

Successful PSD Avoidance for a Wood-Fired Boiler Modification in 2003

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Pulp and Paper Mill in Washington State

- Mechanical Pulp and Recycling
- Near Class 1 Area
- Marginal Economics



CE Water Tube Boiler

- Constructed 1952 – Oil Fired
- Converted 1976 – Oil/Wood/Sludge
- Rated 120,000 lb/hr
- Cyclones, Wet Scrubber and Heat Recovery



Problems to be Addressed

- Fuel Moisture (>60% at times)
- Poor combustion
- High Oil Consumption
- Ash and Fuel Carryover



Goals

- Eliminate Oil Firing
- Maximize Steam from Wood Fuels
- Reduce Carryover



Proposed Solutions

- Replace Overfire Air
- Replace Damaged Steam Tubes
- Replace Wood Fuel Distributors



Air Permitting Issues

- Federal PSD
- State PSD
- State NSR/NOC
- NSPS
- Title V
- Data Quality and Interpretation
- Emission Factors



Federal PSD

- New Rules in Effect
- Actual-to-Actual Test
- Different Baseline Period
- Predicted Actual Emissions

Result: Federal PSD Not Applicable



State PSD—Initial Application

- Actual-to-Actual Test
- Exempt as Routine Maintenance, Repair & Replacement (RMRR)
- Pollution Control Project (PCP)
- Avoidance Limits?



Initial Ecology Response

- Potential, Not Actual (Emphatically!)
- Caps on all pollutants @ Baseline + SER
- Life Extension, no RMRR
- Increase in utilization, no PCP



State PSD—Revised Application

- Project Exempt from State PSD
- Boiler Tubes = RMRR
- Overfire Air and Wood Distributors = PCP



“Routine” Test for Boiler Tube Replacement

- Same equipment and design
- Not an entire component
- Common practice in industry
- Safety driven, not capacity
- Capitalized cost, but relatively low

Result: Summary Letter Approving RMRR



PCP Test for Overfire Air and Wood Distributors

- Planned 100% SO₂ reduction
- Documented 5% NO_x reduction
- Documented 50% CO reduction
- No expected PM increases ??



PCP Test for Overfire Air and Wood Distributors

- Inherently less polluting fuel: presumed environmentally beneficial
- Uncertainty re: possible PM increase
 - No expected increase in utilization
 - Well controlled source
- Source Test pre- and post-project



PM Data Quality and Interpretation

- Two Source Tests
- 1991 Solid Fuels
- 1997 Oil, Multiple Fuels
- No Confirmed pre- or post-project emission factors



PM Data Solution

- Accept avoidance limit
- Order allows for revision
- Conduct Pre-project Source Test @ Baseline Period conditions
- Basis for revised Avoidance Limit
- Basis for revised Emission Inventories



State NSR/NOC and NSPS and TAP

- NSPS definition of “modification”
- Maximum hourly emission rate
- Deminimis impact on air quality

Result: State NSR Not Applicable



Title V

- Not a “Title I Modification”
- Not covered by § 502(b)(10) or SIP trading
- Authorized as “off permit” change

Result: No Title V Permit Revision



Results and Conclusion

- Project Constructed and Completed on Schedule
- Reduced greenhouse gas emissions
- Oil consumption reduced 34% from 2002
- SO₂ emissions reduced 33% from 2002
- Particulate reduced 45% from 2002
- Win-win for mill, environment

