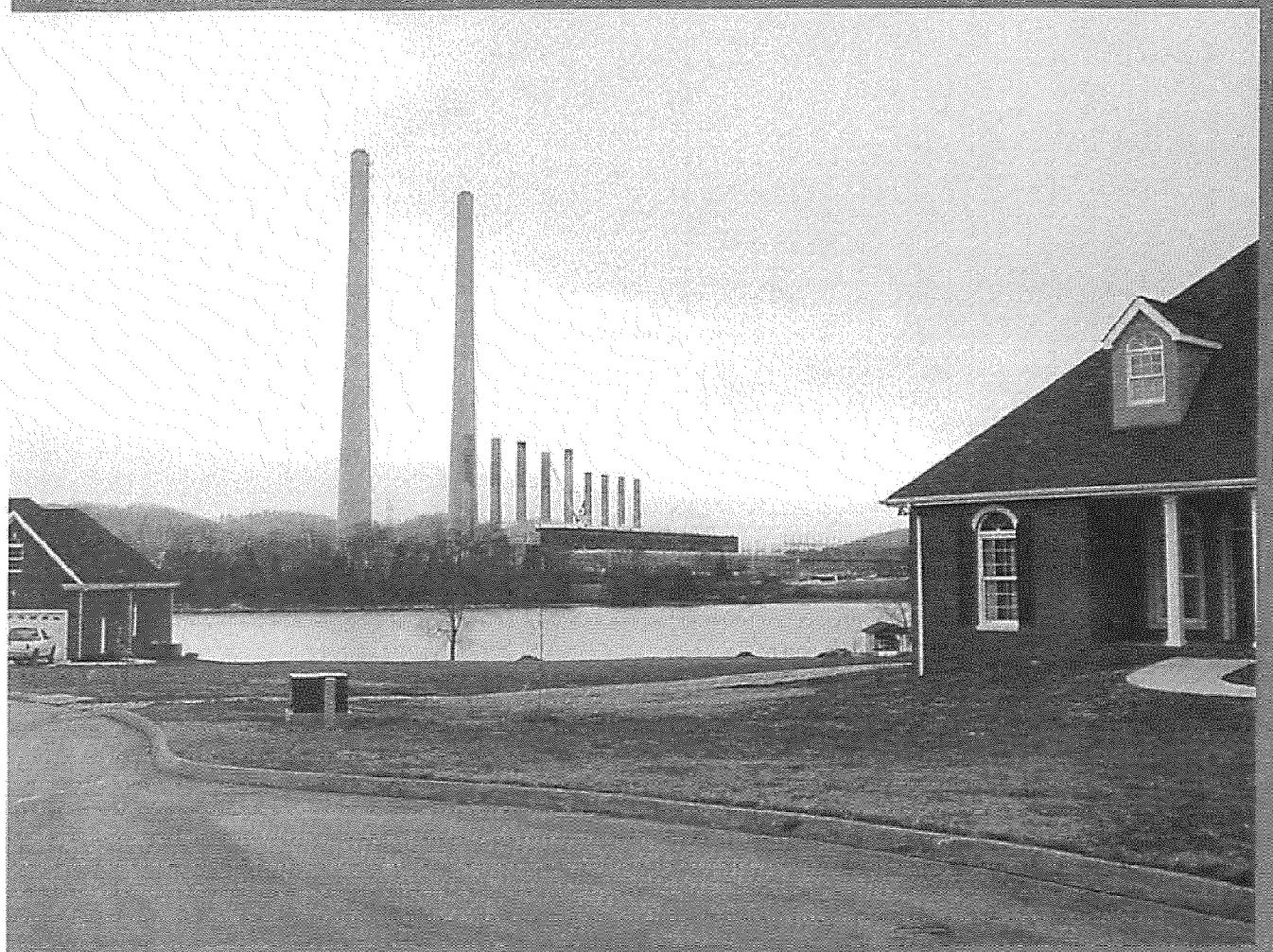
# Summary of Non-Economic Factors by Option

## Option 1 Wet Ash in Pond – Gypsum on Peninsula

- Straight forward design and operation
- Potential opposition of neighbors across the lake
- Involves ARAP & 404 Permitting
- Takes a State Wildlife Management Area
- Involves karst mitigation
- Adds a New NPDES Outfall

## Option 3 Wet Ash in Pond – Gypsum in Pond

- Permit is already in process
- Less potential for public opposition
- Does not involve any greenfield impacts
- More operationally complex
- Utilizes potential ash disposal capacity for gypsum



There are two significant non-economic issues

- Proximity of neighbors across the lake
- Operational complexity of in-pond option

# Engineering Recommendation

**Recommended Option**
**Wet Ash in Pond – Gypsum on Peninsula (Option 1)**

**HOWEVER, WE ALSO RECOMMEND THAT PERMITTING FOR OPTION 3 CONTINUE TO BE PURSUED.**

- Already in Permit Process
- No Additional Expense
- Lateral Expansion Permit Required for Ash Regardless of Gypsum Decision
- This Option Can Be a Fall Back Position If Public Opposition Delays Permitting Peninsula

# Path Forward

Begin Development of Permit Package for Peninsula

Collection of groundwater information has been ongoing

ARAP & 404 permits will be required

Milestone Dates are included in Appendix A

NPDES Outfall permitting will be pursued

# Appendix A – Permitting Milestones