



13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

Project # 1079

SOURCE EVALUATION REPORT

WILLAMETTE INDUSTRIES, INC
Dry Kiln Particulate and VOC Emissions while Drying Hemlock

16 Ft. Wellons Dry Kiln at Oregon State University
Corvallis, Oregon

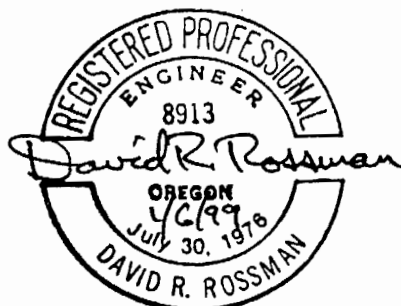
November 16-20, 1998

Prepared for

Warrenton Saw Mill
Willamette Industries, Inc.
Western Administrative & Sales Office
P.O. Box 907
Albany, OR 97321

by

David Broderick and
David R. Rossman, P.E.



Expires 12/31/00

Air Pollution Emission Testing • Infrared Inspections • Mechanical Engineering

Table 1
Hemlock Test Results, Wellons Dry Kiln, OSU

Test Dates: November 16-20, 1998

	Units	Cycle 1	Cycle 2	Average
Particulate (ODEQ M-7)	lb/mbf	0.046	0.055	0.051
	lb/hr	0.0017	0.0018	0.0018
	gr/dscf	0.0044	0.0034	0.0039
Volatile Organic Compounds				
TGOC, dry basis (EPA M-25A)	lbC/mbf	0.20	0.30	0.25
	lbC/hr	0.0081	0.0116	0.0099
	ppmC	80	87	84
Source Parameters				
Flow Rate, standard	dscf/min	56	76	66
Flow Rate, actual	acf/min	96	124	110
Exhaust Moisture	%	31	30	31
Exhaust Temperature	°F	161	159	160



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SOURCE EVALUATION REPORT

WILLAMETTE INDUSTRIES, INC

Dry Kiln Particulate and VOC Emissions while Drying Douglas Fir

**16 Ft. Wellons Dry Kiln at Oregon State University
Corvallis, Oregon**

December 14-19, 1998

Prepared for

Vaughn Laminating Complex
Warrenton Saw Mill
Willamette Industries, Inc.
Western Administrative & Sales Office
P.O. Box 907
Albany, OR 97321

by

David R. Rossman, P.E.



Expires 12/31/00

Table 1
Douglas Fir Test Results, Wellons Dry Kiln, OSU

Test Dates: December 14-19, 1998

	Units	Cycle 1	Cycle 2	Average
Particulate (ODEQ M-7)	lb/mbf	0.020	0.024	0.022
	lb/hr	0.0008	0.0010	0.0009
	gr/dscf	0.0016	0.0017	0.0017

Volatile Organic Compounds

TGOC, dry basis (EPA M-25A)	lbC/mbf	0.40	0.38	0.39
	lbC/hr	0.017	0.016	0.017
	ppmC	150	123	137

Source Parameters

Flow Rate, standard	dscf/min	60	69	65
Flow Rate, actual	acf/min	86	97	92
Exhaust Moisture	%	23	21	22
Exhaust Temperature	°F	146	145	146

Description of the Source and Its Operation

The 16-foot Wellons kiln located in the Forest Research Lab at OSU is a small version of a production kiln and is set up to dry about 2000 board feet at a time. A computer in an adjoining lab room controls the drying cycle. Photographs at the end of the report text show the kiln and sampling setup.

The kiln is steam-heated with coils located above the lumber on either side of an axial fan. The fan reversed every three hours (all programmed on the computer) to keep the drying process more uniform.

There are two exhaust vents with motorized dampers, one from each side of the