

APPENDIX A

GROWTH OF NO<sub>x</sub> INVENTORY FOR BEAUMONT PORT ARTHUR NON-ATTAINMENT AREA  
USING BANKED EMISSIONS - MODELING AND BASE INVENTORY GROWN

BEAUMONT/PORT ARTHUR ATTAINMENT DEMONSTRATION

APRIL 2000 REVISION

# Texas Natural Resource Conservation Commission

## INTEROFFICE MEMORANDUM

To: Mike Magee Date: Sept 29, 1999

From: Jim Smith, Kathy Pendleton

Subject: Growth of NO<sub>x</sub> Inventory For Beaumont Port Arthur Non-attainment Area Using Banked Emissions - Modeling and Base Inventory Grown

---

### Background and Reduction Expected From Banking Between 1990 and 2007

We have seen actual reductions in emissions between 1990 and 1996 in the emissions inventory. However, some of these reductions may return to a future inventory as a result of banking action by the companies. The total amount of banked emissions recorded by TNRCC provides an indication, through the banking rule's offset ratio for the Beaumont area, the actual amount of reduction which will not be returned to the inventory.

The total amount of NOX emissions placed in the bank between 1990 and 1999 was 8,068.6 tons. If this trend were to continue to 2007, a total of 15,241 tons would be banked. Converting to a tons per day value for easier comparison to the model, a value of 41.76 tons per day is obtained.

The offset ration for Beaumont Port Arthur is 1.15. The amount of emissions, E, that can be returned to the inventory is determined by utilizing the offset ratio in the equation,

$$E \times 1.15 = 41.76. \text{ The value E is determined to be } 36.31 \text{ tons per day.}$$

The amount retained by the bank and not allowed to be returned is  
 $41.76 - 36.31 = 5.45$  tons per day for the 17 year period.

Both the future 2007 value used by modeling (inventory is grown from the 1993 COAST study) and the future 2007 documented for the SIP (inventory is grown from the 1990 base case) are calculated in the following paragraphs.

### Modeling Future Case (Year 2007)

Because the inventory in the model was grown from a 1993 inventory, this 5.45 tons per day reduction was scaled back to 14 years (the period from 1993 to 2007). This calculates to

$$14 \times 5.45/17 = 4.49 \text{ tons per day.}$$

Because this is an amount retained by the bank, it is a reduction in emissions. The amount of NOX in the model is 175.00 tons per day in 1993. The 2007 inventory for modeling is:

$$175.00 - 4.49 = 170.51 \text{ tons per day in 2007 for the modeling inventory.}$$

### Future Case Grown From 1990 Inventory Base

The 1990 emissions inventory is 77,335 tons per year or 221.01 tons per day. Using the values expected to remain in the bank between 1990 and 2007 as the reduction, the future inventory is calculated to be:

$$77335 - (5.45 \times 365) =$$

$$77,335 - 1,989 = 75,346 \text{ tons per year}$$

or in ozone season values,

$$221.01 - 5.45 = 215.56 \text{ tons per day using the 1990 base year inventory.}$$