



Big Sandy Plant Unit 1
ORDER-OF-MAGNITUDE FGD/SCR COST ESTIMATE

Prepared for:
Kentucky Power Company (Owner)
and American Electric Power Service Corporation

Project No. 12756-000
November 24, 2010

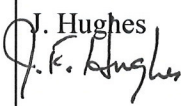
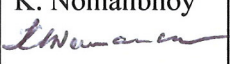
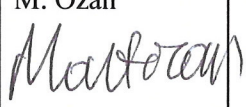
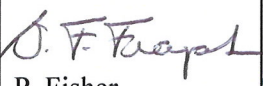
Report for NID Technologies

Volume 1 – Summary Report



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Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	11/10/10	Comments	D. Anderson J. Hughes K. Nomanbhoy M. Ozan	D. F. Franczak P. Fisher	S. R. Bertheau	All
0	11/24/10	Use	D. Anderson  J. Hughes  K. Nomanbhoy  M. Ozan 	D. F. Franczak  P. Fisher  Poulette Fisher/mwo	S. R. Bertheau 	All



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EXECUTIVE SUMMARY

Sargent & Lundy (S&L) recently completed the Big Sandy Plant Unit 2 Order-of-Magnitude FGD Cost Estimate Study to assist American Electric Power (AEP) with the selection of an FGD technology for Unit 2.

For that Study Order-of-Magnitude FGD Cost Estimates were prepared for the following four FGD Technologies:

- **Wet (WFGD):** Wet FGD Spray Tower and Integrated Wet ESP
- **Dry (DFGD):** Dry FGD Spray Dryer Absorber (SDA) and Fabric Filter (FF)
- **IAQCS:** Integrated Air Quality Control System (IAQCS) Dry SDA/FF and Wet FGD Spray Tower
- **NID:** Dry FGD NID and Fabric Filter

For each technology, capital cost estimates were prepared for fuel specifications with sulfur content of 1.7, 3.0, 4.5 and 7.5 lb SO₂/MMBtu. A base fuel was selected for each technology and a capital cost estimate was prepared for each assuming an Engineer, Procure, Construct (EPC) contracting approach. Adjustments were then made to the base cost estimate to develop the remaining fuel cost estimates for that specific technology.

The Final Report for the Unit 2 Study was issued on September 29, 2010 and revisions to the report were provided on October 14, 2010.

Subsequent to the release of the Final Report for the Unit 2 Study AEP determined a need to evaluate Unit 1 and develop an incremental cost estimate for the addition of a FGD and SCR system. The technology selected to evaluate was the NID technology for both Units 1 and 2, with the existing cold-side ESP removed from service. The design basis fuel considered was 1.7 lb SO₂/MMBtu for Unit 1 and 3.0 lb

SO₂/MMBtu for Unit 2. Since the Unit 2 study included a cost estimate for the NID Technology (ESP Out of Service) using 3.0 lb SO₂/MMBtu fuel, this cost estimate was used as the starting point for development of the new Unit 2 cost estimate calculating the incremental change from the original Unit 2 cost estimate. A new Unit 1 cost estimate was prepared to develop the costs for the new equipment required for the Unit 1 NID FGD System and the SCR. The combination of these two cost estimates provides the total cost for the combined Unit 1 and Unit 2 projects.

The results of the capital cost estimates prepared for Unit 1 NID FGD and SCR, and Unit 2 NID FGD, were tabulated in the following tables. Costs were tabulated without (Table ES-1) and with (Table ES-2) escalation and contingency. These total costs include costs provided by AEP for the common dual flue chimney installation, CEMS equipment, activated carbon injection (ACI) system and hazardous material abatement. The cost estimates exclude AEP costs for associated project work (new landfill, haul road, coal blending equipment, economizer exit gas temperature control system, etc.) which are typically not included in FGD cost estimates.



Table ES-1
CAPITAL COST ESTIMATE SUMMARY
(EXCLUDES ESCALATION AND CONTINGENCY)

Technology	Existing ESP Option	Unit 1 FGD & SCR Total Cost (1.7 lb SO ₂ /MMbtu)	Unit 2/Unit 1&2 Common FGD Total Cost (3.0 lb SO ₂ /MMbtu)	Total Unit 1 and 2 Cost
NID	N/ESP	\$152,316,400	\$412,124,900	\$564,441,300

N/ESP = ESP Out-of-Service

Table ES-2
CAPITAL COST ESTIMATE SUMMARY
(INCLUDES ESCALATION AND CONTINGENCY)

Technology	Existing ESP Option	Unit 1 FGD & SCR Total Cost (1.7 lb SO ₂ /MMbtu)	Unit 2/Unit 1&2 Common FGD Total Cost (3.0 lb SO ₂ /MMbtu)	Total Unit 1 and 2 Cost
NID	N/ESP	\$198,531,800	\$521,325,400	\$719,857,200

N/ESP = ESP Out-of-Service

The following Table ES-3 provides a comparison of the original Unit 2 cost estimate (from the Unit 2 study) with the Unit 2 cost estimate prepared for this study. The incremental cost change represents the added common equipment, material, labor and services added to Unit 2 to support the Unit 1 NID FGD. Costs associated with equipment, material, labor and services solely for the Unit 1 NID FGD and SCR are included in the Unit 1 cost estimate identified in Tables ES-1 and ES-2 above.

Table ES-3
Unit 2 CAPITAL COST ESTIMATE
INCREMENTAL CHANGE SUMMARY
(INCLUDES ESCALATION AND CONTINGENCY)

Technology	Existing ESP Option	Unit 2 Original FGD Total Cost (3.0 lb SO ₂ /MMbtu)	Unit 2/Unit 1&2 Common FGD Total Cost (3.0 lb SO ₂ /MMbtu)	Unit 2 Incremental Cost Change
NID	N/ESP	\$489,693,500	\$521,325,400	\$31,631,900

N/ESP = ESP Out-of-Service

The following Table ES-4 provides the total cost of Unit 1 FGD (excluding the SCR) and the incremental cost change to Unit 2 for increasing the capacity of the common FGD Systems to handle Unit 1 as well as Unit 2.

Table ES-4
UNIT 1 & COMMON CAPITAL COST ESTIMATE SUMMARY
(INCLUDES ESCALATION AND CONTINGENCY)

Technology	Existing ESP Option	Unit 1 FGD Total Cost (N/SCR) (1.7 lb SO ₂ /MMbtu)	Unit 2/Unit 1&2 Common FGD Total Incremental Cost Change (3.0 lb SO ₂ /MMbtu)	Total Unit 1 and 2 Cost
NID	N/ESP	\$172,965,900	\$31,631,900	\$204,597,800

N/ESP = ESP Out-of-Service

N/SCR = SCR Excluded

The following Table ES-5 provides the total cost of the Unit 1 FGD and the Unit 1 SCR.

Table ES-5
UNIT 1 CAPITAL COST ESTIMATE SUMMARY
(INCLUDES ESCALATION AND CONTINGENCY)

Technology	Existing ESP Option	Unit 1 FGD Total Cost (N/SCR) (1.7 lb SO ₂ /MMbtu)	Unit 1 SCR Total Cost (1.7 lb SO ₂ /MMbtu)	Unit 1 FGD & SCR Total Cost (1.7 lb SO ₂ /MMbtu)
NID	N/ESP	\$172,965,900	\$25,565,900	\$198,531,800

N/ESP = ESP Out-of-Service

N/SCR = SCR Excluded

O&M costs were based on defined inputs from AEP and the results of the mass balance calculations (for Unit 1 and Unit 2). O&M fixed costs include maintenance material costs and operating and maintenance labor costs. Labor staffing is an assumed minimum value for comparative purposes. Variable O&M costs were developed on a yearly basis in 2010 dollars and include costs for reagent (lime and urea), activated carbon, makeup water, byproduct disposal, SCR catalyst replacement, and fabric filter bag and cage replacement. Unit 1 includes O&M costs for the SCR which are not included in Unit 2.



Table ES-6
FIXED & VARIABLE O&M COST SUMMARY (2010 Dollars)

Technology	Existing ESP Option	Unit 1 (1.7 lb SO ₂ /MMbtu) +		Unit 2 (3.0 lb SO ₂ /MMbtu)	
		Total Fixed O&M Cost (\$/year)	Total Variable O&M Cost * (\$/year)	Total Fixed O&M Cost (\$/year)	Total Variable O&M Cost * (\$/year)
NID	N/ESP	\$3,415,000	\$8,677,000	\$4,956,000	\$29,864,000

N/ESP = ESP Out-of-Service

+ Includes Unit 1 SCR

* Excludes Auxiliary Power

Unit 1 O&M costs for the NID FGD and the SCR are provided in Table ES-7.

Table ES-7
UNIT 1 FIXED & VARIABLE O&M COST SUMMARY (2010 Dollars)

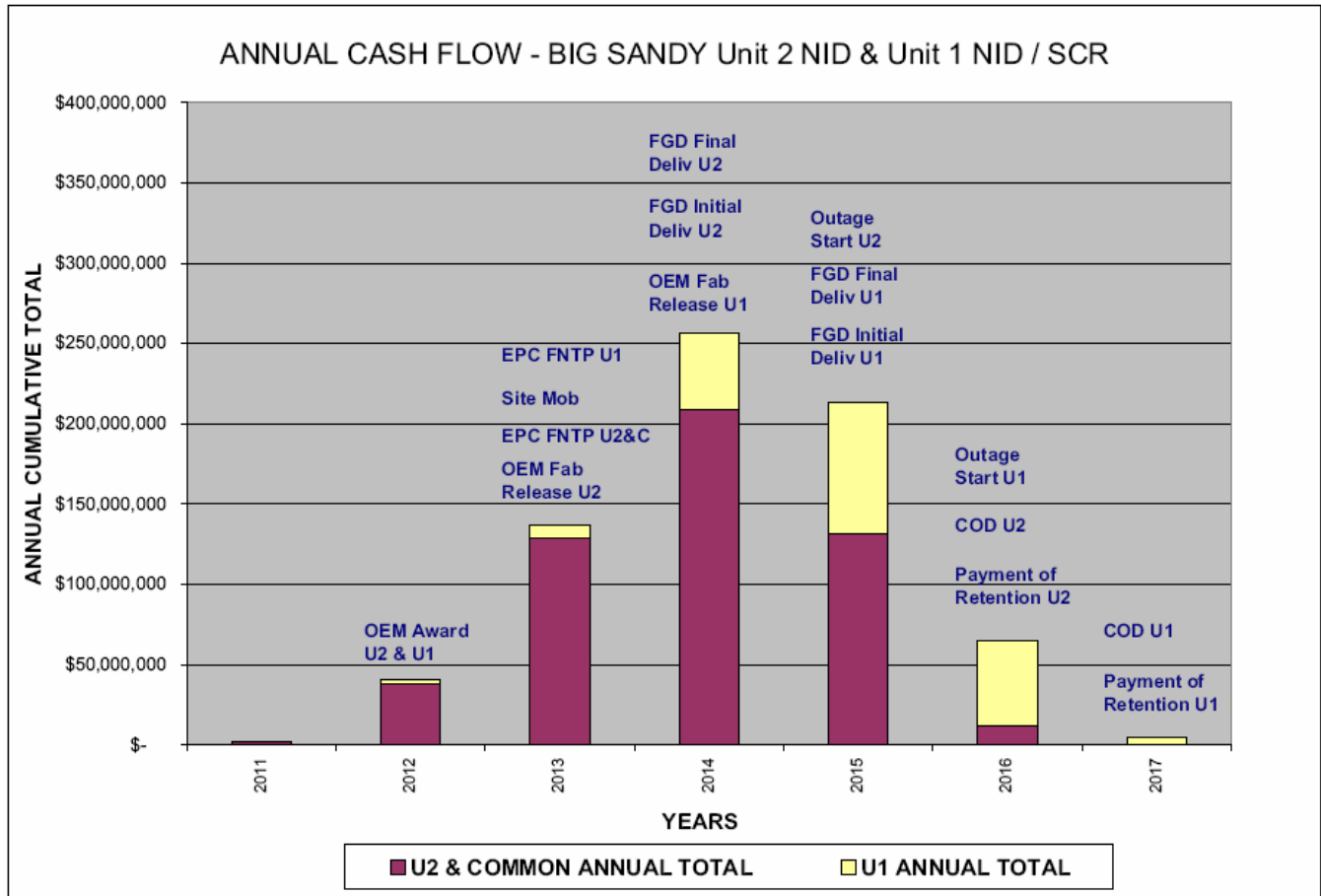
Technology	Existing ESP Option	System	Unit 1 (1.7 lb SO ₂ /MMbtu)	
			Total Fixed O&M Cost (\$/year)	Total Variable O&M Cost * (\$/year)
NID	N/ESP	FGD	\$3,270,000	\$5,918,000
		SCR	\$145,000	\$2,759,000
		Total Unit 1	\$3,415,000	\$8,677,000

N/ESP = ESP Out-Of-Service

* Excludes Auxiliary Power

One EPC project schedule was prepared for the combined Unit 1 and 2 project. The project schedule reflects a project plan to award one EPC contract for both Units and the SCR, but release the unit-based equipment fabrication work based on two separate milestone dates, according to the required commercial operation dates. Unit 2 project activities were developed to meet a Gas to Absorber milestone date of December 1, 2015. Unit 1 FGD and SCR would follow a year later with a Gas to Absorber milestone date of December 1, 2016. Using the results of the capital cost estimates and the EPC project schedule a preliminary project cash flow was developed. The project annual cash flow, showing the incremental yearly cost addition for Unit 1, is represented in Figure ES-8 and identify key project milestone dates.

Figure ES-8
PROJECT ANNUAL CASH FLOW SUMMARY



The technical and commercial basis to develop the capital and O&M cost estimates is defined in the following report.

1.0 INTRODUCTION

Sargent & Lundy (S&L) recently completed the Big Sandy Plant Unit 2 Order-of-Magnitude FGD Cost Estimate Study to assist American Electric Power (AEP) with the selection of an FGD technology for Unit 2.

For that Study Order-of-Magnitude FGD Cost Estimates were prepared for the following four FGD Technologies:

- **Wet (WFGD):** Wet FGD Spray Tower and Integrated Wet ESP
- **Dry (DFGD):** Dry FGD Spray Dryer Absorber (SDA) and Fabric Filter (FF)
- **IAQCS:** Integrated Air Quality Control System (IAQCS) Dry SDA/FF and Wet FGD Spray Tower
- **NID:** Dry FGD NID and Fabric Filter

For each technology, capital cost estimates were prepared for fuel specifications with sulfur content of 1.7, 3.0, 4.5 and 7.5 lb SO₂/MMBtu. A base fuel was selected for each technology and a capital cost estimate was prepared for each assuming an Engineer, Procure, Construct (EPC) contracting approach. Adjustments were then made to the base cost estimate to develop the remaining fuel cost estimates for that specific technology. The cost estimates also considered both the existing ESP in and removed from service for the Dry, IAQCS and NID technologies. The ESP is required to remain in service for the WFGD technology for protection from erosion and wear of the ID fans and FGD system components (pumps, piping, nozzles, etc.).

The estimates were based upon the AEP Order of Magnitude/Relative Capital Installed Cost Estimate Specification (BS2-FGDSCE-052010, Rev. 2) which provided design basis and performance requirements, and the conceptual design deliverables prepared by S&L for each technology. The conceptual deliverables, consisting of project general arrangements, process flow diagrams, mass balances, water balances and electrical one-lines, formed the basis for development of preliminary major equipment sizes and commodity estimates. Attention was focused on the significant elements that changed from one fuel to another, such as storage, handling and disposal of reagent and byproduct

materials. The OEM equipment costs were taken from recent vendor quotes and adjusted for Big Sandy specifications, schedule and unit size.

The Final Report for the Unit 2 Study was issued on September 29, 2010 and revisions to the report were provided on October 14, 2010.

Subsequent to the release of the Final Report for the Unit 2 Study AEP determined a need to evaluate Unit 1 and develop an incremental cost estimate for the addition of a FGD and SCR system. The technology selected to evaluate was the NID technology for both Units 1 and 2, with the existing cold-side ESP removed from service. The design basis fuel considered was 1.7 lb SO₂/MMbtu for Unit 1 and 3.0 lb SO₂/MMbtu for Unit 2. Since the Unit 2 study included a cost estimate for the NID Technology (ESP out of Service) using 3.0 lb SO₂/MMbtu fuel, this cost estimate was used as the starting point for development of the new Unit 2 cost estimate calculating the incremental change from the original Unit 2 cost estimate. A new Unit 1 cost estimate was prepared to develop the costs for the new equipment required for the Unit 1 NID FGD System and the SCR. The combination of these two cost estimates provides the total cost for the combined Unit 1 and Unit 2 projects.

The purpose of this document is to establish the Basis of the Order-of-Magnitude FGD/SCR Cost Estimate to assist American Electric Power (AEP) with developing the incremental costs of adding NID/SCR technology to Big Sandy Plant Unit 1 if Big Sandy Unit 2 is retrofit with NID FGD technology. It is also intended to organize and present the deliverables that were used to develop the Order-of-Magnitude FGD Cost Estimates for both Units 1 and 2. This document defines the project scope of work, the organization of the capital cost estimate structure and the technical and commercial basis used to develop the Capital and O&M Cost Estimates. It also defines the assumptions used in preparing the cost estimates.

This Order-of-Magnitude FGD/SCR Cost Estimate Report is comprised of one (1) volume which contains all the study deliverables.

The cost estimates were based upon conceptual design deliverables prepared by S&L and the AEP Order of Magnitude/Relative Capital Installed Cost Estimate Specification Addendum (BS2-FGDSCE-052010AD1, Rev. 1) which provided design basis and performance requirements. The conceptual deliverables, consisting of project general arrangements, process flow diagrams, mass balances, water balances and electrical one-lines, formed the basis for development of preliminary major equipment sizes and commodity estimates. The OEM equipment pricing for the Unit 1 NID and SCR (catalyst) was based on recent vendor quotes adjusted to meet the Big Sandy project specifications. The installation labor costs were developed as a percentage of the OEM equipment costs based upon cost data previously furnished by various equipment manufacturers which once again was adjusted to meet the Big Sandy specifications and location. The OEM equipment pricing was then benchmarked on a \$/kW basis against other S&L FGD and SCR projects over the last 4 years. The other equipment and material costs included in the capital cost estimate was based on recent vendor proposals, S&L's in-house cost database, vendor catalogs or published estimating manuals and adjusted, as required, for capacity, size, or material type.

Table 1-1 illustrates the new cost estimates that were prepared for this study.

Table 1-1
EPC COST ESTIMATES

Technology	Unit 1 FGD & SCR 1.7 lb SO ₂ /MMbtu	Unit 2 FGD / Unit 1 & 2 Common, 3.0 lb SO ₂ /MMbtu
NID (N/ESP)	Cost Estimate No. 30925	Cost Estimate No. 30924

N/ESP = ESP Out of Service

Existing Unit 2 cost estimate No. 30727 for the NID Technology (ESP out of Service) using 3.0 lb SO₂/MMbtu fuel was used as the basis in development of new Unit 2 cost estimate No. 30924. Comparison summaries were also developed to identify the incremental changes between these two cost estimates.

2.0 TECHNICAL BASIS

The Design Basis used to establish the project scope of work for Unit 1 was fully defined in the AEP Specification BS2-FGDSCE-052010AD1, Revision 1, titled Order of Magnitude/Relative Capital Installed Cost Estimate Specification Addendum (Exhibit 1-1). The Design Basis used previously to establish the scope of work for Unit 2 also applies (BS2-FGDSCE-052010, Revision 2) but is not attached to this report. Additional Design Basis documents were previously provided by AEP for use in establishing the design and scope and are not attached to this report. Table 2-1 identifies the AEP Design Basis documents utilized in this study.

Table 2-1
DESIGN BASIS DOCUMENTS

SPECIFICATION	DESCRIPTION
BS2-FGDSCE-052010AD1, Rev 1 (applies to Unit 1)	Order of Magnitude/Relative Capital Installed Cost Estimate Specification Addendum
BS2-FGDSCE-052010, Rev 2 (applies to Unit 2)	Order of Magnitude/Relative Capital Installed Cost Estimate Specification
GESP-06-004	Civil Design Criteria
SES-7018	Structural Design Criteria for Fossil Fuel Project
DC-NGDE-002	Architectural Design Criteria
DC-MECH-001	Mechanical Design Criteria
DC-ELEC-001-00	Fleet Plant Electrical Design Criteria
DC-FGD/SCR-004-03	Fleet FGD/SCR Control and Instrumentation Design Criteria
-----	Engineering Services Technically Approved Suppliers List (3/2/10)

The Order-of-Magnitude FGD/SCR Cost Estimates were also based on the Big Sandy Plant Unit 1 FGD/SCR Retrofit Project conceptual design developed during the course of the study. These conceptual design deliverables are tabulated in the Project Deliverable Index (Exhibit 1-4) and described below.

2.1 FGD Technology Process Flow Diagrams

Conceptual Process Flow Diagrams were prepared for the Unit 1 NID Technology FGD System to identify the major components of the specific FGD/SCR system and the supporting systems, such as material handling, service water systems, etc. The interfaces to the Unit 2 NID Technology FGD System Conceptual Process Flow Diagrams, prepared for the previous study, are also referenced. These documents were developed early in the estimating process to define the basic scope. They were utilized to develop the general arrangements, preliminary equipment lists and spare parts philosophy. The Process Flow Diagrams for the Unit 1 NID Technology FGD System and the Unit 1 and 2 FGD Common Systems are included as Attachments 1-1.

2.2 Site Plan and General Arrangement Drawings

Conceptual Site Plan and General Arrangement Drawings were prepared to identify the general arrangement and layout of the Unit 1 FGD/SCR System and the Unit 2 FGD System at the Big Sandy Plant. These drawings conceptually show the arrangement of the FGD Island and supporting systems/equipment including those common to both Units. The SCR reagent (ammonia) for Unit 1 will be generated on site from the existing urea conversion system supplying the Unit 2 SCR. The ammonia demand for the Unit 1 SCR is expected to be 500 lbs/hr at 90% NO_x removal and full load.

The Unit 2 Site Plan and General Arrangement Drawings, prepared for the previous study, were used to develop the new combined arrangement for Unit 1 and 2. Separate Ductwork Elevation General Arrangement Drawings were prepared for Unit 1. The General Arrangements were a critical part of the commodity development for the cost estimates. The Site Plan and General Arrangement Drawings for the Unit 1 and 2 NID Technology FGD Systems are included as Attachment 1-2.

2.3 Mass Balances

A Mass Balance was prepared for the Unit 1 NID Technology FGD System and considered three separate variables; flue gas, solids and water. The Mass Balance also considered the existing cold-side ESP out of service. The Mass Balance was utilized in the development of equipment sizing and O&M costs. The Mass Balance for the Unit 1 NID Technology FGD System is included as Attachment 1-3.

2.4 Water Balances

A Water Balance was prepared for the Unit 1 NID Technology FGD System to show the source of FGD system make-up water. The Water Balance also considered the existing cold-side ESP out of service. The Water Balance, similar to the Mass Balance, was utilized in the development of equipment sizing and O&M costs. The Water Balance for the Unit 1 NID Technology FGD System is included as Attachment 1-4.

2.5 Electrical One-Lines

The existing electrical one-lines, switchyard one-lines and the one-lines developed for the Unit 2 study were reviewed to establish options for the auxiliary power required for the Unit 1 NID Technology FGD System and the Unit 1 SCR. The design previously established for Unit 2 was reviewed and modifications were made to the design to incorporate Unit 1. Conceptual load lists were prepared based on in-house data from other projects. The electrical one-lines were utilized to define the basic scope of the electrical system. Electrical equipment sizing and associated costs were then determined for the estimates. The Electrical One-Lines for the Unit 1 and Unit 2 design are included as Attachment 1-5.

3.0 COMMERCIAL BASIS

3.1 Capital Cost Estimate Outline

The Capital Cost Estimates prepared for the Big Sandy Plant FGD/SCR Project were organized by Area/Equipment. The structure of the cost estimates prepared for this study are provided in Exhibit 1-5.

3.2 Capital Cost Estimate Accuracy Range

3.2.1 Cost Estimate Classification

The capital cost estimate prepared for the Big Sandy Plant FGD/SCR Project was classified in accordance with AACE International Recommended Practice No. 18R-97 dated February 2, 2005 (refer to Exhibit 1-2). As a recommended practice of AACE International, the Cost Estimate Classification System provided guidelines for applying the general principles of estimate classification to project cost estimates.

Based on the current level of project definition for the Big Sandy Plant FGD/SCR Project, (1% to 15% of full project definition), the capital cost estimate was categorized as a Class 4 estimate in accordance with the AACE International Recommended Practice No. 18R-97. Therefore, the expected accuracy range of the cost estimate typically varies in the low and high ranges as follows:

Low:	-15% to -30%
High:	+20% to +50%

The Estimate Input Checklist (Figure 2B of AACE International 18R-97) and Maturity Matrix (Figure 4 of AACE International 18R-97) were utilized to further justify the estimate Class 4 determination.

3.2.2 Contingency Analysis

The capital cost estimate contingency was determined using the range estimating process and Monte Carlo analysis. The Palisade Corporation @RISK software program was used to perform the risk analysis using Monte Carlo simulation. Range estimating (1) determined the probability of having a cost overrun, (2) identified how large the overrun can be, and (3) identified how much contingency to add to the cost estimate to reduce the residual risk to an acceptable level. Range estimates were determined for each of the cost elements in the cost estimate reflecting the confidence in the cost estimate. Risk drivers included OEM costs, BOP quantities, relocation/reinforcement costs. Refer to Exhibit 1-6 for the Contingency Analysis summary and other reports that established the contingency used.

3.3 Equipment/Material Cost

3.3.1 The OEM equipment pricing for the NID Technologies were from a 2009 Alstom bid for a confidential client. The bid was an “engineer and furnish only” proposal for a project in which S&L was involved. The costs were adjusted to meet the Big Sandy project specifications. The installation labor costs were developed as a percentage of the OEM equipment costs based upon cost data previously furnished by various equipment manufacturers which once again was adjusted to meet the Big Sandy specifications and location. The OEM equipment pricing was then benchmarked on a \$/kW basis against other S&L FGD projects over the last 4 years. Note that the NID benchmarking was done through comparison to similar Circulating Dry Scrubber (CDS) projects. The other equipment and material costs included in the capital cost estimate (for S&L estimated items) was based on recent vendor proposals, S&L’s in-

house cost database, vendor catalogs or published estimating manuals and adjusted, as required, for capacity, size, or material type. The OEM cost for the SCR catalyst is based on recent vendor quotes received over the past year.

3.4 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were from the TriState Union Wage Rates from Huntington, West Virginia as provided by AEP. State specific Workman Comp % Rates were provided by AEP. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate (See Exhibit 1-3: Union Labor Rate Summary). A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2010 Edition plus and additional 5% for safety related issues for a total productivity multiplier of 1.15.

3.4.1 Labor Work Schedule and Incentives

The estimate assumed a 5x10 work week.

A productivity penalty of +8% (in hours) and premium time cost (1-1/2 times the base rate) between the 40 single and 50 single shift was included.

Per-diem subsistence was excluded for craft labor.

3.4.2 Base Craft Rates

The base labor crafts used for the capital cost estimate were defined in the Union Labor Rate Summary found on page 1 of Exhibit 1-3.

3.4.3 Labor Crews

The construction/erection labor cost was based on the use of applicable construction crews required for the scope of work of this project.

3.4.4 Crew Mixes

Major crew mixes used in the cost estimates were defined in the Union Labor Rate Summary found on page 2 of Exhibit 1-3.

3.4.5 Quantity Sources

Quantities of pieces of equipment and/or bulk material commodities used in this cost estimate were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the site plan and general arrangement drawings, sketches and past project data provided by the S&L Engineers. Equipment quantities were defined in the AEP design basis specification and the conceptual process flow diagrams.

3.4.6 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: 5% of the total equipment and material costs.
- Additional Crane Allowance: Based on the location of the NID FGD and the SCR structures, two separate heavy cranes will be utilized. Costs for heavy construction equipment and large cranes were based upon 6 months (for NID FGD) and 9 months (for SCR) of heavy crane usage with a crane crew of 4 persons full time for each crane/duration. Refer to account 99.0 of the individual estimates for details. Cost of small cranes and construction machinery were included in the wage rates.
- Mobilization and Demobilization: included in labor wage rates as 3.52% of site overhead factor which is 38% of total payroll wages + other + construction equipment. Overall, it is 1.33% of crew wage rates (refer to Union Labor Rate Summary – Exhibit 1-3)
- Scaffolding: 5% of total material and labor costs.
- Consumables: 0.5% of total material and labor costs.
- Loss of Productivity due to working 5-10's for extended periods and Premium Time Pay was included as noted in 3.4.1 above.
- Per Diem Costs: Excluded from the estimate as noted in 3.4.1 above.

- General and Administrative Costs and Profit: Included in the estimate at 15% per AEP direction. Contractor allowance percentages noted above were base estimating percentages used for this type of major construction project on an Order-of-Magnitude estimate. These percentages were applied across the entire estimate and were not intended to be representative of individual estimate work areas. General Administrative Costs and Profit was also applied to the costs provided by AEP for the common dual flue chimney, CEMS equipment, activated carbon injection (ACI) system and hazardous material abatement.

3.4.7 Engineering/Design/Procurement Services

Sargent & Lundy has included estimated costs for Engineering, Design, Procurement Services and Project Management and Administrative Services. These costs were based upon S&L experience with EPC projects, recent FGD projects and other projects performed for AEP.

In addition costs for Training Services (operator & technician training), and Outside Contractors (noise consultant, ductwork consultant, etc.) were included as separate line items.

3.4.8 Construction Management/Field Engineering

Construction Management/Field Engineering was estimated at 3% of total direct and construction indirect costs. Services include on-site construction management, field coordinators and engineering office technical field assistance.

3.4.9 Start-Up Commissioning

Start-Up/Commissioning was estimated at 1% of total direct and construction indirect costs. Services include on-site start-up/commissioning management, start-up coordinators and engineering office support.

3.4.10 Craft Startup Support

Craft Startup Support was estimated at 1% of total labor manhours.

3.4.11 Initial Fills

Initial fills were estimated at 0.3% of total direct and construction indirect costs.

3.4.12 Spare Parts

Spare parts were included as capitalized spares at 0.9% of total equipment costs and spares for first year of operation at 0.6% of total equipment costs.

3.4.13 Owners Costs

Owner costs were not included and will be provided by AEP for the following:

- Project Engineering
- Project Administration
- Owner Construction Management
- Owner Startup & Commissioning
- Permits & Fees
- Air Modeling
- Legal Fees

3.4.14 Sales/Use Tax

Sales/Use Tax was not included in the cost estimate.

3.4.15 Escalation

S&L has monitored over 200 U.S. indices from nine sources to track past escalation. These included indices for various pieces of equipment, various types of material, labor by city, and other items relevant to power plants. Some of the equipment included heat exchangers, pumps, and transformers. Some of the material types tracked included structural steel, pipe, and conduit.

Data for up to the last ten years was used to calculate past escalation. Then using the most current data as a base the average annual escalation was calculated over various time periods from the last six

months, last one year, last two years, last three years, etc., up to the last ten years. We then used that past escalation to help predict future escalation while realizing that past escalation is not an indication of future escalation; but it is an appropriate benchmark along with knowledge of the current market to make predictions. Since anything can occur in a short time frame it was not uncommon to see wide escalation fluctuations for the data of less than about three years. After about three years the data was usually more stable and started to show a long term trend. Also since three years was a reasonable time frame for purchases to be made on many projects this data point was usually used as the starting point for making predictions before current market conditions were factored in. Since using only one data source was very risky, multiple indices from various sources were evaluated and their average was used in the calculation of past escalation.

The average escalation for the last three years was used as the starting point for making predictions before current market conditions were factored in. In addition to this the average escalation for the last five years was used to make escalation predictions after three years in the future before current market conditions were factored in. Based upon this evaluation along with input from AEP we have used the following escalation percentages for the respective units:

Unit 2/Unit 1 &2 Common

Equipment: 4.0%/yr of equipment cost (2012-2016).

Material: 2.0%/yr of material cost (2012-2016).

Labor: 2.5%/yr of labor cost (2011-2016).

Indirects: 2.5%/yr of indirect cost (2011-2016).

Unit 1 FGD & SCR

Equipment: 4.0%/yr of equipment cost (2013-2017).

Material: 2.0%/yr of material cost (2013-2017).

Labor: 2.5%/yr of labor cost (2012-2017).

Indirects: 2.5%/yr of indirect cost (2012-2017).

Escalation was calculated for the Unit 1 and Unit 2 cost estimates based upon time of performance. The escalation percentages noted above were applied to estimate monthly expenditures for each estimate component; equipment, material, labor and indirects. The monthly expenditures were determined from cash flows developed for the combined Unit 1 and Unit 2 project. The cash flow was based upon estimating curves and past project data and can be found in Exhibit 1-9. The escalation component costs provided in the cost estimates was the summation of each of the monthly escalation costs for each component.

3.4.16 Contingency

After completion of the cost estimate a Risk Analysis was performed to develop the contingency to be applied to the cost estimates. Cost categories were defined for establishing target, maximum and minimum values depending on the confidence of achieving the target costs. For each category a range (minimum and maximum values) was determined based on level of design, equipment pricing, material / commodity pricing, labor pricing, and volatility in equipment, material, and labor pricing. These ranges were then entered into a software program utilizing Monte Carlo Simulation to determine an overall contingency for the project. The Monte Carlo Simulation is based on running 10,000 iterations where the inputs are randomly generated from probability distribution curves to simulate the process of sampling. The output was a curve where a point on the curve gives % confidence factor and corresponding overall dollar amount for the project to meet that confidence factor. The software program also provided an output listing contingency % in terms of total direct and indirect costs. For this project a 95% confidence factor was used to determine contingency dollars. Commercially available “@Risk” program was used to perform the risk analysis. Refer to Exhibit 1-6 for the contingency analysis summary.

3.4.17 AFUDC

Costs associated with AFUDC were not included.

3.4.18 Scope Excluded

The following additional scope items were not included.

- New landfill
- By-product disposal at landfill
- Private haul road to landfill (includes bridge)
- New coal handling equipment required for coal blending
- New coal storage/reclaim system
- Boiler modifications including the feedwater bypass system (required to maintain minimum catalyst operating temperature)
- Balanced draft conversion
- Controls modernization

3.5 Assumptions

- 3.5.1** All utilities such as electricity and water, required for the construction of this project, will be furnished by the owner and made available for use by the installation contractors. The installation contractor will be responsible for construction of the infrastructure needed for utilization of the utility, i.e. construction power distribution system, etc.
- 3.5.2** All fuel required for construction equipment will be the responsibility of the installation contractors. This cost is included in the estimate wage rates.
- 3.5.3** Initial fills for testing and startup/commissioning will be furnished by the owner and include the following:
- Lime
 - Urea
 - Service Water
- 3.5.4** Consumables were included as a line item in the estimates totaling 0.5% of Total Direct and Construction Indirect Costs and are comprised of the following:
- Welding Rods

- Solder and Flux
- Tapes of all Types
- Splicing Materials
- Cable-Pulling Compounds
- Sealing Compounds
- Cleaning Fluids

3.5.5 Expendables were included in the labor rates and are comprised of the following:

- Sandpapers
- Emery Cloth
- Rags
- Twine

3.6 Capital Cost Estimate Summary

Refer to the following Exhibits and Attachments for the summaries.

- Exhibit 1-7: Unit 1 NID & SCR/Unit 2 NID Capital Cost Estimate Summary (Unit 1 and Unit 2 Totals)
- Attachment 1-8: Unit 2/Unit 1&2 Common NID Capital Cost Estimate Summary
- Attachment 1-9: Unit 1 NID & SCR Capital Cost Estimate Summary

4.0 O&M COST ESTIMATE

The O&M Cost Estimate Summary for the Unit 1 and 2 NID Technology FGD Systems, including the Unit 1 SCR, is included in Exhibit 1-8. The Unit 2 O&M Cost Estimate Summary in Exhibit 1-8 is the same as prepared for the Unit 2 study. The detailed O&M Cost Estimates for the Unit 1 and Unit 2 NID Technology FGD Systems, including the Unit 1 SCR, is included in Attachment 1-11.

5.0 PROJECT SCHEDULE

An EPC Project Schedule was developed for the Unit 1 and 2 NID Technology FGD Systems, including the Unit 1 SCR, and is included in Attachment 1-12. The project schedule reflects a project plan to award one EPC contract for both Units and the SCR, but release the unit-based equipment fabrication work based on two separate milestone dates, according to the required commercial operation dates. Unit 2 project activities were developed to meet a Gas to Absorber milestone date of December 1, 2015. Unit 1 FGD and SCR would follow a year later with a Gas to Absorber milestone date of December 1, 2016.

Based on the capital cost estimate for Unit 1 and Unit 2 and the EPC project schedule, a cash flow was developed for the complete Unit 1 and 2 project. The total project cash flow curve and a graph indicating the annual cash flow totals is provided in Exhibit 1-9.

6.0 REFERENCES

- 6.1** Order of Magnitude/Relative Capital Installed Cost Estimate Specification, BS2-FGDSCE-052010, Rev. 2, Dated September 24, 2010. Applies to Unit 2 and is not attached.
- 6.2** Order of Magnitude/Relative Capital Installed Cost Estimate Specification Addendum, BS2-FGDSCE-052010AD1, Rev. 1, Dated October 11, 2010. Applies to Unit 1 and is provided in Exhibit 1-1.
- 6.3** AACE International Recommended Practice No. 18R-97 (February 2, 2005): Cost Estimate Classification System – As Applied In Engineering, Procurement, And Construction For The Process Industries. Applies to Unit 1 and Unit 2 and is provided in Exhibit 1-2.
- 6.4** Big Sandy Plant Unit 2, Order-of-Magnitude Final Report for WFGD, DFGD, IAQCS and NID Technologies; Volume 1, Summary Report (October 14, 2010) and Volume 5, NID Technology (September 29, 2010). These reports were issued for the Unit 2 study and are not attached.



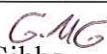
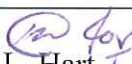
Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

EXHIBIT 1-1
Order of Magnitude/Relative Capital Installed
Cost Estimate Specification Addendum



SPECIFICATION COVER SHEET

TITLE: Order of Magnitude/Relative Capital Installed
Cost Estimate Specification Addendum
SPECIFICATION NUMBER: BS2-FGDSCE-052010AD1

PROJECT:	Big Sandy 1 – Incremental FGD/SCR Estimate		
REVISION:	1		
DATE:	October 11, 2010		
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INTERNAL APPROVAL SIGNATURES			
	Original Issue	Rev. 1	Rev. 2
AUTHOR: L. A. Hicks	L. A. Hicks 8/4/2010	 C. A. West 10/11/2010	
REVIEW: G. M. Gibbs	G. M. Gibbs 8/5/2010	 G. M. Gibbs 10/11/2010	
APPROVAL: T. L. Hart	T. L. Hart 8/6/2010	 T. L. Hart 10/11/2010	

REVISION HISTORY

REV.	SCOPE OF REVISION	APPROVAL
0	Initial Release	TLH 8/5/2010
1	- Deleted items 1, 2 and 4 in Section 1.0; pg 4 and making the Dry FGD Unit 1 & 2 Stand alone NID and Fabric Filter the only estimate. - Added clarification for without existing dry ESP on item 3 in Section 1.0; pg 4 - Deleted reference to Unit 1 stand alone NID and fabric filter design to function as a separate system in Section 1.0; pg 4 - Deleted Table 2.1.1B; pg 4 and replaced with table 2.1.1 - Deleted Table 2.1.1A pg 4 and replaced with table 2.1.1 - Deleted base case Fuel Data for Unit 2 Wet FGD Spray Tower and Wet ESP in Section 2.1.2 pg 5 - Corrected reference to Table 2.1.2 in Section 2.1.2, pg 5 - Added clarification for Unit 2 base case fuel for evaluation with Unit 1 FGD technologies in Section 2.1.2, pg 5 - Deleted reference to WET FGD in Section 2.1.5 Byproduct handling pg 7 - Deleted Table 2.1.5A pg 7 and replaced with Table 2.1.5 - Deleted Table 2.1.5B; pg 8 and replaced with Table 2.1.5 - Deleted Wet FGD Reagent Consumption from Table 2.1.6 pg 8 - Deleted reagent consumption rate for Unit 1 Dry FGD spray dryer absorber and fabric filter in Table 2.1.6; pg 9 - Deleted Section 2.3.1 and Figure 2.3.1 pg 14 and made NID/FF the new Section 2.3.1 - Deleted Section 2.3.2 and Figure 2.3.2; pg 15 and made NID/FF the new Section 2.3.1 - Deleted Section 2.3.4 and Figure 2.3.4 page 17 and made NID/FF the new section 2.3.1 - Revised number of J-reactors from 10 to 12 in Section 2.3.3 and Figure 2.3.3; pg 15 - Deleted Section 2.3.4 and Figure 2.3.4; pg 16 - Deleted Section 2.3.5; pg 16	MWD 10/11/2010

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1.0 PURPOSE

The purpose of this addendum is to provide additional high level design basis requirements such that a 3rd party consultant can develop an incremental cost estimate for Big Sandy Unit 1 FGD. In addition to the Unit 1 FGD system, a Unit 1 SCR system will also be included as part of the incremental cost estimate.

The following Unit 1 FGD technologies and Unit 1 & 2 flue gas arrangements shall be estimated:

- 1) Dry FGD – Unit 1 & 2 Stand Alone NID and Fabric Filter without existing dry ESP

The definition of stand alone refers to the gas path. For example, a stand alone arrangement implies that Unit 1 and Unit 2 flue gas enters and exits separate FGD equipment and discharges into separate stack liners contained in a single stack shell.

Although the flue gas path for Unit 1 and Unit 2 is stand alone, all of the FGD auxiliary equipment shall be shared between both units. For example, reagent unloading and preparation shall be sized to accommodate Unit 1 and Unit 2 at full load and full sulfur content, respectively.

2.0 TECHNICAL REQUIREMENTS

The technical requirements for Big Sandy Unit 1 FGD system are similar to requirements contained in Big Sandy Unit 2 Order of Magnitude/Relative Capital Installed Cost Estimate Specification BS2-FGDSCE-052010, in which this addendum is part of. Therefore, the technical requirements listed below are items that are only specific for Big Sandy Unit 1.

2.1 FGD DESIGN BASIS & PERFORMANCE REQUIREMENTS

2.1.1 SO2 REMOVAL EFFICIENCY

Table 2.1.1. Dry FGD NID and Fabric Filter Sulfur Dioxide Removal Efficiency.

Flue Gas Emission		
Uncontrolled SO2	lb/MMBtu	1.7
	ton/year	16,899
SO2 removal efficiency	%	97.6
Controlled SO2	lb/MMBtu SO2	0.04
	ton/year	406
SO2 Removed	ton/year	16,493

Note:

1. ton/yr numbers are at 85% capacity factor.

2.1.2 FUEL DATA

The Big Sandy Unit 1 FGD installed and design basis fuel is the existing low sulfur coal, which is a 1.7 lb/MMBtu SO2 currently being burned pursuant to compliance purposes. See Table 2.1.2 for the coal analysis.

The following base case fuel for Big Sandy Unit 2 shall be used in conjunction with Unit 1 FGD.

Unit 2 Dry FGD NID and Fabric Filter – 3.0 lb/MMBtu SO2

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Table 2.1.2. Big Sandy Unit 1 Fuel Analysis – 1.7 lb/MMBtu SO₂.

1.7 lb SO₂/mmBTU
100% Central Appalachian Coal

Mine Name: Harris #1
Mine Location: Boone County, W. Va.
Seam Name: Eagle

Proximate Data:	As Received:	Dry Basis: (Calc)	Ultimate:	Dry Basis:	As Rcvd: (Calc)
% Moisture:	6.20%		% Carbon:	74.00%	69.41%
% Ash :	11.60%	12.37%	% Hydrogen:	5.00%	4.69%
% Volatile Matter:	30.20%	32.20%	% Nitrogen:	1.40%	1.31%
% Fixed Carbon:	52.00%	55.44%	% Chlorine:	0.20%	0.19%
Total Proximate:	100.00%	100.00%	% Moisture:		6.20%
% Sulfur:	0.94%	1.00%	% Ash:	12.37%	11.60%
BTU/#:	12,242	13,521	% Sulfur:	1.00%	0.94%
Moist.-Ash-Free BTU/#:		14,893	Ultimate subtotal:		94.34%
Grindability:	45		% Oxygen by Diff.:	6.03%	5.66%
			% Total:	100.00%	100.00%

SO₂/mmBTU: 1.48

Mineral Ash Data:	Dry Basis	SO ₃ Free Basis	Ash Fusion Temperature Data:	
% SiO ₂ :	56.50%	56.90%	Reducing Temperatures:	
% Al ₂ O ₃ :	28.40%	28.60%	Initial Deformation (ID):	2680
% TiO ₂ :	1.30%	1.31%	Softening (H=W):	2700
% Fe ₂ O ₃ :	6.50%	6.55%	Hemispherical (H=1/2W):	2700
% CaO:	0.80%	0.81%	Fluid (FI):	2700
% MgO:	1.30%	1.31%		
% K ₂ O:	3.78%	3.81%	Oxidizing Temperatures:	
% Na ₂ O:	0.47%	0.47%	Initial Deformation (ID):	2700
% SO ₃ :	0.70%		Softening (H=W):	2700
% P ₂ O ₅ :	0.10%	0.10%	Hemispherical (H=1/2W):	2700
% SrO:	0.05%	0.05%	Fluid (FI):	2700
% BaO:	0.08%	0.08%		
% MnO ₂ :	0.02%	0.02%	Other Data:	
% Undetermined:	0.00%		T250 Temperature:	2880
			Free Swelling Index:	7.50
			Sulfur Forms:	
			% Pyritic:	0.20
			% Sulfate:	0.01
			% Organic:	0.70
			Equilibrium Moisture %:	1.80

2.1.3 GENERATING UNIT / STEAM GENERATOR INFORMATION

Big Sandy Plant is located in Louisa, Kentucky along the Big Sandy River. The physical address is 23000 Highway 23, Louisa, KY 41230.

Road Access: Entrance to the plant is from U.S. Route 23.
Rail Access: CSX Transportation
Barge Access: No; however barge access is available less than 10 miles away from the plant for construction purposes.

Big Sandy 1

Full Load Firing Rate	2,670 MMBTU/hr
Nominal Unit Rating (Net)	278* MW
Boiler Type	Pressurized Dry Bottom
Firing Method	Wall fired
Plant Capacity Factor	85%
Annual Starts (Hot / Cold)	6 / 4
Minimum Load (Net)	90 MW
Minimum Load Firing Rate	1,017 MMBTU/hr
Unit Ramp Rate	3 MW/min
Air Heater Type	Ljungstrom Rotary Bi-Sector
Ignition Fuel	#2 Fuel Oil
Particulate Control Device	ESP (cold)
Combustion Control Devices	Low NO _x Burner
Other Emission Control Devices	None
Nominal Flue Gas O ₂ @ Economizer Outlet	3.5 % (by volume – wet)
Max (upset) Flue Gas O ₂ @ Economizer Outlet	4.5 % (by volume – wet)

* Note: The current Net load rating will drop after retrofit of the FGD system.

2.1.4 FLUE GAS CONDITIONS

The FGD System shall be designed to treat the expected nominal inlet flue gas conditions downstream of the ESP at full load.

Big Sandy 1 – FGD System

Mass Flow	3.236 * million lbs/hr wet
Volumetric Flow Rate	1,085,595* acfm (at 350°F & 0 inwc static pressure)
Average Flue Gas Temperature	350 ° F
Flue Gas Particulate Loading w/ ESP	0.236 lb/MMBtu
Flue Gas Particulate Loading w/o ESP	7.58 lb/MMBtu
Flue Gas NO _x w/out SCR	0.50 lb/MMBtu
Flue Gas NO _x w/ SCR	0.05 lb/MMBtu
Percent of Flue Gas Treated	100 %
Flue Gas SO ₃	6 ppmv @ 1.7 lb/MMBtu SO ₂ w/out SCR

* Note: Calculated gas flow rates are based upon operating the steam generator at 21% excess air and an assumed air in-leakage rate of 20 % to account for air heater leakage and any additional leakage due to conversion to balanced draft operation.

2.1.5 BYPRODUCT HANDLING

The Dry FGD byproduct is a mixture of 60% calcium sulfite hemihydrate and 40% calcium sulfate dihydrate (gypsum). The fly ash and FGD byproduct will be conditioned with water to minimize dusting and 30% moisture is used as a conservative estimate. The fly ash and Dry FGD byproduct capacity in the following table must be added together to determine the total quantity going to the landfill from the Dry FGD and FF system.

Table 2.1.5. Dry FGD NID and Fabric Filter Estimated Landfill Capacity.

Landfill Ash and Byproduct		
Sulfur	lb/MMBtu	1.7
Bottom Ash	ton/hr	2.5
	ton/year	22,163
Fly Ash	ton/hr	10.1
	ton/year	88,650
Mixture Calcium Sulfite/Sulfate	ton/hr	8.1
	ton/year	71,151

Note:

1. ton/hr and ton/year values are at 100% capacity factor.

2.1.6 REAGENT HANDLING

Table 2.1.6. Big Sandy Unit 1 Reagent Consumption.

Reagent Consumption		
Fuel Sulfur	1.7	lb/MMBTU
Dry FGD - NID & Fabric Filter		
Crushed Lime (CaO)	23,400	ton/year
	3.1	ton/hr

Notes:

1. ton/year numbers are at 85% capacity factor
2. ton/hr numbers are at 100% capacity factor

2.2 SCR DESIGN BASIS & PERFORMANCE REQUIREMENTS

The following items provide high level design basis requirements for the Unit 1 SCR, which will be included in the Unit 1 FGD incremental cost estimate.

The Big Sandy Unit 1 SCR Technical Performance Specification (BS1-AECE-060805 Rev 0) is attached for reference, but major parts of the specification are described in the following sections.

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2.2.1 **NOX REMOVAL EFFICIENCY**

The SCR system shall remove a minimum of 90.0% of the NO_x produced by the steam generator during all periods of operation from full load to minimum. This includes the unbalanced steam generator firing conditions, which are incurred as pulverizers are removed from service for maintenance or due to normal steam generator load following conditions. Typical load change ramp rates are 3 MW per minute with a maximum of 6 MW per minute. The SCR operation shall not affect the unit ramp rate unless prevented by the SCR heat up rate as reviewed and accepted by AEP.

2.2.2 **REACTOR**

The SCR system shall be designed to minimize the pressure drop across the entire SCR system from the boiler economizer outlet to the air heater inlet.

An SCR flue gas bypass system shall not be required. The catalyst will be in the flue gas path during unit start up and shutdown.

The SCR reactor and the associated inlet and outlet ductwork system shall be designed for the following operating pressures and temperatures:

Continuous	+/- 20 inwc	710°F
Transient	+/- 35 inwc	800°F

The reactor will be of a 4-catalyst layer design. Typically only 2 1/2 or 3 layers are initially filled to achieve NO_x removal performance.

The reactors shall be designed to allow thermal expansion and contraction of the catalyst modules without damaging the catalyst modules or seals. It shall be designed for the slow heat accumulation of the catalyst mass and rapid heating of the nearby ductwork in start up and shut down.

Reactors shall be designed with sufficient access and maintenance accessories for efficient installation and removal of each catalyst layer. A sufficient number of catalyst access doors shall be provided at each catalyst layer to permit quick and efficient exchanges of catalyst layers. Access man-way doors shall also be provided at all catalyst layers, ammonia injection points, and at any other location requiring maintenance access.

The reactor design shall include sufficient space between catalyst layers to permit safe access for personnel for inspection and cleaning of the catalyst, removal of catalyst activity samples, inspection of the catalyst sealing system and inspection and repair of any cleaning devices.

The SCR reactor shall be designed with access and catalyst transport and handling accessories so that the installation of new catalyst modules and the removal of spent catalyst modules can be performed simultaneously during unit outages. The use of chain falls and hoists within the reactor vessel are not desirable. The appropriate access shall be provided for each reactor to facilitate transporting the individual catalyst modules between the ground elevation and the catalyst platform elevations. Removal of catalyst cleaning devices shall not be required to remove or add catalyst modules.

Each SCR reactor shall have permanent test sample grids installed upstream of the first catalyst layer, and also downstream of the last catalyst layer, and located a sufficient distance away from any obstruction or turns that would disrupt uniform gas flow during sampling. The gas sampling tubing shall be made of 316 stainless steel. Gas sampling ports shall be installed in between each

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catalyst layer and capped for future use should testing be required between catalyst layers. All test ports or instrumentation connections shall protrude 6" through the insulation and lagging.

The SCR reactors interconnecting ductwork and all outdoor equipment shall be weather tight.

The catalyst cleaning system will have an automatic monitoring capability to verify that it is operating correctly at all times. If sonic horns are used as the cleaning device "dry" air versus "wet" plant air will be used for their operation.

The reactors and connecting ductwork will be designed to accommodate ash loading due to settle out of fly ash. For ash loading see Structural Design Criteria specification No. Spec # DC-FGD-SCR-006 Rev 01 (See Attachment 1). The SCR reactors and associated equipment shall not impose any loads on the plant existing equipment.

All ductwork velocity calculations shall be based on ductwork net area cross-section and shall not exceed 60 fps.

2.2.3 CATALYST

The SCR system shall be designed for a minimum catalyst life of 16,000 operating hours at the 90% NO_x removal rate, with an allowable maximum ammonia slip of 2 ppmvd at 3% O₂ at the end of 16,000 operating hours.

The SO₂ to SO₃ conversion rate in the SCR system with all three catalyst layers completely filled shall be maintained as low as reasonably achievable, but not greater than 0.5% conversion with ammonia injection under all load and temperature conditions listed in Section 2.2.6.

The catalyst shall be designed, formulated and installed for high-dust application located between the boiler economizer outlet and the air pre-heater inlet. The catalyst formulation shall be compatible with the fly ash analysis presented in this specification and shall be of sufficient pitch to prevent plugging with fly ash. Plate catalyst shall be provided.

The catalyst shall be factory assembled and shipped in modules sized for ease of expedient handling and installation. The catalyst modules shall be of a standardized size to match existing Owner SCR installations, which will permit interchangeability between Owners plants. The designated module size is 1474mm high, 1982mm wide x 1014mm deep. The top flange is 1982 mm wide x 1014 mm deep. The module protective screen shall extend to within 3 mm from the module sidewalls. The bottom of the catalyst module is 1882 mm wide x 954 mm deep. All dimensions are +/- 3mm. The modules are bottom supported and top sealed. Catalyst modules shall be designed to be handled by Owner's existing lifting rig and catalyst cart. The required number of lifting rigs and catalyst carts are 2 each per reactor.

Each catalyst module shall be protected with an inlet screen or mesh and shall be of sufficient strength to allow foot traffic for inspection, cleaning and catalyst sample removal.

The catalyst shall be formulated with materials resistant to poisoning by trace elements found in coal and fly ash as deemed appropriate. Fly ash and coal trace element analyses, as available, are contained in this specification.

The catalyst shall be resistant to erosion from fly ash. The catalyst material shall maintain structural integrity under stresses induced by ash accumulation, flow, thermal cycling, in service cleaning, and normal operation.

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Each catalyst module shall be equipped to facilitate handling at the point of delivery and installation in the SCR. Lifting jigs or fixtures that are required for catalyst installation handling shall be provided with the catalyst. The catalyst handling equipment shall be designed to be able to handle Owner's existing catalyst modules.

The catalyst modules shall provide sufficient rigidity to support 5-ton ash load and the pressure loading resulted from twice the normal draft loss on any catalyst layer.

2.2.4 **AMMONIA SUPPLY**

The reagent for the SCR system shall be ammonia, which is generated on site from the existing urea conversion system supplying the Unit 2 SCR. The urea conversion system is capable of producing 4,000 lb/hr of ammonia based on a 40% urea solution. Two urea conversion hydrolyzers equipped with flow, pressure, and temperature instrumentation are provided, each capable of producing 2,000 lb/hr of ammonia.

The ammonia demand for Unit 2 SCR is 1,800 lb/hr at 90% NOx removal and full load. The ammonia demand for Unit 1 SCR is expected to be 500 lb/hr at 90% NOx removal and full load. Therefore, the ammonia demand for both units is 2,300 lb/hr. The hydrolyzer ammonia vapor output based on 40% urea solution is 2,000 lb/hr. In order to maintain the system's redundancy the urea feed solution concentration will be increased from 40% to 46% by weight to meet the design conditions of 2,300 lb/hr ammonia for both units. The saturation temperature of 46% urea solution is 50°F; therefore the urea solution operating temperature will be maintained at or above its current 90°F setpoint.

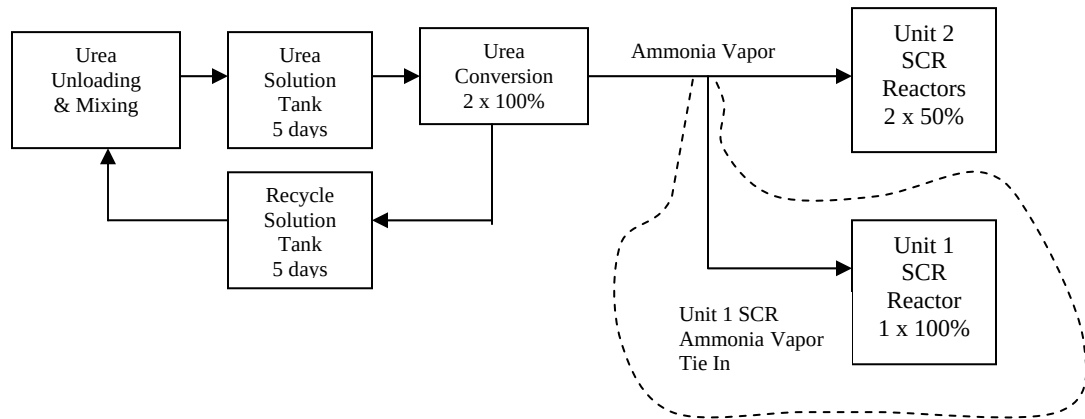


Figure 2.2.4. Unit 1 Ammonia Vapor Tie In to Existing Unit 2 Urea Conversion System.

2.2.5 **AMMONIA INJECTION**

The SCR reactors shall be equipped with independent instrumentation and control systems to ensure the proper ammonia to NOx ratio can be maintained for the required NOx removal rates specified in this document.

Individual ammonia injection devices shall have the capability to be tuned to balance ammonia feed across the ductwork in response to the flow distribution. The flow will be automatically controlled to respond to load changes. Manual valves are to be used to balance the ammonia

distribution across the reactor using 60° V-Port ball valves with the ability to lock the valve handle in place using lock down brackets.

Ammonia injection shall be installed in an area of ductwork free from stiffeners, bracing or other interferences, which could negatively impact the ductwork or negatively impact the ammonia flow balance.

The ammonia injection system (injection system and flue gas mixing devices) shall be designed to withstand the erosive service into which it is placed.

Protection shall be provided to prevent overfeeding ammonia due to a failure in the control or monitoring system. Protection shall also be provided to prevent injecting ammonia into a reactor with catalyst temperatures below the minimum operating temperature levels for the specific catalyst. Automatic shutdown of the injection system shall be initiated by a boiler trip.

The ammonia injection manifold shall be designed to allow flanged disassembly of ammonia injection piping from outside the duct for cleaning of the injection system components should they become plugged.

2.2.6 FLUE GAS CONDITIONS

Table 2.2.6. Unit 1 SCR Flue Gas Conditions.

FULL LOAD		
Load	% MCR	100
Firing Rate	10 ⁶ Btu/hr	2,670
NUHR	Btu/kWhr	9,607
Flue Gas Recirc Rate	lb/hr wet	0
Flue Gas NO _x @ Economizer Outlet	#/MMBtu	0.55
1.75 #SO₂/MMBtu		
Fuel Flow Rate	lb/hr	218,163
Flue Gas Flow Rate @ Economizer Outlet	lb/hr wet	2,696,627
Flue Gas Flow Rate @ Economizer Outlet (-8.0 inwc & 710°F)	acfm	1,325,832
Flue Gas O ₂ @ Economizer Outlet (at 21% EA)	% Vol wet	3 - 4
Flue Gas SO ₂ @ Economizer Outlet	ppmv	700
Flue Gas SO ₃ @ Economizer Outlet	ppmv	9
Flue Gas Temp – Economizer Outlet	°F	710
MINIMUM LOAD		
Load	% MCR	39
	MW net	90
Firing Rate	10 ⁶ Btu/hr	1,017
NUHR	Btu/kWhr	11,305
Flue Gas Recirc Rate	lb/hr wet	0
Flue Gas NO _x @ Economizer Outlet	#/MMBtu	0.27
1.75 #SO₂/MMBtu		
Fuel Flow Rate	lb/hr	83,111
Flue Gas Flow Rate @ Economizer Outlet	lb/hr wet	1,098,283
Flue Gas Flow Rate @ Economizer Outlet (-8.0 inwc & 580°F)	acfm	480,978
Flue Gas O ₂ @ Economizer Outlet (at 30% EA)	% Vol wet	4.5
Flue Gas SO ₂ @ Economizer Outlet	ppmv	655
Flue Gas SO ₃ @ Economizer Outlet	ppmv	8
Flue Gas Temp – Economizer Outlet	°F	580

2.2.7 MINIMUM LOAD FLUE GAS TEMPERATURE

The flue gas temperature at minimum load can decrease below the minimum catalyst operating temperature. Therefore, an economizer feedwater bypass system must be installed to maintain the flue gas temperature at minimum loads. The economizer feedwater bypass system will bypass a portion of the feedwater around the economizer section of the steam generator resulting in an increase of the economizer flue gas temperature.

2.2.8 SITE CONDITIONS

The unit is placed in service using No. 2 fuel oil. Coal is then introduced into the furnace and a combination of oil and coal is burned until the unit reaches minimum load and stable coal combustion can be maintained without oil support. A cold startup, from light off to full load, typically requires 12-24 hours. A hot restart typically requires 6 to 12 hours. No. 2 fuel oil is also used at any load for flame stabilization during upset firing conditions. The unit operates between minimum and full load on a daily basis. Typically it is on Automatic Generation Control and will operate at a load change ramp rate of 3 MW/min with a maximum of 6 MW/min.

2.3 TECHNOLOGY OVERVIEWS/EQUIPMENT ARRANGEMENTS

The following provides a narrative overview and conceptual process flow chart for each FGD technology being considered for Big Sandy Unit 1 & 2.

2.3.1 UNIT 1&2 STAND ALONE DRY FGD – NID & FABRIC FILTER

The Unit 1 & 2 stand alone Dry FGD NID and fabric filter system is made up of two independent flue gas paths, one for each unit, and will discharge through separate stack liners. Although the flue gas paths are separate between both units, both units will share reagent storage, byproduct waste handling, and other auxiliary services.

The Dry FGD NID gas path equipment for each Unit 1 & 2 consists of the J-reactors, fabric filters, induced draft (ID) fans, and stack discharge liners.

The Unit 1 Dry FGD NID system is expected to have 4 J-reactor and fabric filter modules. The Unit 2 Dry FGD NID system is expected to have 12 J-reactor and fabric filter modules.

In this case, the existing ESP on both units and the booster fan on Unit 2 are removed from service. The fabric filter for each unit becomes the particulate collection device which is located upstream of the ID fans. Independent flue gas paths and the ability to procure an ID fan capable of operating the furnace at balanced draft allows the removal of the existing ESP and booster fans.

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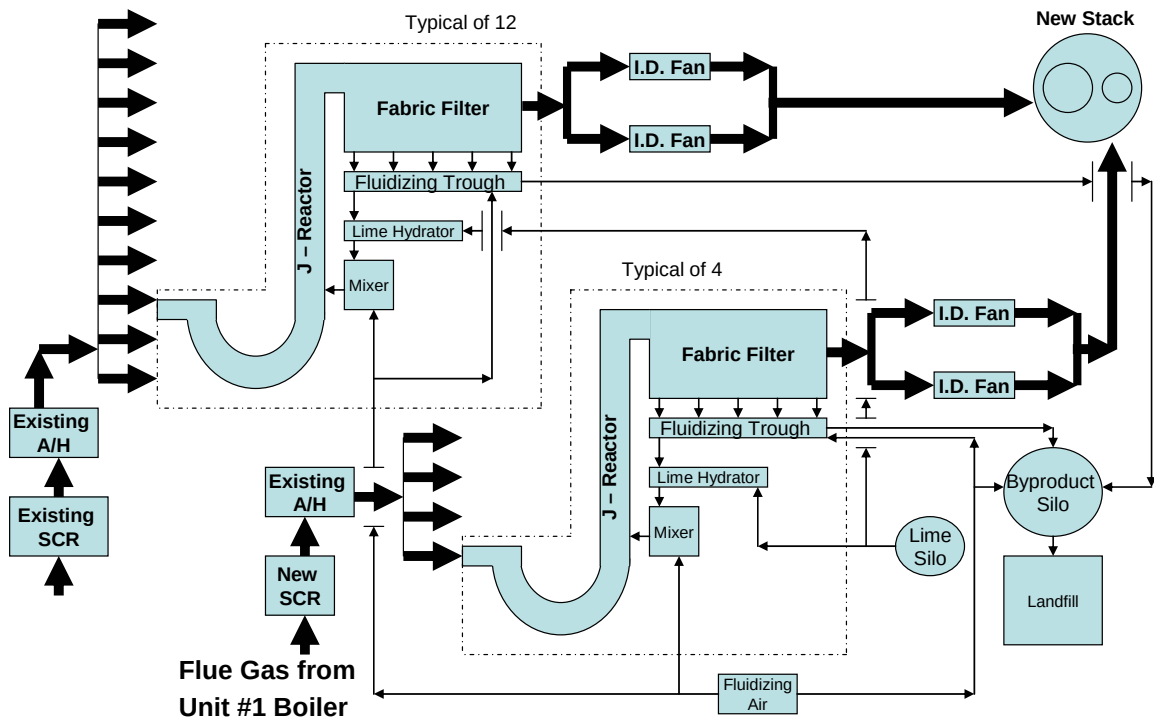


Figure 2.3.1. Unit 1 & 2 Stand Alone Dry FGD – NID and Fabric Filter Process Flow Chart.

3.0 ATTACHMENTS

- 1) Big Sandy Unit 1 SCR Technical Performance Specification BS1-AECE-060805 Rev 0



Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

EXHIBIT 1-2
AACE International
Recommended Practice No. 18R-97,
February 2, 2005

AACE International Recommended Practice No. 18R-97

**COST ESTIMATE CLASSIFICATION SYSTEM – AS APPLIED IN
ENGINEERING, PROCUREMENT, AND CONSTRUCTION FOR
THE PROCESS INDUSTRIES**

TCM Framework: 7.3 – Cost Estimating and Budgeting

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COST ESTIMATE CLASSIFICATION SYSTEM – AS APPLIED IN ENGINEERING, PROCUREMENT, AND CONSTRUCTION FOR THE PROCESS INDUSTRIES

TCM Framework: 7.3 – Cost Estimating and Budgeting



February 2, 2005

PURPOSE

As a recommended practice of AACE International, the Cost Estimate Classification System provides guidelines for applying the general principles of estimate classification to project cost estimates (i.e., cost estimates that are used to evaluate, approve, and/or fund projects). The Cost Estimate Classification System maps the phases and stages of project cost estimating together with a generic maturity and quality matrix, which can be applied across a wide variety of industries.

This addendum to the generic recommended practice provides guidelines for applying the principles of estimate classification specifically to project estimates for engineering, procurement, and construction (EPC) work for the process industries. This addendum supplements the generic recommended practice (17R-97) by providing:

- a section that further defines classification concepts as they apply to the process industries;
- charts that compare existing estimate classification practices in the process industry; and
- a chart that maps the extent and maturity of estimate input information (project definition deliverables) against the class of estimate.

As with the generic standard, an intent of this addendum is to improve communications among all of the stakeholders involved with preparing, evaluating, and using project cost estimates specifically for the process industries.

It is understood that each enterprise may have its own project and estimating processes and terminology, and may classify estimates in particular ways. This guideline provides a generic and generally acceptable classification system for process industries that can be used as a basis to compare against. It is hoped that this addendum will allow each user to better assess, define, and communicate their own processes and standards in the light of generally-accepted cost engineering practice.

INTRODUCTION

For the purposes of this addendum, the term process industries is assumed to include firms involved with the manufacturing and production of chemicals, petrochemicals, and hydrocarbon processing. The common thread among these industries (for the purpose of estimate classification) is their reliance on process flow diagrams (PFDs) and piping and instrument diagrams (P&IDs) as primary scope defining documents. These documents are key deliverables in determining the level of project definition, and thus the extent and maturity of estimate input information.

Estimates for process facilities center on mechanical and chemical process equipment, and they have significant amounts of piping, instrumentation, and process controls involved. As such, this addendum may apply to portions of other industries, such as pharmaceutical, utility, metallurgical, converting, and similar industries. Specific addendums addressing these industries may be developed over time.

This addendum specifically does not address cost estimate classification in nonprocess industries such as commercial building construction, environmental remediation, transportation infrastructure, “dry” processes such as assembly and manufacturing, “soft asset” production such as software development, and similar industries. It also does not specifically address estimates for the exploration, production, or transportation of mining or hydrocarbon materials, although it may apply to some of the intermediate processing steps in these systems.

The cost estimates covered by this addendum are for engineering, procurement, and construction (EPC) work only. It does not cover estimates for the products manufactured by the process facilities, or for research and development work in support of the process industries. This guideline does not cover the

significant building construction that may be a part of process plants. Building construction will be covered in a separate addendum.

This guideline reflects generally-accepted cost engineering practices. This addendum was based upon the practices of a wide range of companies in the process industries from around the world, as well as published references and standards. Company and public standards were solicited and reviewed by the AACE International Cost Estimating Committee. The practices were found to have significant commonalities that are conveyed in this addendum.

COST ESTIMATE CLASSIFICATION MATRIX FOR THE PROCESS INDUSTRIES

The five estimate classes are presented in figure 1 in relationship to the identified characteristics. Only the level of project definition determines the estimate class. The other four characteristics are secondary characteristics that are generally correlated with the level of project definition, as discussed in the generic standard. The characteristics are typical for the process industries but may vary from application to application.

This matrix and guideline provide an estimate classification system that is specific to the process industries. Refer to the generic standard for a general matrix that is non-industry specific, or to other addendums for guidelines that will provide more detailed information for application in other specific industries. These will typically provide additional information, such as input deliverable checklists to allow meaningful categorization in those particular industries.

ESTIMATE CLASS	Primary Characteristic	Secondary Characteristic			
	LEVEL OF PROJECT DEFINITION Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges [a]	PREPARATION EFFORT Typical degree of effort relative to least cost index of 1 [b]
Class 5	0% to 2%	Concept Screening	Capacity Factored, Parametric Models, Judgment, or Analogy	L: -20% to -50% H: +30% to +100%	1
Class 4	1% to 15%	Study or Feasibility	Equipment Factored or Parametric Models	L: -15% to -30% H: +20% to +50%	2 to 4
Class 3	10% to 40%	Budget, Authorization, or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: -10% to -20% H: +10% to +30%	3 to 10
Class 2	30% to 70%	Control or Bid/Tender	Detailed Unit Cost with Forced Detailed Take-Off	L: -5% to -15% H: +5% to +20%	4 to 20
Class 1	50% to 100%	Check Estimate or Bid/Tender	Detailed Unit Cost with Detailed Take-Off	L: -3% to -10% H: +3% to +15%	5 to 100

- Notes: [a] The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for given scope.
- [b] If the range index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the project and the quality of estimating data and tools.

Figure 1. – Cost Estimate Classification Matrix for Process Industries

CHARACTERISTICS OF THE ESTIMATE CLASSES

The following charts (figures 2a through 2e) provide detailed descriptions of the five estimate classifications as applied in the process industries. They are presented in the order of least-defined estimates to the most-defined estimates. These descriptions include brief discussions of each of the estimate characteristics that define an estimate class.

For each chart, the following information is provided:

- **Description:** a short description of the class of estimate, including a brief listing of the expected estimate inputs based on the level of project definition.
- **Level of Project Definition Required:** expressed as a percent of full definition. For the process industries, this correlates with the percent of engineering and design complete.
- **End Usage:** a short discussion of the possible end usage of this class of estimate.
- **Estimating Methods Used:** a listing of the possible estimating methods that may be employed to develop an estimate of this class.
- **Expected Accuracy Range:** typical variation in low and high ranges after the application of contingency (determined at a 50% level of confidence). Typically, this results in a 90% confidence that the actual cost will fall within the bounds of the low and high ranges.
- **Effort to Prepare:** this section provides a typical level of effort (in hours) to produce a complete estimate for a US\$20,000,000 plant. Estimate preparation effort is highly dependent on project size, project complexity, estimator skills and knowledge, and on the availability of appropriate estimating cost data and tools.
- **ANSI Standard Reference (1989) Name:** this is a reference to the equivalent estimate class in the existing ANSI standards.
- **Alternate Estimate Names, Terms, Expressions, Synonyms:** this section provides other commonly used names that an estimate of this class might be known by. These alternate names are not endorsed by this Recommended Practice. The user is cautioned that an alternative name may not always be correlated with the class of estimate as identified in the chart.

CLASS 5 ESTIMATE	
Description: Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. As such, some companies and organizations have elected to determine that due to the inherent inaccuracies, such estimates cannot be classified in a conventional and systemic manner. Class 5 estimates, due to the requirements of end use, may be prepared within a very limited amount of time and with little effort expended—sometimes requiring less than an hour to prepare. Often, little more than proposed plant type, location, and capacity are known at the time of estimate preparation. Level of Project Definition Required: 0% to 2% of full project definition. End Usage: Class 5 estimates are prepared for any number of strategic business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project screening, project location studies, evaluation of resource needs and budgeting, long-range capital planning, etc.	Estimating Methods Used: Class 5 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, and other parametric and modeling techniques. Expected Accuracy Range: Typical accuracy ranges for Class 5 estimates are -20% to -50% on the low side, and +30% to +100% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. Effort to Prepare (for US\$20MM project): As little as 1 hour or less to perhaps more than 200 hours, depending on the project and the estimating methodology used. ANSI Standard Reference Z94.2-1989 Name: Order of magnitude estimate (typically -30% to +50%). Alternate Estimate Names, Terms, Expressions, Synonyms: Ratio, ballpark, blue sky, seat-of-pants, ROM, idea study, prospect estimate, concession license estimate, guesstimate, rule-of-thumb.

Figure 2a. – Class 5 Estimate

CLASS 4 ESTIMATE	
Description: Class 4 estimates are generally prepared based on limited information and subsequently have fairly wide accuracy ranges. They are typically used for project screening, determination of feasibility, concept evaluation, and preliminary budget approval. Typically, engineering is from 1% to 15% complete, and would comprise at a minimum the following: plant capacity, block schematics, indicated layout, process flow diagrams (PFDs) for main process systems, and preliminary engineered process and utility equipment lists. Level of Project Definition Required: 1% to 15% of full project definition. End Usage: Class 4 estimates are prepared for a number of purposes, such as but not limited to, detailed strategic planning, business development, project screening at more developed stages, alternative scheme analysis, confirmation of economic and/or technical feasibility, and preliminary budget approval or approval to proceed to next stage.	Estimating Methods Used: Class 4 estimates virtually always use stochastic estimating methods such as equipment factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, the Miller method, gross unit costs/ratios, and other parametric and modeling techniques. Expected Accuracy Range: Typical accuracy ranges for Class 4 estimates are -15% to -30% on the low side, and +20% to +50% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. Effort to Prepare (for US\$20MM project): Typically, as little as 20 hours or less to perhaps more than 300 hours, depending on the project and the estimating methodology used. ANSI Standard Reference Z94.2-1989 Name: Budget estimate (typically -15% to + 30%). Alternate Estimate Names, Terms, Expressions, Synonyms: Screening, top-down, feasibility, authorization, factored, pre-design, pre-study.

Figure 2b. – Class 4 Estimate

CLASS 3 ESTIMATE	
Description: Class 3 estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. As such, they typically form the initial control estimate against which all actual costs and resources will be monitored. Typically, engineering is from 10% to 40% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, preliminary piping and instrument diagrams, plot plan, developed layout drawings, and essentially complete engineered process and utility equipment lists. Level of Project Definition Required: 10% to 40% of full project definition. End Usage: Class 3 estimates are typically prepared to support full project funding requests, and become the first of the project phase "control estimates" against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates. In many owner organizations, a Class 3 estimate may be the last estimate required and could well form the only basis for cost/schedule control.	Estimating Methods Used: Class 3 estimates usually involve more deterministic estimating methods than stochastic methods. They usually involve a high degree of unit cost line items, although these may be at an assembly level of detail rather than individual components. Factoring and other stochastic methods may be used to estimate less-significant areas of the project. Expected Accuracy Range: Typical accuracy ranges for Class 3 estimates are -10% to -20% on the low side, and +10% to +30% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. Effort to Prepare (for US\$20MM project): Typically, as little as 150 hours or less to perhaps more than 1,500 hours, depending on the project and the estimating methodology used. ANSI Standard Reference Z94.2-1989 Name: Budget estimate (typically -15% to + 30%). Alternate Estimate Names, Terms, Expressions, Synonyms: Budget, scope, sanction, semi-detailed, authorization, preliminary control, concept study, development, basic engineering phase estimate, target estimate.

Figure 2c. – Class 3 Estimate

CLASS 2 ESTIMATE	
Description: Class 2 estimates are generally prepared to form a detailed control baseline against which all project work is monitored in terms of cost and progress control. For contractors, this class of estimate is often used as the “bid” estimate to establish contract value. Typically, engineering is from 30% to 70% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, piping and instrument diagrams, heat and material balances, final plot plan, final layout drawings, complete engineered process and utility equipment lists, single line diagrams for electrical, electrical equipment and motor schedules, vendor quotations, detailed project execution plans, resourcing and work force plans, etc. Level of Project Definition Required: 30% to 70% of full project definition. End Usage: Class 2 estimates are typically prepared as the detailed control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program.	Estimating Methods Used: Class 2 estimates always involve a high degree of deterministic estimating methods. Class 2 estimates are prepared in great detail, and often involve tens of thousands of unit cost line items. For those areas of the project still undefined, an assumed level of detail takeoff (forced detail) may be developed to use as line items in the estimate instead of relying on factoring methods. Expected Accuracy Range: Typical accuracy ranges for Class 2 estimates are -5% to -15% on the low side, and +5% to +20% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. Effort to Prepare (for US\$20MM project): Typically, as little as 300 hours or less to perhaps more than 3,000 hours, depending on the project and the estimating methodology used. Bid estimates typically require more effort than estimates used for funding or control purposes. ANSI Standard Reference Z94.2-1989 Name: Definitive estimate (typically -5% to + 15%). Alternate Estimate Names, Terms, Expressions, Synonyms: Detailed control, forced detail, execution phase, master control, engineering, bid, tender, change order estimate.

Figure 2d. – Class 2 Estimate

CLASS 1 ESTIMATE	
Description: Class 1 estimates are generally prepared for discrete parts or sections of the total project rather than generating this level of detail for the entire project. The parts of the project estimated at this level of detail will typically be used by subcontractors for bids, or by owners for check estimates. The updated estimate is often referred to as the current control estimate and becomes the new baseline for cost/schedule control of the project. Class 1 estimates may be prepared for parts of the project to comprise a fair price estimate or bid check estimate to compare against a contractor's bid estimate, or to evaluate/dispute claims. Typically, engineering is from 50% to 100% complete, and would comprise virtually all engineering and design documentation of the project, and complete project execution and commissioning plans. Level of Project Definition Required: 50% to 100% of full project definition. End Usage: Class 1 estimates are typically prepared to form a current control estimate to be used as the final control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program. They may be used to evaluate bid checking, to support vendor/contractor negotiations, or for claim evaluations and dispute resolution.	Estimating Methods Used: Class 1 estimates involve the highest degree of deterministic estimating methods, and require a great amount of effort. Class 1 estimates are prepared in great detail, and thus are usually performed on only the most important or critical areas of the project. All items in the estimate are usually unit cost line items based on actual design quantities. Expected Accuracy Range: Typical accuracy ranges for Class 1 estimates are -3% to -10% on the low side, and +3% to +15% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. Effort to Prepare (for US\$20MM project): Class 1 estimates require the most effort to create, and as such are generally developed for only selected areas of the project, or for bidding purposes. A complete Class 1 estimate may involve as little as 600 hours or less, to perhaps more than 6,000 hours, depending on the project and the estimating methodology used. Bid estimates typically require more effort than estimates used for funding or control purposes. ANSI Standard Reference Z94.2 Name: Definitive estimate (typically -5% to + 15%). Alternate Estimate Names, Terms, Expressions, Synonyms: Full detail, release, fall-out, tender, firm price, bottoms-up, final, detailed control, forced detail, execution phase, master control, fair price, definitive, change order estimate.

Figure 2e. – Class 1 Estimate

COMPARISON OF CLASSIFICATION PRACTICES

Figures 3a through 3c provide a comparison of the estimate classification practices of various firms, organizations, and published sources against one another and against the guideline classifications. These tables permits users to benchmark their own classification practices.



AACE Classification Standard	ANSI Standard Z94.0	AACE Pre-1972	Association of Cost Engineers (UK) ACostE	Norwegian Project Management Association (NFP)	American Society of Professional Estimators (ASPE)
Class 5	Order of Magnitude Estimate -30/+50	Order of Magnitude Estimate	Order of Magnitude Estimate Class IV -30/+30	Concession Estimate	Level 1
				Exploration Estimate	
				Feasibility Estimate	
Class 4	Budget Estimate -15/+30	Study Estimate	Study Estimate Class III -20/+20	Authorization Estimate	Level 2
Class 3		Preliminary Estimate	Budget Estimate Class II -10/+10	Master Control Estimate	Level 3
Class 2	Definitive Estimate -5/+15	Definitive Estimate	Definitive Estimate Class I -5/+5	Current Control Estimate	Level 4
Class 1		Detailed Estimate			Level 5
					Level 6

Figure 3a. – Comparison of Classification Practices



AACE Classification Standard	Major Consumer Products Company (Confidential)	Major Oil Company (Confidential)	Major Oil Company (Confidential)	Major Oil Company (Confidential)
Class 5	Class S Strategic Estimate	Class V Order of Magnitude Estimate	Class A Prospect Estimate	Class V
			Class B Evaluation Estimate	
Class 4	Class 1 Conceptual Estimate	Class IV Screening Estimate	Class C Feasibility Estimate	Class IV
			Class D Development Estimate	
Class 3	Class 2 Semi-Detailed Estimate	Class III Primary Control Estimate	Class E Preliminary Estimate	Class III
Class 2	Class 3 Detailed Estimate	Class II Master Control Estimate	Class F Master Control Estimate	Class II
Class 1		Class I Current Control Estimate	Current Control Estimate	Class I

Figure 3b. – Comparison of Classification Practices



AACE Classification Standard	J.R. Heizelman, 1988 AACE Transactions [1]	K.T. Yeo, The Cost Engineer, 1989 [2]	Stevens & Davis, 1988 AACE Transactions [3]	P. Behrenbruck, Journal of Petroleum Technology, 1993 [4]
Class 5	Class V	Class V Order of Magnitude	Class III*	Order of Magnitude
Class 4	Class IV	Class IV Factor Estimate	Class II	Study Estimate
Class 3	Class III	Class III Office Estimate		Budget Estimate
Class 2	Class II	Class II Definitive Estimate		
Class 1	Class I	Class I Final Estimate	Class I	Control Estimate

[1] John R. Heizelman, ARCO Oil & Gas Co., 1988 AACE Transactions, Paper V3.7

[2] K.T. Yeo, The Cost Engineer, Vol. 27, No. 6, 1989

[3] Stevens & Davis, BP International Ltd., 1988 AACE Transactions, Paper B4.1 (* Class III is inferred)

[4] Peter Behrenbruck, BHP Petroleum Pty., Ltd., article in Petroleum Technology, August 1993

Figure 3c. – Comparison of Classification Practices

ESTIMATE INPUT CHECKLIST AND MATURITY MATRIX

Figure 4 maps the extent and maturity of estimate input information (deliverables) against the five estimate classification levels. This is a checklist of basic deliverables found in common practice in the process industries. The maturity level is an approximation of the degree of completion of the deliverable. The degree of completion is indicated by the following letters.

- None (blank): development of the deliverable has not begun.
- Started (S): work on the deliverable has begun. Development is typically limited to sketches, rough outlines, or similar levels of early completion.
- Preliminary (P): work on the deliverable is advanced. Interim, cross-functional reviews have usually been conducted. Development may be near completion except for final reviews and approvals.
- Complete (C): the deliverable has been reviewed and approved as appropriate.

General Project Data:	ESTIMATE CLASSIFICATION				
	CLASS 5	CLASS 4	CLASS 3	CLASS 2	CLASS 1
Project Scope Description	General	Preliminary	Defined	Defined	Defined
Plant Production/Facility Capacity	Assumed	Preliminary	Defined	Defined	Defined
Plant Location	General	Approximate	Specific	Specific	Specific
Soils & Hydrology	None	Preliminary	Defined	Defined	Defined
Integrated Project Plan	None	Preliminary	Defined	Defined	Defined
Project Master Schedule	None	Preliminary	Defined	Defined	Defined
Escalation Strategy	None	Preliminary	Defined	Defined	Defined
Work Breakdown Structure	None	Preliminary	Defined	Defined	Defined
Project Code of Accounts	None	Preliminary	Defined	Defined	Defined
Contracting Strategy	Assumed	Assumed	Preliminary	Defined	Defined
Engineering Deliverables:					
Block Flow Diagrams	S/P	P/C	C	C	C
Plot Plans		S	P/C	C	C
Process Flow Diagrams (PFDs)		S/P	P/C	C	C
Utility Flow Diagrams (UFDs)		S/P	P/C	C	C
Piping & Instrument Diagrams (P&IDs)		S	P/C	C	C
Heat & Material Balances		S	P/C	C	C
Process Equipment List		S/P	P/C	C	C
Utility Equipment List		S/P	P/C	C	C
Electrical One-Line Drawings		S/P	P/C	C	C
Specifications & Datasheets		S	P/C	C	C
General Equipment Arrangement Drawings		S	P/C	C	C
Spare Parts Listings			S/P	P	C
Mechanical Discipline Drawings			S	P	P/C
Electrical Discipline Drawings			S	P	P/C
Instrumentation/Control System Discipline Drawings			S	P	P/C
Civil/Structural/Site Discipline Drawings			S	P	P/C

Figure 4. – Estimate Input Checklist and Maturity Matrix

REFERENCES

ANSI Standard Z94.2-1989. **Industrial Engineering Terminology: Cost Engineering.**
AACE International Recommended Practice No.17R-97, **Cost Estimate Classification System.**

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EXHIBIT 1-3

Union Labor Rate Summary

EXHIBIT 1-3 Union Labor Rate Summary

2010 BIG SANDY CRAFTS Union Labor Rates

Craft Rates								
Craft	Means Title	S&L Title	Base	W. Comp	Fringes	Travel	FICA	Craft Total
1	Insulation Worker		27.00	5.53	16.34	0.00	2.60	51.47
2	Boilermaker		31.04	6.35	18.06	0.00	2.91	58.36
3	Bricklayer		24.98	5.11	16.37	0.00	2.44	48.90
4	Carpenter		26.30	5.38	14.31	0.00	2.54	48.53
5	Cement Finisher	Cement Mason	25.25	5.17	15.22	0.00	2.46	48.10
6	Electrician		28.68	5.87	19.71	0.00	2.73	56.99
7	Elevator Constr		26.63	5.45	18.04	0.00	2.57	52.69
8	Glazier		26.63	5.45	18.04	0.00	2.57	52.69
9	Structural Steel Worker	Ironworker	26.63	5.45	18.04	0.00	2.57	52.69
10	Common Bldg Laborer	Laborer, Bulding	22.90	4.69	12.37	0.00	2.28	42.24
11	Common Bldg Laborer	Laborer, Chimney	22.90	4.69	12.37	0.00	2.28	42.24
12	Com Bldg Lab, Air Tool	Laborer, Jackhammer	22.90	4.69	12.37	0.00	2.28	42.24
13	Plasterers Helper	Laborer, Plasterer	22.90	4.69	12.37	0.00	2.28	42.24
14	Lather		22.77	4.66	11.10	0.00	2.27	40.80
15	Equip Oper - Med	Lineman	24.32	4.98	13.02	0.00	2.39	44.71
16	Mill Wright		28.04	5.74	14.86	0.00	2.68	51.32
17	Equip Oper - Light	Oper Engr, Air Comp.	20.65	4.23	13.02	0.00	2.11	40.01
18	Equip Oper - Oiler	Oper Eng, Oiler	20.65	4.23	13.02	0.00	2.11	40.01
19	Equip Oper - Heavy	Loader > 2.5 Cu Yds	25.08	5.13	13.02	0.00	2.45	45.68
20	Equip Oper - Med	Loader < 2.5 Cu Yds	24.32	4.98	13.02	0.00	2.39	44.71
21	Equip Oper - Heavy	Oper Eng, Crane	25.08	5.13	13.02	0.00	2.45	45.68
22	Painter, Struct Steel	Painter	22.77	4.66	11.10	0.00	2.27	40.80
23	Pipefitter		24.63	5.04	19.35	0.00	2.42	51.44
24	Plumber		24.63	5.04	19.35	0.00	2.42	51.44
25	Roofer, Composition		24.30	4.97	11.18	0.00	2.39	42.84
26	Sheet Metal Worker		23.18	4.74	19.37	0.00	2.31	49.60
27	Tile Layer		24.98	5.11	16.37	0.00	2.44	48.90
28	Truck Driver - Heavy	Teamster	29.39	6.02	13.18	0.00	2.78	51.37
29	Waterproofer		22.77	4.66	11.10	0.00	2.27	40.80
30	Plasterer		22.77	4.66	11.10	0.00	2.27	40.80

Average 47.01

Average	85.34
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EXHIBIT 1-3
Union Labor Rate Summary

Sargent & Lundy Labor Rate
Make-Up and Calculations

Indirect Cost Items

Total Payroll Wages	Base Hourly Rate		
	Payroll Taxes		
	Social Security - FICA	Calculated as a percent of Base	(Set by the Federal Government Annually)
	State Unemployment - SUI	Calculated as a percent of Base	(Set by each State Government and adjusted periodically)
	Federal Unemployment - FUI	Calculated as a percent of Base	(Set by the Federal Government and adjusted periodically)
	Total Payroll Taxes		
	Insurance		
	Workmen's Compensation	Calculated as a percent of Base	(Set by each State and adjusted periodically)
Total Insurance Burden			
Fringe Benefits			
		Calculated as a percent of Base	(Set By Union/Project Agreements)

Other	Other		
	Expendable/Small Tools	6.00% Calculated as a percent of Base	(Set By Contractor)
	Show-up Time	2% Allowance	
	Working Foreman	0% Calculated as a percent of Base	
	General Liability	2.35% Calculated as a percent of Base	(Set by Contractor)

Construction Equipment	Fixed	Calculation based on Required Equipment x Rental Rate. Rental rate is based on monthly rate/173 to arrive at an hourly rate
-------------------------------	-------	--

Site Overheads	Overheads		38% - This item is strictly all field overheads. (38% of Total Payroll Wages + Other + Construction Equipment)
	Indirects		
	Percentage breakdown of Site Overhead Factor		
	Job Supervision-Field Staff	4.29	
	Administration-Field Staff	6.67	
	Personnel Hiring	4.29	
	Craft Superintendents	12.87	
	Safety	4.17	
	Purchasing/Expediting-Field Staff	2.98	
	Material Control-Field Staff	1.40	
	Engineering Liaison-Field Staff	0.53	
	Project Controls-Field Staff	6.61	
	Cost/Schedule Controls-Field Staff	4.41	
	Quality Control Inspection-Field Staff	5.54	
	Project Office Supplies-Field Staff	1.10	
	Computer Expenses	2.58	
	Service Trucks/Supplies	2.57	
	Field and Shop Mechanics and Supplies	2.77	
	Subcontract Administration	1.63	
	Warehousing-Field Staff	1.46	
	Field Surveying	2.66	
	Water & Ice	0.44	
	Sanitation and Cleanup	2.15	
	Move In/Move Out	3.52	
	Detours/Barricades/Flags	0.22	
	Security	3.13	
	Temp. Utilities/Distr/Hookup	1.47	
	Temporary Site Improvement	0.39	
	Temporary Facilities/Buildings	0.80	
	Utilities Consumption	2.19	
	Employee Expenses	16.31	
	Legal Expenses/Claims	0.52	
	Permits and Fees	0.07	
	Timekeeping	0.26	
	Total Indirect Labor Burdened	100.00	



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EXHIBIT 1-4
Unit 1 NID & SCR/ Unit 2 NID
Project Deliverable Index

EXHIBIT 1-4
UNIT 1 NID & SCR/ UNIT 2 NID
PROJECT DELIVERABLE INDEX

Document No.	Description	Attachment No.
MSK-NID-PFD-010_B	Unit 1 NID & SCR Process Flow Diagram – Sheet 1	1-1
MSK-NID-PFD-011_B	Unit 1 NID & SCR Process Flow Diagram – Sheet 2	1-1
MSK-NID-GA-010_C	Unit 1 NID & SCR/ Unit 2 NID Site Plan	1-2
MSK-NID-GA-011_C	Unit 1 NID & SCR/ Unit 2 General Arrangement – Plan	1-2
MSK-NID-GA-012_B	Unit 1 NID & SCR/ Unit 2 General Arrangement – Ductwork Elevations	1-2
MSK-NID-GA-013_B	Unit 1 NID & SCR/ Unit 2 General Arrangement – Ductwork Elevations	1-2
MSK-NID-MB-010_B	Unit 1 NID & SCR Mass Balance Diagram – (1.7 lb SO ₂ /MMBtu Coal w/o ESP)	1-3
MSK-NID-WB-010_B	Unit 1 NID & SCR Water Balance Diagram – (1.7 lb SO ₂ /MMBtu Coal w/o ESP)	1-4
ESK-NID-NOTES-010_A	Basic Description of One Lines – Unit 1 NID & SCR/ Unit 2 NID	1-5
ESK-NID-010_A	Unit 1 NID & SCR/ Unit 2 NID Overall One Line	1-5
ESK-NID-011_A	Unit 1 NID & SCR/ Unit 2 Overall One Line	1-5



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EXHIBIT 1-5
Unit 1 NID & SCR/ Unit 2 NID
Capital Cost Estimate Outline

EXHIBIT 1-5
U2/U1&2 COMMON
NID CAPITAL COST ESTIMATE OUTLINE
DIRECT COSTS

PROJECT DIRECT COSTS					
ACCT	COST ESTIMATE CATEGORY	EQUIPMENT/MATERIAL COST RESPONSIBILITY	CONSTRUCTION/ERECTION COST RESPONSIBILITY	ESTIMATE BASIS	NOTES
1.0	ID FANS	S&L	S&L	Previous OEM Proposals and S&L Estimates	1, 2
2.0	NID MODULES	S&L	S&L	Previous OEM Proposals and S&L Estimates	2
3.0	NEW STACK (UNIT 1 & 2)	AEP	AEP	Past AEP Projects	
4.0	LIME HANDLING SYSTEM	S&L	S&L	Previous OEM Proposals and S&L Estimates	
5.0	LIME SLAKER BUILDING	N/A	N/A	N/A for NID	
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	S&L	S&L	Previous OEM Proposals and S&L Estimates	
7.0	ABSORBER ISLAND	N/A	N/A	N/A for NID	
8.0	ACTIVATED CARBON INJECTION SYSTEM	AEP	AEP	AEP	
9.0	COMPRESSED AIR SYSTEM	S&L	S&L	Past & Current S&L Projects	
10.0	SERVICE WATER SYSTEM	S&L	S&L	Past & Current S&L Projects	
11.0	POTABLE WATER SYSTEM	S&L	S&L	Past & Current S&L Projects	

EXHIBIT 1-5
U2/U1&2 COMMON
NID CAPITAL COST ESTIMATE OUTLINE
DIRECT COSTS

PROJECT DIRECT COSTS					
ACCT	COST ESTIMATE CATEGORY	EQUIPMENT/MATERIAL COST RESPONSIBILITY	CONSTRUCTION/ERECTION COST RESPONSIBILITY	ESTIMATE BASIS	NOTES
12.0	FGD SUBSTATION	S&L	S&L	Past & Current S&L Projects	
13.0	FGD DCS SYSTEM	S&L	S&L	Past S&L Projects Adjusted to Meet AEP Design Criteria	
14.0	CEM SYSTEM	AEP	AEP	Past AEP Projects	
15.0	TRUCK & RAIL INFRASTRUCTURE	S&L	S&L	Past & Current S&L Projects	
16.0	SITE IMPROVEMENTS - CIVIL WORK	S&L	S&L	Past & Current S&L Projects	
17.0	BOP ITEMS	S&L	S&L	Past & Current S&L Projects	
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	S&L	S&L	Site Plans	
19.0	ARSENIC, ASBESTOS, LEAD ABATEMENT	AEP	AEP	Past AEP Projects	

Notes: 1) Noise Mitigation costs were considered for ID Fan insulation and lagging and blower building construction.
2) Ductwork costs are based upon general arrangement layouts.

EXHIBIT 1-5
U2/U1&2 COMMON
NID CAPITAL COST ESTIMATE OUTLINE
INDIRECT COSTS

PROJECT INDIRECT COSTS			
ACCT	COST ESTIMATE CATEGORY	TOTAL COST RESPONSIBILITY	ESTIMATE SOURCE
	ENGINEERING, PROCUREMENT & PROJECT SERVICES	S&L	Past FGD and AEP Projects
	CONSTRUCTION MANAGEMENT	S&L	Estimated % of Direct Costs
	S-U / COMMISSIONING	S&L	Estimated % of Direct Costs
	CRAFT S-U SUPPORT	S&L	Estimated % of Direct Costs
	INITIAL FILLS	S&L	Estimated % of Direct Costs
	SPARE PARTS	S&L	Estimated % of Direct Costs
	CONTINGENCY	S&L	Range Estimating
	ESCALATION	S&L	Equipment, Material & Labor Indices

EXHIBIT 1-5
U1/SCR
NID CAPITAL COST ESTIMATE OUTLINE
DIRECT COSTS

PROJECT DIRECT COSTS					
ACCT	COST ESTIMATE CATEGORY	EQUIPMENT/MATERIAL COST RESPONSIBILITY	CONSTRUCTION/ERECTION COST RESPONSIBILITY	ESTIMATE BASIS	NOTES
1.0	ID FANS	S&L	S&L	Previous OEM Proposals and S&L Estimates	1, 2
2.0	NID MODULES	S&L	S&L	Previous OEM Proposals and S&L Estimates	2
3.0	NEW STACK	N/A	N/A	Included with Unit 2	
4.0	LIME HANDLING SYSTEM	S&L	S&L	Previous OEM Proposals and S&L Estimates	
5.0	LIME SLAKER BUILDING	N/A	N/A	N/A for NID	
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	S&L	S&L	Previous OEM Proposals and S&L Estimates	
7.0	ABSORBER ISLAND	N/A	N/A	N/A for NID	
8.0	ACTIVATED CARBON INJECTION SYSTEM	N/A	N/A	Included with Unit 2	
9.0	COMPRESSED AIR SYSTEM	S&L	S&L	Past & Current S&L Projects	
10.0	SERVICE WATER SYSTEM	S&L	S&L	Past & Current S&L Projects	
11.0	POTABLE WATER SYSTEM	S&L	S&L	Past & Current S&L Projects	

EXHIBIT 1-5
U1/SCR
NID CAPITAL COST ESTIMATE OUTLINE
DIRECT COSTS

PROJECT DIRECT COSTS					
ACCT	COST ESTIMATE CATEGORY	EQUIPMENT/MATERIAL COST RESPONSIBILITY	CONSTRUCTION/ERECTION COST RESPONSIBILITY	ESTIMATE BASIS	NOTES
12.0	FGD SUBSTATION	S&L	S&L	Past & Current S&L Projects	
13.0	FGD DCS SYSTEM	S&L	S&L	Past S&L Projects Adjusted to Meet AEP Design Criteria	
14.0	CEM SYSTEM	AEP	AEP	Past AEP Projects	
15.0	TRUCK & RAIL INFRASTRUCTURE	N/A	N/A	Included with Unit 2	
16.0	SITE IMPROVEMENTS - CIVIL WORK	S&L	S&L	Past & Current S&L Projects	
17.0	BOP ITEMS	S&L	S&L	Past & Current S&L Projects	
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	S&L	S&L	Site Plans	
19.0	ARSENIC, ASBESTOS, LEAD ABATEMENT	AEP	AEP	Past AEP Projects	
20.0	SCR	S&L	S&L	Previous OEM Proposals and S&L Estimates	2

Notes: 1) Noise Mitigation costs were considered for ID Fan insulation and lagging and blower building construction.
2) Ductwork costs are based upon general arrangement layouts.

EXHIBIT 1-5
U1/SCR
NID CAPITAL COST ESTIMATE OUTLINE
INDIRECT COSTS

PROJECT INDIRECT COSTS			
ACCT	COST ESTIMATE CATEGORY	TOTAL COST RESPONSIBILITY	ESTIMATE SOURCE
	ENGINEERING, PROCUREMENT & PROJECT SERVICES	S&L	Past FGD and AEP Projects
	CONSTRUCTION MANAGEMENT	S&L	Estimated % of Direct Costs
	S-U / COMMISSIONING	S&L	Estimated % of Direct Costs
	CRAFT S-U SUPPORT	S&L	Estimated % of Direct Costs
	INITIAL FILLS	S&L	Estimated % of Direct Costs
	SPARE PARTS	S&L	Estimated % of Direct Costs
	CONTINGENCY	S&L	Range Estimating
	ESCALATION	S&L	Equipment, Material & Labor Indices



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EXHIBIT 1-6
Unit 1 NID & SCR/ Unit 2 NID
Contingency Analysis

AEP
BIG SANDY UNIT 2
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)
UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU

SARGENT & LUNDY
DATE: 11/24/2010

@RISK
Risk Analysis and Simulation Add-In for Microsoft EXCEL
Version 5.0
Palisade Corporation

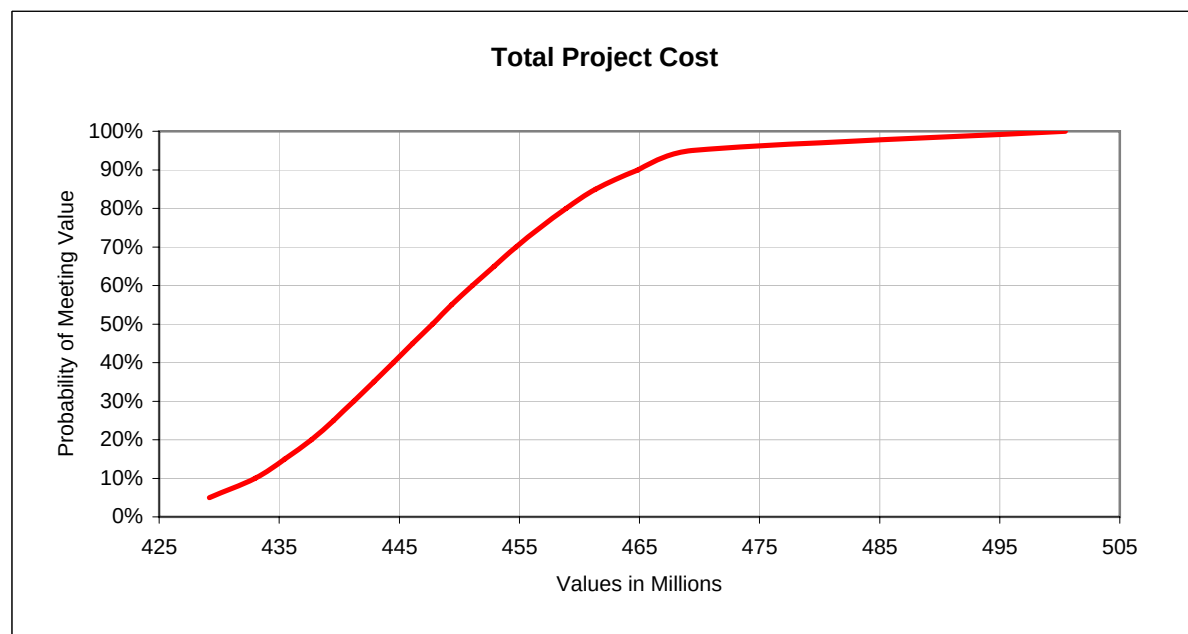
ANALYSIS INPUT

Acct. No.	Cost Elements	Target Value \$k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	\$52,340,500	95%	130%	\$49,723,475	\$68,042,650
2.0	NID MODULES	\$124,123,100	95%	125%	\$117,916,945	\$155,153,875
3.0	STACK	\$30,500,000	95%	130%	\$28,975,000	\$39,650,000
4.0	LIME HANDLING SYSTEM	\$22,265,300	95%	125%	\$21,152,035	\$27,831,625
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$12,030,200	95%	130%	\$11,428,690	\$15,639,260
8.0	ACTIVATED CARBON INJECTION SYSTEM	\$8,112,700	95%	130%	\$7,707,065	\$10,546,510
9.0	COMPRESSED AIR SYSTEM	\$4,363,200	95%	135%	\$4,145,040	\$5,890,320
10.0	SERVICE WATER SYSTEM	\$2,982,200	95%	135%	\$2,833,090	\$4,025,970
11.0	POTABLE WATER SYSTEM	\$800,900	95%	135%	\$760,855	\$1,081,215
12.0	FGD SUBSTATION	\$7,316,800	95%	135%	\$6,950,960	\$9,877,680
13.0	FGD DCS SYSTEM	\$5,016,900	95%	135%	\$4,766,055	\$6,772,815
14.0	CEM SYSTEM	\$2,110,000	95%	130%	\$2,004,500	\$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	\$4,340,800	95%	140%	\$4,123,760	\$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	\$13,457,400	95%	140%	\$12,784,530	\$18,840,360
17.0	BOP ITEMS	\$3,223,700	95%	160%	\$3,062,515	\$5,157,920
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$3,509,200	95%	200%	\$3,333,740	\$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	\$750,000	95%	150%	\$712,500	\$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	\$66,939,300	95%	140%	\$63,592,335	\$93,715,020
	OVERALL PROJECT INDIRECT COSTS	\$46,378,800	95%	130%	\$44,059,860	\$60,292,440
	SPARE PARTS	\$1,563,900	95%	130%	\$1,485,705	\$2,033,070
	Total Base Case	\$412,124,900				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 412,124,900 0.0%

Total Budget Required (\$k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
500,477,048	100.0%	88,352,100	21.438%
469,390,110	95.0%	57,265,200	13.895%
464,860,813	90.0%	52,735,900	12.796%
461,345,266	85.0%	49,220,400	11.943%
458,908,436	80.0%	46,783,500	11.352%
456,731,699	75.0%	44,606,800	10.824%
454,702,580	70.0%	42,577,700	10.331%
452,900,792	65.0%	40,775,900	9.894%
451,088,221	60.0%	38,963,300	9.454%
449,364,568	55.0%	37,239,700	9.036%
447,774,957	50.0%	35,650,100	8.650%
446,105,112	45.0%	33,980,200	8.245%
444,498,716	40.0%	32,373,800	7.855%
442,881,024	35.0%	30,756,100	7.463%
441,224,071	30.0%	29,099,200	7.061%
439,535,901	25.0%	27,411,000	6.651%
437,692,418	20.0%	25,567,500	6.204%
435,482,502	15.0%	23,357,600	5.668%
433,024,304	10.0%	20,899,400	5.071%
429,190,937	5.0%	17,066,000	4.141%



For the purpose of this analysis, the total project cost is defined as the sum of the unit 2 FGD project cost and the unit 1 & 2 common NID (N/ESP) cost. The total project cost is the sum of the unit 2 FGD project cost and the unit 1 & 2 common NID (N/ESP) cost.

AEP
BIG SANDY UNIT 1
FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU

@RISK
Risk Analysis and Simulation Add-In for Microsoft EXCEL
Version 5.0
Palisade Corporation

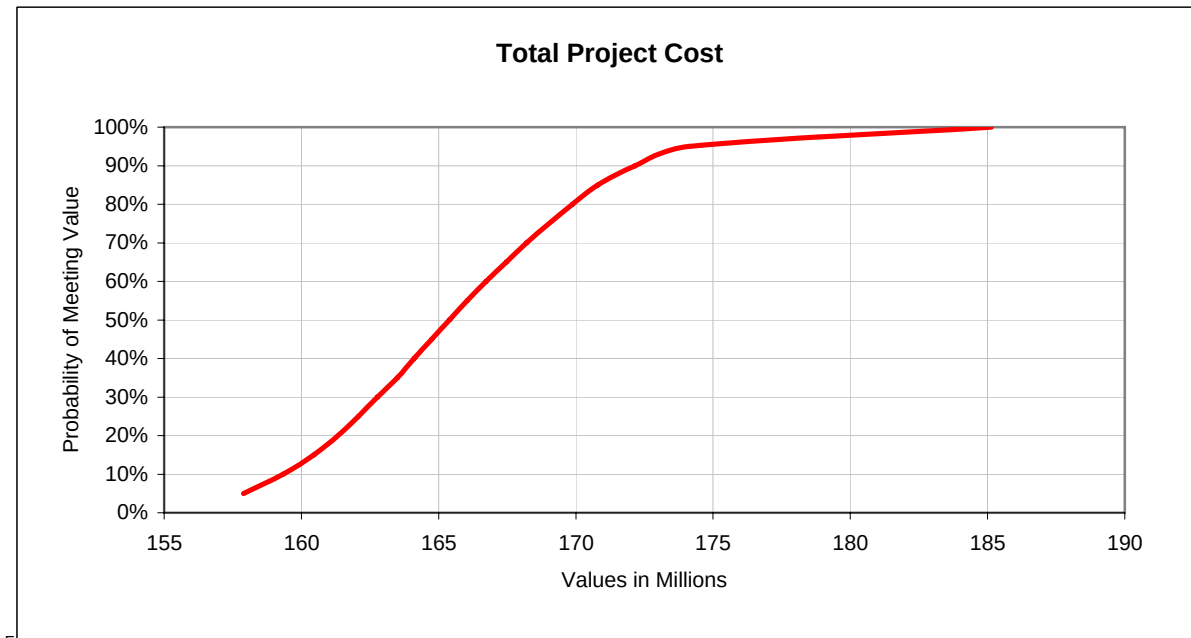
ANALYSIS INPUT

Acct. No.	Cost Elements	Target Value \$k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	\$23,103,800	95%	130%	\$21,948,610	\$30,034,940
2.0	NID MODULES	\$47,086,900	95%	125%	\$44,732,555	\$58,858,625
4.0	LIME HANDLING SYSTEM	\$26,300	95%	125%	\$24,985	\$32,875
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$284,800	95%	130%	\$270,560	\$370,240
9.0	COMPRESSED AIR SYSTEM	\$303,200	95%	135%	\$288,040	\$409,320
10.0	SERVICE WATER SYSTEM	\$505,400	95%	135%	\$480,130	\$682,290
11.0	POTABLE WATER SYSTEM	\$241,100	95%	135%	\$229,045	\$325,485
12.0	FGD SUBSTATION	\$2,050,900	95%	135%	\$1,948,355	\$2,768,715
13.0	FGD DCS SYSTEM	\$5,032,900	95%	135%	\$4,781,255	\$6,794,415
14.0	CEM SYSTEM	\$3,200,000	95%	130%	\$3,040,000	\$4,160,000
16.0	SITE IMPROVEMENTS - CIVIL WORK	\$923,500	95%	140%	\$877,325	\$1,292,900
17.0	BOP ITEMS	\$1,489,700	95%	160%	\$1,415,215	\$2,383,520
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$738,300	95%	200%	\$701,385	\$1,476,600
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	\$750,000	95%	150%	\$712,500	\$1,125,000
20.0	SCR	\$19,179,900	95%	130%	\$18,220,905	\$24,933,870
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	\$26,264,600	95%	140%	\$24,951,370	\$36,770,440
	OVERALL PROJECT INDIRECT COSTS	\$20,506,600	95%	130%	\$19,481,270	\$26,658,580
	SPARE PARTS	\$628,500	95%	130%	\$597,075	\$817,050
	Total Base Case	\$152,316,400				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 152,316,400 0.1%

Total Budget Required (\$k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
185,135,929	100.0%	32,819,500	21.547%
174,139,122	95.0%	21,822,700	14.327%
172,154,351	90.0%	19,838,000	13.024%
170,801,578	85.0%	18,485,200	12.136%
169,875,618	80.0%	17,559,200	11.528%
169,023,046	75.0%	16,706,600	10.968%
168,196,211	70.0%	15,879,800	10.426%
167,462,654	65.0%	15,146,300	9.944%
166,726,507	60.0%	14,410,100	9.461%
166,040,551	55.0%	13,724,200	9.010%
165,398,666	50.0%	13,082,300	8.589%
164,742,718	45.0%	12,426,300	8.158%
164,104,559	40.0%	11,788,200	7.739%
163,503,115	35.0%	11,186,700	7.344%
162,776,336	30.0%	10,459,900	6.867%
162,073,241	25.0%	9,756,800	6.406%
161,327,653	20.0%	9,011,300	5.916%
160,457,135	15.0%	8,140,700	5.345%
159,348,639	10.0%	7,032,200	4.617%
157,891,178	5.0%	5,574,800	3.660%





Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

EXHIBIT 1-7
Unit 1 NID & SCR/ Unit 2 NID
Capital Cost Estimate Summary

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B					Estimate No.: 30925B				
AEP				Project No.: 12756-000	AEP				Project No.: 12756-001				
BIG SANDY UNIT 2				Date: 11/24/2010	BIG SANDY UNIT 1				Date: 11/24/2010				
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer: MNO				
COST ESTIMATE SUMMARY				Reviewer: JMK	COST ESTIMATE SUMMARY				Reviewer: JMK				
				Approver: PEF					Approver: PEF				
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)		Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)				
1.0	ID FANS				1.0	ID FANS							
1.1	ID FANS - OEM EQUIPMENT	1,875,000 ACFM WITH 19,500 HP MOTORS (\$750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	\$ 8,594,400		1.1	ID FANS - OEM EQUIPMENT	665,000 ACFM WITH 6,000 HP MOTORS (\$360,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	\$ 4,525,800					
1.2	PIPING & SUPPORTS - MECHANICAL		\$ 171,000		1.2	PIPING & SUPPORTS - MECHANICAL		\$ 133,300					
1.3	DAMPERS		\$ 1,133,600		1.3	DAMPERS		\$ 755,700					
1.4	EXPANSION JOINTS		\$ 247,600		1.4	EXPANSION JOINTS		\$ 164,900					
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	\$ 8,890,200		1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	\$ 4,445,100					
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ 2,734,300		1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ 1,396,200					
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	\$ 385,200		1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	\$ 275,100					
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR NID MODULE DUCTWORK SUPPLIED WITH THE OEM EQUIPMENT	\$ 2,982,300		1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR NID MODULE DUCTWORK SUPPLIED WITH THE OEM EQUIPMENT	\$ 1,881,700					
1.9	DUCT SUPPORT STEEL - FOUNDATIONS		\$ 1,088,800		1.9	DUCT SUPPORT STEEL - FOUNDATIONS		\$ 863,100					
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		\$ 304,700		1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		\$ 278,400					
1.11	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS		\$ 858,900		1.11	ID FAN PDC - FOUNDATIONS		\$ 136,200					
1.12	NID CONTROL / SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	\$ 4,505,000		1.12	ID FAN PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	\$ 477,000					
1.13	TRANSFORMERS		\$ 1,140,200		1.13	TRANSFORMERS		\$ 224,600					
1.14	SWITCHGEAR		\$ 1,945,700		1.14	SWITCHGEAR		\$ 1,075,000					
1.15	CABLE BUS & TERMINATIONS		\$ 2,411,900		1.15	CABLE BUS & TERMINATIONS		\$ 1,929,100					

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B					Estimate No.: 30925B				
AEP				Project No.: 12756-000	AEP				Project No.: 12756-001				
BIG SANDY UNIT 2				Date: 11/24/2010	BIG SANDY UNIT 1				Date: 11/24/2010				
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer: MNO				
COST ESTIMATE SUMMARY				Reviewer: JMK	COST ESTIMATE SUMMARY				Reviewer: JMK				
				Approver: PEF					Approver: PEF				
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)		Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)		Total Project Cost (Unit 1 & 2)			
1.16	MCC		\$ 127,200		1.16	MCC		\$ 190,900					
1.17	MIMIC PANELS		\$ 22,000		1.17	MIMIC PANELS		\$ 44,100					
1.18	EMERGENCY POWER SYSTEM		\$ 324,400		1.18	UPS SYSTEM		\$ 437,100					
1.19	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C 750KCMIL- 13.8KV	\$ 521,600		1.19	PANELS - RELAY		\$ 109,100					
					1.20	HIGH VOLTAGE POWER CABLE & TERMINATION		\$ 391,300					
1.20	MEDIUM VOLTAGE POWER CABLE & TERMINATION		\$ 485,300		1.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	NOT REQUIRED	\$ -					
1.21	LOW VOLTAGE POWER CABLE & TERMINATION		\$ 1,416,700		1.22	LOW VOLTAGE POWER CABLE & TERMINATION		\$ 1,209,500					
1.22	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ 1,325,200		1.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ 328,800					
1.23	GROUNDING		\$ 48,300		1.24	GROUNDING		\$ 9,100					
1.24	LIGHTING/ TRANSFORMERS & PANELS		\$ 85,500		1.25	LIGHTING/ TRANSFORMERS & PANELS	LIGHT FIXTURES ONLY	\$ 12,000					
1.25	RACEWAY, CABLE TRAY, & CONDUIT		\$ 9,764,800		1.26	RACEWAY, CABLE TRAY, & CONDUIT		\$ 1,425,400					
1.26	DUCT BANK		\$ 485,300		1.27	DUCT BANK		\$ 296,600					
1.27	FOUNDATION FOR TRANSFORMERS		\$ 253,500		1.28	FOUNDATION FOR TRANSFORMERS		\$ 22,500					
1.28	FIREWALL FOR TRANSFORMERS		\$ 11,500		1.29	FIREWALL FOR TRANSFORMERS	NOT REQUIRED	\$ -					
1.29	COMMUNICATIONS		\$ 33,200		1.30	COMMUNICATIONS		\$ 30,000					
1.30	LIGHTNING PROTECTION		\$ 24,200		1.31	LIGHTNING PROTECTION		\$ 21,200					
1.31	SECURITY SYSTEM		\$ 18,000		1.32	SECURITY SYSTEM		\$ 15,000					
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 52,340,500		90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 23,103,800		\$ 75,444,300			
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 13,856,300			SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 5,840,900		\$ 19,697,200			
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 66,196,800			TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 28,944,700		\$ 95,141,500			

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B				Estimate No.: 30925B			
AEP				Project No.: 12756-000				Project No.: 12756-001			
BIG SANDY UNIT 2				Date: 11/24/2010				Date: 11/24/2010			
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO				Preparer: MNO			
COST ESTIMATE SUMMARY				Reviewer: JMK				Reviewer: JMK			
				Approver: PEF				Approver: PEF			
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)			
2.0	NID MODULES			2.0	NID MODULES						
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	\$ 82,646,100	2.1	MECHANICAL EQUIPMENT	A 4-MODULE NID SYSTEM (80' X 100') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	\$ 33,955,200				
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	\$ 2,419,200	2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	\$ 960,000				
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	\$ 3,122,600	2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 8000 SF	\$ 1,052,800				
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	\$ 5,066,000	2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	\$ 1,774,700				
2.5	PIPING & SUPPORTS - MECHANICAL		\$ 685,600	2.5	PIPING & SUPPORTS - MECHANICAL		\$ 411,100				
2.6	DUCTWORK		\$ 13,959,600	2.6	DUCTWORK		\$ 3,688,500				
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ 4,293,400	2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ 1,163,500				
2.8	DUCTWORK INSULATION & LAGGING		\$ 4,828,400	2.8	DUCTWORK INSULATION & LAGGING		\$ 1,775,200				
2.9	NID MODULE- FOUNDATIONS		\$ 2,865,100	2.9	NID MODULE- FOUNDATIONS		\$ 973,800				
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		\$ 4,015,700	2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		\$ 1,254,900				
2.11	GROUNDING		\$ 62,100	2.11	GROUNDING		\$ 21,700				

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Sargent & Lundy, LLC					
AEP			Estimate No.:	30924B	AEP			Estimate No.:	30925B
BIG SANDY UNIT 2			Project No.:	12756-001	BIG SANDY UNIT 1			Project No.:	12756-001
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)			Date:	11/24/2010	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU			Date:	11/24/2010
COST ESTIMATE SUMMARY			Preparer:	MNO	COST ESTIMATE SUMMARY			Preparer:	MNO
			Reviewer:	JMK				Reviewer:	JMK
			Approver:	PEF				Approver:	PEF
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)	
2.12	LIGHTING/ TRANSFORMERS & PANELS		\$ 159,300	2.12	LIGHTING/ TRANSFORMERS & PANELS		\$ 55,500		
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	\$ -	2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	\$ -		
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 124,123,100	90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 47,086,900	\$ 171,210,000	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 28,488,900		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,979,100	\$ 39,468,000	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	\$ 152,612,000		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	\$ 58,066,000	\$ 210,678,000	
3.0	NEW STACK			3.0	NEW STACK				
3.1	CONCRETE STACK (DRY)	COMMON STACK FOR UNITS 1 & 2. (PROVIDED BY AEP)	\$ 30,500,000	3.1	CONCRETE STACK (DRY)	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -		
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 30,500,000	90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 30,500,000	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 4,575,000		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 4,575,000	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK	\$ 35,075,000		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK	\$ -	\$ 35,075,000	
4.0	LIME HANDLING SYSTEM			4.0	LIME HANDLING SYSTEM	0			
4.1	LIME STORAGE SILO		\$ 6,914,000	4.1	LIME STORAGE SILO	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -		
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	\$ 1,072,900	4.2	LIME UNLOADING SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -		
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	\$ 2,001,000	4.3	LIME TRANSPORT SYSTEM TO DAY BINS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -		
4.4	PIPING - MECHANICAL		\$ 561,600	4.4	PIPING - MECHANICAL		\$ 26,300		
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		\$ 359,900	4.5	LIME STORAGE SILO ACCESS STAIR TOWER	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -		
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	\$ 3,781,400	4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -		
4.7	RAIL CAR UNLOADING PAD - FOUNDATIONS	20' X 120' - NO SIDING	\$ 132,800	4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -		
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		\$ 217,200	4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -		

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B				Estimate No.: 30925B			
AEP				Project No.: 12756-000				Project No.: 12756-001			
BIG SANDY UNIT 2				Date: 11/24/2010				Date: 11/24/2010			
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO				Preparer: MNO			
COST ESTIMATE SUMMARY				Reviewer: JMK				Reviewer: JMK			
				Approver: PEF				Approver: PEF			
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)			
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	\$ 434,400	4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.10	CONCRETE PIT FOR THE ELEVATOR		\$ 9,200	4.10	CONCRETE PIT FOR THE ELEVATOR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	\$ 995,500	4.11	LIME STORAGE SILO - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		\$ 42,800	4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.13	PIPE RACK - FOUNDATIONS		\$ 828,200	4.13	PIPE RACK - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	\$ 224,600	4.14	TRANSFORMERS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	\$ 300,700	4.15	SWITCHGEAR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.16	CABLE BUS DUCT		\$ 345,700	4.16	CABLE BUS DUCT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.17	MCC		\$ 65,400	4.17	MCC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.18	MIMIC PANELS		\$ 18,900	4.18	MIMIC PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.19	EMERGENCY POWER SYSTEM		\$ 132,700	4.19	EMERGENCY POWER SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.20	GROUNDING		\$ 54,600	4.20	GROUNDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B				Estimate No.: 30925B			
AEP				Project No.: 12756-000				Project No.: 12756-001			
BIG SANDY UNIT 2				Date: 11/24/2010				Date: 11/24/2010			
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO				Preparer: MNO			
COST ESTIMATE SUMMARY				Reviewer: JMK				Reviewer: JMK			
				Approver: PEF				Approver: PEF			
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)			
4.21	LIGHTING/ TRANSFORMERS & PANELS		\$ 291,500	4.21	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.22	RACEWAY, CABLE TRAY, & CONDUIT		\$ 1,938,200	4.22	RACEWAY, CABLE TRAY, & CONDUIT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCML- 15KV	\$ 552,400	4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCML-5KV	\$ 348,500	4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		\$ 252,400	4.25	LOW VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ 112,000	4.26	CONTROL & INSTRUMENT CABLE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4- 3" CONDUITS, 2.38' H X 3.79' W	\$ 177,300	4.27	DUCT BANK	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	\$ 13,800	4.28	FOUNDATIONS FOR TRANSFORMERS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.29	COMMUNICATIONS		\$ 60,000	4.29	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.30	LIGHTNING PROTECTION		\$ 10,700	4.30	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
4.31	SECURITY SYSTEM		\$ 15,000	4.31	SECURITY SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 22,265,300	90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 26,300	\$ 22,291,600			
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 4,594,000		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 7,700	\$ 4,601,700			
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 26,859,300		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 34,000	\$ 26,893,300			
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID		5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID					

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.:	30924B					Estimate No.:	30925B		
AEP				Project No.:	12756-000	AEP				Project No.:	12756-001		
BIG SANDY UNIT 2				Date:	11/24/2010	BIG SANDY UNIT 1				Date:	11/24/2010		
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer:	MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer:	MNO		
COST ESTIMATE SUMMARY				Reviewer:	JMK	COST ESTIMATE SUMMARY				Reviewer:	JMK		
				Approver:	PEF					Approver:	PEF		
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)					
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS			6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS								
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	\$ 5,027,500	6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	\$ 696,400	6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	N/A	\$ -						
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	\$ 40,300	6.3	BUILDING SUMP PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
6.4	AGITATOR FOR SUMP PUMPS	5 HP	\$ 16,600	6.4	AGITATOR FOR SUMP PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
6.5	PIPING - MECHANICAL		\$ 682,500	6.5	PIPING - MECHANICAL		\$ 284,800						
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 75' DIA X 121' H - 6746 TONS - SUBCONTRACT COST INCLUDES LABOR	\$ 3,035,700	6.6	BYPRODUCT WASTE SILO	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	\$ -	6.7	RECYCLE SILO	NOT REQUIRED FOR NID	\$ -						
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICED TO BOTTOM ASH POND	\$ -	6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICED TO BOTTOM ASH POND	\$ -						
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		\$ 676,600	6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	\$ -	6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	\$ -						
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		\$ 269,700	6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	\$ 307,700	6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	\$ -	6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	\$ -						
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	\$ -	6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	\$ -						

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B					Estimate No.: 30925B				
AEP				Project No.: 12756-000	AEP				Project No.: 12756-001				
BIG SANDY UNIT 2				Date: 11/24/2010	BIG SANDY UNIT 1				Date: 11/24/2010				
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer: MNO				
COST ESTIMATE SUMMARY				Reviewer: JMK	COST ESTIMATE SUMMARY				Reviewer: JMK				
				Approver: PEF					Approver: PEF				
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)		Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)				
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	\$ 300,000		6.15	LOAD OUT AREA PDC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.16	MCC	480V MCC PER LINE UP	\$ 63,600		6.16	MCC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.17	EMERGENCY POWER SYSTEM		\$ 112,700		6.17	EMERGENCY POWER SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.18	LIGHTING/ TRANSFORMERS & PANELS		\$ 122,600		6.18	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.19	RACEWAY, CABLE TRAY, & CONDUIT		\$ 221,600		6.19	RACEWAY, CABLE TRAY, & CONDUIT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.20	GROUNDING		\$ 15,400		6.20	GROUNDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	\$ 57,400		6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		\$ 145,200		6.22	LOW VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ 116,900		6.23	CONTROL & INSTRUMENT CABLE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.24	DUCT BANK		\$ 16,800		6.24	DUCT BANK	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.25	COMMUNICATIONS		\$ 60,000		6.25	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.26	LIGHTNING PROTECTION		\$ 30,000		6.26	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
6.27	SECURITY SYSTEM		\$ 15,000		6.27	SECURITY SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 12,030,200		90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 284,800	\$ 12,315,000				

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B					Estimate No.: 30925B				
AEP				Project No.: 12756-000	AEP				Project No.: 12756-001				
BIG SANDY UNIT 2				Date: 11/24/2010	BIG SANDY UNIT 1				Date: 11/24/2010				
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer: MNO				
COST ESTIMATE SUMMARY				Reviewer: JMK	COST ESTIMATE SUMMARY				Reviewer: JMK				
				Approver: PEF					Approver: PEF				
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)		Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 2,056,900			SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 71,900	\$ 2,128,800				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 14,087,100			TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 356,700	\$ 14,443,800				
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID			7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID						
8.0	ACTIVATED CARBON INJECTION SYSTEM				8.0	ACTIVATED CARBON INJECTION SYSTEM	COMMON WITH UNIT 2						
8.1	ACI MECHANICAL EQUIPMENT:	COMMON FOR UNIT 1 & UNIT 2	\$ 6,087,600										
8.2	PIPING - MECHANICAL	COMMON FOR UNIT 1 & UNIT 2	\$ 871,400										
8.3	ACI SYSTEM - FOUNDATIONS	COMMON FOR UNIT 1 & UNIT 2	\$ 239,800										
8.4	MCC	COMMON FOR UNIT 1 & UNIT 2	\$ 98,200										
8.5	GROUNDING	COMMON FOR UNIT 1 & UNIT 2	\$ 35,700										
8.6	LIGHTING / TRANSFORMERS & PANELS	COMMON FOR UNIT 1 & UNIT 2	\$ 73,400										
8.7	RACEWAY, CABLE TRAY, & CONDUIT		\$ 576,000										
8.8	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	\$ 45,300										
8.9	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ 85,300										
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 8,112,700		90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 8,112,700				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,422,800			SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 1,422,800				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	\$ 9,535,500			TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	\$ -	\$ 9,535,500				
9.0	COMPRESSED AIR SYSTEM	INCLUDES ADDITIONAL CAPACITY FOR UNIT 1 NID & SCR			9.0	COMPRESSED AIR SYSTEM							
9.1	AIR COMPRESSOR & AUXILIARIES		\$ 1,414,400		9.1	AIR COMPRESSOR & AUXILIARIES	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
9.2	PIPING - MECHANICAL		\$ 1,541,000		9.2	PIPING - MECHANICAL		\$ 303,200					
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS		\$ 669,500		9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B				Estimate No.: 30925B			
AEP				Project No.: 12756-001				Project No.: 12756-001			
BIG SANDY UNIT 2				Date: 11/24/2010				Date: 11/24/2010			
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO				Preparer: MNO			
COST ESTIMATE SUMMARY				Reviewer: JMK				Reviewer: JMK			
				Approver: PEF				Approver: PEF			
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)			
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H	\$ 612,000	9.4	AIR COMPRESSOR BUILDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
9.5	LIGHTING/ TRANSFORMERS & PANELS		\$ 32,900	9.5	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	\$ -	9.6	RACEWAY, CABLE TRAY, & CONDUIT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
9.7	GROUNDING		\$ 15,400	9.7	GROUNDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
9.8	COMMUNICATIONS		\$ 60,000	9.8	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
9.9	LIGHTNING PROTECTION		\$ 18,000	9.9	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 4,363,200	90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 303,200	\$ 4,666,400			
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 983,800		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 84,300	\$ 1,068,100			
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	\$ 5,347,000		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	\$ 387,500	\$ 5,734,500			
10.0	SERVICE WATER SYSTEM			10.0	SERVICE WATER SYSTEM						
10.1	PUMPS	INCLUDES SELF-CLEANING STRAINERS	\$ 321,100	10.1	PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
10.2	PIPING - MECHANICAL		\$ 1,329,500	10.2	PIPING - MECHANICAL		\$ 335,400				
10.3	PIPING - FIRE PROTECTION SYSTEM		\$ 1,139,100	10.3	PIPING - FIRE PROTECTION SYSTEM		\$ 170,000				
10.4	TANKS		\$ 120,000	10.4	TANKS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		\$ 72,500	10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
10.6	ELECTRICAL	INCLUDED IN ID FANS, 1.0	\$ -	10.6	ELECTRICAL	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,982,200	90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 505,400	\$ 3,487,600			
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 783,700		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 133,200	\$ 916,900			
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	\$ 3,765,900		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	\$ 638,600	\$ 4,404,500			

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.:	30924B					Estimate No.:	30925B		
AEP				Project No.:	12756-000	AEP				Project No.:	12756-001		
BIG SANDY UNIT 2				Date:	11/24/2010	BIG SANDY UNIT 1				Date:	11/24/2010		
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer:	MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer:	MNO		
COST ESTIMATE SUMMARY				Reviewer:	JMK	COST ESTIMATE SUMMARY				Reviewer:	JMK		
				Approver:	PEF					Approver:	PEF		
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)					
11.0	POTABLE WATER SYSTEM			11.0	POTABLE WATER SYSTEM								
11.1	PUMPS		\$ 48,400	11.1	PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)							
11.2	PIPING - MECHANICAL		\$ 729,600	11.2	PIPING - MECHANICAL		\$ 241,100						
11.3	TANKS		\$ 8,500	11.3	TANKS		\$ -						
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		\$ 14,400	11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		\$ -						
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0	\$ -	11.5	ELECTRICAL	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 800,900	90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 241,100	\$ 1,042,000					
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 229,800		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 70,200	\$ 300,000					
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	\$ 1,030,700		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	\$ 311,300	\$ 1,342,000					
12.0	FGD SUBSTATION			12.0	FGD SUBSTATION								
12.1	TRANSFORMERS		\$ 1,608,500	12.1	TRANSFORMERS		\$ 963,900						
12.2	TRANSFORMER PDC	15W X 45' X 10'H. SUBCONTRACT PRICE INCLUDES LABOR	\$ 202,500	12.2	TRANSFORMER PDC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
12.3	TRANSFORMER PDC - FOUNDATION		\$ 220,100	12.3	TRANSFORMER PDC - FOUNDATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
12.4	138KV MAIN FEEDER & TERMINATIONS		\$ 915,600	12.4	138KV MAIN FEEDER & TERMINATIONS		\$ 518,000						
12.5	SWITCHGEAR		\$ 638,500	12.5	SWITCHGEAR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
12.6	MCC	480V MCC, PER LINE UP	\$ 63,600	12.6	MCC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
12.7	CABLE BUS		\$ 185,600	12.7	CABLE BUS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -						
12.8	PANELS - RELAY		\$ 109,100	12.8	PANELS - RELAY	NOT REQUIRED	\$ -						

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B	Estimate No.: 30925B			
AEP				Project No.: 12756-000	AEP			
BIG SANDY UNIT 2				Date: 11/24/2010	BIG SANDY UNIT 1			
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU			
COST ESTIMATE SUMMARY				Reviewer: JMK	COST ESTIMATE SUMMARY			
				Approver: PEF				
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)
12.9	MIMIC PANELS		\$ 22,000	12.9	MIMIC PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	
12.10	EMERGENCY POWER SYSTEM		\$ 132,700	12.10	EMERGENCY POWER SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	
12.11	GROUNDING		\$ 82,400	12.11	GROUNDING		\$ 41,500	
12.12	LIGHTING/ TRANSFORMERS & PANELS		\$ 85,500	12.12	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING ALLOWANCE	\$ 81,800	12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING ALLOWANCE	\$ 81,800	
12.14	RACEWAY, CABLE TRAY, & CONDUIT		\$ 2,214,400	12.14	RACEWAY, CABLE TRAY, & CONDUIT		\$ 120,400	
12.15	DUCT BANK		\$ 80,500	12.15	DUCT BANK		\$ 36,800	
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	NOT REQUIRED	\$ -	12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	
12.17	LOW VOLTAGE POWER CABLE & TERMINATION		\$ 165,200	12.17	LOW VOLTAGE POWER CABLE & TERMINATION		\$ 16,200	
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD	\$ 70,700	12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD	\$ 12,200	
12.19	FOUNDATION FOR AUX TRANSFORMER	INCLUDES FOUNDATIONS FOR 138KV SWITCH & OH LINE INCLUDED IN ACCOUNT 12.4	\$ 375,200	12.19	FOUNDATION FOR AUX TRANSFORMER		\$ 248,200	
12.20	FIREWALL FOR TRANSFORMERS		\$ 11,900	12.20	FIREWALL FOR TRANSFORMERS		\$ 11,900	
12.21	COMMUNICATIONS		\$ 30,000	12.21	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	
12.22	LIGHTNING PROTECTION		\$ 6,000	12.22	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	
12.23	SECURITY SYSTEM		\$ 15,000	12.23	SECURITY SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 7,316,800	90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,050,900	\$ 9,367,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,608,700		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 392,500	\$ 2,001,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	\$ 8,925,500		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	\$ 2,443,400	\$ 11,368,900

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B					Estimate No.: 30925B				
AEP				Project No.: 12756-000	AEP				Project No.: 12756-001				
BIG SANDY UNIT 2				Date: 11/24/2010	BIG SANDY UNIT 1				Date: 11/24/2010				
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer: MNO				
COST ESTIMATE SUMMARY				Reviewer: JMK	COST ESTIMATE SUMMARY				Reviewer: JMK				
				Approver: PEF					Approver: PEF				
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)		Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)				
13.0	FGD DCS SYSTEM				13.0	FGD DCS SYSTEM							
13.1	DCS	3200 I/O POINTS	\$ 3,213,600		13.1	DCS	3400 I/O POINTS. INCLUDES CONTROLS FOR THE NID + SCR SYSTEM	\$ 3,414,400					
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	\$ 300,000		13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	\$ 300,000					
13.3	LOCALLY MOUNTED INSTRUMENTS		\$ 1,503,300		13.3	LOCALLY MOUNTED INSTRUMENTS	NID + SCR	\$ 1,318,500					
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 5,016,900		90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 5,032,900	\$ 10,049,800				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 923,200			SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 886,400	\$ 1,809,600				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	\$ 5,940,100			TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	\$ 5,919,300	\$ 11,859,400				
14.0	CEM SYSTEM				14.0	CEM SYSTEM							
14.1	CEM	PROVIDED BY AEP	\$ 2,110,000		14.1	CEM	PROVIDED BY AEP	\$ 3,200,000					
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,110,000		90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,200,000	\$ 5,310,000				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 316,500			SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 480,000	\$ 796,500				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM	\$ 2,426,500			TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM	\$ 3,680,000	\$ 6,106,500				
15.0	TRUCK & RAIL INFRASTRUCTURE				15.0	TRUCK & RAIL INFRASTRUCTURE							
15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF	\$ 1,349,400		15.1	EXISTING RAILROAD IMPROVEMENTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF	\$ 2,064,400		15.2	EXISTING RAILROAD IMPROVEMENTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12: SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	\$ 465,100		15.3	NEW RAILROAD TRACK	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	\$ 144,800		15.4	FIELD FABRICATED TURNOUTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	\$ 212,500		15.5	RAIL SCALE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B				Estimate No.: 30925B			
AEP				Project No.: 12756-000				Project No.: 12756-001			
BIG SANDY UNIT 2				Date: 11/24/2010				Date: 11/24/2010			
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO				Preparer: MNO			
COST ESTIMATE SUMMARY				Reviewer: JMK				Reviewer: JMK			
				Approver: PEF				Approver: PEF			
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)			
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION	\$ 104,600	15.6	NEW CONCRETE ENCASEMENT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 4,340,800	90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 4,340,800			
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,311,500		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 1,311,500			
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	\$ 5,652,300		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	\$ -	\$ 5,652,300			
16.0	SITE IMPROVEMENTS - CIVIL WORK			16.0	SITE IMPROVEMENTS - CIVIL WORK						
16.1	SITE GRADING	INCLUDES ADDITIONAL AREA FOR UNIT 1 COMMON ITEMS	\$ 713,200	16.1	SITE GRADING	SCR AREA ONLY	\$ 79,000				
16.2	ROADS & SURFACING		\$ 2,872,400	16.2	ROADS & SURFACING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	\$ 109,500	16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	\$ 109,500				
16.4	TRUCK SCALE & CONCRETE APPROACH		\$ 289,300	16.4	TRUCK SCALE & CONCRETE APPROACH	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.5	PROCESS WATER STORAGE BASIN		\$ 381,900	16.5	PROCESS WATER STORAGE BASIN	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE		\$ 152,400	16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	\$ 1,062,300	16.7	STORM WATER DRAINAGE TRENCH	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.8	STORM WATER RUNOFF POND		\$ 137,600	16.8	STORM WATER RUNOFF POND	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B				Estimate No.: 30925B			
AEP				Project No.: 12756-000				Project No.: 12756-001			
BIG SANDY UNIT 2				Date: 11/24/2010				Date: 11/24/2010			
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO				Preparer: MNO			
COST ESTIMATE SUMMARY				Reviewer: JMK				Reviewer: JMK			
				Approver: PEF				Approver: PEF			
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)			
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE		\$ 314,500	16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.10	OILY WATER SEWER		\$ 353,100	16.10	OILY WATER SEWER	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	\$ 216,100	16.11	OIL SEPARATOR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.12	SANITARY SEWER		\$ 119,100	16.12	SANITARY SEWER	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH TWO PUMPS, 100 GPM TOTAL	\$ 199,200	16.13	SANITARY LIFT STATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.14	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 12 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	\$ 1,833,600	16.14	CONSTRUCTION LAYDOWN AREA	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.15	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 24,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	\$ 713,100	16.15	CRAFT PARKING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				
16.16	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 6,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	\$ 178,300	16.16	CONTRACTOR OFFICES (AREA)	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -				

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B					Estimate No.: 30925B				
AEP				Project No.: 12756-000	AEP				Project No.: 12756-001				
BIG SANDY UNIT 2				Date: 11/24/2010	BIG SANDY UNIT 1				Date: 11/24/2010				
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer: MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer: MNO				
COST ESTIMATE SUMMARY				Reviewer: JMK	COST ESTIMATE SUMMARY				Reviewer: JMK				
				Approver: PEF					Approver: PEF				
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)		Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)		Total Project Cost (Unit 1 & 2)			
16.17	TRUCK WASH AREA		\$ 130,400		16.17	TRUCK WASH AREA	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
16.18	NEW PERMANENT STORAGE	INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	\$ 850,000		16.18	NEW PERMANENT STORAGE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
16.19	FOUNDATIONS FOR THE NEW WAREHOUSE		\$ 723,700		16.19	FOUNDATIONS FOR THE NEW WAREHOUSE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
16.20	NEW TEMPORARY STORAGE	WEATHER TIGHT CANVAS ENCLOSURE. INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	\$ 450,000		16.20	NEW TEMPORARY STORAGE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -					
16.21	FOUNDATIONS FOR TEMPORARY STORAGE		\$ 256,700		16.21	FOUNDATIONS FOR TEMPORARY STORAGE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2)	\$ -					
16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 2 BUSES OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	\$ 1,368,000		16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 1 BUS OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	\$ 702,000					
16.23	EROSION & SEDIMENT CONTROL		\$ 33,000		16.23	EROSION & SEDIMENT CONTROL		\$ 33,000					
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 13,457,400		90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 923,500		\$ 14,380,900			
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 3,464,500			SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 107,700		\$ 3,572,200			
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	\$ 16,921,900			TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	\$ 1,031,200		\$ 17,953,100			
17.0	BOP ITEMS				17.0	BOP ITEMS							
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	\$ 140,000		17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	\$ 57,600					
17.2	HEAT TRACING		\$ 424,100		17.2	HEAT TRACING		\$ 199,700					
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		\$ 854,600		17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		\$ 482,100					

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.: 30924B	AEP				Estimate No.: 30925B	AEP			
BIG SANDY UNIT 2				Project No.: 12756-000	BIG SANDY UNIT 1				Project No.: 12756-001	BIG SANDY UNIT 1			
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Date: 11/24/2010	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Date: 11/24/2010	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU			
COST ESTIMATE SUMMARY				Preparer: MNO	COST ESTIMATE SUMMARY				Preparer: MNO	COST ESTIMATE SUMMARY			
				Reviewer: JMK					Reviewer: JMK				
				Approver: PEF					Approver: PEF				
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)		Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)		Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1 & 2)
17.4	HOISTS & TROLLEYS		\$ 529,400		17.4	HOISTS & TROLLEYS		\$ 423,600					
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	\$ 633,100		17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	\$ 180,900					
17.6	MISC PIPE SUPPORT FOUNDATIONS		\$ 31,500		17.6	MISC PIPE SUPPORT FOUNDATIONS		\$ 23,600					
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	\$ 65,700		17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	\$ 13,100					
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	\$ 545,300		17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	\$ 109,100					
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,223,700		90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,489,700					\$ 4,713,400
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,050,167			SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 480,132					\$ 1,530,299
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	\$ 4,273,900			TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	\$ 1,969,800					\$ 6,243,700
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE				18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE							
18.1	RELOCATE HYDROGEN STORAGE TANK		\$ 102,400		18.1	RELOCATE HYDROGEN STORAGE TANK	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A	\$ -					
18.2	NEW HYDROGEN LINE TO PLANT		\$ 212,700		18.2	NEW HYDROGEN LINE TO PLANT	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A	\$ -					
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	\$ 295,500		18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	\$ 190,900					
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	\$ 804,000		18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 55 TON DUCTWORK	\$ 522,600					
18.5	RELOCATED WAREHOUSE - FOUNDATIONS		\$ 877,500		18.5	RELOCATED WAREHOUSE - FOUNDATIONS	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A	\$ -					
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	150' L X 75' W X 25' H	\$ 1,217,100		18.6	RELOCATE EXISTING WAREHOUSE BUILDING	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A	\$ -					
					18.7	DUCTWORK REMOVAL FROM ECONOMIZER OUTLET TO AIR HEATER INLET	ALLOWANCE FOR 40 TON DUCTWORK	\$ 24,800					
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,509,200		90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 738,300					\$ 4,247,500

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.:	30924B	AEP				Estimate No.:	30925B	
AEP				Project No.:	12756-000	AEP				Project No.:	12756-001	
BIG SANDY UNIT 2				Date:	11/24/2010	BIG SANDY UNIT 1				Date:	11/24/2010	
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer:	MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer:	MNO	
COST ESTIMATE SUMMARY				Reviewer:	JMK	COST ESTIMATE SUMMARY				Reviewer:	JMK	
				Approver:	PEF					Approver:	PEF	
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,161,000		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 232,000	\$ 1,393,000				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$ 4,670,200		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$ 970,300	\$ 5,640,500				
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT			19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT							
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP	\$ 750,000	19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP	\$ 750,000					
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 750,000	90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 750,000	\$ 1,500,000				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 112,500		SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 112,500	\$ 225,000				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT	\$ 862,500		TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT	\$ 862,500	\$ 1,725,000				
				20.0	SCR							
				20.1	CATALYST		\$ 4,119,100					
				20.2	CRANES & HOISTS	CATALYST REPLACEMENT TROLLEY, 8 TONS	\$ 48,200					
				20.3	AMMONIA INJECTION GRID		\$ 179,300					
				20.4	STATIC MIXER		\$ 469,000					
				20.5	SONIC HORNS		\$ 129,100					
				20.6	PALLET TRUCKS		\$ 30,000					
				20.7	SCR REACTOR VESSEL		\$ 3,783,100					
				20.8	ACCESS DOORS	24"X36", SCR REACTOR	\$ 15,200					
				20.9	ACCESS DOORS	REMOVABLE CATALYST DOOR, 6'X8', SCR REACTOR	\$ 104,700					
				20.10	EXPANSION JOINTS		\$ 434,400					
				20.11	DUCTWORK	INLET (120T) / OUTLET (150T) DUCT FOR SCR	\$ 2,553,600					
				20.12	SCR ACCESS GALLERY	4 LEVELS, 800 SF EACH LEVEL	\$ 268,500					

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.:	30924B	AEP				Estimate No.:	30925B	
AEP				Project No.:	12756-000	AEP				Project No.:	12756-001	
BIG SANDY UNIT 2				Date:	11/24/2010	BIG SANDY UNIT 1				Date:	11/24/2010	
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer:	MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer:	MNO	
COST ESTIMATE SUMMARY				Reviewer:	JMK	COST ESTIMATE SUMMARY				Reviewer:	JMK	
				Approver:	PEF					Approver:	PEF	
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)				
				20.13	SCR STAIR TOWER		\$ 145,400					
				20.14	ELEVATOR	MAINTENANCE ELEVATOR SUBCONTRACT COST INCLUDES LABOR	\$ 325,000					
				20.15	CONCRETE PIT FOR THE ELEVATOR		\$ 9,200					
				20.16	PIPING & SUPPORTS - MECHANICAL		\$ 723,900					
				20.17	SCR SUPPORT STEEL	THREE COAT SHOP PAINT, REACTOR VESSEL	\$ 1,338,000					
				20.18	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT, INLET / OUTLET DUCTWORK	\$ 785,400					
				20.19	PIPE RACK FOR AMMONIA PIPING	NOT REQUIRED	\$ -					
				20.20	SCR REACTOR VESSEL INSULATION		\$ 826,500					
				20.21	DUCTWORK INSULATION & LAGGING	INLET / OUTLET DUCTWORK	\$ 1,491,100					
				20.22	SCR REACTOR SUPPORT STEEL - FOUNDATIONS		\$ 303,200					
				20.23	DUCTWORK SUPPORT STEEL - FOUNDATIONS		\$ 120,700					
				20.24	SCR PDC - FOUNDATION		\$ -					
				20.25	PIPE RACK - FOUNDATIONS		\$ 175,900					
				20.26	CEMS BUILDING FOUNDATION	CEMS BUILDING IS INCLUDED IN CEMS COST PROVIDED BY AEP	\$ 38,300					
				20.27	SCR PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	\$ 107,500					
				20.28	MCC		\$ 71,900					
				20.29	PANEL BOARDS		\$ 20,000					

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Sargent & Lundy, LLC					
AEP			Estimate No.:	30924B	AEP			Estimate No.:	30925B
BIG SANDY UNIT 2			Project No.:	12756-000	BIG SANDY UNIT 1			Project No.:	12756-001
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)			Date:	11/24/2010	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU			Date:	11/24/2010
COST ESTIMATE SUMMARY			Preparer:	MNO	COST ESTIMATE SUMMARY			Preparer:	MNO
			Reviewer:	JMK				Reviewer:	JMK
			Approver:	PEF				Approver:	PEF
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)	
				20.30	LOW VOLTAGE POWER CABLE & TERMINATION		\$ 128,900		
				20.31	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ 73,100		
				20.32	GROUNDING		\$ 38,900		
				20.33	LIGHTING/ TRANSFORMERS & PANELS		\$ 24,500		
				20.34	RACEWAY, CABLE TRAY, & CONDUIT		\$ 434,600		
				20.35	COMMUNICATIONS		\$ 19,800		
				20.36	SECURITY SYSTEM		\$ 19,800		
				90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 19,179,900	\$ 19,179,900	
					SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,386,000	\$ 6,386,000	
					TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SCR	\$ 25,565,900	\$ 25,565,900	
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 297,242,900	99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 104,916,700	\$ 402,159,600	
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 66,939,300		OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 26,264,600	\$ 93,203,900	
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 364,182,200		OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 131,181,300	\$ 495,363,500	
	OVERALL PROJECT INDIRECT COSTS				OVERALL PROJECT INDIRECT COSTS				
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES		\$ 26,000,000		ENGINEERING, PROCUREMENT, & PROJECT SERVICES		\$ 11,000,000	\$ 37,000,000	
	CONSTRUCTION MANAGEMENT		\$ 10,925,500		CONSTRUCTION MANAGEMENT		\$ 3,935,400	\$ 14,860,900	
	S-U / COMMISSIONING		\$ 3,641,800		S-U / COMMISSIONING		\$ 1,311,800	\$ 4,953,600	
	CRAFT START-UP SUPPORT		\$ 1,419,000		CRAFT START-UP SUPPORT		\$ 565,900	\$ 1,984,900	
	INITIAL FILLS		\$ 1,092,500		INITIAL FILLS		\$ 393,500	\$ 1,486,000	
	OPERATOR & TRAINING MANUALS		\$ 300,000		OPERATOR & TRAINING MANUALS		\$ 300,000	\$ 600,000	
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)		\$ 400,000		SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)		\$ 400,000	\$ 800,000	
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS	\$ 2,600,000		NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS	\$ 2,600,000	\$ 5,200,000	
	SUBTOTAL - INDIRECT COSTS		\$ 46,378,800		SUBTOTAL - INDIRECT COSTS		\$ 20,506,600	\$ 66,885,400	
	TOTAL PROJECT DIRECT AND INDIRECT COSTS		\$ 410,561,000		TOTAL PROJECT DIRECT AND INDIRECT COSTS		\$ 151,687,900	\$ 562,248,900	
	SPARE PARTS:		\$ 1,563,900		SPARE PARTS:		\$ 628,500	\$ 2,192,400	
	SPARE PARTS - CAPITALIZED	0.90	\$ 938,340		SPARE PARTS - CAPITALIZED	0.90	\$ 377,100	\$ 1,315,440	
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60	\$ 625,560		SPARE PARTS - FIRST YEAR OF OPERATION	0.60	\$ 251,400	\$ 876,960	

EXHIBIT 1-7
NID Capital Cost Estimate Summary

Sargent & Lundy, LLC				Estimate No.:	30924B	AEP				Estimate No.:	30925B	
AEP				Project No.:	12756-000	AEP				Project No.:	12756-001	
BIG SANDY UNIT 2				Date:	11/24/2010	BIG SANDY UNIT 1				Date:	11/24/2010	
FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)				Preparer:	MNO	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU				Preparer:	MNO	
COST ESTIMATE SUMMARY				Reviewer:	JMK	COST ESTIMATE SUMMARY				Reviewer:	JMK	
				Approver:	PEF					Approver:	PEF	
Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 2 & Common)	Account No.	Item Description	Scope Definition	Total Projected Cost (Unit 1)	Total Project Cost (Unit 1 & 2)				
	CONTINGENCY	13.90	\$ 57,265,200		CONTINGENCY	14.33	\$ 21,822,700	\$ 79,087,900				
	ESCALATION		\$ 51,935,300		ESCALATION		\$ 24,392,700	\$ 76,328,000				
	EQUIPMENT		\$ 16,566,100		EQUIPMENT		\$ 8,625,100	\$ 25,191,200				
	MATERIAL		\$ 6,315,500		MATERIAL		\$ 2,349,400	\$ 8,664,900				
	LABOR		\$ 23,603,000		LABOR		\$ 10,435,200	\$ 34,038,200				
	INDIRECTS		\$ 5,450,700		INDIRECTS		\$ 2,983,000	\$ 8,433,700				
	TOTAL PROJECT COST		\$ 521,325,400		TOTAL PROJECT COST		\$ 198,531,800	\$ 719,857,200				
	REFERENCE COSTS:				REFERENCE COSTS:			\$ -				
A	ESP DEMOLITION		\$ 832,300	A	ESP DEMOLITION	ALLOWANCE FOR 400T STRUCTURE	\$ 332,900	\$ 1,165,200				
B	REMOVE BOOSTER AIR FANS		\$ 111,000					\$ 111,000				
C	REMOVAL OF FUEL OIL TANK		\$ 1,749,400					\$ 1,749,400				
				B	ECONOMIZER EXIT GAS TEMPERATURE CONTROL SYSTEM	BY AEP	\$ -	\$ -				



Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
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EXHIBIT 1-8
Unit 1 NID & SCR/ Unit 2 NID
O&M Cost Estimate Summary



Order-of-Magnitude FGD/SCR Cost Estimate
Big Sandy Plant – Unit 1

Project No. 12756-000
November 24, 2010
Revision 1

Exhibit 1-8. O&M Cost Estimate Summary (2010 dollars)

Unit Fuel	#1 1.7 w/o ESP	#2 3.0 w/o ESP
Fixed O&M (\$/year)		
Operating Labor		
NID System	520,000	1,040,000
SCR System	0	NA
Maintenance Material		
NID System	1,650,000	2,350,000
SCR System	58,000	NA
Maintenance Labor		
NID System	1,100,000	1,566,000
SCR System	87,000	NA
Total NID Fixed O&M (\$/year)	3,270,000	4,956,000
Total SCR Fixed O&M (\$/year)	145,000	NA
Variable O&M (\$/year)		
Lime Reagent Cost	3,326,000	20,462,000
Urea Reagent Cost	2,217,000	NA
Activated Carbon	765,000	2,319,000
FGD Byproduct Disposal Cost	1,434,000	5,860,000
Makeup Water Cost	171,000	533,000
Wastewater Treatment Chemicals	NA	NA
Bags and Cages Replacement	222,000	690,000
Catalyst Replacement Cost	542,000	NA
Total NID Variable O&M excluding Auxiliary Power (\$/year)	5,918,000	29,864,000
Total SCR Variable O&M excluding Auxiliary Power (\$/year)	2,759,000	NA
Total NID O&M (\$/year)	9,188,000	34,820,000
Total SCR O&M (\$/year)	2,904,000	NA



Order-of-Magnitude FGD/SCR Cost Estimate
Big Sandy Plant – Unit 1

Project No. 12756-000
November 24, 2010
Revision 1

Exhibit 1-8. O&M Cost Estimate Summary (2010 dollars)

Unit Fuel	#1 1.7 w/o ESP	#2 3.0 w/o ESP
Auxiliary Power at Full Load (MW)		
Overall Draft [in WC]	7 [54]	23 [52]
FGD Draft Only [in WC]	4 [18]	10 [18]
SCR Draft Only [in WC]	1 [6]	NA
FGD Equipment Load	2	5
Existing Booster Fans	NA	-10
Existing ESP	-1	-4
Total Auxiliary Power at Full Load (MW)	8	14

Note: NA = Not Applicable for the technology



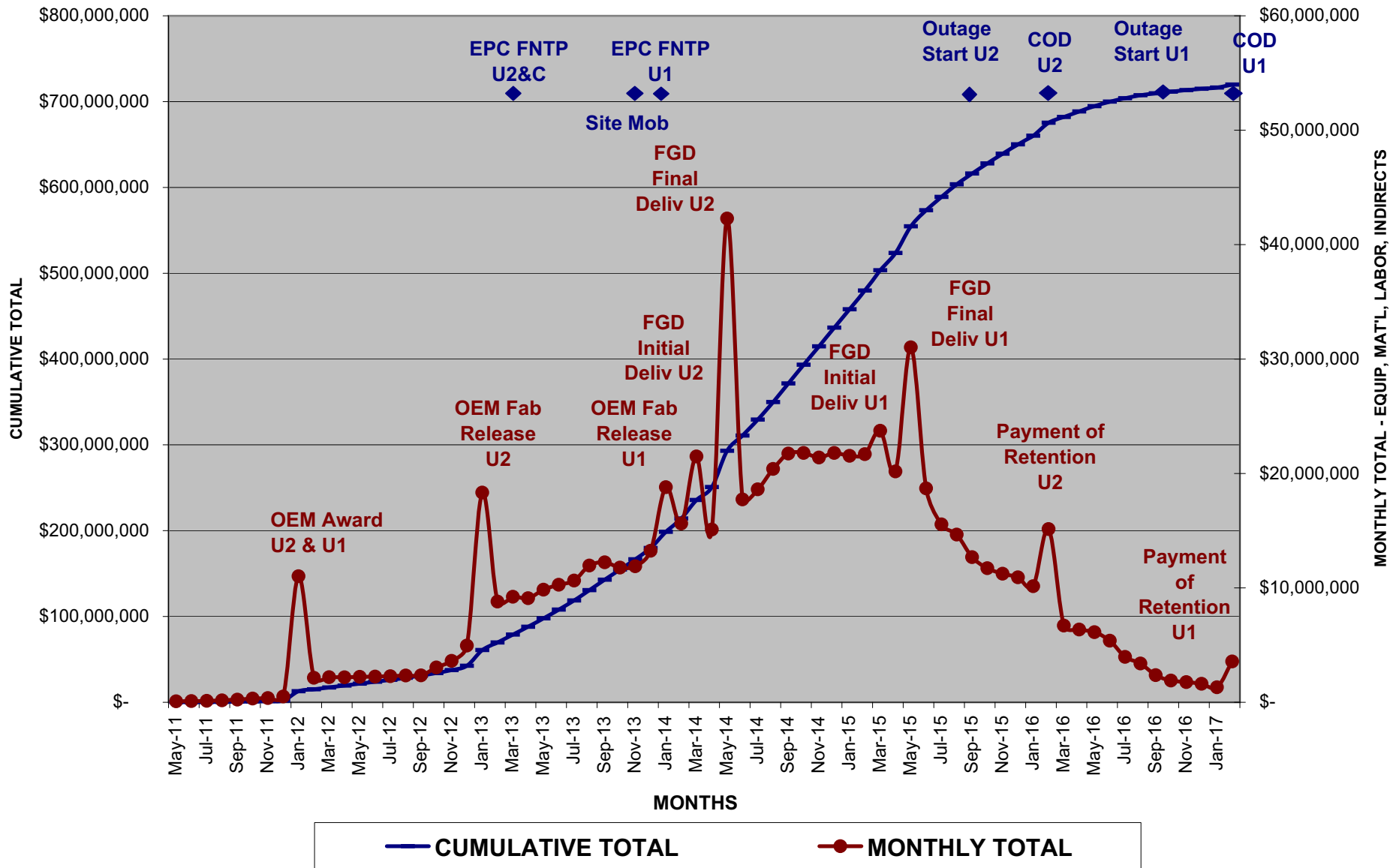
Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

EXHIBIT 1-9
Unit 1 NID & SCR/ Unit 2 NID
Project Cash Flow

Kentucky Power Company & American Electric Power Service Corp
BIG SANDY
 Unit 2 NID (N/ESP - 3.0 Lb/SO₂/MMBtu)
 & Unit 1 NID (N/ESP - 1.7 Lb/SO₂/MMBtu) + SCR
 Cash Flows - Cumulative & Monthly Totals

Sargent & Lundy
 Date: 11/24/10
 Rev: 1

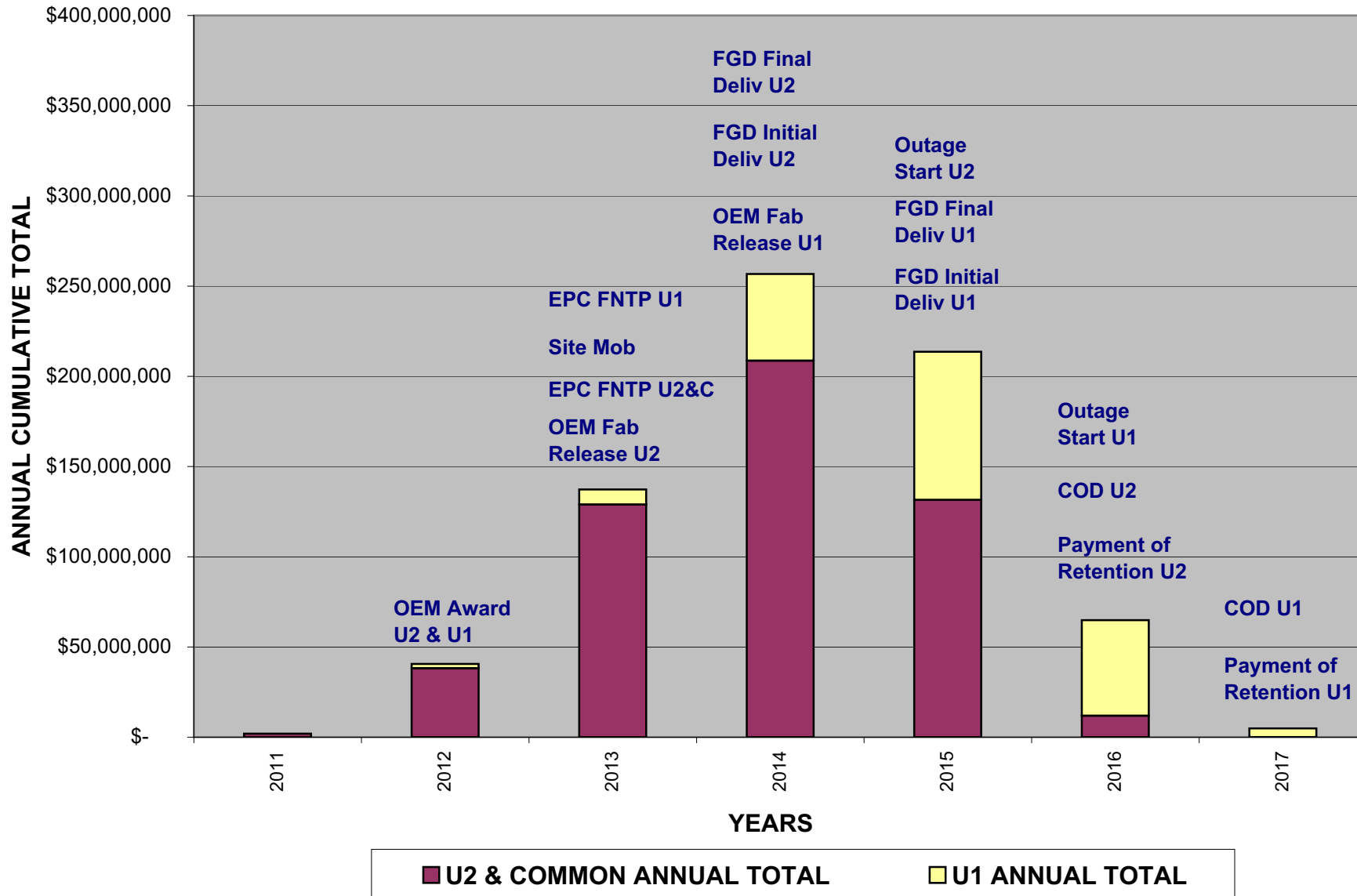
CASH FLOW - BIG SANDY Unit 2 NID & Unit 1 NID / SCR



Kentucky Power Company & American Electric Power Service Corp
BIG SANDY
 Unit 2 NID (N/ESP - 3.0 Lb/SO₂/MMBtu)
 & Unit 1 NID (N/ESP - 1.7 Lb/SO₂/MMBtu) + SCR
 Cash Flows - Cumulative & Monthly Totals

Sargent & Lundy
 Date: 11/24/10
 Rev: 1

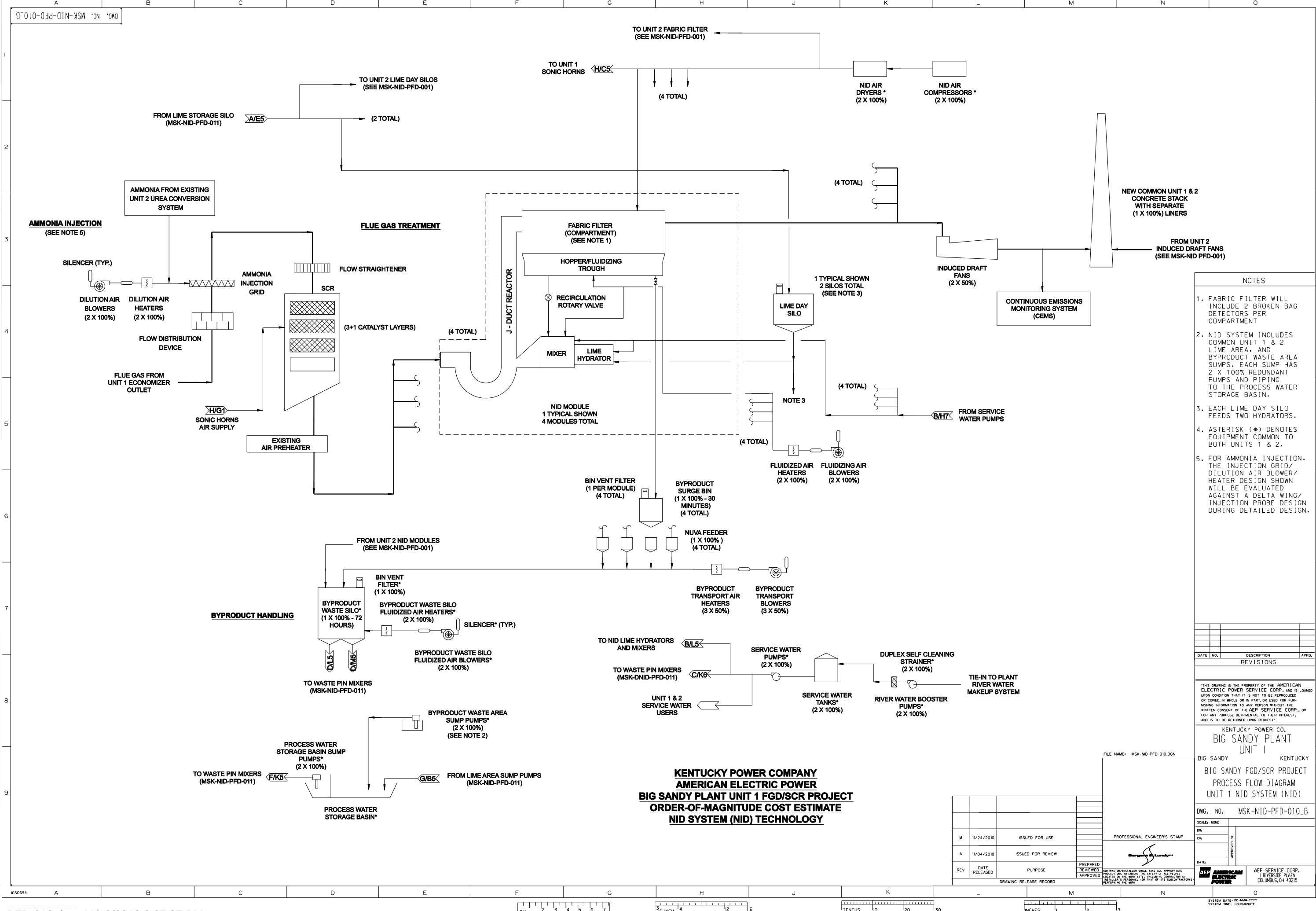
ANNUAL CASH FLOW - BIG SANDY Unit 2 NID & Unit 1 NID / SCR





Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
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November 24, 2010

ATTACHMENT 1-1
Unit 1 NID & SCR
Process Flow Diagrams



- NOTES
1. FABRIC FILTER WILL INCLUDE 2 BROKEN BAG DETECTORS PER COMPARTMENT
 2. NID SYSTEM INCLUDES COMMON UNIT 1 & 2 LIME AREA, AND BYPRODUCT WASTE AREA SUMPS. EACH SUMP HAS 2 X 100% REDUNDANT PUMPS AND PIPING TO THE PROCESS WATER STORAGE BASIN.
 3. EACH LIME DAY SILO FEEDS TWO HYDRATORS.
 4. ASTERISK (*) DENOTES EQUIPMENT COMMON TO BOTH UNITS 1 & 2.
 5. FOR AMMONIA INJECTION, THE INJECTION GRID/DILUTION AIR BLOWER/HEATER DESIGN SHOWN WILL BE EVALUATED AGAINST A DELTA WING/INJECTION PROBE DESIGN DURING DETAILED DESIGN.

DATE	NO.	DESCRIPTION	APPD.
REVISIONS			

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KENTUCKY POWER CO.
BIG SANDY PLANT
UNIT 1
BIG SANDY KENTUCKY
BIG SANDY FGD/SCR PROJECT
PROCESS FLOW DIAGRAM
UNIT 1 NID SYSTEM (NID)

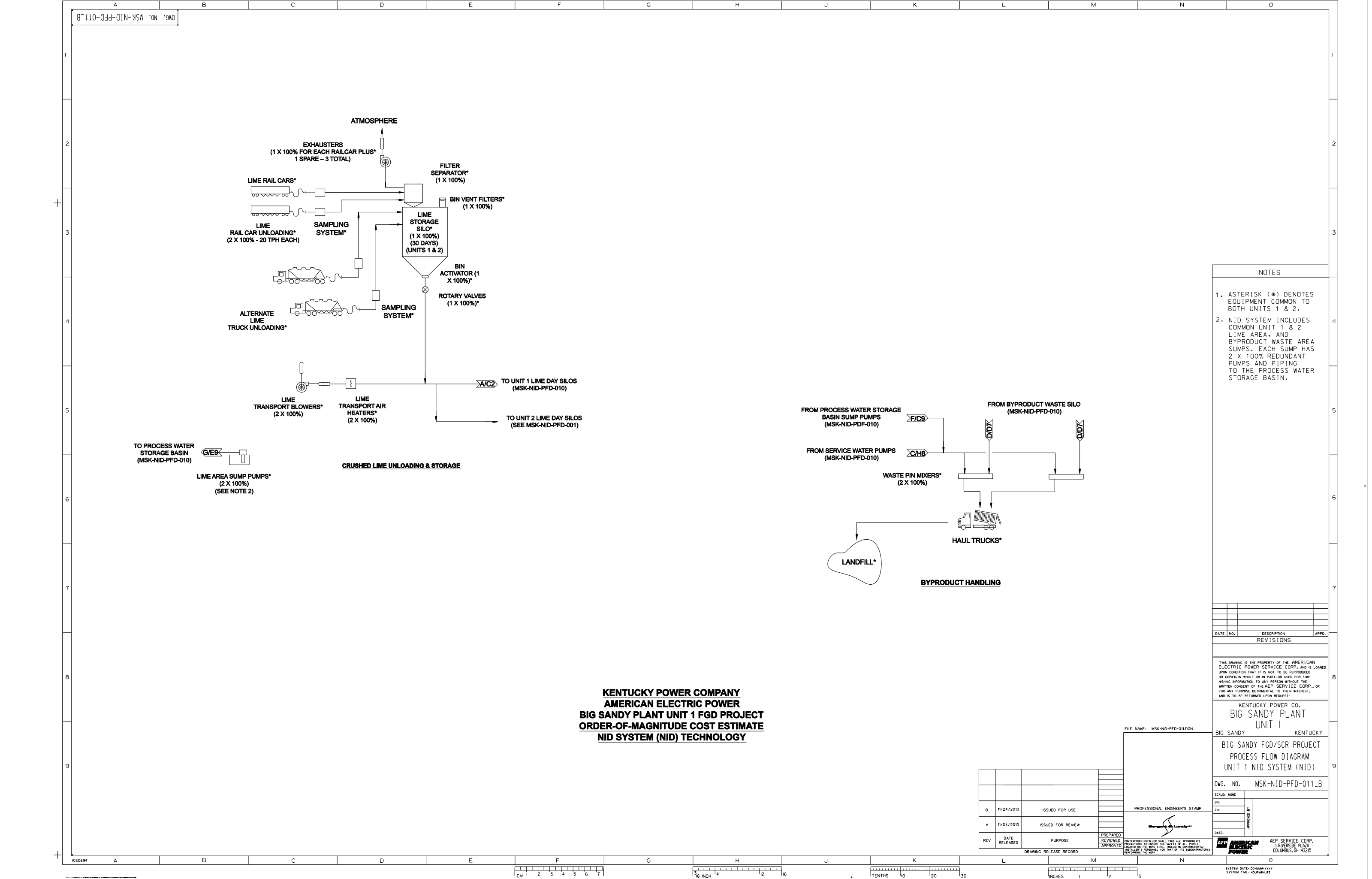
DWG. NO. MSK-NID-PFD-010_B

SCALE: NONE	PROFESSIONAL ENGINEER'S STAMP
DR: CH	APPROVED BY:
DATE: 11/04/2010	DATE: 11/24/2010
PREPARED:	REVIEWED:
CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE EMPLOYED ON THE WORK SITE, INCLUDING CONTRACTOR, INSTALLER'S PERSONNEL, OR THAT OF ITS SUBCONTRACTORS PERFORMING THE WORK.	AEP SERVICE CORP. 1 RIVERVIEW PLAZA COLUMBUS, OH 43215

**KENTUCKY POWER COMPANY
AMERICAN ELECTRIC POWER
BIG SANDY PLANT UNIT 1 FGD/SCR PROJECT
ORDER-OF-MAGNITUDE COST ESTIMATE
NID SYSTEM (NID) TECHNOLOGY**

REV	DATE RELEASED	PURPOSE	APPROVED
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A	11/04/2010	ISSUED FOR REVIEW	

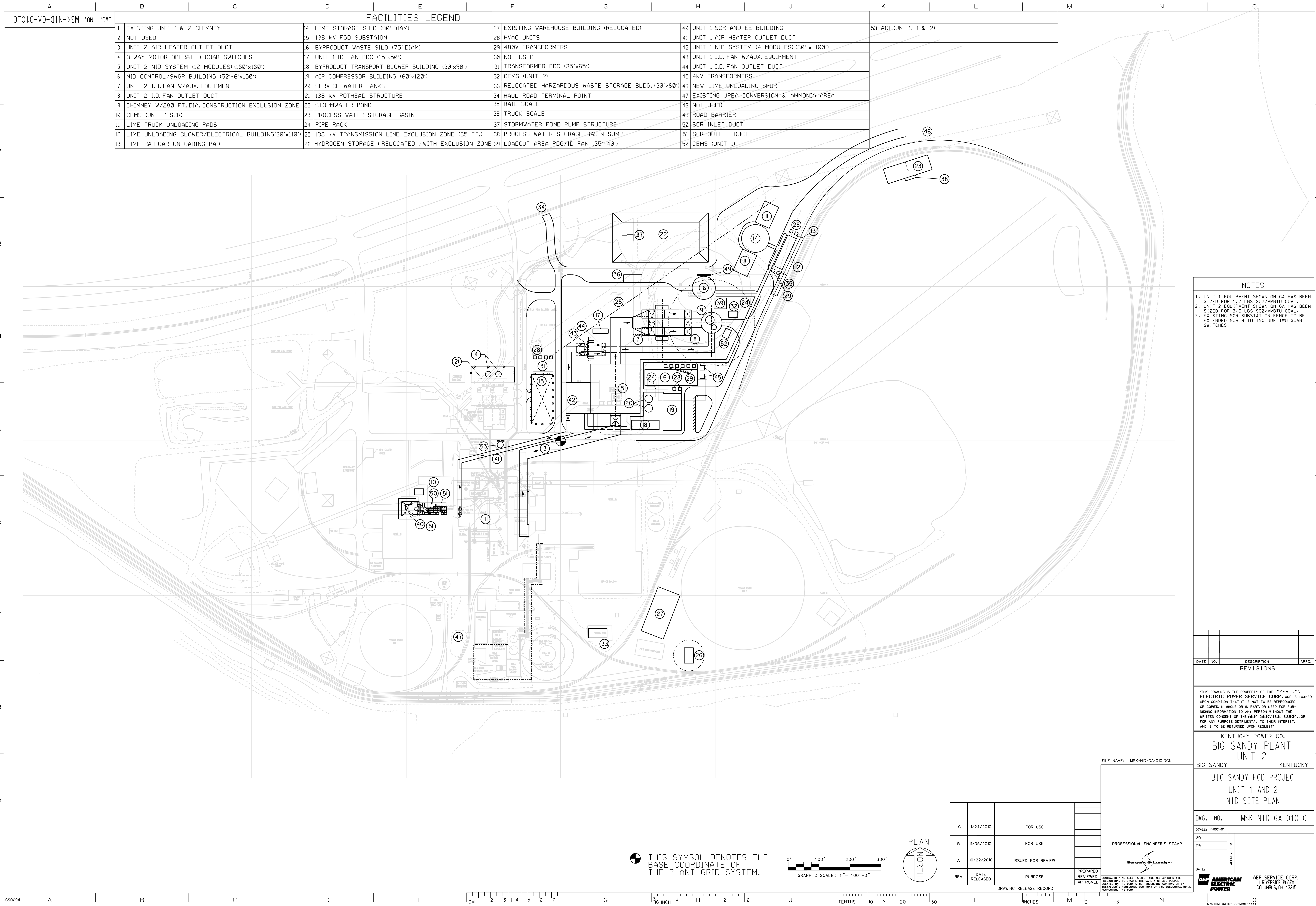
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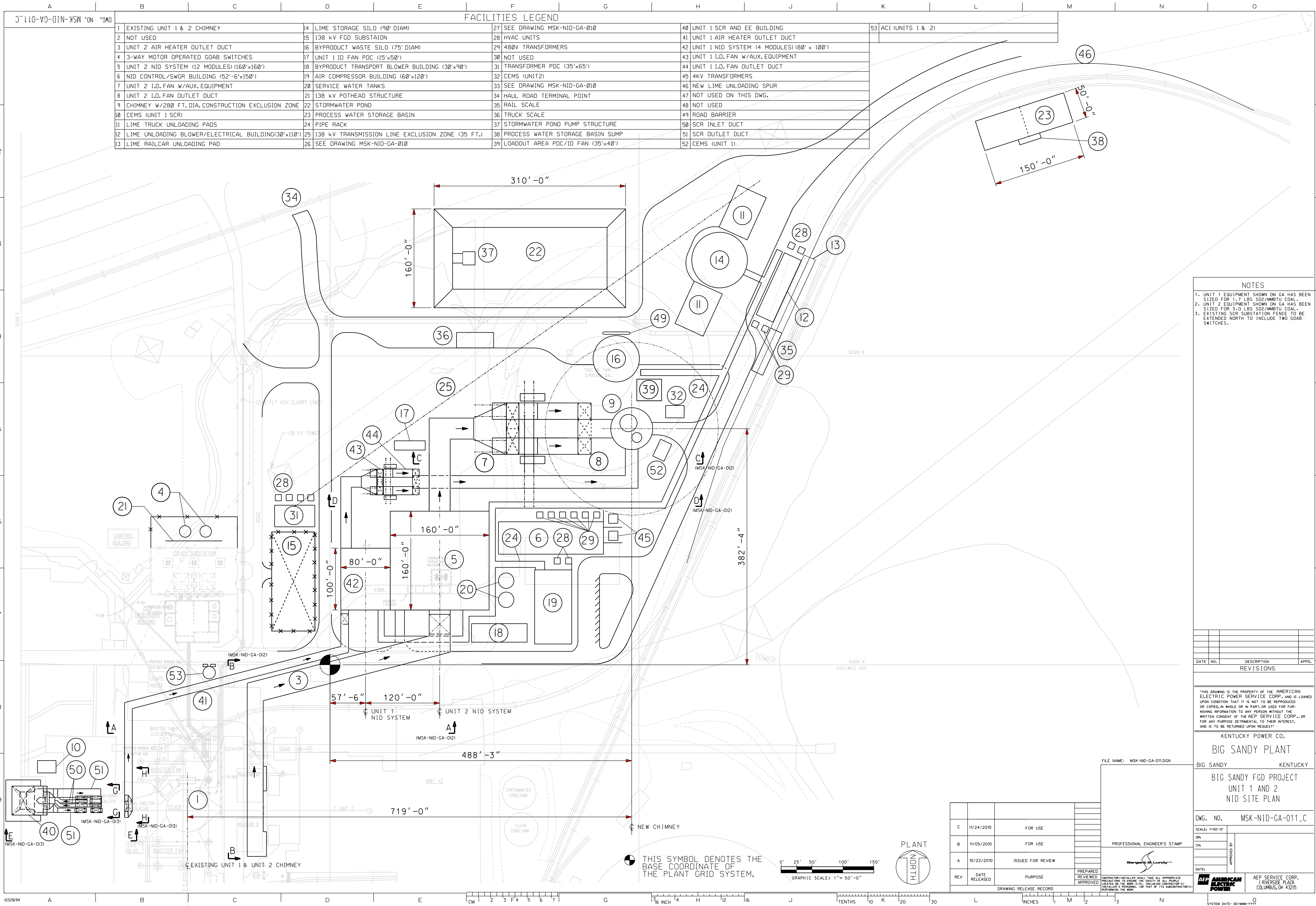




Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
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ATTACHMENT 1-2
Unit 1 NID & SCR/ Unit 2 NID
Site Plan and General Arrangement Drawings





FACILITIES LEGEND					
1	EXISTING UNIT 1 & 2 CHIMNEY	14	LIME STORAGE SILO (90' DIAM)	27	SEE DRAWING MSK-NID-GA-010
2	NOT USED	15	138 kV FGD SUBSTATION	28	HVAC UNITS
3	UNIT 2 AIR HEATER OUTLET DUCT	16	BYPRODUCT WASTE SILO (75' DIAM)	29	480V TRANSFORMERS
4	3-WAY MOTOR OPERATED GOAB SWITCHES	17	UNIT 1 ID FAN PDC (15'x50')	30	NOT USED
5	UNIT 2 NID SYSTEM (12 MODULES) (160'x160')	18	BYPRODUCT TRANSPORT BLOWER BUILDING (30'x90')	31	TRANSFORMER PDC (35'x65')
6	NID CONTROL/SWGR BUILDING (52'-6"x150')	19	AIR COMPRESSOR BUILDING (60'x120')	32	CEMS (UNIT2)
7	UNIT 2 I.D. FAN W/AUX. EQUIPMENT	20	SERVICE WATER TANKS	33	SEE DRAWING MSK-NID-GA-010
8	UNIT 2 I.D. FAN OUTLET DUCT	21	138 kV POTHEAD STRUCTURE	34	HAUL ROAD TERMINAL POINT
9	CHIMNEY W/280 FT. DIA. CONSTRUCTION EXCLUSION ZONE	22	STORMWATER POND	35	RAIL SCALE
10	CEMS (UNIT 1 SCR)	23	PROCESS WATER STORAGE BASIN	36	TRUCK SCALE
11	LIME TRUCK UNLOADING PADS	24	PIPE RACK	37	STORMWATER POND PUMP STRUCTURE
12	LIME UNLOADING BLOWER/ELECTRICAL BUILDING(30'x110')	25	138 kV TRANSMISSION LINE EXCLUSION ZONE (35 FT.)	38	PROCESS WATER STORAGE BASIN SUMP
13	LIME RAILCAR UNLOADING PAD	26	SEE DRAWING MSK-NID-GA-010	39	LOADOUT AREA PDC/ID FAN (35'x40')
				40	UNIT 1 SCR AND EE BUILDING
				41	UNIT 1 AIR HEATER OUTLET DUCT
				42	UNIT 1 NID SYSTEM (4 MODULES) (80' x 100')
				43	UNIT 1 I.D. FAN W/AUX. EQUIPMENT
				44	UNIT 1 I.D. FAN OUTLET DUCT
				45	4KV TRANSFORMERS
				46	NEW LIME UNLOADING SPUR
				47	NOT USED ON THIS DWG.
				48	NOT USED
				49	ROAD BARRIER
				50	SCR INLET DUCT
				51	SCR OUTLET DUCT
				52	CEMS (UNIT 1)
				53	ACI (UNITS 1 & 2)

- NOTES
1. UNIT 1 EQUIPMENT SHOWN ON GA HAS BEEN SIZED FOR 1.7 LBS SO2/MMBTU COAL.
 2. UNIT 2 EQUIPMENT SHOWN ON GA HAS BEEN SIZED FOR 3.0 LBS SO2/MMBTU COAL.
 3. EXISTING SCR SUBSTATION FENCE TO BE EXTENDED NORTH TO INCLUDE TWO GOAB SWITCHES.

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KENTUCKY POWER CO.	
BIG SANDY PLANT	
BIG SANDY	KENTUCKY
BIG SANDY FGD PROJECT	
UNIT 1 AND 2	
NID SITE PLAN	
DWG. NO.	MSK-NID-GA-011_C
SCALE: 1"=50'-0"	
DATE:	
APPROVED BY:	
DATE:	
AEP AMERICAN ELECTRIC POWER	
AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215	

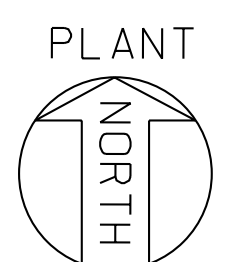
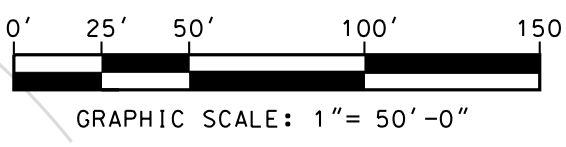
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B	11/05/2010	FOR USE			
A	10/22/2010	ISSUED FOR REVIEW			

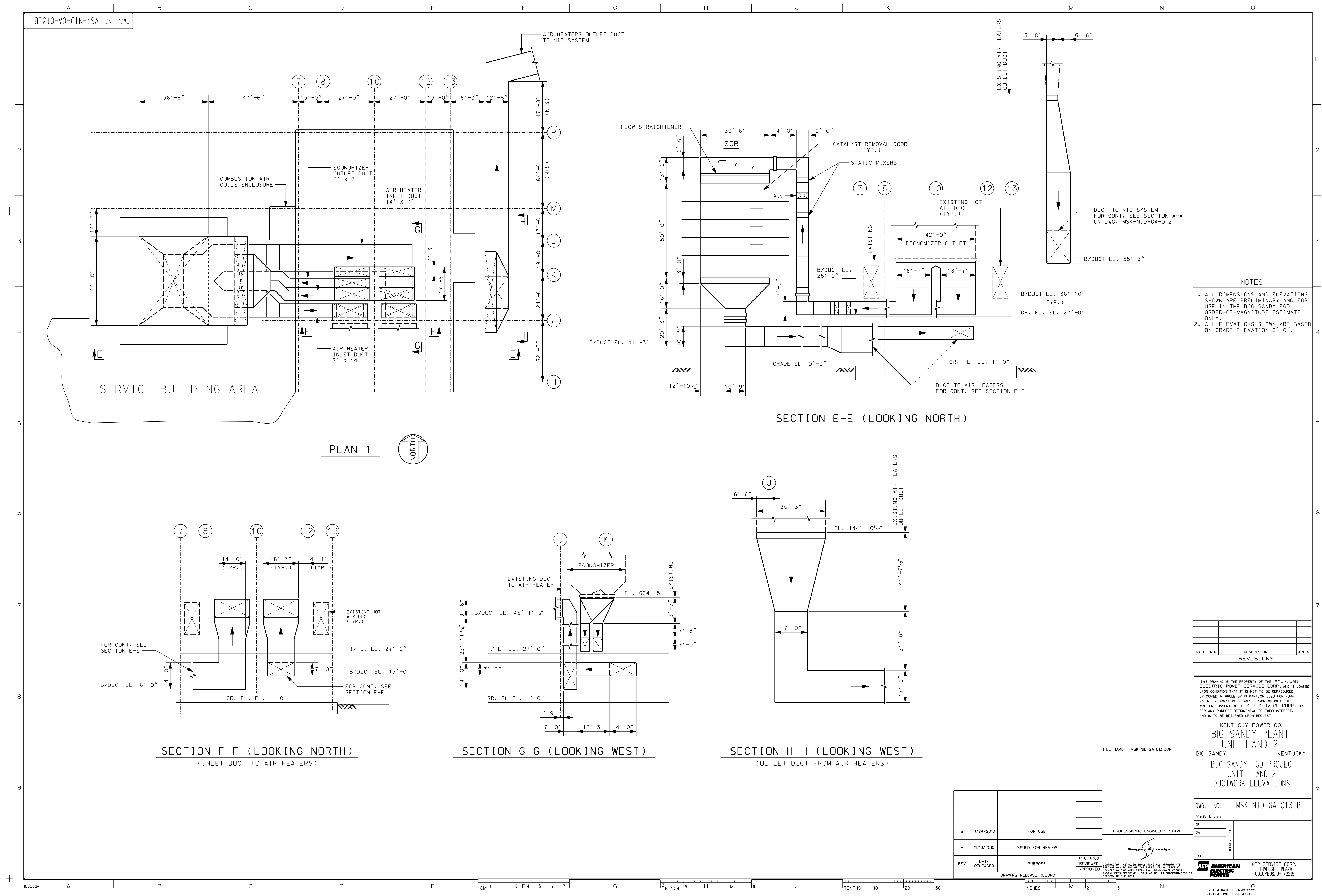
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PROFESSIONAL ENGINEER'S STAMP
George A. Lundy, Inc.

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S, INSTALLER'S PERSONNEL, AND THAT OF 115 SUBCONTRACTORS' PERSONNEL, THE WORK.

THIS SYMBOL DENOTES THE BASE COORDINATE OF THE PLANT GRID SYSTEM.







Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
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ATTACHMENT 1-3
Unit 1 NID & SCR
Mass Balance

Mass Balance NID System -
1.7 lb SO₂/MMBtu Coal

Plant Production		
MCR Output	MW (Net)	278
Heat Input	MMBtu/hr	2670
Coal Flow	lb/hr	218,102
Coal Analysis		
Component	Units	As Received
Carbon	wt%	69.41
Hydrogen	wt%	4.69
Nitrogen	wt%	1.31
Sulfur	wt%	0.94
Oxygen	wt%	5.66
Chlorine	wt%	0.19
Moisture	wt%	6.20
Ash	wt%	11.60
Calc. HHV	Btu/lb	12,242

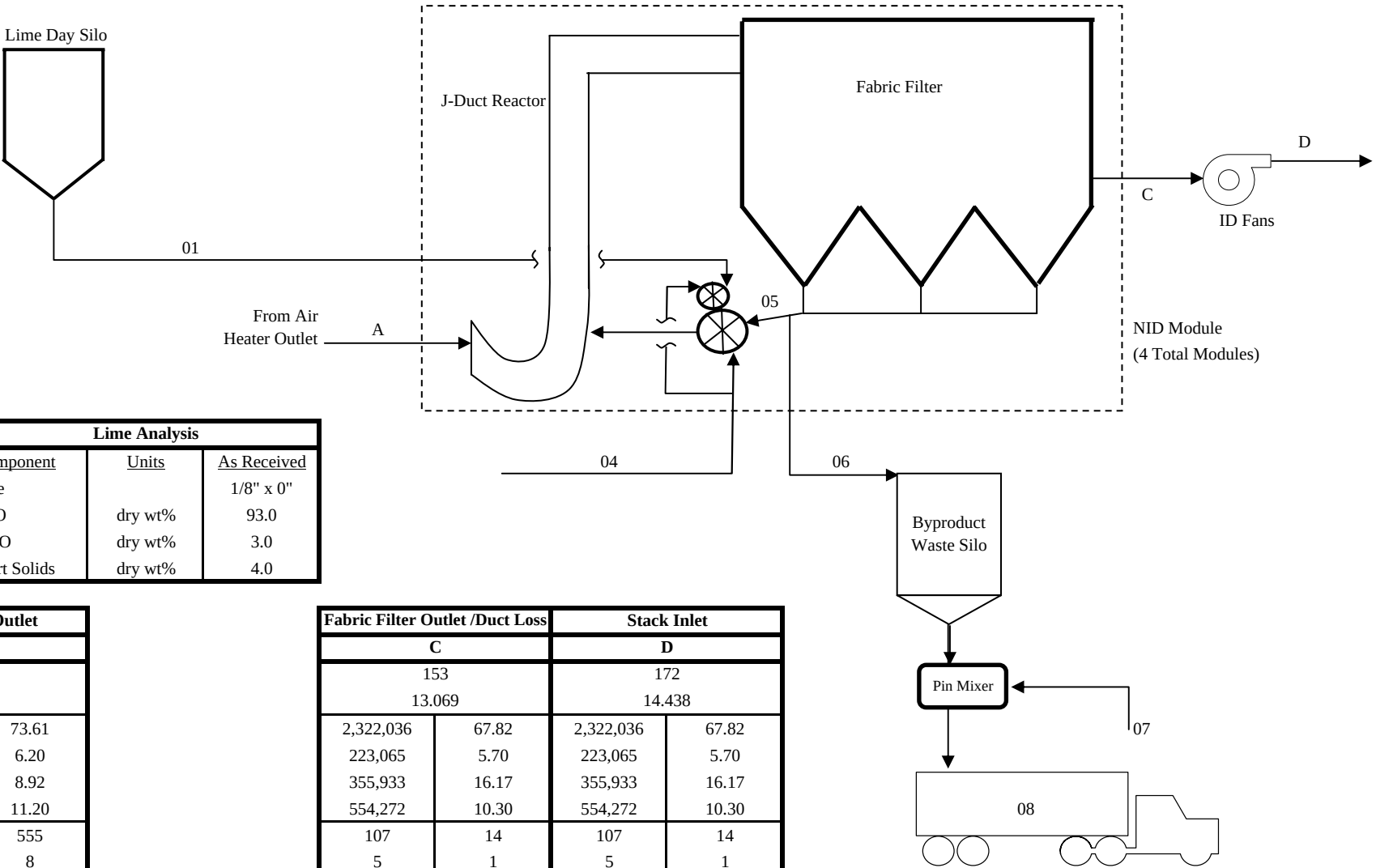
Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

Stream Characteristics		Air Heater Outlet	
		A	
Temperature	°F	350	
Pressure	psia	13.718	
N ₂	lb/hr-vol%	2,322,036	73.61
O ₂	lb/hr-vol%	223,461	6.20
H ₂ O	lb/hr-vol%	180,923	8.92
CO ₂	lb/hr-vol%	555,076	11.20
SO ₂	lb/hr-ppmv	4,004	555
SO ₃	lb/hr-ppmv	72	8
HCl	lb/hr-ppmv	426	104
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	3,285,998	1,189,188
MW - Moist.	lb/lbmol-lb/lb	29.169	0.058
Ash	lb/hr-gr/acf	20,240	1.986

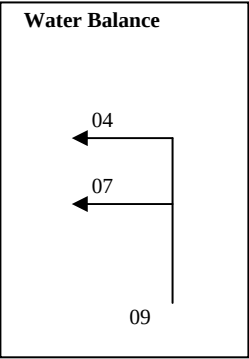
Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	257
CaO	lb/hr	5,977
Ca(OH) ₂	lb/hr	0
MgO	lb/hr	193
CaSO ₃ *0.5H ₂ O	lb/hr	0
CaSO ₄ *2H ₂ O	lb/hr	0
CaCO ₃	lb/hr	0
CaCl ₂ + CaF ₂	lb/hr	0
Total Solids	lb/hr	6,427
Water	lb/hr	0
Total Flow	lb/hr	6,427
Total Flow	gpm	---
Solids	wt%	100

Fabric Filter Outlet /Duct Loss		Stack Inlet	
C		D	
153		172	
13.069		14.438	
2,322,036	67.82	2,322,036	67.82
223,065	5.70	223,065	5.70
355,933	16.17	355,933	16.17
554,272	10.30	554,272	10.30
107	14	107	14
5	1	5	1
0	0	0	0
0	0	0	0
3,455,418	1,025,573	3,455,418	957,070
28.260	0.115	28.260	0.111
37	0.004	37	0.005

Sat. H2O	Recycle	Waste Solids	Dust Control	Landfill	Total Water
04	05	06	07	08	09
0	2,045,970	20,460	0	20,460	0
0	0	0	0	0	0
0	154,641	1,546	0	1,546	0
0	19,280	193	0	193	0
0	477,813	4,778	0	4,778	0
0	424,723	4,247	0	4,247	0
0	182,599	1,826	0	1,826	0
0	64,785	648	0	648	0
0	3,369,809	33,698	0	33,698	0
180,353	374,423	3,744	10,698	14,442	191,050
180,353	3,744,233	37,442	10,698	48,140	191,050
360	---	---	21	---	382
0	90	90	0	70	0



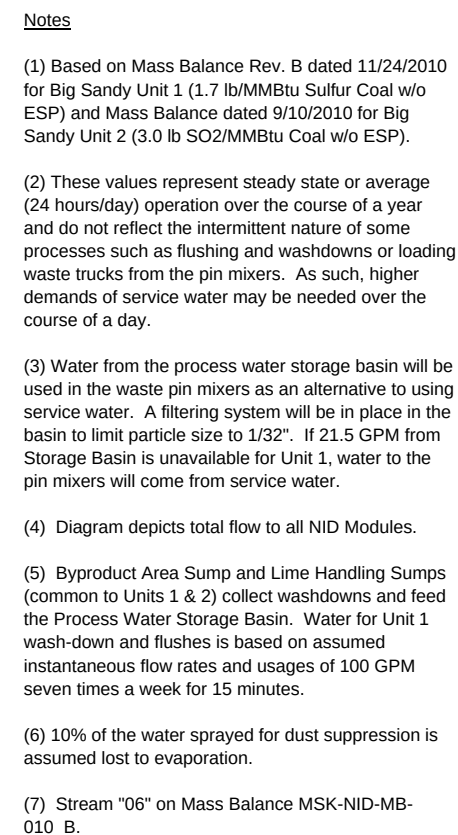
FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.5
Internal Stoich.	Ca:S Inlet	31
Approach to Saturation	°F	25
Saturation Temperature	°F	128
Saturation Humidity	lb/lb dry air	0.118
Outlet Particulates	lb/MMBtu	0.014
Sulfur Levels		
SO ₂ In	lb/MMBtu	1.500
SO ₂ Out	lb/MMBtu	0.040
SO ₃ In	lb/MMBtu	0.027
SO ₃ Out	lb/MMBtu	0.002





Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
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ATTACHMENT 1-4
Unit 1 NID & SCR
Water Balance





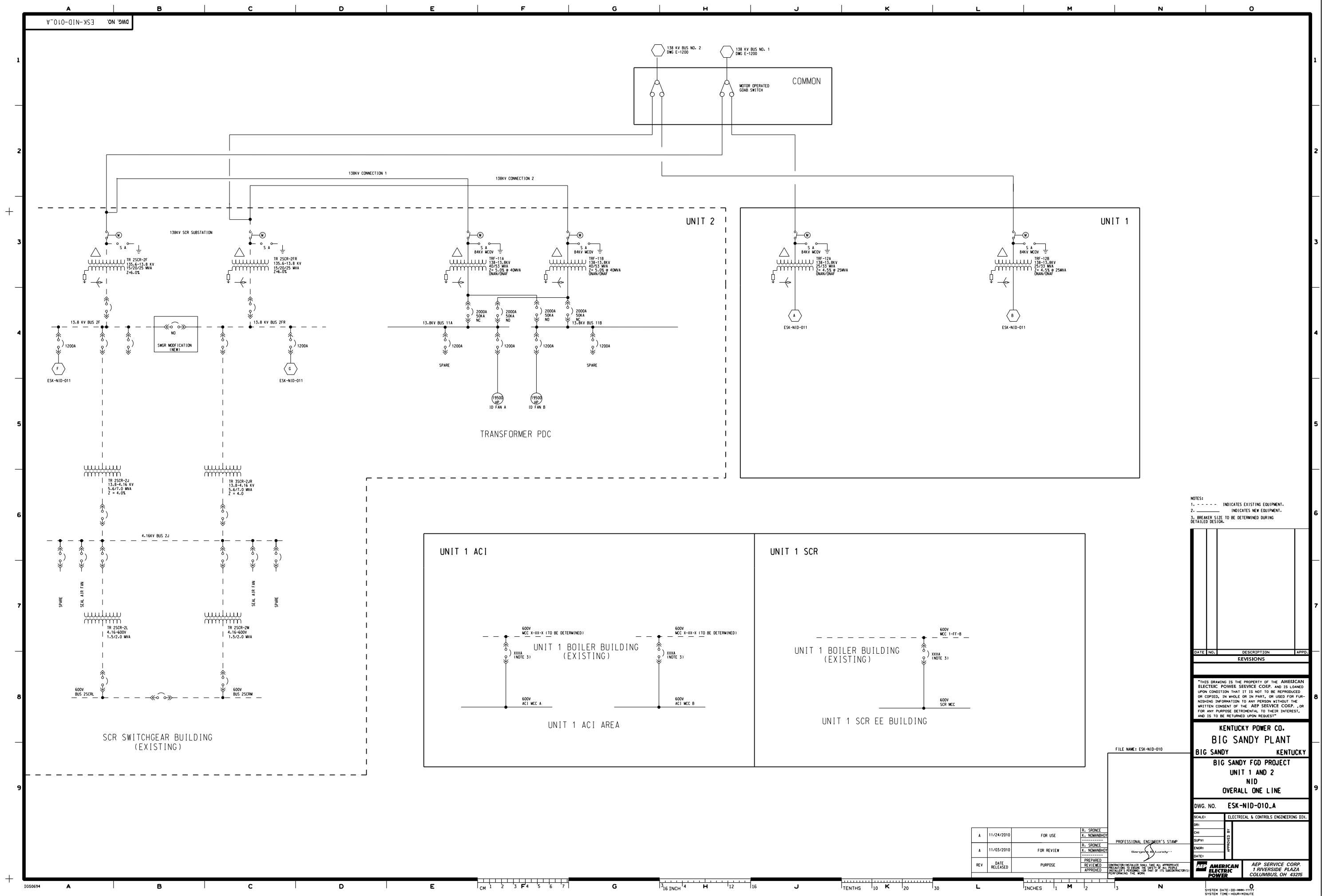
Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

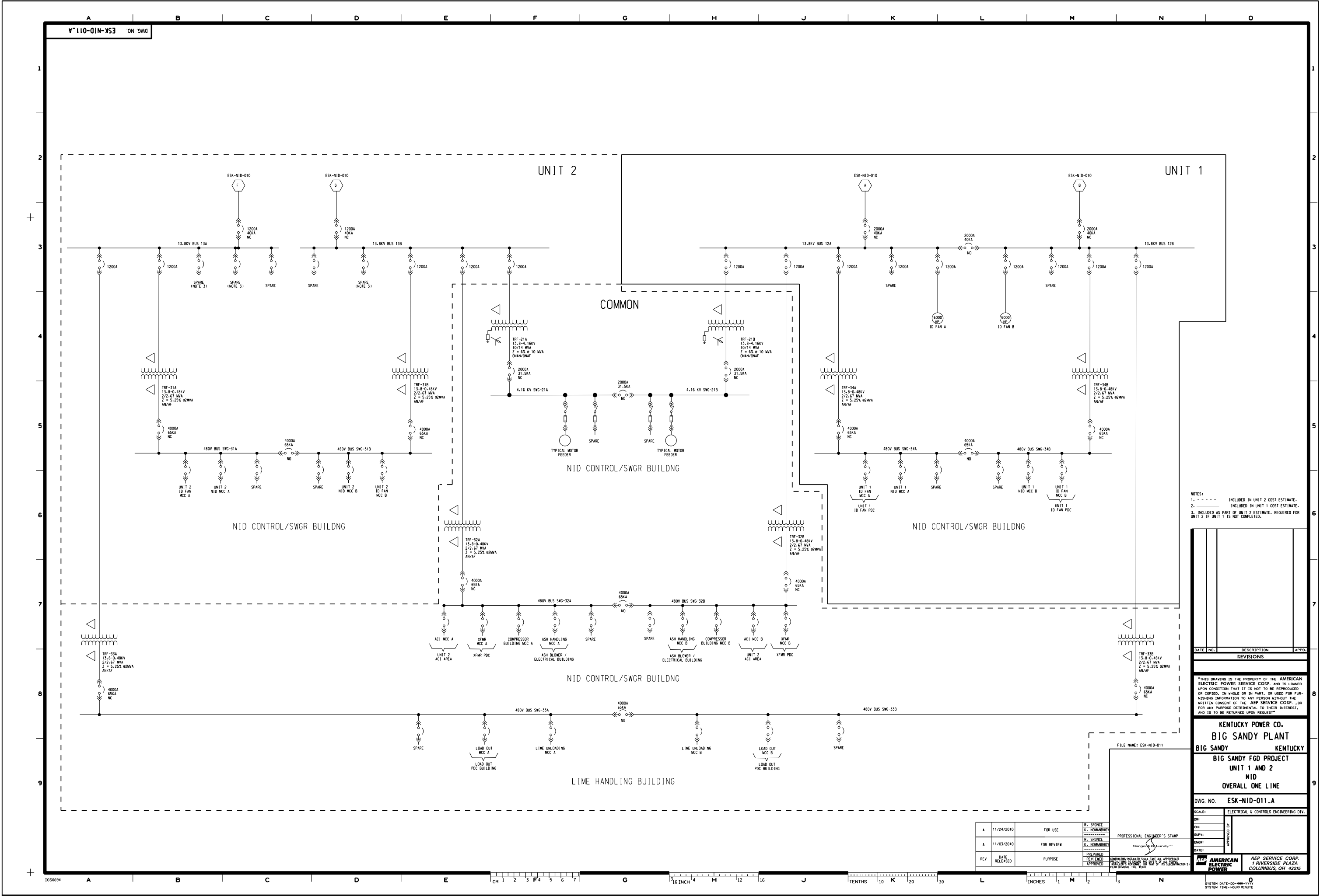
ATTACHMENT 1-5
Unit 1 NID & SCR/ Unit 2 NID
Electrical One-Lines

BASIC DESCRIPTION OF BIG SANDY UNIT 1 NIDS ONE LINE

A. NID FGD SYSTEM

1. The preliminary ID fan size on which the one line has been developed is 6,000 HP.
2. The 138 kV voltage used in the study is 1.009 PU based on information received from the system planning group during the Big Sandy Unit 2 estimate.
3. The 138 kV line to the existing Unit 2 SCR transformers will be intercepted to feed new 138 kV – 13.8 and two (2) three way motor operated GOAB switches will be installed in the existing 138 kV switchyard. 138 kV connections (overhead and underground) will be taken from the GOAB switches to the Unit 1 138 kV substation.
4. New Unit 1 138 kV – 13.8 kV transformers will be installed to feed Unit 1 ID Fans as well as Unit 1 and common 4.16 kV and 480 volt FGD loads.
5. Available spare Motor Control Centers in the Unit 1 boiler building shall be utilized to provide power to SCR Electrical room.
6. Available spare Motor Control Centers in the UREA/AOD electrical room will be utilized to provide power to any additional mechanical equipment in the UREA/AOD area.







Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

ATTACHMENT 1-6
Unit 2/ Unit 1&2 Common NID Detailed Capital Cost Estimate No. 30924
(ESP not in Service; Unit 1-1.7 lb SO₂/MMbtu; Unit 2-3.0 lb SO₂/MMbtu)

				AEP										Estimate No.:	30924B
				BIG SANDY UNIT 2										Project No.:	12756-000
				FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated				ATTACHMENT 1-6								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
1.1	ID FANS - OEM EQUIPMENT	1,875,000 ACFM WITH 19,500 HP MOTORS (\$750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	EST	2	EA	3,460,000		6,920,000	0	8190.00	18,837	MECH	88.89	1,674,400	8,594,400
1.2	PIPING & SUPPORTS - MECHANICAL							21,800	28,700					120,500	171,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	250	LF		48.80	0	12,200	1.44	414	SPNG	94.41	39,100	51,300
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	PIPE SUPPORTS		EST	105	EA		35.00	0	3,700	1.50	181	MECH	88.89	16,100	19,800
1.3	DAMPERS							781,000	0					352,600	1,133,600
	INLET DAMPERS	2X50% DOUBLE LOUVER TYPE WITH SEAL AIR FANS TOTAL FOR TWO FANS	EST	580	SF	450		261,000	0	2.50	1,668	MECH	88.89	148,200	409,200
	OUTLET DAMPERS	2X50% GUILLOTINE DAMPERS, WITH SEAL AIR FANS TOTAL FOR TWO FANS	EST	800	SF	650		520,000	0	2.50	2,300	MECH	88.89	204,400	724,400
1.4	EXPANSION JOINTS		EST	570	LF		230.00	0	131,100	2.00	1,311	MECH	88.89	116,500	247,600
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	EST	940	TN		3,250.00	0	3,055,000	50.00	54,050	FLDU	107.96	5,835,200	8,890,200
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	470	TN		2,900.00	0	1,363,000	24.00	12,972	STST	105.71	1,371,300	2,734,300
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	EST	4,200	SF		40.00	0	168,000	0.55	2,657	DINS	81.75	217,200	385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR NID MODULE DUCTWORK SUPPLIED WITH THE OEM EQUIPMENT	EST	84,000	SF		12.00	0	1,008,000	0.25	24,150	DINS	81.75	1,974,300	2,982,300
1.9	DUCT SUPPORT STEEL - FOUNDATIONS							0	369,000					719,800	1,088,800
	EXCAVATION / BACKFILL		EST	2,400	CY			0	0	0.36	994	EXFD	90.00	89,400	89,400
	REINFORCING		EST	135	TN		1,150.00	0	155,300	20.00	3,105	REIN	78.27	243,000	398,300
	FORMWORK		EST	7,800	SF		2.50	0	19,500	0.14	1,256	FORM	99.43	124,900	144,400
	CONCRETE		EST	1,500	CY		105.00	0	157,500	1.50	2,588	CONP	79.64	206,100	363,600
	MUD MAT		EST	230	CY		105.00	0	24,200	1.50	397	CONP	79.64	31,600	55,800
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT							0	106,000					198,700	304,700
	EXCAVATION / BACKFILL		EST	600	CY			0	0	0.36	248	EXFD	90.00	22,400	22,400
	REINFORCING		EST	40	TN		1,150.00	0	46,000	20.00	920	REIN	78.27	72,000	118,000
	FORMWORK		EST	1,500	SF		2.50	0	3,800	0.14	242	FORM	99.43	24,000	27,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
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		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800
1.11	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS							0	322,200					536,700	858,900
	EXCAVATION / BACKFILL		EST	1,310	CY			0	0	0.36	542	EXFD	90.00	48,800	48,800
	REINFORCING		EST	130	TN		1,150.00	0	149,500	20.00	2,990	REIN	78.27	234,000	383,500
	FORMWORK		EST	1,800	SF		2.50	0	4,500	0.14	290	FORM	99.43	28,800	33,300
	CONCRETE		EST	1,400	CY		105.00	0	147,000	1.50	2,415	CONP	79.64	192,300	339,300
	MUD MAT		EST	130	CY		105.00	0	13,700	1.50	224	CONP	79.64	17,900	31,600
	EMBEDDED STEEL		EST	3,000	LB		2.50	0	7,500	0.06	207	CARP	71.88	14,900	22,400
1.12	NID CONTROL / SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	EST	9,010	SF		500.00	0	4,505,000	0.00	0	STST	105.71	0	4,505,000
1.13	TRANSFORMERS							940,000	0					200,200	1,140,200
	SST TRANSFORMERS: 21F & 21G	13.8KV-4160V, 3 PHASE, 2 WINDING	EST	2	EA	300000		600,000	0	500.00	1,150	EHEA	79.16	91,000	691,000
	SUS TRANSFORMERS: 31A, 31B, 32A, 32B	13.8KV-4160V, 3 PHASE, CAST COIL	EST	4	EA	85000		340,000	0	300.00	1,380	EHEA	79.16	109,200	449,200
1.14	SWITCHGEAR							1,272,000	0		0			673,700	1,945,700
	13KV MEDIUM VOLTAGE	PRICE PER SECTION	EST	10	EA	50000		500,000	0	230.00	2,645	EHEA	79.16	209,400	709,400
	4.16 KV MEDIUM VOLTAGE (21A/B)	PRICE PER SECTION	EST	10	EA	39200		392,000	0	280.00	3,220	EHEA	79.16	254,900	646,900
	480V LOW VOLTAGE (31F/G)	PRICE PER SECTION	EST	10	EA	38000		380,000	0	230.00	2,645	EHEA	79.16	209,400	589,400
1.15	CABLE BUS & TERMINATIONS							849,000	46,600		0			1,516,300	2,411,900
	15KV CABLE BUS TO 13F/G)	CABLE BUS	EST	1,300	FT	466		605,800	0	6.75	10,091	WIRE	98.84	997,400	1,603,200
	5KV CABLE BUS	CABLE BUS	EST	150	FT	385		57,800	0	4.70	811	WIRE	98.84	80,100	137,900
	480V CABLE BUS	CABLE BUS	EST	300	FT	618		185,400	0	10.30	3,554	WIRE	98.84	351,200	536,600
	CABLE BUS TERMINATION	500MCM- 15KV TERMINATIONS	EST	4	EA		1,800	0	7,200	33.00	152	WIRE	98.84	15,000	22,200
	CABLE BUS TERMINATION	1000MCM- 5KV TERMINATIONS	EST	4	EA		4,440	0	17,800	51.60	237	WIRE	98.84	23,500	41,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	8	EA		2,700	0	21,600	54.00	497	WIRE	98.84	49,100	70,700
1.16	MCC							120,000	0					7,200	127,200
	480V MCC	PER LINE UP	EST	2	EA	30,000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
	DC MCC	PER LINE UP	EST	2	EA	30,000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
1.17	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
1.18	EMERGENCY POWER SYSTEM							285,500	0					38,900	324,400
	DC PANEL BOARD		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	2	EA	15500		31,000	0	40.00	92	WIRE	98.84	9,100	40,100
	UPS		EST	1	EA	60000		60,000	0	32.00	37	WIRE	98.84	3,600	63,600
	SWITCHBOARD		EST	1	EA	40000		40,000	0	40.00	46	WIRE	98.84	4,500	44,500
	BYPASS TRANSFORMERS		EST	1	EA	25000		25,000	0	40.00	46	WIRE	98.84	4,500	29,500
	BATTERY CHARGER		EST	2	EA	32000		64,000	0	16.00	37	WIRE	98.84	3,600	67,600
	BATTERIES		EST	1	LT	50000		50,000	0	80.00	92	WIRE	98.84	9,100	59,100

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1.26	DUCT BANK							0	163,800					321,500	485,300
	DUCT BANK WITH 3-5" & 3-3" CONDUITS		EST	450	LF		142.42	0	64,100	3.17	1,640	ECND	75.97	124,600	188,700
	DUCT BANK WITH 6-5" & 6-3" CONDUITS		EST	375	LF		265.88	0	99,700	6.01	2,592	ECND	75.97	196,900	296,600
1.27	FOUNDATION FOR TRANSFORMERS							0	64,600		0			188,900	253,500
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.36	393	EXFD	90.00	35,400	35,400
	REINFORCING		EST	18	TN		1,150.00	0	20,700	20.00	414	REIN	78.27	32,400	53,100
	FORMWORK		EST	4,500	SF		2.50	0	11,300	0.14	725	FORM	99.43	72,000	83,300
	CONCRETE		EST	178	CY		105.00	0	18,700	1.50	307	CONP	79.64	24,500	43,200
	MUD MAT		EST	42	CY		105.00	0	4,400	1.50	72	CONP	79.64	5,800	10,200
	EMBEDDED STEEL		EST	3,800	LB		2.50	0	9,500	0.06	262	CARP	71.88	18,800	28,300
1.28	FIREWALL FOR TRANSFORMERS							0	3,200					8,300	11,500
	REINFORCING		EST	1.2	TN		1,150.00	0	1,400	20.00	28	REIN	78.27	2,200	3,600
	FORMWORK		EST	80	SF		2.50	0	200	0.14	13	FORM	99.43	1,300	1,500
	CONCRETE		EST	15	CY		105.00	0	1,600	3.50	60	CONP	79.64	4,800	6,400
1.29	COMMUNICATIONS		EST	1	LT		19,000.00	0	19,000	125.00	144	WIRE	98.84	14,200	33,200
1.30	LIGHTNING PROTECTION		EST	1	LT		14,000.00	0	14,000	90.00	104	WIRE	98.84	10,200	24,200
1.31	SECURITY SYSTEM		EST	1	LT		10,000.00	0	10,000	70.00	81	WIRE	98.84	8,000	18,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							11,243,900	14,271,600		279,178			26,825,000	52,340,500
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										4,155,768
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						24,276		83.48	2,027,000	2,027,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						30,345			2,128,768	2,128,768
	PER DIEM	NONE		0.00	HR						333,799			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				71,358					134,125	205,483
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				713,580						713,580
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			562,195							562,195
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				713,580					1,341,250	2,054,830
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				2,140,740					4,023,750	6,164,490
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							562,200	3,639,300					9,654,900	13,856,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS						11,806,100	17,910,900					36,479,900	66,196,800

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2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	50,231,000		50,231,000	0	317100.00	364,665	MECH	88.89	32,415,100	82,646,100
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	80,640	SF	30		2,419,200	0	0.00	0	DINS	81.75	0	2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF						58,100	1,316,900					1,747,600	3,122,600
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	200	TN		2,900.00	0	580,000	24.00	5,520	STST	105.71	583,500	1,163,500
	SIDING FOR PENTHOUSE		EST	8,960	SF		12.00	0	107,500	0.11	1,133	SDNG	93.41	105,900	213,400
	CONCRETE FLOOR FOR PENTHOUSE		EST	632	CY		230.00	0	145,400	7.50	5,451	SDNG	93.41	509,200	654,600
	ROOFING FOR PENTHOUSE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	58100	23240	58,100	23,200	1084.00	1,247	HVAC	81.24	101,300	182,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						92,200	2,428,900					2,544,900	5,066,000
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	560	TN		2,900.00	0	1,624,000	24.00	15,456	STST	105.71	1,633,900	3,257,900
	SIDING FOR BOTTOM ENCLOSURE		EST	25,600	SF		12.00	0	307,200	0.11	3,238	SDNG	93.41	302,500	609,700
	ROOFING FOR BOTTOM ENCLOSURE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	92200	36880	92,200	36,900	1721.33	1,980	HVAC	81.24	160,800	289,900
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	4,797,000					9,162,600	13,959,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,476	TN		3,250.00	0	4,797,000	50.00	84,870	FLDU	107.96	9,162,600	13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	738	TN		2,900.00	0	2,140,200	24.00	20,369	STST	105.71	2,153,200	4,293,400
2.8	DUCTWORK INSULATION & LAGGING		EST	136,000	SF		12.00	0	1,632,000	0.25	39,100	DINS	81.75	3,196,400	4,828,400
2.9	NID MODULE- FOUNDATIONS							0	1,087,000					1,778,100	2,865,100
	EXCAVATION / BACKFILL		EST	4,400	CY			0	0	0.36	1,822	EXFD	90.00	163,900	163,900
	REINFORCING		EST	450	TN		1,150.00	0	517,500	20.00	10,350	REIN	78.27	810,100	1,327,600
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	4,750	CY		105.00	0	498,800	1.50	8,194	CONP	79.64	652,600	1,151,400
	MUD MAT		EST	340	CY		105.00	0	35,700	1.50	587	CONP	79.64	46,700	82,400

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	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	261.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	359,000					636,500	995,500
	EXCAVATION / BACKFILL		EST	2,400	CY			0	0	0.36	994	EXFD	90.00	89,400	89,400
	REINFORCING		EST	150.0	TN		1,150.00	0	172,500	20.00	3,450	REIN	78.27	270,000	442,500
	FORMWORK		EST	1,800	SF		2.50	0	4,500	0.14	290	FORM	99.43	28,800	33,300
	CONCRETE		EST	1,500	CY		105.00	0	157,500	1.50	2,588	CONP	79.64	206,100	363,600
	MUD MAT		EST	90	CY		105.00	0	9,500	1.50	155	CONP	79.64	12,400	21,900
	EMBEDDED STEEL		EST	6,000	LB		2.50	0	15,000	0.06	414	CARP	71.88	29,800	44,800
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100
	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUST DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
4.17	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900

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4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	331,400					1,606,800	1,938,200
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,500	LF		21.50	0	53,800	0.65	1,854	WIRE	98.84	183,300	237,100
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCML- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCML-5KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	100,200					152,200	252,400
	3/C # 500KCML- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	11,700	LF		7.22	0	84,500	0.08	1,063	WIRE	98.84	105,100	189,600
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	9,200	LF		3.20	0	29,400	0.08	836	WIRE	98.84	82,600	112,000

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4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800
4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							9,691,300	4,187,300		88,842			8,386,700	22,265,300
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,322,433
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						7,725		83.48	645,000	645,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						9,657			677,433	677,433
	PER DIEM	NONE		0.00	HR						106,224			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				20,937					41,934	62,870
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				209,365						209,365
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			484,565							484,565
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				209,365					419,335	628,700
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				628,095					1,258,005	1,886,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							484,600	1,067,800					3,041,700	4,594,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						10,175,900	5,255,100					11,428,400	26,859,300
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	3,217,080		3,217,100	0	17710.00	20,367	MECH	88.89	1,810,400	5,027,500
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	EST	1	LT	400,000		400,000	0	2900.00	3,335	MECH	88.89	296,400	696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600

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6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED						0	0					0	0
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED						0	0					0	0
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING		EST	0	SF		95	0	0	0.00	0	STST	105.71	0	0
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS		EST	0	LT	75000	20000	0	0	350.00	0	HVAC	81.24	0	0
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	2	EA	30000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
6.17	EMERGENCY POWER SYSTEM							92,800	0					19,900	112,700
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	60,000					44,100	122,600
	LIGHT FIXTURES		EST	80	EA		750	0	60,000	4.00	368	WIRE	98.84	36,400	96,400
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	32,500					189,100	221,600
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	280	LF		27.10	0	7,600	1.75	564	WIRE	98.84	55700	63,300

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	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	280	LF		31.00	0	8,700	0.81	260	WIRE	98.84	25700	34,400
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,040	LF		4.44	0	4,600	0.24	286	WIRE	98.84	28300	32,900
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,600	LF		3.23	0	11,600	0.19	803	WIRE	98.84	79400	91,000
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	64,700					80,500	145,200
	#4/0 - #12 AWG-600V		EST	8,960	LF		7.22	0	64,700	0.08	814	WIRE	98.84	80,500	145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	9,600	LF		3.20	0	30,700	0.08	872	WIRE	98.84	86,200	116,900
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800
6.25	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
6.26	LIGHTNING PROTECTION		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
6.27	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							7,046,900	1,276,300		41,597			3,707,000	12,030,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										619,180
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,617		83.48	302,000	302,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						4,521			317,180	317,180
	PER DIEM	NONE		0.00	HR						49,735			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				6,382					18,535	24,917
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				63,815						63,815
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			352,345							352,345
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				63,815					185,350	249,165
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				191,445					556,050	747,495
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							352,300	325,500					1,379,100	2,056,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						7,399,200	1,601,800					5,086,100	14,087,100
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													
8.0	ACTIVATED CARBON INJECTION SYSTEM														
8.1	ACI MECHANICAL EQUIPMENT:	COMMON FOR UNIT 1 & UNIT 2	EST	1	LT	4569600		4,569,600	0	14850.00	17,078	MECH	88.89	1,518,000	6,087,600
	PAC CARBON STORAGE SILO	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0

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				FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated				ATTACHMENT 1-6								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	BIN VENT FILTER	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	SUPPORT STEEL	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	ROOF ACCESS LADDER	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	ROOF MOUNTED JIB CRANE	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	INSTRUMENTATION FOR SILO	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	PRESSURE VACUUM RELIEF	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	3X50% PAC FEED TRAIN	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	FEED HOPERS WITH ROTARY FEEDERS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	GRAVIMETRIC FEEDERS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	REGENERATIVE BLOWERS AND EDUCTORS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	PAC LOADING PIPE WITH CERAMIC BACKED ELBOWS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	PAC DISTRIBUTION MANIFOLD AND LANCES	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
8.2	PIPING - MECHANICAL	COMMON FOR UNIT 1 & UNIT 2	EST	1	LT			44,800	235,100					591,500	871,400
	LARGE BORE PIPING	2" CS, SCH 80 WELDED	EST	225	LF		22.2	0	5,000	1.26	326	SPNG	94.41	30,800	35,800
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	1,800	LF		110.3	0	198,500	2.40	4,968	SPNG	94.41	469,000	667,500
	VALVE	2" GATE 150 #, CS, WELDED	EST	6	EA	960		5,800	0	5.60	39	SPNG	94.41	3,600	9,400
	VALVE	10" GATE, 150 #, CS, WELDED	EST	6	EA	6,500		39,000	0	16.10	111	SPNG	94.41	10,500	49,500
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	253	EA		125.00	0	31,600	3.00	873	MECH	88.89	77,600	109,200
8.3	ACI SYSTEM - FOUNDATIONS	COMMON FOR UNIT 1 & UNIT 2						0	76,200					163,600	239,800
	EXCAVATION / BACKFILL		EST	606	CY			0	0	0.36	251	EXFD	90.00	22,600	22,600
	REINFORCING		EST	32	TN		1,150.00	0	36,200	20.00	725	REIN	78.27	56,700	92,900
	FORMWORK		EST	2,363	SF		2.50	0	5,900	0.14	380	FORM	99.43	37,800	43,700
	CONCRETE		EST	263	CY		105.00	0	27,600	1.50	453	CONP	79.64	36,100	63,700
	MUD MAT		EST	38	CY		105.00	0	3,900	1.50	65	CONP	79.64	5,200	9,100
	EMBEDDED STEEL		EST	1,057	LB		2.50	0	2,600	0.06	73	CARP	71.88	5,200	7,800
8.4	MCC	COMMON FOR UNIT 1 & UNIT 2						92,700	0					5,500	98,200
	480V MCC	PER LINE UP	EST	3	EA	30900		92,700	0	16.00	55	WIRE	98.84	5,500	98,200
8.5	GROUNDING	COMMON FOR UNIT 1 & UNIT 2						8,200	0					27,500	35,700
	GROUND ROD	3/4" - 20' LONG	EST	12	EA	150		1,800	0	4.00	55	WIRE	98.84	5,500	7,300
	500 MCM	BARE COPPER WIRE	EST	750	FT	7.65		5,700	0	0.12	104	WIRE	98.84	10,200	15,900
	CADWELD		EST	48	EA	15		700	0	2.00	110	WIRE	98.84	10,900	11,600
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	8.00	9	WIRE	98.84	900	900
8.6	LIGHTING / TRANSFORMERS & PANELS	COMMON FOR UNIT 1 & UNIT 2						26,000	22,500					24,900	73,400
	LIGHT FIXTURES		EST	30	EA		750	0	22,500	4.00	138	WIRE	98.84	13,600	36,100

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est.=Estimated				ATTACHMENT 1-6								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
8.7	RACEWAY, CABLE TRAY, & CONDUIT							0	132,900					443,100	576,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	450	LF		18.25	0	8,200	0.96	495	WIRE	98.84	48900	57,100
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	300	LF		21.50	0	6,500	1.26	435	WIRE	98.84	43000	49,500
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	300	LF		61.00	0	18,300	0.98	338	WIRE	98.84	33400	51,700
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	375	LF		31.00	0	11,600	0.70	303	WIRE	98.84	29900	41,500
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	450	LF		21.50	0	9,700	0.56	290	WIRE	98.84	28700	38,400
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	450	LF		9.25	0	4,200	0.31	158	WIRE	98.84	15700	19,900
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		7.15	0	5,400	0.25	213	WIRE	98.84	21100	26,500
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,800	LF		4.44	0	12,400	0.21	669	WIRE	98.84	66100	78,500
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	4,200	LF		3.23	0	13,600	0.19	937	WIRE	98.84	92600	106,200
	DUCT BANK WITH 12-5" & 6-3" CONDUITS	3.08' H X 5.2' W	EST	113	LF		381.96	0	43,000	6.48	838	ECND	75.97	63700	106,700
8.8	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	EST	2,800	LF		7.22	0	20,200	0.08	254	WIRE	98.84	25100	45,300
8.9	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	7,000	LF		3.20	0	22,400	0.08	636	WIRE	98.84	62900	85,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							4,741,300	509,300		31,495			2,862,100	8,112,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										469,150
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,739		83.48	229,000	229,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						3,423			240,150	240,150
	PER DIEM	NONE		0.00	HR						37,656			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				2,547					14,311	16,857
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				25,465						25,465
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			237,065							237,065
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				25,465					143,105	168,570
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				76,395					429,315	505,710
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							237,100	129,900					1,055,900	1,422,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM						4,978,400	639,200					3,918,000	9,535,500

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		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
9.0	COMPRESSED AIR SYSTEM	INCLUDES ADDITIONAL CAPACITY FOR UNIT 1 NID & SCR													
9.1	AIR COMPRESSOR & AUXILIARIES							1,188,600	0					225,800	1,414,400
	AIR COMPRESSOR	6000 CFM, OIL FREE	EST	2	EA	483800		967,600	0	900.00	2,070	MECH	88.89	184,000	1,151,600
	DRYERS	DESICCANT TYPE, HEATED AIR	EST	2	EA	90500		181,000	0	150	344	MECH	88.89	30,600	211,600
	RECEIVERS	4500 GAL WITH SAFETY RELIEF VALVE AND PRESSURE GAUGE	EST	2	EA	20000		40,000	0	55.00	127	MECH	88.89	11,200	51,200
9.2	PIPING - MECHANICAL							320,600	344,800					875,600	1,541,000
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	500	LF		14.5	0	7,300	0.70	403	SPNG	94.41	38,000	45,300
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	500	LF		45.1	0	22,600	0.87	500	SPNG	94.41	47,200	69,800
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	200	LF		111.0	0	22,200	2.02	465	SPNG	94.41	43,900	66,100
	LARGE BORE PIPING	8" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	700	LF		122.2	0	85,500	1.26	1,014	SPNG	94.41	95,800	181,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED, UNDERGROUND WRAPPED	EST	700	LF		20.80	0	14,600	0.64	515	SPNG	94.41	48,600	63,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" CS, SCH 80 WELDED	EST	200	LF		19.30	0	3,900	1.16	267	SPNG	94.41	25,200	29,100
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	700	LF		48.80	0	34,200	1.44	1,159	SPNG	94.41	109,400	143,600
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	1,500	LF		33.70	0	50,600	1.32	2,277	SPNG	94.41	215,000	265,600
	VALVE	2" GLOBE, 150# SS, WELDED	EST	50	EA	1,450		72,500	0	5.64	324	SPNG	94.41	30,600	103,100
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	4" GATE, 150 #, SS, WELDED	EST	10	EA	3,400		34,000	0	9.24	106	SPNG	94.41	10,000	44,000
	VALVE	6" GATE, 150 #, SS, WELDED	EST	2	EA	4,700		9,400	0	12.96	30	SPNG	94.41	2,800	12,200
	VALVE	8" GATE, 150 #, SS, WELDED	EST	14	EA	6,240		87,400	0	15.96	257	SPNG	94.41	24,300	111,700
	VALVE	<2" GLOBE, 150# CS, WELDED	EST	10	EA	450		4,500	0	3.40	39	SPNG	94.41	3,700	8,200
	VALVE	<2" GLOBE, 150# SS, WELDED	EST	100	EA	750	750.00	75,000	75,000	4.08	469	SPNG	94.41	44,300	194,300
	VALVE	2" GLOBE, 150# CS, WELDED	EST	15	EA	850		12,800	0	4.20	72	SPNG	94.41	6,800	19,600
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	440	EA		50.00	0	22,000	2.00	1,012	MECH	88.89	90,000	112,000
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	583	CY			0	0	0.20	134	EXFD	90.00	12,100	12,100
	BEDDING	FOR UNDERGROUND PIPING	EST	78	CY		35.0	0	2,700	0.25	22	EXFD	90.00	2,000	4,700
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS							0	249,800					419,700	669,500
	EXCAVATION / BACKFILL		EST	1,100	CY			0	0	0.36	455	EXFD	90.00	41,000	41,000
	REINFORCING		EST	100	TN		1,150.00	0	115,000	20.00	2,300	REIN	78.27	180,000	295,000
	FORMWORK		EST	1,500	SF		2.50	0	3,800	0.14	242	FORM	99.43	24,000	27,800
	CONCRETE		EST	1,100	CY		105.00	0	115,500	1.50	1,898	CONP	79.64	151,100	266,600
	MUD MAT		EST	100	CY		105.00	0	10,500	1.50	173	CONP	79.64	13,700	24,200
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H						0	612,000					0	612,000
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	7,200	SF		85	0	612,000	0.00	0	STST	105.71	0	612,000
9.5	LIGHTING/ TRANSFORMERS & PANELS							11,000	10,500					11,400	32,900
	LIGHT FIXTURES		EST	14	EA		750	0	10,500	4.00	64	WIRE	98.84	6,400	16,900
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
9.7	GROUNDING							4,500	0					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA	150		600	0	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT	7.65		3,800	0	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA	15		100	0	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
9.8	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
9.9	LIGHTNING PROTECTION		EST	1	LT		10,500.00	0	10,500	66.00	76	WIRE	98.84	7,500	18,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,524,700	1,261,600		17,650			1,576,900	4,363,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										262,584
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,535		83.48	128,000	128,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,918			134,584	134,584
	PER DIEM	NONE		0.00	HR						21,103			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				6,308					7,885	14,193
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				63,080						63,080
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			76,235							76,235
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				63,080					78,845	141,925
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				189,240					236,535	425,775
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							76,200	321,700					585,800	983,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM						1,600,900	1,583,300					2,162,700	5,347,000
10.0	SERVICE WATER SYSTEM														
10.1	PUMPS	INCLUDES SELF-CLEANING STRAINERS						218,000	0					103,100	321,100
	SERVICE WATER PUMPS	3500 GPM, 175 HP	EST	2	EA	54000		108,000	0	264.00	607	MECH	88.89	54,000	162,000
	RIVER WATER BOOSTER PUMPS	3500 GPM, 100 PSIG	EST	2	EA	30000		60,000	0	150.00	345	MECH	88.89	30,700	90,700
	SELF-CLEANING STRAINERS	DUPLEX, 3500 GPM	EST	2	EA	25000		50,000	0	90.00	207	MECH	88.89	18,400	68,400
10.2	PIPING - MECHANICAL		EST	1	LT			298,400	342,800					688,300	1,329,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	900	LF		45.1	0	40,600	0.87	900	SPNG	94.41	85,000	125,600
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	400	LF		80.4	0	32,200	1.14	524	SPNG	94.41	49,500	81,700
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	200	LF		111.0	0	22,200	2.02	465	SPNG	94.41	43,900	66,100
	LARGE BORE PIPING	10" SS, SCHEDULE 40, WELDED	EST	1,000	LF		179.9	0	179,900	2.49	2,864	SPNG	94.41	270,300	450,200
	LARGE BORE PIPING	14" HDPE (UNDERGROUND)	EST	500	LF		65.5	0	32,800	1.02	587	SPNG	94.41	55,400	88,200
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	300	LF		48.80	0	14,600	1.44	497	SPNG	94.41	46,900	61,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	4" GATE, 150 #, SS, WELDED	EST	12	EA	3,400		40,800	0	9.24	128	SPNG	94.41	12,000	52,800
	VALVE	6" GATE, 150 #, SS, WELDED	EST	8	EA	4,700		37,600	0	12.96	119	SPNG	94.41	11,300	48,900
	VALVE	10" GATE, 150 #, SS, WELDED	EST	20	EA	9,500		190,000	0	18.52	426	SPNG	94.41	40,200	230,200
	VALVE	14" BFLY 150# SS, FLANGED	EST	4	EA	7,500		30,000	0	19.76	91	SPNG	94.41	8,600	38,600

				AEP										Estimate No.:	30924B
				BIG SANDY UNIT 2										Project No.:	12756-000
				FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est.=Estimated				ATTACHMENT 1-6								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	160	EA		95.00	0	15,200	2.50	460	MECH	88.89	40,900	56,100
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	417	CY			0	0	0.20	96	EXFD	90.00	8,600	8,600
	BEDDING	FOR UNDERGROUND PIPING	EST	56	CY		35.0	0	1,900	0.25	16	EXFD	90.00	1,400	3,300
10.3	PIPING - FIRE PROTECTION SYSTEM		EST	1	LT			181,200	284,600					673,300	1,139,100
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	200	LF		24.4	0	4,900	0.73	168	SPNG	94.41	15,900	20,800
	LARGE BORE PIPING	8" CS, SCHEDULE 40, WELDED	EST	300	LF		64.2	0	19,300	0.98	338	SPNG	94.41	31,900	51,200
	LARGE BORE PIPING	12" CS, SCHEDULE 40, WELDED	EST	150	LF		174.6	0	26,200	1.43	247	SPNG	94.41	23,300	49,500
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	3,000	LF		72.8	0	218,400	1.45	5,003	SPNG	94.41	472,300	690,700
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	8" GATE, 150 #, CS, WELDED	EST	6	EA	4,800		28,800	0	13.30	92	SPNG	94.41	8,700	37,500
	VALVE	10" GATE, 150 #, CS, WELDED	EST	4	EA	6,500		26,000	0	16.10	74	SPNG	94.41	7,000	33,000
	VALVE	10" GATE WITH PIV, 150 #, CS, WELDED	EST	10	EA	7,000		70,000	0	17.71	204	SPNG	94.41	19,200	89,200
	VALVE	12" GATE, 150 #, CS, WELDED	EST	2	EA	8,200		16,400	0	19.20	44	SPNG	94.41	4,200	20,600
	FIRE HYDRANTS		EST	10	EA	1,500		15,000	0	8.00	92	MECH	88.89	8,200	23,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	54	EA		75.00	0	4,100	2.50	156	MECH	88.89	13,800	17,900
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,500	CY			0	0	0.20	575	EXFD	90.00	51,800	51,800
	BEDDING	FOR UNDERGROUND PIPING	EST	333	CY		35.0	0	11,700	0.25	96	EXFD	90.00	8,600	20,300
10.4	TANKS							0	120,000					0	120,000
	SERVICE WATER TANKS	20,000 GAL, CS, 14" DIA X 20' - SUBCONTRACT PRICE INCLUDES LABOR WITH EXTERIOR PRIMED AND FIELD PAINTED	EST	2	EA		60000.0	0	120,000	0.00	0	TANK	89.16	0	120,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS							0	22,600					49,900	72,500
	EXCAVATION / BACKFILL		EST	280	CY			0	0	0.36	116	EXFD	90.00	10,400	10,400
	REINFORCING		EST	8.0	TN		1,150.00	0	9,200	20.00	184	REIN	78.27	14,400	23,600
	FORMWORK		EST	450	SF		2.50	0	1,100	0.14	72	FORM	99.43	7,200	8,300
	CONCRETE		EST	85	CY		105.00	0	8,900	1.50	147	CONP	79.64	11,700	20,600
	MUD MAT		EST	9	CY		105.00	0	900	1.50	16	CONP	79.64	1,200	2,100
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
10.6	ELECTRICAL	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							697,600	770,000		16,262			1,514,600	2,982,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										242,000
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,414		83.48	118,000	118,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,768			124,000	124,000
	PER DIEM	NONE		0.00	HR						19,444			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%			3,850						7,573	11,423
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%			38,500							38,500
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			34,880							34,880
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				38,500					75,730	114,230

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		Cost Type:												Reviewer:	JMK
		Est=Estimated				ATTACHMENT 1-6								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				115,500					227,190	342,690
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							34,900	196,400					552,500	783,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM						732,500	966,400					2,067,100	3,765,900
11.0	POTABLE WATER SYSTEM														
11.1	PUMPS							30,000	0					18,400	48,400
	POTABLE WATER BOOSTER PUMPS	50 GPM, 5 HP	EST	2	EA	15000		30,000	0	90.00	207	MECH	88.89	18,400	48,400
11.2	PIPING - MECHANICAL		EST	1	LT			99,500	181,900					448,200	729,600
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	800	LF		45.1	0	36,100	0.87	800	SPNG	94.41	75,600	111,700
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED	EST	200	LF		68.3	0	13,700	1.82	419	SPNG	94.41	39,500	53,200
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	800	LF		111.0	0	88,800	2.02	1,858	SPNG	94.41	175,500	264,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	200	LF		14.1	0	2,800	0.83	191	SPNG	94.41	18,000	20,800
	SMALL BORE PIPING	2" D.I. SCH 80 (UNDERGROUND)	EST	500	LF		15.00	0	7,500	0.30	173	SPNG	94.41	16,300	23,800
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	SMALL BORE PIPING	2" COPPER	EST	300	LF		28.50	0	8,600	0.43	148	SPNG	94.41	14,000	22,600
	VALVE	2" GLOBE, 150# CS, WELDED	EST	10	EA	850		8,500	0	4.20	48	SPNG	94.41	4,600	13,100
	VALVE	<2" GLOBE, 150# SS, WELDED	EST	8	EA	750	750.00	6,000	6,000	4.08	38	SPNG	94.41	3,500	15,500
	VALVE	4" GATE, 150 #, SS, WELDED	EST	20	EA	4,250		85,000	0	9.24	213	SPNG	94.41	20,100	105,100
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	150	EA		60.00	0	9,000	2.50	431	MECH	88.89	38,300	47,300
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	583	CY			0	0	0.20	134	EXFD	90.00	12,100	12,100
	BEDDING	FOR UNDERGROUND PIPING	EST	78	CY		35.0	0	2,700	0.25	22	EXFD	90.00	2,000	4,700
11.3	TANKS							0	8,500					0	8,500
	POTABLE WATER TANK	1,000 GAL, SS, 5' DIA X 8' - SUBCONTRACT PRICE INCLUDES LABOR	EST	1	EA		8500.0	0	8,500	0.00	0	TANK	89.16	0	8,500
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS							0	5,200					9,200	14,400
	EXCAVATION / BACKFILL		EST	20	CY			0	0	0.36	8	EXFD	90.00	700	700
	REINFORCING		EST	3.0	TN		1,150.00	0	3,500	20.00	69	REIN	78.27	5,400	8,900
	FORMWORK		EST	75	SF		2.50	0	200	0.14	12	FORM	99.43	1,200	1,400
	CONCRETE		EST	12	CY		105.00	0	1,300	1.50	21	CONP	79.64	1,600	2,900
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	60	LB		2.50	0	200	0.06	4	CARP	71.88	300	500
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							129,500	195,600		5,100			475,800	800,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										75,889
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						443		83.48	37,000	37,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						554			38,889	38,889
	PER DIEM	NONE		0.00	HR						6,098			0	0

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		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	CONSUMABLES - % of ACCT NO. 90			0.5	%				978					2,379	3,357
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				9,780						9,780
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			6,475							6,475
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				9,780					23,790	33,570
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				29,340					71,370	100,710
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							6,500	49,900					173,400	229,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM						136,000	245,500					649,200	1,030,700
12.0	FGD SUBSTATION														
12.1	TRANSFORMERS							1,390,000	0					218,500	1,608,500
	FGD SUBSTATION-AUX TRANSFORMERS: 11A & 11B	138KV-13.8KV- 2 WINDING XFMR	EST	2	EA	695000		1,390,000	0	1200.00	2,760	EHEA	79.16	218,500	1,608,500
	SUS TRANSFORMERS: 32F, 32G	NOT REQUIRED													
12.2	TRANSFORMER PDC	15W X 45' X 10'H. SUBCONTRACT PRICE INCLUDES LABOR	EST	675.0	SF	300.0		202500.0	0.0	0.0	0.0	STST	105.71	0.0	202,500
12.3	TRANSFORMER PDC - FOUNDATION							0	73,200					146,900	220,100
	EXCAVATION / BACKFILL		EST	700	CY			0	0	0.36	290	EXFD	90.00	26,100	26,100
	REINFORCING		EST	26	TN		1,150.00	0	30,200	20.00	604	REIN	78.27	47,300	77,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	35	CY		105.00	0	3,700	1.50	60	CONP	79.64	4,800	8,500
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
12.4	138KV MAIN FEEDER & TERMINATIONS							524,000	10,200					381,400	915,600
	138KV STRUCTURE AND SWITCH		EST	1	LT	103500		103,500	0	450.00	518	STST	105.71	54,700	158,200
	138KV MAIN FEEDER	1/C 750KCMIL- 138KV	EST	2,100	LF	51.75		108,700	0	0.69	1,671	WIRE	98.84	165,200	273,900
	138KV ACCESSORIES		EST	1	LT	51750		51,800	0	300.00	345	WIRE	98.84	34,100	85,900
	138kv GOAB SWITCH	3WAY SWITCH, SUPPORT STRUCTURE, SWITCHYARD MODS AND ACCESSORIES		2	EA	130000		260,000	0	400.00	920	EHEA	79.16	72,800	332,800
	138 KV OH LINE UPGRADE	6-200FT QUAIL #200	EST	1,200	EA		8.5	0	10,200	0.50	690	EHEA	79.16	54,600	64,800
12.5	SWITCHGEAR							524,200	0					114,300	638,500
	13.8 KV MEDIUM VOLTAGE (11A/B)	PRICE PER SECTION	EST	8	EA	50000		400,000	0	40.00	368	EHEA	79.16	29,100	429,100
	480V LOW VOLTAGE (32F/G)	NOT REQUIRED													
	EXISTING SCR SWITCHGEAR MODIFICATION	TURNKEY INCLUDING INSTALLATION & MATERIAL (EATON QUOTE 7/16/10)	Q	1	LT	124,200		124,200	0	750.00	863	WIRE	98.84	85,200	209,400
12.6	MCC	480V MCC, PER LINE UP	EST	2	EA	30000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
12.7	CABLE BUS							88,400	7,200					90,000	185,600
	15KV CABLE BUS DUCT	BUS DUCT ONLY	EST	200	FT	442		88,400	0	3.30	759	WIRE	98.84	75,000	163,400
	480V CABLE BUS DUCT	NOT REQUIRED													
	CABLE BUS TERMINATION	500MCM - 15KV TERMINATIONS	EST	4	EA		1,800.00	0	7,200	33.00	152	WIRE	98.84	15,000	22,200
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS - NOT REQUIRED													
12.8	PANELS - RELAY							100,000	0					9,100	109,100
	RELAY PANELS & INTERLOCK	ALLOWANCE	EST	1	LT	100000		100,000	0	80.00	92	WIRE	98.84	9,100	109,100
12.9	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
12.10	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000

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		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
12.11	GROUNDING							23,300	0					59,100	82,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	18	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	2,600	FT	7.65		19,900	0	0.12	359	WIRE	98.84	35,500	55,400
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
12.12	LIGHTING/ TRANSFORMERS & PANELS							26,000	30,000					29,500	85,500
	LIGHT FIXTURES		EST	40	EA		750	0	30,000	4.00	184	WIRE	98.84	18,200	48,200
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING - ALLOWANCE	EST	1	LT	25000		25,000	0	500.00	575	WIRE	98.84	56,800	81,800
12.14	RACEWAY, CABLE TRAY, & CONDUIT							0	369,100					1,845,300	2,214,400
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,250	LF		18.25	0	22,800	1.10	1,581	WIRE	98.84	156,300	179,100
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	750	LF		21.50	0	16,100	1.45	1,251	WIRE	98.84	123,600	139,700
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	2,200	LF		27.10	0	59,600	1.75	4,428	WIRE	98.84	437,200	497,200
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		30.30	0	18,200	1.95	1,346	WIRE	98.84	133,000	151,200
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		61.00	0	61,000	1.13	1,296	WIRE	98.84	128,100	189,100
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,800	LF		31.00	0	55,800	0.81	1,670	WIRE	98.84	165,100	220,900
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		21.50	0	21,500	0.65	742	WIRE	98.84	73,300	94,800
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,000	LF		9.25	0	27,800	0.35	1,214	WIRE	98.84	120,000	147,800
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,700	LF		7.15	0	26,500	0.28	1,208	WIRE	98.84	119,400	145,900
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	6,200	LF		4.44	0	27,500	0.24	1,704	WIRE	98.84	168,400	195,900
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	10,000	LF		3.23	0	32,300	0.19	2,231	WIRE	98.84	220,500	252,800
12.15	DUCT BANK							0	26,200	0.05	0			54,300	80,500
	UNDERGROUND SURVEY FOR NEW DUCT BANK RUN	MAIN FEEDER BETWEEN EXISTING SCR SUBSTATION TO FGD AUX XFMR	EST	200	LF			0	0	0.80	184	ECND	75.97	14,000	14,000
	4' X 4' DUCT BANK (138KV SCR TO FGD AUX XFMR SUBSTATION)	6 - 6" PVC	EST	40	LF		375	0	15,000	6.25	288	ECND	75.97	21,800	36,800
	DUCT BANK WITH 6-5" & 4-3" CONDUITS	2.38' H X 4' W	EST	50	LF		223.02	0	11,200	4.24	244	ECND	75.97	18,500	29,700
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	NOT REQUIRED			LF		9.27	0	0	0.23	0	WIRE	98.84	0	0
12.17	LOW VOLTAGE POWER CABLE & TERMINATION							0	73,600					91,600	165,200
	3/C # 500KCMIL- 600V	NOT REQUIRED													
	#4/0 - #12 AWG-600V		EST	10,200	LF		7.22	0	73,600	0.08	927	WIRE	98.84	91,600	165,200
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	5,800	LF		3.20	0	18,600	0.08	527	WIRE	98.84	52,100	70,700
12.19	FOUNDATION FOR AUX TRANSFORMER	INCLUDES FOUNDATIONS FOR 138KV SWITCH & OH LINE INCLUDED IN ACCOUNT 12.4						0	112,400					262,800	375,200
	EXCAVATION / BACKFILL		EST	1,030	CY			0	0	0.36	426	EXFD	90.00	38,400	38,400
	REINFORCING		EST	37.0	TN		1,150.00	0	42,600	20.00	851	REIN	78.27	66,600	109,200
	FORMWORK		EST	4,770	SF		2.50	0	11,900	0.14	768	FORM	99.43	76,400	88,300
	CONCRETE		EST	382	CY		105.00	0	40,100	1.50	658	CONP	79.64	52,400	92,500
	MUD MAT		EST	88	CY		105.00	0	9,300	1.50	152	CONP	79.64	12,100	21,400
	EMBEDDED STEEL		EST	3,400	LB		2.50	0	8,500	0.06	235	CARP	71.88	16,900	25,400

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est.=Estimated				ATTACHMENT 1-6								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
12.20	FIREWALL FOR TRANSFORMERS							0	4,300					7,600	11,900
	REINFORCING		EST	1.5	TN		1,150.00	0	1,700	20.00	35	REIN	78.27	2,700	4,400
	FORMWORK		EST	120	SF		2.50	0	300	0.14	19	FORM	99.43	1,900	2,200
	CONCRETE		EST	22	CY		105.00	0	2,300	1.50	38	CONP	79.64	3,000	5,300
12.21	COMMUNICATIONS		EST	1	LT		17,000.00	0	17,000	114.00	131	WIRE	98.84	13,000	30,000
12.22	LIGHTNING PROTECTION		EST	1	LT		4,000.00	0	4,000	18.00	21	WIRE	98.84	2,000	6,000
12.23	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,089,200	753,800		36,972			3,473,800	7,316,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										549,915
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,215		83.48	268,000	268,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						4,019			281,915	281,915
	PER DIEM	NONE		0.00	HR						44,205			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,769					17,369	21,138
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				37,690						37,690
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			154,460							154,460
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				37,690					173,690	211,380
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				113,070					521,070	634,140
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							154,500	192,200					1,262,044	1,608,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION						3,243,700	946,000					4,735,800	8,925,500
13.0	FGD DCS SYSTEM														0
13.1	DCS	3200 I/O POINTS	EST	3,200	EA	750		2,400,000	0	2.50	9,200	INEL	88.43	813,600	3,213,600
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	EST	200	DAYS	1500		300,000	0		0	INEL	88.43	0	300,000
13.3	LOCALLY MOUNTED INSTRUMENTS							0	650,400					852,900	1,503,300
	LOCALLY MOUNTED INSTRUMENTS		EST	275	EA		2200	0	605,000	20.00	6,325	INEL	88.43	559,300	1,164,300
	INSTRUMENT RACKS	INCLUDED WITH INSTRUMENTS													
	INSTRUMENT TUBING	ALLOWANCE	EST	8,250	LF		5.5	0	45,400	0.35	3,321	INEL	88.43	293,600	339,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							2,700,000	650,400		18,846			1,666,500	5,016,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										280,700

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		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,639		83.48	137,000	137,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,048			143,700	143,700
	PER DIEM	NONE		0.00	HR						22,533			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,252					8,333	11,585
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				32,520						32,520
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			135,000							135,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				32,520					83,325	115,845
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				97,560					249,975	347,535
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							135,000	165,900					622,300	923,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM						2,835,000	816,300					2,288,800	5,940,100
14.0	CEM SYSTEM														0
14.1	CEM	PROVIDED BY AEP		1	LT	1260000	540000	1,260,000	540,000					310,000	2,110,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,260,000	540,000					310,000	2,110,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				81,000						316,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														316,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM													2,426,500
15.0	TRUCK & RAIL INFRASTRUCTURE														0
15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF						0	660,200					689,200	1,349,400
	REMOVE AND REPLACE 8" OF THE BALLAST	INCLUDES DISPOSAL OF REMOVED BALLAST	EST	3,250	LF		12.25	0	39,800	0.16	598	RRTK	88.26	52,800	92,600
	REPLACE 75% OF THE EXISTING WOODEN RAILROAD TIES	INCLUDES TIE PLATES, SPIKES AND BOLTS	EST	1,950	LF		80	0	156,000	0.85	1,906	RRTK	88.26	168,200	324,200
	REMOVE THE EXISTING RAIL AND REPLACE WITH 132-LB RAIL		EST	3,250	LF		87.5	0	284,400	1.05	3,924	RRTK	88.26	346,400	630,800
	REPLACE EXISTING #8 TURNOUTS		EST	4	EA		45000	0	180,000	300.00	1,380	RRTK	88.26	121,800	301,800
15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF						0	1,008,800					1,055,600	2,064,400
	REMOVE AND REPLACE 8" OF THE BALLAST	INCLUDES DISPOSAL OF REMOVED BALLAST	EST	5,000	LF		12.25	0	61,300	0.16	920	RRTK	88.26	81,200	142,500
	REPLACE 75% OF THE EXISTING WOODEN RAILROAD TIES	INCLUDES TIE PLATES, SPIKES AND BOLTS	EST	3,000	LF		80	0	240,000	0.85	2,933	RRTK	88.26	258,800	498,800
	REMOVE THE EXISTING RAIL AND REPLACE WITH 132-LB RAIL		EST	5,000	LF		87.5	0	437,500	1.05	6,038	RRTK	88.26	532,900	970,400
	REPLACE EXISTING #8 TURNOUTS		EST	6	EA		45000	0	270,000	300.00	2,070	RRTK	88.26	182,700	452,700
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12" SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	EST	1,400	LF		180	0	252,000	1.50	2,415	RRTK	88.26	213,100	465,100
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	EST	2	EA		45000	0	90,000	270.00	621	RRTK	88.26	54,800	144,800
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	EST	2	EA	106250		212,500	0	0.00	0	MECH	88.89	0	212,500

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		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION						0	33,200					71,400	104,600
	EXCAVATION / BACKFILL		EST	170	CY			0	0	0.36	70	EXFD	90.00	6,300	6,300
	REINFORCING		EST	13	TN		1,150.00	0	14,400	20.00	288	REIN	78.27	22,500	36,900
	FORMWORK		EST	1,350	SF		2.50	0	3,400	0.14	217	FORM	99.43	21,600	25,000
	CONCRETE		EST	113	CY		105.00	0	11,900	1.50	195	CONP	79.64	15,500	27,400
	MUD MAT		EST	20	CY		105.00	0	2,100	1.50	35	CONP	79.64	2,700	4,800
	EMBEDDED STEEL		EST	567	LB		2.50	0	1,400	0.06	39	CARP	71.88	2,800	4,200
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							212,500	2,044,200		23,648			2,084,100	4,340,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										352,321
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,056		83.48	172,000	172,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,570			180,321	180,321
	PER DIEM	NONE		0.00	HR						28,275			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				10,221					10,421	20,642
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				102,210						102,210
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			10,625							10,625
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				102,210					104,205	206,415
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				306,630					312,615	619,245
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							10,600	521,300					779,600	1,311,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE						223,100	2,565,500					2,863,700	5,652,300

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		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
16.0	SITE IMPROVEMENTS - CIVIL WORK														
16.1	SITE GRADING	INCLUDES ADDITIONAL AREA FOR UNIT 1 COMMON ITEMS						0	0					713,200	713,200
	CUT		EST	21,840	CY			0	0	0.08	2,009	ETWK	177.49	356,600	356,600
	FILL		EST	21,840	CY			0	0	0.08	2,009	ETWK	177.49	356,600	356,600
16.2	ROADS & SURFACING							0	1,204,900					1,667,500	2,872,400
	20' WIDE ACCESS ROAD	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	5,600	SY		47	0	263,200	0.40	2,576	PBIT	90.25	232,500	495,700
	24' WIDE ACCESS ROAD	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	5,300	SY		47	0	249,100	0.40	2,438	PBIT	90.25	220,000	469,100
	24' WIDE ACCESS ROAD AGGREGATE SHOULDERS	INCLUDES: 12" BASE COURSE 10 OZ/SY GEOTEXTILE	EST	1,300	SY		17.5	0	22,800	0.10	150	BCSE	105.94	15,800	38,600
	LIME UNLOADING AREA	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	2,400	SY		47	0	112,800	0.40	1,104	PBIT	90.25	99,600	212,400
	PARKING AREA	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	900	SY		47	0	42,300	0.40	414	PBIT	90.25	37,400	79,700
	BYPRODUCT & WASTE LOADING AREA - SURFACING	12" REINFORCED CONCRETE	EST	1,900	SY		96	0	182,400	1.60	3,496	CONP	79.64	278,400	460,800
	BYPRODUCT & WASTE LOADING AREA	6" CONCRETE CURB	EST	560	LF		6.5	0	3,600	0.96	618	COND	70.04	43,300	46,900
	CONCRETE PAD BUILDING ENTRANCES	10" REINFORCED CONCRETE	EST	340	SY		80	0	27,200	1.50	587	CONP	79.64	46,700	73,900
	AGGREGATE AREA SURFACING	INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	33,500	SY		9	0	301,500	0.17	6,549	BCSE	105.94	693,800	995,300
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING						0	36,500					73,000	109,500
	EXCAVATION / BACKFILL		EST	300	CY			0	0	0.36	124	EXFD	90.00	11,200	11,200
	REINFORCING		EST	25.0	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	500	SF		2.50	0	1,300	0.14	81	FORM	99.43	8,000	9,300
	CONCRETE		EST	50	CY		105.00	0	5,300	1.50	86	CONP	79.64	6,900	12,200
	MUD MAT		EST	5	CY		105.00	0	500	1.50	9	CONP	79.64	700	1,200
	EMBEDDED STEEL		EST	250	LB		2.50	0	600	0.06	17	CARP	71.88	1,200	1,800
16.4	TRUCK SCALE & CONCRETE APPROACH							170,000	27,300					92,000	289,300
	TRUCK SCALE WITH OPERATOR'S CAB	SUBCONTRACT COST, INCLUDES FOUNDATIONS AND LABOR	EST	2	EA	85000		170,000	0	0.00	0	MECH	88.89	0	170,000

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated				ATTACHMENT 1-6								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:			BIG SANDY		
		Q=Vendor Quote						0.242		Labor Productivity =			1.15		
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	CONCRETE APPROACH FOR TRUCK SCALE	20' x 40' - TOTAL FOR TWO SCALES	EST	119	CY		230.0	0	27,300	7.50	1,022	EXFD	90.00	92,000	119,300
16.5	PROCESS WATER STORAGE BASIN							60,000	81,600					240,300	381,900
	SAND EXCAVATION		EST	3,000	CY			0	0	0.03	90	ETWK	177.49	15,900	15,900
	ROCK EXCAVATION	ASSUME ROCK IS RIPPABLE	EST	400	CY			0	0	0.05	22	ETWK	177.49	3,900	3,900
	POND SURFACING	6" REINFORCED CONCRETE	EST	1,700	SY		48	0	81,600	1.20	2,346	CONP	79.64	186,800	268,400
	PUMPS	500 GPM, 75 PSIG	EST	2	EA	30000		60,000	0	165.00	380	MECH	88.89	33,700	93,700
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE							0	47,000					105,400	152,400
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	7	TN		1,150.00	0	8,100	20.00	161	REIN	78.27	12,600	20,700
	FORMWORK		EST	3,968	SF		2.50	0	9,900	0.14	639	FORM	99.43	63,500	73,400
	CONCRETE		EST	76	CY		105.00	0	8,000	1.50	131	CONP	79.64	10,400	18,400
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	380	LB		2.50	0	1,000	0.06	26	CARP	71.88	1,900	2,900
	PROCESS WATER BASIN PUMP STRUCTURE - GALLERY		EST	5	TN		4,000.00	0	20,000	35.00	201	GALL	84.61	17,000	37,000
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	EST	3,900	LF		135	0	526,500	1.50	6,728	CONP	79.64	535,800	1,062,300
16.8	STORM WATER RUNOFF POND							0	15,000					122,600	137,600
	SAND EXCAVATION		EST	11,000	CY			0	0	0.03	329	ETWK	177.49	58,400	58,400
	ROCK EXCAVATION	ASSUME ROCK IS RIPPABLE	EST	3,700	CY			0	0	0.05	204	ETWK	177.49	36,300	36,300
	4" TOPSOIL		EST	650	CY		14	0	9,100	0.03	22	LAND	61.45	1,400	10,500
	GRASS SEEDING, FERTILIZER AND MULCH		EST	1.2	AC		4930	0	5,900	240.00	331	MSTR	80.04	26,500	32,400
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE							90,000	42,300					182,200	314,500
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	3	TN		1,150.00	0	3,500	20.00	69	REIN	78.27	5,400	8,900
	FORMWORK		EST	2,028	SF		2.50	0	5,100	0.14	326	FORM	99.43	32,400	37,500
	CONCRETE		EST	33	CY		105.00	0	3,500	1.50	57	CONP	79.64	4,500	8,000
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	165	LB		2.50	0	400	0.06	11	CARP	71.88	800	1,200
	STORM WATER POND PUMP STRUCTURE - GALLERY		EST	5	TN		4,000.00	0	20,000	35.00	201	GALL	84.61	17,000	37,000
	PUMPS	500 GPM, 75 PSIG	EST	3	EA	30000		90,000	0	165.00	569	MECH	88.89	50,600	140,600
	PIPING	6" HDPE, SDR 9	EST	1,000	LF		9.8	0	9,800	0.69	794	YDPP	90.14	71,500	81,300
16.10	OILY WATER SEWER							4,500	112,600					236,000	353,100
	PIPING	6" CISP	EST	1,500	LF		21.5	0	32,300	0.33	569	YDPP	90.14	51,300	83,600
	PIPING	8" CISP	EST	1,400	LF		33.5	0	46,900	0.54	869	YDPP	90.14	78,400	125,300
	PIPING	6" HDPE, SDR 9	EST	1,000	LF		9.8	0	9,800	0.69	794	YDPP	90.14	71,500	81,300
	POST INDICATOR VALVE		EST	6	EA	750		4,500	0	6.00	41	YDPP	90.14	3,700	8,200
	MANHOLES		EST	15	EA		1575.0	0	23,600	20.00	345	YDPP	90.14	31,100	54,700
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	EST	2	EA	50000		100,000	0	560.00	1,288	YDPP	90.14	116,100	216,100
16.12	SANITARY SEWER							0	22,200					96,900	119,100
	PIPING	6" CISP	EST	500	LF		21.5	0	10,800	0.33	190	YDPP	90.14	17,100	27,900
	MANHOLES		EST	4	EA		1575.0	0	6,300	20.00	92	YDPP	90.14	8,300	14,600
	PIPING	4" HDPE (UNDERGROUND)	EST	1,500	LF		3.4	0	5,100	0.46	794	YDPP	90.14	71,500	76,600

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16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH TWO PUMPS, 100 GPM TOTAL	EST	1	EA	150,000	3.4	150,000	0	475.00	546	YDPP	90.14	49,200	199,200
16.14	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 12 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	EST	12	AC		70,000.0	0	840,000	800.00	11,040	EXFD	90.00	993,600	1,833,600
16.15	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 24,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	24,000	SY		9	0	216,000	0.17	4,692	BCSE	105.94	497,100	713,100
16.16	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 6,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	6,000	SY		9	0	54,000	0.17	1,173	BCSE	105.94	124,300	178,300
16.17	TRUCK WASH AREA							0	47,300					83,100	130,400
	EXCAVATION / BACKFILL		EST	190	CY			0	0	0.36	79	EXFD	90.00	7,100	7,100
	REINFORCING		EST	20	TN		1,150.00	0	23,000	20.00	460	REIN	78.27	36,000	59,000
	FORMWORK		EST	510	SF		2.50	0	1,300	0.14	82	FORM	99.43	8,200	9,500
	CONCRETE		EST	170	CY		105.00	0	17,900	1.50	293	CONP	79.64	23,400	41,300
	MUD MAT		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
16.18	NEW PERMANENT STORAGE	INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V		10,000	SF	85		850,000	0		0	STST	105.71	0	850,000
16.19	FOUNDATIONS FOR THE NEW WAREHOUSE							0	273,500					450,200	723,700
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.36	393	EXFD	90.00	35,400	35,400
	REINFORCING		EST	110	TN		1,150.00	0	126,500	20.00	2,530	REIN	78.27	198,000	324,500
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	1,100	CY		105.00	0	115,500	1.50	1,898	CONP	79.64	151,100	266,600
	MUD MAT		EST	140	CY		105.00	0	14,700	1.50	242	CONP	79.64	19,200	33,900
	EMBEDDED STEEL		EST	5,500	LB		2.50	0	13,800	0.06	380	CARP	71.88	27,300	41,100
16.20	NEW TEMPORARY STORAGE	WEATHER TIGHT CANVAS ENCLOSURE. INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V		10,000	SF	45		450,000	0		0	STST	105.71	0	450,000
16.21	FOUNDATIONS FOR TEMPORARY STORAGE							0	99,500					157,200	256,700
	EXCAVATION / BACKFILL		EST	230	CY			0	0	0.36	95	EXFD	90.00	8,600	8,600
	REINFORCING		EST	35	TN		1,150.00	0	40,300	20.00	805	REIN	78.27	63,000	103,300
	FORMWORK		EST	400	SF		2.50	0	1,000	0.14	64	FORM	99.43	6,400	7,400
	CONCRETE		EST	370	CY		105.00	0	38,900	1.50	638	CONP	79.64	50,800	89,700
	MUD MAT		EST	140	CY		105.00	0	14,700	1.50	242	CONP	79.64	19,200	33,900
	EMBEDDED STEEL		EST	1,850	LB		2.50	0	4,600	0.06	128	CARP	71.88	9,200	13,800

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16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 2 BUSES OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	ALLOW	36	MN	38000		1,368,000	0					0	1,368,000
16.23	EROSION & SEDIMENT CONTROL							0	12,500					20,500	33,000
	SILT FENCE		EST	2,500	LF		1.0	0	2,500	0.02	58	LAND	61.45	3,500	6,000
	ROCK CHECK DAMS		EST	20	EA		500.0	0	10,000	12.00	276	LAND	61.45	17,000	27,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,242,500	3,658,700		68,901			6,556,200	13,457,400
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,025,380
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						5,991		83.48	500,000	500,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						7,489			525,380	525,380
	PER DIEM	NONE		0.00	HR						82,382			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				18,294					32,781	51,075
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				182,935						182,935
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			162,125							162,125
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				182,935					327,810	510,745
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				548,805					983,430	1,532,235
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							162,100	933,000					2,369,400	3,464,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK						3,404,600	4,591,700					8,925,600	16,921,900
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	176,700					677,900	854,600
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	31,200	SF		3	0	93,600	0.15	5,382	PNTR	66.72	359,100	452,700
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800

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18.2	NEW HYDROGEN LINE TO PLANT							0	62,100					150,600	212,700
	LARGE BORE PIPE	DOUBLE WALL PIPE	EST	800	LF		75	0	60,000	1.65	1,518	YDPP	90.14	136,800	196,800
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	593	CY			0	0	0.20	136	EXFD	90.00	12,300	12,300
	BEDDING	FOR UNDERGROUND PIPING	EST	59	CY		35	0	2,100	0.25	17	EXFD	90.00	1,500	3,600
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	EST	1	LT		125000	0	125,000	1500.00	1,725	WIRE	98.84	170,500	295,500
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	ALLOW	85	TN		3250	0	276,300	50.00	4,888	FLDU	107.96	527,700	804,000
18.5	RELOCATED WAREHOUSE - FOUNDATIONS							0	342,600					534,900	877,500
	EXCAVATION / BACKFILL		EST	1,152	CY			0	0	0.15	199	EXFD	90.00	17,900	17,900
	REINFORCING		EST	134	TN		1,150.00	0	154,100	20.00	3,082	REIN	78.27	241,200	395,300
	FORMWORK		EST	1,356	SF		2.50	0	3,400	0.14	218	FORM	99.43	21,700	25,100
	CONCRETE		EST	1,419	CY		105.00	0	149,000	1.50	2,448	CONP	79.64	194,900	343,900
	MUD MAT		EST	175	CY		105.00	0	18,400	1.50	302	CONP	79.64	24,000	42,400
	EMBEDDED STEEL		EST	7,095	LB		2.50	0	17,700	0.06	490	CARP	71.88	35,200	52,900
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	150' L X 75' W X 25' H						0	95,600					1,121,500	1,217,100
	CAREFULLY REMOVE BUILDING SIDING, STEEL AND ROOF & PIECE MARK FOR RELOCATION		EST	11,250	SF			0	0	0.22	2,846	STST	105.71	300,900	300,900
	ASSEMBLE REMOVED BUILDING STEEL, ROOFING, SIDING, WINDOWS AND DOORS INCLUDING OVERHEAD DOORS	INCLUDES 10-15% NEW MATERIAL ALLOWANCE AS SOME REMOVED PIECES MAY NOT BE SALVAGEABLE	EST	11,250	SF		8.5	0	95,600	0.60	7,763	STST	105.71	820,600	916,200
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							0	917,200		26,591			2,592,000	3,509,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										395,761
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,312		83.48	193,000	193,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,890			202,761	202,761
	PER DIEM	NONE		0.00	HR						31,794			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,586					12,960	17,546
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				45,860						45,860
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			0							0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				45,860					129,600	175,460
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				137,580					388,800	526,380
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							0	233,900					927,100	1,161,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE						0	1,151,100					3,519,100	4,670,200

				AEP										Estimate No.:	30924B
				BIG SANDY UNIT 2										Project No.:	12756-000
				FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est.=Estimated				ATTACHMENT 1-6								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote						0.242		Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP		1	LT										750,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS														750,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				0						112,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														112,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT													862,500
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							98,712,100	46,854,800		1,292,564			120,426,000	297,242,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										19,291,253
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						112,397			9,383,000	9,383,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						141,241			9,908,253	9,908,253
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				231,574					600,580	832,154
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,315,740						2,315,740
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			4,872,605							4,872,605
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,315,740					6,005,800	8,321,540
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				7,028,220					18,017,400	29,968,620
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							5,547,600	11,891,300					44,577,400	66,939,300
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							104,259,700	58,746,100					165,003,400	364,182,200
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							104,259,700	58,746,100					165,003,400	364,182,200
								0	0					0	0
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										26,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										10,925,500
	S-U / COMMISSIONING			1.0	%										3,641,800
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						14,050		93.17	1,419,000	1,419,000
	INITIAL FILLS			0.3	%										1,092,500
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000



Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

ATTACHMENT 1-7
Unit 1 NID & SCR Detailed Capital Cost Estimate No. 30925
(ESP not in Service; 1.7 lb SO₂MMbtu)

				AEP										Estimate No.:	30925B
				BIG SANDY UNIT 1										Project No.:	12756-001
				FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated						ATTACHMENT 1-7						Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
1.1	ID FANS - OEM EQUIPMENT	665,000 ACFM WITH 6,000 HP MOTORS (\$360,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	EST	2	EA	1,762,000		3,524,000	0	4900.00	11,270	MECH	88.89	1,001,800	4,525,800
1.2	PIPING & SUPPORTS - MECHANICAL							14,500	23,100					95,700	133,300
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	150	LF		41.7	0	6,300	1.61	278	SPNG	94.41	26,200	32,500
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	200	LF		48.80	0	9,800	1.44	331	SPNG	94.41	31,300	41,100
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	80	LF		33.70	0	2,700	1.32	121	SPNG	94.41	11,500	14,200
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	90	EA		35.00	0	3,200	1.50	155	MECH	88.89	13,800	17,000
1.3	DAMPERS							520,600	0					235,100	755,700
	INLET DAMPERS	2X50% DOUBLE LOUVER TYPE WITH SEAL AIR FANS TOTAL FOR TWO FANS	EST	386	SF	450		173,800	0	2.50	1,111	MECH	88.89	98,700	272,500
	OUTLET DAMPERS	2X50% GUILLOTINE DAMPERS, WITH SEAL AIR FANS TOTAL FOR TWO FANS	EST	534	SF	650		346,800	0	2.50	1,534	MECH	88.89	136,400	483,200
1.4	EXPANSION JOINTS		EST	380	LF		230.00	0	87,300	2.00	873	MECH	88.89	77,600	164,900
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	EST	470	TN		3,250.00	0	1,527,500	50.00	27,025	FLDU	107.96	2,917,600	4,445,100
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	240	TN		2,900.00	0	696,000	24.00	6,624	STST	105.71	700,200	1,396,200
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	EST	3,000	SF		40.00	0	120,000	0.55	1,898	DINS	81.75	155,100	275,100
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR NID MODULE DUCTWORK SUPPLIED WITH THE OEM EQUIPMENT	EST	53,000	SF		12.00	0	636,000	0.25	15,238	DINS	81.75	1,245,700	1,881,700
1.9	DUCT SUPPORT STEEL - FOUNDATIONS	INLET / OUTLET DUCT SUPPORTS @ 60'-0 C/C						0	288,400					574,700	863,100
	EXCAVATION / BACKFILL		EST	2,000	CY			0	0	0.36	828	EXFD	90.00	74,500	74,500
	REINFORCING		EST	110	TN		1,150.00	0	126,500	20.00	2,530	REIN	78.27	198,000	324,500
	FORMWORK		EST	6,700	SF		2.50	0	16,800	0.14	1,079	FORM	99.43	107,300	124,100
	CONCRETE		EST	1,120	CY		105.00	0	117,600	1.50	1,932	CONP	79.64	153,900	271,500
	MUD MAT		EST	190	CY		105.00	0	20,000	1.50	328	CONP	79.64	26,100	46,100
	EMBEDDED STEEL		EST	3,000	LB		2.50	0	7,500	0.06	207	CARP	71.88	14,900	22,400
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT							0	96,400					182,000	278,400
	EXCAVATION / BACKFILL		EST	570	CY			0	0	0.36	236	EXFD	90.00	21,200	21,200
	REINFORCING		EST	35	TN		1,150.00	0	40,300	20.00	805	REIN	78.27	63,000	103,300
	FORMWORK		EST	1,400	SF		2.50	0	3,500	0.14	225	FORM	99.43	22,400	25,900
	CONCRETE		EST	370	CY		105.00	0	38,900	1.50	638	CONP	79.64	50,800	89,700
	MUD MAT		EST	35	CY		105.00	0	3,700	1.50	60	CONP	79.64	4,800	8,500

				AEP										Estimate No.:	30925B
				BIG SANDY UNIT 1										Project No.:	12756-001
				FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated				ATTACHMENT 1-7								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.20	HIGH VOLTAGE POWER CABLE & TERMINATION		EST	3,000	LF		51.75	0	155,300	0.69	2,387	WIRE	98.84	236,000	391,300
1.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	NOT REQUIRED						0	0		0			0	0
	1/C # 350KCMIL-5KV				LF		6.13	0	0	0.23	0	WIRE	98.84	0	0
	1/C # 2/0-5KV				LF		2.35	0	0	0.12	0	WIRE	98.84	0	0
1.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	346,600		0			862,900	1,209,500
	3/C # 500KCMIL- 600V		EST	9,400	LF		26.12	0	245,500	0.69	7,459	WIRE	98.84	737,200	982,700
	#4/0 - #12 AWG-600V		EST	14,000	LF		7.22	0	101,100	0.08	1,272	WIRE	98.84	125,700	226,800
1.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	27,000	LF		3.20	0	86,400	0.08	2,453	WIRE	98.84	242,400	328,800
1.24	GROUNDING							1,900	0					7,200	9,100
	GROUND ROD	3/4" - 20' LONG EACH	EST	2	EA	150		300	0	4.00	9	WIRE	98.84	900	1,200
	500 MCM	BARE COPPER WIRE	EST	200	FT	7.65		1,500	0	0.12	28	WIRE	98.84	2,700	4,200
	CADWELD		EST	8	EA	15		100	0	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
1.25	LIGHTING/ TRANSFORMERS & PANELS	LIGHT FIXTURES ONLY						0	7,500					4,500	12,000
	LIGHT FIXTURES		EST	10	EA		750	0	7,500	4.00	46	WIRE	98.84	4,500	12,000
	45KVA, 480V, 3 PHASE				EA	10000		0	0	40.00	0	WIRE	98.84	0	0
	37.7KVA, 480V, 3 PHASE				EA	7500		0	0	32.00	0	WIRE	98.84	0	0
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL				EA	5000		0	0	16.00	0	WIRE	98.84	0	0
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS				EA	3500		0	0	12.00	0	WIRE	98.84	0	0
1.26	RACEWAY, CABLE TRAY, & CONDUIT							0	237,800		0			1,187,600	1,425,400
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	530	LF		18.25	0	9,700	1.10	670	WIRE	98.84	66,300	76,000
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	800	LF		21.50	0	17,200	1.45	1,334	WIRE	98.84	131,900	149,100
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,300	LF		27.10	0	35,200	1.75	2,616	WIRE	98.84	258,600	293,800
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	300	LF		30.30	0	9,100	1.95	673	WIRE	98.84	66,500	75,600
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	600	LF		61.00	0	36,600	1.13	778	WIRE	98.84	76,900	113,500
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		31.00	0	31,000	0.81	928	WIRE	98.84	91,700	122,700
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,200	LF		21.50	0	25,800	0.65	890	WIRE	98.84	88,000	113,800
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,800	LF		9.25	0	16,700	0.35	729	WIRE	98.84	72,000	88,700
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,250	LF		7.15	0	16,100	0.28	735	WIRE	98.84	72,600	88,700
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	4,000	LF		4.44	0	17,800	0.24	1,099	WIRE	98.84	108,700	126,500
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	7,000	LF		3.23	0	22,600	0.19	1,562	WIRE	98.84	154,400	177,000
1.27	DUCT BANK							0	99,700					196,900	296,600
	DUCT BANK WITH 3-5" & 3-3" CONDUITS	NOT REQUIRED			LF		142.42	0	0	3.17	0	ECND	75.97	0	0

				AEP										Estimate No.:	30925B
				BIG SANDY UNIT 1										Project No.:	12756-001
				FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est.=Estimated				ATTACHMENT 1-7								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	32,000	SF	30		960,000	0	0.00	0	DINS	81.75	0	960,000
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 8000 SF						20,200	447,100					585,500	1,052,800
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	65	TN		2,900.00	0	188,500	24.00	1,794	STST	105.71	189,600	378,100
	SIDING FOR PENTHOUSE		EST	5,040	SF		12.00	0	60,500	0.11	638	SDNG	93.41	59,600	120,100
	CONCRETE FLOOR FOR PENTHOUSE		EST	200	CY		230.00	0	46,000	7.50	1,725	SDNG	93.41	161,100	207,100
	ROOFING FOR PENTHOUSE		EST	8,000	SF		18.00	0	144,000	0.22	2,024	ROOF	69.12	139,900	283,900
	H&V		EST	1	LT	20200	8080	20,200	8,100	377.33	434	HVAC	81.24	35,300	63,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						32,000	851,600					891,100	1,774,700
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	180	TN		2,900.00	0	522,000	24.00	4,968	STST	105.71	525,200	1,047,200
	SIDING FOR BOTTOM ENCLOSURE		EST	14,400	SF		12.00	0	172,800	0.11	1,822	SDNG	93.41	170,200	343,000
	ROOFING FOR BOTTOM ENCLOSURE		EST	8,000	SF		18.00	0	144,000	0.22	2,024	ROOF	69.12	139,900	283,900
	H&V		EST	1	LT	32000	12800	32,000	12,800	597	687	HVAC	81.24	55,800	100,600
2.5	PIPING & SUPPORTS - MECHANICAL							111,100	89,200					210,800	411,100
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	150	LF		23.0	0	3,500	1.48	255	SPNG	94.41	24,100	27,600
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	200	LF		111.00	0	22,200	2.02	465	SPNG	94.41	43,900	66,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	200	LF		234.10	0	46,800	2.34	538	SPNG	94.41	50,800	97,600
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	75	LF		22.20	0	1,700	1.26	109	SPNG	94.41	10,300	12,000
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	150	LF		33.70	0	5,100	1.32	228	SPNG	94.41	21,500	26,600
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	3	EA	4,700		14,100	0	12.96	45	SPNG	94.41	4,200	18,300
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	100	EA		75.00	0	7,500	2.50	288	MECH	88.89	25,600	33,100
2.6	DUCTWORK							0	1,267,500					2,421,000	3,688,500
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	390	TN		3,250.00	0	1,267,500	50.00	22,425	FLDU	107.96	2,421,000	3,688,500
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	200	TN		2,900.00	0	580,000	24.00	5,520	STST	105.71	583,500	1,163,500
2.8	DUCTWORK INSULATION & LAGGING		EST	50,000	SF		12.00	0	600,000	0.25	14,375	DINS	81.75	1,175,200	1,775,200
2.9	NID MODULE- FOUNDATIONS							0	361,600					612,200	973,800
	EXCAVATION / BACKFILL		EST	1,520	CY			0	0	0.36	629	EXFD	90.00	56,600	56,600
	REINFORCING		EST	140	TN		1,150.00	0	161,000	20.00	3,220	REIN	78.27	252,000	413,000
	FORMWORK		EST	1,800	SF		2.50	0	4,500	0.14	290	FORM	99.43	28,800	33,300
	CONCRETE		EST	1,500	CY		105.00	0	157,500	1.50	2,588	CONP	79.64	206,100	363,600
	MUD MAT		EST	110	CY		105.00	0	11,600	1.50	190	CONP	79.64	15,100	26,700
	EMBEDDED STEEL		EST	10,800	LB		2.50	0	27,000	0.06	745	CARP	71.88	53,600	80,600
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	360,000					894,900	1,254,900
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	200	TN			0	0	24.00	5,520	STST	105.71	583,500	583,500
	ACCESS GALLERY		EST	8,000	SF		45.00	0	360,000	0.40	3,680	GALL	84.61	311,400	671,400
2.11	GROUNDING							0	5,300		0			16,400	21,700
	GROUND ROD	3/4" - 20' LONG	EST	5	EA		150	0	800	4.00	23	WIRE	98.84	2,300	3,100
	500 MCM	BARE COPPER WIRE	EST	550	FT		7.65	0	4,200	0.12	76	WIRE	98.84	7,500	11,700
	CADWELD		EST	21	EA		15	0	300	2.00	48	WIRE	98.84	4,800	5,100
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							13,500	22,500		0			19,500	55,500

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		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	LIGHT FIXTURES		EST	30	EA		750	0	22,500	4.00	138	WIRE	98.84	13,600	36,100
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							21,291,800	4,584,800		233,159			21,210,300	47,086,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			6	MN	75000		450,000		720.00	4,968	MECH	88.89	441600	891,600
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										3,505,719
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						20,275		83.48	1,693,000	1,693,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						25,840			1,812,719	1,812,719
	PER DIEM	NONE		0.00	HR						284,242			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				22,924					106,052	128,976
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				229,240						229,240
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			1,064,590							1,064,590
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				229,240					1,060,515	1,289,755
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				687,720					3,181,545	3,869,265
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							1,514,600	1,169,100					8,295,400	10,979,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						22,806,400	5,753,900					29,505,700	58,066,000
3.0	NEW STACK														
3.1	CONCRETE STACK (DRY)	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS														0
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT			15	%				0						0
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														0
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK													0
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	SILO		EST		EA	2,764,000.00		0	0	0.00	0	CONP	79.64	0	0
	ELEVATOR		EST		EA	290,000.00		0	0	0.00	0	MECH	88.89	0	0
4.2	LIME UNLOADING SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	EST		LT	350,000		0	0	2750.00	0	MECH	88.89	0	0

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated				ATTACHMENT 1-7								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
4.30	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			LT		6,000.00	0	0	41.00	0	WIRE	98.84	0	0
4.31	SECURITY SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			LT		8,000.00	0	0	62.00	0	WIRE	98.84	0	0
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							2,900	4,900		198			18,500	26,300
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										2,506
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						17		83.48	1,000	1,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						21			1,506	1,506
	PER DIEM	NONE		0.00	HR						236			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				25					93	117
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				245						245
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			145							145
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				245					925	1,170
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				735					2,775	3,510
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							100	1,200					6,300	7,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						3,000	6,100					24,800	34,000
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	EST		LT	2,386,000		0	0	14200.00	0	MECH	88.89	0	0
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	N/A													
6.3	BUILDING SUMP PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	EST		EA	14,000		0	0	60.00	0	MECH	88.89	0	0
6.4	AGITATOR FOR SUMP PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	EST		EA	12,000		0	0	45.00	0	MECH	88.89	0	0
6.5	PIPING - MECHANICAL		EST	1	LT			85,700	45,900					153,200	284,800
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	100	LF		45.1	0	4,500	0.87	100	SPNG	94.41	9,400	13,900
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	80	LF		32.2	0	2,600	0.88	81	SPNG	94.41	7,600	10,200
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	50	LF		41.7	0	2,100	1.61	93	SPNG	94.41	8,700	10,800
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	100	LF		14.1	0	1,400	0.83	95	SPNG	94.41	9,000	10,400
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	100	LF		110.3	0	11,000	2.40	276	SPNG	94.41	26,100	37,100
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	150	LF		72.8	0	10,900	1.45	250	SPNG	94.41	23,600	34,500
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	4" GATE, 150 #, CS, WELDED	EST	6	EA	2,500		15,000	0	7.70	53	SPNG	94.41	5,000	20,000

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9.2	PIPING - MECHANICAL							61,100	66,200					175,900	303,200	
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	100	LF		14.5	0	1,500	0.70	81	SPNG	94.41	7,600	9,100	
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	50	LF		41.7	0	2,100	1.61	93	SPNG	94.41	8,700	10,800	
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	100	LF		45.1	0	4,500	0.87	100	SPNG	94.41	9,400	13,900	
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	50	LF		111.0	0	5,600	2.02	116	SPNG	94.41	11,000	16,600	
	LARGE BORE PIPING	8" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	100	LF		122.2	0	12,200	1.26	145	SPNG	94.41	13,700	25,900	
	SMALL BORE PIPING	2" CS, SCH 80 WELDED, UNDERGROUND WRAPPED	EST	200	LF		20.80	0	4,200	0.64	147	SPNG	94.41	13,900	18,100	
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" CS, SCH 80 WELDED	EST	50	LF		19.30	0	1,000	1.16	67	SPNG	94.41	6,300	7,300	
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500	
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100	
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600	
	VALVE	4" GATE, 150 #, CS, WELDED	EST	2	EA	2,500		5,000	0	7.70	18	SPNG	94.41	1,700	6,700	
	VALVE	4" GATE, 150 #, SS, WELDED	EST	2	EA	3,400		6,800	0	9.24	21	SPNG	94.41	2,000	8,800	
	VALVE	6" GATE, 150 #, SS, WELDED	EST	1	EA	4,700		4,700	0	12.96	15	SPNG	94.41	1,400	6,100	
	VALVE	8" GATE, 150 #, SS, WELDED	EST	2	EA	6,240		12,500	0	15.96	37	SPNG	94.41	3,500	16,000	
	VALVE	<2" GLOBE, 150# CS, WELDED	EST	2	EA	450		900	0	3.40	8	SPNG	94.41	700	1,600	
	VALVE	<2" GLOBE, 150# SS, WELDED	EST	20	EA	750	750.00	15,000	15,000	4.08	94	SPNG	94.41	8,900	38,900	
	VALVE	2" GLOBE, 150# CS, WELDED	EST	2	EA	850		1,700	0	4.20	10	SPNG	94.41	900	2,600	
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	85	EA		50.00	0	4,300	2.00	196	MECH	88.89	17,400	21,700	
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	167	CY			0	0	0.20	38	EXFD	90.00	3,500	3,500	
	BEDDING	FOR UNDERGROUND PIPING	EST	22	CY		35.0	0	800	0.25	6	EXFD	90.00	600	1,400	
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0	
	EXCAVATION / BACKFILL		EST		CY			0	0	0.36	0	EXFD	90.00	0	0	
	REINFORCING		EST		TN	1,150.00		0	0	20.00	0	REIN	78.27	0	0	
	FORMWORK		EST		SF	2.50		0	0	0.14	0	FORM	99.43	0	0	
	CONCRETE		EST		CY	105.00		0	0	1.50	0	CONP	79.64	0	0	
	MUD MAT		EST		CY	105.00		0	0	1.50	0	CONP	79.64	0	0	
	EMBEDDED STEEL		EST		LB	2.50		0	0	0.06	0	CARP	71.88	0	0	
9.4	AIR COMPRESSOR BUILDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0	
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING		EST		SF	85		0	0	0.00	0	STST	105.71	0	0	
9.5	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0	
	LIGHT FIXTURES				EA	750		0	0	4.00	0	WIRE	98.84	0	0	
	37.7KVA, 480V, 3 PHASE				EA	7500		0	0	32.00	0	WIRE	98.84	0	0	
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS				EA	3500		0	0	12.00	0	WIRE	98.84	0	0	
9.6	RACEWAY, CABLE TRAY, & CONDUIT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)														
9.7	GROUNDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0	
	GROUND ROD				EA	150		0	0	4.00	0	WIRE	98.84	0	0	
	500 MCM				FT	7.65		0	0	0.12	0	WIRE	98.84	0	0	
	CADWELD				EA	15		0	0	2.00	0	WIRE	98.84	0	0	

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost	
	GROUNDING TEST	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			LT			0	0	4.00	0	WIRE	98.84	0	0	
9.8	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			LT		34,000.00	0	0	229.00	0	WIRE	98.84	0	0	
9.9	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			LT		10,500.00	0	0	66.00	0	WIRE	98.84	0	0	
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							61,100	66,200		1,876			175,900	303,200	
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS															
	ADDITIONAL CRANE ALLOWANCE								0					0	0	
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0	
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										28,305	
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						163		83.48	14,000	14,000	
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						204			14,305	14,305	
	PER DIEM	NONE		0.00	HR						2,243			0	0	
	CONSUMABLES - % of ACCT NO. 90			0.5	%				331					880	1,211	
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				3,310						3,310	
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%		3,055								3,055	
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				3,310					8,795	12,105	
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				9,930					26,385	36,315	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							3,100	16,900					64,400	84,300	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM						64,200	83,100					240,300	387,500	
10.0	SERVICE WATER SYSTEM															
10.1	PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0	
	SERVICE WATER PUMPS		EST		EA	45000		0	0	220.00	0	MECH	88.89	0	0	
	RIVER WATER BOOSTER PUMPS		EST		EA	20000		0	0	120.00	0	MECH	88.89	0	0	
	SELF-CLEANING STRAINERS		EST		EA	22000		0	0	80.00	0	MECH	88.89	0	0	
10.2	PIPING - MECHANICAL		EST	1	LT			68,500	85,300					181,600	335,400	
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800	
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	100	LF		80.4	0	8,000	1.14	131	SPNG	94.41	12,400	20,400	
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	50	LF		111.0	0	5,600	2.02	116	SPNG	94.41	11,000	16,600	
	LARGE BORE PIPING	10" SS, SCHEDULE 40, WELDED	EST	200	LF		179.9	0	36,000	2.49	573	SPNG	94.41	54,100	90,100	
	LARGE BORE PIPING	14" HDPE (UNDERGROUND)	EST	100	LF		65.5	0	6,600	1.02	117	SPNG	94.41	11,100	17,700	
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500	
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	50	LF		33.70	0	1,700	1.32	76	SPNG	94.41	7,200	8,900	
	VALVE	4" GATE, 150 #, SS, WELDED	EST	4	EA	3,400		13,600	0	9.24	43	SPNG	94.41	4,000	17,600	
	VALVE	6" GATE, 150 #, SS, WELDED	EST	2	EA	4,700		9,400	0	12.96	30	SPNG	94.41	2,800	12,200	
	VALVE	10" GATE, 150 #, SS, WELDED	EST	4	EA	9,500		38,000	0	18.52	85	SPNG	94.41	8,000	46,000	
	VALVE	14" BFLY 150# SS, FLANGED	EST	1	EA	7,500		7,500	0	19.76	23	SPNG	94.41	2,100	9,600	
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	90	EA		95.00	0	8,600	2.50	259	MECH	88.89	23,000	31,600	
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	83	CY			0	0	0.20	19	EXFD	90.00	1,700	1,700	

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	BEDDING	FOR UNDERGROUND PIPING	EST	11	CY		35.0	0	400	0.25	3	EXFD	90.00	300	700
10.3	PIPING - FIRE PROTECTION SYSTEM		EST	1	LT			48,300	38,900	89.55	884	0	1207.47	82,800	170,000
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	50	LF		24.4	0	1,200	0.73	42	SPNG	94.41	4,000	5,200
	LARGE BORE PIPING	8" CS, SCHEDULE 40, WELDED	EST	100	LF		64.2	0	6,400	0.98	113	SPNG	94.41	10,600	17,000
	LARGE BORE PIPING	12" CS, SCHEDULE 40, WELDED	EST	80	LF		174.6	0	14,000	1.43	132	SPNG	94.41	12,400	26,400
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	200	LF		72.8	0	14,600	1.45	334	SPNG	94.41	31,500	46,100
	VALVE	4" GATE, 150 #, CS, WELDED	EST	4	EA	2,500		10,000	0	7.70	35	SPNG	94.41	3,300	13,300
	VALVE	8" GATE, 150 #, CS, WELDED	EST	2	EA	4,800		9,600	0	13.30	31	SPNG	94.41	2,900	12,500
	VALVE	10" GATE, 150 #, CS, WELDED	EST	1	EA	6,500		6,500	0	16.10	19	SPNG	94.41	1,700	8,200
	VALVE	10" GATE WITH PIV, 150 #, CS, WELDED	EST	2	EA	7,000		14,000	0	17.71	41	SPNG	94.41	3,800	17,800
	VALVE	12" GATE, 150 #, CS, WELDED	EST	1	EA	8,200		8,200	0	19.20	22	SPNG	94.41	2,100	10,300
	FIRE HYDRANTS		EST	0	EA	1,500		0	0	8.00	0	MECH	88.89	0	0
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	25	EA		75.00	0	1,900	2.50	72	MECH	88.89	6,400	8,300
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	167	CY			0	0	0.20	38	EXFD	90.00	3,500	3,500
	BEDDING	FOR UNDERGROUND PIPING	EST	22	CY		35.0	0	800	0.25	6	EXFD	90.00	600	1,400
10.4	TANKS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	SERVICE WATER TANKS		EST		EA		60000.0	0	0	0.00	0	TANK	89.16	0	0
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	EXCAVATION / BACKFILL		EST		CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST		TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST		SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST		CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST		CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST		LB		2.50	0	0	0.06	0	CARP	71.88	0	0
10.6	ELECTRICAL	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							116,800	124,200		2,824			264,400	505,400
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										41,533
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						246		83.48	20,000	20,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						307			21,533	21,533
	PER DIEM	NONE		0.00	HR						3,376			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				621					1,322	1,943
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				6,210						6,210
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			5,840							5,840
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				6,210					13,220	19,430
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				18,630					39,660	58,290

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				BIG SANDY UNIT 1										Project No.:	12756-001
				FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated				ATTACHMENT 1-7								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip. Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							5,800	31,700					95,700	133,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM						122,600	155,900					360,100	638,600
11.0	POTABLE WATER SYSTEM														
11.1	PUMPS							30,000	0					18,400	48,400
	POTABLE WATER BOOSTER PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)													
11.2	PIPING - MECHANICAL		EST	1	LT			38,900	53,800					148,400	241,100
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	200	LF		45.1	0	9,000	0.87	200	SPNG	94.41	18,900	27,900
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED	EST	100	LF		68.3	0	6,800	1.82	209	SPNG	94.41	19,800	26,600
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	180	LF		111.0	0	20,000	2.02	418	SPNG	94.41	39,500	59,500
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	100	LF		14.1	0	1,400	0.83	95	SPNG	94.41	9,000	10,400
	SMALL BORE PIPING	2" D.I. SCH 80 (UNDERGROUND)	EST	200	LF		15.00	0	3,000	0.30	69	SPNG	94.41	6,500	9,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	SMALL BORE PIPING	2" COPPER	EST	100	LF		28.50	0	2,900	0.43	49	SPNG	94.41	4,700	7,600
	VALVE	2" GLOBE, 150# CS, WELDED	EST	4	EA	850		3,400	0	4.20	19	SPNG	94.41	1,800	5,200
	VALVE	<2" GLOBE, 150# SS, WELDED	EST	2	EA	750	750.00	1,500	1,500	4.08	9	SPNG	94.41	900	3,900
	VALVE	4" GATE, 150 #, SS, WELDED	EST	8	EA	4,250		34,000	0	9.24	85	SPNG	94.41	8,000	42,000
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	90	EA		60.00	0	5,400	2.50	259	MECH	88.89	23,000	28,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	83	CY			0	0	0.20	19	EXFD	90.00	1,700	1,700
	BEDDING	FOR UNDERGROUND PIPING	EST	11	CY		35.0	0	400	0.25	3	EXFD	90.00	300	700
11.3	TANKS							0	0					0	0
	POTABLE WATER TANK	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	EST		EA		8500.0	0	0	0.00	0	TANK	89.16	0	0
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	EXCAVATION / BACKFILL		EST		CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST		TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST		SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST		CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST		CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST		LB		2.50	0	0	0.06	0	CARP	71.88	0	0
11.5	ELECTRICAL	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							38,900	53,800		1,588			148,400	241,100
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										24,109
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						138		83.48	12,000	12,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						173			12,109	12,109
	PER DIEM	NONE		0.00	HR						1,899			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%			269						742	1,011
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%			2,690							2,690

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		Est=Estimated						ATTACHMENT 1-7						Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			1,945							1,945
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,690					7,420	10,110
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				8,070					22,260	30,330
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							1,900	13,700					54,500	70,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM						40,800	67,500					202,900	311,300
12.0	FGD SUBSTATION														
12.1	TRANSFORMERS							800,000	0					163,900	963,900
	FGD SUBSTATION-AUX TRANSFORMERS: 11A & 11B	138KV-13.8KV- 2 WINDING XFMR	EST	2	EA	400000		800,000	0	900.00	2,070	EHEA	79.16	163,900	963,900
	SUS TRANSFORMERS: 32F, 32G	NOT REQUIRED			EA	85000		0	0	300.00	0	EHEA	79.16	0	0
12.2	TRANSFORMER PDC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			SF	300.0		0.0	0.0	0.0	0.0	STST	105.71	0.0	0.0
12.3	TRANSFORMER PDC - FOUNDATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	EXCAVATION / BACKFILL				CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING				TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK				SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE				CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT				CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL				LB		2.50	0	0	0.06	0	CARP	71.88	0	0
12.4	138KV MAIN FEEDER & TERMINATIONS							264,000	0					254,000	518,000
	138KV STRUCTURE AND SWITCH		EST	1	LT	103500		103,500	0	450.00	518	STST	105.71	54,700	158,200
	138KV MAIN FEEDER	1/C 750KCMIL- 138KV	EST	2,100	LF	51.75		108,700	0	0.69	1,671	WIRE	98.84	165,200	273,900
	138KV ACCESSORIES		EST	1	LT	51750		51,800	0	300.00	345	WIRE	98.84	34,100	85,900
12.5	SWITCHGEAR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	13.8 KV MEDIUM VOLTAGE (11A/B)				EA	50000		0	0	40.00	0	EHEA	79.16	0	0
	480V LOW VOLTAGE (32F/G)				EA	38000		0	0	16.00	0	EHEA	79.16	0	0
	EXISTING SCR SWITCHGEAR MODIFICATION				LT	124,200		0	0	750.00	0	WIRE	98.84	0	0
12.6	MCC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)													
12.7	CABLE BUS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	15KV CABLE BUS DUCT				FT	442		0	0	3.30	0	WIRE	98.84	0	0
	480V CABLE BUS DUCT				FT	618		0	0	10.30	0	WIRE	98.84	0	0
	CABLE BUS TERMINATION				EA		1,800.00	0	0	33.00	0	WIRE	98.84	0	0
	CABLE BUS TERMINATION				EA		2,700.00	0	0	54.00	0	WIRE	98.84	0	0
12.8	PANELS - RELAY	NOT REQUIRED						0	0					0	0
	RELAY PANELS & INTERLOCK				LT	100000		0	0	80.00	0	WIRE	98.84	0	0
12.9	MIMIC PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			EA	17500		0	0	40.00	0	WIRE	98.84	0	0
12.10	EMERGENCY POWER SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	DC PANEL BOARD				EA	15500		0	0	40.00	0	WIRE	98.84	0	0
	UPS PANEL BOARDS				EA	15500		0	0	40.00	0	WIRE	98.84	0	0
	SATELLITE UPS				EA	41200		0	0	16.00	0	WIRE	98.84	0	0
	VRLA BATTERIES				LT	36050		0	0	120.00	0	WIRE	98.84	0	0

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	FORMWORK		EST	120	SF		2.50	0	300	0.14	19	FORM	99.43	1,900	2,200
	CONCRETE		EST	22	CY		105.00	0	2,300	1.50	38	CONP	79.64	3,000	5,300
12.21	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			LT		17,000.00	0	0	114.00	0	WIRE	98.84	0	0
12.22	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			LT		4,000.00	0	0	18.00	0	WIRE	98.84	0	0
12.23	SECURITY SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)			LT		8,000.00	0	0	62.00	0	WIRE	98.84	0	0
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,100,600	113,900		9,174			836,400	2,050,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										136,952
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						798		83.48	67,000	67,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						997			69,952	69,952
	PER DIEM	NONE		0.00	HR						10,969			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				570					4,182	4,752
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				5,695						5,695
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			55,030							55,030
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				5,695					41,820	47,515
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				17,085					125,460	142,545
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							55,000	29,000					308,414	392,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION						1,155,600	142,900					1,144,800	2,443,400
13.0	FGD DCS SYSTEM														0
13.1	DCS	3400 I/O POINTS. INCLUDES CONTROLS FOR THE NID + SCR SYSTEM	EST	3,400	EA	750		2,550,000	0	2.50	9,775	INEL	88.43	864,400	3,414,400
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	EST	200	DAYS	1500		300,000	0		0	INEL	88.43	0	300,000
13.3	LOCALLY MOUNTED INSTRUMENTS	NID + SCR						0	603,300					715,200	1,318,500
	LOCALLY MOUNTED INSTRUMENTS	NID AND BOP	EST	200	EA		2200	0	440,000	20.00	4,600	INEL	88.43	406,800	846,800
	LOCALLY MOUNTED INSTRUMENTS	FOR SCR SYSTEM. INCLUDES AMMONIA ANALYZERS, ELEMENT AND MISC INSTRUMENTS	EST	1	LT		122000	0	122,000	408.00	469	INEL	88.43	41,500	163,500
	INSTRUMENT RACKS	INCLUDED WITH INSTRUMENTS													
	INSTRUMENT TUBING	ALLOWANCE	EST	7,500	LF		5.5	0	41,300	0.35	3,019	INEL	88.43	266,900	308,200
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							2,850,000	603,300		17,863			1,579,600	5,032,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0

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		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										266,207
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,553		83.48	130,000	130,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,942			136,207	136,207
	PER DIEM	NONE		0.00	HR						21,358			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,017					7,898	10,915
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				30,165						30,165
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			142,500							142,500
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				30,165					78,980	109,145
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				90,495					236,940	327,435
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							142,500	153,800					590,000	886,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM						2,992,500	757,100					2,169,600	5,919,300
14.0	CEM SYSTEM														0
14.1	CEM	PROVIDED BY AEP		1	LT	1910000	825000	1,910,000	825,000					465,000	3,200,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,910,000	825,000					465,000	3,200,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				123,750						480,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														480,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM													3,680,000
15.0	TRUCK & RAIL INFRASTRUCTURE														0
15.1	EXISTING RAILROAD IMPROVEMENTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	REMOVE AND REPLACE 8" OF THE BALLAST		EST		LF		12.25	0	0	0.16	0	RRTK	88.26	0	0
	REPLACE 75% OF THE EXISTING WOODEN RAILROAD TIES		EST		LF		80	0	0	0.85	0	RRTK	88.26	0	0
	REMOVE THE EXISTING RAIL AND REPLACE WITH 132-LB RAIL		EST		LF		87.5	0	0	1.05	0	RRTK	88.26	0	0
	REPLACE EXISTING #8 TURNOUTS		EST		EA		45000	0	0	300.00	0	RRTK	88.26	0	0
15.2	EXISTING RAILROAD IMPROVEMENTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0
	REMOVE AND REPLACE 8" OF THE BALLAST		EST		LF		12.25	0	0	0.16	0	RRTK	88.26	0	0
	REPLACE 75% OF THE EXISTING WOODEN RAILROAD TIES		EST		LF		80	0	0	0.85	0	RRTK	88.26	0	0
	REMOVE THE EXISTING RAIL AND REPLACE WITH 132-LB RAIL		EST		LF		87.5	0	0	1.05	0	RRTK	88.26	0	0
	REPLACE EXISTING #8 TURNOUTS		EST		EA		45000	0	0	300.00	0	RRTK	88.26	0	0
15.3	NEW RAILROAD TRACK	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	EST		LF		180	0	0	1.50	0	RRTK	88.26	0	0
15.4	FIELD FABRICATED TURNOUTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	EST		EA		45000	0	0	270.00	0	RRTK	88.26	0	0
15.5	RAIL SCALE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	EST		EA	106250		0	0	0.00	0	MECH	88.89	0	0
15.6	NEW CONCRETE ENCASEMENT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0

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				ORDER OF MAGNITUDE COST ESTIMATE												Preparer:	MNO
		Cost Type:												Reviewer:	JMK		
		Est=Estimated				ATTACHMENT 1-7								Approver:	PEF		
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY					
		Q=Vendor Quote								Labor Productivity =		1.15					
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost		
	EXCAVATION / BACKFILL		EST		CY			0	0	0.36	0	EXFD	90.00	0	0		
	REINFORCING		EST		TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0		
	FORMWORK		EST		SF		2.50	0	0	0.14	0	FORM	99.43	0	0		
	CONCRETE		EST		CY		105.00	0	0	1.50	0	CONP	79.64	0	0		
	MUD MAT		EST		CY		105.00	0	0	1.50	0	CONP	79.64	0	0		
	EMBEDDED STEEL		EST		LB		2.50	0	0	0.06	0	CARP	71.88	0	0		
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							0	0		0			0	0		
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS																
	ADDITIONAL CRANE ALLOWANCE							0						0	0		
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0		
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										0		
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						0		83.48	0	0		
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						0			0	0		
	PER DIEM	NONE		0.00	HR						0			0	0		
	CONSUMABLES - % of ACCT NO. 90			0.5	%				0					0	0		
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				0					0	0		
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			0						0	0		
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				0					0	0		
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				0					0	0		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							0	0					0	0		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE						0	0					0	0		
16.0	SITE IMPROVEMENTS - CIVIL WORK																
16.1	SITE GRADING	SCR AREA ONLY						0	0					79,000	79,000		
	CUT		EST	2,420	CY			0	0	0.08	223	ETWK	177.49	39,500	39,500		
	FILL		EST	2,420	CY			0	0	0.08	223	ETWK	177.49	39,500	39,500		
16.2	ROADS & SURFACING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)						0	0					0	0		
	20' WIDE ACCESS ROAD		EST		SY		47	0	0	0.40	0	PBIT	90.25	0	0		
	24' WIDE ACCESS ROAD		EST		SY		47	0	0	0.40	0	PBIT	90.25	0	0		
	24' WIDE ACCESS ROAD AGGREGATE SHOULDERS		EST		SY		17.5	0	0	0.10	0	BCSE	105.94	0	0		
	LIME UNLOADING AREA		EST		SY		47	0	0	0.40	0	PBIT	90.25	0	0		
	PARKING AREA		EST		SY		47	0	0	0.40	0	PBIT	90.25	0	0		
	BYPRODUCT & WASTE LOADING AREA - SURFACING		EST		SY		96	0	0	1.60	0	CONP	79.64	0	0		
	BYPRODUCT & WASTE LOADING AREA		EST		LF		6.5	0	0	0.96	0	COND	70.04	0	0		
	CONCRETE PAD BUILDING ENTRANCES		EST		SY		80	0	0	1.50	0	CONP	79.64	0	0		
	AGGREGATE AREA SURFACING		EST		SY		9	0	0	0.17	0	BCSE	105.94	0	0		
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING						0	36,500					73,000	109,500		
	EXCAVATION / BACKFILL		EST	300	CY			0	0	0.36	124	EXFD	90.00	11,200	11,200		
	REINFORCING		EST	25.0	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800		
	FORMWORK		EST	500	SF		2.50	0	1,300	0.14	81	FORM	99.43	8,000	9,300		
	CONCRETE		EST	50	CY		105.00	0	5,300	1.50	86	CONP	79.64	6,900	12,200		
	MUD MAT		EST	5	CY		105.00	0	500	1.50	9	CONP	79.64	700	1,200		
	EMBEDDED STEEL		EST	250	LB		2.50	0	600	0.06	17	CARP	71.88	1,200	1,800		

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	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										24,739
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						145		83.48	12,000	12,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						182			12,739	12,739
	PER DIEM	NONE		0.00	HR						1,997			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				245					863	1,108
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,450						2,450
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			35,100							35,100
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,450					8,625	11,075
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				7,350					25,875	33,225
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							35,100	12,500					60,100	107,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK						737,100	61,500					232,600	1,031,200
															0
17.0	BOP ITEMS														
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	1,400	LF		10	0	14,000	0.39	628	PINS	69.50	43,600	57,600
17.2	HEAT TRACING							0	82,200					117,500	199,700
	CABLE	AVERAGE 6" PIPE SIZE	EST	1,200	LF		10.35	0	12,400	0.05	69	WIRE	98.84	6,800	19,200
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	22	EA		450	0	9,800	8.00	201	WIRE	98.84	19,800	29,600
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	2	LT		30000	0	60,000	400.00	920	WIRE	98.84	90,900	150,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	99,700					382,400	482,100
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	18,720	SF		3	0	56,200	0.15	3,229	PNTR	66.72	215,500	271,700
	TOUCH UP PAINT FOR EQUIPMENT		EST	9,000	SF		3	0	27,000	0.15	1,553	PNTR	66.72	103,600	130,600
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 3,500 LF PIPE	EST	5,500	SF		3	0	16,500	0.15	949	PNTR	66.72	63,300	79,800
17.4	HOISTS & TROLLEYS							120,000	140,000					163,600	423,600
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	8	EA	15000	17500	120,000	140,000	200.00	1,840	MECH	88.89	163,600	423,600
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	10	TN		3500	0	35,000	120.00	1,380	STST	105.71	145,900	180,900
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	7,800					15,800	23,600
	EXCAVATION / BACKFILL		EST	49	CY			0	0	0.36	20	EXFD	90.00	1,800	1,800
	REINFORCING		EST	4	TN		1,150.00	0	4,300	20.00	86	REIN	78.27	6,800	11,100
	FORMWORK		EST	195	SF		2.50	0	500	0.14	31	FORM	99.43	3,100	3,600
	CONCRETE		EST	19	CY		105.00	0	2,000	1.50	32	CONP	79.64	2,600	4,600
	MUD MAT		EST	8	CY		105.00	0	800	1.50	13	CONP	79.64	1,000	1,800
	EMBEDDED STEEL		EST	94	LB		2.50	0	200	0.06	6	CARP	71.88	500	700
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	1	EA	6000	1000	6,000	1,000	60.00	69	MECH	88.89	6,100	13,100

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17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	2	EA		30000	0	60,000	240.00	552	MECH	88.89	49,100	109,100
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							126,000	439,700		11,579			924,000	1,489,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE													0	
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										172,289
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,007		83.48	84,000	84,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,259			88,289	88,289
	PER DIEM	NONE		0.00	HR						13,844			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				2,199					4,620	6,819
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				21,985						21,985
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			6,300							6,300
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				21,985					46,200	68,185
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				65,955					138,600	204,555
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							6,300	112,124					361,709	480,132
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						132,300	551,800					1,285,700	1,969,800
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
18.1	RELOCATE HYDROGEN STORAGE TANK	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A						0	0					0	0
	LABOR ALLOWANCE TO RELOCATED THE TANK		EST		LT			0	0	500.00	0	MECH	88.89	0	0
	NEW FOUNDATION ALLOWANCE FOR THE RELOCATED TANK		EST		CY		230	0	0	6.00	0	MECH	88.89	0	0
	ELECTRICAL ALLOWANCE FOR THE RELOCATED TANK		EST		LT		7500	0	0	125.00	0	WIRE	98.84	0	0
18.2	NEW HYDROGEN LINE TO PLANT	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A						0	0					0	0
	LARGE BORE PIPE				LF		75	0	0	1.65	0	YDPP	90.14	0	0
	EXCAVATION / BACKFILL				CY			0	0	0.20	0	EXFD	90.00	0	0
	BEDDING				CY		35	0	0	0.25	0	EXFD	90.00	0	0
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	EST	1	LT		75000	0	75,000	1020.00	1,173	WIRE	98.84	115,900	190,900
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 55 TON DUCTWORK	ALLOW	55	TN		3250	0	179,600	50.00	3,177	FLDU	107.96	343,000	522,600
18.5	RELOCATED WAREHOUSE - FOUNDATIONS	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A						0	0					0	0
	EXCAVATION / BACKFILL		EST		CY			0	0	0.15	0	EXFD	90.00	0	0
	REINFORCING		EST		TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST		SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST		CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST		CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST		LB		2.50	0	0	0.06	0	CARP	71.88	0	0
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A						0	0					0	0

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	CAREFULLY REMOVE BUILDING SIDING, STEEL AND ROOF & PIECE MARK FOR RELOCATION		EST		SF			0	0	0.22	0	STST	105.71	0	0
	ASSEMBLE REMOVED BUILDING STEEL, ROOFING, SIDING, WINDOWS AND DOORS INCLUDING OVERHEAD DOORS		EST		SF		8.5	0	0	0.60	0	STST	105.71	0	0
18.7	DUCTWORK REMOVAL FROM ECONOMIZER OUTLET TO AIR HEATER INLET	ALLOWANCE FOR 40 TON DUCTWORK	ALLOW	40	TN			0	0	5.00	230	FLDU	107.96	24,800	24,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							0	254,600		4,580			483,700	738,300
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS				1LS										67,922
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						398		83.48	33,000	33,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						498			34,922	34,922
	PER DIEM	NONE		0.00	HR						5,476			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				1,273					2,419	3,692
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				12,730						12,730
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			0							0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				12,730					24,185	36,915
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				38,190					72,555	110,745
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							0	64,900					167,100	232,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE						0	319,500					650,800	970,300
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														0
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP		1	LT										750,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS														750,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				0						112,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														112,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT													862,500
20.0	SCR														
20.1	CATALYST		EST	500	CM	6,500		3,250,000	0	14.00	8,050	FLDU	107.96	869,100	4,119,100
20.2	CRANES & HOISTS	CATALYST REPLACEMENT TROLLEY, 8 TONS	EST	2	EA	16,800		33,600	0	60.00	138	STST	105.71	14,600	48,200
20.3	AMMONIA INJECTION GRID		EST	2	EA	40,000		80,000	0	400.00	920	FLDU	107.96	99,300	179,300
20.4	STATIC MIXER		EST	4	EA	80,000		320,000	0	300.00	1,380	FLDU	107.96	149,000	469,000
20.5	SONIC HORNS		EST	16	EA	5,000		80,000	0	30.00	552	MECH	88.89	49,100	129,100
20.6	PALLET TRUCKS		EST	3	EA	10,000		30,000	0		0	FLDU	107.96	0	30,000

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20.7	SCR REACTOR VESSEL		EST	400	TN		3,250.00	0	1,300,000	50.00	23,000	FLDU	107.96	2,483,100	3,783,100
20.8	ACCESS DOORS	24"X36", SCR REACTOR	EST	3	EA		2,600.00	0	7,800	20.00	69	FLDU	107.96	7,400	15,200
20.9	ACCESS DOORS	REMOVABLE CATALYST DOOR, 6'X8', SCR REACTOR	EST	6	EA		10,000.00	0	60,000	60.00	414	FLDU	107.96	44,700	104,700
20.10	EXPANSION JOINTS		EST	1,000	LF		230.00	0	230,000	2.00	2,300	MECH	88.89	204,400	434,400
20.11	DUCTWORK	INLET (120T) / OUTLET (150T) DUCT FOR SCR	EST	270	TN		3,250.00	0	877,500	50.00	15,525	FLDU	107.96	1,676,100	2,553,600
20.12	SCR ACCESS GALLERY	4 LEVELS, 800 SF EACH LEVEL	EST	3,200	SF		45.00	0	144,000	0.40	1,472	GALL	84.61	124,500	268,500
20.13	SCR STAIR TOWER		EST	25	TN		2,900.00	0	72,500	24.00	690	STST	105.71	72,900	145,400
20.14	ELEVATOR	MAINTENANCE ELEVATOR - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	325,000		325,000	0	0.00	0	MECH	88.89	0	325,000
20.15	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
20.16	PIPING & SUPPORTS - MECHANICAL							55,500	95,300					573,100	723,900
	LARGE BORE PIPING	2.5" CS, SCH 40 WELDED	EST	300	LF		17.0	0	5,100	1.25	431	SPNG	94.41	40,700	45,800
	LARGE BORE PIPING	3" CS, SCH 40 WELDED	EST	50	LF		18.30	0	900	1.34	77	SPNG	94.41	7,300	8,200
	LARGE BORE PIPING	3" CS, SCH 40 WELDED, AMMONIA SYSTEM	EST	200	LF		18.30	0	3,700	1.34	308	SPNG	94.41	29,100	32,800
	LARGE BORE PIPING	4" CS, SCH 40 WELDED	EST	100	LF		23.00	0	2,300	1.48	170	SPNG	94.41	16,100	18,400
	LARGE BORE PIPING	4" CS, SCH 40 WELDED, AMMONIA SYSTEM	EST	500	LF		23.00	0	11,500	1.48	851	SPNG	94.41	80,300	91,800
	LARGE BORE PIPING	VACUUM CLEANING, 4" CS, SCH 40 WELDED. INCLUDES HOOK UP FITTINGS	EST	300	LF		42.13	0	12,600	1.63	562	SPNG	94.41	53,000	65,600
	SMALL BORE PIPING	1" CS, SCH 80 WELDED, SERVICE AIR	EST	200	LF		9.40	0	1,900	1.02	235	SPNG	94.41	22,100	24,000
	SMALL BORE PIPING	2" SS, SCH 80 WELDED, AMMONIA SYSTEM	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500
	SMALL BORE PIPING	INSTRUMENT AIR PIPING, 2" CS, SCH 80 WELDED, SONIC HORNS	EST	600	LF		22.20	0	13,300	1.26	869	SPNG	94.41	82,100	95,400
	SMALL BORE PIPING	AMMONIA PIPING, 2" CS, SCH 80 WELDED	EST	200	LF		22.20	0	4,400	1.26	290	SPNG	94.41	27,400	31,800
	SMALL BORE PIPING	2" CS, SCH 80 WELDED, SERVICE WATER	EST	250	LF		22.20	0	5,600	1.26	362	SPNG	94.41	34,200	39,800
	SMALL BORE PIPING	2" CS GALV, SCH 80, POTABLE WATER	EST	350	LF		26.64	0	9,300	1.30	523	SPNG	94.41	49,400	58,700
	SMALL BORE PIPING	HIGH PRESSURE WASH PIPING, 2" CS, SCH 80 WELDED	EST	250	LF		22.20	0	5,600	1.26	362	SPNG	94.41	34,200	39,800
	VALVE	LARGE BORE - ALLOWANCE FOR MISC SIZE	EST	12	EA	2,500		30,000	0	7.70	106	SPNG	94.41	10,000	40,000
	VALVE	SMALL BORE - ALLOWANCE FOR MISC SIZE	EST	30	EA	850		25,500	0	4.20	145	SPNG	94.41	13,700	39,200
	PIPE SUPPORTS		EST	283	EA		50.00	0	14,200	2.00	652	MECH	88.89	57,900	72,100
20.17	SCR SUPPORT STEEL	THREE COAT SHOP PAINT, REACTOR VESSEL	EST	230	TN		2,900.00	0	667,000	24.00	6,348	STST	105.71	671,000	1,338,000

				AEP										Estimate No.:	30925B
				BIG SANDY UNIT 1										Project No.:	12756-001
				FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU										Date:	11/24/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est.=Estimated				ATTACHMENT 1-7								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
20.18	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT, INLET / OUTLET DUCTWORK	EST	135	TN		2,900.00	0	391,500	24.00	3,726	STST	105.71	393,900	785,400
20.19	PIPE RACK FOR AMMONIA PIPING	NOT REQUIRED													
20.20	SCR REACTOR VESSEL INSULATION		EST	20,000	SF		15.00	0	300,000	0.28	6,440	DINS	81.75	526,500	826,500
20.21	DUCTWORK INSULATION & LAGGING	INLET / OUTLET DUCTWORK	EST	42,000	SF		12.00	0	504,000	0.25	12,075	DINS	81.75	987,100	1,491,100
20.22	SCR REACTOR SUPPORT STEEL - FOUNDATIONS							0	107,500					195,700	303,200
	EXCAVATION / BACKFILL		EST	450	CY			0	0	0.36	186	EXFD	90.00	16,800	16,800
	REINFORCING		EST	35	TN		1,150.00	0	40,300	20.00	805	REIN	78.27	63,000	103,300
	FORMWORK		EST	880	SF		2.50	0	2,200	0.14	142	FORM	99.43	14,100	16,300
	CONCRETE		EST	350	CY		105.00	0	36,800	1.50	604	CONP	79.64	48,100	84,900
	MUD MAT		EST	30	CY		105.00	0	3,200	1.50	52	CONP	79.64	4,100	7,300
	EMBEDDED STEEL		EST	10,000	LB		2.50	0	25,000	0.06	690	CARP	71.88	49,600	74,600
20.23	DUCTWORK SUPPORT STEEL - FOUNDATIONS							0	37,000					83,700	120,700
	EXCAVATION / BACKFILL		EST	300	CY			0	0	0.36	124	EXFD	90.00	11,200	11,200
	REINFORCING		EST	10	TN		1,150.00	0	11,500	20.00	230	REIN	78.27	18,000	29,500
	FORMWORK		EST	1,000	SF		2.50	0	2,500	0.14	161	FORM	99.43	16,000	18,500
	CONCRETE		EST	80	CY		105.00	0	8,400	1.50	138	CONP	79.64	11,000	19,400
	MUD MAT		EST	20	CY		105.00	0	2,100	1.50	35	CONP	79.64	2,700	4,800
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
20.24	SCR PDC - FOUNDATION	NOT REQUIRED. INSTALLED / SUPPORTED ON SCR STRUCTURE						0	0					0	0
20.25	PIPE RACK - FOUNDATIONS							0	46,400					129,500	175,900
	EXCAVATION / BACKFILL		EST	673	CY			0	0	0.36	279	EXFD	90.00	25,100	25,100
	REINFORCING		EST	15	TN		1,150.00	0	17,400	20.00	348	REIN	78.27	27,200	44,600
	FORMWORK		EST	2,859	SF		2.50	0	7,100	0.14	460	FORM	99.43	45,800	52,900
	CONCRETE		EST	168	CY		105.00	0	17,700	1.50	290	CONP	79.64	23,100	40,800
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,682	LB		2.50	0	4,200	0.06	116	CARP	71.88	8,300	12,500
20.26	CEMS BUILDING FOUNDATION	CEMS BUILDING IS INCLUDED IN CEMS COST PROVIDED BY AEP						0	13,700					24,600	38,300
	EXCAVATION / BACKFILL		EST	50	CY			0	0	0.36	21	EXFD	90.00	1,900	1,900
	REINFORCING		EST	5	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	200	SF		2.50	0	500	0.14	32	FORM	99.43	3,200	3,700
	CONCRETE		EST	45	CY		105.00	0	4,700	1.50	78	CONP	79.64	6,200	10,900
	MUD MAT		EST	15	CY		105.00	0	1,600	1.50	26	CONP	79.64	2,100	3,700
	EMBEDDED STEEL		EST	450	LB		2.50	0	1,100	0.06	31	CARP	71.88	2,200	3,300
20.27	SCR PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	EST	215	SF		500.00	0	107,500	0.00	0	STST	105.71	0	107,500
20.28	MCC							65,000	0					6,900	71,900
	480V MCC	THREE SECTIONS TOTAL	EST	3	EA	20,000		60,000	0	16.00	55	WIRE	98.84	5,500	65,500
	MCC REPLACEMENT PARTS		EST	1	LT	5,000		5,000	0	12.00	14	WIRE	98.84	1,400	6,400
20.29	PANEL BOARDS							15,500	0					4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
20.30	LOW VOLTAGE POWER CABLE & TERMINATION							0	38,400		0			90,500	128,900

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est.=Estimated				ATTACHMENT 1-7								Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	3/C # 250KCMIL- 600V		EST	1,000	LF		13.11	0	13,100	0.52	598	WIRE	98.84	59,100	72,200
	#4/0 - #12 AWG-600V		EST	3,500	LF		7.22	0	25,300	0.08	318	WIRE	98.84	31,400	56,700
20.31	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	6,000	LF		3.20	0	19,200	0.08	545	WIRE	98.84	53,900	73,100
20.32	GROUNDING							10,500	0					28,400	38,900
	GROUND ROD	3/4" - 20' LONG EACH	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,000	FT	7.65		7,700	0	0.12	138	WIRE	98.84	13,600	21,300
	CADWELD		EST	25	EA	15		400	0	2.00	58	WIRE	98.84	5,700	6,100
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
20.33	LIGHTING/ TRANSFORMERS & PANELS							11,000	5,300					8,200	24,500
	LIGHT FIXTURES		EST	7	EA		750	0	5,300	4.00	32	WIRE	98.84	3,200	8,500
	37.7KVA, 480V, 3 PHASE		EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS		EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
20.34	RACEWAY, CABLE TRAY, & CONDUIT							0	58,800		0			375,800	434,600
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	750	LF		18.25	0	13,700	1.10	949	WIRE	98.84	93,800	107,500
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		27.10	0	13,600	1.75	1,006	WIRE	98.84	99,500	113,100
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,500	LF		7.15	0	10,700	0.28	490	WIRE	98.84	48,400	59,100
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,500	LF		4.44	0	11,100	0.24	687	WIRE	98.84	67,900	79,000
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,000	LF		3.23	0	9,700	0.19	669	WIRE	98.84	66,200	75,900
20.35	COMMUNICATIONS		EST	1	LT		10,000	0	10,000	86.00	99	WIRE	98.84	9,800	19,800
20.36	SECURITY SYSTEM		EST	1	LT		10,000	0	10,000	86.00	99	WIRE	98.84	9,800	19,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							4,276,100	5,059,300		99,054			9,844,500	19,179,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,526,575
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						8,613		83.48	719,000	719,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						11,512			807,575	807,575
	PER DIEM	NONE		0.00	HR						126,631			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				25,297					49,223	74,519
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				252,965						252,965
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			213,805							213,805
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				252,965					492,225	745,190
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				758,895					1,476,675	2,235,570
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							888,800	1,290,100					4,207,100	6,386,000

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		Q=Vendor Quote								Labor Productivity =		1.15			
Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip. Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SCR						5,164,900	6,349,400					14,051,600	25,565,900
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							38,924,700	17,216,400		508,907			48,025,600	104,916,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE	6 MONTHS FOR NID + 9 MONTHS FOR SCR						1,125,000	0		12,420			1,104,000	2,229,000
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										7,662,616
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						44,253			3,695,000	3,695,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						56,558			3,967,616	3,967,616
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				81,957					237,803	319,760
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				819,570						819,570
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			1,850,735							1,850,735
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				819,570					2,378,030	3,197,600
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				2,582,460					7,134,090	10,185,300
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							2,975,700	4,303,600					18,516,500	26,264,600
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							41,900,400	21,520,000					66,542,100	131,181,300
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							41,900,400	21,520,000					66,542,100	131,181,300
								0	0					0	0
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										11,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										3,935,400
	S-U / COMMISSIONING			1.0	%										1,311,800
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						5,532		94.37	565,900	565,900
	INITIAL FILLS			0.3	%										393,500
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														20,506,600
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														151,687,900
	SPARE PARTS:			1.5	%			628,500							628,500
	SPARE PARTS - CAPITALIZED			0.90	%			377,100							377,100
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			251,400							251,400



Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

ATTACHMENT 1-8
Unit 2/ Unit 1&2 Common NID Summary Capital Cost Estimate No. 30924
(ESP not in Service; Unit 1-1.7 lb SO₂MMbtu; Unit 2-3.0 lb SO₂MMbtu)

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8		Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
1.1	ID FANS - OEM EQUIPMENT	1,875,000 ACFM WITH 19,500 HP MOTORS (\$750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	\$ 6,920,000	\$ -	\$ 1,674,400	\$ 8,594,400
1.2	PIPING & SUPPORTS - MECHANICAL		\$ 21,800	\$ 28,700	\$ 120,500	\$ 171,000
1.3	DAMPERS		\$ 781,000	\$ -	\$ 352,600	\$ 1,133,600
1.4	EXPANSION JOINTS		\$ -	\$ 131,100	\$ 116,500	\$ 247,600
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	\$ -	\$ 3,055,000	\$ 5,835,200	\$ 8,890,200
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ -	\$ 1,363,000	\$ 1,371,300	\$ 2,734,300
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	\$ -	\$ 168,000	\$ 217,200	\$ 385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR NID MODULE DUCTWORK SUPPLIED WITH THE OEM EQUIPMENT	\$ -	\$ 1,008,000	\$ 1,974,300	\$ 2,982,300
1.9	DUCT SUPPORT STEEL - FOUNDATIONS		\$ -	\$ 369,000	\$ 719,800	\$ 1,088,800
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		\$ -	\$ 106,000	\$ 198,700	\$ 304,700

Sargent & Lundy, LLC		AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.11	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS		\$ -	\$ 322,200	\$ 536,700	\$ 858,900
1.12	NID CONTROL / SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR, COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	\$ -	\$ 4,505,000	\$ -	\$ 4,505,000
1.13	TRANSFORMERS		\$ 940,000	\$ -	\$ 200,200	\$ 1,140,200
1.14	SWITCHGEAR		\$ 1,272,000	\$ -	\$ 673,700	\$ 1,945,700
1.15	CABLE BUS & TERMINATIONS		\$ 849,000	\$ 46,600	\$ 1,516,300	\$ 2,411,900
1.16	MCC		\$ 120,000	\$ -	\$ 7,200	\$ 127,200
1.17	MIMIC PANELS		\$ 17,500	\$ -	\$ 4,500	\$ 22,000
1.18	EMERGENCY POWER SYSTEM		\$ 285,500	\$ -	\$ 38,900	\$ 324,400
1.19	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C 750KCML- 13.8KV	\$ -	\$ 207,000	\$ 314,600	\$ 521,600
1.20	MEDIUM VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 91,600	\$ 393,700	\$ 485,300
1.21	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 565,900	\$ 850,800	\$ 1,416,700
1.22	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 348,200	\$ 977,000	\$ 1,325,200
1.23	GROUNDING		\$ 11,100	\$ -	\$ 37,200	\$ 48,300
1.24	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500
1.25	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 1,651,700	\$ 8,113,100	\$ 9,764,800
1.26	DUCT BANK		\$ -	\$ 163,800	\$ 321,500	\$ 485,300
1.27	FOUNDATION FOR TRANSFORMERS		\$ -	\$ 64,600	\$ 188,900	\$ 253,500
1.28	FIREWALL FOR TRANSFORMERS		\$ -	\$ 3,200	\$ 8,300	\$ 11,500
1.29	COMMUNICATIONS		\$ -	\$ 19,000	\$ 14,200	\$ 33,200

Sargent & Lundy, LLC		AEP		Estimate No.:	30924B
		BIG SANDY UNIT 2		Project No.:	12756-000
		FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)		Date:	11/24/2010
		UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU		Preparer:	MNO
		COST ESTIMATE SUMMARY		Reviewer:	JMK
		ATTACHMENT 1-8		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.30	LIGHTNING PROTECTION		\$ -	\$ 14,000	\$ 10,200	\$ 24,200
1.31	SECURITY SYSTEM		\$ -	\$ 10,000	\$ 8,000	\$ 18,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 11,243,900	\$ 14,271,600	\$ 26,825,000	\$ 52,340,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 562,200	\$ 3,639,300	\$ 9,654,900	\$ 13,856,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 11,806,100	\$ 17,910,900	\$ 36,479,900	\$ 66,196,800
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	\$ 50,231,000	\$ -	\$ 32,415,100	\$ 82,646,100
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	\$ 2,419,200	\$ -	\$ -	\$ 2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	\$ 58,100	\$ 1,316,900	\$ 1,747,600	\$ 3,122,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	\$ 92,200	\$ 2,428,900	\$ 2,544,900	\$ 5,066,000

Sargent & Lundy, LLC		AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
2.5	PIPING & SUPPORTS - MECHANICAL		\$ 125,200	\$ 174,500	\$ 385,900	\$ 685,600
2.6	DUCTWORK		\$ -	\$ 4,797,000	\$ 9,162,600	\$ 13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ -	\$ 2,140,200	\$ 2,153,200	\$ 4,293,400
2.8	DUCTWORK INSULATION & LAGGING		\$ -	\$ 1,632,000	\$ 3,196,400	\$ 4,828,400
2.9	NID MODULE- FOUNDATIONS		\$ -	\$ 1,087,000	\$ 1,778,100	\$ 2,865,100
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		\$ -	\$ 1,152,000	\$ 2,863,700	\$ 4,015,700
2.11	GROUNDING		\$ -	\$ 16,000	\$ 46,100	\$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		\$ 27,000	\$ 75,000	\$ 57,300	\$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 52,952,700	\$ 14,819,500	\$ 56,350,900	\$ 124,123,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 3,322,600	\$ 3,779,000	\$ 21,387,300	\$ 28,488,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	\$ 56,275,300	\$ 18,598,500	\$ 77,738,200	\$ 152,612,000
3.0	NEW STACK					
3.1	CONCRETE STACK (DRY)	COMMON STACK FOR UNITS 1 & 2. (PROVIDED BY AEP)	\$ -	\$ -	\$ -	\$ 30,500,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ -	\$ -	\$ 30,500,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ 4,575,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK	\$ -	\$ -	\$ -	\$ 35,075,000

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8		Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		\$ 6,914,000	\$ -	\$ -	\$ 6,914,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	\$ 595,000	\$ -	\$ 477,900	\$ 1,072,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	\$ 1,265,000	\$ -	\$ 736,000	\$ 2,001,000
4.4	PIPING - MECHANICAL		\$ 88,700	\$ 130,300	\$ 342,600	\$ 561,600
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		\$ -	\$ 179,400	\$ 180,500	\$ 359,900
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	\$ -	\$ 1,885,000	\$ 1,896,400	\$ 3,781,400
4.7	RAIL CAR UNLOADING PAD - FOUNDATIONS	20' X 120' - NO SIDING	\$ -	\$ 42,700	\$ 90,100	\$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		\$ -	\$ 69,600	\$ 147,600	\$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	\$ 75,000	\$ 335,000	\$ 24,400	\$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		\$ -	\$ 2,300	\$ 6,900	\$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	\$ -	\$ 359,000	\$ 636,500	\$ 995,500
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		\$ -	\$ 14,200	\$ 28,600	\$ 42,800
4.13	PIPE RACK - FOUNDATIONS		\$ -	\$ 239,600	\$ 588,600	\$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	\$ 170,000	\$ -	\$ 54,600	\$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	\$ 196,000	\$ -	\$ 104,700	\$ 300,700
4.16	CABLE BUS DUCT		\$ 134,700	\$ 10,800	\$ 200,200	\$ 345,700

Sargent & Lundy, LLC					AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8		Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost		
4.17	MCC		\$ 61,800	\$ -	\$ 3,600	\$ 65,400		
4.18	MIMIC PANELS		\$ 17,500	\$ -	\$ 1,400	\$ 18,900		
4.19	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700		
4.20	GROUNDING		\$ 13,300	\$ -	\$ 41,300	\$ 54,600		
4.21	LIGHTING/ TRANSFORMERS & PANELS		\$ 52,000	\$ 135,000	\$ 104,500	\$ 291,500		
4.22	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 331,400	\$ 1,606,800	\$ 1,938,200		
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	\$ -	\$ 144,600	\$ 407,800	\$ 552,400		
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	\$ -	\$ 66,200	\$ 282,300	\$ 348,500		
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 100,200	\$ 152,200	\$ 252,400		
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 29,400	\$ 82,600	\$ 112,000		
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	\$ -	\$ 61,100	\$ 116,200	\$ 177,300		
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	\$ -	\$ 3,500	\$ 10,300	\$ 13,800		
4.29	COMMUNICATIONS		\$ -	\$ 34,000	\$ 26,000	\$ 60,000		
4.30	LIGHTNING PROTECTION		\$ -	\$ 6,000	\$ 4,700	\$ 10,700		
4.31	SECURITY SYSTEM		\$ -	\$ 8,000	\$ 7,000	\$ 15,000		
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 9,691,300	\$ 4,187,300	\$ 8,386,700	\$ 22,265,300		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 484,600	\$ 1,067,800	\$ 3,041,700	\$ 4,594,000		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 10,175,900	\$ 5,255,100	\$ 11,428,400	\$ 26,859,300		
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID						

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	\$ 3,217,100	\$ -	\$ 1,810,400	\$ 5,027,500	
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	\$ 400,000	\$ -	\$ 296,400	\$ 696,400	
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	\$ 28,000	\$ -	\$ 12,300	\$ 40,300	
6.4	AGITATOR FOR SUMP PUMPS	5 HP	\$ 12,000	\$ -	\$ 4,600	\$ 16,600	
6.5	PIPING - MECHANICAL		\$ 142,800	\$ 131,000	\$ 408,700	\$ 682,500	
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 75' DIA X 121' H - 6746 TONS - SUBCONTRACT COST INCLUDES LABOR	\$ 3,035,700	\$ -	\$ -	\$ 3,035,700	
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	\$ -	\$ -	\$ -	\$ -	
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICED TO BOTTOM ASH POND	\$ -	\$ -	\$ -	\$ -	
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		\$ -	\$ 240,100	\$ 436,500	\$ 676,600	
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -	
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		\$ -	\$ 97,600	\$ 172,100	\$ 269,700	

Sargent & Lundy, LLC		AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	\$ 40,000	\$ 241,500	\$ 26,200	\$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	\$ -	\$ 300,000	\$ -	\$ 300,000
6.16	MCC	480V MCC PER LINE UP	\$ 60,000	\$ -	\$ 3,600	\$ 63,600
6.17	EMERGENCY POWER SYSTEM		\$ 92,800	\$ -	\$ 19,900	\$ 112,700
6.18	LIGHTING/ TRANSFORMERS & PANELS		\$ 18,500	\$ 60,000	\$ 44,100	\$ 122,600
6.19	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 32,500	\$ 189,100	\$ 221,600
6.20	GROUNDING		\$ -	\$ 4,500	\$ 10,900	\$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	\$ -	\$ 9,500	\$ 47,900	\$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 64,700	\$ 80,500	\$ 145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 30,700	\$ 86,200	\$ 116,900
6.24	DUCT BANK		\$ -	\$ 6,200	\$ 10,600	\$ 16,800
6.25	COMMUNICATIONS		\$ -	\$ 34,000	\$ 26,000	\$ 60,000
6.26	LIGHTNING PROTECTION		\$ -	\$ 16,000	\$ 14,000	\$ 30,000
6.27	SECURITY SYSTEM		\$ -	\$ 8,000	\$ 7,000	\$ 15,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 7,046,900	\$ 1,276,300	\$ 3,707,000	\$ 12,030,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 352,300	\$ 325,500	\$ 1,379,100	\$ 2,056,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 7,399,200	\$ 1,601,800	\$ 5,086,100	\$ 14,087,100

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8		Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					
8.1	ACI MECHANICAL EQUIPMENT:	COMMON FOR UNIT 1 & UNIT 2	\$ 4,569,600	\$ -	\$ 1,518,000	\$ 6,087,600
8.2	PIPING - MECHANICAL	COMMON FOR UNIT 1 & UNIT 2	\$ 44,800	\$ 235,100	\$ 591,500	\$ 871,400
8.3	ACI SYSTEM - FOUNDATIONS	COMMON FOR UNIT 1 & UNIT 2	\$ -	\$ 76,200	\$ 163,600	\$ 239,800
8.4	MCC	COMMON FOR UNIT 1 & UNIT 2	\$ 92,700	\$ -	\$ 5,500	\$ 98,200
8.5	GROUNDING	COMMON FOR UNIT 1 & UNIT 2	\$ 8,200	\$ -	\$ 27,500	\$ 35,700
8.6	LIGHTING / TRANSFORMERS & PANELS	COMMON FOR UNIT 1 & UNIT 2	\$ 26,000	\$ 22,500	\$ 24,900	\$ 73,400
8.7	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 132,900	\$ 443,100	\$ 576,000
8.8	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	\$ -	\$ 20,200	\$ 25,100	\$ 45,300
8.9	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 22,400	\$ 62,900	\$ 85,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 4,741,300	\$ 509,300	\$ 2,862,100	\$ 8,112,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 237,100	\$ 129,900	\$ 1,055,900	\$ 1,422,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	\$ 4,978,400	\$ 639,200	\$ 3,918,000	\$ 9,535,500
9.0	COMPRESSED AIR SYSTEM	INCLUDES ADDITIONAL CAPACITY FOR UNIT 1 NID & SCR				
9.1	AIR COMPRESSOR & AUXILIARIES		\$ 1,188,600	\$ -	\$ 225,800	\$ 1,414,400
9.2	PIPING - MECHANICAL		\$ 320,600	\$ 344,800	\$ 875,600	\$ 1,541,000
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS		\$ -	\$ 249,800	\$ 419,700	\$ 669,500

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H	\$ -	\$ 612,000	\$ -	\$ 612,000	
9.5	LIGHTING/ TRANSFORMERS & PANELS		\$ 11,000	\$ 10,500	\$ 11,400	\$ 32,900	
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -	
9.7	GROUNDING		\$ 4,500	\$ -	\$ 10,900	\$ 15,400	
9.8	COMMUNICATIONS		\$ -	\$ 34,000	\$ 26,000	\$ 60,000	
9.9	LIGHTNING PROTECTION		\$ -	\$ 10,500	\$ 7,500	\$ 18,000	
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,524,700	\$ 1,261,600	\$ 1,576,900	\$ 4,363,200	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 76,200	\$ 321,700	\$ 585,800	\$ 983,800	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	\$ 1,600,900	\$ 1,583,300	\$ 2,162,700	\$ 5,347,000	
10.0	SERVICE WATER SYSTEM						
10.1	PUMPS	INCLUDES SELF-CLEANING STRAINERS	\$ 218,000	\$ -	\$ 103,100	\$ 321,100	
10.2	PIPING - MECHANICAL		\$ 298,400	\$ 342,800	\$ 688,300	\$ 1,329,500	
10.3	PIPING - FIRE PROTECTION SYSTEM		\$ 181,200	\$ 284,600	\$ 673,300	\$ 1,139,100	
10.4	TANKS		\$ -	\$ 120,000	\$ -	\$ 120,000	
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 22,600	\$ 49,900	\$ 72,500	
10.6	ELECTRICAL	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 697,600	\$ 770,000	\$ 1,514,600	\$ 2,982,200	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 34,900	\$ 196,400	\$ 552,500	\$ 783,700	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	\$ 732,500	\$ 966,400	\$ 2,067,100	\$ 3,765,900	
11.0	POTABLE WATER SYSTEM						
11.1	PUMPS		\$ 30,000	\$ -	\$ 18,400	\$ 48,400	
11.2	PIPING - MECHANICAL		\$ 99,500	\$ 181,900	\$ 448,200	\$ 729,600	
11.3	TANKS		\$ -	\$ 8,500	\$ -	\$ 8,500	

Sargent & Lundy, LLC				AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8		Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 5,200	\$ 9,200	\$ 14,400	
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 129,500	\$ 195,600	\$ 475,800	\$ 800,900	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,500	\$ 49,900	\$ 173,400	\$ 229,800	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	\$ 136,000	\$ 245,500	\$ 649,200	\$ 1,030,700	
12.0	FGD SUBSTATION						
12.1	TRANSFORMERS		\$ 1,390,000	\$ -	\$ 218,500	\$ 1,608,500	
12.2	TRANSFORMER PDC	15W X 45' X 10'H. SUBCONTRACT PRICE INCLUDES LABOR	\$ 202,500	\$ -	\$ -	\$ 202,500	
12.3	TRANSFORMER PDC - FOUNDATION		\$ -	\$ 73,200	\$ 146,900	\$ 220,100	
12.4	138KV MAIN FEEDER & TERMINATIONS		\$ 524,000	\$ 10,200	\$ 381,400	\$ 915,600	
12.5	SWITCHGEAR		\$ 524,200	\$ -	\$ 114,300	\$ 638,500	
12.6	MCC	480V MCC, PER LINE UP	\$ 60,000	\$ -	\$ 3,600	\$ 63,600	
12.7	CABLE BUS		\$ 88,400	\$ 7,200	\$ 90,000	\$ 185,600	
12.8	PANELS - RELAY		\$ 100,000	\$ -	\$ 9,100	\$ 109,100	
12.9	MIMIC PANELS		\$ 17,500	\$ -	\$ 4,500	\$ 22,000	
12.10	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700	
12.11	GROUNDING		\$ 23,300	\$ -	\$ 59,100	\$ 82,400	

Sargent & Lundy, LLC	AEP	Estimate No.:	30924B
	BIG SANDY UNIT 2	Project No.:	12756-000
	FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP)	Date:	11/24/2010
	UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU		
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
	ATTACHMENT 1-8	Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
12.12	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING ALLOWANCE	\$ 25,000	\$ -	\$ 56,800	\$ 81,800
12.14	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 369,100	\$ 1,845,300	\$ 2,214,400
12.15	DUCT BANK		\$ -	\$ 26,200	\$ 54,300	\$ 80,500
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
12.17	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 73,600	\$ 91,600	\$ 165,200
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 18,600	\$ 52,100	\$ 70,700
12.19	FOUNDATION FOR AUX TRANSFORMER	INCLUDES FOUNDATIONS FOR 138KV SWITCH & OH LINE INCLUDED IN ACCOUNT 12.4	\$ -	\$ 112,400	\$ 262,800	\$ 375,200
12.20	FIREWALL FOR TRANSFORMERS		\$ -	\$ 4,300	\$ 7,600	\$ 11,900
12.21	COMMUNICATIONS		\$ -	\$ 17,000	\$ 13,000	\$ 30,000
12.22	LIGHTNING PROTECTION		\$ -	\$ 4,000	\$ 2,000	\$ 6,000
12.23	SECURITY SYSTEM		\$ -	\$ 8,000	\$ 7,000	\$ 15,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,089,200	\$ 753,800	\$ 3,473,800	\$ 7,316,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 154,500	\$ 192,200	\$ 1,262,044	\$ 1,608,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	\$ 3,243,700	\$ 946,000	\$ 4,735,800	\$ 8,925,500

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	
13.0	FGD DCS SYSTEM						
13.1	DCS	3200 I/O POINTS	\$ 2,400,000	\$ -	\$ 813,600	\$ 3,213,600	
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	\$ 300,000	\$ -	\$ -	\$ 300,000	
13.3	LOCALLY MOUNTED INSTRUMENTS		\$ -	\$ 650,400	\$ 852,900	\$ 1,503,300	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,700,000	\$ 650,400	\$ 1,666,500	\$ 5,016,900	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 135,000	\$ 165,900	\$ 622,300	\$ 923,200	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	\$ 2,835,000	\$ 816,300	\$ 2,288,800	\$ 5,940,100	
14.0	CEM SYSTEM						
14.1	CEM	PROVIDED BY AEP	\$ 1,260,000	\$ 540,000	\$ 310,000	\$ 2,110,000	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,260,000	\$ 540,000	\$ 310,000	\$ 2,110,000	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ 316,500	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM	\$ -	\$ -	\$ -	\$ 2,426,500	
15.0	TRUCK & RAIL INFRASTRUCTURE						
15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF	\$ -	\$ 660,200	\$ 689,200	\$ 1,349,400	

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	
15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF	\$ -	\$ 1,008,800	\$ 1,055,600	\$ 2,064,400	
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12" SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	\$ -	\$ 252,000	\$ 213,100	\$ 465,100	
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	\$ -	\$ 90,000	\$ 54,800	\$ 144,800	
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	\$ 212,500	\$ -	\$ -	\$ 212,500	
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION	\$ -	\$ 33,200	\$ 71,400	\$ 104,600	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 212,500	\$ 2,044,200	\$ 2,084,100	\$ 4,340,800	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,600	\$ 521,300	\$ 779,600	\$ 1,311,500	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	\$ 223,100	\$ 2,565,500	\$ 2,863,700	\$ 5,652,300	
16.0	SITE IMPROVEMENTS - CIVIL WORK						
16.1	SITE GRADING	INCLUDES ADDITIONAL AREA FOR UNIT 1 COMMON ITEMS	\$ -	\$ -	\$ 713,200	\$ 713,200	
16.2	ROADS & SURFACING		\$ -	\$ 1,204,900	\$ 1,667,500	\$ 2,872,400	

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF		
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost		
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	\$ -	\$ 36,500	\$ 73,000	\$ 109,500		
16.4	TRUCK SCALE & CONCRETE APPROACH		\$ 170,000	\$ 27,300	\$ 92,000	\$ 289,300		
16.5	PROCESS WATER STORAGE BASIN		\$ 60,000	\$ 81,600	\$ 240,300	\$ 381,900		
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE		\$ -	\$ 47,000	\$ 105,400	\$ 152,400		
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	\$ -	\$ 526,500	\$ 535,800	\$ 1,062,300		
16.8	STORM WATER RUNOFF POND		\$ -	\$ 15,000	\$ 122,600	\$ 137,600		
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE		\$ 90,000	\$ 42,300	\$ 182,200	\$ 314,500		
16.10	OILY WATER SEWER		\$ 4,500	\$ 112,600	\$ 236,000	\$ 353,100		
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	\$ 100,000	\$ -	\$ 116,100	\$ 216,100		
16.12	SANITARY SEWER		\$ -	\$ 22,200	\$ 96,900	\$ 119,100		
16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH TWO PUMPS, 100 GPM TOTAL	\$ 150,000	\$ -	\$ 49,200	\$ 199,200		
16.14	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 12 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	\$ -	\$ 840,000	\$ 993,600	\$ 1,833,600		

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8		Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
16.15	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 24,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	\$ -	\$ 216,000	\$ 497,100	\$ 713,100
16.16	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 6,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	\$ -	\$ 54,000	\$ 124,300	\$ 178,300
16.17	TRUCK WASH AREA		\$ -	\$ 47,300	\$ 83,100	\$ 130,400
16.18	NEW PERMANENT STORAGE	INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	\$ 850,000	\$ -	\$ -	\$ 850,000
16.19	FOUNDATIONS FOR THE NEW WAREHOUSE		\$ -	\$ 273,500	\$ 450,200	\$ 723,700
16.20	NEW TEMPORARY STORAGE	WEATHER TIGHT CANVAS ENCLOSURE. INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	\$ 450,000	\$ -	\$ -	\$ 450,000
16.21	FOUNDATIONS FOR TEMPORARY STORAGE		\$ -	\$ 99,500	\$ 157,200	\$ 256,700

Sargent & Lundy, LLC				AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8		Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	
16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 2 BUSES OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	\$ 1,368,000	\$ -	\$ -	\$ 1,368,000	
16.23	EROSION & SEDIMENT CONTROL		\$ -	\$ 12,500	\$ 20,500	\$ 33,000	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,242,500	\$ 3,658,700	\$ 6,556,200	\$ 13,457,400	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 162,100	\$ 933,000	\$ 2,369,400	\$ 3,464,500	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	\$ 3,404,600	\$ 4,591,700	\$ 8,925,600	\$ 16,921,900	
17.0	BOP ITEMS						
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	\$ -	\$ 34,000	\$ 106,000	\$ 140,000	
17.2	HEAT TRACING		\$ -	\$ 175,600	\$ 248,500	\$ 424,100	
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		\$ -	\$ 176,700	\$ 677,900	\$ 854,600	
17.4	HOISTS & TROLLEYS		\$ 150,000	\$ 175,000	\$ 204,400	\$ 529,400	
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	\$ -	\$ 122,500	\$ 510,600	\$ 633,100	
17.6	MISC PIPE SUPPORT FOUNDATIONS		\$ -	\$ 10,500	\$ 21,000	\$ 31,500	

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8		Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	\$ 30,000	\$ 5,000	\$ 30,700	\$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	\$ -	\$ 300,000	\$ 245,300	\$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 180,000	\$ 999,300	\$ 2,044,400	\$ 3,223,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 9,000	\$ 254,822	\$ 786,346	\$ 1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	\$ 189,000	\$ 1,254,100	\$ 2,830,700	\$ 4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
18.1	RELOCATE HYDROGEN STORAGE TANK		\$ -	\$ 15,600	\$ 86,800	\$ 102,400
18.2	NEW HYDROGEN LINE TO PLANT		\$ -	\$ 62,100	\$ 150,600	\$ 212,700
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	\$ -	\$ 125,000	\$ 170,500	\$ 295,500
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	\$ -	\$ 276,300	\$ 527,700	\$ 804,000
18.5	RELOCATED WAREHOUSE - FOUNDATIONS		\$ -	\$ 342,600	\$ 534,900	\$ 877,500
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	150' L X 75' W X 25' H	\$ -	\$ 95,600	\$ 1,121,500	\$ 1,217,100

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8			Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF		
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost		
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 917,200	\$ 2,592,000	\$ 3,509,200		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 233,900	\$ 927,100	\$ 1,161,000		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$ -	\$ 1,151,100	\$ 3,519,100	\$ 4,670,200		
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT							
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 750,000		
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ -	\$ -	\$ 750,000		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ 112,500		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT	\$ -	\$ -	\$ -	\$ 862,500		
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 98,712,100	\$ 46,854,800	\$ 120,426,000	\$ 297,242,900		
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 5,547,600	\$ 11,891,300	\$ 44,577,400	\$ 66,939,300		
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 104,259,700	\$ 58,746,100	\$ 165,003,400	\$ 364,182,200		
	OVERALL PROJECT INDIRECT COSTS							
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					\$ 26,000,000		
	CONSTRUCTION MANAGEMENT					\$ 10,925,500		
	S-U / COMMISSIONING					\$ 3,641,800		
	CRAFT START-UP SUPPORT					\$ 1,419,000		
	INITIAL FILLS					\$ 1,092,500		

Sargent & Lundy, LLC		AEP BIG SANDY UNIT 2 FGD PROJECT - UNIT 2 / UNIT 1 & 2 COMMON NID (N/ESP) UNIT 2 - 3.0 LB/MM BTU, UNIT 1 - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-8				Estimate No.: 30924B Project No.: 12756-000 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	OPERATOR & TRAINING MANUALS					\$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					\$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				\$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					\$ 46,378,800
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					\$ 410,561,000
	SPARE PARTS:					\$ 1,563,900
	SPARE PARTS - CAPITALIZED	0.90				\$ 938,340
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60				\$ 625,560
	CONTINGENCY	13.90				\$ 57,265,200
	ESCALATION					\$ 51,935,300
	EQUIPMENT					\$ 16,566,100
	MATERIAL					\$ 6,315,500
	LABOR					\$ 23,603,000
	INDIRECTS					\$ 5,450,700
	TOTAL PROJECT COST					\$ 521,325,400
	REFERENCE COSTS:					
A	ESP DEMOLITION					\$ 832,300
B	REMOVE BOOSTER AIR FANS					\$ 111,000
C	REMOVAL OF FUEL OIL TANK		\$ 1,200,000	\$ 80,000	\$ 469,400	\$ 1,749,400



Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

ATTACHMENT 1-9
Unit 1 NID & SCR Summary Capital Cost Estimate No. 30925
(ESP not in Service; 1.7 lb SO₂MMbtu)

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 1
FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30925B
Project No.: 12756-001
Date: 11/24/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

ATTACHMENT 1-9

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
1.1	ID FANS - OEM EQUIPMENT	665,000 ACFM WITH 6,000 HP MOTORS (\$360,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	\$ 3,524,000	\$ -	\$ 1,001,800	\$ 4,525,800
1.2	PIPING & SUPPORTS - MECHANICAL		\$ 14,500	\$ 23,100	\$ 95,700	\$ 133,300
1.3	DAMPERS		\$ 520,600	\$ -	\$ 235,100	\$ 755,700
1.4	EXPANSION JOINTS		\$ -	\$ 87,300	\$ 77,600	\$ 164,900
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	\$ -	\$ 1,527,500	\$ 2,917,600	\$ 4,445,100
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ -	\$ 696,000	\$ 700,200	\$ 1,396,200
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	\$ -	\$ 120,000	\$ 155,100	\$ 275,100
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR NID MODULE DUCTWORK SUPPLIED WITH THE OEM EQUIPMENT	\$ -	\$ 636,000	\$ 1,245,700	\$ 1,881,700
1.9	DUCT SUPPORT STEEL - FOUNDATIONS		\$ -	\$ 288,400	\$ 574,700	\$ 863,100
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		\$ -	\$ 96,400	\$ 182,000	\$ 278,400

Sargent & Lundy, LLC	AEP	Estimate No.:	30925B
	BIG SANDY UNIT 1	Project No.:	12756-001
	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU	Date:	11/24/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
	ATTACHMENT 1-9	Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.11	ID FAN PDC - FOUNDATIONS		\$ -	\$ 44,500	\$ 91,700	\$ 136,200
1.12	ID FAN PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	\$ -	\$ 477,000	\$ -	\$ 477,000
1.13	TRANSFORMERS		\$ 170,000	\$ -	\$ 54,600	\$ 224,600
1.14	SWITCHGEAR		\$ 740,000	\$ -	\$ 335,000	\$ 1,075,000
1.15	CABLE BUS & TERMINATIONS		\$ 698,500	\$ 18,000	\$ 1,212,600	\$ 1,929,100
1.16	MCC		\$ 180,000	\$ -	\$ 10,900	\$ 190,900
1.17	MIMIC PANELS		\$ 35,000	\$ -	\$ 9,100	\$ 44,100
1.18	UPS SYSTEM		\$ 378,300	\$ -	\$ 58,800	\$ 437,100
1.19	PANELS - RELAY		\$ 100,000	\$ -	\$ 9,100	\$ 109,100
1.20	HIGH VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 155,300	\$ 236,000	\$ 391,300
1.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
1.22	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 346,600	\$ 862,900	\$ 1,209,500
1.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 86,400	\$ 242,400	\$ 328,800
1.24	GROUNDING		\$ 1,900	\$ -	\$ 7,200	\$ 9,100
1.25	LIGHTING/ TRANSFORMERS & PANELS	LIGHT FIXTURES ONLY	\$ -	\$ 7,500	\$ 4,500	\$ 12,000
1.26	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 237,800	\$ 1,187,600	\$ 1,425,400
1.27	DUCT BANK		\$ -	\$ 99,700	\$ 196,900	\$ 296,600
1.28	FOUNDATION FOR TRANSFORMERS		\$ -	\$ 7,300	\$ 15,200	\$ 22,500
1.29	FIREWALL FOR TRANSFORMERS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
1.30	COMMUNICATIONS		\$ -	\$ 17,000	\$ 13,000	\$ 30,000
1.31	LIGHTNING PROTECTION		\$ -	\$ 12,000	\$ 9,200	\$ 21,200
1.32	SECURITY SYSTEM		\$ -	\$ 8,000	\$ 7,000	\$ 15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 6,362,800	\$ 4,991,800	\$ 11,749,200	\$ 23,103,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 318,100	\$ 1,272,900	\$ 4,249,900	\$ 5,840,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 6,680,900	\$ 6,264,700	\$ 15,999,100	\$ 28,944,700

Sargent & Lundy, LLC	AEP	Estimate No.:	30925B
	BIG SANDY UNIT 1	Project No.:	12756-001
	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU	Date:	11/24/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
	ATTACHMENT 1-9	Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 4-MODULE NID SYSTEM (80' X 100') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	\$ 20,155,000	\$ -	\$ 13,800,200	\$ 33,955,200
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	\$ 960,000	\$ -	\$ -	\$ 960,000
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 8000 SF	\$ 20,200	\$ 447,100	\$ 585,500	\$ 1,052,800
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	\$ 32,000	\$ 851,600	\$ 891,100	\$ 1,774,700
2.5	PIPING & SUPPORTS - MECHANICAL		\$ 111,100	\$ 89,200	\$ 210,800	\$ 411,100
2.6	DUCTWORK		\$ -	\$ 1,267,500	\$ 2,421,000	\$ 3,688,500
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ -	\$ 580,000	\$ 583,500	\$ 1,163,500
2.8	DUCTWORK INSULATION & LAGGING		\$ -	\$ 600,000	\$ 1,175,200	\$ 1,775,200
2.9	NID MODULE- FOUNDATIONS		\$ -	\$ 361,600	\$ 612,200	\$ 973,800
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		\$ -	\$ 360,000	\$ 894,900	\$ 1,254,900
2.11	GROUNDING		\$ -	\$ 5,300	\$ 16,400	\$ 21,700
2.12	LIGHTING/ TRANSFORMERS & PANELS		\$ 13,500	\$ 22,500	\$ 19,500	\$ 55,500
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 21,291,800	\$ 4,584,800	\$ 21,210,300	\$ 47,086,900

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 1 FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-9	Estimate No.: 30925B Project No.: 12756-001 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,514,600	\$ 1,169,100	\$ 8,295,400	\$ 10,979,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	\$ 22,806,400	\$ 5,753,900	\$ 29,505,700	\$ 58,066,000
3.0	NEW STACK					
3.1	CONCRETE STACK (DRY)	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ -	\$ -	\$ -
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ -
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK	\$ -	\$ -	\$ -	\$ -
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.2	LIME UNLOADING SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.4	PIPING - MECHANICAL		\$ 2,900	\$ 4,900	\$ 18,500	\$ 26,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 1 FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-9	Estimate No.: 30925B Project No.: 12756-001 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.10	CONCRETE PIT FOR THE ELEVATOR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.11	LIME STORAGE SILO - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.13	PIPE RACK - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.14	TRANSFORMERS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.15	SWITCHGEAR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.16	CABLE BUS DUCT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.17	MCC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 1 FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-9	Estimate No.: 30925B Project No.: 12756-001 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.18	MIMIC PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.19	EMERGENCY POWER SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.20	GROUNDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.21	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.22	RACEWAY, CABLE TRAY, & CONDUIT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.25	LOW VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.26	CONTROL & INSTRUMENT CABLE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.27	DUCT BANK	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.28	FOUNDATIONS FOR TRANSFORMERS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.29	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.30	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
4.31	SECURITY SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,900	\$ 4,900	\$ 18,500	\$ 26,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 100	\$ 1,200	\$ 6,300	\$ 7,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 3,000	\$ 6,100	\$ 24,800	\$ 34,000
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	N/A	\$ -	\$ -	\$ -	\$ -
6.3	BUILDING SUMP PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.4	AGITATOR FOR SUMP PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.5	PIPING - MECHANICAL		\$ 85,700	\$ 45,900	\$ 153,200	\$ 284,800
6.6	BYPRODUCT WASTE SILO	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	\$ -	\$ -	\$ -	\$ -
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICED TO BOTTOM ASH POND	\$ -	\$ -	\$ -	\$ -
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.15	LOAD OUT AREA PDC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.16	MCC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.17	EMERGENCY POWER SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.18	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.19	RACEWAY, CABLE TRAY, & CONDUIT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 1 FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-9	Estimate No.: 30925B Project No.: 12756-001 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.20	GROUNDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.22	LOW VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.23	CONTROL & INSTRUMENT CABLE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.24	DUCT BANK	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.25	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.26	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
6.27	SECURITY SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 85,700	\$ 45,900	\$ 153,200	\$ 284,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 4,300	\$ 11,700	\$ 55,900	\$ 71,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 90,000	\$ 57,600	\$ 209,100	\$ 356,700

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924B)				
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ -	\$ -	\$ -
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ -
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	\$ -	\$ -	\$ -	\$ -
9.0	COMPRESSED AIR SYSTEM					
9.1	AIR COMPRESSOR & AUXILIARIES	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
9.2	PIPING - MECHANICAL		\$ 61,100	\$ 66,200	\$ 175,900	\$ 303,200
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
9.4	AIR COMPRESSOR BUILDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
9.5	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
9.6	RACEWAY, CABLE TRAY, & CONDUIT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
9.7	GROUNDING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
9.8	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
9.9	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 61,100	\$ 66,200	\$ 175,900	\$ 303,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 3,100	\$ 16,900	\$ 64,400	\$ 84,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	\$ 64,200	\$ 83,100	\$ 240,300	\$ 387,500
10.0	SERVICE WATER SYSTEM					
10.1	PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
10.2	PIPING - MECHANICAL		\$ 68,500	\$ 85,300	\$ 181,600	\$ 335,400
10.3	PIPING - FIRE PROTECTION SYSTEM		\$ 48,300	\$ 38,900	\$ 82,800	\$ 170,000
10.4	TANKS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
10.6	ELECTRICAL	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 116,800	\$ 124,200	\$ 264,400	\$ 505,400

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 5,800	\$ 31,700	\$ 95,700	\$ 133,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	\$ 122,600	\$ 155,900	\$ 360,100	\$ 638,600
11.0	POTABLE WATER SYSTEM					
11.1	PUMPS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)				
11.2	PIPING - MECHANICAL		\$ 38,900	\$ 53,800	\$ 148,400	\$ 241,100
11.3	TANKS		\$ -	\$ -	\$ -	\$ -
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ -	\$ -	\$ -
11.5	ELECTRICAL	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 38,900	\$ 53,800	\$ 148,400	\$ 241,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,900	\$ 13,700	\$ 54,500	\$ 70,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	\$ 40,800	\$ 67,500	\$ 202,900	\$ 311,300
12.0	FGD SUBSTATION					
12.1	TRANSFORMERS		\$ 800,000	\$ -	\$ 163,900	\$ 963,900
12.2	TRANSFORMER PDC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.3	TRANSFORMER PDC - FOUNDATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.4	138KV MAIN FEEDER & TERMINATIONS		\$ 264,000	\$ -	\$ 254,000	\$ 518,000

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
12.5	SWITCHGEAR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.6	MCC	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.7	CABLE BUS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.8	PANELS - RELAY	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
12.9	MIMIC PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.10	EMERGENCY POWER SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.11	GROUNDING		\$ 11,600	\$ -	\$ 29,900	\$ 41,500
12.12	LIGHTING/ TRANSFORMERS & PANELS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING ALLOWANCE	\$ 25,000	\$ -	\$ 56,800	\$ 81,800
12.14	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 20,900	\$ 99,500	\$ 120,400
12.15	DUCT BANK		\$ -	\$ 15,000	\$ 21,800	\$ 36,800
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.17	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 7,200	\$ 9,000	\$ 16,200
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 3,200	\$ 9,000	\$ 12,200
12.19	FOUNDATION FOR AUX TRANSFORMER		\$ -	\$ 63,300	\$ 184,900	\$ 248,200
12.20	FIREWALL FOR TRANSFORMERS		\$ -	\$ 4,300	\$ 7,600	\$ 11,900

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
12.21	COMMUNICATIONS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.22	LIGHTNING PROTECTION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
12.23	SECURITY SYSTEM	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,100,600	\$ 113,900	\$ 836,400	\$ 2,050,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 55,000	\$ 29,000	\$ 308,414	\$ 392,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	\$ 1,155,600	\$ 142,900	\$ 1,144,800	\$ 2,443,400
13.0	FGD DCS SYSTEM					
13.1	DCS	3400 I/O POINTS. INCLUDES CONTROLS FOR THE NID + SCR SYSTEM	\$ 2,550,000	\$ -	\$ 864,400	\$ 3,414,400
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	\$ 300,000	\$ -	\$ -	\$ 300,000
13.3	LOCALLY MOUNTED INSTRUMENTS	NID + SCR	\$ -	\$ 603,300	\$ 715,200	\$ 1,318,500
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,850,000	\$ 603,300	\$ 1,579,600	\$ 5,032,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 142,500	\$ 153,800	\$ 590,000	\$ 886,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	\$ 2,992,500	\$ 757,100	\$ 2,169,600	\$ 5,919,300

Sargent & Lundy, LLC	AEP	Estimate No.:	30925B
	BIG SANDY UNIT 1	Project No.:	12756-001
	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU	Date:	11/24/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
	ATTACHMENT 1-9	Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
14.0	CEM SYSTEM					
14.1	CEM	PROVIDED BY AEP	\$ 1,910,000	\$ 825,000	\$ 465,000	\$ 3,200,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,910,000	\$ 825,000	\$ 465,000	\$ 3,200,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ 480,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM	\$ -	\$ -	\$ -	\$ 3,680,000
15.0	TRUCK & RAIL INFRASTRUCTURE					
15.1	EXISTING RAILROAD IMPROVEMENTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
15.2	EXISTING RAILROAD IMPROVEMENTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
15.3	NEW RAILROAD TRACK	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
15.4	FIELD FABRICATED TURNOUTS	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
15.5	RAIL SCALE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
15.6	NEW CONCRETE ENCASEMENT	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ -	\$ -	\$ -
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ -
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	\$ -	\$ -	\$ -	\$ -

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 1 FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-9	Estimate No.: 30925B Project No.: 12756-001 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
16.0	SITE IMPROVEMENTS - CIVIL WORK					
16.1	SITE GRADING	SCR AREA ONLY	\$ -	\$ -	\$ 79,000	\$ 79,000
16.2	ROADS & SURFACING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	\$ -	\$ 36,500	\$ 73,000	\$ 109,500
16.4	TRUCK SCALE & CONCRETE APPROACH	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.5	PROCESS WATER STORAGE BASIN	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.7	STORM WATER DRAINAGE TRENCH	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.8	STORM WATER RUNOFF POND	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.10	OILY WATER SEWER	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.11	OIL SEPARATOR	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -

Sargent & Lundy, LLC	AEP	Estimate No.:	30925B
	BIG SANDY UNIT 1	Project No.:	12756-001
	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU	Date:	11/24/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
	ATTACHMENT 1-9	Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
16.12	SANITARY SEWER	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.13	SANITARY LIFT STATION	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.14	CONSTRUCTION LAYDOWN AREA	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.15	CRAFT PARKING	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.16	CONTRACTOR OFFICES (AREA)	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.17	TRUCK WASH AREA	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.18	NEW PERMANENT STORAGE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.19	FOUNDATIONS FOR THE NEW WAREHOUSE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.20	NEW TEMPORARY STORAGE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -
16.21	FOUNDATIONS FOR TEMPORARY STORAGE	COMMON WITH UNIT 2 (INCLUDED WITH UNIT 2 COST ESTIMATE 30924A)	\$ -	\$ -	\$ -	\$ -

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 1 FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-9	Estimate No.: 30925B Project No.: 12756-001 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 1 BUS OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	\$ 702,000	\$ -	\$ -	\$ 702,000
16.23	EROSION & SEDIMENT CONTROL		\$ -	\$ 12,500	\$ 20,500	\$ 33,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 702,000	\$ 49,000	\$ 172,500	\$ 923,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 35,100	\$ 12,500	\$ 60,100	\$ 107,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	\$ 737,100	\$ 61,500	\$ 232,600	\$ 1,031,200
17.0	BOP ITEMS					
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	\$ -	\$ 14,000	\$ 43,600	\$ 57,600
17.2	HEAT TRACING		\$ -	\$ 82,200	\$ 117,500	\$ 199,700
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		\$ -	\$ 99,700	\$ 382,400	\$ 482,100
17.4	HOISTS & TROLLEYS		\$ 120,000	\$ 140,000	\$ 163,600	\$ 423,600
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	\$ -	\$ 35,000	\$ 145,900	\$ 180,900
17.6	MISC PIPE SUPPORT FOUNDATIONS		\$ -	\$ 7,800	\$ 15,800	\$ 23,600
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	\$ 6,000	\$ 1,000	\$ 6,100	\$ 13,100
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR	\$ -	\$ 60,000	\$ 49,100	\$ 109,100
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 126,000	\$ 439,700	\$ 924,000	\$ 1,489,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,300	\$ 112,124	\$ 361,709	\$ 480,132
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	\$ 132,300	\$ 551,800	\$ 1,285,700	\$ 1,969,800

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 1 FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-9	Estimate No.: 30925B Project No.: 12756-001 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
18.1	RELOCATE HYDROGEN STORAGE TANK	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A	\$ -	\$ -	\$ -	\$ -
18.2	NEW HYDROGEN LINE TO PLANT	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A	\$ -	\$ -	\$ -	\$ -
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	\$ -	\$ 75,000	\$ 115,900	\$ 190,900
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 55 TON DUCTWORK	\$ -	\$ 179,600	\$ 343,000	\$ 522,600
18.5	RELOCATED WAREHOUSE - FOUNDATIONS	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A	\$ -	\$ -	\$ -	\$ -
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	INCLUDED WITH UNIT 2 COST ESTIMATE 30924A	\$ -	\$ -	\$ -	\$ -
18.7	DUCTWORK REMOVAL FROM ECONOMIZER OUTLET TO AIR HEATER INLET	ALLOWANCE FOR 40 TON DUCTWORK	\$ -	\$ -	\$ 24,800	\$ 24,800
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 254,600	\$ 483,700	\$ 738,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 64,900	\$ 167,100	\$ 232,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$ -	\$ 319,500	\$ 650,800	\$ 970,300
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 750,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ -	\$ -	\$ 750,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ 112,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT	\$ -	\$ -	\$ -	\$ 862,500

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 1 FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU COST ESTIMATE SUMMARY ATTACHMENT 1-9	Estimate No.: 30925B Project No.: 12756-001 Date: 11/24/2010 Preparer: MNO Reviewer: JMK Approver: PEF
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
20.0	SCR					
20.1	CATALYST		\$ 3,250,000	\$ -	\$ 869,100	\$ 4,119,100
20.2	CRANES & HOISTS	CATALYST REPLACEMENT TROLLEY, 8 TONS	\$ 33,600	\$ -	\$ 14,600	\$ 48,200
20.3	AMMONIA INJECTION GRID		\$ 80,000	\$ -	\$ 99,300	\$ 179,300
20.4	STATIC MIXER		\$ 320,000	\$ -	\$ 149,000	\$ 469,000
20.5	SONIC HORNS		\$ 80,000	\$ -	\$ 49,100	\$ 129,100
20.6	PALLET TRUCKS		\$ 30,000	\$ -	\$ -	\$ 30,000
20.7	SCR REACTOR VESSEL		\$ -	\$ 1,300,000	\$ 2,483,100	\$ 3,783,100
20.8	ACCESS DOORS	24"X36", SCR REACTOR	\$ -	\$ 7,800	\$ 7,400	\$ 15,200
20.9	ACCESS DOORS	REMOVABLE CATALYST DOOR, 6'X8', SCR REACTOR	\$ -	\$ 60,000	\$ 44,700	\$ 104,700
20.10	EXPANSION JOINTS		\$ -	\$ 230,000	\$ 204,400	\$ 434,400
20.11	DUCTWORK	INLET (120T) / OUTLET (150T) DUCT FOR SCR	\$ -	\$ 877,500	\$ 1,676,100	\$ 2,553,600
20.12	SCR ACCESS GALLERY	4 LEVELS, 800 SF EACH LEVEL	\$ -	\$ 144,000	\$ 124,500	\$ 268,500
20.13	SCR STAIR TOWER		\$ -	\$ 72,500	\$ 72,900	\$ 145,400
20.14	ELEVATOR	MAINTENANCE ELEVATOR - SUBCONTRACT COST INCLUDES LABOR	\$ 325,000	\$ -	\$ -	\$ 325,000
20.15	CONCRETE PIT FOR THE ELEVATOR		\$ -	\$ 2,300	\$ 6,900	\$ 9,200
20.16	PIPING & SUPPORTS - MECHANICAL		\$ 55,500	\$ 95,300	\$ 573,100	\$ 723,900
20.17	SCR SUPPORT STEEL	THREE COAT SHOP PAINT, REACTOR VESSEL	\$ -	\$ 667,000	\$ 671,000	\$ 1,338,000
20.18	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT, INLET / OUTLET DUCTWORK	\$ -	\$ 391,500	\$ 393,900	\$ 785,400
20.19	PIPE RACK FOR AMMONIA PIPING	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -

Sargent & Lundy, LLC	AEP	Estimate No.:	30925B
	BIG SANDY UNIT 1	Project No.:	12756-001
	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU	Date:	11/24/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
	ATTACHMENT 1-9	Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
20.20	SCR REACTOR VESSEL INSULATION		\$ -	\$ 300,000	\$ 526,500	\$ 826,500
20.21	DUCTWORK INSULATION & LAGGING	INLET / OUTLET DUCTWORK	\$ -	\$ 504,000	\$ 987,100	\$ 1,491,100
20.22	SCR REACTOR SUPPORT STEEL - FOUNDATIONS		\$ -	\$ 107,500	\$ 195,700	\$ 303,200
20.23	DUCTWORK SUPPORT STEEL - FOUNDATIONS		\$ -	\$ 37,000	\$ 83,700	\$ 120,700
20.24	SCR PDC - FOUNDATION		\$ -	\$ -	\$ -	\$ -
20.25	PIPE RACK - FOUNDATIONS		\$ -	\$ 46,400	\$ 129,500	\$ 175,900
20.26	CEMS BUILDING FOUNDATION	CEMS BUILDING IS INCLUDED IN CEMS COST PROVIDED BY AEP	\$ -	\$ 13,700	\$ 24,600	\$ 38,300
20.27	SCR PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	\$ -	\$ 107,500	\$ -	\$ 107,500
20.28	MCC		\$ 65,000	\$ -	\$ 6,900	\$ 71,900
20.29	PANEL BOARDS		\$ 15,500	\$ -	\$ 4,500	\$ 20,000
20.30	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 38,400	\$ 90,500	\$ 128,900
20.31	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 19,200	\$ 53,900	\$ 73,100
20.32	GROUNDING		\$ 10,500	\$ -	\$ 28,400	\$ 38,900
20.33	LIGHTING/ TRANSFORMERS & PANELS		\$ 11,000	\$ 5,300	\$ 8,200	\$ 24,500
20.34	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 58,800	\$ 375,800	\$ 434,600
20.35	COMMUNICATIONS		\$ -	\$ 10,000	\$ 9,800	\$ 19,800
20.36	SECURITY SYSTEM		\$ -	\$ 10,000	\$ 9,800	\$ 19,800
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 4,276,100	\$ 5,059,300	\$ 9,844,500	\$ 19,179,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 888,800	\$ 1,290,100	\$ 4,207,100	\$ 6,386,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SCR	\$ 5,164,900	\$ 6,349,400	\$ 14,051,600	\$ 25,565,900

Sargent & Lundy, LLC	AEP	Estimate No.:	30925B
	BIG SANDY UNIT 1	Project No.:	12756-001
	FGD PROJECT - UNIT 1 NID (N/ESP) + SCR - 1.7 LB/MM BTU	Date:	11/24/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
	ATTACHMENT 1-9	Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 38,924,700	\$ 17,216,400	\$ 48,025,600	\$ 104,916,700
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 2,975,700	\$ 4,303,600	\$ 18,516,500	\$ 26,264,600
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 41,900,400	\$ 21,520,000	\$ 66,542,100	\$ 131,181,300
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					\$ 11,000,000
	CONSTRUCTION MANAGEMENT					\$ 3,935,400
	S-U / COMMISSIONING					\$ 1,311,800
	CRAFT START-UP SUPPORT					\$ 565,900
	INITIAL FILLS					\$ 393,500
	OPERATOR & TRAINING MANUALS					\$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					\$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				\$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					\$ 20,506,600
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					\$ 151,687,900
	SPARE PARTS:					\$ 628,500
	SPARE PARTS - CAPITALIZED	0.90				\$ 377,100
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60				\$ 251,400
	CONTINGENCY	14.33				\$ 21,822,700

Sargent & Lundy, LLC	AEP	Estimate No.:	30925B
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	ESCALATION					\$ 24,392,700
	EQUIPMENT					\$ 8,625,100
	MATERIAL					\$ 2,349,400
	LABOR					\$ 10,435,200
	INDIRECTS					\$ 2,983,000
	TOTAL PROJECT COST					\$ 198,531,800
	REFERENCE COSTS:					
A	ESP DEMOLITION	ALLOWANCE FOR 400T STRUCTURE				\$ 332,900
B	ECONOMIZER EXIT GAS TEMPERATURE CONTROL SYSTEM	BY AEP				\$ -



Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
NID Technologies
Volume 1- Summary Report
November 24, 2010

ATTACHMENT 1-10

Incremental Change Cost Estimate Summary:

Unit 2 NID Capital Cost Estimate No. 30727 Base Est-1B (ESP not in Service; 3.0 lb SO₂MMbtu) / Unit 2/ Unit 1&2 Common NID Capital Cost Estimate No. 30924 (ESP not in Service; Unit 1-1.7 lb SO₂/MMbtu; Unit 2-3.0 lb SO₂MMbtu)

Sargent & Lundy, LLC AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10							307270 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost					
1.0	ID FANS											
1.1	ID FANS - OEM EQUIPMENT	1,875,000 ACFM WITH 19,500 HP MOTORS (\$750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	\$ 6,920,000	\$ -	\$ 1,674,400	\$ 8,594,400	8,594,400	0				
1.2	PIPING & SUPPORTS - MECHANICAL		\$ 21,800	\$ 28,700	\$ 120,500	\$ 171,000	171,000	0				
1.3	DAMPERS		\$ 781,000	\$ -	\$ 352,600	\$ 1,133,600	1,133,600	0				
1.4	EXPANSION JOINTS		\$ -	\$ 131,100	\$ 116,500	\$ 247,600	247,600	0				
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	\$ -	\$ 2,600,000	\$ 4,966,200	\$ 7,566,200	8,890,200	1,324,000	Unit 2 Ductwork length increased by 85 ft.			
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ -	\$ 1,160,000	\$ 1,167,000	\$ 2,327,000	2,734,300	407,300	Additional supports due to increased ductwork length.			
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	\$ -	\$ 168,000	\$ 217,200	\$ 385,200	385,200	0				
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLET DUCT TO NID MODULES SUPPLIED WITH THE OEM EQUIPMENT	\$ -	\$ 864,000	\$ 1,692,200	\$ 2,556,200	2,982,300	426,100	Additional insulation due to increased ductwork length.			
1.9	DUCT SUPPORT STEEL - FOUNDATIONS		\$ -	\$ 295,500	\$ 574,000	\$ 869,500	1,088,800	219,300	Additional foundation due to increased ductwork supports.			
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		\$ -	\$ 106,000	\$ 198,700	\$ 304,700	304,700	0				
1.11	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS		\$ -	\$ 273,800	\$ 458,900	\$ 732,700	858,900	126,200	The size of the NID Control / Switchgear Building is increased to house new Unit 1 electrical distribution equipment.			
1.12	NID CONTROL / SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	\$ -	\$ 3,937,500	\$ -	\$ 3,937,500	4,505,000	567,500	The size of the NID Control / Switchgear Building is increased to house new Unit 1 electrical distribution equipment.			
1.13	TRANSFORMERS		\$ 770,000	\$ -	\$ 145,600	\$ 915,600	1,140,200	224,600	The LV Substation originally located at the Transformer PDC has been relocated to the NID Control / Switchgear Building to accommodate feeding common loads.			

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10				Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost					
1.14	SWITCHGEAR		\$ 1,082,000	\$ -	\$ 569,000	\$ 1,651,000	1,945,700	294,700	The LV Substation originally located at the Transformer PDC has been relocated to the NID Control / Switchgear Building to accommodate feeding common loads.			
1.15	CABLE BUS & TERMINATIONS		\$ 756,300	\$ 35,800	\$ 1,316,200	\$ 2,108,300	2,411,900	303,600	The LV Substation originally located at the Transformer PDC has been relocated to the NID Control / Switchgear Building to accommodate feeding common loads.			
1.16	MCC		\$ 120,000	\$ -	\$ 7,200	\$ 127,200	127,200	0				
1.17	MIMIC PANELS		\$ 17,500	\$ -	\$ 4,500	\$ 22,000	22,000	0				
1.18	EMERGENCY POWER SYSTEM		\$ 285,500	\$ -	\$ 38,900	\$ 324,400	324,400	0				
1.19	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C 750KCML- 13.8KV	\$ -	\$ 186,300	\$ 283,200	\$ 469,500	521,600	52,100	The LV Substation originally located at the Transformer PDC has been relocated to the NID Control / Switchgear Building to accommodate feeding common loads.			
1.20	MEDIUM VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 91,600	\$ 393,700	\$ 485,300	485,300	0				
1.21	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 543,000	\$ 794,800	\$ 1,337,800	1,416,700	78,900	The LV Substation originally located at the Transformer PDC has been relocated to the NID Control / Switchgear Building to accommodate feeding common loads.			
1.22	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 345,000	\$ 968,000	\$ 1,313,000	1,325,200	12,200	The LV Substation originally located at the Transformer PDC has been relocated to the NID Control / Switchgear Building to accommodate feeding common loads.			
1.23	GROUNDING		\$ 11,100	\$ -	\$ 37,200	\$ 48,300	48,300	0				
1.24	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500	85,500	0				
1.25	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 1,651,700	\$ 8,113,100	\$ 9,764,800	9,764,800	0				
1.26	DUCT BANK		\$ -	\$ 40,800	\$ 280,000	\$ 320,800	485,300	164,500	Increased due to addition of Unit 1.			
1.27	FOUNDATION FOR TRANSFORMERS		\$ -	\$ 64,600	\$ 188,900	\$ 253,500	253,500	0				
1.28	FIREWALL FOR TRANSFORMERS		\$ -	\$ 3,200	\$ 8,300	\$ 11,500	11,500	0				
1.29	COMMUNICATIONS		\$ -	\$ 17,000	\$ 13,000	\$ 30,000	33,200	3,200	The size of the NID Control / Switchgear Building is increased to house new Unit 1 electrical distribution equipment.			
1.30	LIGHTNING PROTECTION		\$ -	\$ 12,000	\$ 9,200	\$ 21,200	24,200	3,000	The size of the NID Control / Switchgear Building is increased to house new Unit 1 electrical distribution equipment.			
1.31	SECURITY SYSTEM		\$ -	\$ 8,000	\$ 7,000	\$ 15,000	18,000	3,000	The size of the NID Control / Switchgear Building is increased to house new Unit 1 electrical distribution equipment.			
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 10,791,200	\$ 12,593,600	\$ 24,745,500	\$ 48,130,300	52,340,500	4,210,200				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 539,600	\$ 3,211,400	\$ 8,904,700	\$ 12,655,600	13,856,300	1,200,700				

Sargent & Lundy, LLC							AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10		Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)		NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)	
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost									
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 11,330,800	\$ 15,805,000	\$ 33,650,200	\$ 60,785,900	66,196,800	5,410,900								
2.0	NID MODULES															
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J- DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	\$ 50,231,000	\$ -	\$ 32,415,100	\$ 82,646,100	82,646,100	0								
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	\$ 2,419,200	\$ -	\$ -	\$ 2,419,200	2,419,200	0								
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	\$ 58,100	\$ 1,316,900	\$ 1,747,600	\$ 3,122,600	3,122,600	0								
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	\$ 92,200	\$ 2,428,900	\$ 2,544,900	\$ 5,066,000	5,066,000	0								
2.5	PIPING & SUPPORTS - MECHANICAL		\$ 125,200	\$ 174,500	\$ 385,900	\$ 685,600	685,600	0								
2.6	DUCTWORK		\$ -	\$ 4,797,000	\$ 9,162,600	\$ 13,959,600	13,959,600	0								
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ -	\$ 2,140,200	\$ 2,153,200	\$ 4,293,400	4,293,400	0								
2.8	DUCTWORK INSULATION & LAGGING		\$ -	\$ 1,632,000	\$ 3,196,400	\$ 4,828,400	4,828,400	0								
2.9	NID MODULE- FOUNDATIONS		\$ -	\$ 1,087,000	\$ 1,778,100	\$ 2,865,100	2,865,100	0								
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		\$ -	\$ 1,152,000	\$ 2,863,700	\$ 4,015,700	4,015,700	0								
2.11	GROUNDING		\$ -	\$ 16,000	\$ 46,100	\$ 62,100	62,100	0								
2.12	LIGHTING/ TRANSFORMERS & PANELS		\$ 27,000	\$ 75,000	\$ 57,300	\$ 159,300	159,300	0								
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -	0	0								
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 52,952,700	\$ 14,819,500	\$ 56,350,900	\$ 124,123,100	124,123,100	0								
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 3,322,600	\$ 3,779,000	\$ 21,387,300	\$ 28,488,900	28,488,900	0								

Sargent & Lundy, LLC AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10							Estimate No.: 307270	30924B	DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
							Project No.: 12721-000	12756-000		
							Date: 9/29/2010	11/24/2010		
							Preparer: MNO	MNO		
							Reviewer: JMK	JMK		
							Approver: PEF	PEF		
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost			
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	\$ 56,275,300	\$ 18,598,500	\$ 77,738,200	\$ 152,612,000	152,612,000	0		
3.0	NEW STACK									
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 19,350,000	30,500,000	11,150,000	Common stack for Unit 1 & Unit 2.	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ -	\$ -	\$ 19,350,000	30,500,000	11,150,000		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ 2,902,500	4,575,000	1,672,500		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK	\$ -	\$ -	\$ -	\$ 22,252,500	35,075,000	12,822,500		
4.0	LIME HANDLING SYSTEM									
4.1	LIME STORAGE SILO		\$ 6,770,000	\$ -	\$ -	\$ 6,770,000	6,914,000	144,000	Silo size increased for additional storage required for Unit 1 NID. One larger silo will be utilized in lieu of 2 smaller silos (in original Unit 2 cost estimate).	
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	\$ 595,000	\$ -	\$ 477,900	\$ 1,072,900	1,072,900	0		
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	\$ 1,100,000	\$ -	\$ 654,200	\$ 1,754,200	2,001,000	246,800	Increased lime handling system capacity for Unit1.	
4.4	PIPING - MECHANICAL		\$ 88,700	\$ 130,300	\$ 342,600	\$ 561,600	561,600	0		
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		\$ -	\$ 159,500	\$ 160,500	\$ 320,000	359,900	39,900	Higher silo height for increased capacity.	
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	\$ -	\$ 1,885,000	\$ 1,896,400	\$ 3,781,400	3,781,400	0		
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	\$ -	\$ 42,700	\$ 90,100	\$ 132,800	132,800	0		
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		\$ -	\$ 69,600	\$ 147,600	\$ 217,200	217,200	0		
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	\$ 75,000	\$ 335,000	\$ 24,400	\$ 434,400	434,400	0		
4.10	CONCRETE PIT FOR THE ELEVATOR		\$ -	\$ 2,300	\$ 6,900	\$ 9,200	9,200	0		
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	\$ -	\$ 368,100	\$ 676,300	\$ 1,044,400	995,500	(48,900)	Although silo storage capacity is increased, quantity of silos is decreased from two to one.	
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		\$ -	\$ 14,200	\$ 28,600	\$ 42,800	42,800	0		
4.13	PIPE RACK - FOUNDATIONS		\$ -	\$ 239,600	\$ 588,600	\$ 828,200	828,200	0		
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	\$ 170,000	\$ -	\$ 54,600	\$ 224,600	224,600	0		
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	\$ 196,000	\$ -	\$ 104,700	\$ 300,700	300,700	0		
4.16	CABLE BUS DUCT		\$ 134,700	\$ 10,800	\$ 200,200	\$ 345,700	345,700	0		

Sargent & Lundy, LLC							AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10		Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost							
4.17	MCC		\$ 61,800	\$ -	\$ 3,600	\$ 65,400	65,400	0						
4.18	MIMIC PANELS		\$ 17,500	\$ -	\$ 1,400	\$ 18,900	18,900	0						
4.19	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700	132,700	0						
4.20	GROUNDING		\$ 13,300	\$ -	\$ 41,300	\$ 54,600	54,600	0						
4.21	LIGHTING/ TRANSFORMERS & PANELS		\$ 52,000	\$ 135,000	\$ 104,500	\$ 291,500	291,500	0						
4.22	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 310,900	\$ 1,537,100	\$ 1,848,000	1,938,200	90,200	The process water storage basin loads will now be fed from the Lime Unloading Blower / Electrical Building.					
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	\$ -	\$ 144,600	\$ 407,800	\$ 552,400	552,400	0						
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	\$ -	\$ 66,200	\$ 282,300	\$ 348,500	348,500	0						
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 93,000	\$ 143,200	\$ 236,200	252,400	16,200	The process water storage basin loads will now be fed from the Lime Unloading Blower / Electrical Building.					
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 26,200	\$ 73,600	\$ 99,800	112,000	12,200	The process water storage basin loads will now be fed from the Lime Unloading Blower / Electrical Building.					
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	\$ -	\$ 61,100	\$ 116,200	\$ 177,300	177,300	0						
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	\$ -	\$ 3,500	\$ 10,300	\$ 13,800	13,800	0						
4.29	COMMUNICATIONS		\$ -	\$ 34,000	\$ 26,000	\$ 60,000	60,000	0						
4.30	LIGHTNING PROTECTION		\$ -	\$ 6,000	\$ 4,700	\$ 10,700	10,700	0						
4.31	SECURITY SYSTEM		\$ -	\$ 8,000	\$ 7,000	\$ 15,000	15,000	0						
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 9,382,300	\$ 4,145,600	\$ 8,237,000	\$ 21,764,900	22,265,300	500,400						
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 469,100	\$ 1,057,100	\$ 2,988,100	\$ 4,514,400	4,594,000	79,600						
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 9,851,400	\$ 5,202,700	\$ 11,225,100	\$ 26,279,300	26,859,300	580,000						
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID												
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS													
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	\$ 2,822,000	\$ -	\$ 1,609,000	\$ 4,431,000	5,027,500	596,500	Additional byproduct waste handling required for Unit 1 NID.					

Sargent & Lundy, LLC							AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10		Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost							
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	\$ 400,000	\$ -	\$ 296,400	\$ 696,400	696,400	0						
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	\$ 28,000	\$ -	\$ 12,300	\$ 40,300	40,300	0						
6.4	AGITATOR FOR SUMP PUMPS	5 HP	\$ 12,000	\$ -	\$ 4,600	\$ 16,600	16,600	0						
6.5	PIPING - MECHANICAL		\$ 142,800	\$ 131,000	\$ 408,700	\$ 682,500	682,500	0						
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 111' H - 4700 TONS - SUBCONTRACT COST INCLUDES LABOR	\$ 2,630,000	\$ -	\$ -	\$ 2,630,000	3,035,700	405,700	Silo size increased for additional byproduct waste storage required for Unit 1 NID.					
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	\$ -	\$ -	\$ -	\$ -	0	0						
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICED TO BOTTOM ASH POND	\$ -	\$ -	\$ -	\$ -	0	0						
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		\$ -	\$ 162,400	\$ 301,900	\$ 464,300	676,600	212,300	Additional foundation due to larger byproduct waste silo.					
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -	0	0						
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		\$ -	\$ 97,600	\$ 172,100	\$ 269,700	269,700	0						
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	\$ 40,000	\$ 241,500	\$ 26,200	\$ 307,700	307,700	0						
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -	0	0						
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -	0	0						
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	\$ -	\$ 300,000	\$ -	\$ 300,000	300,000	0						
6.16	MCC	480V MCC PER LINE UP	\$ 60,000	\$ -	\$ 3,600	\$ 63,600	63,600	0						
6.17	EMERGENCY POWER SYSTEM		\$ 92,800	\$ -	\$ 19,900	\$ 112,700	112,700	0						
6.18	LIGHTING/ TRANSFORMERS & PANELS		\$ 18,500	\$ 60,000	\$ 44,100	\$ 122,600	122,600	0						
6.19	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 32,500	\$ 189,100	\$ 221,600	221,600	0						
6.20	GROUNDING		\$ -	\$ 4,500	\$ 10,900	\$ 15,400	15,400	0						
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	\$ -	\$ 9,500	\$ 47,900	\$ 57,400	57,400	0						
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 64,700	\$ 80,500	\$ 145,200	145,200	0						

Sargent & Lundy, LLC			AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10				Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost					
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 30,700	\$ 86,200	\$ 116,900	116,900	0				
6.24	DUCT BANK		\$ -	\$ 6,200	\$ 10,600	\$ 16,800	16,800	0				
6.25	COMMUNICATIONS		\$ -	\$ 34,000	\$ 26,000	\$ 60,000	60,000	0				
6.26	LIGHTNING PROTECTION		\$ -	\$ 16,000	\$ 14,000	\$ 30,000	30,000	0				
6.27	SECURITY SYSTEM		\$ -	\$ 8,000	\$ 7,000	\$ 15,000	15,000	0				
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 6,246,100	\$ 1,198,600	\$ 3,371,000	\$ 10,815,700	12,030,200	1,214,500				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 312,300	\$ 305,600	\$ 1,251,300	\$ 1,869,200	2,056,900	187,700				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 6,558,400	\$ 1,504,200	\$ 4,622,300	\$ 12,684,900	14,087,100	1,402,200				
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID										
8.0	ACTIVATED CARBON INJECTION SYSTEM											
8.1	ACI MECHANICAL EQUIPMENT:		\$ 3,046,400	\$ -	\$ 1,012,000	\$ 4,058,400	6,087,600	2,029,200	Increased cost due to common system for Unit 1 & Unit 2			
8.2	PIPING - MECHANICAL		\$ 29,800	\$ 149,800	\$ 377,100	\$ 556,700	871,400	314,700	Increased cost due to common system for Unit 1 & Unit 2			
8.3	ACI SYSTEM - FOUNDATIONS		\$ -	\$ 41,500	\$ 88,000	\$ 129,500	239,800	110,300	Increased cost due to common system for Unit 1 & Unit 2			
8.4	MCC		\$ 61,800	\$ -	\$ 3,600	\$ 65,400	98,200	32,800	Increased cost due to common system for Unit 1 & Unit 2			
8.5	GROUNDING		\$ 5,500	\$ -	\$ 18,600	\$ 24,100	35,700	11,600	Increased cost due to common system for Unit 1 & Unit 2			
8.6	LIGHTING / TRANSFORMERS & PANELS		\$ 26,000	\$ 15,000	\$ 20,400	\$ 61,400	73,400	12,000	Increased cost due to common system for Unit 1 & Unit 2			
8.7	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 89,900	\$ 302,900	\$ 392,800	576,000	183,200	Increased cost due to common system for Unit 1 & Unit 2			
8.8	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	\$ -	\$ 14,400	\$ 18,000	\$ 32,400	45,300	12,900	Increased cost due to common system for Unit 1 & Unit 2			
8.9	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 16,000	\$ 44,900	\$ 60,900	85,300	24,400	Increased cost due to common system for Unit 1 & Unit 2			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,169,500	\$ 326,600	\$ 1,885,500	\$ 5,381,600	8,112,700	2,731,100				
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 158,500	\$ 83,300	\$ 694,500	\$ 936,300	1,422,800	486,500				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	\$ 3,328,000	\$ 409,900	\$ 2,580,000	\$ 6,317,900	9,535,500	3,217,600				

Sargent & Lundy, LLC		AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10				Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF	30924B 12756-000 11/24/2010 MNO JMK PEF	DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost		
9.0	COMPRESSED AIR SYSTEM								
9.1	AIR COMPRESSOR & AUXILIARIES		\$ 848,000	\$ -	\$ 184,600	\$ 1,032,600	1,414,400	381,800	Includes additional capacity for Unit 1.
9.2	PIPING - MECHANICAL		\$ 320,600	\$ 344,800	\$ 875,600	\$ 1,541,000	1,541,000	0	
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS		\$ -	\$ 249,800	\$ 419,700	\$ 669,500	669,500	0	
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H	\$ -	\$ 612,000	\$ -	\$ 612,000	612,000	0	
9.5	LIGHTING/ TRANSFORMERS & PANELS		\$ 11,000	\$ 10,500	\$ 11,400	\$ 32,900	32,900	0	
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -	0	0	
9.7	GROUNDING		\$ 4,500	\$ -	\$ 10,900	\$ 15,400	15,400	0	
9.8	COMMUNICATIONS		\$ -	\$ 34,000	\$ 26,000	\$ 60,000	60,000	0	
9.9	LIGHTNING PROTECTION		\$ -	\$ 10,500	\$ 7,500	\$ 18,000	18,000	0	
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,184,100	\$ 1,261,600	\$ 1,535,700	\$ 3,981,400	4,363,200	381,800	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 59,200	\$ 321,700	\$ 570,900	\$ 951,800	983,800	32,000	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	\$ 1,243,300	\$ 1,583,300	\$ 2,106,600	\$ 4,933,200	5,347,000	413,800	
10.0	SERVICE WATER SYSTEM								
10.1	PUMPS	INCLUDES SELF-CLEANING STRAINERS	\$ 174,000	\$ -	\$ 85,900	\$ 259,900	321,100	61,200	Includes additional capacity for Unit 1.
10.2	PIPING - MECHANICAL		\$ 298,400	\$ 342,800	\$ 688,300	\$ 1,329,500	1,329,500	0	
10.3	PIPING - FIRE PROTECTION SYSTEM		\$ 181,200	\$ 284,600	\$ 673,300	\$ 1,139,100	1,139,100	0	
10.4	TANKS		\$ -	\$ 120,000	\$ -	\$ 120,000	120,000	0	
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 17,300	\$ 41,400	\$ 58,700	72,500	13,800	Additional foundation due to increased capacity for Unit 1.
10.6	ELECTRICAL	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -	0	0	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 653,600	\$ 764,700	\$ 1,488,900	\$ 2,907,200	2,982,200	75,000	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 32,700	\$ 195,000	\$ 542,900	\$ 770,600	783,700	13,100	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	\$ 686,300	\$ 959,700	\$ 2,031,800	\$ 3,677,800	3,765,900	88,100	
11.0	POTABLE WATER SYSTEM								
11.1	PUMPS		\$ 30,000	\$ -	\$ 18,400	\$ 48,400	48,400	0	
11.2	PIPING - MECHANICAL		\$ 99,500	\$ 181,900	\$ 448,200	\$ 729,600	729,600	0	
11.3	TANKS		\$ -	\$ 8,500	\$ -	\$ 8,500	8,500	0	
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 5,200	\$ 9,200	\$ 14,400	14,400	0	
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0	\$ -	\$ -	\$ -	\$ -	0	0	
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 129,500	\$ 195,600	\$ 475,800	\$ 800,900	800,900	0	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,500	\$ 49,900	\$ 173,400	\$ 229,800	229,800	0	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	\$ 136,000	\$ 245,500	\$ 649,200	\$ 1,030,700	1,030,700	0	

Sargent & Lundy, LLC							AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10		Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost							
12.0	FGD SUBSTATION													
12.1	TRANSFORMERS		\$ 1,560,000	\$ -	\$ 273,100	\$ 1,833,100	1,608,500	(224,600)	The LV Substation will be relocated to the NID Control / Switchgear Building to accommodate feeding common Unit loads.					
12.2	TRANSFORMER PDC	15W X 45' X 10'H. SUBCONTRACT PRICE INCLUDES LABOR	\$ 202,500	\$ -	\$ -	\$ 202,500	202,500	0						
12.3	TRANSFORMER PDC - FOUNDATION		\$ -	\$ 73,200	\$ 146,900	\$ 220,100	220,100	0						
12.4	138KV MAIN FEEDER & TERMINATIONS		\$ 264,000	\$ -	\$ 254,000	\$ 518,000	915,600	397,600	Two 138 kV GOAB switches, additional support structures, and switchyard modifications are required to provide 138 kV feeds to both the Unit 1 & Unit 2 FGD 138/13.8 kV transformers.					
12.5	SWITCHGEAR		\$ 714,200	\$ -	\$ 121,600	\$ 835,800	638,500	(197,300)	The LV Substation will be relocated to the NID Control / Switchgear Building to accommodate feeding common Unit loads.					
12.6	MCC	480V MCC, PER LINE UP	\$ 60,000	\$ -	\$ 3,600	\$ 63,600	63,600	0						
12.7	CABLE BUS		\$ 181,100	\$ 18,000	\$ 290,200	\$ 489,300	185,600	(303,700)	The LV Substation will be relocated to the NID Control / Switchgear Building to accommodate feeding common Unit loads.					
12.8	PANELS - RELAY		\$ 100,000	\$ -	\$ 9,100	\$ 109,100	109,100	0						
12.9	MIMIC PANELS		\$ 17,500	\$ -	\$ 4,500	\$ 22,000	22,000	0						
12.10	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700	132,700	0						
12.11	GROUNDING		\$ 23,300	\$ -	\$ 59,100	\$ 82,400	82,400	0						
12.12	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500	85,500	0						
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING ALLOWANCE	\$ 25,000	\$ -	\$ 56,800	\$ 81,800	81,800	0						
12.14	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 390,600	\$ 1,918,600	\$ 2,309,200	2,214,400	(94,800)	The Process water storage basin will not be fed from this area.					
12.15	DUCT BANK		\$ -	\$ 26,200	\$ 54,300	\$ 80,500	80,500	0						

Sargent & Lundy, LLC							AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10		Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost							
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	\$ -	\$ 16,700	\$ 47,100	\$ 63,800	0	(63,800)	The LV Substation originally located at the Transformer PDC has been relocated to the NID Control / Switchgear Building to accommodate feeding common loads.					
12.17	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 96,600	\$ 147,700	\$ 244,300	165,200	(79,100)	1. The LV Substation will be relocated to the NID Control / Switchgear Building to accommodate feeding common Unit loads. 2. The Process water storage basin will not be fed from this area.					
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 21,800	\$ 61,100	\$ 82,900	70,700	(12,200)	The Process water storage basin will not be fed from this area.					
12.19	FOUNDATION FOR AUX TRANSFORMER		\$ -	\$ 70,200	\$ 205,400	\$ 275,600	375,200	99,600	The LV Substation will be relocated to the NID Control / Switchgear Building to accommodate feeding common Unit loads. Also includes foundations for 138kV switch & OH line.					
12.20	FIREWALL FOR TRANSFORMERS		\$ -	\$ 4,300	\$ 7,600	\$ 11,900	11,900	0						
12.21	COMMUNICATIONS		\$ -	\$ 17,000	\$ 13,000	\$ 30,000	30,000	0						
12.22	LIGHTNING PROTECTION		\$ -	\$ 4,000	\$ 2,000	\$ 6,000	6,000	0						
12.23	SECURITY SYSTEM		\$ -	\$ 8,000	\$ 7,000	\$ 15,000	15,000	0						
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,281,900	\$ 776,600	\$ 3,736,600	\$ 7,795,100	7,316,800	(478,300)						
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 164,100	\$ 198,000	\$ 1,350,783	\$ 1,712,900	1,608,700	(104,200)						
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	\$ 3,446,000	\$ 974,600	\$ 5,087,400	\$ 9,508,000	8,925,500	(582,500)						
13.0	FGD DCS SYSTEM													
13.1	DCS	3200 I/O POINTS	\$ 2,400,000	\$ -	\$ 813,600	\$ 3,213,600	3,213,600	0						
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	\$ 300,000	\$ -	\$ -	\$ 300,000	300,000	0						
13.3	LOCALLY MOUNTED INSTRUMENTS		\$ -	\$ 650,400	\$ 852,900	\$ 1,503,300	1,503,300	0						
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,700,000	\$ 650,400	\$ 1,666,500	\$ 5,016,900	5,016,900	0						
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 135,000	\$ 165,900	\$ 622,300	\$ 923,200	923,200	0						
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	\$ 2,835,000	\$ 816,300	\$ 2,288,800	\$ 5,940,100	5,940,100	0						
14.0	CEM SYSTEM													
14.1	CEM	PROVIDED BY AEP	\$ 1,260,000	\$ 540,000	\$ 310,000	\$ 2,110,000	2,110,000	0						
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,260,000	\$ 540,000	\$ 310,000	\$ 2,110,000	2,110,000	0						

Sargent & Lundy, LLC							AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10		Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost							
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ 316,500	316,500	0						
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM	\$ -	\$ -	\$ -	\$ 2,426,500	2,426,500	0						
15.0	TRUCK & RAIL INFRASTRUCTURE													
15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF	\$ -	\$ 660,200	\$ 689,200	\$ 1,349,400	1,349,400	0						
15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF	\$ -	\$ 1,008,800	\$ 1,055,600	\$ 2,064,400	2,064,400	0						
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12" SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	\$ -	\$ 252,000	\$ 213,100	\$ 465,100	465,100	0						
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	\$ -	\$ 90,000	\$ 54,800	\$ 144,800	144,800	0						
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	\$ 212,500	\$ -	\$ -	\$ 212,500	212,500	0						
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION	\$ -	\$ 33,200	\$ 71,400	\$ 104,600	104,600	0						
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 212,500	\$ 2,044,200	\$ 2,084,100	\$ 4,340,800	4,340,800	0						
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,600	\$ 521,300	\$ 779,600	\$ 1,311,500	1,311,500	0						
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	\$ 223,100	\$ 2,565,500	\$ 2,863,700	\$ 5,652,300	5,652,300	0						
16.0	SITE IMPROVEMENTS - CIVIL WORK													
16.1	SITE GRADING		\$ -	\$ -	\$ 555,200	\$ 555,200	713,200	158,000	Includes additional area for Unit 1 common items.					
16.2	ROADS & SURFACING		\$ -	\$ 1,204,900	\$ 1,667,500	\$ 2,872,400	2,872,400	0						
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	\$ -	\$ 36,500	\$ 73,000	\$ 109,500	109,500	0						
16.4	TRUCK SCALE & CONCRETE APPROACH		\$ 170,000	\$ 27,300	\$ 92,000	\$ 289,300	289,300	0						
16.5	PROCESS WATER STORAGE BASIN		\$ 60,000	\$ 81,600	\$ 240,300	\$ 381,900	381,900	0						
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE		\$ -	\$ 47,000	\$ 105,400	\$ 152,400	152,400	0						

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost							
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	\$ -	\$ 526,500	\$ 535,800	\$ 1,062,300	1,062,300	0						
16.8	STORM WATER RUNOFF POND		\$ -	\$ 15,000	\$ 122,600	\$ 137,600	137,600	0						
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE		\$ 90,000	\$ 42,300	\$ 182,200	\$ 314,500	314,500	0						
16.10	OILY WATER SEWER		\$ 4,500	\$ 112,600	\$ 236,000	\$ 353,100	353,100	0						
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	\$ 100,000	\$ -	\$ 116,100	\$ 216,100	216,100	0						
16.12	SANITARY SEWER		\$ -	\$ 22,200	\$ 96,900	\$ 119,100	119,100	0						
16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH TWO PUMPS, 100 GPM TOTAL	\$ 150,000	\$ -	\$ 49,200	\$ 199,200	199,200	0						
16.14	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	\$ -	\$ 700,000	\$ 828,000	\$ 1,528,000	1,833,600	305,600	Increased laydown area to handle Unit 1 construction.					
16.15	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	\$ -	\$ 180,000	\$ 414,200	\$ 594,200	713,100	118,900	Increased craft parking area to handle Unit 1 construction.					
16.16	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 5,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	\$ -	\$ 45,000	\$ 103,600	\$ 148,600	178,300	29,700	Increased contractor office area to handle Unit 1 construction.					

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost										
16.17	TRUCK WASH AREA		\$ -	\$ 47,300	\$ 83,100	\$ 130,400	130,400	0									
16.18	NEW PERMANENT STORAGE	INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	\$ 850,000	\$ -	\$ -	\$ 850,000	850,000	0									
16.19	FOUNDATIONS FOR THE NEW WAREHOUSE		\$ -	\$ 273,500	\$ 450,200	\$ 723,700	723,700	0									
16.20	NEW TEMPORARY STORAGE	WEATHER TIGHT CANVAS ENCLOSURE. INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	\$ 450,000	\$ -	\$ -	\$ 450,000	450,000	0									
16.21	FOUNDATIONS FOR TEMPORARY STORAGE		\$ -	\$ 99,500	\$ 157,200	\$ 256,700	256,700	0									
16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 2 BUSES OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	\$ 1,368,000	\$ -	\$ -	\$ 1,368,000	1,368,000	0									
16.23	EROSION & SEDIMENT CONTROL		\$ -	\$ 12,500	\$ 20,500	\$ 33,000	33,000	0									
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,242,500	\$ 3,473,700	\$ 6,129,000	\$ 12,845,200	13,457,400	612,200									
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 162,100	\$ 885,800	\$ 2,226,600	\$ 3,274,500	3,464,500	190,000									
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	\$ 3,404,600	\$ 4,359,500	\$ 8,355,600	\$ 16,119,700	16,921,900	802,200									
17.0	BOP ITEMS																
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	\$ -	\$ 34,000	\$ 106,000	\$ 140,000	140,000	0									
17.2	HEAT TRACING		\$ -	\$ 175,600	\$ 248,500	\$ 424,100	424,100	0									
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		\$ -	\$ 176,700	\$ 677,900	\$ 854,600	854,600	0									
17.4	HOISTS & TROLLEYS		\$ 150,000	\$ 175,000	\$ 204,400	\$ 529,400	529,400	0									
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	\$ -	\$ 122,500	\$ 510,600	\$ 633,100	633,100	0									
17.6	MISC PIPE SUPPORT FOUNDATIONS		\$ -	\$ 10,500	\$ 21,000	\$ 31,500	31,500	0									

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17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	\$ 30,000	\$ 5,000	\$ 30,700	\$ 65,700	65,700	0						
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	\$ -	\$ 300,000	\$ 245,300	\$ 545,300	545,300	0						
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 180,000	\$ 999,300	\$ 2,044,400	\$ 3,223,700	3,223,700	0						
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 9,000	\$ 254,822	\$ 786,346	\$ 1,050,167	1,050,167	0						
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	\$ 189,000	\$ 1,254,100	\$ 2,830,700	\$ 4,273,900	4,273,900	0						
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE													
18.1	RELOCATE HYDROGEN STORAGE TANK		\$ -	\$ 15,600	\$ 86,800	\$ 102,400	102,400	0						
18.2	NEW HYDROGEN LINE TO PLANT		\$ -	\$ 62,100	\$ 150,600	\$ 212,700	212,700	0						
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	\$ -	\$ 125,000	\$ 170,500	\$ 295,500	295,500	0						
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	\$ -	\$ 276,300	\$ 527,700	\$ 804,000	804,000	0						
18.5	RELOCATED WAREHOUSE - FOUNDATIONS		\$ -	\$ 342,600	\$ 534,900	\$ 877,500	877,500	0						
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	150' L X 75' W X 25' H	\$ -	\$ 95,600	\$ 1,121,500	\$ 1,217,100	1,217,100	0						
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 917,200	\$ 2,592,000	\$ 3,509,200	3,509,200	0						
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 233,900	\$ 927,100	\$ 1,161,000	1,161,000	0						
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$ -	\$ 1,151,100	\$ 3,519,100	\$ 4,670,200	4,670,200	0						

Sargent & Lundy, LLC							AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10		Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost							
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT													
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 750,000	750,000	0						
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ -	\$ -	\$ 750,000	750,000	0						
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ -	\$ -	\$ 112,500	112,500	0						
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT	\$ -	\$ -	\$ -	\$ 862,500	862,500	0						
								0						
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 95,385,900	\$ 44,707,200	\$ 116,652,900	\$ 276,846,000	297,242,900	20,396,900						
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 5,381,300	\$ 11,343,600	\$ 43,205,800	\$ 63,181,200	66,939,300	3,758,100						
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 100,767,200	\$ 56,050,800	\$ 159,858,700	\$ 340,027,200	364,182,200	24,155,000						
	OVERALL PROJECT INDIRECT COSTS													
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					\$ 25,000,000	26,000,000	1,000,000	Increased engineering effort due to coordination and design of common items that will be installed for Unit 1.					
	CONSTRUCTION MANAGEMENT					\$ 10,200,800	10,925,500	724,700	Higher construction management cost due to common items that will be installed for Unit 1.					
	S-U / COMMISSIONING					\$ 3,400,300	3,641,800	241,500	Higher start up and commissioning cost due to common items that will be installed for Unit 1.					
	CRAFT START-UP SUPPORT					\$ 1,374,500	1,419,000	44,500	Higher craft start up support due to common items that will be installed for Unit 1.					
	INITIAL FILLS					\$ 1,020,100	1,092,500	72,400	Higher cost for initial fills due to common items that will be installed for Unit 1.					
	OPERATOR & TRAINING MANUALS					\$ 300,000	300,000	0						
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					\$ 400,000	400,000	0						
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				\$ 2,600,000	2,600,000	0						
	SUBTOTAL - INDIRECT COSTS					\$ 44,295,700	46,378,800	2,083,100						
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					\$ 384,322,900	410,561,000	26,238,100						
	SPARE PARTS:					\$ 1,511,500	1,563,900	52,400						
	SPARE PARTS - CAPITALIZED	0.90				\$ 906,900	938,340	31,440	Higher spare parts cost due to common items that will be installed for Unit 1.					
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60				\$ 604,600	625,560	20,960	Higher spare parts cost due to common items that will be installed for Unit 1.					

Sargent & Lundy, LLC							AEP BIG SANDY UNIT 2 FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU COST ESTIMATE SUMMARY - INCREMENTAL CHANGE ATTACHMENT 1-10		Estimate No.: 307270 Project No.: 12721-000 Date: 9/29/2010 Preparer: MNO Reviewer: JMK Approver: PEF		30924B 12756-000 11/24/2010 MNO JMK PEF		DELTA (UNIT 2 & UNIT 1 COMMON - ORIGINAL UNIT 2 COST EST)	NOTES (EXPLANATION OF COST DIFFERENCES FROM ORIGINAL UNIT 2 ONLY COST ESTIMATE)
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost							
	CONTINGENCY	14.287				\$ 55,124,800	57,265,200	2,140,400	Higher contingency as a result of higher overall cost due to common items that will be installed for Unit 1.					
	ESCALATION					\$ 48,734,300	51,935,300	3,201,000	Higher escalation as a result of higher overall cost due to common items that will be installed for Unit 1.					
	EQUIPMENT					\$ 16,011,200	16,566,100	554,900						
	MATERIAL					\$ 5,863,300	6,315,500	452,200						
	LABOR					\$ 21,653,900	23,603,000	1,949,100						
	INDIRECTS					\$ 5,205,900	5,450,700	244,800						
	TOTAL PROJECT COST					\$ 489,693,500	521,325,400	31,631,900						
	REFERENCE COSTS:													
A	ESP DEMOLITION					\$ 832,300	832,300	0						
B	REMOVE BOOSTER AIR FANS					\$ 111,000	111,000	0						
C	REMOVAL OF FUEL OIL TANK		\$ 1,200,000	\$ 80,000	\$ 469,400	\$ 1,749,400	1,749,400	0						



Big Sandy Unit 1
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD/SCR Cost Estimate
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ATTACHMENT 1-11
Unit 1 NID & SCR/ Unit 2 NID
O&M Costs – Fixed and Variable

Attachment 1-11 O&M Costs – Revision 1

GENERAL

The O&M costs are based on defined inputs from AEP and results of mass balance calculations. Unlike the capital costs that require estimation from previous project and scaling parameters, the O&M cost basis is well defined. Therefore, the O&M costs presented are expected to reflect the actual cost that will be incurred with little variance. The costs are affected by changes in labor rates, commodity pricing, and agreed to minimum staffing requirements. Although these inputs were confirmed by AEP, an uncertainty associated with this pricing is generally in the range of $\pm 10\%$. Based on the typical pricing uncertainty, it is expected that the O&M costs are accurate to $\pm 10\%$.

All O&M costs are presented in constant 2010 dollars.

VARIABLE O&M COSTS

The variable O&M costs include:

- Reagent (lime and urea) and Disposal.
- NID byproduct and dry fly ash removed from the ESP includes 30 wt% dust control water for weight of solids transported to the landfill.
- Makeup water for the process only. The water consumption includes: hydrator water, temperature control water, and dust control water only.
- Activated carbon injection rate is based on 2 lb/MMacfm into the NID system. The 2 lb/MMacfm injection rate should achieve a 90% mercury removal, based on current industry experience.
- Bag replacement every 3 years.
- Cage replacement every 9 years.
- Catalyst replacement is an averaged yearly cost for replacement of one layer of SCR catalyst every 2 years.
- Auxiliary Power (displayed as MW consumed).
- The draft power accounts for the SCR and NID system losses, new ductwork, and all other losses associated with the balance draft conversion (furnace to stack). This will provide a consistent basis for comparison of the various technologies. The operating power is 20% less than the test block power used for cost estimating purposes.

Attachment 1-11 O&M Costs – Revision 1

- A second value for the draft power is provided that shows the estimated requirement for the FGD system only (J-duct through baghouse). The FGD draft power is part of the overall draft power.
- A third value for the draft power is provided that shows the estimated requirement for the SCR system only (4 layers of catalyst, mixing vanes, ammonia injection grid, and inlet/outlet losses). The SCR draft power is part of the overall draft power.
- No forced outages are anticipated due to equipment redundancy designed into the system.

FIXED O&M COSTS

The fixed O&M costs include:

- Operating Labor (NID)

The FGD system will require additional staff to operate the equipment. An absolute minimum number of additional staff was used for determining the fixed O&M costs. Actual staffing requirements would be based on site specific operating experience. The NID estimate was based on:

Operation	Staff
Absorber Island Operation	1 person per shift for 5 shifts (5 operators total)
Total	5 operations staff

Depending on the workload of the balance of the plant operations staff, additional FGD operating labor may be required. Other areas to consider are:

Operation	Staff
Reagent Unloading	2 additional people if the coal handling staff cannot handle the additional duties.
Hydrator/Mixer Operations	5 additional operations staff
Byproduct Loadout	2 additional operators
System Engineer	1 additional position
Total	10 additional operations staff

For FGD technology comparison purposes, the minimum operations staff required was used in the evaluation.



Order-of-Magnitude FGD/SCR Cost Estimate
Big Sandy Plant – Unit 1

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Attachment 1-11 O&M Costs – Revision 1

- Operating Labor (SCR)
No additional staff is anticipated to operate the SCR system.
- Maintenance Labor
Including: maintenance mechanics, I&C technicians, maintenance planner, supervision, and overhead.
- Maintenance Materials
Including: all preventative and corrective maintenance materials for the hydrators, mixers, module dampers, blowers/compressors, fans, sonic horns, etc...

Order-of-Magnitude FGD/SCR Cost Estimate
Big Sandy Plant – Unit 1

Project No. 12756-000
November 24, 2010

Attachment 1-11 O&M Costs – Revision 1

ECONOMIC BASIS

Table 1 shows the data used to generate the costs associated with the retrofit options.

Table 1. Economic Parameters

Unit 1 Capacity Factor (%) ^{Note 1}	85
Unit 2 Capacity Factor (%) ^{Note 2}	85
Operating Labor Rate (\$/hr) ^{Note 3}	50.00
Lime (\$/ton) ^{Note 6}	139 (Delivered by Rail Costs)
Urea (\$/ton) ^{Note 7}	333 (Delivered by Truck Costs)
Activated Carbon (\$/ton) ^{Note 5}	1440 (Delivered by Truck Costs)
By-Product Disposal (\$/ton) ^{Note 4}	8
Makeup Water (\$/1000 gallons)	1.00
Fabric Filter Bag Costs (\$/bag) ^{Note 5}	80
Fabric Filter Cage Costs (\$/cage) ^{Note 5}	30
SCR Catalyst Installed (\$/cubic meter)	6500

Notes:

- 1) Per Order of Magnitude/Relative Capital Installed Cost Estimate Specification (BS2-FGDSCE-052010AD1) Revision 1 dated October 11, 2010 provided by AEP.
- 2) Per Order of Magnitude/Relative Capital Installed Cost Estimate Specification (BS2-FGDSCE-052010) Revision 2 dated September 24, 2010 provided by AEP.
- 3) The labor rate is a total pay and benefits rate.
- 4) Disposal cost for by-product (FGD and/or fly ash), trucking to landfill on private haul road.
- 5) Cost was provided by AEP during the Big Sandy Unit 2 study.
- 6) Provided by AEP on the teleconference on 27-July-2010.
- 7) Provided by AEP by comments to Revision 0.

Order-of-Magnitude FGD/SCR Cost Estimate
Big Sandy Plant – Unit 1

Project No. 12756-000
November 24, 2010

Attachment 1-11 O&M Costs – Revision 1

Table 2. O&M Costs (2010 dollars)

Unit Fuel	#1 1.7 w/o ESP	#2 3.0 w/o ESP
Fixed O&M (\$/year)		
Operating Labor		
NID System	520,000	1,040,000
SCR System	0	NA
Maintenance Material		
NID System	1,650,000	2,350,000
SCR System	58,000	NA
Maintenance Labor		
NID System	1,100,000	1,566,000
SCR System	87,000	NA
Total NID Fixed O&M (\$/year)	3,270,000	4,956,000
Total SCR Fixed O&M (\$/year)	145,000	NA
Variable O&M (\$/year)		
Lime Reagent Cost	3,326,000	20,462,000
Urea Reagent Cost	2,217,000	NA
Activated Carbon	765,000	2,319,000
FGD Byproduct Disposal Cost	1,434,000	5,860,000
Makeup Water Cost	171,000	533,000
Wastewater Treatment Chemicals	NA	NA
Bags and Cages Replacement	222,000	690,000
Catalyst Replacement Cost	542,000	NA
Total NID Variable O&M excluding Auxiliary Power (\$/year)	5,918,000	29,864,000
Total SCR Variable O&M excluding Auxiliary Power (\$/year)	2,759,000	NA
Total NID O&M (\$/year)	9,188,000	34,820,000
Total SCR O&M (\$/year)	2,904,000	NA



Order-of-Magnitude FGD/SCR Cost Estimate
Big Sandy Plant – Unit 1

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Attachment 1-11
O&M Costs – Revision 1

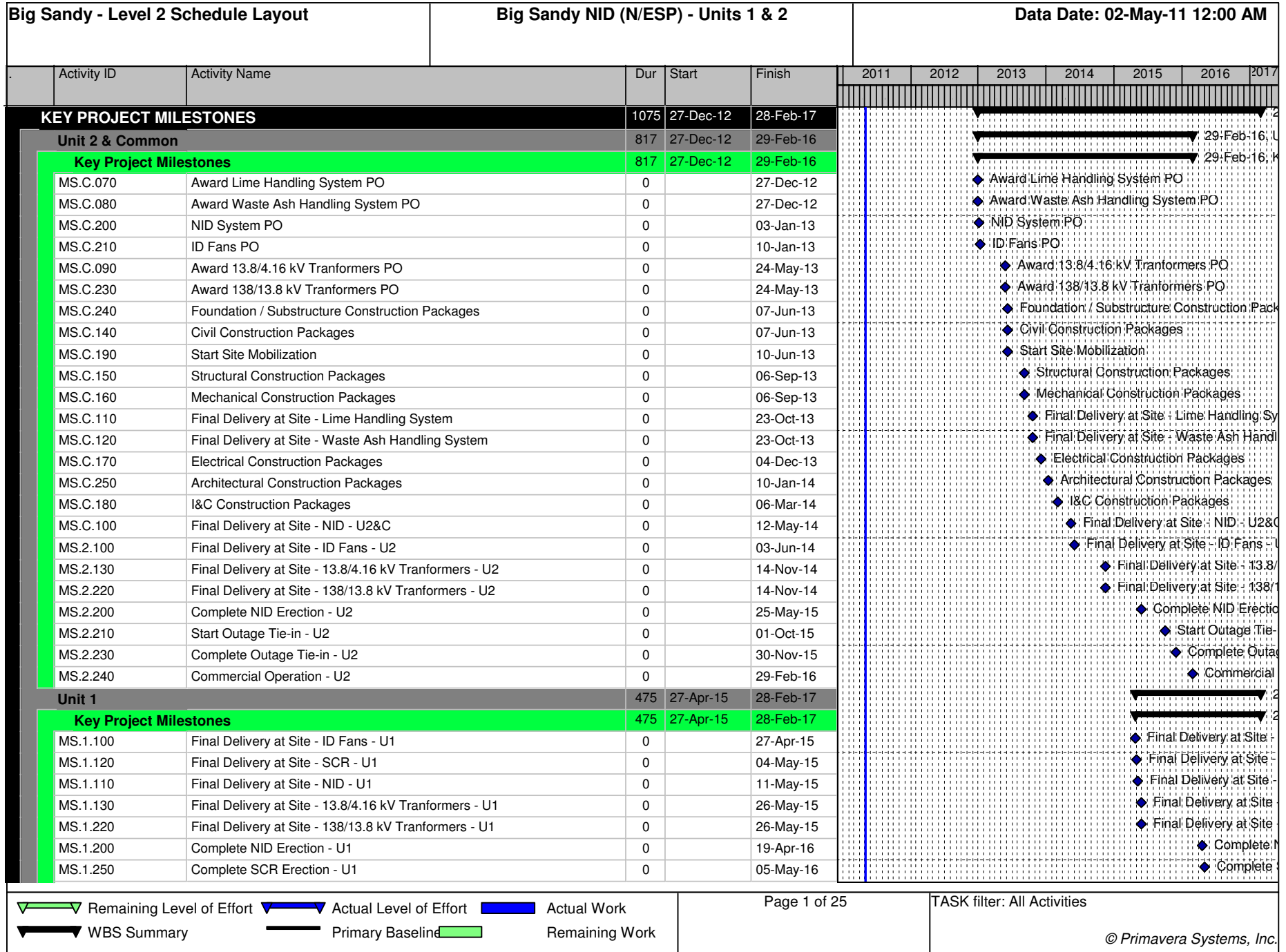
Unit Fuel	#1 1.7 w/o ESP	#2 3.0 w/o ESP
Auxiliary Power at Full Load (MW)		
Overall Draft [in WC]	7 [54]	23 [52]
FGD Draft Only [in WC]	4 [18]	10 [18]
SCR Draft Only [in WC]	1 [6]	NA
FGD Equipment Load	2	5
Existing Booster Fans	NA	-10
Existing ESP	-1	-4
Total Auxiliary Power at Full Load (MW)	8	14

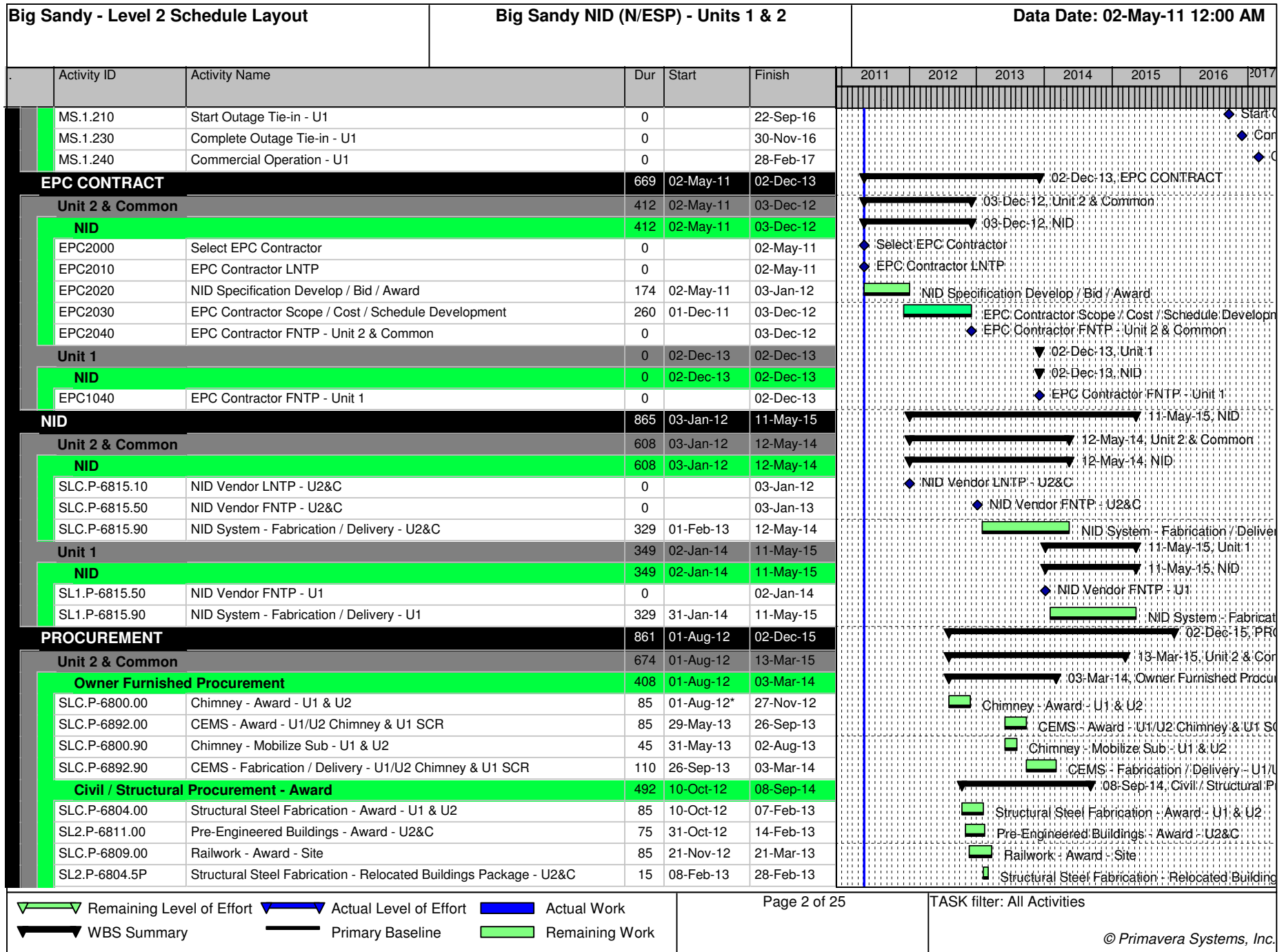
Note: NA = Not Applicable for the technology

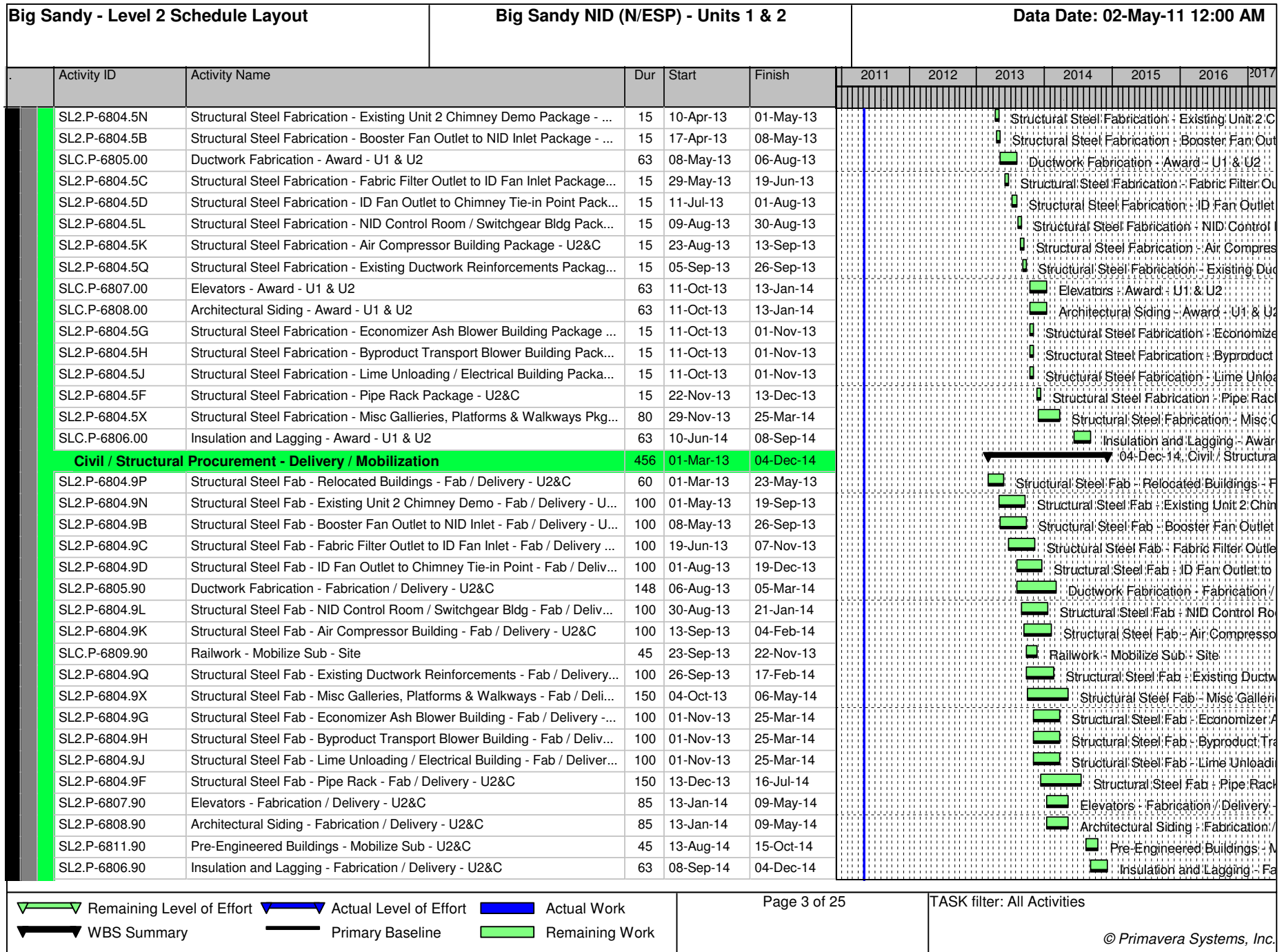


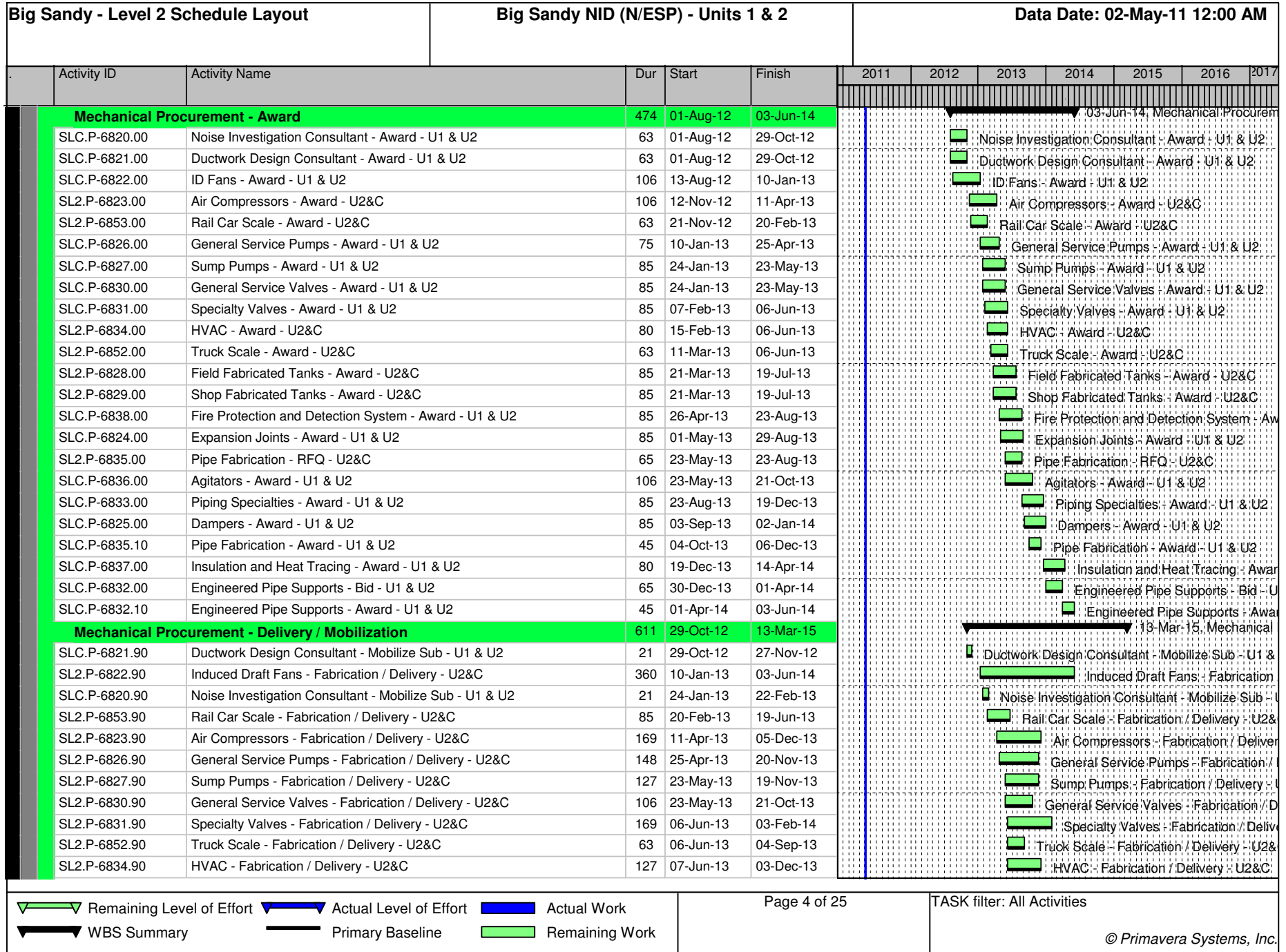
Big Sandy Unit 1
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ATTACHMENT 1-12
Project Schedule – Units 1&2 (NID – ESP out of Service)



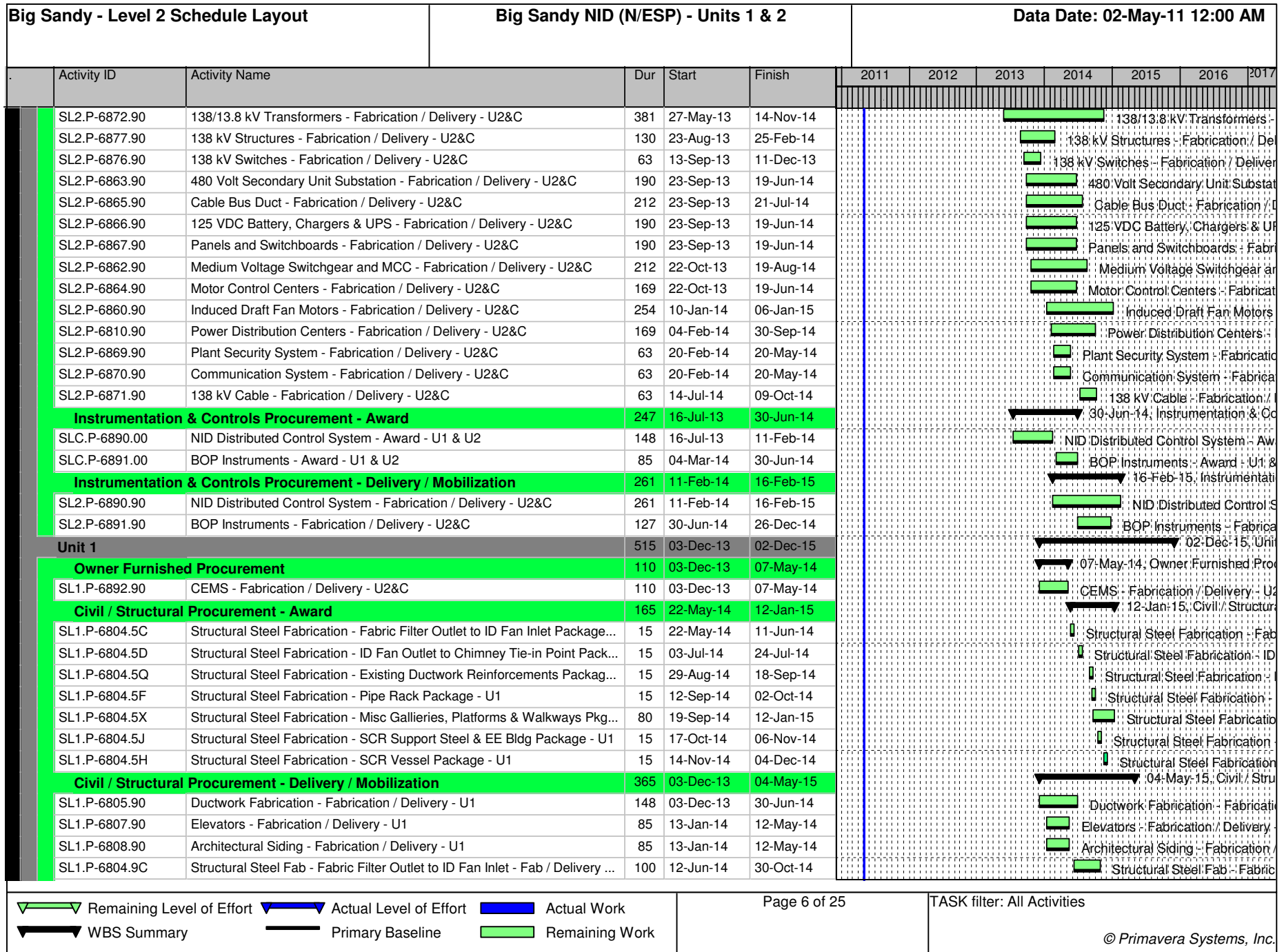


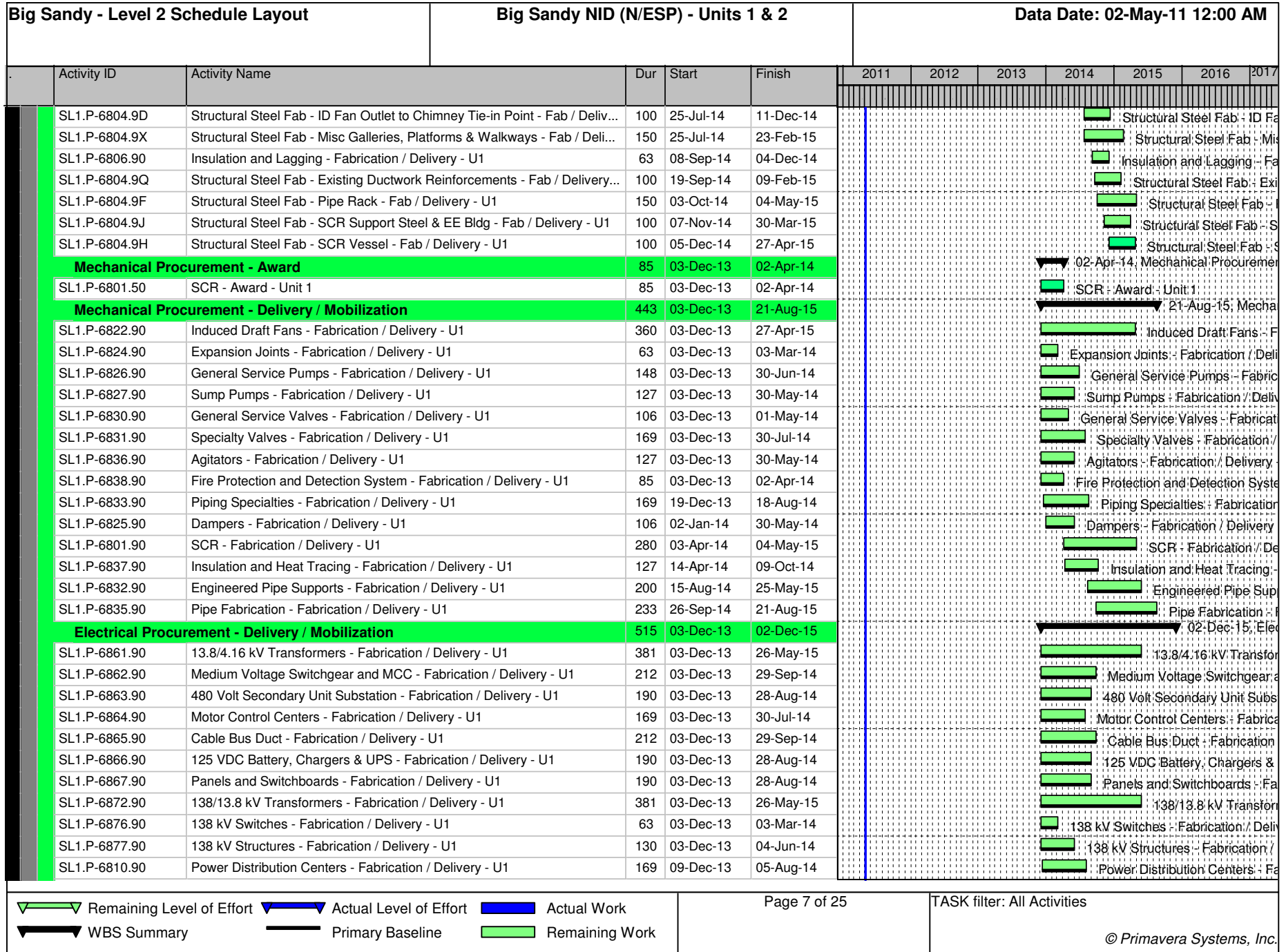


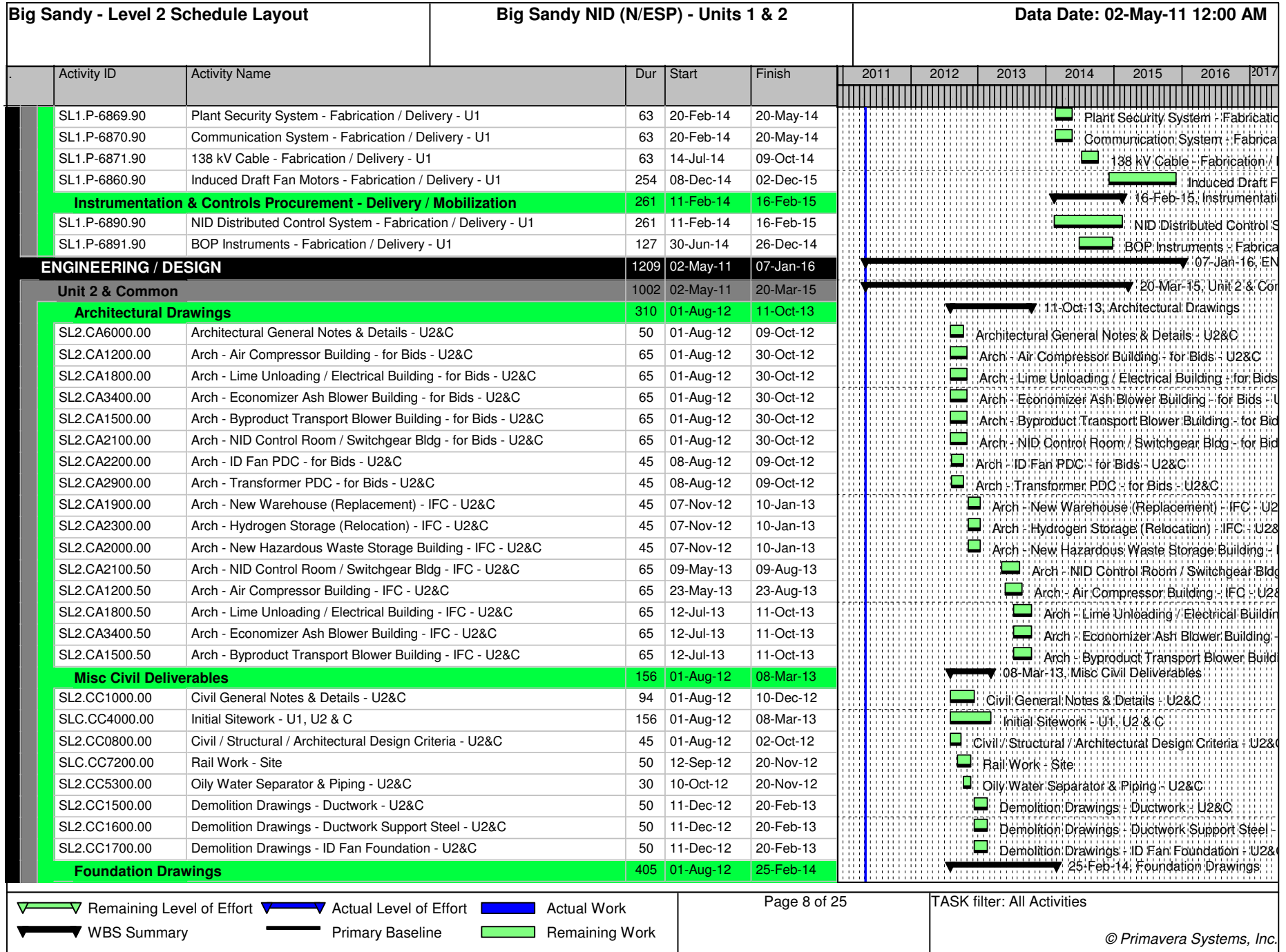


Big Sandy - Level 2 Schedule Layout			Big Sandy NID (N/ESP) - Units 1 & 2			Data Date: 02-May-11 12:00 AM									
Activity ID	Activity Name	Dur	Start	Finish	2011	2012	2013	2014	2015	2016	2017				
SL2.P-6828.90	Field Fabricated Tanks - Mobilize Sub - U2&C	106	19-Jul-13	16-Dec-13											
SL2.P-6829.90	Shop Fabricated Tanks - Fabrication / Delivery - U2&C	190	19-Jul-13	16-Apr-14											
SL2.P-6838.90	Fire Protection and Detection System - Fabrication / Delivery - U2&C	85	26-Aug-13	20-Dec-13											
SL2.P-6824.90	Expansion Joints - Fabrication / Delivery - U2&C	63	29-Aug-13	26-Nov-13											
SL2.P-6836.90	Agitators - Fabrication / Delivery - U2&C	127	21-Oct-13	18-Apr-14											
SL2.P-6835.90	Pipe Fabrication - Fabrication / Delivery - U2&C	233	06-Dec-13	03-Nov-14											
SL2.P-6833.90	Piping Specialties - Fabrication / Delivery - U2&C	169	19-Dec-13	19-Aug-14											
SL2.P-6825.90	Dampers - Fabrication / Delivery - U2&C	106	02-Jan-14	30-May-14											
SL2.P-6837.90	Insulation and Heat Tracing - Fabrication / Delivery - U2&C	127	14-Apr-14	09-Oct-14											
SL2.P-6832.90	Engineered Pipe Supports - Fabrication / Delivery - U2&C	200	03-Jun-14	13-Mar-15											
Material Handling Procurement - Award		106	01-Aug-12	27-Dec-12											
SL2.P-6850.00	Lime Handling System - Award - U2&C	106	01-Aug-12	27-Dec-12											
SL2.P-6851.00	Waste Ash Handling System - Award - U2&C	106	01-Aug-12	27-Dec-12											
SL2.P-6875.00	Economizer Ash Handling System - Award (N/ESP) - U2&C	106	01-Aug-12	27-Dec-12											
Material Handling Procurement - Delivery / Mobilization		212	28-Dec-12	23-Oct-13											
SL2.P-6850.90	Lime Handling System - Fabrication / Delivery - U2&C	212	28-Dec-12	23-Oct-13											
SL2.P-6851.90	Waste Ash Handling System - Fabrication / Delivery - U2&C	212	28-Dec-12	23-Oct-13											
SL2.P-6875.90	Economizer Ash Handling System - Fabrication / Delivery (N/ESP) - U2&C	212	28-Dec-12	23-Oct-13											
Electrical Procurement - Award		452	10-Oct-12	14-Jul-14											
SLC.P-6810.00	Power Distribution Centers - Award - U1 & U2	75	10-Oct-12	24-Jan-13											
SLC.P-6861.00	13.8/4.16 kV Transformers - Award - U1 & U2	106	27-Dec-12	24-May-13											
SLC.P-6872.10	138/13.8 kV Transformers - Award - U1 & U2	106	27-Dec-12	24-May-13											
SLC.P-6860.00	Induced Draft Fan Motors - Award - U1 & U2	106	10-Jan-13	07-Jun-13											
SLC.P-6862.00	Medium Voltage Switchgear and MCC - Award - U1 & U2	106	27-May-13	22-Oct-13											
SLC.P-6863.00	480 Volt Secondary Unit Substation - Award - U1 & U2	85	27-May-13	23-Sep-13											
SLC.P-6864.00	Motor Control Centers - Award - U1 & U2	106	27-May-13	22-Oct-13											
SLC.P-6865.00	Cable Bus Duct - Award - U1 & U2	85	27-May-13	23-Sep-13											
SLC.P-6866.00	125 VDC Battery, Chargers & UPS - Award - U1 & U2	85	27-May-13	23-Sep-13											
SLC.P-6867.00	Panels and Switchboards - Award - U1 & U2	85	27-May-13	23-Sep-13											
SLC.P-6877.00	138 kV Structures - Award - U1 & U2	63	27-May-13	23-Aug-13											
SLC.P-6876.00	138 kV Switches - Award - U1 & U2	63	17-Jun-13	13-Sep-13											
SLC.P-6869.00	Plant Security System - Award - U1 & U2	85	22-Oct-13	20-Feb-14											
SLC.P-6870.00	Communication System - Award - U1 & U2	85	22-Oct-13	20-Feb-14											
SLC.P-6871.00	138 kV Cable - Award - U1 & U2	63	14-Apr-14	14-Jul-14											
Electrical Procurement - Delivery / Mobilization		415	27-May-13	06-Jan-15											
SL2.P-6861.90	13.8/4.16 kV Transformers - Fabrication / Delivery - U2&C	381	27-May-13	14-Nov-14											

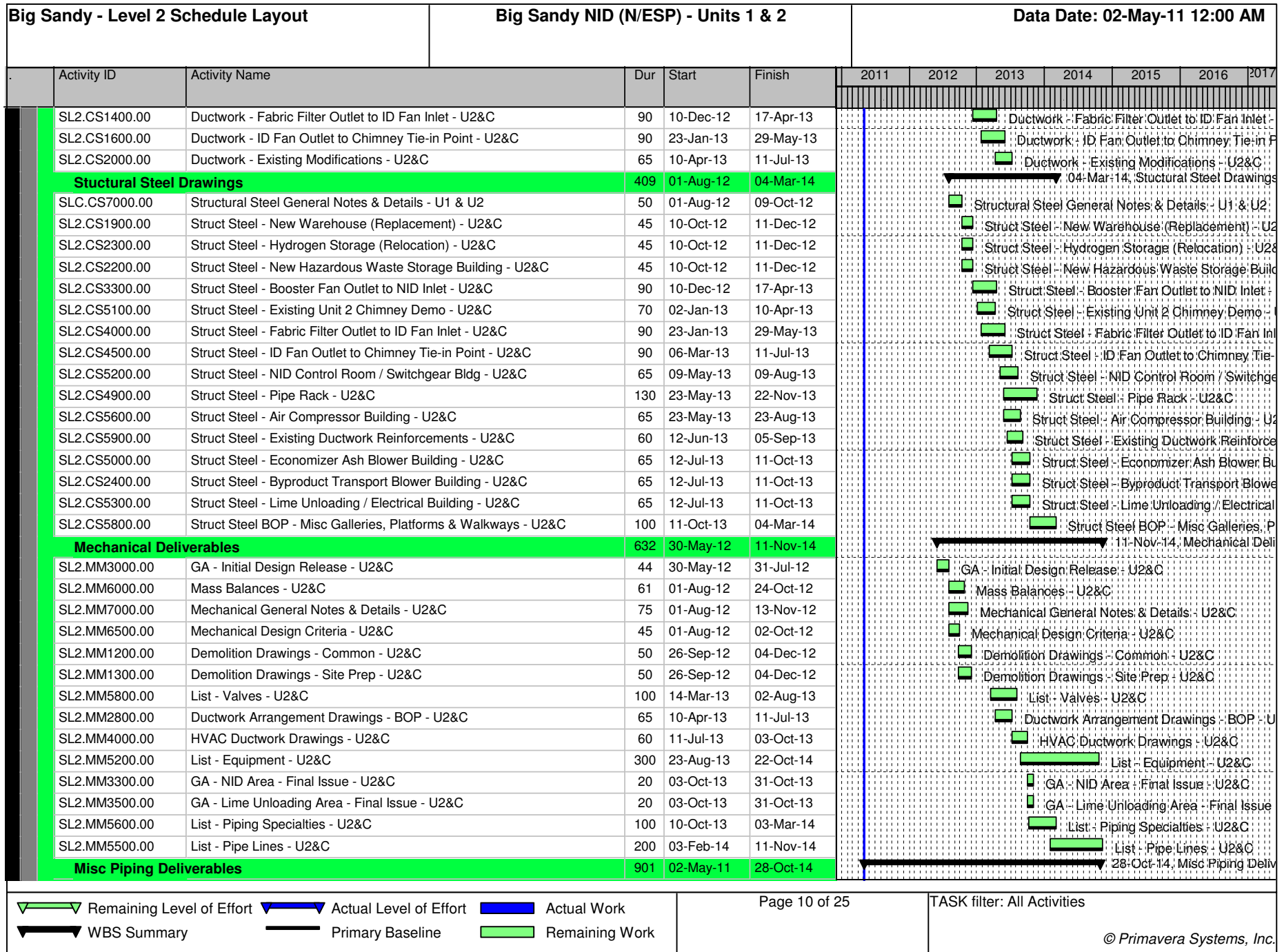
Remaining Level of Effort
 Actual Level of Effort
 Actual Work
 WBS Summary
 Primary Baseline
 Remaining Work

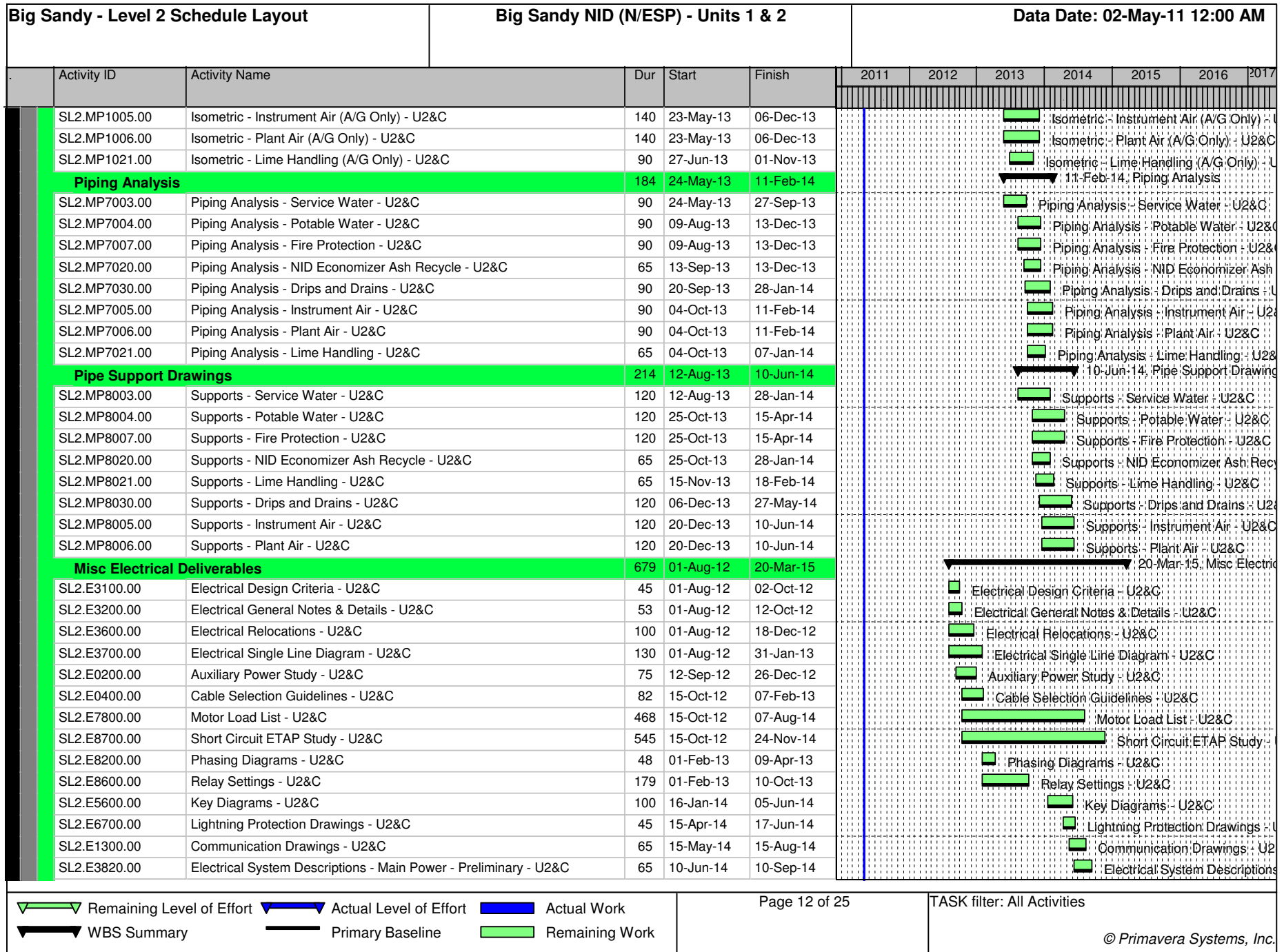


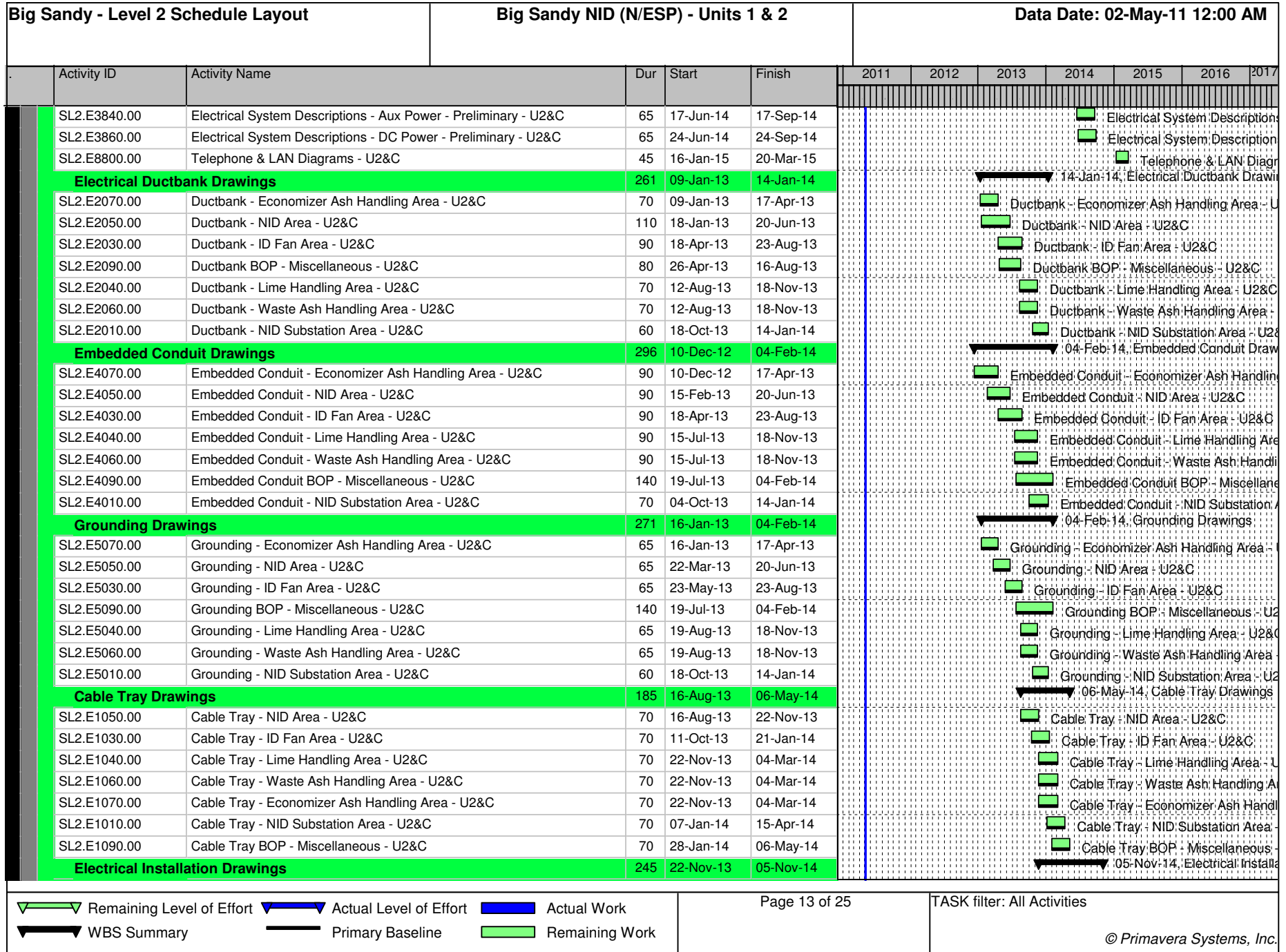


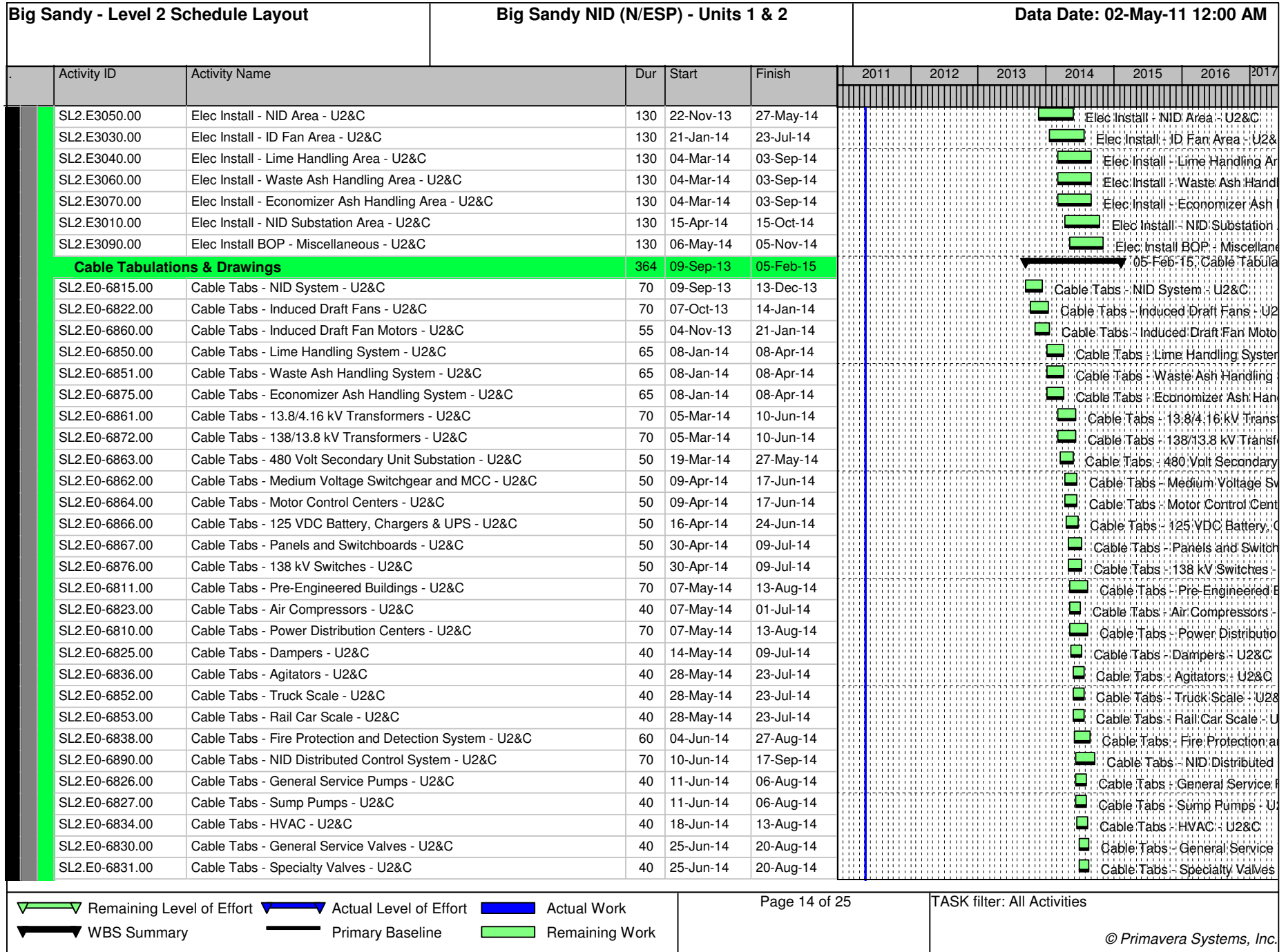


Big Sandy - Level 2 Schedule Layout			Big Sandy NID (N/ESP) - Units 1 & 2				Data Date: 02-May-11 12:00 AM						
	Activity ID	Activity Name	Dur	Start	Finish	2011	2012	2013	2014	2015	2016	2017	
	SLC.CK1200.00	Concrete General Notes & Details - U1 & U2	60	01-Aug-12	23-Oct-12								
	SL2.CK3700.00	Foundation - New Warehouse (Replacement) - U2&C	45	24-Oct-12	26-Dec-12								
	SL2.CK3100.00	Foundation - Hydrogen Storage (Relocation) - U2&C	45	24-Oct-12	26-Dec-12								
	SL2.CK3800.00	Foundation - New Hazardous Waste Storage Building - U2&C	45	24-Oct-12	26-Dec-12								
	SL2.CK7100.00	Foundation - Booster Fan Outlet to NID Inlet - U2&C	80	10-Dec-12	03-Apr-13								
	SL2.CK5600.00	Foundation - NID - U2&C	110	04-Jan-13	06-Jun-13								
	SLC.CK3500.00	Foundation - Chimney - U1 & U2	80	11-Jan-13	02-May-13								
	SL2.CK7300.00	Foundation - Fabric Filter Outlet to ID Fan Inlet - U2&C	80	23-Jan-13	15-May-13								
	SL2.CK4100.00	Foundation - Lime Railcar Unloading Pad - U2&C	80	11-Feb-13	31-May-13								
	SL2.CK4400.00	Foundation - Lime Truck Unloading Pad - U2&C	35	11-Feb-13	29-Mar-13								
	SL2.CK9000.00	Foundation - Economizer Ash Silo - U2&C	50	11-Feb-13	19-Apr-13								
	SL2.CK4500.00	Foundation - Emergency Crushed Lime Truck Unloading Pad - U2&C	35	11-Feb-13	29-Mar-13								
	SL2.CK4700.00	Foundation - Pipe Rack - U2&C	100	14-Feb-13	05-Jul-13								
	SL2.CK1500.00	Dynamic Analysis - ID Fan Foundation - U2&C	50	21-Feb-13	02-May-13								
	SL2.CK7400.00	Foundation - ID Fan Outlet to Chimney Tie-in Point - U2&C	80	06-Mar-13	26-Jun-13								
	SL2.CK3600.00	Foundation - ID Fans w/ Aux Equip - U2&C	90	07-Mar-13	12-Jul-13								
	SL2.CK4200.00	Foundation - Transformer PDC - U2&C	50	08-Mar-13	16-May-13								
	SL2.CK3620.00	Foundation - NID Control Room / Switchgear Bldg - U2&C	65	09-May-13	09-Aug-13								
	SL2.CK2300.00	Foundation - Air Compressor Building - U2&C	65	23-May-13	23-Aug-13								
	SL2.CK3640.00	Foundation - ID Fan PDC - U2&C	50	30-May-13	09-Aug-13								
	SL2.CK6200.00	Foundation - Transformers - U2&C	67	09-Jul-13	09-Oct-13								
	SL2.CK5300.00	Foundation - Economizer Ash Blower Building - U2&C	65	12-Jul-13	11-Oct-13								
	SL2.CK2400.00	Foundation - Byproduct Transport Blower Building - U2&C	65	12-Jul-13	11-Oct-13								
	SL2.CK3200.00	Foundation - Lime Unloading / Electrical Building - U2&C	65	12-Jul-13	11-Oct-13								
	SL2.CK3400.00	Foundation - HVAC - U2&C	46	22-Jul-13	23-Sep-13								
	SL2.CK8000.00	Foundation BOP - Miscellaneous - U2&C	140	09-Aug-13	25-Feb-14								
	SL2.CK4300.00	Foundation - Lime Storage Silos - U2&C	46	30-Aug-13	04-Nov-13								
	SL2.CK7200.00	Foundation - Waste Ash Silo - U2&C	46	30-Aug-13	04-Nov-13								
	SL2.CK5800.00	Foundation - Service Water Tanks - U2&C	46	30-Aug-13	04-Nov-13								
	SL2.CK2500.00	Foundation - 138 kV Substation - U2&C	60	04-Oct-13	30-Dec-13								
	SL2.CK4800.00	Foundation - Process Water Storage Basin - U2&C	50	22-Nov-13	04-Feb-14								
	SL2.CK5100.00	Foundation - Stormwater Runoff Pond Pump Structure - U2&C	50	22-Nov-13	04-Feb-14								
	Ductwork Drawings		180	29-Oct-12	11-Jul-13								
	SL2.CS1200.00	Ductwork - Booster Fan Outlet to NID Inlet - U2&C	90	29-Oct-12	06-Mar-13								
	SLC.CS2500.00	Ductwork General Notes & Details - U1 & U2	55	29-Oct-12	16-Jan-13								
	SL2.CS1700.00	Ductwork - Existing Unit 2 Chimney Demo - U2&C	60	19-Nov-12	13-Feb-13								
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Remaining Level of Effort				Actual Level of Effort				Actual Work					
WBS Summary				Primary Baseline				Remaining Work					
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Big Sandy - Level 2 Schedule Layout			Big Sandy NID (N/ESP) - Units 1 & 2				Data Date: 02-May-11 12:00 AM							
	Activity ID	Activity Name	Dur	Start	Finish	2011	2012	2013	2014	2015	2016	2017		
	SL2.E0-6807.00	Cable Tabs - Elevators - U2&C	40	10-Jul-14	03-Sep-14									
	SL2.E0-6869.00	Cable Tabs - Plant Security System - U2&C	50	24-Jul-14	01-Oct-14									
	SL2.E0-6870.00	Cable Tabs - Communication System - U2&C	50	24-Jul-14	01-Oct-14									
	SL2.E0-6999.00	Cable Tabs BOP - Miscellaneous - U2&C	75	07-Aug-14	19-Nov-14									
	SL2.E0-6837.00	Cable Tabs - Insulation and Heat Tracing - U2&C	80	12-Aug-14	02-Dec-14									
	SL2.E0-6891.00	Cable Tabs - BOP Instruments - U2&C	70	28-Oct-14	05-Feb-15									
	Lighting Diagrams		165	27-May-14	16-Jan-15									
	SL2.E6050.00	Lighting - NID Area - U2&C	45	27-May-14	30-Jul-14									
	SL2.E6030.00	Lighting - ID Fan Area - U2&C	45	23-Jul-14	24-Sep-14									
	SL2.E6040.00	Lighting - Lime Handling Area - U2&C	45	03-Sep-14	05-Nov-14									
	SL2.E6060.00	Lighting - Waste Ash Handling Area - U2&C	45	03-Sep-14	05-Nov-14									
	SL2.E6070.00	Lighting - Economizer Ash Handling Area - U2&C	45	03-Sep-14	05-Nov-14									
	SL2.E6010.00	Lighting - NID Substation Area - U2&C	45	15-Oct-14	17-Dec-14									
	SL2.E6090.00	Lighting BOP - Miscellaneous - U2&C	50	05-Nov-14	16-Jan-15									
	Master Schematic Diagrams		359	05-Aug-13	23-Dec-14									
	SL2.E7-6815.00	Master Schem - NID System - U2&C	170	05-Aug-13	01-Apr-14									
	SL2.E7-6822.00	Master Schem - Induced Draft Fans - U2&C	120	02-Sep-13	18-Feb-14									
	SL2.E7-6860.00	Master Schem - Induced Draft Fan Motors - U2&C	100	30-Sep-13	18-Feb-14									
	SL2.E7-6850.00	Master Schem - Lime Handling System - U2&C	100	02-Dec-13	22-Apr-14									
	SL2.E7-6851.00	Master Schem - Waste Ash Handling System - U2&C	100	02-Dec-13	22-Apr-14									
	SL2.E7-6875.00	Master Schem - Economizer Ash Handling System - U2&C	100	02-Dec-13	22-Apr-14									
	SL2.E7-6861.00	Master Schem - 13.8/4.16 kV Transformers - U2&C	90	29-Jan-14	03-Jun-14									
	SL2.E7-6872.00	Master Schem - 138/13.8 kV Transformers - U2&C	90	29-Jan-14	03-Jun-14									
	SL2.E7-6863.00	Master Schem - 480 Volt Secondary Unit Substation - U2&C	105	12-Feb-14	09-Jul-14									
	SL2.E7-6862.00	Master Schem - Medium Voltage Switchgear and MCC - U2&C	127	05-Mar-14	29-Aug-14									
	SL2.E7-6864.00	Master Schem - Motor Control Centers - U2&C	105	05-Mar-14	30-Jul-14									
	SL2.E7-6866.00	Master Schem - 125 VDC Battery, Chargers & UPS - U2&C	120	12-Mar-14	27-Aug-14									
	SL2.E7-6867.00	Master Schem - Panels and Switchboards - U2&C	120	26-Mar-14	10-Sep-14									
	SL2.E7-6876.00	Master Schem - 138 kV Switches - U2&C	75	26-Mar-14	09-Jul-14									
	SL2.E7-6810.00	Master Schem - Power Distribution Centers - U2&C	90	02-Apr-14	06-Aug-14									
	SL2.E7-6823.00	Master Schem - Air Compressors - U2&C	65	02-Apr-14	01-Jul-14									
	SL2.E7-6811.00	Master Schem - Pre-Engineered Buildings - U2&C	90	02-Apr-14	06-Aug-14									
	SL2.E7-6825.00	Master Schem - Dampers - U2&C	60	09-Apr-14	01-Jul-14									
	SL2.E7-6836.00	Master Schem - Agitators - U2&C	60	23-Apr-14	16-Jul-14									
	SL2.E7-6852.00	Master Schem - Truck Scale - U2&C	50	23-Apr-14	01-Jul-14									
	SL2.E7-6853.00	Master Schem - Rail Car Scale - U2&C	50	23-Apr-14	01-Jul-14									

Remaining Level of Effort

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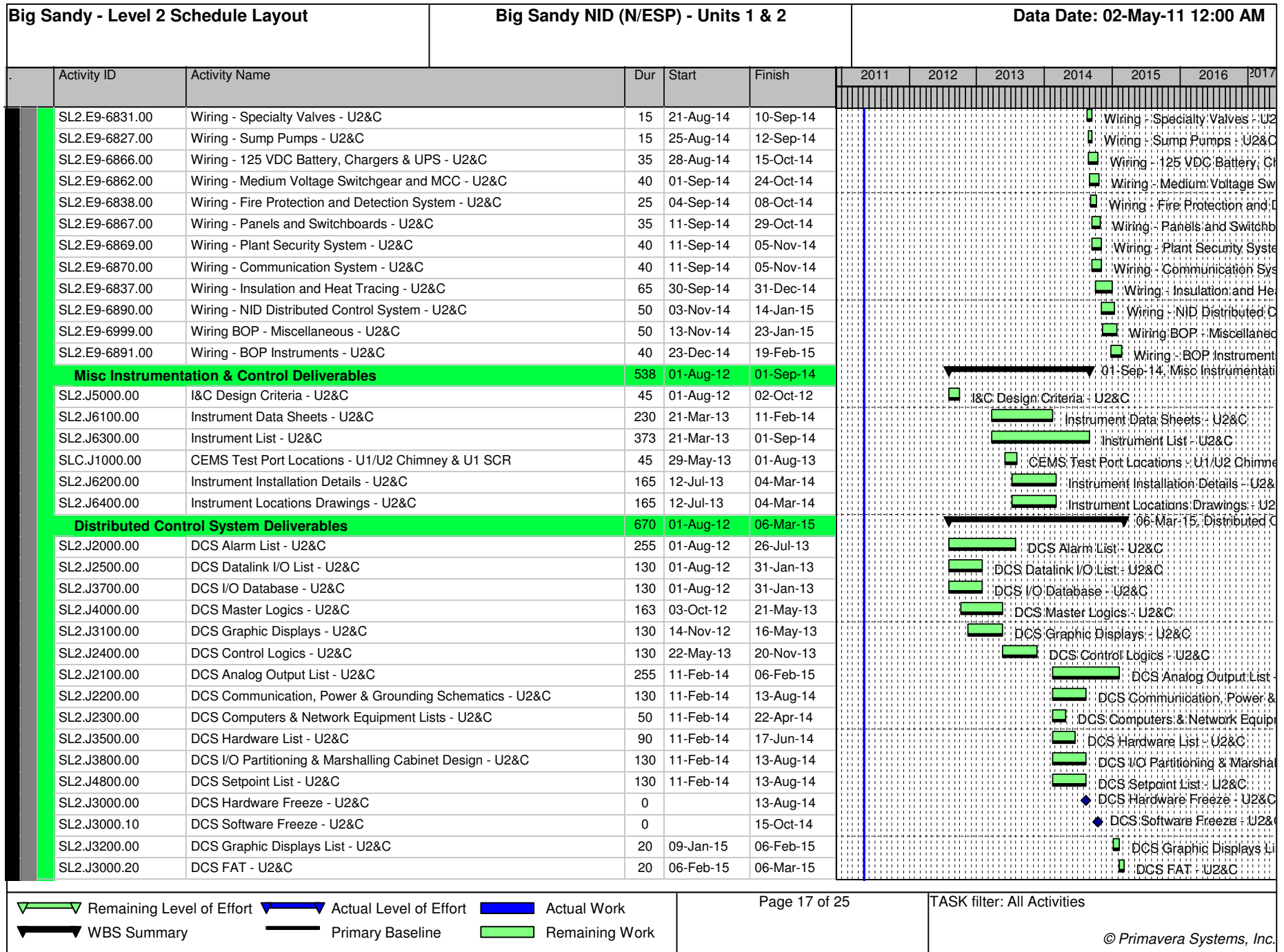
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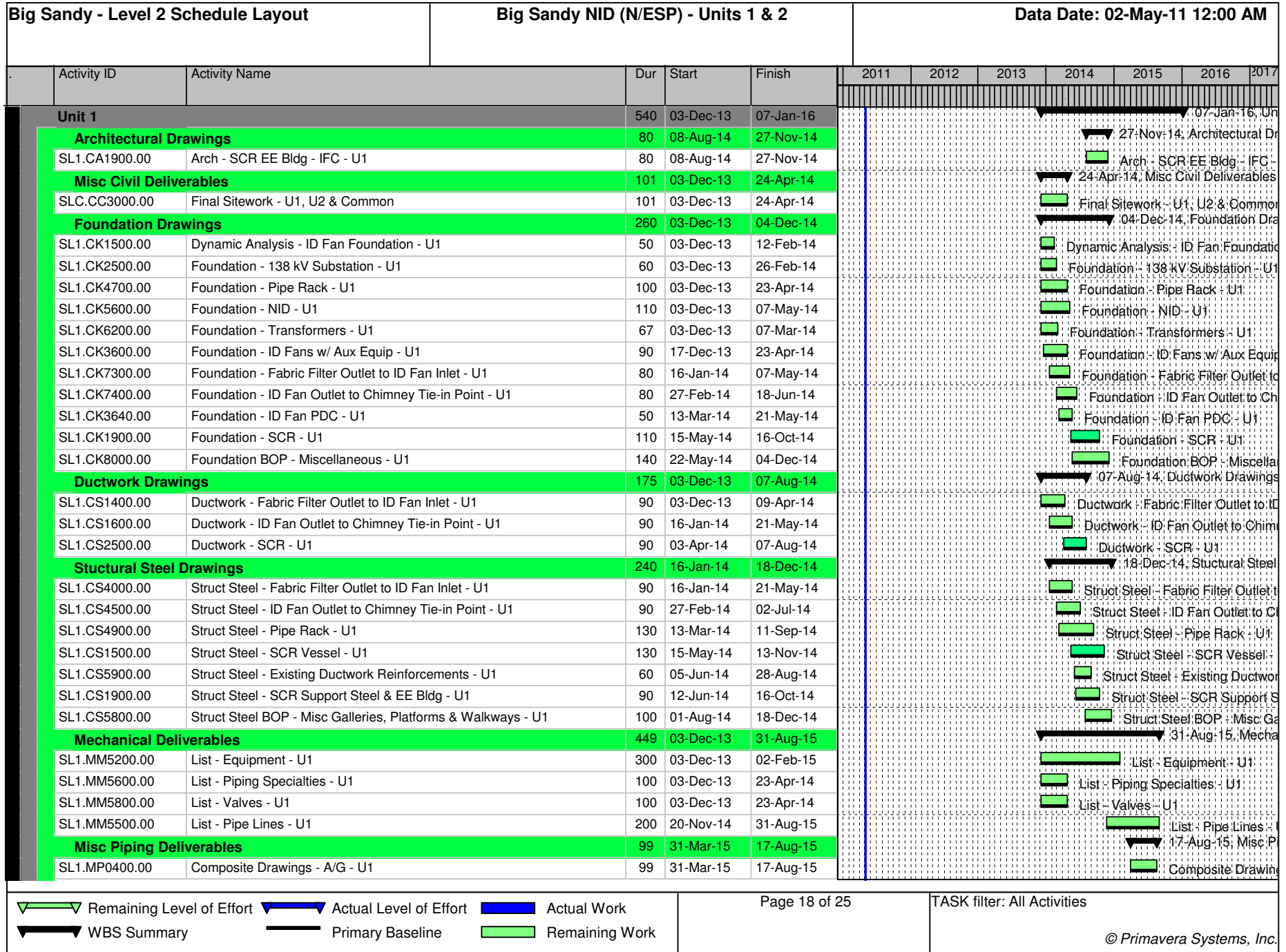
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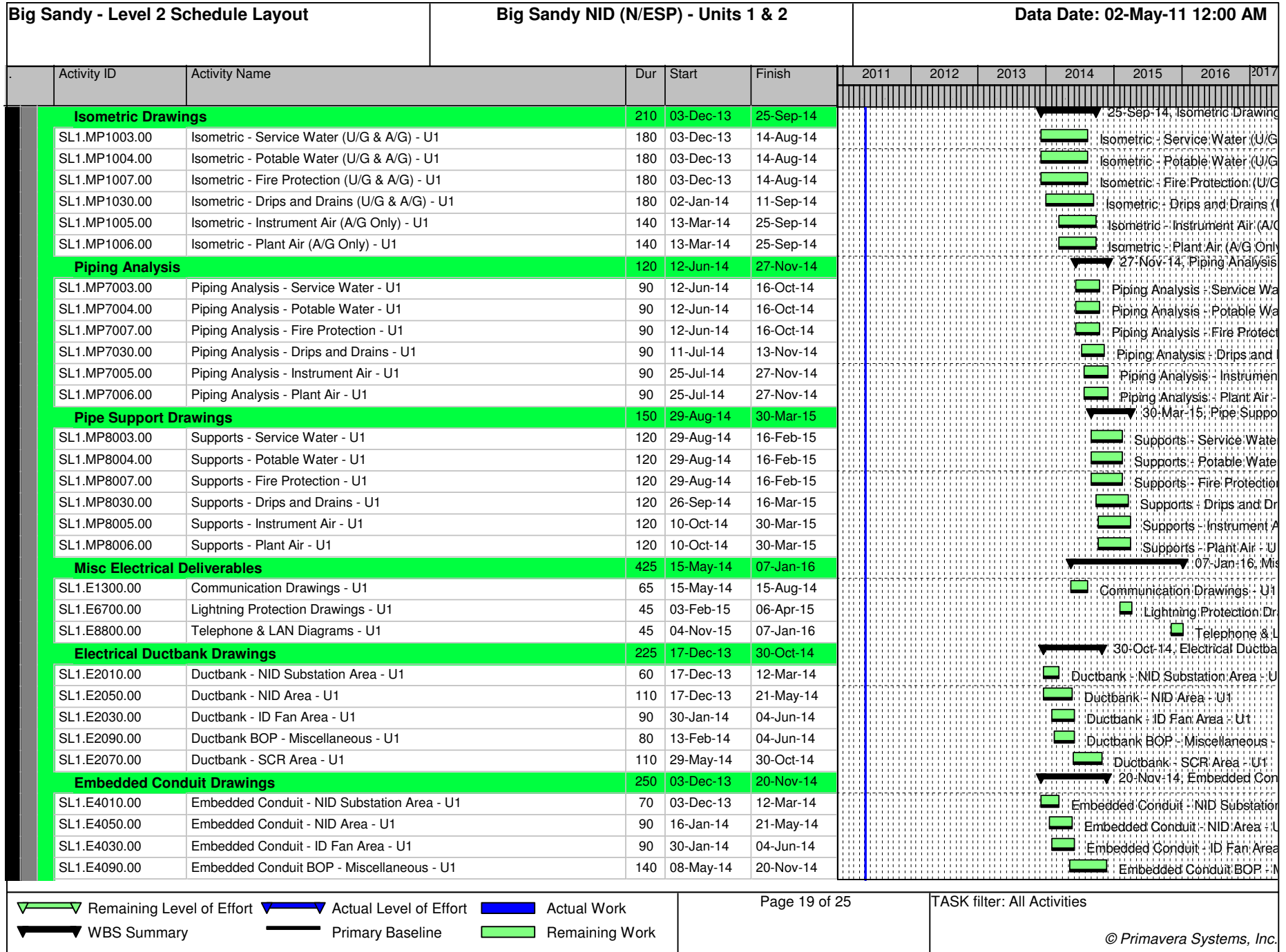
Remaining Level of Effort
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 Actual Work
 WBS Summary
 Primary Baseline
 Remaining Work

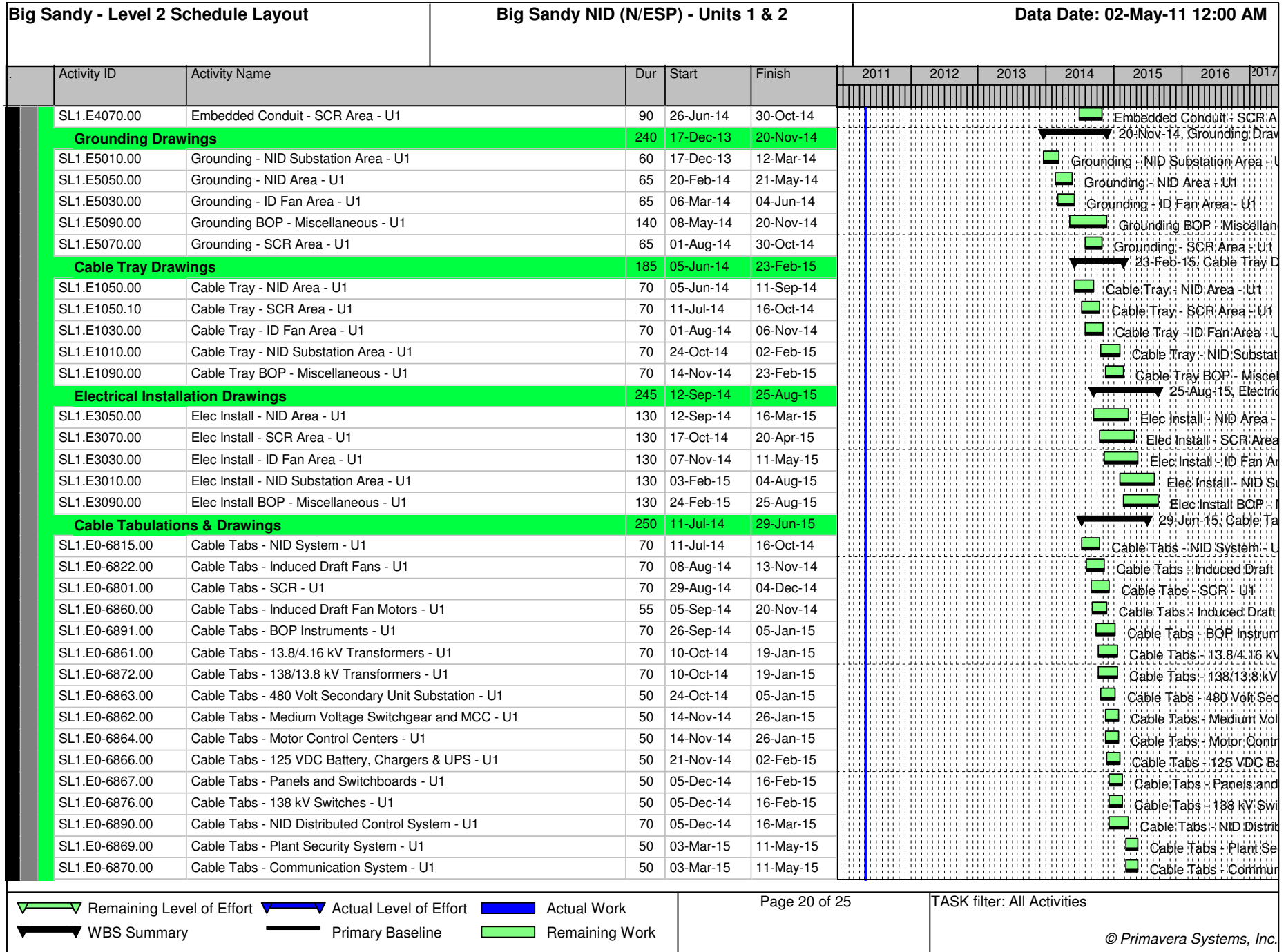
Big Sandy - Level 2 Schedule Layout			Big Sandy NID (N/ESP) - Units 1 & 2				Data Date: 02-May-11 12:00 AM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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	SL2.E7-6838.00	Master Schem - Fire Protection and Detection System - U2&C	90	30-Apr-14	03-Sep-14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

Remaining Level of Effort
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Big Sandy - Level 2 Schedule Layout			Big Sandy NID (N/ESP) - Units 1 & 2			Data Date: 02-May-11 12:00 AM										
Activity ID	Activity Name	Dur	Start	Finish	2011	2012	2013	2014	2015	2016	2017					
SL1.E0-6810.00	Cable Tabs - Power Distribution Centers - U1	70	10-Mar-15	15-Jun-15												Cable Tabs - Power
SL1.E0-6837.00	Cable Tabs - Insulation and Heat Tracing - U1	80	10-Mar-15	29-Jun-15												Cable Tabs - Insulati
SL1.E0-6825.00	Cable Tabs - Dampers - U1	40	17-Mar-15	11-May-15												Cable Tabs - Dampers
SL1.E0-6999.00	Cable Tabs BOP - Miscellaneous - U1	75	17-Mar-15	29-Jun-15												Cable Tabs BOP - M
SL1.E0-6836.00	Cable Tabs - Agitators - U1	40	31-Mar-15	25-May-15												Cable Tabs - Agitator
SL1.E0-6838.00	Cable Tabs - Fire Protection and Detection System - U1	60	07-Apr-15	29-Jun-15												Cable Tabs - Fire Pr
SL1.E0-6826.00	Cable Tabs - General Service Pumps - U1	40	14-Apr-15	08-Jun-15												Cable Tabs - Genera
SL1.E0-6827.00	Cable Tabs - Sump Pumps - U1	40	14-Apr-15	08-Jun-15												Cable Tabs - Sump F
SL1.E0-6807.00	Cable Tabs - Elevators - U1	40	21-Apr-15	15-Jun-15												Cable Tabs - Elevato
SL1.E0-6830.00	Cable Tabs - General Service Valves - U1	40	28-Apr-15	22-Jun-15												Cable Tabs - Genera
SL1.E0-6831.00	Cable Tabs - Specialty Valves - U1	40	28-Apr-15	22-Jun-15												Cable Tabs - Special
Lighting Diagrams		165	17-Mar-15	03-Nov-15												03-Nov-15, Light
SL1.E6050.00	Lighting - NID Area - U1	45	17-Mar-15	18-May-15												Lighting - NID Area - U
SL1.E6070.00	Lighting - SCR Area - U1	45	21-Apr-15	22-Jun-15												Lighting - SCR Area
SL1.E6030.00	Lighting - ID Fan Area - U1	45	12-May-15	14-Jul-15												Lighting - ID Fan Are
SL1.E6010.00	Lighting - NID Substation Area - U1	45	05-Aug-15	06-Oct-15												Lighting - NID Sul
SL1.E6090.00	Lighting BOP - Miscellaneous - U1	50	26-Aug-15	03-Nov-15												Lighting BOP - M
Master Schematic Diagrams		280	05-Jun-14	07-Jul-15												07-Jul-15, Master Sc
SL1.E7-6815.00	Master Schem - NID System - U1	170	05-Jun-14	02-Feb-15												Master Schem - NID Syst
SL1.E7-6822.00	Master Schem - Induced Draft Fans - U1	120	03-Jul-14	18-Dec-14												Master Schem - Induced D
SL1.E7-6801.00	Master Schem - SCR - U1	135	25-Jul-14	02-Feb-15												Master Schem - SCR - U
SL1.E7-6860.00	Master Schem - Induced Draft Fan Motors - U1	100	01-Aug-14	18-Dec-14												Master Schem - Induced D
SL1.E7-6891.00	Master Schem - BOP Instruments - U1	65	22-Aug-14	20-Nov-14												Master Schem - BOP Instru
SL1.E7-6861.00	Master Schem - 13.8/4.16 kV Transformers - U1	90	05-Sep-14	12-Jan-15												Master Schem - 13.8/4.16
SL1.E7-6872.00	Master Schem - 138/13.8 kV Transformers - U1	90	05-Sep-14	12-Jan-15												Master Schem - 138/13.8
SL1.E7-6863.00	Master Schem - 480 Volt Secondary Unit Substation - U1	105	19-Sep-14	16-Feb-15												Master Schem - 480 Volt
SL1.E7-6862.00	Master Schem - Medium Voltage Switchgear and MCC - U1	127	10-Oct-14	08-Apr-15												Master Schem - Medium
SL1.E7-6864.00	Master Schem - Motor Control Centers - U1	105	10-Oct-14	09-Mar-15												Master Schem - Motor C
SL1.E7-6866.00	Master Schem - 125 VDC Battery, Chargers & UPS - U1	120	17-Oct-14	06-Apr-15												Master Schem - 125 V
SL1.E7-6867.00	Master Schem - Panels and Switchboards - U1	120	31-Oct-14	20-Apr-15												Master Schem - Panel
SL1.E7-6876.00	Master Schem - 138 kV Switches - U1	75	31-Oct-14	16-Feb-15												Master Schem - 138 kV:8
SL1.E7-6890.00	Master Schem - NID Distributed Control System - U1	128	31-Oct-14	30-Apr-15												Master Schem - NID D
SL1.E7-6869.00	Master Schem - Plant Security System - U1	60	27-Jan-15	20-Apr-15												Master Schem - Plant
SL1.E7-6870.00	Master Schem - Communication System - U1	60	27-Jan-15	20-Apr-15												Master Schem - Comm
SL1.E7-6810.00	Master Schem - Power Distribution Centers - U1	90	03-Feb-15	08-Jun-15												Master Schem - Pow
SL1.E7-6837.00	Master Schem - Insulation and Heat Tracing - U1	60	03-Feb-15	27-Apr-15												Master Schem - Insula

Remaining Level of Effort
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Big Sandy - Level 2 Schedule Layout			Big Sandy NID (N/ESP) - Units 1 & 2			Data Date: 02-May-11 12:00 AM							
	Activity ID	Activity Name	Dur	Start	Finish	2011	2012	2013	2014	2015	2016	2017	
	SL1.E7-6825.00	Master Schem - Dampers - U1	60	10-Feb-15	04-May-15								
	SL1.E7-6999.00	Master Schem BOP - Miscellaneous - U1	95	10-Feb-15	22-Jun-15								
	SL1.E7-6836.00	Master Schem - Agitators - U1	60	24-Feb-15	18-May-15								
	SL1.E7-6838.00	Master Schem - Fire Protection and Detection System - U1	90	03-Mar-15	07-Jul-15								
	SL1.E7-6826.00	Master Schem - General Service Pumps - U1	65	10-Mar-15	08-Jun-15								
	SL1.E7-6827.00	Master Schem - Sump Pumps - U1	77	10-Mar-15	24-Jun-15								
	SL1.E7-6807.00	Master Schem - Elevators - U1	55	17-Mar-15	01-Jun-15								
	SL1.E7-6830.00	Master Schem - General Service Valves - U1	65	24-Mar-15	22-Jun-15								
	SL1.E7-6831.00	Master Schem - Specialty Valves - U1	65	24-Mar-15	22-Jun-15								
	Wiring Diagrams		200	21-Nov-14	01-Sep-15								
	SL1.E9-6891.00	Wiring - BOP Instruments - U1	40	21-Nov-14	19-Jan-15								
	SL1.E9-6822.00	Wiring - Induced Draft Fans - U1	80	19-Dec-14	13-Apr-15								
	SL1.E9-6860.00	Wiring - Induced Draft Fan Motors - U1	55	19-Dec-14	09-Mar-15								
	SL1.E9-6861.00	Wiring - 13.8/4.16 kV Transformers - U1	40	13-Jan-15	09-Mar-15								
	SL1.E9-6872.00	Wiring - 138/13.8 kV Transformers - U1	40	13-Jan-15	09-Mar-15								
	SL1.E9-6815.00	Wiring - NID System - U1	60	03-Feb-15	27-Apr-15								
	SL1.E9-6801.00	Wiring - SCR - U1	60	03-Feb-15	27-Apr-15								
	SL1.E9-6863.00	Wiring - 480 Volt Secondary Unit Substation - U1	40	17-Feb-15	13-Apr-15								
	SL1.E9-6876.00	Wiring - 138 kV Switches - U1	35	17-Feb-15	06-Apr-15								
	SL1.E9-6864.00	Wiring - Motor Control Centers - U1	40	10-Mar-15	04-May-15								
	SL1.E9-6866.00	Wiring - 125 VDC Battery, Chargers & UPS - U1	35	07-Apr-15	25-May-15								
	SL1.E9-6862.00	Wiring - Medium Voltage Switchgear and MCC - U1	40	09-Apr-15	03-Jun-15								
	SL1.E9-6867.00	Wiring - Panels and Switchboards - U1	35	21-Apr-15	08-Jun-15								
	SL1.E9-6869.00	Wiring - Plant Security System - U1	40	21-Apr-15	15-Jun-15								
	SL1.E9-6870.00	Wiring - Communication System - U1	40	21-Apr-15	15-Jun-15								
	SL1.E9-6837.00	Wiring - Insulation and Heat Tracing - U1	65	28-Apr-15	28-Jul-15								
	SL1.E9-6890.00	Wiring - NID Distributed Control System - U1	50	01-May-15	10-Jul-15								
	SL1.E9-6825.00	Wiring - Dampers - U1	15	05-May-15	25-May-15								
	SL1.E9-6836.00	Wiring - Agitators - U1	15	19-May-15	08-Jun-15								
	SL1.E9-6807.00	Wiring - Elevators - U1	15	02-Jun-15	22-Jun-15								
	SL1.E9-6810.00	Wiring - Power Distribution Centers - U1	30	09-Jun-15	21-Jul-15								
	SL1.E9-6826.00	Wiring - General Service Pumps - U1	15	09-Jun-15	29-Jun-15								
	SL1.E9-6830.00	Wiring - General Service Valves - U1	15	23-Jun-15	14-Jul-15								
	SL1.E9-6831.00	Wiring - Specialty Valves - U1	15	23-Jun-15	14-Jul-15								
	SL1.E9-6999.00	Wiring BOP - Miscellaneous - U1	50	23-Jun-15	01-Sep-15								
	SL1.E9-6827.00	Wiring - Sump Pumps - U1	15	25-Jun-15	16-Jul-15								
Remaining Level of Effort Actual Level of Effort Actual Work			Page 22 of 25			TASK filter: All Activities							
WBS Summary Primary Baseline Remaining Work						© Primavera Systems, Inc.							

