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OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS

State of Oregon
Department of Environmental Quality

AGENDA

Environmental Quality Commission Meeting

January 26, 1973

Second Floor Auditorium, Public Service Building

920 S.W. 6th Avenue, Portland

9:00 a.m.

A. Minutes of December 21, 1972 EQC Meeting

B. Project Plans for December 1972

C. Confirmation of Diarmuid F. O'Scannlain as Director

D. Hanna Nickel Smelting Co., Riddle (Requested modification of compliance schedule)

10:00 a.m.

E. Veneer Drier Regulations (Public Hearing relative to proposed modification to Oregon Administrative Rules, Chapter 340, Section 25-315(1), Veneer Driers)

11:00 a.m.

F. Adoption of Air Quality Compliance Schedules and Permits (Public Hearing to consider formal adoption of Compliance Schedules and Permits issued by the DEQ and Regional Air Quality Control Authorities to meet requirements of Federal Clean Air Act)

G. Hot-mix Asphalt Plant Regulation (Consideration of Hearings Officer's Report and Adoption of Amended Regulation)

H. Kraft Mill Regulations (Report on Particulate Definition and Proposed Adoption of Amended Regulation)

I. Field Burning (Summary Report on the 1972 Field Burning Season and Issuance of the 1972 Annual Report)

J. G.S.A. Building Parking Facility (Consideration of approval of 200 Space Parking Facility previously considered at October 25, 1972 EQC Meeting)

K. Lincoln County Sewerage Planning - Status report

L. Pacific Carbide and Alloys Co., Multnomah County (Proposed modification of Waste Discharge Permit)

M. Solid Waste Planning Grant Offers (Commission approval)

N. North Tillamook County Sanitary Authority (Addition to construction priority list)

~~O.~~ Tax Credits

March 2nd

P. Establish dates for February and March EQC meetings

Q. Emergency Action Plan - (Status Report)

AGENDA

Environmental Quality Commission Meeting

January 26, 1973

Second Floor Auditorium, Public Service Building

920 S.W. 6th Avenue, Portland

9:00 a.m.

A. Minutes of December 21, 1972 EQC Meeting (Chairman)

B. Project Plans for December 1972 (Weathersbee)

C. Confirmation of Diarmuid F. O'Scannlain as Director (Chairman)

D. Hanna Nickel Smelting Co., Riddle (Requested modification of compliance schedule) (Skirvin)

Mr [illegible] Conflict of Interest

10:00 a.m.

E. Veneer Drier Regulations (Public Hearing relative to proposed modification to Oregon Administrative Rules, Chapter 340, Section 25-315(1), Veneer Driers) (Phillips)

11:00 a.m.

F. Adoption of Air Quality Compliance Schedules and Permits (Public Hearing to consider formal adoption of Compliance Schedules and Permits issued by the DEQ and Regional Air Quality Control Authorities to meet requirements of Federal Clean Air Act) (Phillips)

G. Hot-mix Asphalt Plant Regulation (Consideration of Hearings Officer's Report and Adoption of Amended Regulation) (Patterson)

H. Kraft Mill Regulations (Report on Particulate Definition and Proposed Adoption of Amended Regulation) (Ayer)

I. Field Burning (Summary Report on the 1972 Field Burning Season and Issuance of the 1972 Annual Report) (Brannock)

J. G.S.A. Building Parking Facility (Consideration of approval of 200 Space Parking Facility previously considered at October 25, 1972 EQC Meeting) (Downs)

K. Lincoln County Sewerage Planning - Status report (Bolton)

L. Pacific Carbide and Alloys Co., Multnomah County (Proposed modification of Waste Discharge Permit) (Ashbaker)

M. Solid Waste Planning Grant Offers (Commission approval) (Schmidt)

N. ~~North Tillamook County Sanitary Authority (Addition to construction priority list)~~ (Sawyer)

~~O. Tax Credits~~ (Sawyer)

P. Establish dates for February and March EQC meetings

Q. Emergency Action Plan - (Status Report) (Johnson)

ATTENDANCE LIST

Date: January 26, 1973

Environmental Quality Commission

Location: Public Services Building, Portland

NAME	REPRESENTING
R Bruce Snyder	PGE
Doug Carl	State Forestry
Peter Schnell	Publishers Paper Co
Chet Dyer	DEQ
[illegible] Robbins	Boise Cascade
[illegible]	E.P.A., Oregon
T J Waters	Pacific Carbide
Gary Grimes	DEQ

ATTENDANCE LIST

Date: January 26, 1973 - 11:00 a.m.

Public Hearing for: Compliance Schedules and Permits

Location: Second Floor Auditorium, Public Service Building, Portland, Oregon

NAME	REPRESENTING
R. D. Carter	Hanna Nickel Smelting Co
J. J. Coyle	" " " "
W. V. Nichols	Reynolds Metals
M. K. Michel	Automated Combustion
Wallace N. Cory	Boise Cascade Corp.
Wm J Hall	Weyerhaeuser Co
~~H. L. Gum~~	Weyerhaeuser Co.
David A [illegible]	Willamette-Western Corp
Ed Moir	Astoria Plywood
Waldemar Seton	Waldemar Seton Co.
[illegible] Gray	Astoria Plywood
Richard Reid	CH2M/HILL
W. ARCHIBALD	SANDWELL
C. F. Sisson	Gustine Bros. Flav & Plywood
George Bryson	SWF Plywood Co. Albany Or
Ben. J. Mason	Consultant, Corvallis, Oregon
J. W. Fields	Coe Mfg Co.
C. Olivier	" " "
F. J. [illegible]	" " "
V J Tretter	Georgia-Pacific
RE Hatchard	Col-Will APA

ATTENDANCE LIST

Date: January 26, 1973 - 10:00 a.m.

Public Hearing for: OAR 340 Section 25-315 (1) Veneer Driers

Location: Second Floor Auditorium, Public Service Building, Portland, Oregon

NAME	REPRESENTING
Oliver A Fick	International Paper Co
[illegible] Parrott	Roseburg Lumber
R H Pearson	" "
W. H. [illegible]	COLUMBIA PLYWOOD
W. R. Batchel	Moore Oregon
W. R. Roberts	Bates Plywood
H Cockraham	TURCO AIR INC
BILL BREWSTER	TURCO ENG. INC.
Jack Haynes	C.W. Peters & Assoc.
H. L. Carr	Weyerhaeuser Co.

MINUTES OF THE FORTY-SECOND MEETING
of the
Oregon Environmental Quality Commission
January 26, 1973

The forty-second meeting of the Oregon Environmental Quality Commission was called to order by the Chairman at 9:00 a.m., Friday, January 26, 1973, in the Second Floor Auditorium of the Public Service Building, 920 S.W. 6th Avenue, Portland, Oregon. All members were present including B.A. McPhillips, Chairman, Arnold M. Cogan, George A. McMath, Edward C. Harms, Jr., and Storrs S. Waterman.

Participating staff members were E.J. Weathersbee, Acting Director; K.H. Spies, Deputy Director; Harold M. Patterson, Harold L. Sawyer, E.A. Schmidt and F.M. Bolton, Division Directors; C. Kent Ashbaker, Water Quality Control Engineer; T.M. Phillips, Harold H. Burkitt, F.A. Skirvin, C.A. Ayer and M.J. Downs, Air Quality Control Engineers; Doug Brannock, Meteorologist; Ray M. Johnson, Air Quality Control Program Executive; and Ray P. Underwood, Legal Counsel.

MINUTES OF DECEMBER 21, 1972 COMMISSION MEETING

It was MOVED by Mr. McMath, seconded by Mr. Waterman and carried that the minutes of the forty-first meeting of the Commission held in Salem on December 21, 1972 be approved as prepared.

PROJECT PLANS FOR DECEMBER 1972

It was MOVED by Mr. Waterman, seconded by Mr. McMath and carried that the actions taken by the Department during the month of December 1972 as reported by Mr. Weathersbee regarding the following 22 domestic sewerage, 12 industrial waste, 11 air quality control and 3 solid waste management projects be approved:

Water Quality Control

Date	Location	Project	Action
Municipal Projects (22)			
12-1-72	USA (Aloha)	Windsong Subd. sewers	Prov. app.
12-6-72	Inverness	Unit 5-C, PIA sewerage system	Prov. app.
12-7-72	East Salem Sewer & Drainage Dist. I	Hoffman Road sewer	Prov. app.

Water Quality Control - continued

Municipal Projects (22) - continued

Date	Location	Project	Action
12-7-72	East Salem Sewer & Drainage Dist. I	Weathers Street, N.E. sewer	Prov. app.
12-11-72	Oakridge	Rigdon sanitary sewer and pump station	Prov. app.
12-12-72	Wood Village	Interceptor sewer report	Approved
12-14-72	Inverness	Addendum No. 4, Unit 5C PIA sewerage system	Approved
12-14-72	Myrtle Point	Change Order #4 to sewage treatment plant contract	Approved
12-15-72	Inverness	Addendum #3, Unit 5C PIA sewerage system	Approved
12-15-72	USA (Tigard)	Barnum Park Subd. sewers	Prov. app.
12-15-72	USA (Aloha)	Westword Park Sanitary sewer	Prov. app.
12-18-72	Bear Creek Valley Sanitary Authority	Midway Service Area sewers	Prov. app.
12-21-72	Salem (Willow Lake)	12th - Summer Street, Parrish Street to Market Street area, N.E. sewers	Prov. app.
12-21-72	Newport	(1) S.E. Fifth Street sewer (2) Oceanview Addition sewer	Prov. app.
12-21-72	Vernonia	Change Order #2, East Vernonia sewage pumping station contract	Approved
12-26-72	USA (Forest Grove)	Farview Terrace Subd. sewers	Prov. app.
12-26-72	Gresham	Brookcrest Subd. sewers	Prov. app.
12-26-72	West Linn (Will.)	(1) Farrvista Addn. sewers (2) Glendorra Addn. sewers	Prov. app.
12-26-72	Gresham	Linden Avenue sewer extension	Prov. app.
12-26-72	USA (Fanno Creek)	Fairway Park Subd. sewers	Prov. app.

Industrial Projects (12)

Date	Location	Project	Action
12-5-72	Molalla	Fred Kaser, animal waste facilities	Prov. app.
12-5-72	Scio	Marvin Rempel, animal waste facilities	Prov. app.
12-6-72	Pleasant Hill	Delbert Jones, animal waste facilities	Prov. app.
12-6-72	Albany	John Volbeda, animal waste facilities	Prov. app.
12-8-72	Coquille	Ed Bretzel, animal waste facilities	Prov. app.
12-8-72	Portland	Kenton Packing Company, collection system	Prov. app.
12-8-72	Portland	Pacific Meat Company, collection and treatment system	Prov. app.
12-8-72	Milton-Freewater	Readymix Sand & Gravel Company, waste water treatment facilities	Prov. app.

Water Quality Control - continued

Industrial Projects - continued

Date	Location	Project	Action
12-12-72	Corvallis	George Horning, animal waste facilities	Prov. app.
12-15-72	Merrill	Klamath Potato Distributors, primary treatment facility	Prov. app.
12-19-72	Cloverdale	Jack Wuite, animal waste facilities	Prov. app.
12-21-72	Eugene	Bohemia Lumber Company, log deck sprinkling recirculation system	Prov. app.

Air Quality Control

Date	Location	Project	Action
12-8-72	Multnomah County	Macayo Restaurant 62-space surface parking facility	Approved
12-8-72	Multnomah County	Randall Construction Company 208-space condominium parking facility	Approved
12-8-72	Portland	Kienow's Food Stores, Inc. 58-space surface parking facility	Approved
12-8-72	Portland	Consolidated Freightways 128-space surface parking facility	Approved
12-8-72	Portland	Herfy's Restaurant 57-space surface parking facility	Approved
12-8-72	Portland	River Lodge Apartments 367-space surface parking facility	Approved
12-18-72	Washington County	Investors Insurance Corp. 103-space surface parking facility	Approved
12-18-72	Portland	King's Table Restaurant 45-space surface parking facility	Approved
12-19-72	Klamath County	Weyerhaeuser Company Plans and specifications for installation of two (2) new cyclones and replacement of two (2) existing cyclones at the particleboard plant	Approved

Air Quality Control - continued

Date	Location	Project	Action
12-22-72	Portland	Portland Commons, Inc. Temporary 164-space parking facility	Approved with conditions
12-26-72	Douglas County	Umpqua Excavation and Paving Co. Preliminary plans to install wet dust control system on asphalt plant	Cond. app.

Variances:

Brazier Forest Products - Approved 12-21-72
Mt. Hood Box Company - Approved 12-21-72

Solid Waste Division

Date	Location	Project	Action
12-8-72	Crook County	Grassy Butte Cinder Pit	Not app.
12-27-72		EPA Proposed Sanitary Landfill Guidelines	Reviewed
12-27-72	Columbia Co.	Havlic Landfill (Letter Authorization)	Prov. app.
12-28-72	Lane County	London Transfer Station	Prov. app.

APPOINTMENT OF DIARMUID F. O'SCANNLAIN AS DIRECTOR

It was MOVED by Mr. McMath, seconded by Mr. Waterman and unanimously carried that the appointment by the Commission of Mr. Diarmuid F. O'Scannlain as Director of the Department of Environmental Quality effective February 1, 1973 be confirmed. Mr. O'Scannlain was present to receive congratulations from the Commission members upon his appointment.

The Chairman commended Mr. Weathersbee highly for his services as Acting Director during the period since the resignation of L.B. Day which became effective January 1, 1973.

HANNA NICKEL SMELTING CO. COMPLIANCE SCHEDULE

Mr. Skirvin presented the staff's report and evaluation of the request which had been received from the Hanna Nickel Smelting Company for modification of its present approved schedule for achieving compliance at the Riddle operations with air quality requirements set forth in OAR, Chapter 340, Sections 25-405 through 25-430.

Under the present control program which was initially approved by EQC on September 25, 1970 and revised on May 7, 1971 the company is to reduce the particulate emissions from the previous level of 4000 lbs/hour (in 1970) to about 500 lbs/hour (by April 1, 1974). The effect of the requested modification will be an approximate four months extension of the total control plan completion date (August 1974).

Mr. Ralph D. Carter and Mr. F.J. Coyle were present to represent the company.

It was MOVED by Mr. McMath, seconded by Mr. Waterman and Mr. Cogan and carried that as recommended by the Director the previously approved compliance schedule for the Hanna Nickel Smelting Company operations at Riddle be modified as requested in the company's letter of December 22, 1972 and an appropriate order be entered to that effect.

REQUIREMENTS OF 1972 FEDERAL WATER POLLUTION CONTROL ACT

Subsection 304(h) of Public Law 92-500 (the 1972 Federal Water Pollution Control Act) passed by Congress on October 18, 1972, specifies that "no board or body which approves permit applications or portions thereof shall include, as a member, any person who receives, or has during the previous two years received, a significant portion of his income directly or indirectly from permit holders or applicants for a permit." Rules promulgated on December 22, 1972 by the Environmental Protection Agency (EPA) define "significant portion" as 10 percent of gross personal income for a calendar year.

Mr. Harms read from a letter dated January 8, 1973 which he had written to Mr. Leslie Swanson, Oregon Chairman of the American Civil Liberties Union. The letter had been written on behalf of himself, Mr. George McMath and Mr. Storrs Waterman. It requested the assistance of the ACLU in this matter on the grounds that the aforementioned requirement impinges upon their individual civil rights by virtue of an unconstitutional act of Congress which will have the effect of depriving them of the offices which they now hold and of barring them in the future from holding such offices.

Mr. Harms, Mr. McMath and Mr. Waterman each reported that their incomes from permit holders exceeded the 10% figure specified in the EPA regulations. Mr. Cogan stated that the accountants for the company with which he is associated had thus far been unable to determine if he would be affected by this requirement.

Mr. Harms pointed out 11 separate classifications of individuals constituting a major portion of the citizens of the state of Oregon who under this particular requirement will henceforth not be eligible to serve as a member of the Commission. He said the obvious impact of the statute is to restrict service to an "elite" deemed more "trustworthy" in environmental matters than others in the population of the state. He said the federal statute in question is erroneously called a "conflict of interest" provision whereas it deals not with actual conflicts as set forth by statute or common law but rather with a presumed conflict, not of interest, but of viewpoint.

It was pointed out that in the past it has always been the policy and practice of each Commission member not to participate either in the discussion or in the vote on any matter in which they have a personal or financial interest.

Mr. Harms then proposed that consideration be given by the Commission to adoption of a regulation which would pertain specifically to the subject of conflict of interest on the part of Commission members. He read a draft of the type of regulation that he would propose.

It was MOVED by Mr. Harms, seconded by Mr. Waterman and carried that the proposed regulation be referred to the legal counsel for drafting and for presentation to the Commission for consideration of adoption at a future meeting.

GSA BUILDING PARKING FACILITY

Mr. Downs presented the staff report and evaluation of the proposal to construct a 200-space underground parking facility one block east of the Portland City Hall. It will be ancillary to a new federal office building to be located one block further east. This matter had been considered by the Commission on October 25, 1972 at which time action was deferred until a special study by GSA had been completed and reviewed.

Mr. Downs stated that in view of the fact that the Transportation Control Strategy is expected to achieve compliance with the national air quality standards in the vicinity of the proposed project and the proposed parking facility is consistent with the Commission's guidelines for review of parking facilities it is the recommedation of the Director that the Commission approve the construction of the proposed 200-space underground parking facility.

It was MOVED by Mr. Waterman, seconded by Mr. Cogan and carried that the Director's recommendation in this matter be approved.

After adoption of the above motion and in response to a question by Mr. Cogan it was learned that the parking facility proposal had not been submitted to the city by GSA for approval by the city of Portland.

It was then MOVED by Mr. Cogan, seconded by Mr. Waterman and carried that this matter be reconsidered.

Next it was MOVED by Mr. Cogan, seconded by Mr. Waterman and carried that the original motion be rescinded and that the proposal be referred to the city of Portland for review and recommendations with the hope that final action can be taken at the next meeting of the Commission.

Mr. McMath did not participate in the discussion or vote in this matter because his firm has a contract with GSA.

PUBLIC HEARING RE: PROPOSED VENEER DRIER REGULATIONS

Public notice having been given as required by state law and administrative rules the public hearing in the matter of adoption of proposed veneer drier regulations (modification of Oregon Administrative Rules, Chapter 340, subsection (1) of Section 25-315) was opened by the Chairman at 10:00 a.m. in the Second Floor Auditorium of the Public Service Building, 920 S.W. 6th Avenue, Portland, Oregon with all members of the Commission in attendance.

Mr. Phillips reviewed the extensive efforts made by the department to get input from all interested and concerned parties in the development of the proposed modifications. He also discussed their purpose and scope. He said that among other things they would prohibit after December 31, 1974 the operation of any veneer drier that would emit visible air contaminants, including condensible hydrocarbons, or create the characteristic "blue haze" beyond the edge of the building or at a distance more than 50 feet from the drier, whichever is greater. He estimated that some 250 driers would be involved.

Mr. McMath expressed concern about the lack of a specific definition for the term "blue haze" and also about the enforceability of such a requirement.

Mr. Cogan questioned the need to allow nearly two years for compliance with the proposed rule.

Mr. Mike Roach read a prepared statement dated January 26, 1973 on behalf of the Mid Willamette Valley Air Pollution Authority. He criticized the proposed rule changes by claiming that they appear to be more strict but are in fact vague, confusing and probably unenforceable. He recommended that the present rules and standards be retained without change. He admitted that although the region had received an advance copy of the proposed rule changes it had not commented on them prior to this hearing.

Mr. Vincent J. Tretter, Jr. of Georgia-Pacific Corporation read a prepared statement on behalf of the veneer drier industry committee. He recommended that the visibility or blue haze provision be made a statement of policy rather than a rule and that the opacity limitation be revised so as to be based on an "arithmetic" average.

Mr. Richard E. Hatchard was the next person to make a statement. He said he had been instructed by the Board of Directors of CWAPA to represent them at this hearing. He was extremely critical of the proposed amendment and claimed that it is another example of the trend to give concessions to certain industries. He alleged that DEQ and the Commission are attempting to do away with the Air Pollution Control Regions in Oregon. He said a bill is to be introduced into the Legislature to abolish the regions and he accused the Commission of supporting such a move. Commission members emphatically stated that they had no knowledge of any such bill, had never taken any stand regarding such a proposal and had never even discussed the subject.

Mr. Matt Gould, representative of Georgia Pacific Corporation, appeared and pointed out that to his knowledge no other state has adopted veneer drier regulations. He referred to special studies of the problem which had been made at Washington State University with partial financing by EPA. He said that the natural blue haze over forested areas is caused by the same condensible hydrocarbons that are emitted from veneer driers, that the veneer driers merely concentrate the haze, that solving this visibility problem has been complicated by the fact that no specific hardware, equipment or method was available and therefore had to be developed, that at the present time several different approaches are being taken to abate the pollution, and that unfortunately it has been extremely difficult to measure the hydrocarbons. Highly sophisticated equipment is required for such measurements.

There was no one else present who asked to be heard. Mr. McMath expressed concern about the enforceability of the proposed rule and asked that an opinion be obtained from the Attorney General's office regarding that point. Mr. Cogan asked that the comments made by the Regional Authorities be given further consideration. Mr. Harms commented on the unsubstantiated statements made by Mr. Hatchard.

It was MOVED by Mr. Harms, seconded by Mr. Waterman and carried that the record in this matter be held open for another 20 days, that the staff carefully examine the Regions' objections and report back at the next meeting.

The hearing was adjourned at 11:00 a.m. Copies of the prepared statements submitted by Messrs Roach, Tretter and Hatchard have been made a part of the Department's files in this matter.

ADOPTION OF AIR QUALITY COMPLIANCE SCHEDULES AND PERMITS

Public notice having been given as required by statute and administrative rules the public hearing for adoption of compliance schedules developed and permits issued by DEQ and the Regional Air Pollution Authorities for compliance with the requirements of the Federal Clean Air Act was called to order by the Chairman at 11:00 a.m. on Friday, January 26, 1973 in the Second Floor Auditorium of the Public Service Building, 920 S.W. 6th Avenue, Portland, Oregon. All Commission members were present.

Mr. Phillips presented the staff report covering 167 compliance schedules (75 by DEQ, 22 by CWAPA, 30 by MWVAPA and 40 by LRAPA) and 81 permits (35 by DEQ, 32 by CWAPA and 14 by MWVAPA). He said that no objections to the compliance schedules or permits had been received. No one present at the hearing had any objections or offered to make any statement.

It was MOVED by Mr. Harms, seconded by Mr. McMath and carried that as recommended by the Acting Director (1) the compliance schedules of the Regional Authorities and the Department considered at this hearing be adopted and (2) the Commission adopt an order approving and adopting the compliance schedules as part of Oregon's Clean Air Act Implementation Plan, with said schedules being attached to and made a part of the order.

Because of his connection with Pennwalt Corporation Mr. Waterman did not participate in the discussion or vote on the motion concerning this matter.

The hearing was adjourned at 11:20 a.m.

FIELD BURNING 1972 SUMMARY REPORT

Mr. Brannock presented a brief summary report covering the results of the field burning in the Willamette Valley during 1972. He stated that 270,000 acres of grassland were burned last year compared to 260,000 acres in 1971 and that although visual measurements of air quality indicated the valley was smokier in 1972 the conclusion was that field burning did not significantly contribute to this increase.

Mr. Harms commended the growers for their cooperation in managing field burning during the past season.

No Commission action in this matter was required other than accepting the report.

TAX CREDIT APPLICATIONS

Mr. Sawyer presented the Department's evaluation and recommendations regarding the tax credit applications covered by the following motions:

It was MOVED by Mr. McMath, seconded by Mr. Waterman and carried that a Pollution Control Facility Tax Credit Certificate be issued to Weyerhaeuser Company at Klamath Falls for facilities claimed in application T-330 costing $268,793 with 80% or more allocable to pollution control.

It was MOVED by Mr. Cogan, seconded by Mr. Waterman and carried that a Pollution Control Facility Tax Credit Certificate be issued to Lemons Millwork, Inc. at Albany for facilities claimed in application T-365 costing $31,200 with 80% or more allocable to pollution control.

It was MOVED by Mr. Cogan, seconded by Mr. Waterman and carried that a Pollution Control Facility Tax Credit Certificate be issued to Pacific Meat Company, Portland, for facilities claimed in application T-392 costing $60,639.13 with 80% or more allocable to pollution control.

It was MOVED by Mr. Waterman, seconded by Mr. Cogan and carried that a Pollution Control Facility Tax Credit Certificate be issued to Weyerhaeuser Company at Springfield for facilities claimed in application T-395 costing $17,246 and with 80% or more allocable to pollution control, such issuance being subject to the following special condition: The company shall submit a detailed report to the Department of Environmental Quality prior to December 31 of each year containing an analysis of the data collected together with a complete discussion of the watershed management practices which influence the data.

It was MOVED by Mr. McMath, seconded by Mr. Waterman and carried that a Pollution Control Facility Tax Credit Certificate be issued to Weyerhaeuser Company at Springfield for facilities claimed in application T-396 costing $22,750 with 80% or more allocable to pollution control.

Mr. Sawyer reported that the Weyerhaeuser Company had withdrawn application T-401.

NORTH TILLAMOOK COUNTY SANITARY AUTHORITY

Mr. Sawyer reported that the North Tillamook County Sanitary Authority is preparing to initiate construction of regional sewerage facilities which will serve the cities of Nehalem and Wheeler and the surrounding area. He said the Acting Director has recommended that the North Tillamook County Sanitary Authority be added to the Fiscal Year '73-'74 Construction Grant Priority List so that it can be eligible for a federal construction grant.

It was MOVED by Mr. Cogan, seconded by Mr. Waterman and carried that the Acting Director's recommendation be approved.

The meeting was recessed at 11:55 a.m. and reconvened at 1:30 p.m.

HOT MIX ASPHALT PLANT REGULATION

Mr. Patterson reviewed the hearing officer's report covering the public hearing held on December 19, 1972 beginning at 1:30 p.m. in the DEQ Conference Room at 1234 S.W. Morrison St., Portland, Oregon, regarding the adoption of proposed modification to OAR Chapter 340, Sections 25-105 through 25-130, Hot Mix Asphalt Plants.

Based on a careful review of the testimony presented at said hearing he recommended that the proposed modification be approved but with further changes being made in the definitions of "Hot-mix asphalt plants" and "Portable hot mix asphalt plants" as contained in subsections 25-105 (1) and (5), respectively.

It was MOVED by Mr. Cogan, seconded by Mr. Waterman and carried that the hearing officer's report be accepted and that the proposed rule be approved as corrected.

A copy of the approved rule is attached to and made a part of these minutes.

KRAFT MILL EMISSION REGULATIONS

Mr. Ayer presented a comprehensive review of the testimony which had been received at the public hearing held in Salem on December 21, 1972 regarding the adoption of proposed modifications to the Kraft Pulp Mill Regulation. Based on this detailed review he said it was the recommendation of the Acting Director that the proposed regulation with additional changes to paragraphs A-8, G-2, I-2 and I-3 as set forth in the staff report be adopted. The above additional changes are for the purpose of improving clarity and providing necessary details regarding method of measurement, existing special studies requirements and approval of sampling programs.

In the discussion which followed Mr. Ayer's presentation it was realized that copies of the final report had inadvertently not been sent to the Regional Authorities although they had testified at the December 21 hearing in Salem.

Mr. Matt Gould of Georgia Pacific Corporation and Mr. William Hall of Weyerhaeuser Company participated in the discussion regarding the difficulties involved in monitoring the emissions.

It was MOVED by Mr. Harms, seconded by Mr. McMath and carried that the proposed Kraft Pulp Mill Emission Regulations as revised be adopted. Although Mr. Cogan considered the regulations most acceptable he voted "No" because of the failure to submit the final changes to the Regional Authorities in advance of this meeting.

A copy of the Kraft Pulp Mill Regulations as adopted is attached to and made a part of these minutes.

LINCOLN COUNTY SEWAGE DISPOSAL

Mr. Bolton presented a most descriptive summary report of the status of sewage disposal and sewerage planning in Lincoln County. Colored slides were shown depicting conditions observed during recent investigations made by representatives of the Department and the State Health Division.

PACIFIC CARBIDE AND ALLOYS CO.

Mr. Ashbaker presented the staff report regarding the problem of waste disposal at the Pacific Carbide and Alloys Company plant located adjacent to Columbia Slough and the company's request for an extension of time until August 31, 1973 to complete the removal of sludge deposits from Columbia Slough.

He also referred to a letter received from Mrs. Barbara Lucas of the League of Women Voters regarding this matter.

Mr. T.J. Waters, Vice President, was present to represent the company.

After further discussion it was MOVED by Mr. Cogan, seconded by Mr. McMath and carried that as recommended by the Acting Director Condition No. 7 of the Waste Discharge Permit issued to the company on September 27, 1972 be amended to require removal by August 31, 1973 of the waste solids which exist in Columbia Slough as a result of pond wall failure and that in addition the company submit a report by April 30, 1973 outlining not only the progress being made but also a plan or method for removal of the solids.

SOLID WASTE PLANNING GRANT OFFERS

Mr. Schmidt presented the staff report giving the status of action planning grant applications for solid waste disposal for the several Oregon counties and regions. The staff was instructed to proceed with the processing of the applications.

EMERGENCY ACTION PLAN

Mr. Johnson reviewed the status of the Emergency Action Plan which is a part of the Oregon Clean Air Act Implementation Plan. He indicated that reasonably satisfactory progress is being made.

DATES FOR FUTURE MEETINGS

March 2 and March 30, 1973 were selected as the dates for the next two meetings of the Commission.

There being no further business the meeting was adjourned by the Chairman at 3:50 p.m.

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL DIVISION

ADOPTED January 26, 1973

Amended OAR Chapter 340, Division 2
Section 25-105 through 25-130, Hot Mix Asphalt Plants.

OAR, Chapter 340, Division 2, Sections 25-105 through 25-130 are hereby amended to read as follows:

25-105 DEFINITIONS. As used in Sections 25-105 through 25-125, unless otherwise required by context:

(1) "Hot mix asphalt plants" means those facilities and equipment which convey proportioned quantities or batch load cold aggregate to a drier, and heat, dry, screen, classify, measure and mix the aggregate with asphalt for purposes of paving, construction, industrial, residential or commercial use.

(2) "Collection efficiency"means the overall performance of the air cleaning device in terms of ratio of material collected to total input to the collector unless specific size fractions of the contaminant are stated or required.

(3) "Process weight by hour" means the total weight of all materials introduced into any specific process which process may cause any discharge into the atmosphere. Solid fuels charged will be considered as part of the process weight, but liquid and gaseous fuels and combustion air will not. "The Process Weight Per Hour" will be derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle.

(4) "Dusts" means minute solid particles released into the air by natural forces or by mechanical processes such as crushing, grinding, milling, drilling, demolishing, shoveling, conveying, covering, bagging, or sweeping.

(5) "Portable hot mix asphalt plants" means those hot mix asphalt plants which are designed to be dismantled and are transported from one job site to another job site.

(6) "Particulate Matter" means any matter except uncombined water, which exists as a liquid or solid at standard conditions.

(7) "Special Control Areas" means for the purpose of this regulation any location within:

(a) Multnomah, Clackamas, Columbia, Washington, Yamhill, Polk, Benton, Marion, Linn and Lane Counties.

(b) The Umpqua Basin as defined in section 21-010, (2).

(c) The Rogue Basin as defined in section 21-010, (3).

(d) Any incorporated city or within six (6) miles of the city limits of said incorporated city.

(e) Any area of the state within one (1) mile of any structure or building used for a residence.

(f) Any area of the state within two (2) miles straight line distance or air miles of any paved public road, highway or freeway having a total of two (2) or more traffic lanes.

25-110 CONTROL FACILITIES REQUIRED.

(1) No person shall operate any hot mix asphalt plant, either portable or stationary, located within any area of the state outside special control areas unless all dusts and gaseous effluents generated by the plant are subjected to air cleaning device or devices having a particulate collection efficiency of at least 80% by weight.

(2) No person shall operate any hot-mix asphalt plant, either portable or stationary located within any special control area of the state without installing and operating systems or processes for the control of particulate emissions so as to comply with the emission limits established by the process weight table, Table I, attached herewith and by reference made a part of this rule and the emission limitations in section 21-015, subsections (2) and (3) and section 21-030 of Chapter 340, OAR.

25-115 OTHER ESTABLISHED AIR QUALITY LIMITATIONS: The emission limits established under these sections are in addition to visible emission and other ambient air standards, established or to be established by the Environmental Quality Commission unless otherwise provided by rule or regulation.

25-120 PORTABLE HOT MIX ASPHALT PLANTS.

(1) Portable hot mix asphalt plants temporarily located outside of special control areas and complying with the emission limitation of 25-110 (1) need not comply with Sections 21-015 and 21-030 of Chapter 340, OAR provided however that the particulate matter emitted does not create or tend to create a hazard to human, animal or plant life, or unreasonably interfere with agricultural operations, recreation areas, or the enjoyment of life and property.

(2) Portable hot mix asphalt plants may apply for air contaminant discharge permits within the area of Department jurisdiction without indicating specific site locations. Said permits will be issued for periods not to exceed one (1) calendar year. As a condition of said permit, the permittee will be required to obtain approval from the Department for the air pollution controls to be installed at each site location or set-up at least ten (10) days prior to operating at each site location or set-up.

25-125 ANCILLARY SOURCES OF EMISSION - HOUSEKEEPING OF PLANT AND FACILITIES.

(1) Ancillary air contamination sources from the plant and its facilities which emit air contaminants into the atmosphere such as, but not limited to the drier openings, screening and classifying system, hot rock elevator, bins, hoppers and pug mill mixer, shall be controlled at all times so as to maintain the highest possible level of air quality and the lowest possible discharge of air contaminants.

(2) The handling of aggregate and traffic shall be conducted at all times so as to minimize emissions into the atmosphere.

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY CONTROL DIVISION

ADOPTED January 26, 1973

REVISED REGULATION FOR KRAFT PULP MILLS
OAR Chapter 340, Sections 25-155 to 25-195 are Repealed and Sections A through K are adopted in lieu thereof.

A. DEFINITIONS:

As used in these regulations, unless otherwise required by context:

1. Continual Monitoring means sampling and analysis, in a continuous or timed sequence, using techniques which will adequately reflect actual emission levels or concentrations on a continuous basis.

2. Department means the Department of Environmental Quality.

3. Emission means a release into the atmosphere of air contaminants.

4. Kraft Mill or Mill means any industrial operation which uses for a cooking liquor an alkaline sulfide solution containing sodium hydroxide and sodium sulfide in its pulping process.

5. Lime Kiln means any production device in which calcium carbonate is thermally converted to calcium oxide.

6. Non-condensibles means gases and vapors, contaminated with TRS gases,. from the digestion and multiple-effect evaporation processes of a mill that are not condensed with the equipment used in said processes.

7. Other Sources means sources of TRS emissions in a kraft mill other than recovery furnaces and lime kilns, including but not limited to:

   a. vents from knotters, brown stock washing systems, evaporators, blow tanks, smelt tanks, blow heat accumulators, black liquor storage tanks, black liquor oxidation system, tall oil recovery operations;

   b. any operation connected with the treatment of condensate liquids within the mill, and

   c. any vent which is shown to be a significant contributor of odorous gases.

8. Particulate matter means all solid material in an emission stream which may be removed on a glass fiber filter maintained during sampling at stack temperature or above the water vapor dew point of the stack gas, whichever is greater but not more than 400°F. The glass-fiber filter to be used shall be MSA 1106BH or equivalent.

9. Parts Per Million (ppm) means parts of a contaminant per million parts of gas by volume on a dry-gas basis (1 ppm equals 0.0001% by volume).

10. Production means tons of air-dried, unbleached kraft pulp, or equivalent, produced.

11. Recovery furnace means the combustion device in which pulping chemicals are converted to a molten smelt and wood solids are incinerated. For these regulations, and where present, this term shall include the direct contact evaporator.

12. Total Reduced Sulfur (TRS) means the sulfur in hydrogen sulfide, mercaptans, dimethyl sulfide, dimethyl disulfide, and any other organic sulfides present in an oxidation state of minus two.

B. STATEMENT OF POLICY

Recent technological developments have enhanced the degree of malodorous emission control possible for the kraft pulping process. While recognizing that complete malodorous and particulate emission control is not presently possible, consistent with the meteorological and geographical conditions in Oregon, it is hereby declared to be the policy of the Department to:

1. Require, in accordance with a specific program and time table for all sources at each operating mill, the highest and best practicable treatment and control of atmospheric emissions from kraft mills through the utilization of technically feasible equipment, devices and procedures. Consideration will be given to the economic life of equipment, which when installed, complied with the highest and best practicable treatment requirement.

2. Require degrees and methods of treatment for major and minor emission points that will minimize emissions of odorous gases and eliminate ambient odor nuisances.

3. Require effective monitoring and reporting of emissions and reporting of other data pertinent to air quality or emissions. The Department will use these data in conjunction with ambient air data and observation of conditions in the surrounding area to develop and revise emission and ambient air standards, and to determine compliance therewith.

4. Encourage and assist the kraft pulping industry to conduct a research and technological development program designed to progressively reduce kraft mill emissions, in accordance with a definite program, including specified objectives and time schedules.

C. HIGHEST AND BEST PRACTICABLE TREATMENT AND CONTROL REQUIRED:

Notwithstanding the specific emission limits set forth in Section D of these regulations, in order to maintain the lowest possible emission of air contaminants, the highest and best practicable treatment and control currently available shall in every case be provided, with consideration being given to the economic life of the existing equipment.

All installed process and control equipment shall be operated at full effectiveness and efficiency at all times, such that emissions of contaminants are kept at lowest practicable levels.

D. EMISSION LIMITATIONS:

1. Emission of Total Reduced Sulfur (TRS)

   a. Recovery Furnaces

      1) As soon as practicable, but not later than July 1, 1975, the emissions of TRS from recovery furnaces shall not exceed:

         a) 10 ppm as a daily arithmetic average and 0.3 lb S/ton of production on a mill-site basis,

         b) 40 ppm for more than 60 cumulative minutes in any one day from each recovery furnace stack,

         c) 15 ppm as a daily arithmetic average and 0.45 lb S/ton of production from each recovery furnace stack.

2) As soon as practicable, but not later than July 1, 1978, the emission of TRS shall not exceed:

   a) 5 ppm as a daily arithmetic average and 0.15 lb S/ton of production on a mill-site basis,

   b) 40 ppm for more than 60 cumulative minutes in any one day from each recovery furnace stack,

   c) 10 ppm as a daily arithmetic average and 0.30 lb S/ton of production from each recovery furnace stack.

3) As soon as practicable, but not later than July 1, 1983, the emission of TRS from each recovery furnace shall not exceed:

   a) 5 ppm as a daily arithmetic average and 0.15 lb S/ton of production,

   b) 20 ppm for more than 60 cumulative minutes in any one day.

4) TRS emissions from each recovery furnace placed in operation after the effective date of these regulations shall be controlled immediately such that the emissions of TRS shall not exceed:

   a) 5 ppm as a daily arithmetic average and 0.15 lb S/ton of production,

   b) 20 ppm for more than 60 cumulative minutes in any one day.

b. Lime Kilns

Lime kilns shall be operated and controlled such that emissions of TRS shall be kept to lowest practicable levels and shall not exceed:

1) By not later than July 1, 1975, 40 ppm and 0.2 lb S/ton of production, as determined by a monitoring procedure approved by the Department,

2) By not later than July 1, 1978, 20 ppm and 0.1 lb S/ton of production, as determined by a monitoring procedure approved by the Department.

c. Compliance Programs

Recovery furnaces and lime kilns in operation on or before the effective date of these regulations shall be brought into compliance with subsections D.1.a. and D.1.b. above in accordance with specific programs and schedules to be established with each individual mill and approved by the Department by not later than May 1, 1973, taking into consideration the following:

1) Age and condition of existing facilities,

2) Geographical location,

3) Overall control of emissions,

4) Severity of problems related to emissions from the facility, and

5) Ease of compliance.

d. Non-condensibles

1) Non-condensibles from digesters and multiple-effect evaporators shall be treated to destroy TRS gases by thermal incineration in a lime kiln or equivalent treatment.

2) On mill sites where a lime kiln or combination of lime kilns is used for incinerating non-condensibles, as soon as practicable, but not later than July 1, 1975, the means shall be provided to immediately and automatically treat the non-condensibles in an incineration device capable of subjecting the non-condensibles to a temperature of not less than 1200° F for not less than 0.3 seconds whenever the kiln or combination of kilns is out of service or otherwise incapable of incinerating non-condensibles.

3) When steam- or air-stripping of condensates or other contaminated streams is practiced, the stripped gases shall be subjected to treatment in the non-condensible system or otherwise given equivalent treatment.

e. Other Sources.

1) As soon as practicable, but not later than July 1, 1975, the emission of TRS from other sources, including but not limited to knotters and brown stock washer vents, brown stock washer filtrate tank vents, black liquor oxidation vents, and contaminated condensate stripping shall be limited, controlled or treated to lowest practicable levels in accordance with a specific program and time table submitted to and approved by the Department.

2) Miscellaneous Sources and Practices:

When it is determined that sewers, drains, and anaerobic lagoons significantly contribute to an odor problem, a program for control shall be required.

3) Compliance programs required by these subsections shall be established by not later than May 1, 1973 with each individual mill and incorporated in the Air Contaminant Discharge Permit issued for each mill.

2. Particulate Matter

a. Recovery Furnaces

As soon as practicable, but not later than May 1, 1975, the emissions of particulate matter from recovery furnaces shall not exceed four (4) pounds per ton of production on a mill-site basis and from each recovery furnace stack.

b. Lime Kilns

As soon as practicable, but not later than May 1, 1975, the emissions of particulate matter from lime kilns shall not exceed one (1) pound per ton of production on a mill-site basis and from each lime kiln stack.

c. Smelt Dissolving Tanks

The emission of particulate matter from smelt dissolving tanks shall not exceed one-half ($\frac{1}{2}$) pound per ton of production on a mill-site basis and from each smelt dissolving tank.

3. Sulfur Dioxide (SO_2)

As soon as practicable, but not later than July 1, 1975, emissions of sulfur dioxide from each recovery furnace stack shall not exceed a daily arithmetic average of 300 ppm on a dry-gas basis except during start-up and shut-down periods.

4. New Facility Compliance

As soon as practicable, but not later than within 180 days of the start-up of a new kraft mill or of any new or modified facility having emissions limited by these regulations, that facility shall be operated, controlled, or limited to comply with the applicable provisions of these regulations and the mill shall conduct source sampling or monitoring as appropriate to demonstrate compliance.

5. Compliance Schedules

As soon as practicable, but not later than May 1, 1973, each mill shall submit to the Department a proposed compliance program, including means and methods to the extent possible, and a schedule for complying with the emission limits of these regulations. The approved compliance program shall be incorporated in the Air Contaminant Discharge Permit issued to each mill.

E. MORE RESTRICTIVE EMISSION LIMITS:

The Department may establish more restrictive emission limits and compliance schedules after notice and hearing if applicable for different geographical areas of the state.

F. PLANS AND SPECIFICATIONS:

Prior to construction of new kraft mills, or expansion of production or modification of facilities significantly affecting emissions at existing kraft mills, complete and detailed engineering plans and specifications for air pollution control devices and facilities and such other data as may be required to evaluate projected emissions and potential effects on air quality shall be submitted to and approved by the Department. All construction shall be in accordance with plans as approved in writing by the Department.

G. MONITORING

1. Total Reduced Sulfur (TRS)

Each mill shall provide continual monitoring of TRS in accordance with the following:

a. The monitoring equipment shall be capable of determining compliance with the emission limits established by these regulations, and shall be capable of continual sampling and recording of concentrations of TRS contaminants during a time interval not greater than 30 minutes.

b. The sources monitored shall include, but are not limited to, the recovery furnace stacks and the lime kiln stacks.

c. At least once per year, vents from other sources as required in D.1.e., Other Sources, shall be sampled to demonstrate representative emissions of TRS and the results reported to the Department.

2. Particulate Matter

Each mill shall sample the recovery furnace(s), lime kiln(s) and smelt dissolving tank(s) for particulate emissions with, (a) the sampling method and (b) the analytical methods approved in writing by the Department. Each mill, after the adoption of this regulation, shall establish and have approved in writing by the Department, a regular sampling schedule. As soon as practicable, each mill shall provide continual monitoring of particulate matter from the recovery furnace(s) and lime kiln(s) in a manner approved in writing by the Department.

3. Sulfur Dioxide (SO_2)

Representative sulfur dioxide emissions from the recovery furnace(s) shall be determined at least once each month.

H. REPORTING:

Unless otherwise authorized or required by permit, data shall be reported by each mill for each calendar month by the fifteenth day of the subsequent calendar month as follows:

1. Daily average emissions of TRS gases expressed in parts per million of H_2S on a dry gas basis for each source included in the approved monitoring program.
2. Unless excused in writing by the Department, the number of cumulative minutes each day the TRS gases from the recovery furnaces exceed 20 ppm and 40 ppm and the maximum concentration of TRS measured each day, expressed as H_2S on a dry gas basis.
3. Emissions of TRS gases in pounds of sulfur per equivalent air-dried ton of pulp processed in the kraft cycle for each source included in the approved monitoring program.
4. Emission of SO_2 from the recovery furnace(s), expressed as ppm, dry basis.
5. Emission of particulates in pounds per equivalent air-dried ton of pulp produced in the kraft cycle based upon the sampling conducted in accordance with the approved monitoring program.
6. Cumulative hours of operation of the lime kiln(s) used for non-condensible incineration and the number of cumulative hours of stand-by incinerator operations.

7. Average daily equivalent kraft pulp production in air-dried tons.

8. Each kraft mill shall furnish, upon request of the Department, such other pertinent data as the Department may require to evaluate the mill's emission control program. Each mill shall immediately report abnormal mill operations which result in increased emissions of air contaminants, in accordance with the provisions of the Oregon Administrative Rules, Chapter 340, "Upset Conditions".

I. SPECIAL STUDIES:

1. Where warranted by conditions at particular mills, special studies of specific vents or air contaminant emissions may be required as a condition of issuing an Air Contaminant Discharge Permit.

2. Each mill shall participate in special studies sufficient to identify at each mill:

   a. The amount and effects of sulfur oxides, including SO_2, SO_3, and SO_4 in recovery furnace stack gases.

   b. The extent of interference from the formation of sulfate ion from SO_2 and SO_3 in wet-collection devices used in particulate sampling trains, and

   c. The occurrence of acid mist (H_2SO_4 in water droplets) in recovery furnace stack gases.

   These studies are to be completed by January 1, 1975, and final reports submitted to the Department by July 1, 1975. Reports of progress concerning these studies shall be submitted to the Department by January 1 and July 1 of each year.

3. Each mill shall for all furnaces, allowing a reasonable start-up period for new furnaces, conduct a special study sufficient to evaluate the stability and efficiency of the electrostatic precipitators used on recovery furnace(s). All sampling and analytical procedures to be approved in writing by the Department.

J. OTHER ESTABLISHED AIR QUALITY LIMITATIONS:

The emission limits established by these regulations are in addition to visible emissions and other ambient air standards, established or to be established by the Department, unless exempted therefrom by this regulation.

K. PUBLIC HEARING:

A public hearing shall be held by the Department no later than January 1976, to review current technology and the adequacy of these regulations and to adopt any revisions or additional emission standards that are necessary.

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

Memorandum

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item No. B, January 26, 1973, EQC Meeting

Project Plans for December, 1972

During the month of December, staff action was taken relative to plans, specifications and reports as follows:

Water Quality Control

1. Twenty-two (22) domestic sewage projects were reviewed:
   a) Provisional approval was given to:
      17 plans for sewer extensions
   b) Approval without conditions given to:
      1 engineering report
      4 contract modifications
2. Twelve (12) industrial waste treatment facilities projects were given provisional approval:
   7 animal waste facilities
   2 meat packing plants
   3 miscellaneous projects (sand & gravel (Milton-Freewater; potato processing, Merrill; log sprinkling recirculation, Eugene)

Air Quality Control

1. Eleven (11) project plans, reports or proposals were received and reviewed:
   a) Conditional approval given to:
      1 parking facility (164 space temporary-Portland Commons)
      1 Prel. plans for wet dust control on aspahlt plant (Doug. Co)

Air Quality Control (Continued)

b) Approval without conditions given to:

1) 8 parking facilities

2) 1 particleboard plant treatment facility (2 new cyclones and replace 2 existing cyclones) (Weyco, Klamath Falls)

Solid Waste Disposal

1. Three project plans were reviewed:

1) Provisional approval given to:

1 Transfer station (LondonTransfer Sta., Lane Co.)

1 Demolition landfill (Havlic, Columbia Co.)

2) Not approved was:

1 Tire disposal facility (Grassy Butte Cinder Pit, Crook Co.)

Director's Recommendation

It is recommended that the Commission give its confirming approval to staff action on project plans for the month of December 1972.

E. J. Weathersbee

EJW:lb 1/12/73

PROJECT PLANS

Water Quality Division

During the month of December, 1972, the following project plans and specifications and/or reports were reviewed by the staff. The disposition of each project is shown, pending ratification by the Environmental Quality Commission.

Date	Location	Project	Action
Municipal Projects (22)			
12-1-72	USA (Aloha)	Windsong Subd. sewers	Prov. approval
12-6-72	Inverness	Unit 5-C, PIA sewerage system	Prov. approval
12-7-72	East Salem Sewer & Drainage Dist. I	Hoffman Road sewer	Prov. approval
12-7-72	East Salem Sewer & Drainage Dist. I	Weathers Street, N.E. sewer	Prov. approval
12-11-72	Oakridge	Rigdon sanitary sewer and pump station	Prov. approval
12-12-72	Wood Village	Interceptor sewer report	Approved
12-14-72	Inverness	Addendum No. 4, Unit 5C PIA sewerage system	Approved
12-14-72	Myrtle Point	Change Order #4 to sewage treatment plant contract	Approved
12-15-72	Inverness	Addendum #3, Unit 5C PIA sewerage system	Approved
12-15-72	USA (Tigard)	Barnum Park Subd. sewers	Prov. approval
12-15-72	USA (Aloha)	Westword Park sanitary sewer	Prov. approval
12-18-72	Bear Creek Valley Sanitary Authority	Midway Service Area sewers	Prov. approval
12-21-72	Salem (Willow Lake)	12th - Summer Street, Parrish Street to Market Street area, N.E. sewers	Prov. approval
12-21-72	Newport	(1) S.E. Fifth Street sewer (2) Oceanview Addition sewer	Prov. approval

Date	Location	Project	Action
12-21-72	Vernonia	Change Order #2, East Vernonia sewage pumping station contract	Approved
12-26-72	USA (Forest Grove)	Farview Terrace Subd. sewers	Prov. approval
12-26-72	Gresham	Brookcrest Subd. sewers	Prov. approval
12-26-72	West Linn (Will.)	(1) Farrvista Addn. sewers (2) Glendorra Addn. sewers	Prov. approval
12-26-72	Gresham	Linden Avenue sewer extension	Prov. approval
12-26-72	USA (Fanno Creek)	Fairway Park Subd. sewers	Prov. approval

Water Pollution Control

Industrial Projects (12)

Date	Location	Project	Action
12/5/72	Molalla	Fred Kaser, animal waste facilities	Prov. Approval
12/5/72	Scio	Marvin Rempel, animal waste facilities	Prov. Approval
12/6/72	Pleasant Hill	Delbert Jones, animal waste facilities	Prov. Approval
12/6/72	Albany	John Volbeda, animal waste facilities	Prov. Approval
12/8/72	Coquille	Ed Bretzel, animal waste facilities	Prov. Approval
12/8/72	Portland	Kenton Packing Company, collection system	Prov. Approval
12/8/72	Portland	Pacific Meat Company, collection and treatment system	Prov. Approval
12/8/72	Milton-Freewater	Readymix Sand and Gravel Company, waste water treatment facilities	Prov. Approval
12/12/72	Corvallis	George Horning, animal waste facilities	Prov. Approval
12/15/72	Merrill	Klamath Potato Distributors, primary treatment facility	Prov. Approval
12/19/72	Cloverdale	Jack Wuite, animal waste facilities	Prov. Approval
12/21/72	Eugene	Bohemia Lumber Company, log deck sprinkling recirculation system	Prov. Approval

AP - 9 PROJECT PLANS, REPORTS, PROPOSALS FOR AIR QUALITY CONTROL DIVISION FOR DECEMBER, 1972

Date	Location	Project	Action
Dec. 8	Multnomah County	Macayo Restaurant 62-space surface parking facility	Approved
8	Multnomah County	Randall Construction Company 208-space condominum parking facility	Approved
8	Portland	Kienow's Food Stores, Inc. 58-space surface parking facility	Approved
8	Portland	Consolidated Freightways 128-space surface parking facility	Approved
8	Portland	Herfy's Restaurant 57-space surface parking facility	Approved
8	Portland	River Lodge Apartments 367-space surface parking facility	Approved
18	Washington County	Investors Insurance Corp. 103-space surface parking facility	Approved
18	Portland	King's Table Restaurant 45-space surface parking facility	Approved
19	Klamath County	Weyerhaeuser Company Plans and specifications for installation of two (2) new cyclones and replacement of two (2) existing cyclones at the particleboard plant	Approved
22	Portland	Portland Commons, Inc. temporary 164-space parking facility	Approved with conditions
26	Douglas County	Umpqua Excavation and Paving Co. Preliminary plans to install wet dust control system on asphalt plant	Conditional Approval

Variances:

Brazier Forest Products--Approved 12/21/72
Mt. Hood Box Company--Approved 12/21/72

PROJECT PLANS

SOLID WASTE MANAGEMENT DIVISION

During the month of December 1972, the following project plans and specifications and/or reports were reviewed by the staff. The disposition of each project is shown, pending confirmation by the Environmental Quality Commission.

Date	Location	Project		Action
8	Crook County	Grassy Butte Cinder Pit	Tires	Not approved
27		EPA Proposed Sanitary Landfill Guidelines		Reviewed
27	Columbia Co.	Havlic Landfill (Letter Authorization)	Demolition	Prov. Approval
28	Lane County	London Transfer Station		Prov. Approval

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item No. D, January 26, 1973, EQC Meeting

Hanna Nickel Smelting Company, Riddle, Oregon
Compliance Schedule Modification and Status Report

The purpose of this report is to present for consideration by the EQC, a request from Hanna Nickel Smelting Company for modification of its current approval schedule for achieving compliance with OAR, Chapter 340, Sections 25-405 through 25-430.

Background

The Hanna Nickel Smelting Company produces ferronickel from laterite ore at a smelting facility located about 4 miles southwest of Riddle, Oregon. The EQC approved an extensive particulate control program on September 25, 1970, which had been proposed by Hanna Nickel Smelting Company. The completion of this program is expected to reduce particulate emissions from about 4,000 lb/hour in 1970 to about 500 lb/hour in 1974.

Subsequently, the EQC on May 7, 1971, approved modifications to the original schedule as a result of a company request. This initial schedule modification was mainly due to difficulties encountered in developing control programs for the Dryers and Ore

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Melters. As a result of adjusting the Ore Melters control dates, the schedules for the Skip Hoists and Refining Furnaces required adjusting because the existing Ore Melter baghouses will be used on the Skip Hoists and Refining Furnaces. Modifying the original compliance schedule did not result in lessening the levels of emission control and treatment from those originally approved by the EQC. (A graphical representation of the original and current compliance schedule is attached as a matter of reference.)

Status Report and Requested Compliance Schedule Modification

The Hanna Nickel Smelting Company has submitted a status report and request to modify the existing compliance schedule as detailed in the attached letter dated December 22, 1972, from Mr. F. J. Coyle, Project Engineer. Both graphical and tabular comparisons of the requested revised schedule to the current compliance schedule were submitted and are attached.

The control plans for the Crusher House, Day Bins, Calciners and Skip Hoist No. 1 have been completed. The control of Ore Melter No. 1 is considered complete since it is connected to the full scale "prototype" baghouse. (When the two Ore Melter baghouses are completed this "prototype will be connected to the Ferrosilicon Furnace.) Emission test data for these completed control projects were also submitted.

The control plans for the Ore Melters, Ferrosilicon Furnace, Refining Furnaces, Skip Hoist No. 2, Driers and Rosters have not been completed.

Discussion

The most significant portion of the Hanna Nickel Smelting Company program yet to be completed is the control plan for the four Ore Melters because of the size and complexity of the effort and the relation to the subsequent control of the Ferrosilicon Furnace, the two Refining Furnaces and Skip Hoist No. 2. To date, the company has constructed and operated a large full scale "prototype" baghouse on a single Ore Melter to develop data for two larger baghouses required to control all four Ore Melters. The data gathering phase has taken longer than expected because of abrasion by the dust and the current compliance schedule cannot be met. The company has issued purchase orders for the two Ore Melter baghouses so this program is proceeding but is behind schedule by about three months.

The Ferrosilicon Furnace control plan will be completed after the Ore Melter project is finished. The Ferrosilicon Furnace is on the end of the overall program and the time extension requested is about 1 1/2 months.

The control programs for the two Refining Furnaces and Skip Hoist No. 2 involve the existing baghouses on Ore Melter Furnaces No. 2, 3 and 4. This control equipment will not be available for relocation until the Ore Melter project is completed, therefore, an extension of about three months is requested.

A need to solve problems encountered in production capacity and emission controls for the three Dryers was a major reason for the previous schedule revision. After extensive study, the company has decided to install three new fans and make modifications to the three existing scrubbers in this area. An extension of about a year is requested for completing the Dryer control plan. The Dryer control plan will ber completed within the four month extension requested for completing the total program.

The control program for the two Roasters has been completed but operating problems are being experienced. The company will attempt to solve the difficulties within the time frame of the overall control plan. (The Roasters are considered to be a minor particulate source.)

The control plans completed to date have reduced particulate emissions from about 4,000 lb/hour in 1970 to about 2,500 lb/hour. This reduction is approximately 40% of the projected total reduction which will be achieved when all control plans are completed.

Summary and Conclusion

The effect of the requested compliance schedule revision will be an approximate four months extension of the total control plan completion date. The company has documented a need to revise the existing compliance schedule and has not requested approval for any lesser degree of control than originally approved by the EQC.

In conclusion, the requested compliance schedule revision appears necessary and is considered acceptable.

Director's Recommendation

It is the Director's recommendation that the attached revised compliance schedule requiring the indicated increments of progress for specific sources for controlling particulate emissions for the Hanna Nickel Smelting Company ferronickel smelter facility located near Riddle, Oregon, be approved in the form of an EQC order.

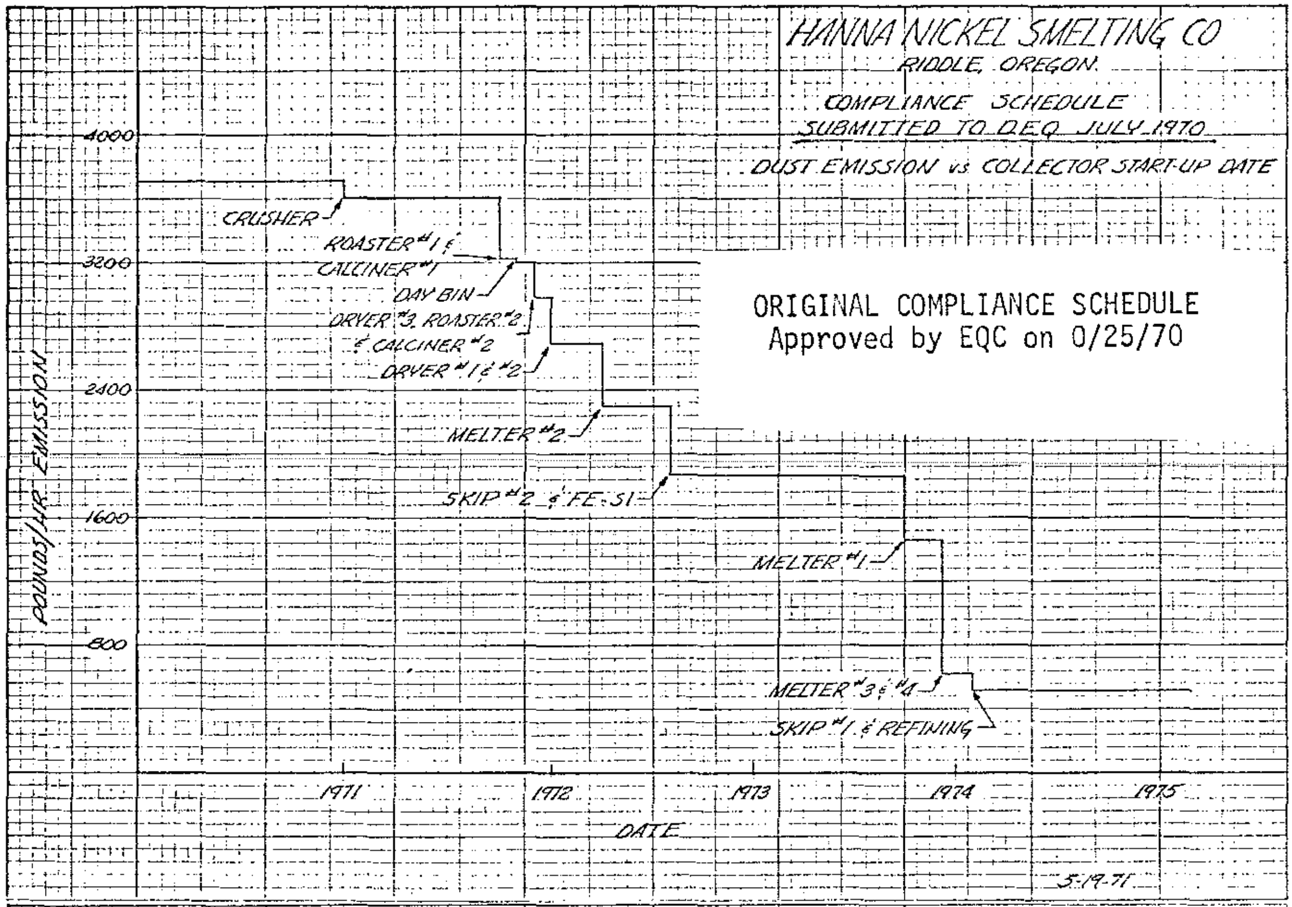
EJWeathersbee

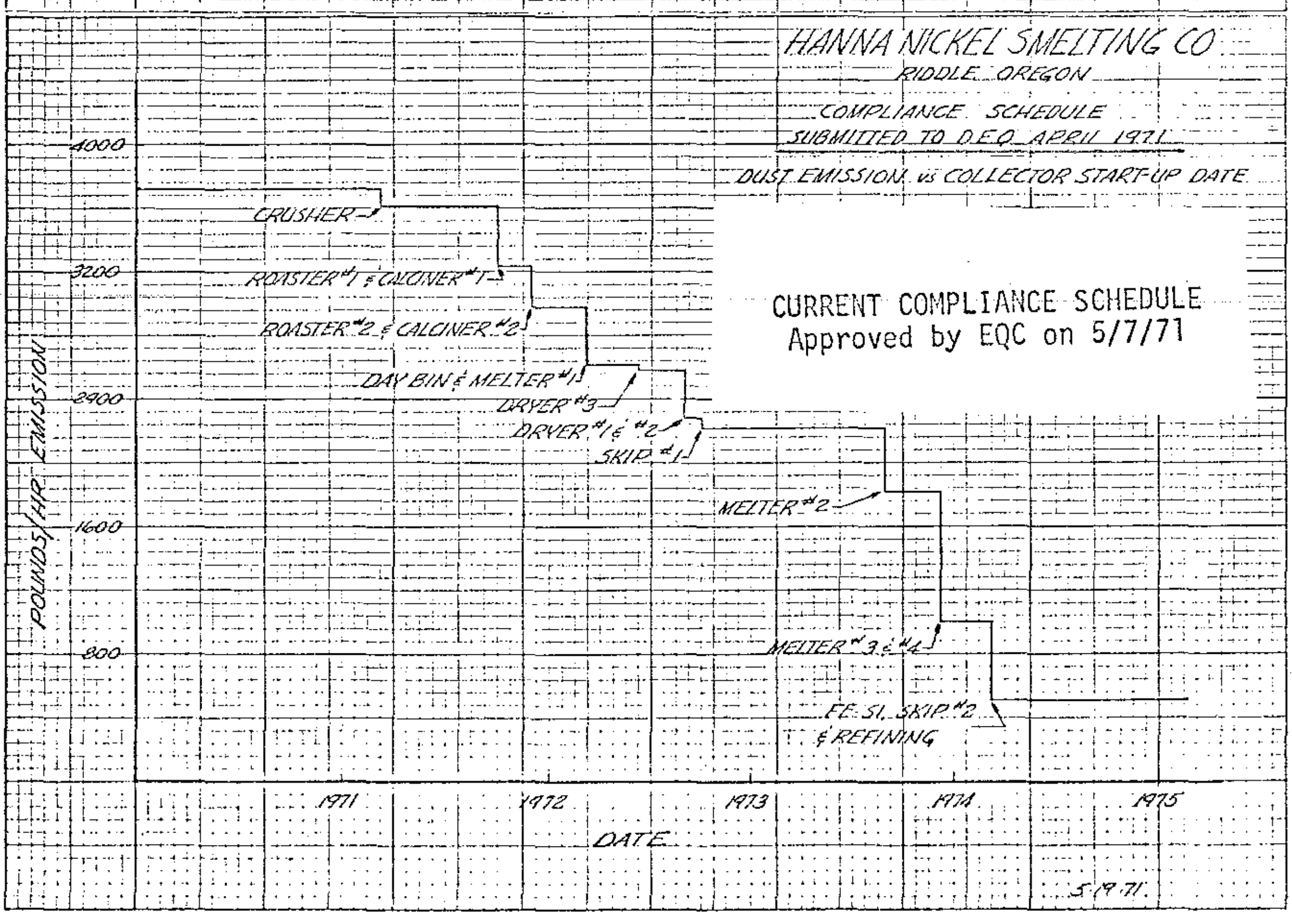
E. J. Weathersbee

FAS:1
1/18/73

REVISED COMPLIANCE SCHEDULE FOR
HANNA NICKEL SMELTING COMPANY, RIDDLE, OREGON

Specific Source	Increments of Progress				
	(1) Date of submittal of final control plan to DEQ	(2) Date by which orders will be issued for the purchase of major component parts to accomplish emission control or process modification	(3) Date of initiation of on-site construction or installation of emission control equipment or process change	(4) Date by which on-site construction or installation of emission control equipment or process modification will be completed	(5) Date by which final compliance will be achieved.
Dryer No. 1	12/22/72	4/1/73	4/1/73	3/1/74	4/1/74
Dryer No. 2	12/22/72	4/1/73	4/1/73	3/1/74	4/1/74
Dryer No. 3	12/22/72	4/1/73	4/1/73	12/1/73	1/1/74
Crusher House	Control Plan Completed - In Compliance				11/1/72
Daybins (4 units)	Control Plan Completed - In Compliance				6/1/72
Calciners (2 units)	Control Plan Completed - In Compliance				5/1/72
Roasters (2 units)	12/22/72	11/1/73	5/1/74	6/1/74	7/1/74
Skiphoist No. 1	Control Plan Completed - In Compliance				11/1/72
Skiphoist No. 2	12/22/72	2/1/74	3/1/74	6/1/74	7/1/74
Oremelter No. 1	12/22/72	12/1/72	1/1/73	4/1/74	7/1/74
Oremelter No. 2	12/22/72	12/1/72	1/1/73	4/1/74	7/1/74
Oremelter No. 3	12/22/72	12/1/72	1/1/73	1/1/74	4/1/74
Oremelter No. 4	12/22/72	12/1/72	1/1/73	1/1/74	4/1/74
Ferrosilicon Furnace	12/22/72	1/1/74	1/1/74	6/1/74	7/1/74
Refining Furnaces (2 units)	12/22/72	2/1/74	3/1/74	6/1/74	7/1/74


HANNA NICKEL SMELTING CO
RIDDLE, OREGON.
COMPLIANCE SCHEDULE
SUBMITTED TO D.E.Q. JULY 1970
DUST EMISSION vs COLLECTOR START-UP DATE
ORIGINAL COMPLIANCE SCHEDULE
Approved by EQC on 0/25/70
POUNDS/HR EMISSION
4000
3200
2400
1600
800
CRUSHER
ROASTER #1 & CALCINER #1
DAY BIN
DRYER #3, ROASTER #2 & CALCINER #2
DRYER #1 & #2
MELTER #2
SKIP #2 & FE-SI
MELTER #1
MELTER #3 & #4
SKIP #1 & REFINING
1971
1972
1973
1974
1975
DATE
5-19-71


HANNA NICKEL SMELTING CO
RIDDLE, OREGON
COMPLIANCE SCHEDULE
SUBMITTED TO D.E.Q. APRIL 1971
DUST EMISSION vs COLLECTOR START-UP DATE
CURRENT COMPLIANCE SCHEDULE
Approved by EQC on 5/7/71
POUNDS/HR EMISSION
4000
3200
2400
1600
800
CRUSHER
ROASTER #1 & CALCINER #1
ROASTER #2 & CALCINER #2
DAY BIN & MELTER #1
DRYER #3
DRYER #1 & #2
SKIP #1
MELTER #2
MELTER #3 & #4
FE-SI, SKIP #2 & REFINING
1971
1972
1973
1974
1975
DATE
5-19-71

Hanna Nickel Smelting Company
Riddle, Oregon, 97469

December 22, 1972

Mr. Fred A. Skirvin
Air Quality Division
Oregon Department of Environmental Quality
1234 S.W. Morrison Street
Portland, Oregon 97205

Dear Mr. Skirvin:

An air quality program designed to bring the operations at Hanna Nickel Smelting Company within state emission limitations was submitted and subsequently approved by the Oregon State Environmental Quality Commission in August, 1970. It became apparent early in 1971 that more time would be needed to evaluate the pressure type dust collector installed on the melting furnace.

A revised compliance schedule was submitted and approved in April, 1971. It is now necessary, due to problems detailed below, for us to submit a second revision of the compliance schedule for your approval. Emission limitations remain the same as in the original proposal as it is only the time table for which we must request an extension. The total program will bring the plant in compliance with OAR Chapter 340, Division 2, Subdivision 5, covering Specific Industrial Standards-Laterite Ore Production of Ferronickel, adopted January 24, 1972.

A tabulation showing the various emission points, the amount of emission, and the proposed revision to the compliance schedule is shown for your convenience. Also attached is a graph which compares the approved and proposed emission levels as a function of time and copies of the dust emission tests taken by Frederiksen Engineering for the completed areas. A discussion of each area to be controlled follows.

MELTING FURNACE

The original program to control the four melting furnaces required that a full size test bag house be installed on one of the furnaces prior to finalizing the ultimate control design. This was necessary to determine required gas volume, type of filter media, fan wear, and whether a pressure or vacuum type system should be used. This first bag house is to be connected to the ferrosilicon furnace after ore melter bag houses are purchased and installed on the four melting furnaces.

The test house was connected to No. 1 furnace on schedule in March, 1972. Severe mechanical difficulties were initially encountered with the house dampers as well as problems with the operating and monitoring controls. Within six weeks, these problems were successfully corrected and the house has operated very satisfactorily since. In the meantime, a very serious condition with fan wear developed.

Numerous unscheduled shutdowns were required to repair the fan rotor, housing, and dampers, which had worn through in a matter of weeks. In order to combat the extreme wear, numerous pounds of abrasive resistant material were added to the fan blades. In May, 1972, the inlet boxes were lined, dampers were remodeled, and deflector plates were installed in the melting furnace hood to keep the large dust particles from entering the furnace off-take ducts. In August, 1972, the original rotor was completely rebuilt in an outside shop, and, in November, 1972, a new factory built rotor was installed. It has now been established that an acceptable fan life can be attained, and the decision has been made to use a pressure bag house system.

The above problems and the time necessary to resolve them have resulted in an unavoidable three months delay in completing the program on the melting furnaces. Two large baghouses and all the auxiliary equipment have been ordered, which will allow us to meet the proposed revised compliance schedule.

ROASTERS

The program as originally proposed to control emission from the two roasters consisted of replacing the existing multiclones, already in series with electrostatic precipitators, with 2-stage cyclones. The cyclone installation was completed in November, 1971, on schedule and functioned as predicted, greatly reducing the grain loading to the electrostatic precipitators. Although this reduction was quite sizable, the emissions from the precipitator stacks still exceeded those in the original proposal.

Additional grain loading reduction was accomplished by increasing the size of the drop holes in the roaster hearths which in turn decreased the gas velocity within the roaster. Although this was of some benefit, the precipitator stacks still emit more dust than originally proposed. The precipitator inlet ducts were modified to improve the gas distribution through the precipitator but this was of little value. After an inspection by Western Precipitator, the manufacturer of the two units, new rapper controllers were installed and additional testing was conducted, including resistivity measurements of the dust. Consultations and field tests are presently being conducted by Western Precipitator, Buell, Hanna, and others to determine the optimum voltage, the possibility of adding moisture to the gas stream, and a thorough mechanical and electrical inspection of the equipment. We believe a solution to the problem will be found shortly and be corrected in time to meet the proposed revised compliance schedule.

CALCINERS

This system was completed November, 1971, and complies with the approved emission control program.

REFINING FURNACES

At present, no work has been done on this area of emission in accord with the compliance schedule. It is proposed that the start-up date for this system be delayed from February to May of 1974 to avoid construction interference with the dust collection system for melters No. 1 and No. 2. This May date also presents less problem with the plant operation.

SKIP HOIST

The new system on No. 1 line was started August, 1972, and does comply with the approved emission control program. The new system on No. 2 line has been moved ahead by three months to coincide with a longer shutdown in May. The schedule, as issued in May of 1971, showed the work to be done during a short shutdown and would have required part of the work to be performed during operation, presenting a safety hazard.

FESI FURNACE

The test house presently on No. 1 furnace is to be connected to the ferrosilicon furnace; however, this must wait until after the melting furnace baghouses are installed in February 1974.

The proposed start-up for this system has been delayed by a month and a half, so as not to coincide with the start-up of 1 & 2 melting furnace system. The present duct work in the smelter drawing gases from No. 1 furnace must be changed for the final hook up of No. 1 and No. 2 melting furnaces to a common collector. This duct is then modified to pull gases from the FeSi furnace. It was felt that this work could be accomplished more efficiently by doing these jobs separately.

CRUSHER HOUSE & DAY BINS

The original program to control these areas required a second baghouse to be installed for the crusher house and a second baghouse for the day bins. The crusher house system was completed in February, 1971; however, we experienced mechanical problems with the dampers and bag shaker mechanism. After a short period of operation, it became apparent that condensation of water vapor would be a problem within the collector. Modifications to the damper and shaker mechanism corrected the mechanical problems. The outside of the collector was completely insulated, which in turn eliminated the moisture problem. The initial filter bags furnished with the collector allowed an excessive amount of dust to seep through the fabric. Several different bag fabrics were tested and a fabric was selected that reduced the seepage and maintained good air flow. All the bags at this time were changed, incorporating the fabric with the better filtering qualities.

The day bins collector was started in March of 1972 with no operational difficulties. Both the crusher house and day bins systems are presently operating satisfactorily and comply with the approved emission control program.

DRYERS

The initial emission control program submitted to the Oregon Department of Environmental Quality consisted of eliminating the present wet scrubber by-pass time on No. 1 and No. 2 dryers. The fan bearings in this portion of the dust collecting system are subjected to the hot gases and are limited on operating temperature. The initial program proposed to replace the axial flow fans with new fans capable of withstanding elevated temperatures and eliminate the dust loss caused by temperature by-pass. The emission control program for the No. 3 dryer called for the wet scrubber to be modified to increase the colleciton efficiency.

In April of 1971, a revised compliance schedule was submitted and approved to delay the start-up date for the improved dust collection systems in the dryer area. The reason for the delay was to continue a program of study and tests to increase the drying capacity in this area. Any changes to increase the drying capacity could have a bearing on the modifications to improve the dust collection efficiency. The testing and study period to determine a possible change in the process to improve drying capacity has taken longer than anticipated. During the test period, experts in dryers, burners, and dust collection have been consulted. An actual installation of a test burner was installed in one dryer to increase heat imput but proved unsuccessful. Changes in the duct work were also made that did improve the drying capacity. After compiling the information gathered during this study period, a decision was made to proceed with the initial program plus additional work on the wet scrubbers. This includes installing new designed fans and additional wetting screens on the microdyne scrubbers for No. 1 & 2 dryers, which will eliminate the problem of high temperature by-pass as well as the installation of a new induced draft fan and modifications to the scrubber on No. 3 dryer.

Equipment will be ordered during the first quarter of 1973 with actual construction to follow shortly after. Dryer No. 3 is expected to be completed during mid-November of next year. Dryers No. 1 and 2 are expected to be completed during February of 1974.

I hope this progress report and the proposed revised compliance schedule meet with your approval.

Sincerely,

HANNA NICKEL SMELTING COMPANY

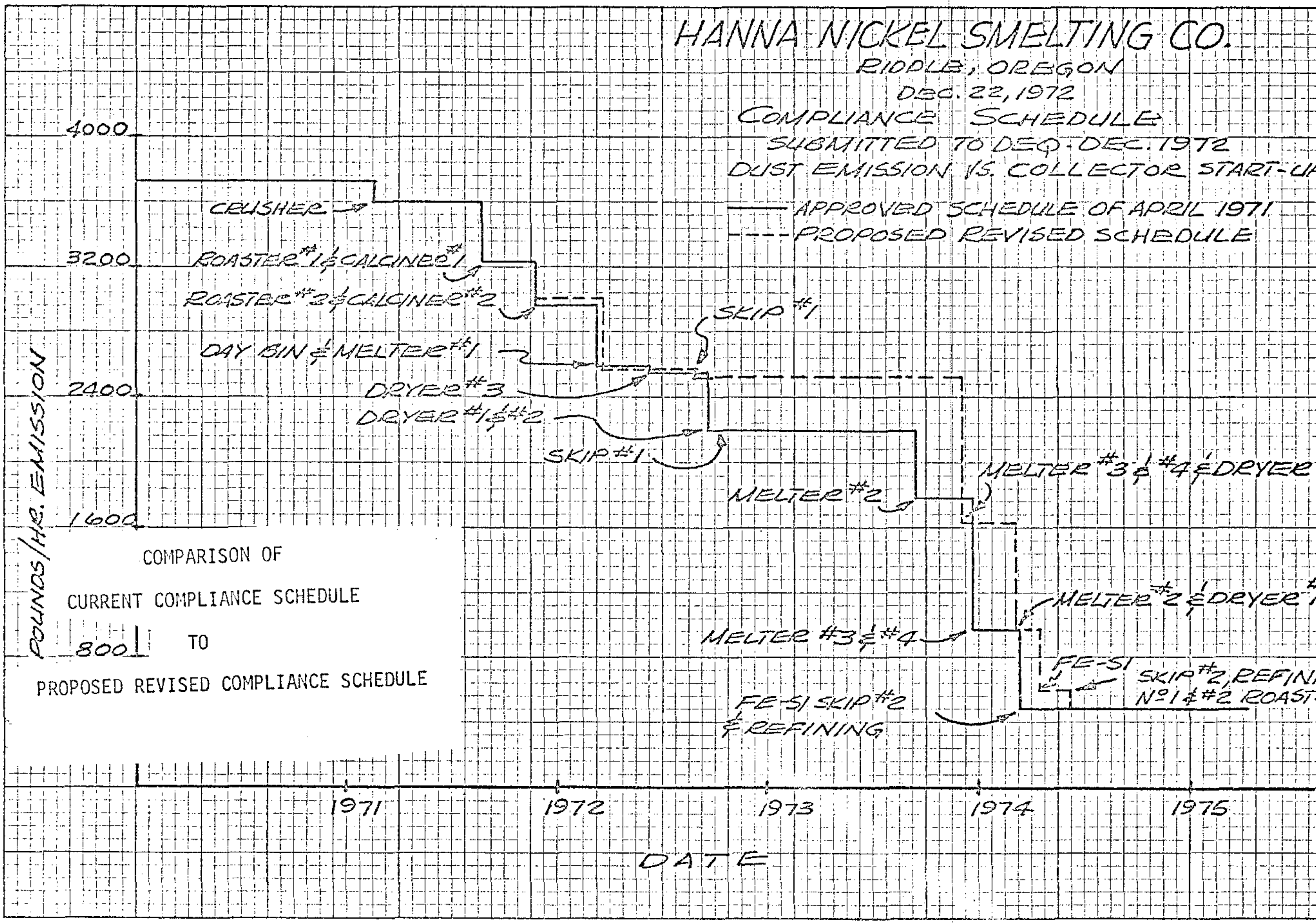
F.J. Coyle

F.J. Coyle
Project Engineer

pa

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
DEC 26 1972

AIR QUALITY CONTROL


HANNA NICKEL SMELTING CO.
RIDDLE, OREGON
DEC. 22, 1972
COMPLIANCE SCHEDULE
SUBMITTED TO DEQ - DEC. 1972
DUST EMISSION VS. COLLECTOR START-UP
APPROVED SCHEDULE OF APRIL 1971
PROPOSED REVISED SCHEDULE
POUNDS/HR. EMISSION
4000
3200
2400
1600
800
CRUSHER
ROASTER #1 & CALCINER #1
ROASTER #2 & CALCINER #2
SKIP #1
DAY BIN & MELTER #1
DRYER #3
DRYER #1 & #2
SKIP #1
MELTER #2
MELTER #3 & #4 & DRYER #3
MELTER #2 & DRYER #1 & #2
MELTER #3 & #4
FE-SI
SKIP #2, REFINING & No 1 & #2 ROASTER
FE-SI SKIP #2 & REFINING
1971
1972
1973
1974
1975
DATE
COMPARISON OF
CURRENT COMPLIANCE SCHEDULE
TO
PROPOSED REVISED COMPLIANCE SCHEDULE

Emission Point	Emission Of 5/18/70 #/Hr.	Approved Emission #/Hr.	Present Emissions #/Hr.	**Approved Compliance Date	Proposed Revised Compliance Date
Dryer #1	201	61.7	201	8/03/72	2/26/74
Dryer #2	201	61.7	201	8/31/72	2/26/74
Dryer #3	102	81.0	102	5/25/72	11/20/73
Crusher House *	111	17.8	11.4	2/22/71	Complete
Day Bins *	8	6.2	0.4	2/29/72	Complete
Calciners*	257	108.0	70.0	11/23/71	Complete
Roaster #1	330	20.0	61.9	11/23/71	5/21/74
Roaster #2	162	20.0	24.8	11/23/71	5/21/74
Skip Hoist #1 *	79	12.0	10.0	8/31/72	Complete
Skip Hoist #2	79	12.0	79	2/26/74	5/21/74
Ore Melter #1 *	431	21.5	5.5	2/29/72	Complete
Ore Melter #2	431	21.5	431	8/28/73	2/26/74
Ore Melter #3	431	21.5	431	11/20/73	11/20/73
Ore Melter #4	431	21.5	431	11/20/73	11/20/73
FeSi Furnace	412	35.0	412	2/26/74	4/01/74
Refining Furnace	40	2.0	40	2/26/74	5/21/74
Totals ***	3706	523.4	2512.0		

* Emission control plan completed.

** Compliance schedule as submitted in April, 1971, and approved by Department of Environmental Quality.

*** Totals added by DEQ

FJC/pa

DEPARTMENT OF
ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item No. E , January 26, 1973, EQC Meeting

Veneer Drier Regulations - Public Hearing

Background

The EQC at its meeting of October 4, 1972, authorized a public hearing to receive testimony relevant to amending OAR, Chapter 340, Section 25-315, Subsection (1). The proposed amendment was to establish a particulate emission standard for veneer driers.

The Department has met with industry to develop a workable regulation that will achieve the required control and the air quality desired.

The regulation as proposed at the time the public hearing was authorized has been rewritten, and the requirement for a numerical mass emission limitation has been deleted in favor of a restrictive visible emission requirement.

TELEPHONE: (503) 229-5696

Discussion

The air pollution problem associated with veneer driers is the visibility reduction or blue haze that occurs in the vicinity of veneer driers. Since the first staff report on veneer driers in September, 1971, a number of reviews have been made attempting to correlate the amount of particulate emissions from veneer driers to visible emissions. These nonconclusive attempts were discussed in the staff report presented to the Commission on October 4, 1972.

The regulation requires control of veneer drier visible emissions so as not to exceed 20% from any one stack and 10% for an average of all stacks. It further prohibits blue haze to be observed beyond the edge of the building. It provides for a hearing by January 1, 1975, to consider information gathered.

Following the mailing of public notice and distribution of the proposed regulation, the Attorney General's Office recommended changes to clarify the intent and has requested rewording for legal reasons. These changes are shown in an attached copy of the proposed rule. A final copy of the rule as now proposed is also attached.

Conclusions

1. The veneer drier regulation will require a substantial reduction in the visible emissions from veneer driers.

2. As veneer driers achieve the control levels required, a significant improvement in the visibility around veneer driers will be apparent.

3. The emission measurements required in the regulation will result in data which will provide a basis for emission inventory purposes and decisions regarding the emission control accomplished.

Recommendations

It is recommended that public testimony be heard concerning the proposal to amend OAR, Chapter 340, Section 25-315, Veneer and Plywood Manufacturing Operations, Subsection (1) Veneer Driers, and appropriate action be taken on this regulation after giving consideration to the testimony received.

EJWeathersbee

E. J. Weathersbee

TMP:c
1/17/73

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL DIVISION

December, 1972

As Distributed

OAR, Chapter 340, Division 2, Section 25-315, Veneer and Plywood Manufacturing Operations. Subsection (1) Veneer Driers is proposed to be amended to read as follows:

25-315 VENEER AND PLYWOOD MANUFACTURING OPERATIONS

(1) Veneer Driers

(a) As soon as practicable, but no later than December 31, 1974, no person shall operate any veneer drier, or veneer driers, such that visible air contaminants, including condensible hydrocarbons, or the characteristic blue haze are emitted in such quantities that create any "blue haze" to be observed beyond the edge of the building or at any distance greater than 50 feet from any veneer drier, whichever is greater.

(b) As soon as practicable, but no later than December 31, 1974, no person shall operate any veneer drier, such that visible air contaminants emitted therefrom at any time exceed 20% opacity from any one stack or an average of 10% opacity from all stacks of that veneer drier. Where the presence of uncombined water is the only reason for failure of an emission to meet these requirements, said requirements shall not apply.

(c) As soon as practicable, but not later than May 1, 1973, every person operating a veneer drier shall submit to the Department of Environmental Quality:

1. Written information, reports, or analysis which demonstrates compliance with 25-315 (1) (a) and (b), or

2. A specific written compliance schedule for complying with subsection 1 (a) and (b), or

3. Written evidence that the person is participating in special studies sufficient to identify the emissions from said veneer drier or similar veneer drier, and further said studies have been determined by the Department to provide for a reasonable approach for establishing effective control systems for that or similar veneer driers.

(d) Veneer driers complying with Section 25-315 (1) shall be exempted from compliance with Section 21-030, Particulate Emission Limitation.

(e) All veneer drier construction which is completed subsequent to the effective date of this regulation shall at time of initial operation comply with emission limitations of Section 25-315 (1).

(f) No person shall attempt to comply with the requirements of 1 (a) or 1 (b) of this subsection by diluting the emissions from the drying process with outside air or other gasses. Emissions which are so diluted shall be deemed to be in violation.

(g) Unless otherwise agreed to by the Department in writing, any person operating veneer driers shall demonstrate compliance by testing at least one (1) representative veneer drier in such manner as specified by the Department. Copies of the standard test method are on file and available from the Department. The date for conducting the test or tests shall be within 90 days of:

1) The date compliance is reported to the Department, or
2) The date the control installation or process change to effect control is completed, or
3) A date agreed to by the Department and established in the compliance schedule.

(h) A Public Hearing shall be held by the Department no later than January 1, 1975, to review current technology and the adequacy of these regulations and the necessity and practicability of adopting a mass emission limitation.

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL DIVISION

December, 1972
Proposed January 26, 1973

OAR, Chapter 340, Division 2, Section 25-315, Veneer and Plywood Manufacturing Operations. Subsection (1) Veneer Driers is proposed to be amended to read as follows:

25-315 VENEER AND PLYWOOD MANUFACTURING OPERATIONS

(1) Veneer Driers

(a) As soon as practicable, but no later than December 31, 1974, no person shall operate any veneer drier, or veneer driers, such that visible air contaminants, including condensible hydrocarbons, [or] and the characteristic "blue haze", are emitted in such quantities that create any "blue haze" to be observed beyond the edge of the building or at any distance greater than 50 feet from any veneer drier, whichever is greater.

(b) As soon as practicable, but no later than December 31, 1974, no person shall operate any veneer drier, such that visible air contaminants emitted therefrom at any time exceed 20% opacity, as defined by section 21-005(4), from any one stack or an average of 10% opacity, as so defined, from all stacks of that veneer drier. Where the presence of uncombined water is the only reason for failure of an emission to meet these requirements, said requirements shall not apply.

(c) As soon as practicable, but not later than May 1, 1973, every person operating a veneer drier shall submit to the Department of Environmental Quality:

[1.] i. Written information, reports, or analysis which demonstrates compliance with [25-315] the emission limitations contained in subsections (1)(a) and (1)(b), of this section, or

[2.] ii. A specific written compliance schedule for complying with the emission limitations contained in subsections (1)(a) and (1)(b), of this section, or

[3.] iii. Written [evidence] notice that the person is participating in [special studies] a study approved by the Department as sufficient to identify the emissions from said veneer drier or similar veneer drier, and [further said studies have been determined by the Department to provide for a reasonable approach for establishing effective control systems for that or similar veneer driers.] to design an "air cleaning device", as defined by ORS 449.760(6), which will achieve compliance by said veneer drier or similar veneer drier with the emission limitations contained in subsections (1)(a) and (1)(b) of this section.

(d) Any [V]veneer drier[s] complying with the emission limitations contained in subsections (1)(a) and (1)(b) of this [S]section [25-315(1)] shall be exempt[ed] from compliance with [S]section 21-030, (pertaining to [P]particulate [E]emission [L]limitations).

(e) [All] Any veneer drier the construction of which is completed subsequent to the effective date of this [regulation] rule, shall, [at] from time of initial operation, comply with the emission limitations [of] contained in subsections (1)(a) and (1)(b) of this [S]section [25-315(1)].

(f) No person shall attempt to comply with the [requirements] emission limitations of subsections (1)(a) or (1)(b) of this [sub]section by diluting the emissions from the drying process with outside air or other gases. Emissions which are so diluted shall be deemed to be in violation[.] of subsections (1)(a) and (1)(b) of this section.

(g) Unless otherwise agreed to by the Department in writing, any person operating one or more veneer driers shall [demonstrate compliance by] test[ing] at least one (1) representative veneer drier in such manner as specified by the Department[.] in its published [Copies of the] standard test method, as it may be amended from time to time, copies of which are on file and available [from] at the main office of the Department. [The date for conducting the] A written report of the results of the test or tests shall be filed with the Department within 90 days of[:] the earliest to occur of the following:

[1)] i. The date compliance with the emission limitations contained in subsections (1)(a) and (1)(b) of this section is reported to the Department, or

[2)] ii. The date the [control installation or process change to effect control is completed,] "air cleaning device", as defined by ORS 449.760(6), designed to achieve compliance with the emission limitations contained in subsections (1)(a) and (1)(b) of this section is put into operation, or

[3)] iii. [A] The date agreed to by the Department and established in the compliance schedule.

(h) A Public Hearing shall be held by the Department no later than January 1, 1975, to review current technology and the adequacy of these regulations and the necessity and practicability of adopting a mass emission limitation.

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL DIVISION

December, 1972
As Amended January 26, 1973

OAR, Chapter 340, Division 2, Section 25-315, Veneer and Plywood Manufacturing Operations. Subsection (1) Veneer Driers is proposed to be amended to read as follows:

25-315 VENEER AND PLYWOOD MANUFACTURING OPERATIONS

(1) Veneer Driers

(a) As soon as practicable, but no later than December 31, 1974, no person shall operate any veneer drier, or veneer driers, such that visible air contaminants, including condensible hydrocarbons, and the characteristic "blue haze", are emitted in such quantities that create any "blue haze" to be observed beyond the edge of the building or at any distance greater than 50 feet from any veneer drier, whichever is greater.

(b) As soon as practicable, but no later than December 31, 1974, no person shall operate any veneer drier, such that visible air contaminants emitted therefrom at any time exceed 20% opacity, as defined by section 21-005(4), from any one stack or an average of 10% opacity, as so defined, from all stacks of that veneer drier. Where the presence of uncombined water is the only reason for failure of an emission to meet these requirements, said requirements shall not apply.

(c) As soon as practicable, but not later than May 1, 1973, every person operating a veneer drier shall submit to the Department of Environmental Quality:

i. Written information, reports, or analysis which demonstrates compliance with the emission limitations contained in subsections (1)(a) and (1)(b), of this section, or

ii. A specific written compliance schedule for complying with the emission limitations contained in subsections (1)(a) and (1)(b), of this section, or

iii. Written notice that the person is participating in a study approved by the Department as sufficient to identify the emissions from said veneer drier or similar veneer drier, and to design an "air cleaning device", as defined by ORS 449.760(6), which will achieve compliance by said veneer drier or similar veneer drier with the emission limitations contained in subsections (1)(a) and (1)(b) of this section.

(d) Any veneer drier complying with the emission limitations contained in subsections (1)(a) and (1)(b) of this section shall be exempt from compliance with section 21-030, (pertaining to particulate emission limitations).

(e) Any veneer drier the construction of which is completed subsequent to the effective date of this rule, shall, from time of initial operation, comply with the emission limitations contained in subsections (1)(a) and (1)(b) of this section.

(f) No person shall attempt to comply with the emission limitations of subsections (1)(a) or (1)(b) of this section by diluting the emissions from the drying process with outside air or other gases. Emissions which are so diluted shall be deemed to be in violation of subsections (1)(a) and (1)(b) of this section.

(g) Unless otherwise agreed to by the Department in writing, any person operating one or more veneer driers shall test at least one (1) representative veneer drier in such manner as specified by the Department in its published standard test method, as it may be amended from time to time, copies of which are on file and available at the main office of the Department. A written report of the results of the test or tests shall be filed with the Department within 90 days of the earliest to occur of the following:

i. The date compliance with the emission limitations contained in subsections (1)(a) and (1)(b) of this section is reported to the Department, or

ii. The date the "air cleaning device', as defined by ORS 449.760(6), designed to achieve compliance with the emission limitations contained in subsections (1)(a) and (1)(b) of this section is put into operation, or

iii. The date agreed to by the Department and established in the compliance schedule.

(h) A Public Hearing shall be held by the Department no later than January 1, 1975, to review current technology and the adequacy of these regulations and the necessity and practicability of adopting a mass emission limitation.

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item F, January 26, 1973, EQC Meeting

Public Hearing for the Adoption of Compliance Schedules Developed by the Department and Regional Authorities and Permits Issued by Regional Authorities, as Required by the Federal Clean Air Act

Background

On December 9, 1972, the Environmental Protection Agency published in the Federal Register requirements for compliance schedules. Among those requirements is Title 40, Part 51.4 that requires submission to EPA of any individual compliance schedule under prescribed conditions described below.

Title 40, Part 51.4 (a)(1) of the Federal Register states that "the State shall prior to the adoption of any plan or any revision thereof required by 51.6 (a) or prior to the submission to the Administrator of any individual compliance schedule pursuant to 51.15 (a) or any revision pursuant to 51.6 (d), conduct one or more public hearings on such plan, schedule or revision."

Title 40, Part 51.15 (a)(2) of the Federal Register states that "a plan may provide that compliance schedules for individual sources or categories of sources will be formulated following submittal of the plan. Such compliance schedules shall be submitted to the Administrator within 60 days following the date such schedule is adopted but in no case later than the prescribed date for submittal of the first semi-annual report."

The first semi-annual report is required to be submitted by the State of Oregon to the Environmental Protection Agency by February 15, 1973.

Summary and Conclusions:

As required by the EPA, there are presented at this hearing compliance schedules and permits for adoption as follows:

Authority	Compliance Schedules	Total Permits	Permits with Comp. Sched.
DEQ	75	35	-
CWAPA	44	32	9
MWVAPA	30	14	14
LRAPA	22	-	-

The names of the individual companies for which compliance schedules were either developed by the Department or by rule are attached as Appendix I and the companies for which permits were issued is attached as Appendix II.

The names of the individual companies for which compliance schedules or permits have been developed by the Regional Authorities are attached as Appendixes III, IV and V.

The compliance schedules presented in this report have been (a) reviewed at a public hearing by the Regional Air Pollution Authorities and adopted by the Regional Board or, (b) developed by the Department under the policies prescribed by the Commission.

The compliance schedules become a part of the State of Oregon Implementation Plan under the Federal Clean Air Act to achieve and maintain State and National Ambient Air Standards.

Recommendations

It is the recommendation of the Acting Director that: (1) the compliance schedules of the Regional Authorities and the Department be adopted; and (2) that the Commission adopt an order approving and adopting the compliance schedules as part of Oregon's Clean Air Act Implementation Plan, with the schedules referred hereto in the attachments made part of the order. This order is made to meet the requirements of EPA in its interpretation of the Federal Clean Air Act.

EJWeathersbee

E. J. Weathersbee

TMP:h:1/18/73

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Appendix I:	Summary of Source Status, D. E. Q.
Appendix II:	Summary of Permits Issued, D. E. Q.
Appendix III:	Summary of Permits Issued and Summary of Compliance Schedules, Columbia-Willamette Air Pollution Authority
Appendix IV:	Summary of Permits Issued Summary of Compliance Schedules Mid-Willamette Valley Air Pollution Authority
Appendix V:	Summary of Compliance Schedules, Lane Regional Air Pollution Authority

APPENDIX I

CENTRAL OREGON INTRASTATE AIR QUALITY CONTROL REGION (REGION 190)

Summary of Source Status
As of January 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Crook County							
Sawmills and Planing Mills							
Consolidated Pine Prineville	70003	2421	5	1	In Compliance	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020
			297	5	Prohibited	OAR 340	23-015
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
Hudspeth Pine Co. Prineville	70004	2421	15	1	In Compliance	OAR 340	21-020
			280	2)	Phased Out	OAR 340	25-020
			280	9)			
			405	8)			
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
			416	6)			
			416	7)			
Ochoco Lbr. Co. Prineville	70005	2421	15	1	In Compliance	OAR 340	21-020
			405	5)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
			416	4)			
Millwork							
Clear Pine Mldgs. Prineville	70001	2431	280	1	Phased Out	OAR 340	25-020
			416	2)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Crook County, Millwork Cont.							
Coin Millwork Co. Prineville	70002	2431	280	1	Apr. 30, 1973	S & O	72-1110058
			298	15	Prohibited	OAR 340	23-015
			416	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)	In Compliance	OAR 340	21-040
			416	9)			
			416	10)			
			416	11)			
			416	12)			
			416	13)			
			416	14)			
Wooden Containers							
Burnett Box Factory Prineville	70009	2441	416	1)	In Compliance	OAR 340	21-040
			416	2)			
Deschutes County							
Sawmills and Planing Mills							
Brooks Scanlon, Inc. Bend	90001	2421	5	1)			
			5	2)	In Compliance	OAR 340	21-020
			5	13)			
			405	14)			
			406	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)	In Compliance	OAR 340	21-040
			416	8)			
			416	9)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Deschutes County, Sawmills and Planing Mills, Brooks Scanlon, Inc.							
			416	10)			
			416	11)	In Compliance	OAR 340	21-040
			416	12)			
Central Ore. Fir Supply Redmond	90009	2421	31	1	In Compliance	OAR 340	21-020
			280	2	In Compliance	OAR 340	25-020
			416	3	In Compliance	OAR 340	21-040
F & F Products Bend	90010	2421	416	1)	In Compliance	OAR 340	21-040
			416	2)			
Brooks Willamette Co. Redmond	90035	2421	15	1	See Footnote [1]	OAR 340	21-020
			280	2	In Compliance	OAR 340	25-020
			298	7	Prohibited	OAR 340	23-015
			402	6)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
			416	5)			
Graves Mfg. Co. Bend	90011	2429	416	1	In Compliance	OAR 340	21-040
Millwork							
Cascade Forest Prod. Bend	90014	2431	416	1	In Compliance	OAR 340	21-040
Bend Millworks Bend	90015	2431	416	1)	In Compliance	OAR 340	21-040
			416	2)			
Oregon Millwork Ltd. Bend	90016	2431	416	1	In Compliance	OAR 340	21-040

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Deschutes County, Millwork Cont.							
Ponderosa Moulding	90017	2431	280	5	Phased Out	OAR 340	25-020
Redmond			416	1)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
			416	4)			
Whittier Moulding	90018	2431	280	10	Phased Out	OAR 340	25-020
Redmond			406	9)			
			416	1)			
			416	2)			
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
			416	6)			
			416	7)			
			416	8)			
Plywood							
Brooks Willamette	90003	2432	31	1	In Compliance	OAR 340	21-020
Redmond			298	13	Prohibited	OAR 340	23-015
			402	15)			
			405	14)			
			416	5)			
			416	6)			
			416	7)	In Compliance	OAR 340	25-315
			416	8)			
			416	9)			
			416	10)			
			416	11)			
			416	12)			
			417	2)			
			417	3)	Dec. 31, 1974	OAR 340	25-315
			417	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Deschutes County Cont.							
Prefab, Structural Members							
Central Ore. Wood Prod. Redmond	90034	2433	416	1	In Compliance	OAR 340	21-040
Particleboard							
Brooks Willamette Bend	90002	2492	1	1)			
			1	2)			
			412	26)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	10)			
			416	12)			
			416	13)			
			416	14)			
			416	15)			
			416	16)	July 30, 1973	S & O	72-1010054
			416	19)			
			416	20)			
			416	21)			
			416	22)			
			416	23)			
			416	24)			
			416	25)			
			436	8)			
			436	9)			
			436	11)			
			436	17)			
			436	18)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Deschutes County Cont.							
Furniture Mfg.							
Kerns Furniture Bend	90036	2511	416	1)			
			416	2)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
			416	5)			
			416	6)			
Asphalt Plants							
Bend Aggregate and Paving Bend	90004	2951	605	1	See Footnote[1]	OAR 340	25-110
Bend Aggregate and Paving Bend	90026	2951	605	1	See Footnote[1]	OAR 340	25-110
R. L. Coats Bend	90027	2953	605	1	See Footnote[1]	OAR 340	25-110
Hood River County							
Sawmills and Planing Mills							
Cascade Locks Lbr. Co. Cascade Locks	140005	2421	5	2	See Footnote[1]	OAR 340	21-020
			15	1	In Compliance	OAR 340	21-020
			298	8	Prohibited	OAR 340	23-015
			402	7)			
			405	6)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
			416	5)			
Hanel Lumber Co. Hood River	140006	2421	35	1	Sept. 1, 1973	S & O	72-0810041
			280	2	July 1, 1973	S & O	72-0810041
			416	3)	In Compliance	OAR 340	21-040
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Hood River County, Sawmills and Planing Mills Cont.							
Carl Krieg Millwork Hood River	140007	2421	24	1	In Compliance	OAR 340	21-020
			298	3	Prohibited	OAR 340	23-015
			416	2	In Compliance	OAR 340	21-040
U. S. Plywood Neal Crk. Hood River	140009	2421	21	1)	In Compliance	OAR 340	21-020
			24	2)			
			280	3	In Compliance	OAR 340	25-020
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
			416	6)			
			416	7)			
Gorge Lumber Co. Cascade Locks	140010	2421	280	1	In Compliance	OAR 340	25-020
Hardboard							
U. S. Plywood Corp. Dee	140002	2493	3	3)	In Compliance	OAR 340	21-020
			21	2)			
			416	4)	See Footnote[1]	OAR 340	25-325
			416	5)			
			416	6)			
			416	7)			
			416	1)			
Asphalt Plants							
B & D Paving Co. Hood River	140001	2951	605	1	Shut Down	N/A	N/A
Disposal Sites							
Hood River County Hood River	140004	4953	297	1	In Compliance	OAR 340	23-015

Summary of Source Status
As of [illegible]uary 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jefferson County							
Sawmills and Planing Mills							
Warm Springs For. Prod. Warm Springs	160001	2421	13	1	See Footnote[2]	OAR 340	21-020
			280	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)	In Compliance	OAR 340	21-040
			416	7)			
			416	8)			
			416	9)			
			416	10)			
Millwork							
Bright Wood Corp. Madras	160003	2431	280	1)	Phased Out	OAR 340	25-020
			280	2)			
			298	5	Prohibited	OAR 340	23-015
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
Madras Sash & Door Madras	160004	2431	416	1	In Compliance	OAR 340	21-040
Green Veneer							
Warm Springs For. Prod. Warm Springs	160008	2434	411	1	In Compliance	OAR 340	25-315
Asphalt Plants							
R. L. Coats Madras	160011	2953	605	1	See Footnote[1]	OAR 340	25-110

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jefferson County Cont.							
Disposal Sites							
Box Canyon Disposal Jefferson County	160009	4953	297	1	In Compliance	OAR 340	23-015
Klamath County							
Rendering Plants							
Klamath Tallow Co. Klamath Falls	180020	2094	35	1			
			297	2			
Sawmills and Planing Mills							
Gilchrist Lumber Co. Gilchrist	180005	2421	5	1	See Footnote[1]	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020
			405	6)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
			416	5)			
Loveness Co. Malin	180007	2421	280	1	Phased Out	OAR 340	25-020
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
Modoc Lumber Co. Klamath Falls	180009	2421	5	1	Apr. 15, 1973	S & O	72-1110059
			297	2	Prohibited	OAR 340	23-015
			405	14)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)	In Compliance	OAR 340	21-040
			416	9)			
			416	10)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Klamath County, Sawmills and Planing Mills, Modoc Lumber Co. Cont.							
			416	11)			
			416	12)	In Compliance	OAR 340	21-040
			416	13)			
Weyerhaeuser Co. Klamath Falls	180013	2421	5	1)	Dec. 31, 1973	S & O	72-0810046
			5	2)			
			405	12)			
			416	3)			
			416	4)			
			416	5)			
			416	6)	In Compliance	OAR 340	21-040
			416	7)			
			416	8)			
			416	9)			
			416	10)			
			416	11)			
Klamath Lbr. Co. Klamath Falls	180015	2421	5	1	In Compliance	OAR 340	21-020
			298	6	Prohibited	OAR 340	23-015
			404	5)			
			405	4)	In Compliance	OAR 340	21-040
			416	2)			
			416	3)			
Klamath Lbr. Co. Klamath Falls	180016	2421	3	1)	In Compliance	OAR 340	21-020
			13	2)			
			280	3	Phased Out	OAR 340	25-020
			298	7	Prohibited	OAR 340	23-015
			400	6)			
			415	5)	In Compliance	OAR 340	21-040
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Klamath County, Sawmills and Planing Mills Cont.							
Boise Cascade	180019	2421	280	2	In Compliance	OAR 340	25-020
Beaver Marsh			405	4)			
(Stud Mill)			406	1)	In Compliance	OAR 340	21-040
			416	3)			
Weyerhaeuser Co.	180037	2421	5	1	Nov. 1, 1973	S & O	72-0810042
Bly			280	2)	Phased Out	OAR 340	25-020
			280	3)			
			404	7)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
			416	6)			
Millwork							
Jeld-Wen, Inc.	180006	2431	297	5	Prohibited	OAR 340	23-015
Klamath Falls			416	1)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
			416	4)			
Metler Bros. Inc.	180017	2431	280	1)	Plant Shut Down	N/A	N/A
Klamath Falls			416	2)			
Chris' Moulding	180028	2431	298	2	Prohibited	OAR 340	23-015
Klamath Falls			416	1	In Compliance	OAR 340	21-040

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Klamath County Cont.							
Plywood							
Columbia Plywood Klamath Falls	180014	2432	5	1	In Compliance	OAR 340	21-020
			405	10)			
			412	4)			
			216	5)			
			416	6)	See Footnote[1]	OAR 340	25-315
			416	7)			
			416	8)			
			416	9)			
			416	2)			
			416	3)			
Green Veneer							
Boise Cascade Beaver Marsh	180018	2432	31	1	In Compliance	OAR 340	21-020
			280	2	In Compliance	OAR 340	25-020
			405	4)	In Compliance	OAR 340	25-315
			416	3)			
Hardboard Plants							
Weyerhaeuser Co. Klamath Falls	180035	2493	416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	10)	In Compliance	S & O	72-0810043
			416	11)			
			416	12)			
			416	13)			
			416	14)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Klamath County, Hardboard Plants, Weyerhaeuser Co. Cont.							
			416	15)			
			416	16)			
			416	17)	In Compliance	S & O	72-0810043
			416	18)			
			416	19)			
			438	20)			
Minerals Processing and Asphalt Plants							
Asphalt Paving Klamath Falls	180011	2951	605	1	See Footnote[1]	OAR 340	25-110
Klamath Rock Prod. Klamath Falls	180012	2951	605	1	See Footnote[1]	OAR 340	25-110
Geo. R. Stacy Co. Klamath Falls	180050	2951	605	1	See Footnote[1]	OAR 340	25-110
Ferrous							
Klamath Iron Works Klamath Falls	180044	3321	113	1	In Compliance	OAR 340	21-040
Misc. Industry							
Kingsley Field AFB Klamath Falls	180039	9190	28		See Footnote[1]	OAR 340	21-020
Lake County							
Sawmills and Planing Mills							
Eastern Ore. Pine Lakeview	190002	2421	25	1	See Footnote[2]	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020
			280	3	See Footnote[2]	OAR 340	25-020
			405	5)	In Compliance	OAR 340	21-040
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Lake County, Sawmills and Planing Mills Cont.							
Fremont Sawmill	190003	2421	10	1	Dec. 31, 1973	S & O	72-0710037
Lakeview			280	2	Oct. 1, 1973	S & O	72-0710037
			416	3	In Compliance	OAR 340	21-040
Lakeview Lbr. Co.	190006	2421	10	1	See Footnote[1]	OAR 340	21-020
Lakeview			280	2	In Compliance	OAR 340	25-020
			416	3)			
			416	4)			
			416	5)	In Compliance	OAR 340	21-040
			416	6)			
			416	7)			
Fremont Sawmill	190011	2421	34	1	See Footnote[1]	OAR 340	21-020
Paisley			280	2	Oct. 1, 1973	S & O	72-0710037
			404	3	In Compliance	OAR 340	21-040
Millwork							
Oregon Windor Co.	190008	2431	280	1	Phased Out	S & O	72-0610026
Lakeview			416	2	In Compliance	OAR 340	21-040
Asphalt Plants							
Asphalt Paving Co.	190010	2951	605	1	See Footnote[1]	OAR 340	25-110
Lake County							
Wasco County							
Sawmill and Planing Mills							
Tygh Valley Timber Co.	330008	2421	5	6)	In Compliance	OAR 340	21-020
Tygh Valley			15	5)			
			280	1	In Compliance	OAR 340	25-020
			416	3)	In Compliance	OAR 340	21-040
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Wasco County, Sawmills and Planing Mills Cont.							
Mt. Fir Lumber Co. Maupin	330009	2421	280	1	In Compliance	OAR 340	25-020
			405	4)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
Tie Plants							
J. H. Baxter & Co. The Dalles	330003	2491	21	1)	In Compliance	OAR 340	21-020
			24	2)			
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
Asphalt Plants							
Interstate Paving Co. The Dalles	330002	2951	605	1	See Footnote[1]	OAR 340	25-110
Primary Aluminum Smelting							
Harvey Aluminum (Martin Marietta) The Dalles	330001	3334	31	6)			
			32	7)			
			61	12)			
			130	1)			
			130	2)			
			130	3)			
			130	4)			
			130	5)	In Compliance	OAR 340	25-265
			160	8)			
			160	9)			
			160	10)			
			160	11)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Wasco County Cont.							
Disposal Sites							
Northern Wasco Refus. The Dalles	330013	4953	280 281 297	2 3) 1)	Phased Out In Compliance	OAR 340 OAR 340	25-020 23-015
Misc. Processing							
Interior Elevator Co. The Dalles	330018	5053	848 848 848 848	2) 3) 4) 1)	See Footnote[2]	OAR 340	21-040

1. Compliance Status Undetermined, Test Results not yet received.
2. Compliance Schedule not yet formalized.

EASTERN OREGON INTRASTATE AIR QUALITY CONTROL

REGION (REGION 191)

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Baker County							
Sawmills and Planing Mills							
Ellingson Lbr. Co. Baker	10003	2421	15	1	Apr. 30, 1973	S & O	72-0610031
			280	2	Apr. 30, 1973	S & O	72-0610031
			404	6)			
			405	3)	In Compliance	OAR 340	25-020
			416	4)			
			416	5)			
4-M Lumber Co. Sumpter	10008	2421	298	1	Prohibited	OAR 340	23-010
Orchard Wood Prod. Baker	10009	2421	298	1	Prohibited	OAR 340	23-010
Ellingson Lumber Co. Baker	10016	2421	280	1	Mill Shut Down	N/A	N/A
Ellingson Lumber Co. Baker	10017	2421	13	1	See Footnote[1]	OAR 340	21-020
			280	2	In Compliance	OAR 340	25-020
Plywood							
Ellingson Tmbr. Co. Baker	10004	2432	31	1)			
			280	2)			
			405	6)	Dec. 31, 1973	OAR 340	25-315
			416	4)			
			416	5)			
			417	3	Dec. 31, 1974	OAR 340	25-315
Mineral Processing							
Baker Redimix, Inc. Baker	10001	2951	605	1	In Compliance	OAR 340	25-110

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Baker County							
Disposal Sites							
Baker Sanit. Serv. Baker	10014	4953	297	1	In Compliance	OAR 340	23-010
Misc. Processing							
Haines Grain & Feed Haines	10019	5053	854	1	See Footnote[2]	OAR 340	21-040
Gilliam County							
J. C. Compton Co. McMinnville	110004	2953	605	1	See Footnote[1]	OAR 340	25-110
Grant County							
Sawmills and Planing Mills							
Edward Hines Lbr. Co. Bates	120001	2421	0 0	1) 2)	See Footnote[1]	OAR 340	21-020
Prairie City Tmbr. Co. Prairie City	120003	2421	280	1	Phased Out	OAR 340	25-020
			416	2	In Compliance	OAR 340	21-040
San Juan Lbr. Co. John Day	120004	2421	15 15	2) 3)	See Footnote[1]	OAR 340	21-020
			280	1	See Footnote[2]	OAR 340	25-020
Edward Hines Lbr. Co. Seneca	120016	2421	280	1	Phased Out	OAR 340	25-020
			298	3	Prohibited	OAR 340	23-010
			416	2	In Compliance	OAR 340	21-040
Delbert Taynton Mill Prairie City	120018	2421	280	1	Mill Shut Down	N/A	N/A

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Grant County Cont.							
Green Veneer							
G. L. Pine Co. John Day	120005	2434	280	1	Phased Out	OAR 340	25-020
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
Edward Hines Co. Mt. Vernon	120015	2434	24	1	In Compliance	OAR 340	21-020
			280	2	In Compliance	OAR 340	25-020
			405	3)	In Compliance	OAR 340	21-040
			411	4)			
Disposal Sites							
Canyon City Dump Canyon City	120010	4953	297	1	In Compliance	OAR 340	23-010
Woods Garbage Syc. John Day	120013	4953	297	1	In Compliance	OAR 340	23-010
Harney County							
Sawmills and Planing Mills							
Edward Hines Lbr. Hines	130001	2421	0	1)			
			0	2)			
			280	3)			
			404	15)			
			405	14)			
			416	4)	Dec. 31, 1973	S & O	72-1210068
			416	5)			
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	10)			
			416	11)			
			416	12)			
			416	13)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Harney County Cont.							
Plywood							
Edward Hines Lbr. Hines	130003	2432	412	10)			
			416	3)			
			416	4)			
			416	5)	Dec. 31, 1973	S & O	72-1210068
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			419	1)	Dec. 31, 1974	S & O	72-1210068
			419	2)			
Disposal Sites							
C & B Sanitary Serv. Hines	130002	4953	297	1	In Compliance	OAR 340	23-010
Malheur County							
Ontario Asphalt Paving Ontario	230001	2951	605	1	See Footnote[1]	OAR 340	25-110
Morrow County							
Sawmills and Planing Mills							
Heppner Lbr. Co. Heppner	250002	2421	280	1	Phased Out	OAR 340	25-020
			405	3)	In Compliance	OAR 340	21-040
			416	2)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Morrow County, Sawmills and Planing Mills Cont.							
Kinzua Co. Heppner	250005	2421	5	1)	In Compliance	OAR 340	21-020
			15	2)			
			280	3	In Compliance	OAR 340	25-020
			298	8	Prohibited	OAR 340	23-010
			405	7)			
			416	4)	In Compliance	OAR 340	210040
			416	5)			
			416	6)			
Disposal Sites							
Heppner City Dump Heppner	250006	4953	297	1	In Compliance	OAR 340	23-010
Misc. Processing							
Morrow Co. Grain Gr. Lexington	250007	5053	854	1	See Footnote[1]	OAR 340	21-040
Morrow Co. Grain Gr. Lexington	250008	5053	854	1	See Footnote[1]	OAR 340	21-040
Morrow Co. Grain Gr. Heppner	250009	5053	854	1	See Footnote[1]	OAR 340	21-040
Umatilla County							
Grain Mill Products							
General Foods Corp. Pendleton	300012	2041	842	5)			
			856	4)			
			857	3)	See Footnote[1]	OAR 340	21-040
			859	1)			
			860	2)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Umatilla County Cont.							
Sawmills and Planing Mills							
Harris Pine Mills Pendleton	300005	2421	5	1)	See Footnote[2]	OAR 340	21-020
			5	2)			
			280	3	Phased Out	OAR 340	25-020
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)	In Compliance	OAR 340	21-040
			416	9)			
			416	10)			
			416	11)			
			416	12)			
Quality Lbr. Mills Athena	300008	2421	280	1			
			405	3	Mill Torn Down	N/A	N/A
			416	2			
Georgia Pacific Corp. Pilot Rock	300016	2421	0	14	See Footnote[1]	OAR 340	21-020
			280	15	Phased Out	OAR 340	25-020
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)	In Compliance	OAR 340	21-040
			416	8)			
			416	9)			
			416	10)			
			416	11)			
			416	12)			
			416	13)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Umatilla County, Sawmills and Planing Mills Cont.							
Exterior Wood Ukiah	300034	2421	281	1	In Compliance	OAR 340	21-025
Hardboard							
U. S. Gypsum Co. Pilot Rock	300042	2493	21	7	See Footnote[1]	OAR 340	21-020
			280	9	Phased Out	OAR 340	25-025
			412	4)			
			416	2)			
			416	3)			
			429	10)	Dec. 31, 1973	OAR 340	25-325
			435	6)			
			438	1)			
			439	8)			
			578	5			
Kerns Furniture Pilot Rock	300037	2511	416	1	In Compliance	OAR 340	21-040
Building Board-Soft Board							
U. S. Gypsum Co. Pilot Rock	300009	2661	416	2)			
			416	3)			
			429	4)			
			435	1)	In Compliance	OAR 340	21-040
			537	7)			
			591	5)			
			591	6)			
Minerals Processing							
Readymix Sand & Gravel Milton-Freewater	300002	2951	605	1	See Footnote[1]	OAR 340	21-040
Percy Jellum Inc. Pendleton	300003	2951	605	1	See Footnote[1]	OAR 340	25-110

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Umatilla County, Minerals Processing Cont.							
Rogers Construction 11760 N. E. Glisan, Ptld. (Pendleton)	300001	2953	605	1	See Footnote[1]	OAR 340	25-120
Asphalt Plants							
Hermiston Asphalt Pd. Hermiston	300021	2953	605	1	See Footnote[1]	OAR 340	25-110
Misc. Industry							
Hinkle Railroad Yard Hermiston	300032	4011	25 297	1 2	See Footnote[1] Prohibited	OAR 340 OAR 340	21-020 23-015
Disposal Sites							
Pendleton Sanitary Svc. Pendleton	300023	4953	297	1	In Compliance	OAR 340	23-010
Eldon Michael San. Pilot Rock	300025	4953	297	1	In Compliance	OAR 340	23-010
Ore. St. Hwy. Div. Pendleton	300029	4953	297	1	In Compliance	OAR 340	23-010
Misc. Processing							
Pendleton Grain Gr. Umatilla	300043	5053	854	1	See Footnote[2]	OAR 340	21-040

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Union County							
Sawmills and Planing Mills							
Peacock Lbr. Co.	310005	2421	280	1	See Footnote[2]	OAR 340	25-020
Alicel			416	2	In Compliance	OAR 340	21-040
Boise Cascade Corp.	310011	2421	5	1	See Footnote[1]	OAR 340	21-020
LaGrande			405	5)			
			416	2)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
			416	6)			
Ronde Valley Lbr. Co.	310013	2421	12	1	See Footnote[1]	OAR 340	21-020
Union			280	2	In Compliance	OAR 340	25-020
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
			416	6)			
Plywood							
Boise Cascade Corp.	310012	2432	10	4)	See Footnote[1]	OAR 340	21-020
Elgin			10	5)			
			21	1)	In Compliance	OAR 340	21-020
			22	2)			
			280	6	In Compliance	OAR 340	25-020
			412	17)			
			416	7)			
			416	8)			
			416	9)	Dec. 31, 1973	OAR 340	25-315
			416	10)			
			416	11)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Union County, Plywood, Boise Cascade Corp. Cont.							
			416	12)			
			416	13)			
			416	14)	Dec. 31, 1973	OAR 340	25-315
			416	15)			
			416	16)			
			417	3	Dec. 31, 1974	OAR 340	25-315
Particleboard							
Boise Cascade Corp. LaGrande	310002	2492	1	31)	See Footnote[1]	OAR 340	21-020
			21	32)			
			412	28)			
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)			
			416	11)			
			416	12)			
			416	13)	Dec. 31, 1973	OAR 340	25-320
			416	16)			
			416	17)			
			416	18)			
			416	19)			
			416	20)			
			416	21)			
			416	22)			
			416	23)			
			416	24)			
			416	25)			
			416	26)			
			416	27)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Union County, Particleboard, Boise Cascade Corp. Cont.							
			416	29)			
			416	30)			
			436	9)	Dec. 31, 1973	OAR 340	25-320
			436	10)			
			436	14)			
			436	15)			
Asphalt Plant							
Rogers Asphalt Pav. LaGrande	310001	2951	605	1	See Footnote[1]	OAR 340	25-110
Disposal Sites							
LaGrande Landfill LaGrande	310014	4953	297	1	In Compliance	OAR 340	23-010
Union City Dump Union	310015	4953	297	1	In Compliance	OAR 340	23-010
Elgin City Dump Elgin	310016	4953	297	1	In Compliance	OAR 340	23-010
Wallowa County							
Sawmills and Planing Mills							
Boise Cascade Corp. Joseph	320001	2421	15	1)	See Footnote[1]	OAR 340	21-020
			15	2)			
			280	3	In Compliance	OAR 340	25-020
			405	5)	In Compliance	OAR 340	21-040
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Wallowa County, Sawmills and Planing Mills Cont.							
Starner Lbr. Co. Lostine	320003	2421	280	1	In Compliance	OAR 340	25-020
Victor & Sons Wallowa	320004	2421	280	1	Phased Out	OAR 340	25-020
Disposal Sites							
Enterprise City Dump Enterprise	320006	4953	297	1	In Compliance	OAR 340	23-010

NORTHWEST OREGON INTRASTATE AIR QUALITY CONTROL

REGION (REGION 192)

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Clatsop County							
Bioproducts Inc. Warrenton	40006	2094	35	1	In Compliance	OAR 340	21-020
Sawmills & Planing Mills							
Valley Ridge Clatsop Airport	40022	2421	0	9	See Footnote[1]	OAR 340	21-020
			0	1	In Compliance	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020
			296	8	Prohibited	OAR 340	23-010
			416	4)			
			416	5)	Dec. 31, 1973	OAR 340	25-315
			416	6)			
			416	7)			
			419	3	Dec. 31, 1974	OAR 340	25-315
Pulp & Paper							
Crown Zellerbach Co. Wauna	40004	2621	21	4	See Footnote[1]	OAR 340	21-020
			25	5			
			297	6	Prohibited	OAR 340	23-010
			446	2)			
			452	1)	July 1, 1975	OAR 340	25-155 thru 25-195
			454	3)			
Asphalt Plants							
Palmberg Paving Co. Seaside	40001	2951	605	1	See Footnote[1]	OAR 340	25-110
Disposal Sites							
Astoria Landfill Astoria	40023	4953	297	1	In Compliance	OAR 340	23-010

Summary of Source Status
As of [illegible]uary 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Clatsop County-Disposal Sites Cont.							
Seaside Disposal Seaside	40024	4953	297	1	In Compliance	OAR 340	23-010
Elsasser San. Serv. Cannon Beach	40027	4953	297	1	In Compliance	OAR 340	23-010
Lincoln County Sawmills & Planing Mills							
W. O. W. Lumber Co. Eddyville	210007	2421	280	1	Phased Out	OAR 340	25-020
			416	2	In Compliance	OAR 340	24-010
Cascadia Lbr. Co. Toledo	210011	2421	280	1	Phased Out	OAR 340	25-020
			416	2)	In Compliance	OAR 340	24-010
			416	3)			
Georgia Pacific Toledo	210012	2421	416	1)			
			416	2)	In Compliance	OAR 340	24-010
			416	3)			
Guy Roberts Lumber Toledo	210013	2421	15	1	See Footnote[1]	OAR 340	21-020
			280	4	Phased Out	OAR 340	25-020
			298	3	Prohibited	OAR 340	23-010
			416	2	In Compliance	OAR 340	21-040
Paul Barber Hardwoods Newport	210020	2421	403	1	In Compliance	OAR 340	21-040
Dahl Lumber Co. Yachats	210021	2421	298	1	Prohibited	OAR 340	23-010
3-G Lumber Co. Harlan	210029	2421	280	1	In Compliance	OAR 340	25-020

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Lincoln County-Sawmills, Planing Mills Cont.							
Toledo Shingle Co. Toledo	210015	2429	34	1	In Compliance	OAR 340	21-020
			280	1	Phased Out	OAR 340	25-020
Toledo Prod. Inc. Toledo	210017	2429	402	1	In Compliance	OAR 340	21-040
Plywood							
Georgia Pacific Corp. Toledo	210004	2432	3	1	See Footnote[1]	OAR 340	21-020
			412	10)			
			416	4)			
			416	5)			
			416	6)	Dec. 31, 1973	OAR 340	25-315
			416	7)			
			416	8)			
			416	9)			
			419	2)			
			419	3)	Dec. 31, 1974	OAR 340	25-315
Green Veneer							
Alsea Veneer Waldport	210016	2434	280	1	Phased Out	OAR 340	25-315
			411	3)	In Compliance	OAR 340	21-040
			416	2)			
Pulp & Paper							
Georgia-Pacific Corp. Toledo	210005	2631	5	7)			
			6	8)			
			21	6)	July 1, 1975	OAR 340	25-155 thru 25-195
			25	5)			
			297	9)			

Summary of Source Status
As of January 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Lincoln County-Sawmills, Planing Mills Cont.							
Georgia-Pacific (cont.)			446	3)			
			446	4)	July 1, 1975	OAR 340	25-155 thru 25-195
			452	1)			
			454	2)			
Asphalt Plants							
Road & Driveway Co. Newport	210001	2951	605	1	In Compliance	OAR 340	25-110
Ocean Lake Paving Co. Lincoln City	210002	2951	605	1	See Footnote[1]	OAR 340	25-110
Disposal Sites							
Walport Disposal Site Waldport	210024	4953	297	1	In Compliance	OAR 340	23-010
N. Lincoln San. Serv. Lincoln City	210025	4953	297		In Compliance	OAR 340	23-010
Toledo San. Serv. Toledo	210027	4953	297	1	In Compliance	OAR 340	23-010
Tillamook County Sawmills & Planing Mills							
Diamond Lbr. Co. Tillamook	290005	2421	280	6	Phased Out	OAR 340	25-020
			280	7	In Compliance	OAR 340	25-020
			405	8)			
			406	5)			
			416	1)	In Compliance	OAR 340	21-040
			416	2)			
			416	3)			
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Tillamook County-Sawmills, Planing Mills Cont.							
Publishers Paper Co. Tillamook	290007	2421	34	7	See Footnote[1]	OAR 340	21-020
			280	8	In Compliance	OAR 340	25-020
			416	1)			
			416	2)			
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
			416	6)			
Erickson Lbr. Co. Garibaldi	290011	2421	405	1	In Compliance	OAR 340	21-040
Hogdon Shingle Co. Tillamook	290006	2429	280	1	Mill Shut Down	NA	NA
American Shingle Co. Garibaldi	290013	2429	280	1	Phased Out	OAR 340	25-020
Cook Creek Shake & Shingle Nehalem	290015	2429	280	1	In Compliance	OAR 340	25-020
Merritt Bros. Wood Prod. Bay City	290016	2429			Shut Down	NA	NA
Miami Shake & Shingle Nehalem	290017	2429	280	1	In Compliance	OAR 340	25-020
Midway Shake Co. Tillamook	290027	2429	280	1	In Compliance	OAR 340	25-020

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Tillamook County Plywood							
Ore-Wash. Plywood Co. Garibaldi	290008	2432	5	1)	In Compliance	OAR 340	21-020
			25	2)			
			405	8)			
			412	11)			
			416	5)	Dec. 31, 1973	OAR 340	25-315
			416	6)			
			416	7)			
			419	3)			
			419	4)	Dec. 31, 1974	OAR 340	25-315
			419	5)			
			419	6)			
Tillamook Veneer Co. Tillamook	290019	2432	21	3)	In Compliance	OAR 340	21-020
			25	2)			
			280	1	In Compliance	OAR 340	25-020
			405	6)			
			416	7)	Dec. 31, 1973	OAR 340	25-315
			416	8)			
			416	9)			
			419	4)	Dec. 31, 1974	OAR 340	21-315
			419	5)			
Misc. Wood Products							
McRae & Sons, Inc. Bay City	290020	2409	402	2)	In Compliance	OAR 340	21-040
			406	1)			
Asphalt Plants							
Tillamook Asphalt Paving Tillamook	290003	295-	605	1	See Footnote[1]	OAR 340	25-110

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Tillamook County-Asphalt Plants Cont.							
Tillamook Asphalt Paving Tillamook	290022	2951	605	1	See Footnote[1]	OAR 340	25-110
Tillamook Co. Rd. Dept. Tillamook	290002	2953	605	1	See Footnote[1]	OAR 340	25-110
Disposal Sites							
Manzanita Open Dump Tillamook	290028	4953	297	1	In Compliance	OAR 340	23-010
Tillamook Open Dump Tillamook	290029	4953	297	1	In Compliance	OAR 340	23-010
Tillamook Co. Dump Tillamook	290030	4953	295	1	In Compliance	OAR 340	23-010
Tillamook Co. Pac. Dump Tillamook	290031	4953	297	1	In Compliance	OAR 340	23-010

Footnote 1: Compliance status undetermined, test results not yet received.

PORTLAND INTERSTATE AIR QUALITY CONTROL REGION

(REGION 193) (DEQ CONTROLLED SOURCES)

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
PULP AND PAPER							
Clackamas County							
Publishers Paper Co. Oregon City	31850	2621	6	3)			
			8	4)			
			21	5)			
			21	7)	July 1, 1974	OAR 340	25-360(a)(b)
			21	8)			
			25	6)			
			470	1)			
			476	2)			
Columbia County							
Boise-Cascade Papers St. Helens	51849	2621	21	8)			
			21	11)			
			21	13)			
			25	9)			
			25	10)			
			25	12)			
			25	14)	July 1, 1975	OAR 340	25-155thru25-195
			208	15)			
			446	2)			
			446	5)			
			446	6)			
			452	1)			
			452	4)			
			454	3)			
			454	7)			
Boise-Cascade Corp. St. Helens	52056	2621	208	1	July 1, 1975	OAR 340	25-155thru25-195

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
PULP AND PAPER,							
Lane County							
Weyerhaeuser Co. Springfield	208850	2631	21 25 446 446 452 452 454 454	7) 8) 2) 5) 1) 4) 3) 6)	July 1, 1975	OAR 340	25-155thru25-195
Nat'l. Metallurgical Springfield	205800	3339	129 770	1) 2)	In Compliance	OAR 340	21-040
Linn County							
American Can Co. Halsey	223501	2621	21 25 446 452 454	4) 5) 2) 1) 3)	July 1, 1975	OAR 340	25-155thru25-193
Crown Zellerbach Co. Lebanon	223501	2621	21 25 446 452 454	1) 2) 3) 4) 6)	Dec. 31, 1975	OAR 340	25-360(3)(b)
Western Kraft Corp.	220471	2631	21 21 21 25 25 25 446 452 454	4) 6) 8) 5) 7) 9) 2) 1) 3)	July 1, 1975	OAR 340	25-155thru25-195

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
PULP AND PAPER							
Marion County							
Boise-Cascade Papers Salem	244171	2621	21	4)			
			21	6)			
			21	8)			
			25	3)			
			25	5)	July 1, 1974	OAR 340	25-360 2(a)(b)
			25	7)			
			25	9)			
			465	2)			
			470	1)			
PRIMARY ALUMINUM SMELTING							
Multnomah County							
Reynolds Metals Co. Troutdale	261851	3334	21	14)			
			130	1)			
			130	2)			
			130	3)			
			130	4)			
			130	5)			
			130	6)			
			130	7)			
			130	8)	See Footnote[1]	OAR 340	25-265
			130	9)			
			130	10)			
			160	12)			
			160	13)			
			530	11)			
			530	16)			
			530	17)			
			823	15)			

1. Compliance Schedule not yet formalized.

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
PULP AND PAPER							
Yamhill County							
Publishers Paper	366142	2621	6	4)			
Newberg			21	5)			
			21	7)			
			21	8)	July 1, 1974	OAR 340	25-360 2(a)(b)
			25	6)			
			470	2)			
			476	3)			

SOUTHWEST OREGON INTRASTATE AIR QUALITY CONTROL REGION (REGION 194)

Summary of Source Status
As of January 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Coos County							
Sawmills							
Al Pierce Lbr. Co.		2421	405	6)			
Coos Bay	60004		416	1)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
Cape Arago Lbr. Co.							
Coos Bay	60006	2421	5	1	See Footnote	OAR 340	21-020
			280	1	Phased out	OAR 340	21-020
			401	5)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
Rogge Lbr. Sales							
Bandon	60019	2421	280	1	Phased out	OAR 340	25-020
			416	2	In Compliance	OAR 340	21-040
Moore Mill & Lumber							
Bandon	60026	2421	416	1	In Compliance	OAR 340	21-040
Leep Logging Corp							
Myrtle Point	60028	2421	280	1)			
			402	2)	Mill shut down	NA	NA
Elkside Lbr. Co.							
Lakeside	60040	2421	280	1	Phased out	OAR 340	25-020
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
Alder Mfg. Inc.							
Collier Div.			280	2	Torn Down	OAR 340	25-020
Myrtle Point	60043	2421	403	1	In Compliance	OAR 340	21-040

Summary of Source Status
As of January 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Coos County-Sawmills (cont.)							
Coos Head Timber Co. North Bend	60048	2421	0	1			
			280	2	Phased out	OAR 340	25-020
			405	4)	In Compliance	OAR 340	21-040
			416	3)			
Weyerhaeuser Co. North Bend	60049	2421	5	13	See Footnote	OAR 340	21-020
			416	1)			
			416	2)			
			416	3)			
			416	4)		OAR 340	21-040
			416	5)			
			416	6)	In Compliance		
			416	7)			
			416	8)			
			416	9)			
			416	10)			
			416	11)			
			416	12)			
Rogge Lumber Sales Bandon	60057	2421	280	1	Phased out	OAR 340	25-020
			416	2	In Compliance	OAR 340	21-040
Coos Head Timber Co. Coos Bay	60059	2421	416	1)	Mill Shut Down	NA	NA
			416	2)			
Coos Head Timber Co. Coos Bay	60061	2421	416	1)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
			416	4)			

Summary of Source Status
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Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Coos County-Sawmills (cont.)							
Coos Head Timber Co.							
Coos Bay	60005	2432	0	5	See Footnote	OAR 340	21-020
			405	6)			25-315
			412	4)			
			416	2)	Dec. 31, 1973	OAR 340 S & O	72-1210071
			416	3)			
			417	1)	Dec. 31, 1974	OAR 340 S & O	25-315 72-1210071
Weyerhaeuser							
North Bend	60007	2432	412	13)			
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)	In Compliance	OAR 340	25-315
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			419	10)			
			419	11)	Dec. 31, 1974	OAR 340	25-315
			419	12)			
Georgia Pacific							
Coos Bay	60008	2432	0	18	See Footnote	OAR 340	21-020
			0	19	See Footnote	OAR 340	21-020
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)	Dec. 31, 1973		25-315
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	10)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Coos County-Sawmills (cont.)							
Georgia Pacific (cont.)			416	11)			
			416	12)			
			416	13)			
			416	14)	Dec. 31, 1973	OAR 340	25-315
			416	15)			
			416	16)			
			416	17)			
Roseburg Lumber Co. Coquille	60010	2432	5	1	In Compliance	OAR 340	21-020
			280	2)	Phased Out	OAR 340	26-000
			280	3)			
			416	10)			
			416	11)			
			416	12)			
			416	13)			
			416	14)			
			416	15)			
			416	16)			
			416	17)	Dec. 31, 1973	OAR 340	25-315
			416	18)			
			416	19)			
			416	20)			
			416	21)			
			416	22)			
			416	23)			
			416	24)			
			416	25)			
			419	4)			
			419	5)			
			419	6)	Dec. 31, 1974	OAR 340	25-315
			419	7)			
			419	8)			
			419	9)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Coos County-Sawmills (cont.)							
Georgia Pacific Corp							
Coquille	60012	2432	0	19	See Footnote	OAR 340	21-020
			280	20	Phased out	OAR 340	25-005 25-025
			412	27)			
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)	In Compliance	OAR 340	25-315
			416	9)			
			416	10)			
			416	11)			
			416	12)			
			416	13)			
			416	14)			
			416	15)			
			416	16)			
			416	17)			
			416	18)			
			419	21)			
			419	22)			
			419	23)			
			419	24)	Dec. 31, 1974	OAR 340	25-315
			419	25)			
			419	26)			
Green Veneer							
Georgia Pacific Co.							
Norway	60013	2434	280	1	Torn down	OAR 340	25-020
			411	3)	In Compliance	OAR 340	21-040
			416	2)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Coos County-Green Veneer (cont.)							
Georgia Pacific Co. Powers	60014	2434	280	1)			
			416	2)	Mill Closed	NA	NA
			416	3)			
			416	4)			
Doyle Veneer-Menasha Myrtle Point (Norway)	60060	2434	280	1	Phased out	OAR 340	25-315
			405	3)	In Compliance	OAR 340	21-040
			411	2)			
Particleboard							
Weyerhaeuser North Bend	60051	2492	412	23)			
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)			
			416	10)	Dec. 31, 1973	OAR 340	25-320
			416	11)			
			416	12)			
			416	15)			
			416	16)			
			416	18)			
			416	19)			
			416	20)			
			416	21)			
			436	9)			
			436	13)			
			436	14)			
			436	17)	Dec. 31, 1973	OAR 340	25-320
			436	22)			

Summary of Source Status
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Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Coos County-Hardboard							
Georgia Pacific Co.							
Coos Bay	60011	2493	258	40	In Compliance	OAR 340	21-015
			293	41	In Compliance	OAR 340	21-015
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)	Dec. 31, 1973	OAR 340	25-320
			416	9)			
			416	10)			
			416	11)			
			416	12)			
			416	20)			
			416	21)			
			416	22)			
			416	23)			
			416	24)			
			416	25)	Dec. 31, 1973	OAR 340	25-320
			416	26)			
			416	27)	(May 31, 1973)	(S & O (#29 Cyclone))	(72-0810038)
			416	28)	(Sept. 30, 1973)	(S & O (#26 Cyclone))	(72-0810038)
			416	29)			
			416	30)			
			416	31)			
			416	32)			
			416	33)			
			416	34)			
			416	35)			
			416	36)			
			416	37)			
			416	38)			

Summary of Source Status
As of [illegible]nuary 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Coos County-Hardboard (cont.)							
Georgia-Pacific Corp (cont.)			436	13)			
			436	14)			
			436	15)			
			436	16)			
			436	17)	Dec. 31, 1973	OAR 340	25-320
			436	18)			
			436	19)			
			438	39)			
Misc. Wood Products							
Acme Wood Products Myrtle Point	60018	2499	280	1	Phased Out	OAR 340	25-020
Norway Archery Norway	60058	2499	298	1	Prohibited	OAR 340	23-010
Rose City Archery Powers	60069	2499	280	1	Phased Out	OAR 340	25-020
			416	2	In Compliance	OAR 340	31-040
Arago Cedar Products Myrtle Point		3949	280	1	Torn Down	OAR 340	25-020
Curry County							
Sawmills, Planing Mills							
South Coast Lbr. Co. Brookings	80008	2421	280	1	In Compliance	OAR 340	25-020
			416	2)			
			416	33)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
			416	6)			
			416	7)			

Summary of Source Status
As of January 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Curry County-Sawmills, Planing Mills Cont.							
RD Tucker Sawmill Langlois	80009	2421	280	1	Phased out	OAR 340	25-020
Rogge Lumber Sales (Bandon) Cape Blanco	80016	2429	280	2	Phased out	OAR 340	25-020
					In Compliance	OAR 340	21-040
Plywood							
Brookings Plywood Brookings	80003	2432	0	1	In Compliance	OAR 340	21-020
			280	2)		OAR 340	25-020
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)	Dec. 31, 1973	OAR 340	25-315
			416	8)			
			416	9)			
			416	10)			
			416	11)			
			416	12)			
			416	13)			
			419	14)	Dec. 31, 1974	OAR 340	25-315
US Ply-Champion Paper Gold Beach	80004	2432	0	1	April 30, 1973	S & O	72-1110056
			280	2	Phased out	OAR 340	25-020
			280	3	In Compliance	OAR 340	25-020
			416	7)			
			416	8)			
			416	9)	Dec. 31, 1973	OAR 340	25-315
			416	10)			
			416	11)			
			416	12)			
			416	13)			
			416	14)			

Summary of Source Status
As of [illegible]uary 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Curry County-Plywood (cont.)							
US Ply-Champion Paper (cont.)			416	15)	Dec. 31, 1973	OAR 340	25-315
			416	16)			
			419	4)			
			419	5)	Dec. 31, 1974	OAR 340	25-315
			419	6)			
Western States Plywood Port Orford	80005	2432	5	1	Dec. 31, 1973	S & O	72-1110063
			5	2	Dec. 31, 1975	S & O	72-1110063
			280	3	In Compliance	OAR 340	25-020
			280	4	Phased out	OAR 340	25-020
			405	10)			
			416	7)	Dec. 31, 1973	OAR 340	25-315
			416	8)		S & O	72-1110063
			416	9)			
			419	5)	Dec. 31, 1974	OAR 340	25-315
			419	6)		S & O	72-1110063
Agnew Timber Prod. Brookings	80002	2432	10	1	In Compliance	OAR 340	21-020
			280	2	In Compliance	OAR 340	25-020
			416	3	Dec. 31, 1973	OAR 340	25-315
Green Veneer							
Tamco Inc. Gold Beach	80010	2434	280	1	Phased out	OAR 340	25-020
Disposal Sites							
Cal-Ore Sanitation Brookings	80010	2434	280	1	In Compliance	OAR 340	23-015
Gold Beach Sanitation Gold Beach	80019	4953	297	1	In Compliance	OAR 340	23-015

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Curry County-Disposal Sites (cont.)							
Port Orford Dump 1 Port Orford	80020	4953	297	1	In Compliance	OAR 340	23-015
Port Orford San. Serv. Port Orford	80026	4953	297	1	In Compliance	OAR 340	23-015
Douglas County							
Sawmills, Planing Mills							
C & D Lumber Co. Riddle	100009	2421	31	1	In Compliance	OAR 340	21-015
			34	2	In Compliance	OAR 340	21-015
			280	5	Phased out	OAR 340	25-020
			405	4)	In Compliance	OAR 340	21-040
			406	3)			
Douglas Co. Lbr. Co. Rosebury	100012	2421	31	1	In Compliance	OAR 340	21-020
			34	2	In Compliance	OAR 340	21-020
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)	In Complaince	OAR 340	21-040
			416	8)			
			416	9)			
			416	10)			
			416	11)			
Hardwood Co., Inc. Reedsport	100015	2421	280	1	Phased out	OAR 340	25-020
Hub Lumber Co. Roseburg	100016	2421	24	6	In Compliance	OAR 340	21-015
			280	1)	In Compliance	OAR 340	25-020
			280	2)			

Summary of Source Status
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Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Sawmills, Planing Mills Cont.							
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
Dillard Lbr. Co.							
Dillard	100017	2421	13	2	In Compliance	OAR 340	21-020
			34	1	In Compliance	OAR 340	21-020
			407	7)			
			405	8)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
			416	5)			
			416	6)			
DR Johnson Lbr. Co.							
Riddle	100018	2421	31	1	In Compliance	OAR 340	21-020
			280	6	Phased out	OAR 340	25-020
			298	3	Prohibited	OAr 340	23-010
			404	5)			
			405	4)	In Compliance	OAR 340	21-040
			416	2)			
Keller Lbr. Co.							
Roseburg	100019	2421	405	3)			
			416	1)	In Compliance	OAR 340	21-040
			416	2)			
L & H Lumber Co.							
Sutherlin	100020	2421	280	1)	Phased out	OAR 340	25-020
			280	2)			
			405	7)			
			406	6)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
			416	5)			
Little River Box Co.							
Glide	100021	2421	280	1	In Compliance	OAR 340	25-020
			405	3)	In Compliance	OAR 340	21-040
			416	2)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Sawmills, Planing Mills Cont.							
Reedsport Mill Co.							
Reedsport	100024	2421	280	1	Phased Out	OAR 340	25-020
			405	3)	In Compliance	OAR 340	21-040
			416	2)			
Roseburg Lbr. Co.							
Roseburg	100025	2421	5	1)			
(Dillard Mill)			5	2)	See Footnote	OAR 340	21-020
			5	3)			
			298	11	Prohibited	OAR 340	23-010
			416	4)			
			416	5)			
			416	6)			
			416	7)	In Compliance	OAR 340	21-040
			416	8)			
			416	9)			
			416	10)			
Round Prairie Lbr. Co.							
Dillard	100027	2421	21	3)	In Compliance	OAR 340	21-015
			25	4)			
			280	5	In Compliance	OAR 340	25-020
			416	1)	In Compliance	OAR 340	21-040
			416	2)			
Smith River Lbr. Co.							
Drain	100028	2421	280	1)		S & O	72-0710033
			280	2)			
			405	5)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
South Fork Lbr. Co.							
Drain	100029	2421	280	1)	Mill Torn Down	NA	NA
			416	2)			
Herbert Lbr. Co.							
Riddle	100043	2421	298	3	Prohibited	OAR 340	23-010
			405	2)	In Compliance	OAR 340	21-040
			406	1)			

Summary of Source Status
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Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Sawmills, Planing Mills Cont.							
Schmidt Lbr. Co. Glendale	100047	2421	280	1	Mill Shut Down	NA	NA
Superior Lbr. Co. Glendate	100048	2421	15	1	In Compliance	OAR 340	21-020
			280	2	In Compliance	OAR 340	25-020
			416	3)	In Compliance	OAR 340	21-040
			416	3)			
Mt. Baldy Mill Drain	100050	2421	280	1		S & O	72-0710032
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
Schafer Lbr. Co. Myrtle Creek	100071	2421	280	1	Phased Out	OAR 340	25-020
Green Valley Lbr. Co. Myrtle Creek	100071	2421	280	1	In Compliance	OAR 340	25-020
			405	4)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
US Ply (Rifle Range) Roseburg	100080	2421	0	1			
			280	2	In Compliance	OAR 340	25-020
			416	3)			
			416	4)	In Compliance	OAr 340	21-040
			416	5)			
International Paper Gardiner	100081	2421	5	1	See Footnote	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020
			416	3)			
			416	4)			
			416	5)			
			416	6)	In Compliance	OAR 340	21-040
			416	7)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Sawmills, Planing Mills Cont.							
International Paper (cont.)			416	8)			
			416	9)	In Compliance	OAR 340	21-040
			416	10)			
Roseburg Shingle Co.							
Roseburg	100026	2429	280	1)			
			280	2)	In Compliance	OAR 340	25-020
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
Spangler Wood Prod.							
Myrtle Creed	100089	2429	280	1	Phased Out	OAR 340	25-020
			416	2	In Compliance	OAR 340	21-040
Plywood							
Sun Studs Inc.							
Roseburg	100030	2421	5	2	April 30, 1973	S & O	72-0910049
			280	1	Phased Out	OAR 340	25-020
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
Nordic Plywood							
Sutherlin	100022	2432	21	1	In Compliance	OAR 340	25-020
			280	2	In Compliance	OAR 340	25-020
			412	7)			
			416	4)			
			416	5)			
			416	6)	Dec. 31, 1973	OAR 340	25-315
			416	7)			
			416	8)			
			416	9)			
			419	3	Dec. 31, 1974	OAR 340	25-315
US Ply (Garden Valley)							
Roseburg	100037	2432	412	16)			
			416	5)			
			416	6)	Dec. 31, 1973	OAR 340	25-315
			416	7)			
			416	8)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Plywood Cont.							
US Ply (cont.)			416	9)			
			416	10)			
			416	11)			
			416	12)	Dec. 31, 1973	OAR 340	25-315
			416	13)			
			416	14)			
			416	15)			
			419	1)			
			419	2)	Dec. 31, 1974	OAR 340	25-315
			419	3)			
			419	4)			
Drain Plywood Drain	100054	2432	25	1)			
			280	2)		S & O	72-0710034
			280	3)			
			405	9)			
			412	10)			
			416	4)	Dec. 31, 1973	OAR 340	25-315
			416	5)			
			416	6)			
			419	7)	Dec. 31, 1974	OAR 340	25-315
			419	8)			
Glendale Plywood Glendale	100055	2432	416	4)			
			416	5)	Dec. 31, 1973	OAr 340	25-315
			416	6)			
			419	1)			
			419	2)	Dec 31, 1974	OAR 340	25-315
			419	3)	(Jan. 31, 1973)	(S & O (#2 & #3 Dryer)	(72-0710035)
International Paper Gardiner	100056	2432	412	11)			
			416	1)			
			416	2)	Dec. 31, 1973	OAR 340	25-315
			416	3)			
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Plywood Cont.							
International Paper (cont.)			416	5)			
			416	6)			
			416	7)	Dec. 31, 1973	OAR 340	25-315
			416	12)			
			416	13)			
			419	8)			
			419	9)	Dec. 31, 1974	OAR 340	21-040
			419	10)			
Roseburg Lbr. Plt. 4 Roseburg	100078	2432	5	10	See Footnote	OAR 340	21-020
			280	8	Phased Out	OAR 340	25-020
			297	9	Prohibited	OAR 340	21-010
			405	11)			
			416	1)			
			416	2)			
			416	3)	Dec. 31, 1973	OAR 340	25-315
			416	4)			
			416	5)			
			416	6)			
			416	7)			
Roseburg Lbr. #3 Roseburg	100083	2432	0	10	In Compliance	OAR 340	21-020
			280	11	Torn Down	OAR 340	25-020
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)	Dec. 31, 1973	OAR 340	25-315
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			419	12)	Dec. 31, 1974		
			419	13)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Plywood Cont.							
Roseburg Lumber Roseburg	100085	2432	412	23)			
			416	1)			
			416	2)			
			416	3)			
			416	8)			
			416	9)			
			416	10)			
			416	11)			
			416	12)			
			416	13)			
			416	14)	Dec. 31, 1973	OAR 340	25-315
			416	15)			
			416	16)			
			416	17)			
			416	18)			
			416	19)			
			416	20)			
			416	21)			
			416	22)			
			416	24)			
			416	25)			
			419	4)			
			419	5)	Dec. 31, 1974	OAR 340	25-315
			419	6)			
			419	7)			
Prefab Buildings and Structural Members							
Duco-Lam Inc. Drain	100060	2433	416	1	In Compliance	OAR 340	21-040

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Green Veneers							
Ideal Veneer Yoncolla	100035	2434	405	1)	In Compliance	OAR 340	21-040
			411	2)			
Robert Dollar Co. Glendale	100045	2434	5	1	June 30, 1973	S & O	73-0110075
			280	2			
			280	9			
			416	3)			
			216	4)			
			216	5)	Dec. 31, 1973	OAR 340	25-315
			216	6)	June 30, 1973	S & O	73-0110075
			216	7)			
			216	8)			
Roseburg Lbr. Co. Roseburg	100053	2434	280	3	Phased Out	OAR 340	25-020
			298	2	Prohibited	OAR 340	23-010
			411	1)	In Compliance	OAR 340	21-040
			416	4)			
Douglas Co. Lbr. Co. Roseburg	100077	2434	416	1)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
US Ply Veneer Plant Roseburg (Gdn Vly)	100079	2434	280	1	In Compliance	OAR 340	25-020
			416	2	In Compliance	OAR 340	21-040
Dillard Veneer Riddle	100011	2434	280	1	Dec. 31, 1973	Administrative Order	
			211	2	In Compliance	OAR 340	21-040
Georgia-Pacific Sutherlin	100014	2434	280	1	In Compliance	OAR 340	25-020
			411	4)			
			416	2)	In Compliance	OAR 340	21-040
			416	3)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County							
Wooden Containers							
B.F. Cleat & Slat Roseburg	100008	2441	280	1	Phased Out	OAR 340	25-020
Wood Salvage Inc. Sutherlin	100061	2441	405	1	In Compliance	OAR 340	21-040
Poteet Wood Products Roseburg	100062	2442	416	1)	In Compliance	OAR 340	21-040
			416	2)			
Particleboard							
Permaneer Corp. Dillard	100013	2492	11	1	See Footnote	OAR 340	21-020
			280	2	In Compliance	OAR 340	25-020
			412	19)			
			416	3)			
			416	4)			
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	10)	Dec. 31, 1973	OAR 340	25-320
			416	11)			
			416	12)			
			416	13)			
			416	14)			
			416	15)			
			416	16)			
			416	17)			
			436	5)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Douglas County-Particleboard Cont.							
Roseburg Lbr. Co. Roseburg	100063	2492	412	23)			
			416	1)			
			416	2)			
			416	3)			
			416	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	14)			
			416	15)	Dec. 31, 1973	OAR 340	25-320
			416	16)			
			416	17)			
			416	18)			
			416	19)			
			416	20)			
			416	21)			
			416	22)			
			436	10)			
			436	11)			
			436	12)			
			436	13)			
Misc. Wood Products							
Monte Slay Ent. Riddle	100064	2499	403	1	In Compliance	OAR 340	21-040
A. F. Saar Inc. Roseburg	100065	2499	13	1	See Footnote	OAR 340	21-020
			416	2	In Compliance	OAR 340	21-040

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jackson County							
Charcoal Manufacturing							
Olson-Lawyer Timber White City	150058	2861	5	1	See Footnote	OAR 340	21-020
			95	2	See Footnote	OAR 340	21-020
			416	3	See Footnote	OAR 340	21-020
Sawmills, Planing Mills							
Boise-Cascade Lbr. Medford	150004	2421	15	1	See Footnote	OAR 340	
			15	2	See Footnote	OAR 340	
			280	6	Phased Out	OAR 340	25-020
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
Cheney Forest Prod. Central Point	150007	2421	21	3)			
			22	4)	In Compliance	OAR 340	21-020
			31	1)			
			32	2)			
			280	5	In Compliance	OAR 340	25-020
			416	6)			
			416	7)	In Compliance	OAR 340	21-040
			416	8)			
Delah Timber Prod. White City	150009	2421	416	1)			
			416	2)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
			416	5)			
Double-Dee Lbr.	150010	2421	10	1			
			10	2	See Footnote	OAR 340	21-020
			280	3	Torn Down	OAR 340	25-020
			405	5)	In Compliance	OAR 340	21-040
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jackson County, Sawmills & Planing Mills, Cont.							
Eugene Burrill Lbr. Medford	150011	2421	10	1	See Footnote	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020
			297	6	Prohibited	OAR 340	23-010
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
Fountain Lbr. Talent	150013		280	1	Phased Out	OAR 340	25-020
McGrew Brothers	150016	2421	15	1	See Footnote	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020
			416	3)			
			416	4)			
			416	5)	In Compliance	OAR 340	21-040
			416	6)			
			416	7)			
Mt. Pitt Co. Central Point	150023	2421	280	1	Phased Out	OAR 340	25-020
			416	2	In Compliance	OAR 340	21-040
Parsons Pine Prod. Ashland	150035	2421	416	1	In Compliance	OAR 340	21-040
Steve Wilson Lbr. Central Point (Tolo Plant)	150044	2421	31	1	See Footnote	OAR 340	21-020
			34	2			
			280	4)	Phased Out	OAR 340	25-020
			280	5)			
			406	3)	In Compliance		
			416	6)			
Steve Wilson Lbr. Medford (Trail)	150045	2421	280	1	June 1, 1973	S & O	72-0610029

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jackson County, Sawmills & Planing Mills Cont.							
Olson-Lawyer Lbr.	150046	2421	31	1)			
White City			35	2)	In Compliance	OAR 340	21-020
			35	3)			
			416	4)			
			416	5)	In Compliance	OAR 340	21-040
			416	5)			
Medford Corp.	150048	2421	5	1	See Footnote	OAR 340	21-020
Medford			5	2	See Footnote	OAR 340	21-020
			5	3)	In Compliance	OAR 340	21-020
			280	10	Phased Out	OAR 340	25-020
			416	4)			
			416	5)			
			416	6)	In Compliance	OAR 340	21-040
			416	7)			
			416	8)			
			416	9)			
S. Ore. Dry Kiln	150053	2421	0	1	In Compliance	OAR 340	21-020
White City			416	2	In Compliance	OAR 340	21-040
Alder Mfg. Inc.	150060	2421	416	1	In Compliance	OAR 340	21-040
White City							
Millwork							
Cascade Wood Prod.	150005	2431	280	1	Phased Out	OAR 340	25-020
White City			416	2)			
			416	3)			
			416	4)			
			416	5)	In Compliance	OAR 340	21-040
			416	6)			
			416	7)			
			416	8)			
			416	9)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jackson County, Millwork Cont.							
Medford Moulding White City	150037	2431	416	1)	In Compliance	OAR 340	21-040
			416	2)			
Ore Cut Stock Mldg. White City	150047	2431	416	1	In Compliance	OAR 340	21-040
Belleview Mldg. Ashland	150070	2431	280	1	Phased Out	OAR 340	25-020
			416	2	In Compliance	OAR 340	21-040
Plywood							
Caro-Pac Medford	150006	2432	21	1	In Compliance	OAR 340	21-010
			280	2	In Compliance	OAR 340	25-020
			416	4)			
			416	5)	Dec. 31, 1973	OAR 340	25-315
			416	6)			
			417	3	Dec. 31, 1974	OAR 340	25-315
Fir Ply Plant 1 White City	150012	2432	21	1)			
			21	3)			
			22	2)	In Compliance	OAR 340	21-020
			22	4)			
			280	5	In Compliance	OAR 340	25-020
			416	8)	Dec. 31, 1973	OAR 340	25-315
			416	9)			
			417	6)	Dec. 31, 1974	OAR 340	25-315
			417	7)			
Medford Corp. Medford	150017	2432	416	5)			
			416	6)			
			416	7)	In Compliance	OAR 340	25-315
			416	8)			
			416	9)			
			419	1)			
			419	2)	Dec. 31, 1974	OAR 340	25-315
			419	3)		S & O	72-1210067
			419	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jackson County, Plywood Cont.							
Medford Veneer Ply White City	150018	2432	6	1)	In Compliance	OAR 340	21-020
			8	2)			
			416	4)	In Compliance	OAR 340	25-315
			416	5)			
			419	3	Dec. 31, 1974	OAR 340	25-315
Rogue Valley Ply White City	150020	2432	31	1)	In Compliance	OAR 340	21-020
			32	2)			
			416	5)	Dec. 31, 1973	OAR 340	25-315
			416	6)			
			417	3)	Dec. 31, 1974	OAR 340	25-315
			417	4)			
Timber Prod. Co. Medford	150025	2432	5	1	See Footnote	OAR 340	21-020
			280	5	Torn Down	OAR 340	25-020
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	10)	Jan. 30, 1973	S & O	72-0610027
			416	11)	Dec. 31, 1973	S & O	72-1110066
			416	12)			
			416	13)			
			416	14)			
			416	15)			
			416	16)			
			417	3)			
			417	4)			
			419	2)			
Fir Ply Plant 2 White City	150039	2432	280	1	In Compliance	OAR 340	25-020
			416	3	Dec. 31, 1973	OAR 340	25-315
			417	2	Dec. 31, 1974	OAR 340	25-315

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jackson County, Plywood Cont.							
White City Ply White City	150040	2432	21	1	In Compliance	OAR 340	21-020
			416	5)	Dec. 31, 1973	OAR 340	25-315
			416	6)			
			417	2)			
			417	3)	Dec. 31, 1974	OAR 340	25-315
			417	4)		S & O	72-1110064
Boise Cascade Ply	150054	2432	0	1)	See Footnote	OAR 340	21-020
			0	2)			
			416	8)			
			416	9)			
		2432	416	10)	Dec. 31, 1973	OAR 340	25-315
			416	11)		S & O	72-1110060
			416	12)			
			416	13)			
			419	3)			
			419	4)			
			419	5)	Dec. 31, 1974	OAR 340	25-315
			419	6)		S & O	72-1110060
			419	7)			
Green Veneer							
Georgia Pacific Rogue River	150014	2434	280	1	In Compliance	OAR 340	25-020
			416	2	In Compliance	OAR 340	21-040
Kogap Mfr. Medford	150015	2434	31	1)	In Compliance	OAR 340	21-020
			34	2)			
			280	3	In Compliance	OAR 340	25-030
			405	5	In Compliance	OAR 340	21-040
			417	4	Dec. 31, 1973	OAR 340	25-315

Summary of Source Status
As of uary 18, 1973

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jackson County Cont.							
Particleboard							
Permaneer Corp. Dillard	150027	2492	1	1	In Compliance	OAR 340	21-020
			96	2)	See Footnote	OAR 340	21-020
			97	3)			
			412	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	10)			
			416	11)	Dec. 31, 1973	OAR 340	25-320
			416	12)			
			416	13)			
			416	14)			
			416	15)			
			416	16)			
			416	17)			
			416	18)			
			416	19)			
Timber Prod. Medford	150032	2492	96	2)	See Footnote	OAR 340	21-020
			97	3)			
			412	4)			
			416	5)			
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	10)			
			416	11)	Dec. 31, 1973	OAR 340	25-320
			416	12)			
			416	13)			
			416	14)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Jackson County, Particleboard, Timber Prod. Cont.							
			416	15)			
			416	16)			
			416	17)	Dec. 31, 1973	OAR 340	25-320
			416	18)			
			416	19)			
Josephine County							
Sawmills and Planing Mills							
Brown Bros. Lbr.	170004	2421	280	1)	Mill Burned	N/A	N/A
Grants Pass			416	2)			
Cabax Mills Lbr. Div.	170005	2421	280	1	Phased Out	OAR 340	25-020
Grants Pass			416	2)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
Cabax Mills Lbr. Div.	170006	2421	10	1	See Footnote	OAR 340	21-020
Kerby			280	2	In Compliance	OAR 340	25-020
Morris Lbr. Co.	170010	2421	280	1	Torn Down	OAR 340	25-020
Grants Pass							
Murphy Creek Lbr.	170011	2421	3	1	In Compliance	OAR 340	21-020
Murphy Creek			280	2	In Compliance	OAR 340	25-020
			416	3)	In Compliance	OAR 340	21-040
			416	4)			
S. Ore. Lbr. Dist.	170012	2421	280	1	Phased Out	OAR 340	25-020
Grants Pass							
Spaulding & Son	170013	2421	10	1	In Compliance	OAR 340	21-020
Grants Pass			280	2	In Compliance	OAR 340	25-020
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Josephine County, Sawmills and Planing Mills Cont.							
S H & W Lbr. Grants Pass	170014	2421	280	1	In Compliance	OAR 340	25-020
			280	2	Phased Out	OAR 340	25-020
			416	3)			
			416	4)	In Compliance	OAR 340	21-040
			416	5)			
Rough & Ready Lbr. Cave Junction	170018	2421	280	1	In Compliance	OAR 340	25-020
			416	2)	In Compliance	OAR 340	21-040
			416	3)			
M & Y Lbr. Co. Selma	170019	2421	280	1)	In Compliance	Administrative Order	N/A
			416	2)			
Trufir Lbr. Wolf Creek	170020	2421	280	1)			
			416		Mill Shut Down	N/A	N/A
			416	3)			
Dual Forest Prod. Grants Pass	170031	2421	280	1	Phased Out	OAR 340	25-025
Machinery Potts Merlin	170032	2421	280	1)			
			280	2)	Mill Shut Down	N/A	N/A
			280	3)			
Lew Merill Lbr. Sales Grants Pass	170034	2421	280	1	Phased Out	OAR 340	25-025
			416	2	In Compliance	OAR 340	21-040
Millwork							
Grants Pass Mldg. Grants Pass	170008	2431	406				
			416	2)			
			416	3)	In Compliance	OAR 340	21-040
			416	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Josephine County							
Plywood							
Agnew Plywood Grants Pass	170002	2432	21	1)	See Footnote	OAR 340	21-020
			22	2)			
			280	3	In Compliance	OAR 340	25-025
			416	6)			
			416	7)	Dec. 31, 1973	OAR 340	25-315
			416	8)			
			416	9)			
			417	4)	Dec. 31, 1974	OAR 340	25-315
			417	5)			
Caro-Pac Ply Grants Pass	170007	2432	21	1	See Footnote	OAR 340	21-020
			280	1	In Compliance	OAR 340	25-025
			416	5)			
			416	6)			
			416	7)			
			416	8)	Dec. 31, 1973	OAR 340	25-315
			416	9)			
			416	10)			
			416	11)			
			417	3	In Compliance	OAR 340	21-315
			417	4	Dec. 31, 1974	OAR 340	25-315
S. Ore. Ply. Co. Grants Pass	170015	2432	0	1	See Footnote	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020
			416	6)			
			416	7)	Dec. 31, 1973	OAR 340	25-315
			416	8)			
			416	9)			
			419	3)			
			419	4)	Dec. 31, 1974	OAR 340	25-315
			419	5)			
SWF Plywood, Inc. Grants Pass	170016	2432	21	1	In Compliance	OAR 340	21-020
			280	2	Phased Out	OAR 340	25-020

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Josephine County, Plywood, SWF Plywood, Inc. Cont.							
			416	5)			
			416	6)			
			416	7)			
			416	8)			
			416	9)			
			416	10)			
			416	11)			
			416	12)	Dec. 31, 1973	OAR 340	25-315
			416	13)	S & O	72-1210072	
			416	14)			
			416	15)			
			416	16)			
			416	17)			
			417	3)	Dec. 31, 1974	S & O	72-1210072
			417	4)		OAR 340	25-315
Bate Plywood Merlin	170023	2432	0	1	In Compliance	OAR 340	21-020
			280	2)	Phased Out	OAR 340	25-020
			280	3)			
			416	7)			
			416	8)			
			416	9)	Dec. 31, 1973	OAR 340	25-315
			416	10)		S & O	72-1210069
			416	11)			
			416	12)			
			416	13)			
			419	4)			
			419	5)	Dec. 31, 1974	OAR 340	25-315
			419	6)		S & O	72-1210069

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Josephine County, Plywood Cont.							
Tim Ply Co.	170029	2432	5	1	Feb. 28, 1973	S & O	72-0910050
Medford			280	2	Phased Out	OAR 340	25-020
			416	6)			
			416	7)	Dec. 31, 1973	OAR 340	25-315
			416	8)			
			416	9)			
			419	3)			
			419	4)	Dec. 31, 1974	OAR 340	25-315
			419	5)		S & O	72-1100065
Merlin Forest Prod. Merlin	170024	2432	400		In Compliance	OAR 340	21-040
Misc. Wood Products							
Caveman Lbr. Co. Grants Pass	170035	2499	416	1	In Compliance	OAR 340	21-040
S. Ore Archery	170028	3949	74	1	In Compliance	OAR 340	21-020
Kerby			280	2	Phased Out	OAR 340	25-020
			416	3	In Compliance	OAR 340	21-040
Pulp and Paper							
Coos Head Timber	60056	2621	0	1)			
Coos Bay			24				
			297		Mill Shut Down	N/A	N/A
			465				
			470				
Menasha Corp.	60015	2631	0	1)	In Compliance	OAR 340	21-020
North Bend			0	2)			
			465	3)	July 1, 1974	OAR 340	25-360[2(a)(b)]
			478	4)			

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Josephine County Pulp and Paper Cont.							
International Paper Gardiner	100036	2631	25	6	See Footnote	OAR 340	21-020
			446	)			
			447	)			
			451	)			
			452	)	July 1, 1975	OAR 340	25-155thru25-195
			452	)			
			454	)			
			454	)			
Misc. Sources							
Midcave Meat Pkg. Medford	150033	2011	271	1	In Compliance	OAR 340	25-055thru25-080
Morton Milling Co. Medford	150061	2482	849	2)	In Compliance	OAR 340	25-055thru25-080
			851	1)			
S. Ore. Tallow Eagle Point	150056	2094	25	1)	In Compliance	OAR 340	25-055thru25-080
			35	2)			
			560	3			
Rock Crushing, Minerals Processing, Asphalt Plants (All Counties)							
Johnson Rock Prod. North Bend	60001	2951	605	1	In Compliance	OAR 340	25-105thru25-130
Bullards Sand & Gravel Bandon	60003	2951	605	1	See Footnote	OAR 340	25-105thru25-130
Coos Bay Timber North Bend	60039	3295	701	1	See Footnote	OAR 340	21-040
Johnson Rock Prod. North Bend	60064	3295	701	1	See Footnote	OAR 340	21-040

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Rock Crushing, Minerals Processing, Asphalt Plants (All Counties)							
Coos Bay Timber Op. North Bend	60068	3295	701	1	See Footnote	OAR 340	21-040
Pacific Rock & Paving Gold Beach	80006	2951	605	1	See Footnote	OAR 340	25-105thru25-130
Pacific Ready Mix Gold Beach	80021	3273	804	1	See Footnote	OAR 340	21-040
Pacific Rock & Paving Gold Beach	80023	3295	701	1	See Footnote	OAR 340	21-040
Johnson Rock Prod. North Bend	100001	2951	605	1	Shut Down	N/A	N/A
Johnson Rock Prod. North Bend	100002	2951	605	1	Shut Down	N/A	N/A
Roseburg Paving Roseburg	100004	2951	605	1	See Footnote	OAR 340	25-105thru25-130
Umpqua Excavation Roseburg	100006	2951	605	1	See Footnote	OAR 340	25-105thru25-130
Beaver St. Ready Mix Roseburg	100098	3273	804	1	See Footnote	OAR 340	21-040
Mining Minerals Mfg. Riddle	100066	3295	670 770 870 870 870 870 870	1) 7) 2) 3) 4) 5) 6)	See Footnote	OAR 340	21-040

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Rock Crushing, Minerals Processing, Asphalt Plants (All Counties)							
Beaver St. Sand & Gravel Roseburg	100098	3295	701	1	See Footnote	OAR 340	21-040
Umpqua Sand & Gravel Roseburg	100091	3295	701	1	See Footnote	OAR 340	21-040
Umpqua Riv. Navig. Reedsport	100097	3295	701	1	See Footnote	OAR 340	21-040
Concrete Steel Corp. Medford	150002	2951	605	1	See Footnote	OAR 340	25-105thru25-130
Rogue River Paving Medford	150003	2951	605	1	See Footnote	OAR 340	25-105thru25-130
Linninger & Sons Medford	150062	3273	804	1	See Footnote	OAR 340	21-040
Linninger & Sons Medford	150071	3273	804	1	See Footnote	OAR 340	21-040
Linninger & Sons Medford	150064	3295	701	1	See Footnote	OAR 340	21-040
Concrete Steel Corp. Medford	150065	3295	701	1	See Footnote	OAR 340	21-040
Copeland Paving Grants Pass	170001	2951	605	1	See Footnote	OAR 340	25-105thru25-130
Copeland Sand & Gravel Grants Pass	170044	3295	701	1	See Footnote	OAR 340	21-040

Firm	EI No.	SIC	BEC	ID	Compliance Schedule Date	Enforcement Schedule 1. Rule 2. S & O 3. Permit	Applicable Rule or Comment
Rock Crushing, Minerals Processing, Asphalt Plants (All Counties)							
G. W. Woodward Coquille	60002	2900	300	1	See Footnote	OAR 340	21-040
B & C Excavation Myrtle Point	60003	2900	300	1	See Footnote	OAR 340	21-040
Roseburg Paving Roseburg	10005	2900	300	1	See Footnote	OAR 340	21-040
Primary Smelting and Refining							
Hanna Nickel Smelting Riddle	100007	3339	129	14)			
			129	15)			
			129	16)			
			129	17)			
			129	18)			
			129	19)			
			670	1)			
			670	2)			
			670	3)			
			670	4)	July 1, 1974	Commission Order	
			670	7)			
			670	8)			
			670	9)			
			670	10)			
			670	11)			
			670	12)			
			770	5)			
			870	6)			
			870	13)			

Footnote: Compliance status undetermined-source test results not yet received.

APPENDIX II

APPENDIX II
Department of Environmental Quality
Summary of Permits Issued

January 18, 1973

Appl. No.	Company	Expiration Date
0001	Sunset Crushed Rock Company	February 28, 1973
0002	Umpqua Excavation and Paving	February 28, 1973
0003	J. C. Compton Company	February 28, 1973
0004	Road and Driveway Company	February 28, 1973
0005	Asphalt Paving Company	February 28, 1973
0006	Deschutes Ready Mix	February 28, 1973
0007	Robert L. Coats, Deschutes Ready Mix	February 28, 1973
0008	Klamath Tallow Company	February 28, 1973
0009	Redmond Tallow Company, Inc.	February 28, 1973
0010	Southern Oregon Tallow Co., Inc.	February 28, 1973
0011	Menasha Corporation	February 28, 1973
0012	Boise Cascade Corporation	February 28, 1973
0013	Publishers Paper, Newberg Division	February 28, 1973
0014	Publishers Paper	February 28, 1973
0015	Johnson Rock Products Company	February 28, 1973
0016	Copeland Paving, Inc.	February 28, 1973
0017	Ontario Rendering Company	February 28, 1973
0018	Rogue River Paving Company, Inc.	February 28, 1973
0019	Readymix Sand and Gravel, Inc.	February 28, 1973
0020	Bend Aggregate and Paving Company	February 28, 1973
0021	Bioproducts Incorporated	February 28, 1973
0022	G. W. Woodward Co., Inc.	February 28, 1973
0023	Tillamook County	Application Rejected
0024	Roseburg Paving Inc.	February 28, 1973
0025	Roseburg Paving Inc.	February 28, 1973
0026	Ontario Asphalt Paving Company	February 28, 1973
0027	George R. Stacy Company	February 28, 1973
0028	Inland Asphalt Company	February 28, 1973
0029	Oceanlake Paving Company	February 28, 1973
0030	Crown Zellerbach	February 28, 1973
0031	Tru-Mix Leasing Company	February 28, 1973
0032	Pacific Crushing Company	February 28, 1973
0033	Central Oregon Pavers, Inc.	February 28, 1973
0034	Palmberg Paving Company	February 28, 1973
0035	Babler Brothers, Inc.	February 28, 1973

APPENDIX III

APPENDIX III
Columbia Willamette Air Pollution Authority
Permits Issued

January 18, 1973

SIC	Permit No.	Company	Compliance Schedule
2094	261739	Associated Meat Packers	None Required
2094	341801	Crown Rendering Company	None Required
2094	262402	Kenton Packing Company	None Required
2094	262453	Pacific Meat Company	None Required
2094	261800	Portland Rendering Company	None Required
2095	262083	Boyd Coffee Company	None Required
2095	262086	MJB Company	Yes, prior to Dec. 1, 1974
2095	262084	Tucker-Emmrich Company	None Required
2819	262015	Pacific Carbide & Alloys	Yes, prior to Aug. 1, 1973
2812	262424	Pennwalt Corporation	Yes, date not determined
2819	262424	Pennwalt Corporation	None Required
2819	261873	Union Carbide Corporation	Yes, date not determined
2951	262025	Chevron Asphalt Company	None Required
2951	262028	Shell Oil Company	None Required
2951	261815	Trumbull Asphalt Company	None Required
2951	342021	Baker Rock Crushing Company	None Required
2951	032452	Gordon H. Ball, Inc.	None Required
2951	031760	Candy Blacktop Company	None Required
2951	261761	Cascade Construction Co.	None Required
2951	261762	Cascade Construction Co.	Yes, prior to Dec. 31, 1973
2951	342080	D. A. Davidson Paving Co.	None Required
2951	261764	K. F. Jacobson & Co, Inc.	None Required
2951	261765	Oregon Asphaltic Paving Co.	Yes, prior to June 1, 1973
2951	261767	Porter W. Yett Company	None Required
2951	031768	Portland Road & Driveway Co.	None Required
2951	051770	St. Helens Paving	None Required
2951	031769	Willamette Hi-Grade Concrete	Yes, prior to June 1, 1973
2952	262043	Bird and Son, Inc. of Mass.	None Required
2952	261845	The Flintkote Company	Yes, date not determined
2952	262044	Lloyd A. Fry Roofing Co.	None Required
2952	261894	Herbert Malarkey Roofing Co.	None Required
3341	261866	Morris P. Kirk & Son, Inc.	Yes, date not determined

APPENDIX III

Columbia-Willamette Air Pollution Authority

Compliance Schedules
January 18, 1973

Company	Location	Source Covered
Milwaukie Plywood	Milwaukie	HFB, Cyclone, Veneer Dryer
Willamette Hygrade	Oregon City	Rock Crusher
Crown Zellerbach	Oregon City	H F Boilers
Portable Equipment	Milwaukie	Wire Incinerator
Oregon Portland Cement	Lake Oswego	Cement Mfg.
Oregon Read-Mix	Oregon City	Ready-Mix Plant
Cargill, Inc.	Portland	Grain Cyclones
Publishers Paper Portland Division	Portland	Cyclones
Terminal Flour	Portland	Flour Cyclones
Albers Milling	Portland	Flour Cyclones
Linnton Plywood	Portland	Cyclones
Nicolai Company	Portland	HFB's, Cyclones
Western Farmers	Portland	Grain Cyclones
Oregon Steel Mills (Front Avenue)	Portland	ARC Furnaces
B. P. John	Portland	HBF, Cyclones
Owens Illinois	Portland	Glass Furnaces
Pacific Bldg. Materials	Portland	Rock Crushing
Kerr Grain	Portland	Grain Handling
Mayflower Farms	Portland	Feed Cyclones
Pacific Carbide	Portland	ARC Furnace, Cuclone
Ross I. Sand & Gravel (McLoughlin)	Portland	Rock Crushing
Dreyfus Corp.	Portland	Grain Handling
Triangle Milling	Portland	Feed Mill Cyclones
Midrex	Portland	Fe & FeO Dust
Willamette Hygrade (N. River)	Portland	Rock Crushing
Seaport Mfg.	Portland	HFB, Cyclones
Barker Mfg.	Portland	Paint Booths, Cyclones
Rich Mfg.	Portland	Induction Furnaces
Rivergate Rock Prod. (St. Helens Road)	Portland	Rock Crushing
Esco Corp. Plant 1	Portland	ARC Furnaces & Related Equipment
Centennial Mills	Portland	Cyclones
Ross I. Sand & Gravel (N. River)	Portland	Concrete Batching
MJB	Portland	Cooler Cyclone

APPENDIX III

CWAPA, (continued)

Company	Location	Source Covered
Ross I. Sand & Gravel (SE McLoughlin)	Portland	Rock Crushing
Ross I. Sand & Gravel (Tait)	Portland	Concrete Batching
Ross I. Sand & Gravel (Van Pelt)	Portland	Concrete Batching
Willamette Hygrade (N. River)	Portland	Concrete Batching
Willamette Hygrade (SE Ivon)	Portland	Concrete Batching
Empire Lite Rock	Wash. County	Mineral Processing
Stimson Lumber	Forest Grove	HFB
Western Foundry	Tigard	Cupola, ARC Furnaces, Finishing
Forest Fiber Prod.	Forest Grove	Cyclones, Tempering Oven
Forest Grove Lumber	Forest Grove	HFB's
Willamette Hygrade	Wash. County	Concrete Batching

APPENDIX IV

APPENDIX IV
Mid-Willamette Valley Air Pollution Authority
Permits Issued

January 18, 1973

SIC	Permit No.	Company	Compliance Schedule
2094	224009	Eugene Chemical Works	Yes, prior to June 1, 1974
2951	245866	American Asphalt Paving	Yes, prior to Jan. 1, 1974
2951	245865	American Asphalt Paving	Yes, prior to Jan. 1, 1974
2951	022519	Corvallis Sand and Gravel	Yes, prior to Jan. 1, 1975
2951	022518	Corvallis Sand and Gravel	Yes, prior to Jan. 1, 1975
2951	220603	Morse Brothers, Inc.	Yes, prior to Jan. 1, 1975
2951	022552	Morse Brothers, Inc.	Yes, prior to Jan. 1, 1975
2951	228245	Morse Brothers, Inc.	Yes, prior to Jan. 1, 1975
2951	227134	Morse Brothers, Inc.	Yes, prior to Jan. 1, 1975
2951	247800	North Santiam Sand & Gravel	Yes, prior to Jan. 1, 1975
2951	245943	Pacific Sand and Gravel	Yes, prior to Jan. 1, 1975
2951	365330	Rowell and Wickersham	Yes, prior to Jan. 1, 1974
2951	245954	Salem Blacktop Paving Co.	Yes, prior to Jan. 1, 1974
2952	022490	Permaglass Company	Yes, Date Not Determined

MWVAPA - PERMITS TO BE ISSUED

SIC	Permit No.	Company	Compliance Schedule
2951	276017	Babler Brothers, Inc.	(Proposed) Yes, prior to January 1, 1975
2951	365376	Central Heating and Paving	Yes, prior to Jan. 1, 1975
2951	270218	LaCreole Lumber and Rock Co.	Yes, prior to Jan. 1, 1975

APPENDIX IV

Mid-Willamette Valley Air Pollution Authority

Compliance Schedules
January 18, 1973

Company	Location
Permaneer Corporation	Brownsville
Georgia Pacific Corp.	Camp Adair
White City Plywood Co. (Ore. Ltd.)	Mc Minnville
Mt. Jefferson Lumber Co.	Lyons
North Santiam Plywood	Mill City
Champion International Corp. (U. S. Plywood)	Willamina
Champion International Corp. (U. S. Plywood)	Lebanon
Boise-Cascade Corp.	Albany
Boise Cascade Corp.	Independence
Boise Cascade Corp.	Sweet Home
Boise Cascade Corp.	Valsetz
Simpson Timber Co.	Albany
Willamette Industries, Inc.	Dallas
Willamette Industries, Inc.	Foster
Willamette Industries, Inc.	Griggs
Willamette Industries, Inc.	Lebanon
Willamette Industries, Inc.	Sweet Home
Brand S. Corp.	Corvallis
Leading Plywood Corp.	Corvallis
SWF Plywood	Albany
McGraw Edison Corp.	Corvallis
Evans Products Co.	Corvallis
Eugene Chemical Works	Harrisburg
Corvallis Plaza Corp.	Corvallis
Duraflake Co.	Albany
Teledyne-Wah Chang Albany Corp.	Albany
Cascade Steel Rolling Mills, Inc.	Mc Minnville
Gerlinger Industries, Corp.	Salem
Walling Sand & Gravel Co.	Salem
Crabtree Rock Co.	Newberg

APPENDIX V

APPENDIX V

Lane Regional Air Pollution Authority

Compliance Schedules
January 18, 1973

Company	Location	Source Covered
Bohemia Lumber Co.	Culp Creek	W. W. B.
Davidson Industries	Mapleton	W. W. B.
Davidson Industries	Tide	W. W. B.
U. S. Plywood	Mapleton	W. W. B.
American Can Co.	Junction City	Board Products
Bohemia Lumber Co.	Culp Creek	Board Products
Cascade Fiber Co.	Eugene	Particle Board
Georgia Pacific	Irving	Veneer Dryer
Georgia Pacific	Junction City	Veneer Dryer
Georgia Pacific	Springfield	Veneer Dryer
Giustina Bros.	Eugene	Board Products
Hines Lumber Co.	Westfir	Board Products
Hines Lumber Co.	Westfir	Veneer
International Paper	Vaughn	Board Products
International Paper	Vaughn	Veneer
Lane Plywood	Eugene	Board Products
Pope & Talbot	Oakridge	Hardboard
Rosboro Lumber Co.	Springfield	Board Products
SWF Products	Springfield	Veneer
Weyerheauser	Springfield	Particle Board
Georgia Pacific	Prairie Road	Veneer
Brands	Jasper	Veneer

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

TO: ENVIRONMENTAL QUALITY COMMISSION

FROM: Acting Director

SUBJECT: Agenda Item No. G , January 26, 1973, EQC Meeting

Hearings Officer's Report

Attached is the Hearings Officer's report with recommendations for proposed amendments to the Hot Mix Asphalt Regulation, OAR Chapter 340, Sections 25-105 through 25-030.

Recommendation:

It is recommended that the Hearing Officer's recommendation that the attached proposed rule, as corrected, to modify Oregon Administrative Rule, Chapter 340, Section 25-105 through 25-130, Hot Mix Asphalt Plants, be approved.

E. J. Weathersbee

HMP:h 12/20/72

BEFORE THE
DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter of the Hearing for Adoption of Modification to OAR, Chapter 340, Sections 25-105 through 25-130 Relating to Hot Mix Asphalt Plants)	HEARING OFFICER'S REPORT AND RECOMMENDATIONS

TO: ENVIRONMENTAL QUALITY COMMISSION

Pursuant to the directive of the Environmental Quality Commission, and as designated by L. B. Day, Director of the Department of Environmental Quality, the undersigned Hearings Officer, H. M. Patterson, conducted a public hearing on December 19, 1972, at the hour of 1:30 p.m. in the Conference Room of the Department of Environmental Quality, Portland, Oregon. The purpose of the public hearing was to consider any oral or written testimony and receive views and comments relative to the adoption of a proposed modification to OAR Chapter 340, Sections 25-105 through 25-130, Hot Mix Asphalt Plants.

A copy of the proposed rule change and a copy of the public notice are attached to this report.

Based on the proposed rule, the public hearing and factors known to me, I have prepared the following:

The hearing was convened at 1:30 p.m. and the record held open until 1:45 p.m. Present for the Department were T. M. Phillips, Chief, Technical Services; F. A. Skirvin, Supervisor of Primary Metals and Mineral Industries, and R. Johnson, Air Quality Specialist. Mike Huddleston, Asphalt Pavement Association and Art Heizenrader signed the attendance list, attached as Exhibit 7.

The record shows that the Hearing Officer was designed by L. B. Day to conduct the hearing. The public notice was read into the record, and the notice and proposed rule amendments were recorded as Exhibit 6.

Written Communications:

T. M. Phillips presented a memorandum, Exhibit 1, which included a request to change the definition of "firms" to "persons" to be consistent with Department rules, which was recommended in written testimony (dated November 9, 1972) to the Department by Assistant Attorney General, A. B. Silver, and is attached as Exhibit 2.

A written communication, dated September 28, 1972, from George M. Baldwin, Administrator of Highways, Oregon State Highway Division, indicated intent to comply with the regulation in both the spirit and fact. A copy of that correspondence was entered into the record as Exhibit 3 and is attached.

Written communications from Mike Huddleston, Manager, Asphalt Pavement Association of Oregon, dated October 23 and September 29, 1972, marked Exhibit 4 and 5, respectively, are attached and were entered into the record. The latter requested ample time to review the proposal and the former acknowledged that ample time had elapsed and advised that the amendments had been widely circulated.

Oral Testimony:

Mike Huddleston, Manager, Asphalt Pavement Association of Oregon, reviewed written testimony and commended the Department for allowing ample time for review of the proposed amendments, and indicated that in addition to circulating the proposal to members and non-members, conferences had been held with the State Highway Division. He expressed some concern that the asphalt industry was the only industry subjected to the maximum of 40 lb/hr process weight particulate emission limitation and that in some instances the 0.2 and 0.1 grain per standard cubic foot particulate emission allowed less than 40 lb/hr of particulate emissions. Mr. Huggleston stated that the association would gather data and that the permit system would help in this respect. If facts then warranted, the Association would submit recommendations to the Department. He stated the Association believes in Oregon and appreciated working with the Department and strict enforcement of the rules had improved the image of the industry.

FINDING OF FACT

1. Oral testimony was submitted which supported the proposed rule revision.
2. Written communications were received, entered in the record, and were favorable to the proposed rule revision.
3. Two persons signed the attendance record sheet.
4. The corrected modified rule, as proposed, is attached.

RECOMMENDATION

It is the recommendation of the Hearing Officer that the proposed rule, as corrected, to modify Oregon Administrative Rules, Chapter 340, Sections 25-105 through 25-130 be approved.

Dated this 20th day of December, 1972.

H M Patterson

H. M. Patterson, Hearing Officer

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL DIVISION

September, 1972

Proposed (As corrected)
Amended OAR Chapter 340, Division 2
Section 25-105 through 25-130, Hot Mix Asphalt Plants.

OAR, Chapter 340, Division 2, Sections 25-105 through 25-130 are hereby amended to read as follows:

25-105 DEFINITIONS. As used in Sections 25-105 through 25-125, unless otherwise required by context:

(1) "Hot mix asphalt plants" means those persons conveying proportioned quantities or batch loading of cold aggregate to a drier, and heating, drying, screening, classifying, measuring and mixing the aggregate with asphalt for the purposes of paving, construction, industrial, residential or commercial use.

(2) "Collection efficiency" means the overall performance of the air cleaning device in terms of ratio of material collected to total input to the collector unless specific size fractions of the contaminant are stated or required.

(3) "Process weight by hour" means the total weight of all materials introduced into any specific process which process may cause any discharge into the atmosphere. Solid fuels charged will be considered as part of the process weight, but liquid and gaseous fuels and combustion air will not. "The Process Weight Per Hour" will be derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle.

(4) "Dusts" means minute solid particles released into the air by natural forces or by mechanical processes such as crushing, grinding, milling, drilling, demolishing, shoveling, conveying, covering, bagging, or sweeping.

(5) "Portable hot mix asphalt plants" means those facilities or equipment, which are designed to be dismantled and are transported from one job site to another job site.

(6) "Particulate Matter" means any matter except uncombined water, which exists as a liquid or solid at standard conditions.

(7) "Special Control Areas" means for the purpose of this regulation any location within:

(a) Multnomah, Clackamas, Columbia, Washington, Yamhill, Polk, Benton, Marion, Linn and Lane Counties.

(b) The Umpqua Basin as defined in section 21-010, (2).

(c) The Rogue Basin as defined in section 21-010, (3).

(d) Any incorporated city or within six (6) miles of the city limits of said incorporated city.

(e) Any area of the state within one (1) mile of any structure or building used for a residence.

(f) Any area of the state within two (2) miles straight line distance or air miles of any paved public road, highway or freeway having a total of two (2) or more traffic lanes.

25-110 CONTROL FACILITIES REQUIRED.

(1) No person shall operate any hot mix asphalt plant, either portable or stationary, located within any area of the state outside special control areas unless all dusts and gaseous effluents generated by the plant are subjected to air cleaning device or devices having a particulate collection efficiency of at least 80% by weight.

(2) No person shall operate any hot-mix asphalt plant, either portable or stationary located within any special control area of the state without installing and operating systems or processes for the control of particulate emissions so as to comply with the emission limits established by the process weight table, Table I, attached herewith and by reference made a part of this rule and the emission limitations in section 21-015, subsections (2) and (3) and section 21-030 of Chapter 340, OAR.

25-115 OTHER ESTABLISHED AIR QUALITY LIMITATIONS: The emission limits established under these sections are in addition to visible emission and other ambient air standards, established or to be established by the Environmental Quality Commission unless otherwise provided by rule or regulation.

25-120 PORTABLE HOT MIX ASPHALT PLANTS.

(1) Portable hot mix asphalt plants temporarily located outside of special control areas and complying with the emission limitation of 25-110 (1) need not comply with Sections 21-015 and 21-030 of Chapter 340, OAR provided however that the particulate matter emitted does not create or tend to create a hazard to human, animal or plant life, or unreasonably interfere with agricultural operations, recreation areas, or the enjoyment of life and property.

(2) Portable hot mix asphalt plants may apply for air contaminant discharge permits within the area of Department jurisdiction without indicating specific site locations. Said permits will be issued for periods not to exceed one (1) calendar year. As a condition of said permit, the permittee will be required to obtain approval from the Department for the air pollution controls to be installed at each site location or set-up at least ten (10) days prior to operating at each site location or set-up.

25-125 ANCILLARY SOURCES OF EMISSION - HOUSEKEEPING OF PLANT AND FACILITIES.

(1) Ancillary air contamination sources from the plant and its facilities which emit air contaminants into the atmosphere such as, but not limited to the drier openings, screening and classifying system, hot rock elevator, bins, hoppers and pug mill mixer, shall be controlled at all times so as to maintain the highest possible level of air quality and the lowest possible discharge of air contaminants.

(2) The handling of aggregate and traffic shall be conducted at all times so as to minimize emissions into the atmosphere.

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

EXHIBIT 1

December 18, 1972

To: Hearings Officer

From: Air Quality Control Division

Subject: Corrections to Proposed Regulations Relating to Hot Mix Asphalt Plant

It is the recommendation of the Department that two corrections be made to the proposed regulations, OAR, Chapter 340, Section 25-105 through 25-130, Hot Mix Asphalt Plants.

1. Definition 25-105 (1). The term "firms" is to be deleted and the word "persons" inserted.

2. Ancillary Sources of Emissions, 25-125 (1). In the amended proposed language one line was omitted. The corrected wording is: "Ancillary air contamination sources from the plant and its facilities which emit air contaminants into the atmosphere such as, but not limited to the dryer openings, screening and classifying system, hot rock elevator, bins, hoppers and pug mill mixer, shall be controlled at all times so as to maintain the highest possible level of air quality and the lowest possible discharge of air contaminants."

TMP:en

LEE JOHNSON
ATTORNEY GENERAL

JAMES W. DURHAM, JR.
DEPUTY ATTORNEY GENERAL

DEPARTMENT OF JUSTICE
STATE OFFICE BUILDING
PORTLAND, OREGON 97201
TELEPHONE: (503) 229-5725

November 9, 1972

H. M. Patterson, Director
Air Quality Control Division
Department of Environmental Quality
Terminal Sales Building
1234 S. W. Morrison Street
Portland, Oregon 97205

Re: Hot Mix Asphalt Rules

Dear Pat:

I have reviewed the proposed rules and have only the following comments at present:

1. The present rules are 25-105 to 25-130. It appears, after amendment, the Department envisions the rules to be 25-105 to 25-125. The notice should have probably indicated Rule 25-125 was to be repealed, rather than "modified". I don't believe this is a problem because any person interested in the rules would see the repeal.

2. Definitions 25-105 (1). Instead of using the term "firms", I would suggest "persons".

Very truly yours,

LEE JOHNSON
Attorney General

Arnold B. Silver
Assistant Attorney General
and Counsel

ABS/cc

EXHIBIT 2

EXHIBIT 3

OREGON STATE HIGHWAY DIVISION

HIGHWAY BUILDING • SALEM, OREGON • 97310

September 28, 1972

Mr. L. B. Day, Director
Department of Environmental Quality
1234 S. W. Morrison Street
Portland, Oregon 97205

Dear Mr. Day:

I want to thank you for your letter of September 7 regarding your proposed regulation pertaining to asphalt paving plants and the opportunity to meet with members of your staff to discuss the situation.

It is the Highway Division's intent to abide by environmental quality regulations, both in spirit and in fact. This applies to regulations pertaining to operation of asphalt paving plants, both operated by the Division and by private contractors providing asphaltic concrete for the Division. The Division's equipment is most directly involved, being low production equipment. High production equipment operated under contract will be less affected due to quantities involved. Deletion of the six-mile remote site consideration in the present regulations may cause an additional $60,000 annual cost to the Division's maintenance operations. This cost includes purchasing of new equipment and increasing operational costs.

It is anticipated by the staff, however, that there could well be some efficiency savings in the operation of these new plants which would compensate for some of the additional expenditures.

Budgeted in the 1973-75 biennium request are monies for purchasing one new paving plant to operate in Eastern Oregon. This item amounts to $200,000. In order to meet the proposed regulations, it would be necessary for the Division to budget an additional plant to replace the second plant operating in Eastern Oregon. Plans were to budget this second plant for the 1975-77 biennium.

Based on a reexamination of the situation and following staff discussions, we now propose to purchase two paving plants in the 1973-75 biennium, with one to be placed in operation in 1974 and the other in 1975. Under this program, we will be able to fully comply with statewide particulate emission requirements by 1975.

We believe the new regulations are reasonable and we are pleased to cooperate with you.

Sincerely,

George M. Baldwin

George M. Baldwin
Administrator of Highways

EXHIBIT 4

THE SYMBOL OF ASPHALT PAVING EXCELLENCE

QUALITY INTEGRITY

ASPHALT PAVEMENT

ECONOMY RESEARCH

SMOOTH-SAFE-DURABLE SURFACE

STAFF:
MIKE HUDDLESTON
Manager

STATE OFFICERS:
FORREST MORSE
President
Lebanon, Oregon

FRED ANUNSEN
Vice President
Salem, Oregon

IVAN WICKERSHAM
Secretary-Treasurer
McMinnville, Oregon

ASSOCIATION OFFICE:
Phone (503) 363-3858

3421 25th Street, S.E. — P. O. Box 2228 — Salem, Oregon 97308

October 23, 1972

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
OCT 25 1972
AIR QUALITY CONTROL

Mr. Harold Patterson, DEQ
1234 S.W. Morrison
Portland, Oregon 97205

Dear Harold:

I received a copy of the proposed amendments to the Asphalt Plant regulations. I prepared an analysis or comparison of the new regulation versus the present regulation. This analysis was distributed to all owners of portable plants in Oregon whether they were members or not.

As of this writing, I have not received any suggestions for changes and I believe ample time has elapsed. Therefore, I see no reason for a pre-hearing meeting with the plant owners.

However, I wish to emphasize again, I believe the definition of a new source and a definition of substantially modified should be included in the regulation change at this time.

Sincerely yours,
ASPHALT PAVEMENT ASSOCIATION OF OREGON

Mike Huddleston

Mike Huddleston, P.E.
Manager

MH:ms

EXHIBIT 5

THE SYMBOL OF ASPHALT PAVING EXCELLENCE

QUALITY — INTEGRITY — ECONOMY — RESEARCH

ASPHALT PAVEMENT Association of Oregon

SMOOTH-SAFE-DURABLE SURFACE

STAFF:
MIKE HUDDLESTON
Manager

STATE OFFICERS:
FORREST MORSE
President
Lebanon, Oregon

FRED ANUNSEN
Vice President
Salem, Oregon

IVAN WICKERSHAM
Secretary-Treasurer
McMinnville, Oregon

ASSOCIATION OFFICE:
Phone (503) 363-3858

3421 25th Street, S.E. — P. O. Box 2228 — Salem, Oregon 97308

September 29, 1972

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
OCT 2 1972
AIR QUALITY CONTROL

Mr. Harold Patterson
Air Quality Engineer
1234 S.W. MOrrison
Portland, Oregon

Dear Harold:

I have a suggestion to make that I believe will be of mutual benefit to both of us. It is as follows.

Your procedure as I see it now is to prepare a change in regulations. Submit it to your board for a request for a hearing and then conduct the hearing at least thirty (30) days after the request for a hearing was made. I believe that a change in regulations should be prepared and distributed to the industry involved as well as the environmental groups at least 30 days before the request for hearing is made. These groups would have two weeks for comment and the final draft for hearing would be made incorporating their comments. At the final hearing, I am sure the discussion time and suggested amendments would be cut to a minimum. Your legal council will tell you that if you make any substantial modifications at the final hearing, you must go back for a re-hearing at least 30 days later to have a legal document. I have a long file on agencies that have violated this important factor.

Sincerely yours,

Mike Huddleston

Mike Huddleston, P.E.
Manager

MH/ms

EXHIBIT 6

NOTICE OF PUBLIC HEARING

DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE OF OREGON

Notice is hereby given that the Department of Environmental Quality is considering the adoption of certain modifications to Oregon Administrative Rules, Chapter 340, Sections 25-105 through 25-130 relating to Hot Mix Asphalt Plants. The proposed modifications will expand the area within Oregon where high efficiency controls are required.

Copies of the proposed regulations may be obtained upon request from the Department of Environmental Quality, Office of the Director, Air Quality Control Division, 1234 S. W. Morrison Street, Portland, Oregon, 97205.

Any interested person desiring to submit any written document, views or data on this matter may do so by forwarding them to the Office of the Director, Air Quality Control Division, 1234 S. W. Morrison Street, Portland, Oregon, 97205, or may appear and submit his material, or be heard orally at 1:30 p.m. on the 19th day of December, 1972, in the Conference Room of the

Department of Environmental Quality
1234 S. W. Morrison Street
Portland, Oregon 97205

Mr. L. B. Day will be the Hearing's Officer acting in behalf of the Environmental Quality Commission.

L. B. Day, Director

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL DIVISION

September, 1972

Proposed
Amendments of OAR, Chapter 340, Division 2,
Section 25-105 through 25-130, Hot Mix Asphalt Plants.

OAR, Chapter 340, Division 2, Sections 25-105 through 25-130 are hereby amended to read as follows:

25-105 DEFINITIONS. As used in Sections 25-105 through [25-130] 25-125, unless otherwise required by context:

(1) "Hot mix asphalt plants" [are] means those firms conveying [proportion] proportioned quantities or batch loading of cold aggregate to a drier, and heating, drying, screening, classifying, measuring and mixing the aggregate [and] with asphalt for the purposes of paving, construction, industrial, residential or commercial use.

(2) "Collection efficiency" [is] means the overall performance of the air cleaning device in terms of ratio of material collected to total input to the collector unless specific size fractions of the contaminant are stated or required.

(3) "Process weight by hour" [is] means the total weight of all materials introduced into any specific process which process may cause any discharge into the atmosphere. Solid fuels charged will be considered as part of the process weight, but liquid and gaseous fuels and combustion air will not. "The Process Weight Per Hour" will be derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle.

(4) "Dusts" [are] means minute solid particles released into the air by natural forces or by mechanical processes such as crushing, grinding, milling, drilling, demolishing, shoveling, conveying, covering, bagging or sweeping.

(5) "Portable hot mix asphalt plants" [are] means those facilities or equipment, which are designed to be dismantled and are transported from one job site to another job site.

(6) "Particulate Matter" means any matter except uncombined water, which exists as a liquid or solid at standard conditions.

(7) "Special Control Areas" means for the purpose of this regulation any location within:

(a) Multnomah, Clackamas, Columbia, Washington, Yamhill, Polk, Benton, Marion, Linn and Lane Counties.

(b) The Umpqua Basin as defined in section 21-010,(2).

(c) The Rogue Basin as defined in section 21-010,(3).

(d) Any incorporated city or within six (6) miles of the city limits of said incorporated city.

(e) Any area of the state within [one-half (1/2)] one (1) mile of any structure or building used for a residence.

(f) Any area of the state within two (2) miles straight line distance or air miles of any paved public road, highway or freeway having a total of two (2) or more traffic lanes.

25-110 CONTROL FACILITIES REQUIRED [- GENERAL AND SPECIAL CONTROL AREAS]. (1) [A] No person shall [not] operate any hot mix asphalt plant, either portable or [permanent] stationary, [in] located within any area of the state outside special control areas unless all dusts and gaseous effluents [collected] generated [from] by the plant are subjected to air cleaning device or devices having a particulate collection efficiency of at least 80% by weight.

(2) [In addition to the provisions of (1) above, plants] No person shall operate any hot-mix asphalt plant, either portable or stationary located within [the following] any special control [areas] area of the state [shall] without installing and operating [install] systems or processes for the control of particulate emissions so as to comply with the emission limits established by the process weight table, Table I, attached herewith and by reference made a part of this rule and the emission limitations in section 21-015, subsections (2) and (3) and section 21-030 of Chapter 340, OAR. [The special control areas are as follows:]

[(a) Those portions of Multnomah, Clackamas, Washington, Yamhill, Polk, Benton, Marion, Linn and Lane Counties specifically described as follows:]

[(a) Those portions of Multnomah, Clackamas, Washington, Yamhill, Polk, Benton, Marion, Linn and Lane Counties specifically described as follows:]

[Beginning at the point where rangeline 5 E, W.M. intersects the Oregon-Washington boundary; thence S on rangeline 5E to the SE corner of T3S, R5E; thence W to the NW corner of T4S, R4E; thence S to the SE corner of T4S, R3E; thence W to the NW corner of T6S, R2E; thence S to the SE corner of T14S, R1E; thence W to the SW corner of T14S, R1E; thence S on the W.M. line to the SE corner of T19S, R1W; thence W to the SW corner of T19S, R1W; thence S to the SE corner of T21S, R2W; thence W to the SW corner of T21S, R3W; thence N to the NW corner of T21S, R3W; thence W to the SW corner of T20S, R6W; thence N to the NE corner of T12S, R7W; thence W to the NW corner of T12S, R7W; thence N to the NE corner of T7S, R8W; thence W to the NW corner of T7S, R8W; thence N to the NW corner of T5S, R8W; thence E to the NE corner of T5S, R6W; thence N to the NW corner of T2N, R5W; thence E along township line 2N to the Oregon-Washington boundary, then southeasterly along the Oregon-Washington boundary to the point of beginning.]

[(b) That portion of Columbia County specifically described as follows:]

[Beginning at the point of intersection of township line 2N, W.M., Multnomah County with the Oregon-Washington boundary; thence W to the NE corner of T2N, R3W; thence N to the NE corner of T6N, R3W; thence W to the NW corner of T6N, R6W; thence N along range line 6W to its point of intersection with the Oregon-Washington boundary; thence southeasterly along the Oregon-Washington boundary to the point of beginning.]

[(c) Incorporated cities or within six (6) miles of the city limits of said incorporated city.]

[(d) In areas of the state within one-half (1/2) mile of any structure or building used for a residence.]

25-115 OTHER ESTABLISHED AIR QUALITY LIMITATIONS: The emission limits established under these sections are in addition to visible emission and other ambient air standards, established or to be established by the [Sanitary Authority] Environmental Quality Commission unless otherwise provided by rule or regulation.

25-120 PORTABLE HOT MIX ASPHALT PLANTS: (1) Portable hot mix asphalt plants temporarily located outside of special control areas and complying with the emission limitation of 25-110 (1) need not comply with (Section) Sections 21-015 and 21-030 of Chapter 340, OAR provided however that the particulate matter emitted does not create or tend to create a hazard to human, animal or plant life, or unreasonably interfere with agricultural operations, recreation areas, or the enjoyment of life and property.

(2) Portable hot mix asphalt plants may apply for air contaminant discharge permits within the area of Department jurisdiction without indicating specific site locations. Said permits will be issued for periods not to exceed one (1) calendar year. As a condition of said permit, the permittee will be required to obtain approval from the Department for the air pollution controls to be installed at each site location or set-up at least ten (10) days prior to operating at each site location or set-up.

[25-125 INFORMATION REQUIRED AND MONITORING OF PLANT FACILITIES: When requested by the Sanitary Authority for the purpose of formulating plans in conjunction with industries who are or may be sources of air pollution, and to investigate sources of air pollution, a person operating or responsible for operating a hot mix asphalt plant shall submit information to include but not be limited to the following:]

[(1) Ownership, address, location and name of manager.]

[(2) Location of plant if different from (1) above.]

[(3) Description of plant processes and quantities of raw materials used and products produced.]

[(4) Description of the system, methods, and equipment used for controlling or preventing release of air contaminants together with all available data on efficiency of air contaminant removal.]

[(5) Provide and maintain such sampling and testing facilities to permit collection of samples to determine collection efficiencies and particulate emissions into the atmosphere.]

[25-130] 25-125 ANCILLARY SOURCES OF EMISSION - HOUSEKEEPING OF PLANT AND FACILITIES: (1) Ancillary air contamination sources from the plant and its facilities which emit air contaminants into the atmosphere such as, but not limited to the drier openings, screening and classifying system, hot rock elevator, bins, hoppers and [pub] pug mill mixer, shall be controlled at all times so as to maintain the highest possible level of air quality and the lowest possible discharge of air contaminants.

(2) The handling of aggregate and traffic shall be conducted at all times so as to minimize emissions into the atmosphere.

Note: Underlined words are added. Bracketed words are deleted.

TABLE I

PROCESS WEIGHT TABLE

Process Wt/hr (lbs)	Maximum Weight Disch/hr (lbs)	Process Wt/hr (lbs)	Maximum Weight Disch/hr (lbs)
50	.24	3400	5.44
100	.46	3500	5.52
150	.66	3600	5.61
200	.85	3700	5.69
250	1.03	3800	5.77
300	1.20	3900	5.85
350	1.35	4000	5.93
400	1.50	4100	6.01
450	1.63	4200	6.08
500	1.77	4300	6.15
550	1.89	4400	6.22
600	2.01	4500	6.30
650	2.12	4600	6.37
700	2.24	4700	6.45
750	2.34	4800	6.52
800	2.43	4900	6.60
850	2.53	5000	6.67
900	2.62	5500	7.03
950	2.72	6000	7.37
1000	2.80	6500	7.71
1100	2.97	7000	8.05
1200	3.12	7500	8.39
1300	3.26	8000	8.71
1400	3.40	8500	9.03
1500	3.54	9000	9.36
1600	3.66	9500	9.67
1700	3.79	10000	10.0
1800	3.91	11000	10.63
1900	4.03	12000	11.28
2000	4.14	13000	11.89
2100	4.24	14000	12.50
2200	4.34	15000	13.13
2300	4.44	16000	13.74
2400	4.55	17000	14.36
2500	4.64	18000	14.97
2600	4.74	19000	15.58
2700	4.84	20000	16.19
2800	4.92	30000	22.22
2900	5.02	40000	28.3
3000	5.10	50000	34.3
3100	5.18	60000 or more	40.0
3200	5.27		
3300	5.36		

EXHIBIT 7

Attendees at Public Hearing, December 19, 1972, in the Conference Room of the Department of Environmental Quality.

NAME	REPRESENTING
Mike Huddleston	Asphalt Pavement Assoc.
Art Heizenrader	Oregon Concrete & Aggregate Producers Assn.

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item H , for January 26, 1973, EQC Meeting
Kraft Mill Emission Regulations

At the December 21, 1972, EQC meeting, a public hearing was held proposing to amend the Kraft Mill Emission Regulations. One section of the proposed regulations, which changed the definition of particulate and changed the sampling method for particulate, received criticism from the State of Washington, Department of Ecology and two Oregon regional authorities. The purpose of this staff report is to describe the area of concern and to elaborate on the effects of the proposed changes.

The Hearing Record was held open for ten (10) days as requested by the Commission and correspondence was received and considered by the Department and is attached as Appendix H.

Background

The present kraft mill regulation defines particulate matter as solid or liquid matter, except uncombined water. This definition has in practice been expanded to mean solid or liquid matter at ambient temperature. The "proposed definition" defines particulate matter as all solid material at stack temperature that can be removed by a high efficiency filter.

TELEPHONE: (503) 229-5696

To clarify why the difference in definition has caused objections, an analysis of and understanding of the actual method used to capture a sample is necessary.

A basic particulate sampling method includes a series of pieces of equipment (sampling train) assembled to (1) collect a measured quantity of gas from a source and to (2) separate the particulate contained in the gas from that measured quantity of gas. The basic segments or pieces of equipment can be described as follows and are shown in figure 1, page 4:

1) Probe or nozzle: This is the section of the sampling train that is inserted into the smoke stack, flue or sample source.
2) Dry filter: This consists of a holder and some sort of dry filter paper, glass, ceramic, etc., that collects the dry particulate from the gas stream.
3) Impinger or condenser: This section of the sampling train cools the gas stream and collects the liquid particulate and other liquids in the gas stream and those gases which condense at that temperature. In those systems without a dry filter, as described in the preceeding paragraph, this section also collects the dry particulate.

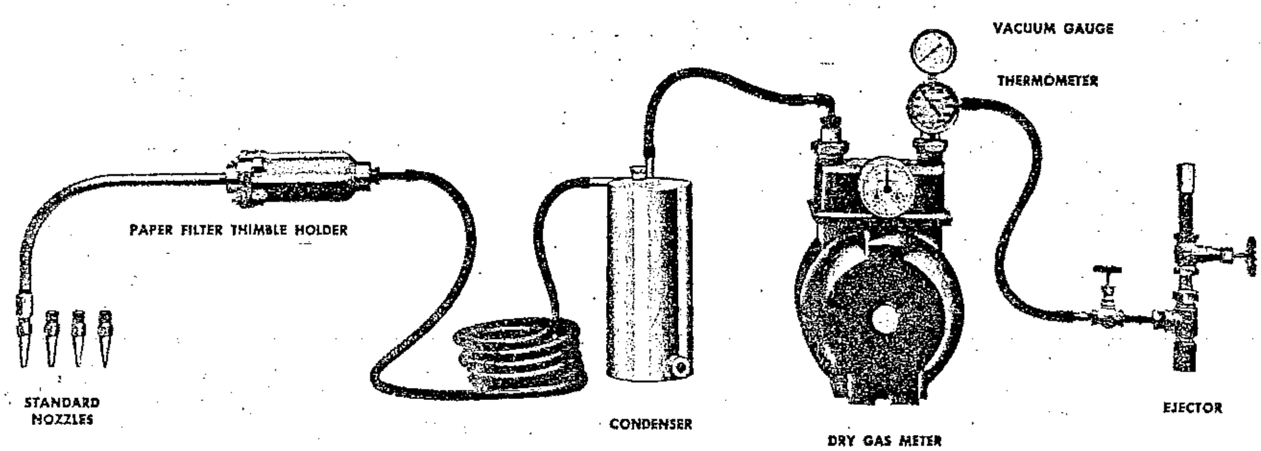
4) The balance of the sampling train consists of the equipment necessary to measure the amount of gas sampled and the equipment needed to pull the sample from the source through the sampling train.

The historical method for obtaining a particulate sample has been with a dry filter. Essentially, most particulate sampling done prior to 1968 was done with some sort of a dry filter. The year 1968 is significant as that is the time when the federal government introduced the impinger sampling method. It was during this same time period that our present regulation and present definition of particulate was established. As can be seen from the definition in 1969, the temperature of sample collection was not considered significant and was not included.

At the time the 1969 regulation was being prepared, a series of meetings were held with the industry and the State of Washington. These meetings continued subsequent to the adoption of the present kraft mill regulation. One result of these meetings was the proposal by the kraft industrial committee of a sampling method. The proposed method was adopted for general use in Oregon and Washington. The method again was different from either the historical dry filter method or the then new federal impinger method.

A comparison of these sampling methods is considered necessary to describe the subsequent changes and problems encountered.

A dry filter has been a paper, ceramic, or other material held in some sort of a frame with the gas drawn from the source through the filter. The sketch in Figure 1 is typical of this type.



FILTRATION APPARATUS ASSEMBLY
Figure 1

An Environmental Protection Agency (EPA) (Federal) type system is shown in Figure 2. The basic difference from that and Figure 1 is the addition of impingers following the filter.

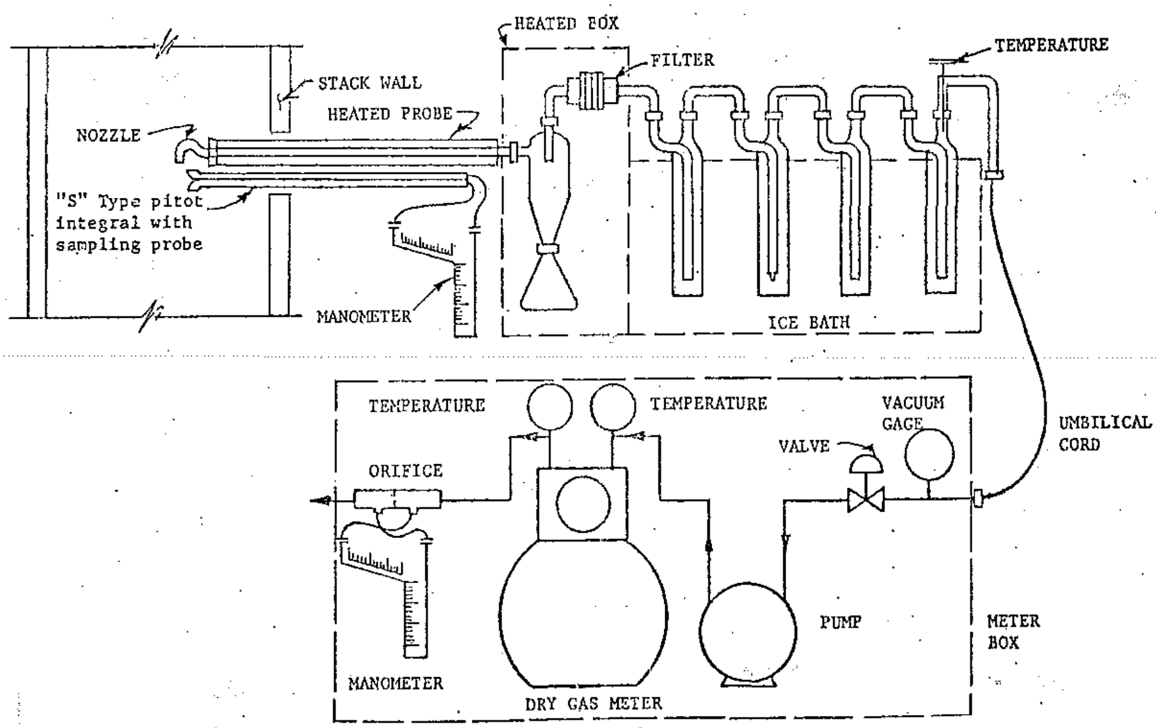


Figure 2

The final method to be compared is the method currently in use by the kraft industry and is shown in Figure 3. As currently used, it deletes the filter of the EPA train and total collection is made in the impingers.

The kraft method when originally proposed included a dry filter after the impingers. It was the stated purpose of industry representatives that the filter was to be used as a special study tool and that industry desired to eliminate the filter as soon as practicable. At the time the filter was proposed it was only to assure that solid particulate did not pass the impingers. The special study demonstrated no need for the filter after the impingers and in the late Spring of 1971 the Department agreed to eliminate the filter.

PARTICULATE SAMPLING TRAIN FOR KRAFT PULP MILLS

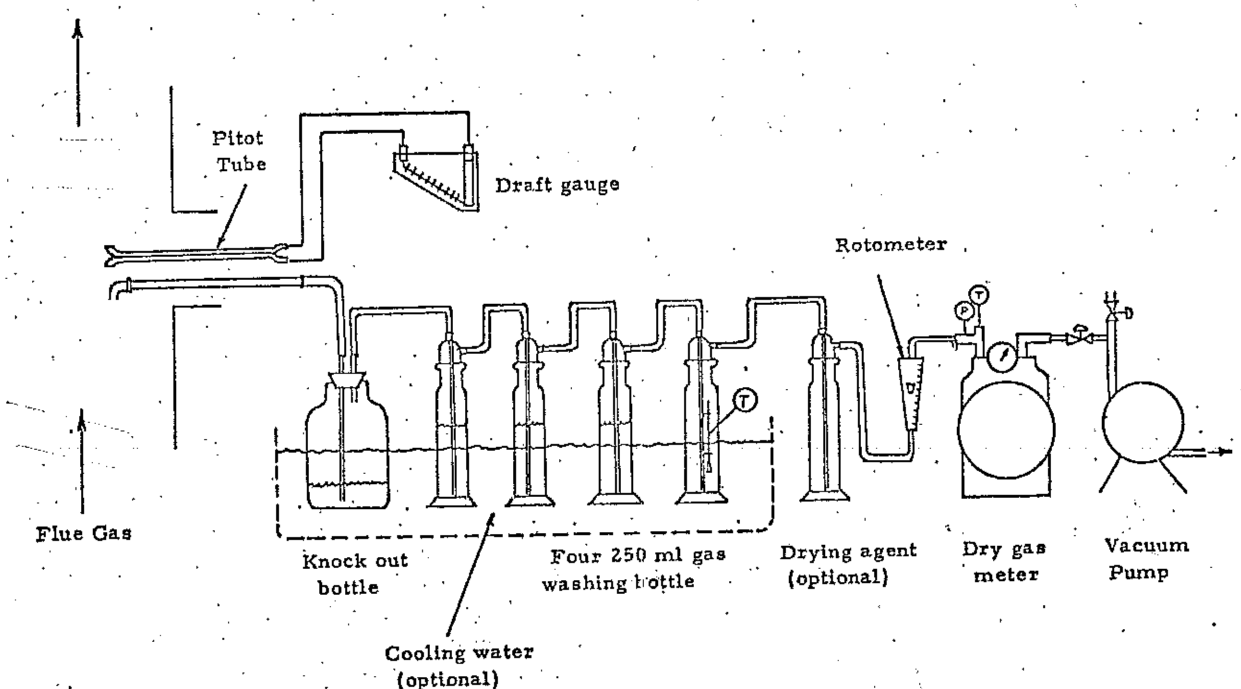


Figure 3

It is at once clear that these three methods illustrated in Figures 1, 2 and 3 have a number of similarities as well as some basic differences. The gas measuring system is in essence identical for all three methods. The nozzle through which the sample is obtained is the same. From these items on, the differences are considerable. The oldest method, or dry filter system in Figure 1, did not specify temperature limits for the sample collection, similar to the present kraft definition. In the EPA method, the filter is heated to assure only solid particulate is collected (no liquids on the filter). The intent of the filter section in these two methods is exactly the same. The newer and the proposed dry filter systems employ the same filter that is used in the EPA type system, a high efficiency filter which is over 99.7% efficient on 0.3 micron materials and at least 98% efficient on 0.05 micron materials. The EPA impinger section is seen to be very similar to the kraft mill impingers. The present kraft method made cooling water optional and the EPA method calls for an ice bath. Each of these impinger sections will collect the liquid particulate as well as the solid particulate with unknown comparative efficiency. The difference in the methods is the temperature at which the sample is collected and the handling of the sample after collection.

To summarize, the EPA sampling method collects both solid particulate on the filter and liquid particulates and soluble gases in the impingers. The dry method collects the the solid particulate on the filter only. The kraft method collects the solid particulate, the liquid particulate and soluble gases in the impingers.

Shortly after the kraft method was adopted, the industry determined that a problem had developed. Their test results were now significantly different than their historical data. The industry, through the National Council for Air and Stream Improvement began a study to determine the cause and the magnitude of the difference. A progress report was submitted in January, 1971, (Reference A) describing their results to date. Those results show that the temperature used in sample analysis is very significant in the reported results and indicated that some chemical reactions or other phenomena might be occurring in the impingers.

As a result of the study and other data that indicated the importance of this temperature condition and possible chemical reaction, the Department of Environmental Quality and the industry developed a dual reporting system to attempt to further evaluate the problem. Samples collected for analysis were to be subjected to temperatures of 105°C and 600°C and results reported for each temperature.

During the same period of time the EPA was conducting studies to evaluate this same type of problem with their sampling method as related to cement plants, incinerators, and power plant industries. On March 21, 1972, the EPA published a change in the prescribed sampling method for particulate requiring only the front half (or dry filter) to be used. The explanation as published in the Federal Register is as follows:

"1. The Particulate Test Method. Particulate emission limits were proposed for steam generators, incinerators, and cement plants, based on measurements made with the full EPA sampling train, which includes a dry filter as well as impingers, which contain water and act as condensers and scrubbers. In the impingers the gases are cooled to about 70°F before metering.

There were objections to the use of impingers in the EPA sampling train, with suggestions that the particulate standards be based either on the "front half" (probe and filter) of the EPA sampling train or on the American Society of Mechanical Engineers test procedure. Both of these methods measure only those materials that are solids or liquids at 250°F and greater temperatures.

It is the opinion of the EPA engineers that particulate standards based either on the front half or the full EPA sampling train will require the same degree of control if appropriate limits are applied. Analyses by EPA show that the material collected in the impingers of the sampling train is usually, although not in every case, a consistent fraction of the total particulate loading.

Nevertheless, there is some question that all of the material collected in the impingers would truly form particulates in the atmosphere under normal dispersion conditions. For instance, gaseous sulfur dioxide may be oxidized to a particulate form - sulfur trioxide and sulfuric acid - in the sampling train. Much of the material found in the impingers is sulfuric acid and sulfates. There has been only limited sampling with the full EPA train such that the occasional anomalies cannot be explained fully at this time. In any case, the front half of the EPA train is considered a more acceptable means of measuring filterable particulates than the ASME method in that a more efficient filter is required and the filter has far less mass than the principal ASME filter in relation to the sample collected. The latter position was reinforced by a recommendation of the Air Pollution Control Association."

While the EPA sampling method change is directed only towards specific new industries, power facilities, cement plants, and incinerators, the problem is seen to be very similar to the kraft mill problem.

Discussion:

The particulate emission data available to the Department are the results of companies' submission of individual test results and reports from the National Council for Air and Stream Improvement.

At the present time there are seven kraft mills submitting data to the Department on a monthly basis. This data submission is the result of requirements of the present kraft mill regulations.

Before any review of the data can be meaningful, an understanding of the methods used to develop the data is needed. In 1969 and before data was being collected to develop the current kraft mill regulations, most all sampling was done with a dry filter and was done on "conventional" furnaces. A "conventional" furnace is one of the older furnaces characterized by direct contact evaporation of spent cooking liquor by furnace flue gases. At the time of the regulation, 1969, all furnaces were "conventional". In late 1969 the first of the "new generation" furnaces was placed into operation. A "new generation" furnace has non-contact evaporation (no direct contact evaporator). In Oregon all furnaces constructed since 1969 and all new furnaces currently planned are "new generation" furnaces.

The impinger tests (using the kraft method Figure 3) conducted on the "conventional" furnaces have been reported as near the same results as with dry filters. The amount of increase in particulate was found to be generally under 5% when the impinger samples were dried at 600°C.

The impinger tests conducted were not comparable to the dry filter method on the "new generation" furnaces. The weight collected from the impinger tests was five to ten times the weight collected on the dry filter when 105°C drying was used. When the impinger samples were heated to 600°C a close comparison to the dry filter was obtained.

Reviewing the data and programs for Oregon kraft mills the following is evident:

1. There are currently three (3) sampling methods being used.
    a. Impingers to collect sample and the results calculated from the sodium ion in the catch.
    b. Impingers to collect sample and results reported either at 105°C or 600°C.
    c. A continuous monitor based on detecting and monitoring sodium ion.
2. There is no data in the Department files that can be used to establish that the sodium ion calculated particulate will give the same results as

the weighed particulate from impingers related to either 105°C and 600°C.

3. The company utilizing a continuous sodium ion monitor has not submitted data to the Department to demonstrate correlation of results with the impinger sampling method.

4. There is data to conclude that the particulate collected from impingers will be reduced when the samples are heated at 600°C rather than at 105°C. (Reference E)

5. The data in the Department files does not yield any known relationship between the different amounts of particulate collected and reported based on either 105°C or 600°C and other parameters such as SO_2 concentration in the stack, temperature of the stack gases, water content of the stack gases, etc. (Reference E)

6. Data from concurrent sampling using an EPA train and an alundum thimble when particulate concentrations are low, .01 gr. per scf, indicate lower results from the alundum thimble than from the EPA dry filter (Reference B)

7. Recent data submitted by industry indicate that impinger catch subsequent to the proposed dry filters is essentially all evaporated when heated to 500°C for analysis and that when the filters and impinger catch are both heated to 400°C for analysis less particulate is reported than from the filter alone at 105°C. (Reference C)

8. The annual average particulate emissions for 1972 reported by the various companies vary from 2.9 lb/adt (air dried ton) to 56.3 lb/adt. For those three furnaces reporting on the dual temperature basis, the reductions reported on elevating the temperature ranged from 0.7 lb/adt to 5.8 lb/adt. The four furnaces reporting compliance with the 4.0 lb/adt are two reporting with the continuous sodium ion monitor (one new generation furnace and one conventional furnace), and two reporting at 600°C, (one new generation furnace and one conventional furnace). On the assumption that the continuous ion monitor is equivalent to the dry filter (no data is available to confirm or refute this), and that impinger samples when reported on the 600°C basis are equivalent to the dry filter (data available indicate this is valid)

the four furnaces currently reporting compliance would continue to report compliance if the particulate definition were changed as proposed and the furnaces currently out of compliance would remain out of compliance.

9. The data currently available also indicates that those furnaces currently meeting the 4.0 lb/adt limit as described in 8 above are also currently operating under 3.5 lb/adt.

10. The data in the Department files currently available from special studies measured by techniques available at the time, indicate that the kraft furnace SO_2 emissions are substantially below the proposed regulatory requirements of 300 ppm to be achieved by July 1, 1975. The data shows furnace SO_2 emissions range from essentially zero to approximately 200 ppm; with six of the eight furnaces under 100 ppm.

Summary:

A summary of the effects of the proposed change in the particulate definition and the sampling method may be characterized as follows:

1. The change in particulate definition is considered significant, and will result in different amounts of particulate being obtained on sampling.

2. The total weight of particulate including solid, liquid, and gases collected by the various methods may be tabulated as follows, listing from highest to lowest:
   a. EPA train.
   b. Present kraft method reported on basis of 105°C.
   c. Present kraft method reported on basis of 600°C. and Proposed sampling method. (see 3 below)

3. The difference in the present method when reported at 600°C and the proposed method is indicated by available data to be very small, i.e. approaching zero.

4. Th

4. The dry solid particulate collected in the EPA method and the proposed method will be the same. The total difference in the four methods relates to the condensable or liquid particulate.

5. The Federal method for new power facilities, cement plants and incinerator, is the same as the proposed method, EPA requires the total EPA train and throws away all by the dry filter catch.

6. The proposed sampling method will catch the material that current control equipment is designed to catch. An electrostatic precipitator is considered highest and best practicable control equipment at this time and this equipment only collects dry particulate.

7. The proposed sampling method has the same efficiency as the EPA dry filter. This efficiency as related to dry particulate has a minimum of 99.7% collection efficiency of particles greater than 0.3 microns diameter and greater than 98% collection efficiency on particles of 0.05 micron size.

There are some liquid aerosols present in kraft mill emissions. Until the SO_x studies are complete and conclusions reached, the liquid aerosol emissions would not be subject to regulation except for the indirect results of the SO_2 emission limit. After the studies are finished, and an appropriate emission limit and test method are adopted specific control strategy can be applied to these emissions. In the meantime, the Department will review proposals for particulate control in terms of providing best present technology, which essentially is high efficiency (in the range of 99.7%) electrostatic precipitation. On completion of the studies if it is appropriate, an adjustment in the particulate limit will be made. Thus, in 1976, these may be:

1. A TRS limit.

2. A particulate limit, either to reflect only solid particulate or solid particulate and liquid aerosol present in the stack.

3. A separate SO_x limit and its own test method. The test method probably would be performed in conjunction with TRS monitoring, rather than with particulates.

4. Each of these measured contaminants will have its own control strategy.

Conclusions:

1. There is need for establishment of a uniform method of sampling and analysis.

2. Additional restrictions should be included in the regulation to require a uniform method of sampling, and uniform procedures for handling and reporting sample data.

3. There is little likelihood that the continued receipt of data as now required from the kraft furnaces will resolve the questions of interference and reactions in the samples.

4. While the evidence is that using the method proposed the measured particulate levels will be lowered, the evidence is not conclusive and the level that should be established is not known but probably should be in the area of 3.5 lb/ton or less.

5. Using the new proposed method of sampling, the efficiency of solid particulate collection will not change from present methods and will remain in excess of 99%.

6. Each mill should be required to periodically sample the precipitator on each furnace on a regular basis for collection efficiency.

7. The regulation should indicate that after the special studies and by the 1976 hearing, consideration will be given to the establishment of new solid particulate emission limits.

8. The special studies relating to sulfur oxide emissions should be expanded to include other sulfur oxides than SO_3.

9. Any modifications to reference test methods and procedures should be approved in writing by the Department prior to any change and any such request for change must include documentation of the equivalency of the proposed method or procedure to the reference methods and procedures.

Recommendations

After a detailed review of the testimony and available data relative to the proposed Kraft Pulp Mill Regulation it is the recommendation of the Director that the proposed Kraft Pulp Mill Regulation be adopted with the following modifications which are recommended to improve clarity and provide for necessary details in the method of measurement, existing special studies requirements, and approval of sampling programs.

1. Paragraph A-8 be amended as follows:
   Particulate matter means all solid material in an emission stream which may be removed on a [0.3 micron glass] glass fiber filter maintained during sampling at stack temperature [and] or above the water vapor dew point of the stack gas, which ever is greater but [less than 600°F] not more than 400°F. The glass-fiber filter to be used shall be MSA 1106BH or equivalent.

2. Paragraph G-2 be amended as follows:
   Each mill shall sample the recovery furnace(s), lime

kiln(s) and smelt dissolving tank(s) for particulate emissions (on a regularly scheduled basis) with, (a) the sampling method and (b) the analytical methods approved in writing by the Department. Each mill, after the adoption of this regulation, shall establish and have approved in writing by the Department, a regular sampling schedule. As soon as practicable, each mill shall provide continual monitoring of particulate matter from the recovery furnace(s) and lime kiln(s) in a manner approved in writing by the Department.

3. Paragraph I-2 be amended as follows:
   Each mill shall participate in special studies sufficient to identify at each mill.
   a. The amount and effects of (sulfur trioxide (SO_3)) sulfur oxides, including SO_2, SO_3, and SO_4 in recovery furnace stack gases.
   b. The extent of interference from the formation of sulfate ion from SO_2 and SO_3 in wet collection devices used in particulate sampling trains, and
   c. The occurrence of acid mist (H_2SO_4 in water droplets) in recovery furnace stack gases.

4. A paragraph I-3 be added as follows:
   Each mill shall for all furnaces, allowing a reasonable start-up period for new furnaces, conduct a special

study sufficient to evaluate the stability and efficiency of the electrostatic precipitators used on recovery furnace(s). All sampling and analytical procedures to be approved in writing by the Department.

E. J. Weathersbee

TMP:sb
1-17-73

ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Water Programs
Research Triangle Park, North Carolina 27711

Reply to
Attn of: OAQPS, ESED, ESB

Date: January 23, 1973

Subject: Proposed Revisions in State of Oregon Regulations for Kraft Mills

To: Larry L. Sims
Technical Advisor
Region X

In your January 15, 1973, memorandum to Dr. James C. Herlihy, you presented several questions concerning a proposed regulation of the State of Oregon that would govern emissions from kraft pulp mills. Much of your request covered a comparison with proposed EPA new source performance standards for the same sources. I must emphasize that any predictions within EPA at this time as to the form or stringency of the NSPS are speculative. We do not intend to propose a NSPS for kraft mills before August of 1973. Appreciable internal and external review is required before the standard is proposed. In addition, it will be necessary to review comments from the public before the standards are finally promulgated.

Dr. Herlihy and my staff have reviewed your transmittal. Our responses are tentative in that almost all aspects of the NSPS could be modified significantly before the standard is promulgated. Our comments are as follows:

Particulate Matter Standards. In the first group of new source performance standards which were promulgated on December 23, 1971, EPA defined particulate matter as any finely divided liquid or solid other than uncombined water as measured by Method 5 of 40 CFR 60. We considered the use of the full sampling train including both filter and impingers but on promulgation chose to base the particulate standard only on the front half of the EPA sampling train, i.e., the filter and probe.

It is not our intention to include limits for particulates if standards are proposed this year. However, such limits would eventually be included. While we do not have a working definition of particulate matter for kraft mills, it is likely that any particulate standard for this source would also be based on Method 5, i.e., it will not include material collected in impingers.

Oregon's proposed regulations define particulates on the basis of an instack glass fiber filter. This filter will, in general, operate at a temperature other than 250°F which is maintained in the filter with the EPA Method. Some differences should be expected in results obtained from the two methods. This is especially true for sources releasing significant sulfur oxides. The latter materials have a tendency to pass through an instack filter that is operated at 300°F or hotter but will often be condensed at 250°F on the EPA filter. The National Council of the Paper Industry for Air and Stream Improvement is currently conducting field tests on recovery furnaces to compare instack and outstack filters. The Council's results should be known later this year.

The particulate limits proposed by the State of Oregon are equivalent to a range of approximately 0.085 to 0.10 grains per dry standard cubic foot (dscf) for recovery furnaces, lime kilns, and smelt dissolving tanks. Based on tests of other particulate sources, it is our opinion that more stringent limits could be achieved. For instance, in Group II New Source Performance Standards, some six particulate sources are included and tentative emission limits range from .020 to .030 grains per dscf. Nevertheless, we have not as yet measured any concentrations in this range at pulp mills.

Total Reduced Sulfur Emissions. It is our plan to propose TRS emission standards for recovery furnaces, black liquor oxidation tanks, digesters, and multiple-effect evaporators. While the form and numerical limits of the standard have not been firmly established, it appears that we will probably set standards in the same range as those proposed by the State of Oregon. Data from pertinent performance tests can be made available to your office for transmittal to the State, when test reports from our contractors are complete.

Regarding lime kilns, there is no conflict inasmuch as EPA does not anticipate setting NSPS for these sources in the near future. We have preliminary indications that lime kilns can be operated well below the 20 parts per million TRS limit proposed by the State of Oregon. We also believe that operating mills can improve their control without expensive and time-consuming process modifications. Nevertheless, we have very little firm data to provide at this time.

Oregon's proposal to require incineration of noncondensables from digesters and evaporators would seem reasonable and consistent with tentative NSPS. It is our intent to base the TRS emission limits on what can be achieved by incineration. The provisions of Section III do not allow EPA to use an equipment standard such as an incinerator in a NSPS.

Oregon's proposal for black liquor oxidation tanks, brown stock washer vents, etc. is a policy statement requiring treatment to lowest practicable levels. No apparent conflict with NSPS can be seen.

Sulfur Oxides Limits. We do not plan to propose a limit for sulfur oxides emission from recovery furnaces. The proposed Oregon standard of 300 parts per million SO_2 should be met easily at most mills. It should serve the stated purpose of ensuring that SO_2 control will not be neglected.

Monitoring. The proposed monitoring requirements appear reasonable and probably consistent with what EPA will propose. Also EPA probably will cite a gas chromatograph as the reference method, it is expected that the Barton titrator will qualify as an equivalent instrument for monitoring the recovery furnace and lime kiln. Available data for recovery furnaces indicate that the Barton Titrator and gas chromatograph agree within two parts per million even at low TRS levels.

Since the latest reorganization of the Office of Air Quality Planning and Standards, the Engineering Services Branch has been designated as the focal point for technical assistance to regional officers. It will expedite future requests for assistance if you will contact my office rather than an individual engineer with whom you might be familiar. Dr. Herlihy is the project officer on kraft pulp mills and is committed to a tight schedule in developing the NSPS. It is usually not feasible for the project officer to provide responses to requests such as yours on short notice.

It would be most helpful if you would send future requests earlier in the procedure. It is often quite difficult to obtain on short notice the services of the necessary technical experts.

I hope we have provided the information you require. Should you have further questions, please contact me.

/s/

Robert T. Walsh, Chief
Engineering Services Branch
Emission Standards and
Engineering Division

cc: J. Herlihy
J. Durham
S. Cuffe

A P P E N D I X

A) Progress Report - National Council for Air and Stream Improvements - January 1971

B) Transactions of the ASME - Paper No. 72 WA/AP - 4

C) Crown Zellerbach Environmental Services - Letter to Mr. L. B. Day - December 27, 1972

D) Chemical Engineering - January 24, 1972

E) Summary of Particulate Emissions from Kraft Mills - DEQ file data

F) Summary Furnaces Reporting Compliance Total Particulate

G) Membrane Filters - Gelman Filters

H) Correspondence received during the 10 day period following the public hearing

APPENDIX A

ncasi special report

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT, INC., 103 PARK AVENUE, NEW YORK, N.Y. 10017

PROGRESS REPORT

AN EVALUATION OF THE PARTICULATE COLLECTION EFFICIENCY OF SOME SOURCE SAMPLING TECHNIQUES FOR KRAFT RECOVERY FURNACE STACKS

by

Rodney Schmall
and
Andre Caron

January, 1971

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INTRODUCTION

Performance ratings of particulate control devices are based on measured dust concentrations prior to and following the unit. The ratings and mass emission rates can therefore be influenced by the methodology used in collection of the samples. A study is in progress to compare particulate emission rates obtained when sampling several point sources using an equipment sequence which features an alundum thimble followed by a wet impinger train.

In the first phase of this project, kraft recovery furnace stack gases were sampled. With new generation non-direct-contact evaporator type furnaces, results obtained with the two above mentioned methods differed substantially. The project was therefore expanded to further investigate and explain these unanticipated findings. The results of both the collection efficiency study of these two sampling methods and the above mentioned additional investigations are presented in this report.

DESCRIPTION OF FURNACES STUDIED

Information relative to individual furnaces sampled in terms of the manufacturer, dimensions, age, liquor firing rates, and precipitator efficiency is presented in Table I. The firing rates varied slightly during different sampling intervals due to changes in mill operating conditions.

SAMPLING EQUIPMENT AND PROCEDURE

One of two methods is usually used to determine particulate concentrations in recovery furnace ducts: a) the alundum thimble, or b) the wet impinger train. In both methods, a measured volume of flue gas is drawn from the duct isokinetically and the amount of collected solids determined. The two techniques differ primarily in the mechanism of particle capture.

TABLE I

DESCRIPTION OF FURNACES STUDIED

Location	Manufacturer	Year built	Precipitator design efficiency (%)	Furnace dimen. (ft x ft x ft)	Firing rate (lb solids/ hour)
I	B and W (non-direct-contact)	1969	99.5	21 x 30 x 109	45,000-50,000
II	CE (non-direct-contact)	1969	98.4	26.4 x 26.8 x 75	46,000
III	CE	1963	97	20 x 20 x 85	45,000-65,000
IV	CE	1964	98	18.5 x 18.5 x 80	115,000-125,000
V	CE	1961	99	21.3 x 21.3 x 86	70,000-75,000
VI	B and W	1966	95	26.2 x 27.5 x 90	100,000-105,000

NOTE: B and W denotes Babcock and Wilcox
CE denotes Combustion Engineering

The alundum thimble method is used universally by manufacturers of electrostatic precipitators to rate their equipment, determine performance efficiency, and satisfy guarantees. It is also the method recommended by the American Society of Mechanical Engineers (1) to determine the performance efficiency of these units. The Code also requires that the type of separation device have an efficiency of separation

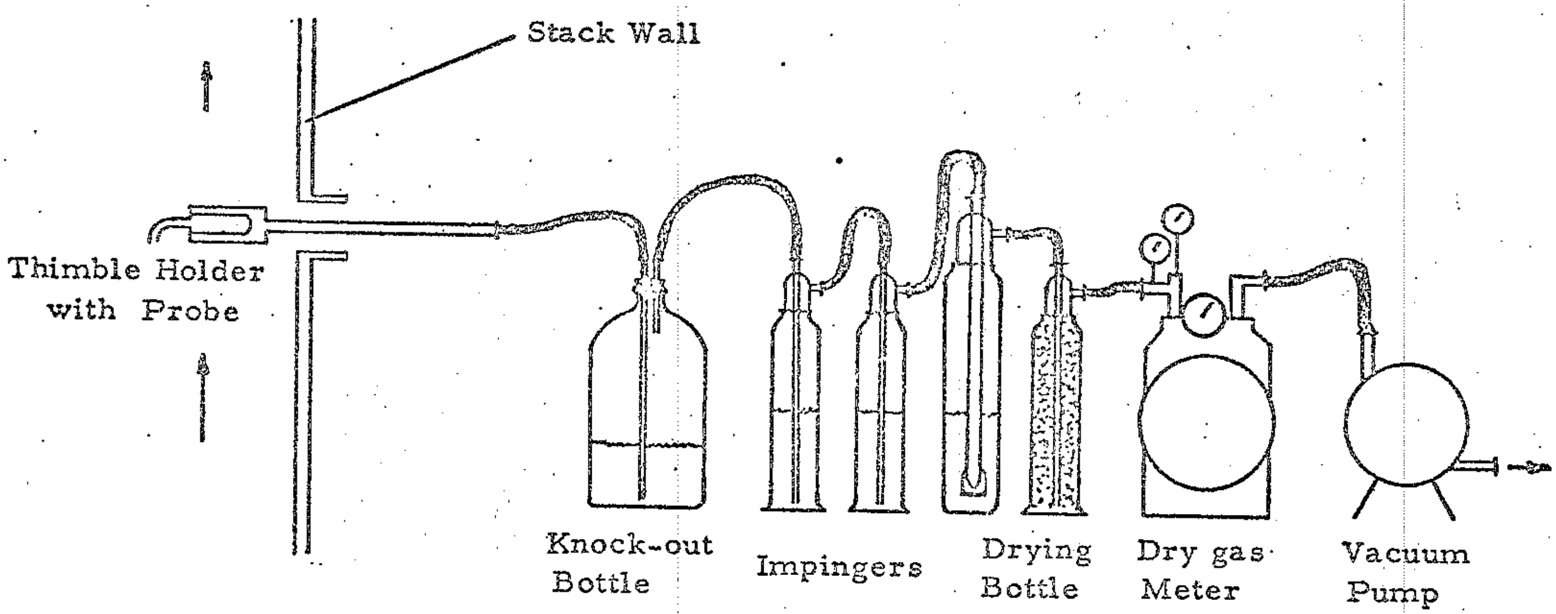


FIGURE I Sketch of Particulate Collection Sampling Equipment Sequence taken from the knock-out bottle and impinger train solutions after evaporation at 105° C. were fired at 200°, 400°, and 600° C. and the weight losses determined. Temperatures at which any fumes were evolved were recorded. Samples of solutions from individual bottles were also analysed for sulfate and sodium ion concentration, and pH. Ion analyses were also performed on the solids caught in the thimbles.

DISCUSSION

Relative Amount of Material Residing in Thimble and 105° C. Impinger Residue

The data obtained for relative amounts of material residing in the thimble and impingers at a drying temperature of 105° C. is shown in Table II. This sample handling procedure corresponds with that specified by the States of Oregon and Washington for analysis of the material collected in the scrubbing solutions. The data obtained when sampling flue gases from new generation non-direct-contact evaporator type units differed substantially from that collected from direct-contact evaporator type furnaces.

When sampling flue gas from non-direct-contact evaporator recovery furnaces, from 71 to 97% of the total weight of material collected was in the impingers following the alundum thimble. For direct-contact evaporator type units, from 0.6 to about 35% of the weight was captured in the impinger train. At locations IV and V, about 95% of the particulate matter was captured in the alundum thimble.

The above indicated that particulate emission rates for new generation non-direct-contact evaporator type units can be greatly influenced by the sampling method used. The impinger train technique using an evaporation temperature of 105° C., as required by the States of Oregon and Washington, could be expected to give results from 5 to in excess of 10 fold those measured using the alundum thimble method.

With direct-contact evaporator type units, the results obtained at three of the four locations sampled correlated well, with 85 to 95% of the material captured by the thimble using the 105° C. drying temperature.

TABLE II

ALUNDUM THIMBLE VS IMPINGER TRAIN EFFICIENCY

Location	Wt. in thimble and nozzle (g)	Wt. in nozzle alone (g)	Wt. in train (105°C) (g)	Wt. in train (600°C) (g)	% caught in train (105°C) (%)	% caught in train (600°C) (%)	SO_2 Conc. in flue gas (ppm)
I	0.0632	.0031	0.1845	--	74.7	--	--
(non-direct-	0.0350	.0024	0.1919	0.0698	84.6	66.6	140
contact-	0.0333	.0047	0.1443	0.0386	81.0	53.7	385
evaporator)	0.1175	.0033	1.1894	0.0881	91.0	42.7	--
	0.1885	.0069	1.1600	0.1016	86.1	35.0	--
	0.0453	.0100	0.7962	0.0895	94.6	65.4	--
	0.0257	.0058	0.0635	0.0364	71.2	57.6	--
II	0.0257	.0051	1.0568	0.2238	97.4	89.7	290
(non-direct-	0.1152	.0141	0.8147	0.3450	87.6	74.9	290
contact-							
evaporator)							
III	1.1189	.0717	0.4370	0.0747	28.0	6.2	--
(direct-	0.5443	.0440	0.2866	0.1549	35.0[1]	22.2[1]	--
contact)	0.4112	.0279	0.1431	0.0502	25.8	10.9	--
	0.2625	.0170	0.1391	0.0285	34.7	9.8	--
	1.0544	.0134	0.2305	0.0445	18.0	4.1	--
	0.3105	.0080	0.3511	0.1907	53.1[2]	38.0[2]	140
	0.8777	.0076	0.1993	0.0099	18.5	1.1	140
	0.5051	.0221	0.1088	0.0016	17.8	0.3	160
	0.8740	.0027	0.1284	0.0024	12.8	0.2	160
IV	1.7428	.0251	0.1044	0.0393	5.6	2.2	<10
(direct-	0.3254	.0486	0.2556	0.2122	44.1[3]	39.5[3]	<10
contact)	0.4313	.0 23	0.0751	0.0582	14.8	11.9	<10
	0.8766	.0624	0.0613	0.0376	6.5	4.1	<10
	0.5280	.0148	0.0167	0.0187	3.1	3.4	<10
	0.2627	.0098	0.0901	0.0600	26.3[4]	18.6[4]	<10
	0.3044	.0072	0.0366	0.0144	10.9	4.5	<10
V	1.6547	.0925	0.0762	0.0371	4.4	2.2	--
(direct-	1.4918	.0587	0.0208	0.0160	1.4	1.1	--
contact)	2.1626	.1158	0.0130	0.0136	0.6	0.6	--
	0.8217	.0692	0.0201	0.0146	2.4	1.7	--
VI	0.2227	.0148	0.0604	0.0083	22.4	3.6	400
(direct-							
contact)							

1, 4 = gasket leak 2, 3 = thimble crack

At location III, the correlation between the thimble and wet scrubbing method was not as good. At this location, 65 to 88% of the material was collected by the alundum thimble, while the remainder was in the residue from the impingers after drying at 105° C.

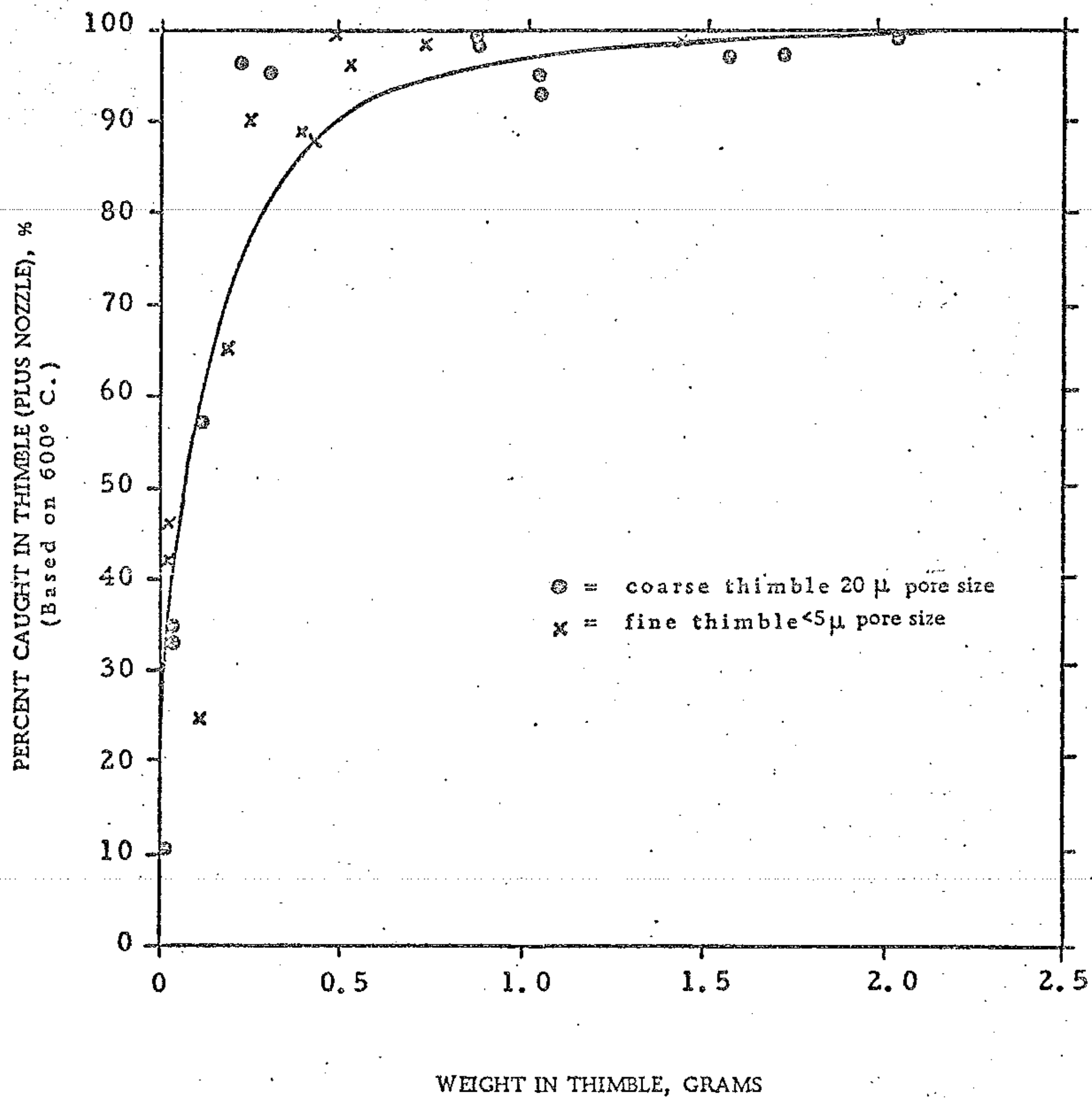
Relative Amount of Material Residing in the Thimble and 600° C. Impinger Residue

The percent of total solids captured by the thimble and by the impinger train individually, based on a 600° C. impinger train residue firing temperature, are also presented in Table II. This temperature was selected to eliminate substances which might have formed in the train such as elemental sulfur and sulfuric acid, or trapped such as black liquor carry-over.

Based on the findings of the impinger residue at 600° C., the alundum thimble captured 90% or more of the particulate matter in the flue gas when sampling direct-contact evaporator type units. With the non-direct-contact evaporator type units sampled, the difference between the two particulate collection methods remained substantial. The alundum thimble captured from 10 to 65% of the total weight collected by the sampling equipment sequence used. However, with both types of furnaces, the grain loadings based on the 600° C. impinger train residue were similar in the range of 0.01 to 0.06 grains per SDCF.

The relationship of thimble collection efficiency to total weight of material in the thimble for all units sampled are plotted in Figure 2. From the plot, it is evident that there is a correlation between the weight of the solids present in a thimble and its collection efficiency. Data collected illustrated that once a coating of dust was formed on the inside wall of the thimble, the particles were more efficiently captured by improved filtration and/or particle affinity due to surface charge. Material which escaped the thimble probably did so prior to the formation of the surface coating. There was no significant difference noted between data collected with thimbles of coarse and fine porosity. This would indicate that once a coating is formed, the thimble merely acts as a support for the filtering medium.

This work suggests that for the low dust concentration specified in current point source regulations, the alundum thimble method appears inadequate in terms of particle capture according to the ASME Test Code when applied to kraft recovery furnace emissions following



Thimble Particulate Collection Efficiency
vs
Weight Captured

FIGURE 2

high efficiency electrostatic precipitators.

Attention is called to the amount of material washed from the sampling nozzle ahead of the thimble reported in Table II. This weight, which can represent about 30% of the particulate weight captured by the thimble, becomes very significant especially when determining performance efficiency of the unit for guarantee purposes.

Examination of Extraneous Material in the Impinger Train

For each sample taken, the total solids collected was determined gravimetrically by weighing both the thimble and liquid aliquots from the impinger train solution after a low temperature drying period. After drying liquid aliquots at 105° C. (for 24 hours) a dark, glossy, viscous material resulted in some of the residues. This condition was especially prevalent in residues from samples collected from the two non-direct-contact evaporator furnaces studied. One of the direct-contact evaporator type furnaces,which had a moderate sulfur dioxide content in the flue gas, exhibited a similar residue. These three locations all had sulfur dioxide emissions in excess of 150 ppm at the time the samples were collected.

The train residue weights obtained after 105° C. drying appeared unreasonably high especially for those units without direct-contact evaporators. To examine the residue more thoroughly, the samples were fired at temperatures of 200°, 400°, and 600° C, and the data obtained are presented in Table III. A typical curve relating weight loss to firing temperature is presented in Figure 3. A large percentage of the train residue weights volatilized. The residues which exhibited a dark, glossy, non-typical appearance emitted white fumes with an acrid odor at temperatures near 170° C. The pH of the train solutions which demonstrated weight losses of about 80% were in the order of 2.5 and less.

An ion analysis was performed of both the train scrubbing solutions and the thimble solids. The analysis indicated a large excess of sulfate (SO_4) ions in the scrubbing solution as shown in Table IV. Assuming that most of the particulate matter was sodium sulfate, a 2:1 sulfate to sodium ion weight ratio would be expected. The ratio of sulfate to sodium ion concentration of the impinger scrubbing solutions from non-direct-contact evaporator furnace complexes varied from 57:1 to

TABLE III

WEIGHT LOSS UPON FIRING SCRUBBER SOLUTION
105° C. RESIDUES

Location	Wt. at (105°C) (g)	Wt. at (200°C) (g)	Wt. at (400°C) (g)	Wt. at (600°C) (g)	% Wt. Lost on firing (600°C) (%)
I (non-direct-contact-evaporator)	0.1919	0.1350	0.0891	0.0698	64
	0.1443	0.0941	0.0623	0.0386	74
	1.1894	0.2549	0.1464	0.0881	93
	1.1600	0.1761	0.1057	0.1016	91
	0.7962	0.1415	0.1308	0.0895	89
	0.0635	0.0474	0.0396	0.0364	43
II (non-direct-contact-evaporator)	1.0568	0.4869	0.4218	0.2238	79
	0.8147	0.6337	0.5643	0.3450	56
III (direct-contact with high SO_2)	0.4370	--	--	0.0747	83
	0.2866	--	--	0.1549	46
	0.1431	--	0.0643	0.0502	65
	0.1391	--	0.0490	0.0285	79
	0.2305	--	0.0445	0.0445	81
	0.3511	--	0.2298	0.1907	46
	0.1993	--	0.0621	0.0099	95
	0.1088	--	0.0174	0.0016	99
	0.1284	--	0.0307	0.0024	98
IV (direct-contact)	0.1044	--	0.0496	0.0393	62
	0.2556	--	0.2203	0.2122	17
	0.0751	--	0.0583	0.0582	22
	0.0631	--	0.0376	0.0376	39
	0.0167	--	--	0.0187	-12
	0.0901	0.0896	--	0.0600	33
	0.0366	0.0260	--	0.0144	62
V (direct-contact)	0.0762	0.0640	--	0.0371	51
	0.0208	0.0119	--	0.0160	23
	0.0130	0.0110	--	0.0136	-4
	0.0201	0.0132	--	0.0146	27
VI (direct-contact)	0.0604	0.0454	--	0.0083	86

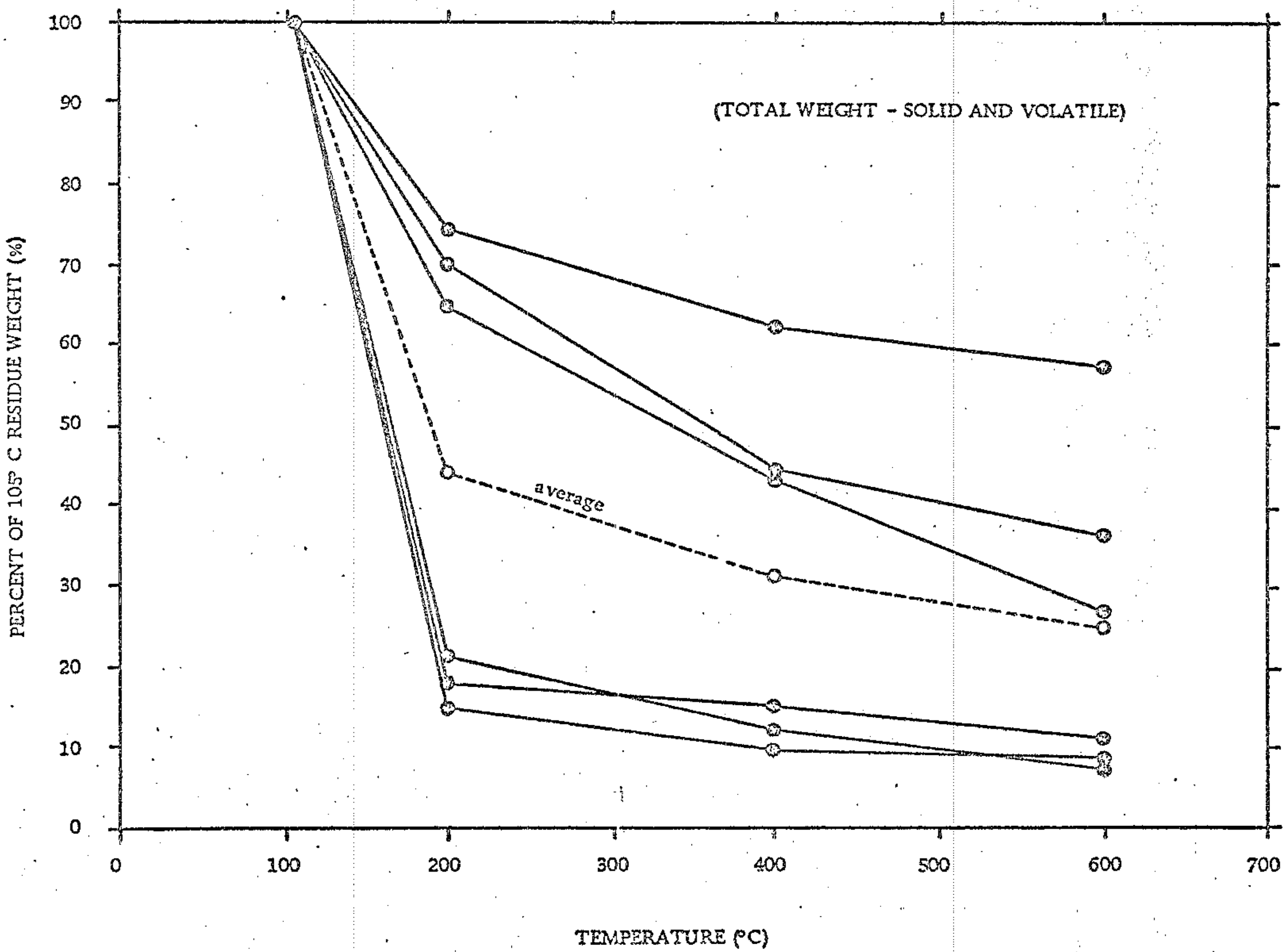


FIGURE 3

Weight Loss Upon Firing Scrubber Train
105° C. Residues - Location I

TABLE IV

SODIUM AND SULFATE ION ANALYSIS

Location	Thimble Solids % Na (%)	% SO_4 (%)	First Collection Bottle SO_4 ion Conc. (ppm)	Na ion Conc. (ppm)	Cl ion Conc. (ppm)	SO_4:Na (rounded values)	pH
I (non-direct contact-evaporator)	--	--	80	1.4	0.6	57:1	2.7
	--	--	98	1.2	0.5	81:1	2.7
	--	--	600	0.9	0.6	670:1	2.0
	--	--	900	2.8	0.5	320:1	2.0
	--	--	550	0.4	0.4	1400:1	2.1
	--	--	275	0.4	0.2	690:1	2.5
II (non-direct contact-evaporator)	--	--	825	0.8	--	1100:1	1.9
	--	--	675	tr.	--	--	1.9
III (direct-contact with high SO_2)	32.3	--	215	1.5	--	144:1	2.5
	24.3	--	185	29.0	--	6:1	2.6
	--	--	30	5.0	0.3	6:1	2.7
	20.3	--	23	2.7	0.5	8:1	2.6
	32.6	--	39	3.0	0.5	13:1	2.4
	27.0	43	183	72.0	0.8	3:1	2.5
	38.2	65	78	5.2	0.9	15:1	2.5
	31.5	63	70	2.6	0.6	27:1	2.6
	30.5	72	70	3.1	1.0	23:1	2.5
IV (direct-contact)	21.5	26	10	4.8	0.2	2:1	3.4
	30.9	25	17	42.0	0.2	1:3	3.7
	31.2	20	10	5.5	0.2	2:1	4.2
	32.0	50	6	1.8	0.1	3:1	5.1
	32.2	58	tr.	1.4	0.1	--	5.7
	30.4	--	18	5.4	0.1	3:1	6.6
	28.4	--	tr.	1.2	0.1	--	6.9
V (direct-contact)	36.4	50	18	1.6	0.1	11:1	3.5
	38.7	50	tr.	0.8	0.1	--	5.2
	34.0	56	tr.	1.4	0.1	--	5.9
	37.7	59	1	2.7	0.1	1:3	5.6
VI (direct-contact)	26.6	--	44	.7	0.1	63:1	3.1

NOTE: A small change in the NA ion concentration changes the SO_4:Na ratio substantially; thus, values should be taken as being approximate. Thimble solids from the first two locations were too small in quantity for an accurate ion analysis. Thimble solids also contain ions other than sodium and sulfate.

as high as 1400:1. The thimble solids exhibited sulfate to sodium weight ratios near the expected 2:1 value. The sulfate to sodium ion ratios were much closer to the calculated value for the scrubbing solutions obtained at sampling locations IV and V. Both these furnaces were operating at sulfur dioxide emission concentrations in the flue gas of less than 10 ppm during the sampling intervals.

From these finds, it was concluded the sulfuric acid was present in the scrubbing solutions which produced a glossy viscous residue upon low temperature drying. This would account for the low pH of the solutions, the evolution of white fumes at 170° C. (sulfuric acid hydrated with two water molecules volatilizes at 167° C.), and also the large excess of sulfate ions. The excess of sulfate ions in the impinger train solutions might be due to either the collection of sulfuric acid mist from the flue gas, or by a reaction in the impingers with sulfur dioxide.

Little is known about the formation of sulfur trioxide in the kraft recovery furnace and associated duct work. At temperatures which are thermodynamically favorable, the kinetics of converting sulfur dioxide to sulfur trioxide are unfavorable in the absence of a catalyst (7). The literature indicates the reaction can be catalyzed by particulate matter, moisture, iron oxides, and ozone, all of which are present in kraft recovery furnace emissions (2, 3, 6).

Oxidation of sulfurous to sulfuric acid is not significant in the absence of a suitable catalyst. The oxidation does proceed in the presence of ferrous chloride (5) which might exist in some furnace flue gases. The rate of oxidation is dependent on the speed of oxygen absorption in water. Ozone can greatly increase the rate of the reaction. Whether sufficient oxygen is available or whether catalytic agents are indeed present for sulfuric acid formation from sulfur dioxide is uncertain.

From the study, it has been established that the use of the impinger train for particulate sampling of kraft recovery furnace off-gases can result in the capture of material other than salt cake or normal particulate matter. The data indicated the material is hydrated sulfuric acid which originates from either sulfur trioxide or sulfur dioxide present in the flue gas.

To illustrate the significance of the weight contributed by the viscous material, dust concentrations and loadings were calculated for all locations based on both a 105° C. and a 600° C. drying temperature. The values are presented in Table V. The differences are especially

TABLE V

TOTAL PARTICULATE CONCENTRATIONS
(THIMBLE AND SCRUBBING SOLUTION)

Location	Particulate Concentration based on 105° C. (gr/SDCF)	Particulate Concentration based on 600° C. (gr/SDCF)	Dust Loading based on 105° C. (lb/ADT)	Dust Loading based on 600° C. (lb/ADT)
I (non-direct contact)	0.077	--	2.7	--
	0.077	0.035	2.6	1.2
	0.083	0.034	2.8	1.1
	0.189	0.030	6.7	1.1
	0.330	0.071	13.2	2.8
	0.199	0.032	6.5	1.0
	0.041	0.028	1.3	0.9
II (non-direct contact)	0.264	0.061	14.8	3.4
	0.205	0.103	12.0	6.0
III (direct-contact with high SO_2)	0.457	0.350	15.8	12.1
	0.335	0.285	12.8	10.9
	0.398	0.333	13.5	11.3
	0.145	0.104	4.6	3.3
	0.231	0.198	8.8	7.5
	0.275	0.208	9.6	7.2
	0.303	0.250	11.0	9.1
	0.465	0.384	17.7	14.6
	1.077	0.941	41.2	36.0
IV (direct-contact)	0.436	0.421	13.8	13.3
	0.149	0.138	4.7	4.4
	0.222	0.215	7.0	6.8
	0.214	0.208	7.5	7.3
	0.150	0.151	5.6	5.6
	0.224	0.205	6.8	6.1
	0.131	0.122	3.8	3.6
V (direct-contact)	0.592	0.578	--	--
	0.980	0.977	--	--
	0.704	0.704	--	--
	0.524	0.520	--	--
VI (direct-contact)	0.268	0.218	2.2	1.7

NOTE: Values are rounded
ADT = Air dried ton of pulp

gr = grains
SDCF = standard dry cubic feet

significant for the non-direct-contact evaporator type units sampled. Firing at 600° C. accounted for reductions of 50% and greater which were equivalent to grain loadings of from 0.03 to 0.2 grains per SDCF. When considering the higher initial emission rate of direct-contact evaporator units sampled, the reduction upon firing is not as significant.

Since the evidence suggested the possibility of sulfur trioxide being present in the emissions from kraft recovery furnaces, some relative concentrations which might be present in the flue gases of the furnaces sampled were estimated. Sulfur trioxide concentrations were calculated assuming that all the weight lost from the solution residues by firing at 600° C. was due to the volatilization of sulfuric acid hydrated with two molecules of water. A sulfur trioxide molecule would comprise about 60% of the total weight. Calculations based on the above assumption give the highest possible concentrations for sulfur trioxide. In Table VI, the concentrations (ppm by volume - dry basis) of sulfur dioxide and calculated sulfur trioxide in the flue gases of the furnaces studied are presented. No bluish haze, typical of sulfur trioxide in concentrations greater than 10 ppm, were evident at location I and II during the sampling intervals. The plumes emitted were not noticeable. This indicated that sulfur trioxide was not present at the emission point.

SUPPLEMENTAL INVESTIGATIONS

Another problem inherent in the use of wet impingement for particulate sampling on kraft recovery furnace stacks is chemical conversion of the particulate matter in the scrubbing solution. Sodium carbonate can be converted to sodium sulfite in solution by reaction with sulfur dioxide (4). The sulfite formed can be oxidized further to sodium sulfate upon evaporation of the liquid aliquots. The error introduced would be proportional to the percent of sodium carbonate in the particulate matter collected, if sulfur dioxide is present in at least a stoichiometric quantity in the stack gas. Using the wet impinger technique on a kraft recovery furnace particulate with a 20% sodium carbonate content could result in an error of approximately 5% above the actual weight.

It was assumed that all the particulate matter that escaped the thimble would be caught in the train of wet impingers. To verify this assumption, the equipment sequence was followed by a membrane filter

TABLE VI

SO_2 AND SO_3 CONCENTRATIONS IN FLUE GASES
(SO_3 concentrations back-calculated from residue weight loss)

Location	SO_2 Conc. (ppm) dry basis	SO_3 Conc. (ppm) dry basis	SO_3 Conc. (gr/SDCF)
I (non-direct contact)	--	16	.025
	140	19	.030
	385	75	.116
	--	100	.154
	--	64	.099
	--	5	.007
II (non-direct contact)	290	78	.120
	290	42	.065
III (direct-contact)	--	40	.062
	--	21	.032
	--	26	.040
	--	15	.024
	--	13	.020
	140	26	.040
	140	22	.034
	160	31	.048
	160	51	.079
IV (direct-contact)	10	6	.009
	10	4	.006
	10	3	.005
	10	2	.003
	10	0	0
	10	7	.011
	10	4	.007
V (direct-contact)	--	5	.008
	--	2	.002
	--	0	0
	--	1	.002
VI (direct-contact)	400	19	.029

TABLE VII

PARTICULATE CONCENTRATIONS
(Non-Direct-Contact-Evaporator Units)

	Values based on 105° C drying						Values based on 600° C Firing					
	Dust Concentration (grains/SDCF)		Dust Loading (lb/ADT)		Total Weights		Dust Concentration (grains/SDCF)		Dust Loading (lb/ADT)		Total Weights	
Location	Thimble	Train	Thimble	Train	(gr/SDCF)	(lb/ADT)	Thimble	Train	Thimble	Train	(gr/SDCF)	(lb/ADT)
I	0.020	0.058	0.7	2.0	0.077	2.7	--	--	--	--	--	--
	0.012	0.065	0.4	2.2	0.077	2.6	0.012	0.024	0.4	0.8	0.035	1.2
	0.016	0.067	0.5	2.3	0.083	2.8	0.016	0.018	0.5	0.6	0.034	1.1
	0.017	0.172	0.6	6.1	0.189	6.7	0.017	0.013	0.6	0.4	0.030	1.1
	0.046	0.284	1.8	11.4	0.330	13.2	0.046	0.025	1.8	1.0	0.071	2.8
	0.011	0.188	0.4	6.1	0.199	6.5	0.011	0.021	0.4	0.7	0.032	1.0
	0.012	0.029	0.4	0.9	0.041	1.3	0.012	0.016	0.4	0.5	0.028	0.9
II	0.006	0.258	0.4	14.4	0.264	14.8	0.006	0.054	0.4	3.0	0.061	3.4
	0.026	0.179	1.5	10.5	0.205	12.0	0.026	0.077	1.5	4.5	0.103	6.0

Note: Values are rounded
ADT = Air-dried ton of pulp
gr = grains
SDCF = Standard dry cubic feet

rated at 99% efficiency in the capture of particles of 0.45 microns and larger on several runs. No significant amount of particulate was captured on the filter; thus, the wet impingers were essentially 100% efficient when applied to electrostatic precipitator particulates.

One kraft mill recovery furnace featuring a Venturi scrubber as a direct-contact evaporator and for particulate control was sampled by mill personnel. In this instance, the particulate sampling equipment sequence featured three stages of wet impingers followed by a 4.7 cm glass filter rated at 99% efficiency for particles of 0.3 microns and larger. On this application, the wet impinger train was efficient in the capture of from 85 to 90% of the total particulate matter collected with the particulate collection equipment sequence used (8).

SUMMARY AND CONCLUSIONS

From this, it was concluded that the alundum thimble method of particulate collection on kraft recovery furnace exit gases may be adequate in cases of high dust loadings. The method, however, lacked the necessary efficiency for the sampling of dust concentrations in the range currently required by existing and proposed kraft recovery furnace particulate regulations. The efficiency of particle capture was shown to be proportional to the dust build-up on the inside of the thimble walls. The capture of 0.5 grams of solids in the thimble appeared to assure a capture efficiency of 90% or more when applied to kraft recovery furnace stack gases and compared to impinger train residues fired at 600° C. Thimble efficiencies for all runs based on the equipment sequence used ranged from 2.6 to 99.4% when based on a 105° C. residue drying temperature, and from 10.3 to 99.8% based on a 600° C. firing temperature. Very little difference was found between coarse and fine thimbles once a dust build-up of 0.5 grams had been collected.

The use of the wet impinger train for kraft recovery furnace stack sampling was found to be inaccurate due to the collection of material other than normal particulate, the chemical conversion of particulates in solution, and the formation of sulfuric acid. It is believed that sulfuric acid resulted from the reaction between sulfur trioxide present in the flue gas and the water in the impingers. The conversion of sulfur dioxide present in the flue gas to sulfuric acid via the oxidation of sulfurous acid in the presence of a catalyst is also a possibility.

Several procedures have been recommended to eliminate the problems associated with the thimble and wet impinger methods of particulate sampling following high efficiency dust collection devices, but only one has been evaluated. The method features firing the scrubber solution residues at 600° C.

Chemical conversion of sodium carbonate in solution to sodium sulfite and sulfate due to a chemical reaction with sulfur dioxide could increase the values obtained by using a wet impinger train. This effect is proportional to the percentage of sodium carbonate in the particulate matter if at least a stoichiometric amount of sulfur dioxide is present.

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APPENDIX B

Paper No.
72-WA/APC-4

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Some Comparisons of Simultaneous Stack Gas Particulate Determinations Using the ASME and EPA Methods

Simultaneous determinations of particulate concentrations were made by the ASME and EPA methods on flue gas from a test furnace burning about 75 lb/hr of low-sulfur North Dakota lignite. Comparisons were made at dust concentration levels of about 0.5 and 0.01 grain per standard cu ft. At the higher dust concentration the two methods checked within about 5 percent and the impinger residues were not significant. At the low dust concentration the EPA complete train generally gave values from 50 to 200 percent greater than the ASME method and the impinger residues constituted a substantial part of the total weight. Attempts were made to identify the various residues from the EPA impinger train.

Introduction

In the last few years the definition and measurement of particulate matter in stack gases from powerplants has become a controversial issue.[1] The Environmental Protection Agency in their proposed Standards of Performance for New Stationary Sources published in the August 17, 1971, Federal Register specified that the weight of particulate from a stack emission test include that material collected in the probe and dry filter as well as material collected in chilled impingers. The allowable particulate rate was set at 0.2 lb per million Btu input. It has been questioned whether the material collected in the impingers would in fact form particulates when emitted from a stack. As a result of objections by the industry the final Standard, as published in the December 23, 1971, Federal Register, was changed to require that the weight of particulate matter include only the material in the probe and that collected by the dry filter. However, the allowable emission rate was reduced to 0.1 lb/mm Btu.

Little information has been published comparing the concentration and nature of particulate matter as collected simultaneously by the EPA impinger method and by the commonly used Alundum thimble method. The latter method is permitted by ASME PTC.27[2] and will be referred to as the ASME method. The purpose of this study was to obtain comparative data on the EPA and ASME methods when used on a flue gas from a test furnace burning a low-sulfur North Dakota lignite. This study was done at the Grand Forks Energy Research Laboratory of the U. S. Bureau of Mines.

Apparatus and Procedure

The tests were conducted on flue gas from a pilot plant furnace burning pulverized lignite at the rate of about 75 lb/hr. Table 1 gives the analysis of the North Dakota lignite used in all of the tests. The as-fired ash content was about 8 percent, and the sulfur content was about 0.7 percent. The SO_2 content in the flue gas at the point of testing was about 550 ppm, for most tests, however, for one series sulfur was added to the furnace to increase the SO_2 level to about 1100 ppm. Fig. 1 is a schematic of the test furnace and shows the location of the sampling ports in the 3.56 in. I.D. flue gas duct. The ports were in the same horizontal plane positioned at 90 deg to each other and were designated as ports *N* and *S*. Fig. 2 is a photo of the furnace and auxiliary equipment. The tests were run under two modes of operations. In the first the flue gas was not passed through the electrostatic precipitator, and this resulted in a moderate dust loading of about 0.5 grain per standard cu ft. In the second mode the flue gas was passed through the electrostatic precipitator, resulting in a low dust loading of about 0.01 grain per standard cu ft.

The ASME and EPA sampling trains as used in the test pro-

[1] Crandall Willard A., Determining Concentration and Nature of Particulate Matter in Stack Gases, ASME preprint 71-WA/PTC-8, 16 pp.

Contributed by the Air Pollution Control Division for presentation at the Winter Annual Meeting, New York, N. Y., November 26-30, 1972, of The American Society of Mechanical Engineers. Manuscript received at ASME Headquarters, August 3, 1972. Paper No. 72-WA/APC-4.

Copies will be available until September, 1973.

[2] ASME power test code 27-1957. Determining Dust Concentration in a Gas Stream.

Discussion on this paper will be accepted at ASME Headquarters until January 2, 1973

Table 1 Typical analysis of North Dakota lignite burned in the pilot furnace during dust loading tests

Proximate analysis, percent	
Moisture	27.3
Volatile matter	31.1
Fixed carbon	33.6
Ash	8.0
Ultimate analysis, percent	
Hydrogen	6.3
Carbon	46.2
Nitrogen	0.7
Oxygen	38.2
Sulfur	0.7
Ash	7.9
Heating value, Btu/lb	7730
Ash fusion temperatures, °F	
Initial deformation	2030
Softening	2080
Fluid	2130
Chemical analysis of ash, Component, percent	
SiO_2	27.6
Al_2O_3	9.4
Fe_2O_3	11.4
TiO_2	0.3
P_2O_5	0.1
CaO	19.2
MgO	4.8
Na_2O	5.9
K_2O	0.8
SO_3	19.6
Total	99.1

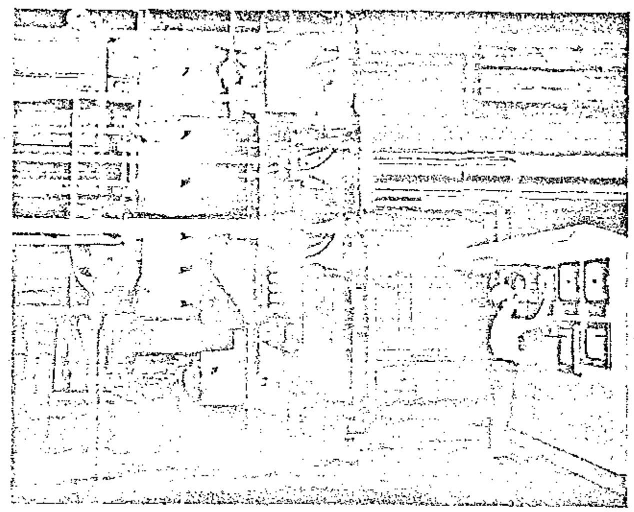


Fig. 2 View of pilot plant furnace

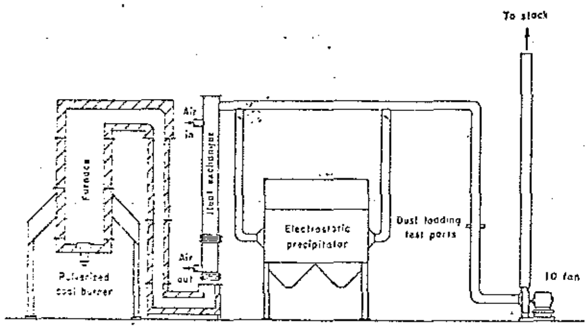


Fig. 1 Schematic of test furnace installation used for dust loading studies

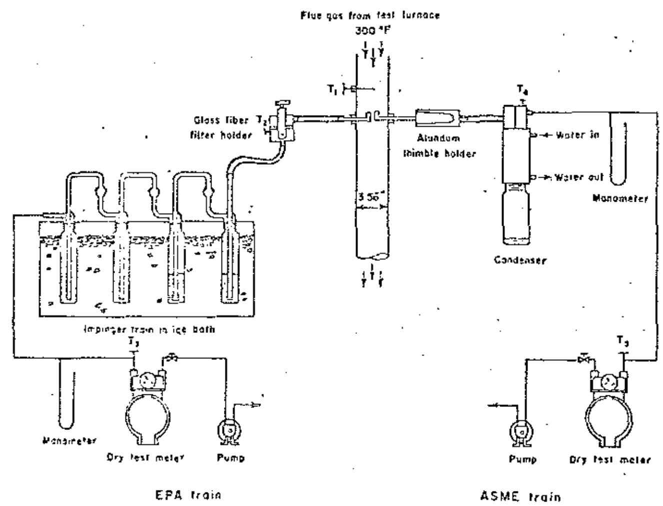


Fig. 3 Schematic of ASME and EPA sampling trains

gram are shown schematically in Fig. 3. The Alundum thimbles used in the ASME method were Norton AL889. Because of the small duct size it was necessary to mount the filter outside the duct; however, there was never any indication of condensation in the filter holder. The EPA train was similar to that shown in the August 17, 1971, Federal Register except that a stainless steel filter holder was constructed and used in place of the glass unit. The filter holder, which is shown in Fig. 4, was heated from the bottom with a ring heating element. The glass fiber filter was supported on a stainless steel screen attached to a ring which could be removed from the holder for weighing. Fig. 5 shows the apparatus as assembled for a test.

Test Procedure. The test procedure used for the simultaneous tests was as follows:

(1) Filters dried and weighed.

(2) Apparatus assembled and leak tested.

(3) Pitot traverses made through both ports using S type probe.

(4) Simultaneous isokinetic dust loading tests run for 50 min, positioning each probe at the point of average gas velocity.

Sample Recovery and Handling. The sample recovery and handling procedure for the two trains is given herewith:

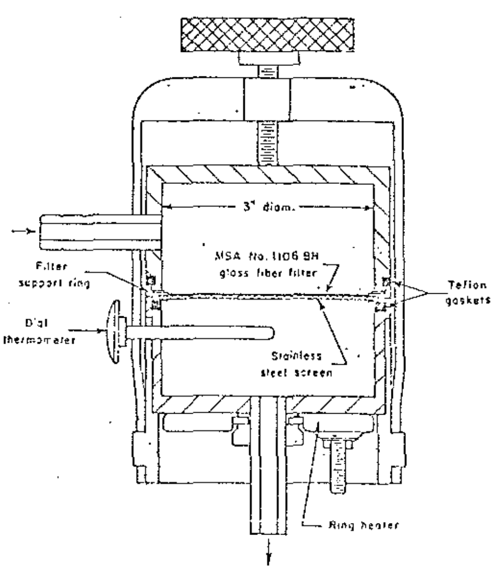


Fig. 4 Construction of stainless steel filter holder

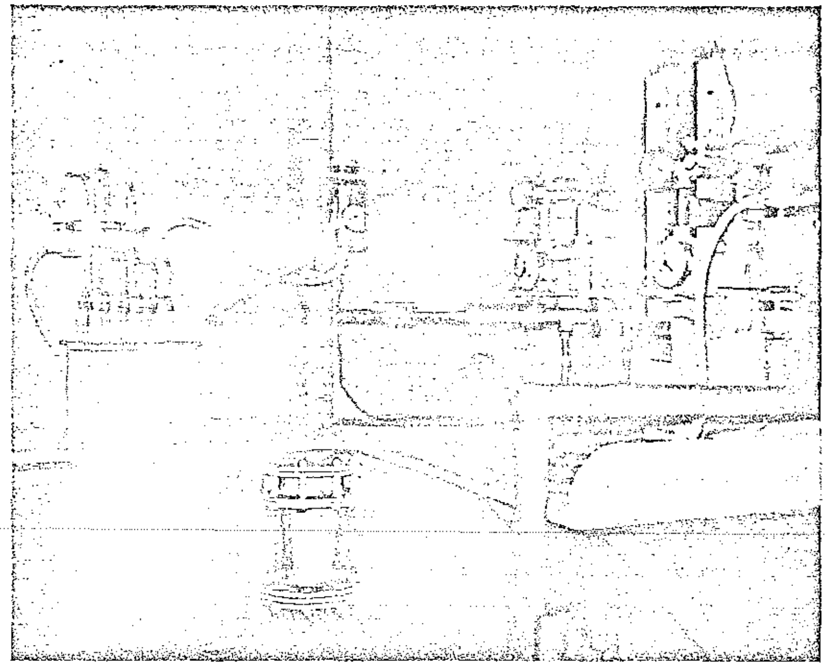


Fig. 5 View of sampling equipment

Table 2 Test results for two ASME sampling trains run simultaneously at moderate dust loading

Test	Sampling point	ASME apparatus	Percent of isokinetic sampling	gr/scf[1]	N − S	$\frac{N-S}{(N+S)/2}$, percent
30-1	N	b	100.8	.537		
	S	a	105.6	.515	.022	4.2
30-2	N	a	104.1	.568		
	S	b	108.5	.550	.018	3.2
31-1	N	a	104.5	.478		
	S	b	102.9	.496	−.018	−3.7
31-2	N	b	103.2	.539		
	S	a	100.4	.544	−.005	−0.9
			average	.528	.004	0.7

[1] grains per cu ft @ 70° F and 29.92 in Hg.

ASME method: (*a*) Alundum thimble removed from holder dried in oven at 105 deg C, placed in dessicator, and dried to constant weight, and, (*b*) Probe washed with distilled water. Water evaporated to constant weight on a stream bath.

EPA method: (*a*) Filter and support removed from holder and placed in dessicator. Filter dried to constant weight. (*b*) Probe, hose, and inlet section of filter holder washed with distilled water. Water evaporated to constant weight on a steam bath. (*c*) Water from first three impingers was measured and combined with the water washing of hose from filter to first impinger. Organics extracted with chloroform and ether. Extract evaporated to constant weight at ambient temperature. Water portion evaporated to constant weight at either ambient temperature or on a steam bath. (*d*) All glass, sample-exposed surface between filter and fourth impinger washed with acetone. Acetone evaporated to constant weight at ambient temperature. (*e*) Silica gel from final impinger collected and weighed.

Results

In the first series of tests two identical ASME sampling trains were run simultaneously to determine whether there was a difference in dust loading between the two sampling points. Four comparative tests were made, reversing the position of the probes for each succeeding test. The results are shown in Table 2. Statistical analysis by means of a double-sided paired t test showed that sampling point and apparatus had no effect at about the 70-percent confidence level. It was concluded that the two sampling points could be used to compare test methods.

A series of nine tests was then run to compare the ASME and EPA methods at a moderate dust loading of about 0.505 grain per cu ft, or 1.27 lb per million Btu heat input. In Fig. 6 the ASME results are compared to those from the complete EPA train, and to the EPA "front half" only. In four of the nine tests the complete EPA train gave higher dust loadings, and in five the ASME values were higher. The variation was from +3.6 percent to −4.3 percent. When using only the EPA front half catch, the ASME results were higher in all but one test. Statistical analysis by the paired t test indicated a difference in results due to test method at about the 40 percent confidence level when using the complete EPA train and at over 99 percent confidence when using only the EPA front half catch.

In the next series of tests the ASME and EPA methods were compared at low dust loading conditions of about 0.0101 grain per cu ft or 0.027 lb per million Btu heat input. The results from 15 tests at low dust loading are plotted in Fig. 7. In all except one test the weights from the EPA complete train were greater than from the ASME method, often by as much as 50 to 200 percent. The weights from the EPA front half only

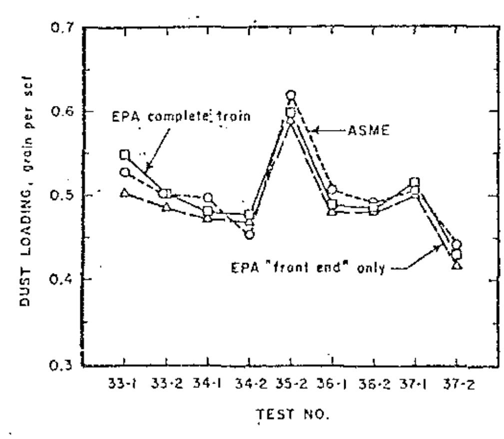


Fig. 6 ASME and EPA test results at moderate dust loading

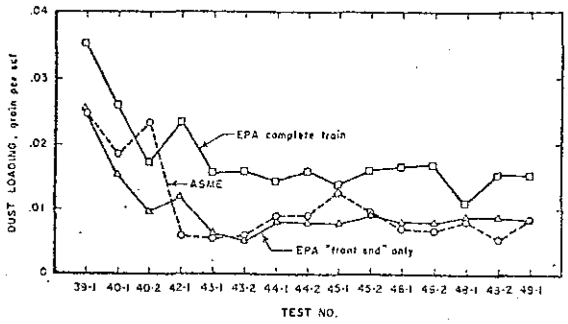


Fig. 7 ASME and EPA test results at low dust loading

were usually within 20 percent of the ASME values. Statistical analysis using the paired t test showed differences in results due to method at about the 99.9 percent confidence level using the complete EPA train and at about the 35 percent confidence level when using the EPA front half only.

In the last five tests shown in Fig. 7 sulfur was added to the furnace in the amounts required to increase the SO_2 level from about 550 to 1100 ppm. The purpose was to determine the effect of SO_2 level on the residue from the EPA impingers. Complete data on the weights of samples collected in all of the tests covered in this report are included in Table 6 in the Appendix. As shown in this table the average weight of residue from the water portion increased about 30 percent for the five tests at 1100 ppm as compared to the previous four tests at 550 ppm SO_2. However, this increase did not greatly affect the total weights from the complete EPA train.

As shown in Table 6 the weights of residues from the impingers were not greatly different between moderate and low dust loading conditions. Table 3 shows sample weights and corresponding percent of total weight for typical tests at both moderate and low dust loadings. In the tests shown the EPA front half catch is 97.9 percent of the total at moderate dust loading and 64.4 percent at low dust loading.

Sample Analysis

Complete chemical analysis of the combined filter catch and probe washing for both ASME and EPA methods was made on tests conducted at moderate dust loading. These results are shown in Table 4 and compared with the analysis of fly ash taken from the hopper of the electrostatic precipitator. The analyses of the three samples are nearly identical. Table 5 shows Bahco size analyses on a sample from the electrostatic precipitator and on ash extracted from the Alundum thimble. The results show about 79 percent less than 8.2 microns in the precipitator sample, compared with about 90 percent in the thimble sample. No analyses for samples at low dust loading tests were made because of the difficulty in recovering representative samples from the filters.

An attempt was made to identify the various residues from the EPA impinger train. The quantity of sample available was often less than 20 mg and some were only 2 mg, which made it necessary to use such methods as X-ray diffraction, X-ray fluorescence, and infrared spectroscopy for analyses.

The water portion from the impinger train was usually about 500-600 ml and two procedures were used to evaporate the water. In tests 33-1 through 43-2 the water was evaporated at ambient conditions, which usually required from 15 to 20 days. In the other tests the water was evaporated at about 200 deg F on a steam bath which reduced the time to 15 to 20 hr. It was found that the residue from the slow evaporation was largely a crystalline material which was determined to be ammonium sulfate. On the other hand, the residue from the faster evaporation was largely sulfuric acid with some inclusions of ammonium sulfate. The source of the ammonia for the reaction has not been

Table 3 Typical sample weights from tests at moderate and low dust loading

	Moderate dust loading test No. 35-2			
	ASME METHOD		EPA METHOD	
Dust loading, grain/scf	0.493		0.487	
	Sample weights		Sample weights	
	Grams	Percent of total	Grams	Percent of total
Probe	0.0381	2.7	0.2066	15.2
Filter	1.3965	97.3	1.1252	82.7
Impinger hydrocarbon extract			0.0044	0.3
Impinger water residue			0.0144	1.1
Acetone washing residue			0.0103	0.7

	Low dust loading test No. 40.1			
	ASME METHOD		EPA METHOD	
Dust loading, grain/scf	0.0114		0.0234	
	Sample weights		Sample weights	
	Grams	Percent of total	Grams	Percent of total
Probe	0.0054	8.2	0.0149	19.3
Filter	0.0602	91.8	0.0353	45.4
Impinger hydrocarbon extract			0.0032	4.1
Impinger water residue			0.0137	17.6
Acetone washing residue			0.0103	13.3

Table 4 Chemical analysis of various fly ash samples

Component, percent	Ash from hopper of pilot electrostatic precipitator	Ash collected in Alundum thimble, ASME method moderate dust loading	Ash collected on glass fiber filter, EPA method moderate dust loading
Ignition loss	0.4	0.6	1.9
SiO_2	28.0	28.0	27.0
Al_2O_3	10.7	10.8	10.6
Fe_2O_3	8.8	8.2	8.1
TiO_2	0.5	0.4	0.4
P_2O_5	0.4	0.1	0.1
CaO	21.7	21.0	20.8
MgO	5.1	5.7	5.3
Na_2O	8.4	11.5	10.9
K_2O	1.3	1.2	1.3
SO_3	13.1	12.3	12.6
Total	98.4	99.8	99.0

Table 5 Bahco size analysis of various fly ash samples

Size, microns	Ash from hopper of pilot electrostatic precipitator	Ash collected in Alundum thimble, ASME method
	Percent less than indicated size	
1.4	4.6	4.1
2.3	11.9	10.6
4.7	46.6	51.2
8.2	78.8	90.5
12.0	90.6	96.8
21.0	98.0	98.1
26.5	99.0	98.4
29.5	99.3	98.9

Table 6 Sample weights from all tests in which simultaneous ASME and EPA methods were used

Test	ASME			EPA					
	Gas 1/	Sample wt., gm		Gas 1/	Sample wt., grams				
No.	vol., ft³	Probe	Filter	vol., ft³	Probe	Filter	HC 2/	H_2O 3/	Acetone 4/
				Moderate dust loading					
33-1	61.91	0.0416	2.0777	53.67	0.2264	1.6826	0.0059	0.1572	0.0122
33-2	51.31	0.0497	1.6271	43.11	0.2350	1.2790	0.0093	0.0455	0.0110
34-1	49.46	0.0506	1.5433	49.32	0.1433	1.1046	0.0031	0.0173	0.0077
34-2	45.67	0.0337	1.3555	44.73	0.2336	1.0777	0.0032	0.0178	0.0095
35-2	46.51	0.0370	1.2273	46.32	0.2220	1.5439	0.0056	0.0105	0.0097
36-1	45.59	0.0375	1.5432	45.44	0.2446	1.2446	0.0013	0.0071	0.0103
36-2	44.95	0.0331	1.3955	43.20	0.2066	1.1252	0.0044	0.0144	0.0103
37-1	47.59	0.0525	1.5112	46.14	0.2651	1.2435	0.0064	0.0151	0.0079
37-2	43.65	0.0393	1.3533	47.70	0.2119	1.0534	0.0035	0.0225	0.0134
				Low dust loading					
39-1	51.63	0.0119	0.0705	53.51	0.0245	0.0652	0.0037	0.0237	0.0101
40-1	55.41	0.0354	0.0692	51.22	0.0143	0.0351	0.0030	0.0137	0.0103
40-2	55.94	0.0061	0.0772	56.05	0.0136	0.0212	0.0027	0.0156	0.0035
42-1	49.93	0.0053	0.0139	50.37	0.0093	0.0393	0.0031	0.0276	0.0070
43-1	53.45	0.0053	0.0130	52.00	0.0094	0.0113	0.0027	0.0191	0.0091
43-2	52.30	0.0054	0.0146	49.69	0.0059	0.0102	0.0032	0.0191	0.0122
44-1	55.24	0.0055	0.0252	48.09	0.0111	0.0231	0.0016	0.0129	0.0113
44-2	53.53	0.0063	0.0226	59.90	0.0068	0.0175	0.0021	0.0138	0.0102
45-1	50.69	0.0066	0.0353	52.73	0.0043	0.0176	0.0032	0.0136	0.0069
45-2	50.47	0.0063	0.0245	52.44	0.0111	0.0190	0.0023	0.0155	0.0058
				Flue gas SO_2 level doubled					
46-1	50.43	0.0052	0.0172	51.47	0.0059	0.0162	0.0013	0.0204	0.0063
46-2	46.92	0.0035	0.0169	44.92	0.0072	0.0172	0.0024	0.0192	0.0069
48-1	51.55	0.0047	0.0231	53.79	0.0121	0.0134	0.0015	0.0151	0.0072
48-2	52.35	0.0042	0.0132	52.63	0.0123	0.0147	0.0019	0.0175	0.0055
49-1	49.20	0.0069	0.0223	52.75	0.0104	0.0172	0.0052	0.0174	0.0048

1/ At 70° F and 29.92 in. Hg.
2/ Hydrocarbon extract from impingers
3/ Non-hydrocarbon extract from impingers. In tests 33-1 through 43-2 water was evaporated at ambient temperature, in all others water was evaporated on a steam bath.
4/ Acetone wash

completely established but there is some indication that at least some of it may come from the laboratory atmosphere.

The small amount of residue from the chloroform-ether extraction was a dark brown oily substance. Analysis by infrared spectroscopy showed it to be largely silicone lubricant. The source of the lubricant was the ground glass joints in the train. Attempts to grease the joints more lightly were only partially successful in reducing the weight of residue.

The residue resulting from evaporation of the acetone washing contained some of the brown oily substance, some small fibers, and some brown-to-black rather solid particles. Silicone grease was again identified by infrared spectroscopy as being present. The source of the fibers has not been identified. They do not appear to be from the filter but may be airborne contaminants collected on the glassware before the apparatus was assembled or during the evaporation period. The brown-to-black particles have not been identified.

Discussion and Conclusions

The values of particulate concentrations at the moderate dust loading level showed good agreement between the ASME and EPA methods. The quantity of material obtained from the EPA impingers was only a few percent of the front half catch and had little effect on the comparisons. The agreement was within ±5 percent in all nine tests considering either the EPA front half only or the total train.

At low dust loading the impinger residues were about the same weight as with moderate dust loading, but they now contributed a large percentage to the total weight. The dust loading based on the complete EPA train was often from 50 to 200 percent greater than that determined by the ASME method. When considering only the EPA front half weights there is less than 20 percent difference from the ASME results in 11 of the 15 tests. The results would indicate comparable filtering efficiency of the EPA filter and the Alundum thimble. This would seem to be substantiated by the good agreement in chemical analysis between the two catches at moderate dust loading.

The efforts to identify and explain the source of the impinger residues was only partially successful. The residue from the chloroform-ether extraction was a very small quantity, usually about 3 mg, and was identified by infrared spectroscopy as largely silicone lubricant from the ground joints. As such it is extraneous and should probably not have been included in the calculated dust loading.

The weight of the residue from the impinger water was often nearly equal to the weight of material collected in the EPA filter during the low dust loading tests. It was shown that the composition of the residue was largely ammonium sulfate when using ambient temperature evaporation and largely sulfuric acid when using steam bath evaporation. It was found that evaporation of a sulfuric acid-water blank produced some ammonium sulfate residue, indicating that the source of at least some of the ammonia was likely the laboratory atmosphere. Surprisingly doubling of the SO_2 level in the flue gas only increased the impinger residue by about 30 percent, on the average.

The residue from the acetone wash was not completely identified although some is known to be silicon lubricant and possibly some other extraneous material not from the gas stream.

The results from the low dust loading tests using the complete EPA train show the need for extremely careful handling of the equipment and samples to prevent contamination of the sample with minute quantities of extraneous material which can have a significant effect on the calculated dust loading. The tests reported here were done under laboratory conditions and one could assume that the problems of insuring accurate results would be much more difficult in test work on a large commercial boiler.

APPENDIX

In order to provide information on reproducibility of the test results, the gas volumes and sample weights for each of the tests in this study are given in Table 6.

Printed in U. S. A.

APPENDIX C

CrownZellerbach
Environmental Services

December 27, 1972

Mr. L. B. Day
Department of Environmental Quality
1234 S. W. Morrison Street
Portland, Oregon 97205

Dear Mr. Day:

Enclosed is a report prepared by Dr. J. E. Walther, which summarizes some of our experiences with particulate matter sampling. Dr. Walther has extensively surveyed all of our kraft and sulfite mills which included some 10 recovery furnaces. Our work has shown that there are significant interferences when using the wet train sampling procedure most of which result from conversion of gaseous compounds to particulate matter. It appears to us that a particulate method should measure solid particulate matter with a minimum of interference. The problem is further complicated by the fact that precipitator manufacturers refuse to bid on the basis of the wet train sampling procedure. This is to be expected since a precipitator is not expected to remove gases.

We hope the attached information will be useful to you and the Commission in the formulation of meaningful kraft mill emission regulations.

Sincerely yours,

Herman R. Amberg

HERMAN R. AMBERG/ea

Director,
Environmental Services

Attachment

cc:
Mr. A. Caron
West Coast Regional Research Center
Oregon State University
Corvallis, Oregon 97331

Mr. C. Ayers
Dept. of Environmental Quality
1234 S. W. Morrison Street
Portland, Oregon 97205

Mr. Oliver Morgan
NWPPA
2633 Eastlake Ave. East
Seattle, Washington 98102

Statement Submitted to

Oregon Environmental Quality Commission on

"Proposed Revised Kraft Mill Emission Regulation",

OAR Chapter 340, Sections 25-155 to 25-195

Prepared By: Dr. James E. Walther
Environmental Services
Crown Zellerbach Corporation
Camas, Washington 98607

Date: December 27, 1972

INTRODUCTION

At the December 21, 1972, Environmental Quality Commission meeting on proposed new regulations pertaining to kraft pulp mill atmospheric emissions, questions concerning the proposed definition of particulate matter were raised by other regulatory agencies. The following technical statement is submitted in support of the proposed particulate regulation:

SUMMARY

The definition of particulate in the proposed regulation prescribes the method of measuring dust emissions. A similar method has been the standard procedure endorsed by the ASME for measuring dust emissions. The basis for the original kraft mill regulation for particulate was based on a solid filtering method. This method has been updated to specify a filter which will recover 99.9% of dust particles greater than a 0.3 micron diameter. The method is similar to the EPA method required for measuring dust emissions in the 1972 regulation for new source power combustion processes. Also the technique of measuring particulate by filtering on a 0.3 micron glass fiber filter is identical to the method for obtaining ambient suspended particulate matter.

The proposed definition of particulate minimizes the known and documented interferences in the wet impinger method from sulfur dioxide and sulfur trioxide. Data is submitted to show the effect of this interference for kraft recovery furnaces, sulfite recovery furnaces, hog fuel furnaces and lime kilns. Further data will be developed in the special studies program. The interference of hydrocarbon vapor condensation in the wet train which does not occur in the ambient atmosphere is also eliminated by the filter method. Specific regulations for sulfur oxide and hydrocarbon emissions exist and should not be part of a particulate regulation.

The elimination of confusion about a sampling method should promote better selection of control equipment with safeguards to the buyer. Precipitator guarantees had been based on the proposed particulate definition. The confusion on testing methods has resulted in the present situation where equipment suppliers will not guarantee performance. The enclosed document from Joy Manufacturing Company states that no guarantees were available for new generation "low odor" recovery furnaces. Older conventional recovery furnace precipitators can be guaranteed only if the method proposed in the regulation is used.

Recent communication with the EPA has indicated that no particulate regulations for kraft mill new source standards will be proposed until further information is available.

The pulp and paper industry through the National Council for Air and Stream Improvement and the Northwest Pulp and Paper Industry is engaged in evaluating particulate methods. The data collected will be available for the special studies section of the proposed regulation.

DISCUSSION

The definition of particulate in the proposed regulation prescribes the method of measuring dust emissions. There have been two major methods of determining source particulate: an instack or heated filter method endorsed by the ASME and all precipitator companies, and methods which use water impingers (scrubbers) in the sampling train to recover particles. The wet impinger method was developed in the Los Angeles Air Pollution Control district. It should be noted that combustion sources in that area do not contain sulfur oxides. A third method developed by the EPA includes both the 0.3 micron filter and the wet impingers.

The 0.3 micron filter developed for this application has a collection efficiency of 99.9 percent for 0.3 micron particles and of course, has a high efficiency for smaller particles. It has been used in ambient methods to collect the smallest particle sizes when a distribution of particles is desired. The 0.3 micron fiberglass filter is used in the determination of suspended particulate matter for ambient testing.

The method selected to determine source particulate for EPA new source standards for power generation combustion processes was only the filter part of the sampling train. Almost six months investigation of the method was made before the method was adopted in 1972. Primary reasons for not including the wet impingers are: (1) sulfur trioxide is collected and weighed as particulate, (2) chemical reactions occur in the impinger which do not occur in the stack or in the atmosphere, (3) sulfur dioxide is catalyzed by metallic salts to form sulfur trioxide and sulfuric acid, and (4) hydrocarbon vapors are condensed which would remain as a vapor in the atmosphere. These interferences are found in pulp mill sources such as kraft recovery furnaces, sulfite recovery furnaces, hog fuel furnaces burning oil and lime kilns which have sulfur dioxide emissions. Therefore, when sulfur oxides are present, particulate should be measured by the filter method.

Examples of the interference of sulfur dioxide are shown in Table I. In all of these sources sulfur dioxide concentrations were in the 200 to 300 ppm range and sulfur trioxide less than 10 ppm. Analysis of the wet impinger catch after the filter indicated no metal ions and almost all sulfate ions. Heating the solution to 500° C. resulted in almost complete loss of solids indicating the material was sulfuric acid. The use of a filter minimizes but does not eliminate the interference of sulfur dioxide on the particulate testing method.

Data collected by R. Schmall of the NCASI at Port Townsend is shown in Table II. This data indicates that the impinger catch after a filter is primarily sulfuric acid produced in the train from sulfur oxides. It also indicates that the filter contains sulfuric acid equivalent to about 0.4 lb/ton. This could result from sulfur dioxide conversion or from collection of sulfur trioxide on the filter. The interferences of using an impinger or a filter at a temperature below the stack temperature is shown by these examples.

Other interferences with the wet impinger method have been found. Sulfur dioxide reacts with sodium carbonate to form sodium sulfate. In dissolver vents carbon dioxide can react with sodium sulfide and sodium carbonate to form a heavier particle of sodium bicarbonate or carbonate. Similar reactions in the impingers can occur in the lime kiln. These interferences can be minimized by using a filter method of analyses.

The attached letter from Joy Manufacturing Company states that they will no longer submit proposals for precipitators for new generation "low odor furnaces" since they cannot guarantee their performance. For conventional furnaces, the precipitator guarantee is based on a filter method of analysis.

TABLE I

PARTICULATE EMISSIONS FROM SOURCES WITH SULFUR DIOXIDE

Method: Wet Impinger

Source	Dust Emissions, lb/ton pulp: Total Catch, 105° C. Wet Impinger	Dust Emissions, lb/ton pulp: Total Catch (1) Dried at 500° C.
Wauna Recovery Furnace	4.5	3.0
Port Townsend Recovery Furnace	10 to 20	2.0
Camas Lime Kiln	1.5	0.9
Camas Magnefite Furnace	5.0	3.0

EPA

Method: Filter Plus Impinger

	Dust Emissions, lb/ton pulp: Filter, 105° C.	Dust Emissions, lb/ton pulp: Filter Plus Impingers, 105° C.	Dust Emissions, lb/ton pulp: Filter Plus (1) Impingers, 500° C.
Wauna Recovery Furnace	3.1	5.0	3.2
Port Townsend Recovery Furnace	1.6	2.0	1.6
Camas Magnefite Furnace	2.0	4.0	2.1
West Linn Hog Fuel Furnace, *gr/SDCF	0.11	0.27	0.12

(1) Loss of weight on drying dust at 500° C. is an indication of sulfur oxides captured in impinger.

TABLE II

PORT TOWNSEND RECOVERY FURNACE EMISSIONS*,
gr/SDCF (0.10 gr/SDCF = 4.0 LB/TON)

Method: Filter Plus Impingers

Run No.	1	2	3	4	5	6
Filter, 105° C.	0.125	0.223	0.214	0.203	0.039	0.039
Filter Wt. Loss on Drying at 400° C.	0.008	0.010	0.008	0.010	0.007	0.008
Impingers, 105° C.	0.012	0.012	0.009	0.008	0.006	0.008
Impinger Catch Loss at 400° C.	0.011	0.011	0.007	0.005	0.003	0.007
% Loss of Total Catch on Drying at 400° C.	15	10	7	8	25	38

*NCASI data recorded by R. Schmall, November 27, 1972, filter maintained at 250°F.

WESTERN PRECIPITATION DIVISION
JOY MANUFACTURING COMPANY
1000 WEST NINTH STREET
P. O. BOX 2744, TERMINAL ANNEX
LOS ANGELES, CALIFORNIA 90051
Phone: (213) 627-4771

November 28, 1972

RECEIVED
DEC 1 1972
CROWN ZELLERBACH CORP.
PURCHASING • SEATTLE

Crown Zellerbach Corporation
Central Engineering
6363 Airport Way South
Seattle, Washington 98108

Attention: Mr. W. G. Lowe

Subject: NO. 4 RECOVERY BOILER
CAMAS, WASHINGTON
YOUR C E D FILE 1442
OUR REFERENCE RP-8216

Gentlemen:

Our letter of January 21, 1972 and October 23, 1972 submitted budget pricing information for precipitators for 99.5% collection efficiency. On November 1, 1972 your Mr. Nick Elia phoned our office and requested price information for a 95% collection efficiency precipitator (to precede a scrubber).

The purpose of this letter is to apologize for the slow response to your latest request and to explain the reason for this delay.

A review of the operation of electrostatic precipitators on low-odor recovery units has indicated that almost without exception the effluent from this type of recovery unit has a detrimental effect on the electrostatic process beyond reasonable predictability.

Western Precipitation always stands behind their performance guarantees. Since we are unable at this time to predict with sufficient certainty the performance of the precipitator for this application we have no alternative but to decline to submit proposals.

Crown Zellerbach is a valued customer of many years and we are taking this action very reluctantly. We hope you will understand that we do so in our mutual interest.

Very truly yours,

JOY MANUFACTURING COMPANY
Western Precipitation Division

J. D. Kocar
Western Regional Sales Manager

APPENDIX D

CRE

N. L. MORROW, R. S. BRIEF and R. R. BERTRAND, Esso Research and Engineering Co.

Immense emphasis is being placed on eliminating and reducing air pollution from stationary sources. So it becomes increasingly important to be able to analyze for various pollutants in these sources.

The engineer is faced with the problem of making these measurements: because he requires such analytical data for designing control equipment, because instrumentation is needed for process control, because abatement performance data are required, and, increasingly, because government regulations call for source measurements. Owing to the high cost of making source measurements, and the limitations and problems associated with current procedures, a basic understanding of the state of the measurement art is required.

In this article we will attempt to present the alternatives available today for measuring the major pollutants, and to highlight the practicalities of applying them. Due to the rapid changes occurring in this area and the limitations of time and space, emphasis will be on the most widely accepted or most promising techniques.

Getting the Sample—A Major Problem

Until recently, there has been little readily available information on stack sampling. This is slowly being corrected. The three-volume set of books by Stern[1] and the biennial reviews appearing in *Analytical Chemistry* [2] are two very useful and general references. Detailed methodologies are available from a number of different sources (e.g., Ref. 3,4,5,6), and new books and articles appear monthly. The stack-sampling methodology published by the Environmental Protection Agency is directed toward specific industries, but can be applied elsewhere.[7]

Before undertaking a source-analysis program, it is very important to decide just what information is needed and how much effort is justified. For rough estimates of emissions, emission factors[8] (average values obtained by previous source-testing of several similar processes) can be applied to determine the approximate discharge from a particular source. In many cases where published data are available, emission data can be calculated. Thus, in combustion processes, the sulfur dioxide emission-rate can often be most easily determined by measuring the sulfur content of the fuel. If actual stack measurements are necessary, these can often be greatly simplified by careful planning.

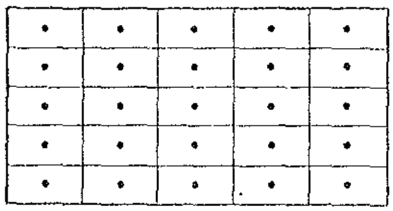
Methodologies are always written for the worst case. But prior knowledge of process characteristics and unit construction, together with application of common and engineering sense can often result in substantial simplifications. The trap that must be avoided is the automatic extension of these simplifications from one emission source to another. Most complex chemical operations include both very simple and very complicated emission-measurement problems, and so each source must be approached as a new problem.

Sampling is the keystone of source analysis. More errors in analysis result from poor or incorrect sampling than from any other part of the measurement process. Furthermore, it is sampling that usually controls the cost of the analysis, because proper sampling strategy sets the number of samples necessary for each valid emission measurement and because it controls the locations at which the samples are obtained. Often these locations are hard-to-reach points, sometimes hazardous, and usually high aboveground.

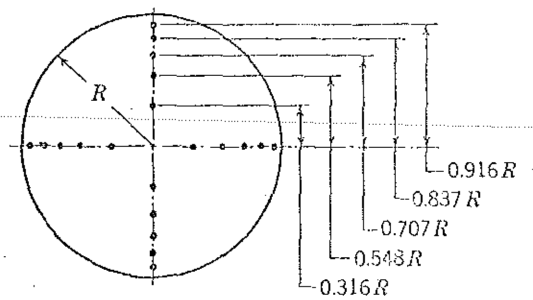
A complete measurement requires determination of the concentration and characteristics of contaminant(s), as well as determination of the associated gas-flow. Most statutory limitations require mass rates of emission; both concentration and volumetric flowrate data are, therefore, required.

Where To Sample

The selection of a sampling site[7] and the number of sampling points needed are based on attempts to get representative samples. To accomplish this, the sampling site should be at least eight stack or duct diameters downstream and two diameters upstream from any bend, expansion, contraction, valve, fitting, or visible flame. For rectangular ducts, the equivalent diameter can be



Rectangular stack
(measure at center of at least 9 equal areas)



Circular stack
(10-point traverse)

TRAVERSE POINT locations for velocity measurement or for multipoint sampling—Fig. 1

calculated from the expression: Equivalent diameter = 2 (length × width)/(length + width).

After determining the sampling location(s), provision must be made to "traverse" the stack. That is, the actual sampling must be performed at a number of traverse points in the stack. These multiple samples are necessary because of the extreme gradients of flow and concentration that occur in some stacks. The concentrations of even relatively inert gases (i.e., CO_2, CH_4) have been found to vary greatly within a stack. Adding flow variations to the concentration gradients could result in extreme differences in mass-emission calculations if proper traversing is not employed. The number of traverse points required on each of two perpendiculars for a particular stack may be estimated from Table I.

For rectangular stacks, the cross-section is divided into equal areas of the same shape, and the traverse points are located at the center of each equal area, as shown in Fig. 1. The ratio of the length to width of each elemental area should be between 1 and 2. A minimum of nine traverse points should be selected.

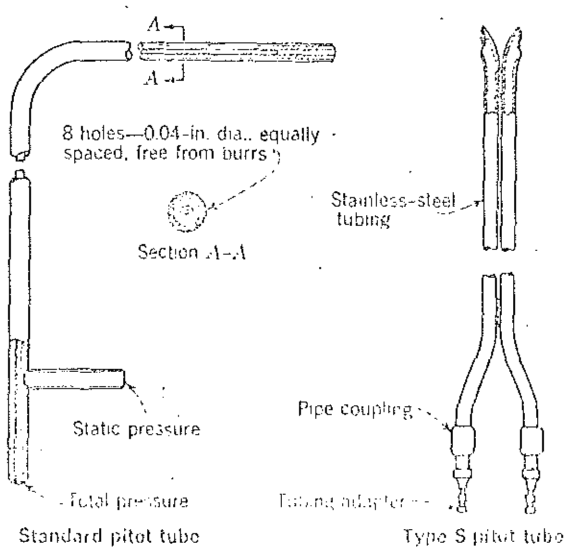
For circular stacks, the cross-section is divided into equal annular areas, and the traverse points are located at the centroids of each area, as shown in Fig. 1. When sampling circular stacks, use Table II, which gives the location of traverse points as a percentage of stack diameter from the inside wall to the traverse point.

Gas-Flow Measurements

Once the traverse points have been established, and safe access to the sampling location has been provided, velocity measurements are needed to determine gas flow. These measurements are time-consuming (since no automatic instrument exists) and so are often performed in a very perfunctory manner. This is extremely rash since the mass flow is commonly a large multiplier of the pollutant concentration and so can greatly affect the resulting pollutant mass-emission rate.

Stack-gas velocity is determined from a measurement of the velocity pressure, made by using a pitot tube. The velocity pressure is the difference between the total pressure (measured against the gas flow) and the static pressure (measured perpendicular to the gas flow). Some workers prefer a Type S (Stauscheibe or reverse type) pitot tube instead of the standard design. Both types of pitot tubes are pictured in Fig. 2.

The Type S pitot tube is designed for easy entry into small holes in the stack wall, and because of its relatively large openings does not readily plug when in the pres-



PITOT TUBE varieties—Fig. 2

Selection of Number of Traverse Points—Table I

Number of Stack Diameters Upstream and Downstream of Flow Disturbance: Upstream	Downstream	Number of Traverse Points on Each Diameter
8+	2+	6
7.3	1.8	8
6.7	1.7	10
6.0	1.5	12
5.3	1.3	14
4.7	1.2	16
4.0	1.0	18
3.3	0.8	20
2.6	0.6	22
2.0	0.5	24

Note: If a different number of traverse points is required by disturbances upstream and downstream, choose whichever number is greater. Data are in accord with Ref. 6 (EPA).

ence of high concentrations of particulate matter. However, it requires a separate calibration for the particular velocity being measured and so does not directly read the velocity pressure.

The standard pitot tube, on the other hand (pointed tip or rounded-nose tip), reads the velocity pressure directly and, therefore, is convertible without correction factor to the velocity at the measured point. Correction factors for the Type S pitot tube ranging from 0.78 to 0.92 have been reported by the Bay Area Air Pollution Control District.[9]

Fig. 3 shows how to convert a pitot-tube reading into velocity and mass flow, and includes a typical data sheet used for stack-flow measurements. This figure shows the conversion between velocity and velocity pressure, including the necessary corrections for the properties of the flowing gas. Account is made of sampling position, the averaging of the square root of the velocity-pressure reading (not the velocity pressure itself), and the gas specific gravity.

Once a flow profile has been obtained, sampling strategy can be considered. Since sample collection can be simplified and greatly reduced, depending on flow characteristics, it is best to complete the flow-profile measurement before sampling or measuring pollutant concentrations. Often it seems convenient to determine flow and concentration simultaneously, but this can require an unnecessarily large number of samples and analyses.

Sampling Strategy

Types of sources have been characterized by Achinger and Shigehara.[10] They concluded that the source characteristics may be either cyclical or continuous as well as either variable or constant throughout the cross-section of the stack (uniform vs. nonuniform). Using these parameters, source characteristics may be placed in four different categories as shown in Table III and discussed in the following paragraphs.

Category 1 presents no time variation, and the emission is relatively uniform across the cross-section of the stack. In this case, only one concentration measurement is needed for accurate results.

Category 2 involves a steady generation of contaminant, but because of ducting configurations, etc., the flow is not uniform across the sampling location, so a traverse is necessary to measure the average concentration. Typically, this is done at the points selected for the velocity traverse. The time of sampling at each point should be the same so as to get a representative, composite sample.

Category 3 is characterized by cyclical operations in which the actual sampling location is ideal, and the variation across the stack is relatively uniform when the operation is running. Because the process involves time

Location of Traverse Points in Circular Stacks—Table II

Traverse Point Number On a Diameter	Number of Traverse Points on a Diameter									
	6	8	10	12	14	16	18	20	22	24
1	4.4	3.3	2.5	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	14.7	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	29.5	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	70.5	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5	85.3	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6	95.6	80.6	65.8	35.5	26.9	22.0	18.8	16.5	14.6	13.2
7		89.5	77.4	64.5	36.6	28.3	23.6	20.4	18.0	16.1
8		96.7	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9			91.8	82.3	73.1	62.5	38.2	30.6	26.1	23.0
10			97.5	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11				93.3	85.4	78.0	70.4	61.2	39.3	32.3
12				97.9	90.1	83.1	76.4	69.4	60.7	39.8
13					94.3	87.5	81.2	75.0	68.5	60.2
14					98.2	91.5	85.4	79.6	73.9	67.7
15						95.1	89.1	83.5	78.2	72.8
16						98.4	92.5	87.1	82.0	77.0
17							95.6	90.3	85.4	80.6
18							98.6	93.3	88.4	83.9
19								96.1	91.3	86.8
20								98.7	94.0	89.5
21									96.5	92.1
22									98.9	94.5
23										96.8
24										98.9

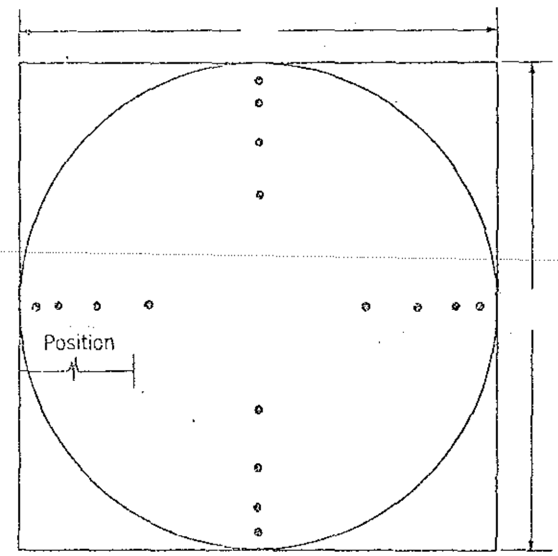
Note: Figures in body of table are percent of stack diameter from inside wall to traverse point.

STACK VOLUME DATA

STACK NO. ________ STATION ________ DATE ________ PAGE ____

NAME OF FIRM ________________________________

Point	Position, in.	Reading, H, in. of H_2O	$\sqrt{H}$	Temp., t_s, °F.	Velocity, V_s, ft./sec.
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
	Totals				
	Average				
	Abs. temp., $T_s = t_s + 460 =$ °R.				



Dry bulb temp., t_d = ________ °F.

Wet bulb temp., t_w = ________ °F.

Absolute humidity, W = ____ lb. H_2O/lb. dry gas

Stack area, A_s = ________ sq. ft.

Barometer, P_b = ________ in., Hg

Stack gage pressure = ________ in., H_2O

Stack abs. pressure, $P_s = \frac{\text{\_\_\_ in., } H_2O}{13.6} \pm P_b =$ ____ in., Hg

Pitot correction factor, F_s = ________

Component	Vol. fraction, dry basis × mol. wgt.		=	wgt. fraction, dry basis
Carbon dioxide		44	=	
Carbon monoxide		28	=	
Oxygen		32	=	
Nitrogen		28	=	

Average dry gas molecular weight, M = ________

Specific gravity of stack gas, $G_s = \frac{0.62\,M\,(W+1)}{18 + MW} = \frac{0.62 \times \_\_ \times \_\_}{18 + \_\_} =$ ________
(Ref. dry air at same conditions)

Velocity, $V_s = 2.9\,F_s\sqrt{\frac{29.92 \times T_s}{P_s \times G_s}}\sqrt{H} = 2.9 \times \_\_\sqrt{\frac{29.92 \times \_\_}{\_\_ \times \_\_}}\sqrt{H} =$ ________ ft./sec.

Volume = ________ ft./sec. × ________ sq. ft. × 60 ________ = ________ cfm.

Standard volume = cfm. $\times \frac{530}{T_s} \times \frac{P_s}{29.92} = \_\_ \times \frac{530}{\_\_} \times \frac{\_\_}{29.92} =$ ________ scfm.

PITOT TUBE calculation sheet—Fig. 3

Source Characteristics—Table III

Category	Time	Cross-Sectional Velocity
	Variation Condition	
1	Steady	Uniform
2	Steady	Nonuniform
3	Unsteady	Uniform
4	Unsteady	Nonuniform

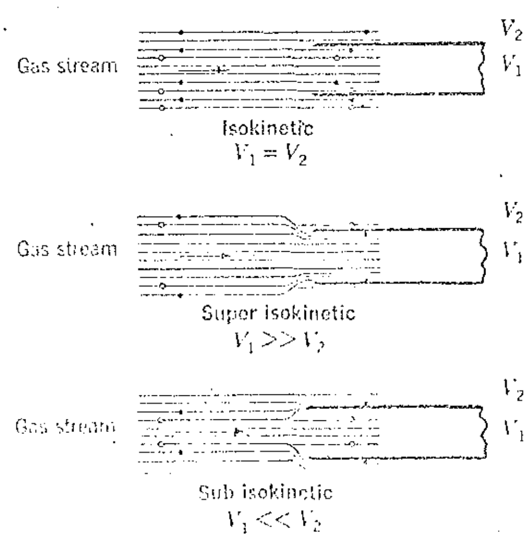
variation only, the sampling is conducted at one point for extended periods, usually related to one or more operational cycles.

Category 4, where both the source and flow conditions are nonuniform, requires the most complicated procedure. If there is some measurable cycle related to the process, the sampling can be conducted over this period, using simultaneously collected samples. One sample is collected at a reference point and the other at selected traverse points. This is repeated until a complete traverse is made. Results are corrected by using the reference point data as a measure of the time variation.

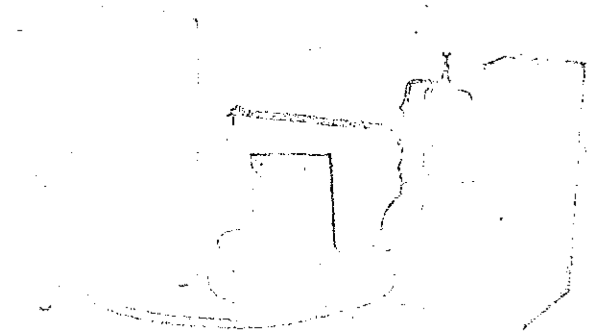
Gas Sampling

When sampling for gases, it is necessary to study the temperature variation across the stack. This is done as part of the velocity traverse and indicates variation in gas distribution. If the temperatures are relatively constant, then a single sample point may be all that is necessary. If temperature variation is considered to be large (greater than 5%), traversing is necessary and is usually done at the same points that the velocity traverse is made. The sampling rate and time of sampling at each point are often kept the same to simplify calculations.

In gas sampling, a straight probe fitted with an integral filter (e.g., glass or Pyrex wool) is placed in the stack.



PARTICLE COLLECTION and sampling velocity—Fig. 4



Research Appliance Corp. photo

COMMERCIALLY available stack-sampling train.

This filter removes particulates at stack temperature, thereby preventing downstream fouling as well as minimizing losses of gaseous pollutants due to reaction with the particulates on cooling. Suction on the nozzle draws the sample into a collection device (such as a bubbler filled with collecting solution) or into a freeze-out trap. The volume of gas remaining after the collected constituent has been removed is measured with a wet or dry test-meter downstream of the collection device; sampling is completed when either a cycle in the process has ended or when sufficient sample has been obtained for analysis.

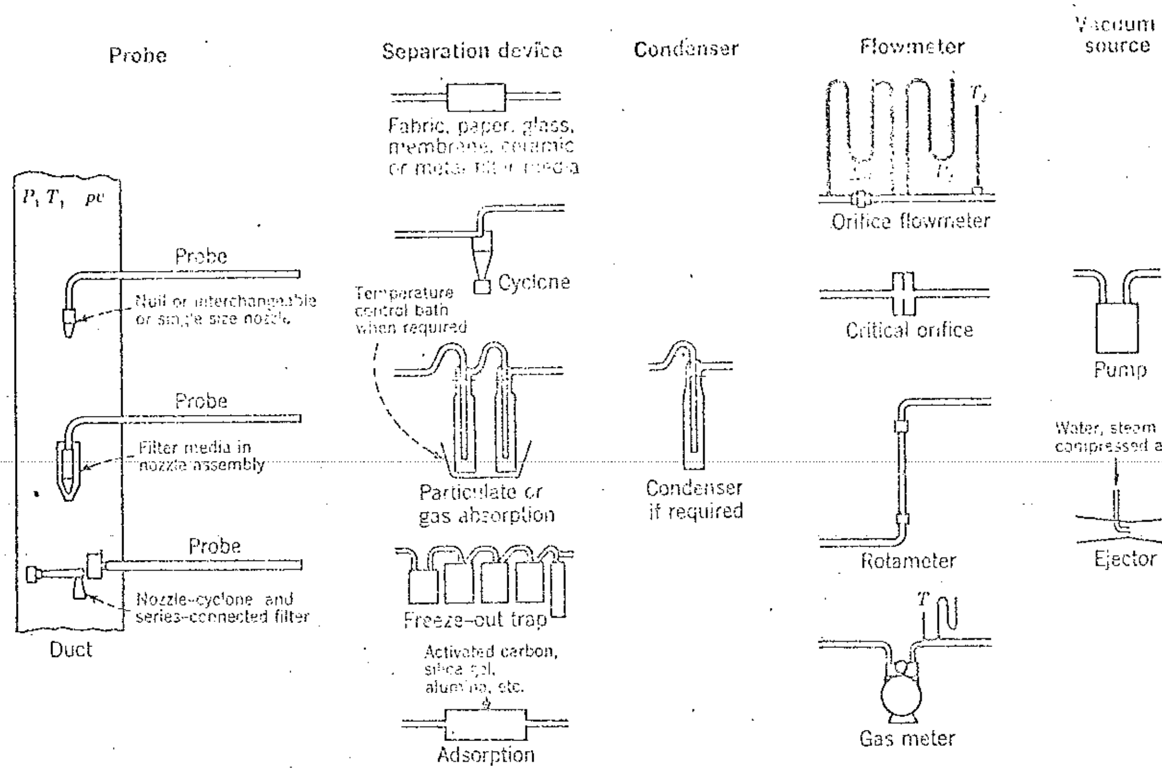
Stainless steel is usually an acceptable probe material. Glass may also be used, but its fragile nature makes it less desirable. In some special applications (e.g., moderate- or ambient-temperature H_2S and mercaptan sampling), Teflon is the preferred material. Even when grab samples are being obtained materials must be carefully chosen. In general, glass bombs or Teflon, Tedlar or Mylar bags are best. Most plastics, except those cited, should be avoided in stack sampling.

In all cases, minimum probe-lengths should be used, and extended flushing with stack gas should precede sample collection. This flushing is very important if losses to the walls of the probe and sample collector are to be avoided. Often the entire sampling system must be heated to prevent condensation of water, heavy hydrocarbons, or sulfuric-acid mist.

Particulate Sampling

Sampling for particulates requires more-detailed concern about the sampling rate than does gas sampling. Depending on the reason for sampling, the variety and extent of components used in the sampling train will vary. For example, if the chemical and physical characteristics of the aerosols are to be measured, a multicomponent train, or even multiple sampling trains, may be required. On the other hand, if mass loading alone is being measured, a lesser number of components will be needed.

As can be seen from Fig. 4, representative sampling is obtained only if the velocity of the stack-gas stream entering the probe nozzle is the same as the velocity of the stream passing the nozzle. If the sampling velocity is too high (super-isokinetic sampling), there will be a smaller concentration of particles collected (because the inertia



COMPONENTS of common sampling systems—Fig. 5

of the larger particles prevents them from following the stream lines into the nozzle). Alternatively, in subisokinetic sampling, where the sampling velocity is below that of the flowing gas stream, the gas samples would contain a higher-than-actual particulate concentration (because heavier aerosol particles will enter the nozzle, but light particles will be diverted).

It has been found[11] that inertia effects become more significant when particle size exceeds about 3 microns dia. Therefore, if a reasonable proportion of the particles exceed this size, isokinetic sampling is necessary.

The Environmental Protection Agency (EPA)[7] believes that samples that are more than about 20% from isokinetic—i.e., (nozzle-velocity)/(stack-velocity) is not between 0.82 and 1.2—should be rejected and sampling repeated. Even samples within this range, they say, should be corrected by means of a complicated expression. In simplified form, this expression can be stated as follows: (true-concentration)/(sampled-concentration) = ½ (1 + nozzle-velocity/stack-velocity). Naturally, correction factors such as this one are based on the assumption of a "normal" particle-size distribution. If a source contains an unusual distribution, correction factors must be avoided. In many cases, isokinetic sampling (with or without correction factors) is used without particle-size data, since isokinetic conditions are needed to obtain valid samples for particle-size-distribution evaluations.

Sampling-Train Construction and Operation

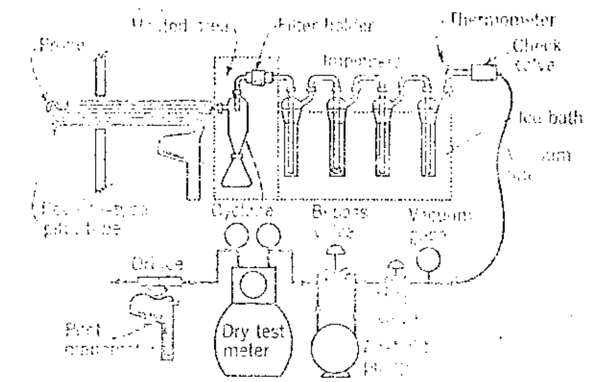
The typical sequence of components in a sampling train is:

- Nozzle.
- Probe.
- Particulate collector.
- Cooling and/or gas collector.
- Flow-measurement devices.
- Vacuum source.

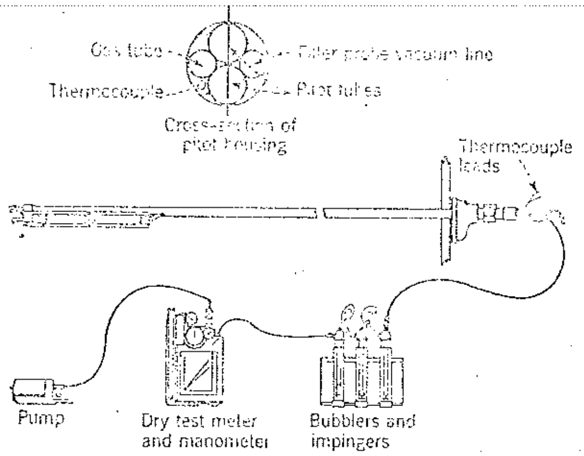
Flow measurements can be made preceding or following the vacuum source. However, vacuum pumps can leak, with the result that gas volumes measured downstream may be greater than those actually sampled. Some commonly used components are pictured in Fig. 5.[11] Ball-and-socket joints and compression fittings allow any desired arrangement of components to be set up rapidly under field conditions.

There is much controversy over particulate-sampling component arrangement. The major point of contention is whether to sample the particulates at stack temperature or at cooler temperatures outside the stack. The Los Angeles Air Pollution Control District (LAAPCD) prefers the out-of-stack sample to measure particulates including constituents that are condensable at approximately 70 F.

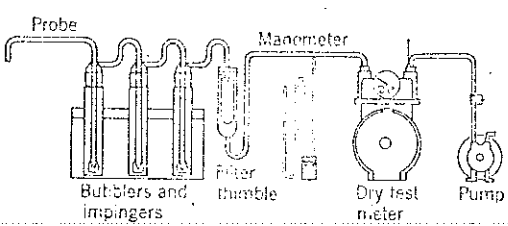
The (San Francisco) Bay Area Air Pollution Control District (BAAPCD) and the Environmental Protection Agency believe that particulates should be collected at stack temperature so they will remain in their original form. Though this was EPA's final decision, the controversy surrounding this point is indicated by the fact that the preliminary procedure published by EPA included condensable material in the mass measurement and the final train still collects condensables, though they are not now included in the particulate mass calculation.



EPA particulate-sampling train—Fig. 6a



BAAPCD particulate-sampling train—Fig. 6b



LAAPCD particulate-sampling train—Fig. 6c

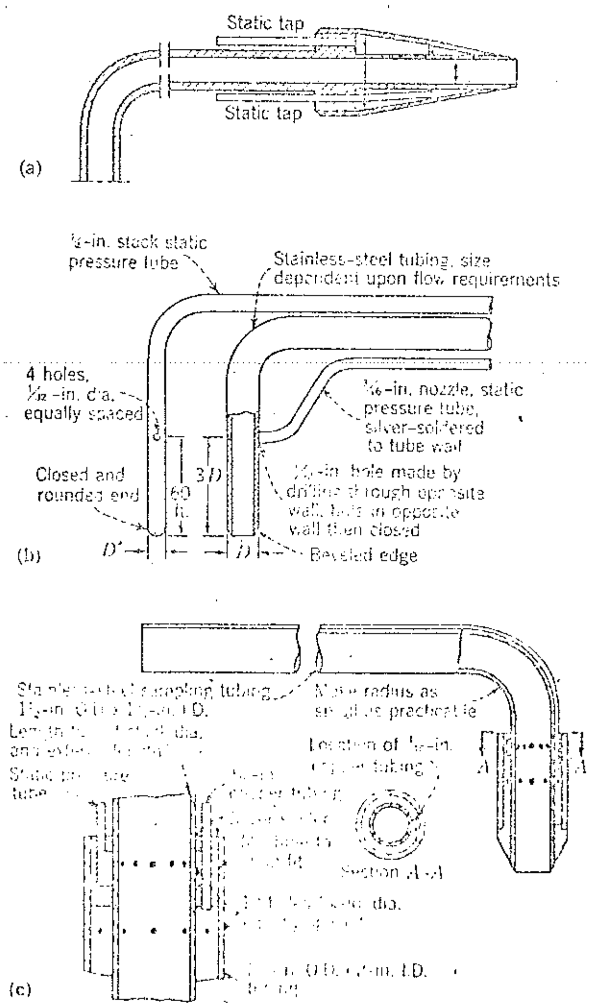
BAAPCD uses a deep-bed Pyrex glass filter inserted in the stack with glass probes and connectors. Downstream and outside of the stack are cooling devices (impingers, a flow meter and the vacuum source). EPA's train is similar, but the filter is in an outside heated enclosure.

The LAAPCD train uses impingers rather than filters to collect the particles. Its experience indicates that impinger collection efficiency is usually sufficiently high that a downstream filter thimble rarely collects more than 5 to 10% of the total weight of particulates captured. This means that the LAAPCD sampling train runs essentially at a fixed pressure drop, hence corrections for changes in pressure are not often needed. However, other trains involving filters do require periodic adjustments in pump setting, to overcome increased resistance from collected particulate matter. Fig. 6 shows three commonly employed sampling trains.

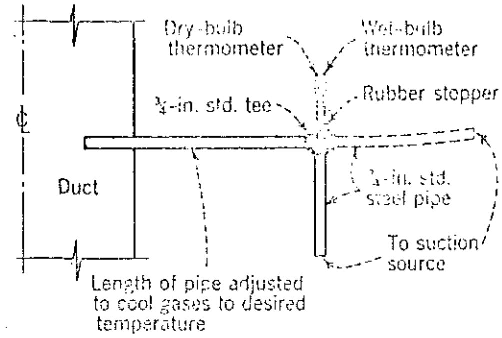
This difference in official methods is of great significance because of its effect on control strategy. In sources where significant hydrocarbons or reactive gases are present as well as particulates, it is possible to remove the particulates, and meet in-stack based regulations, while still exceeding out-of-stack based ones. This may mean serial use of different controls (e.g., electrostatic precipitation followed by wet scrubbing) or rejection of a technique that is optimum for particulates in favor of one adequate for both particulates and gases.

The probe nozzle is selected—after accounting for changes in temperature, pressure and moisture content (from condensation) in the train—so that the pump can maintain isokinetic velocity. For measurements at a single point this may not be difficult, but for multipoint sampling (which is most common) the mathematical and physical manipulations are often troublesome.

A simplification is to use the null probe, examples of which are shown in Fig. 7. Null-probe designs all involve measurement of static pressure perpendicular to flow both inside and outside of the nozzle. The static-pressure taps are connected to opposite sides of an inclined manometer. In operation, the flow through the sampling train is adjusted until there is no pressure differential across the manometer. This is the null condition, which



NULL PROBES of various configurations—Fig. 7



HOT-GAS psychrometry measurement—Fig. 8

in theory presents a situation where isokinetic sampling occurs.

Null sampling probes, however, do not guarantee isokinesis because (even though the static pressures are equal) there may be differences in velocity between the inside and outside of the probe. The differences in turbulence for duct and probe flow; the nozzle shape, and its degree of surface roughness; and the location of the static holes—all may affect the relation between balanced static pressure and isokinetic flow. However, the error (estimated to be no more than 20% for a balanced-null probe) may still be acceptable in rapidly changing flow conditions, because there is also a high possibility of error using the standard nozzle method of sampling. To simplify source testing, some governmental agencies use the null method when checking compliance with air pollution regulations.

As a check on the stability of gas flow, a pitot tube can be placed at a reference point in the stack or located at the traverse point just prior to sampling. In a design adopted by EPA, an S-type pitot tube and a hook sampling nozzle are mounted together so as to continuously measure velocity while sampling. It was felt by EPA that adjustments in sample flow could be more rapidly applied to meet changes in stack flow conditions, and thus more closely approach isokinetic sampling overall. Critics of this system point out that the proximity of the nozzle can influence the pitot tube readings and vice versa, so that the benefits may be outweighed by the effects on sampling results.

Regardless of the sampling system used, it is essential that attempts be made to sample isokinetically when particles are greater than about 3 μm.

Adjustments in flow, when using the isokinetic design, require that a prescribed methodology of data-taking be established. A preferred technique involves making readings at fixed time intervals (e.g., 2 to 5 minutes) and recording data such as temperature, pressure and flowmeter reading. Calculation and readjustment of flowrate are then made to meet changing requirements in the sampling system as the result of increased resistance to the air flow when filtration is included. Typically, it is found that near the end of the run or where the pump capacity is no longer adequate, the rate of change in resistance is the greatest. This is easily sensed and the run time can be adjusted accordingly. In this regard, if the run time is too small because the pump size is not adequate, it may be necessary to rerun with either a smaller nozzle-size or a larger vacuum-source. When possible, the nozzle diameter should not be less than approximately ¼ in., although many sampling trains operate successfully with ⅛-in. nozzles. The sampling time at each traverse point should be the same for composite samples, regardless of the differing velocities at each point.

Temperature corrections are made as needed during the run; there must be a calibration chart for the metering element (viz., pressure drop vs. flowrate), to ensure that isokinetic conditions exist for the full range of sampling conditions.

The moisture correction, which must be applied if condensation occurs prior to metering, can be eliminated if the particulate collection and metering are conducted above the dewpoint. Rate meters that can be used in this way include orifices and venturi meters. If condensation does occur, it is necessary to determine the condensate's vapor fraction in the total gas-volume samples. This can be done simply by drawing a sample of the hot stack-gas through a condenser and gas meter, or by use of hot-gas psychrometry, which is illustrated in Fig. 8.

At the completion of the run, the sampler must be taken to a clean area, and dust that has been collected in the nozzle, probe and collecting elements must be washed or brushed into the succeeding collector. The total catch in each stage is measured and all stages are summed to obtain total particulate-mass loading.

Fixed Gases

It is essential to know the average molecular weight of the flowing gases to determine the actual velocity or volumetric flow in a stack. In stacks where air is present or where combustion gases are emitted, fixed gas (N_2, CO_2, O_2) concentration data are required for this calculation. In addition, these gases are indicators of equipment operation; thus, their measurement is often desirable as a process-control tool.

Orsat Analysis—The above three gases are most easily measured by the Orsat technique. While Orsat analysis is not extremely accurate, it is sufficient for the purpose of determining average molecular weight and many unit operating parameters. Portable Orsat analyzers are available from many suppliers and have been in use for flue-gas analysis for decades. In these devices a measured gas sample is passed through several reagents, and the decrease in gas volume after passage through each reagent is determined. Reagents that are reasonably selective absorbers include 20%-40% aqueous KOH for CO_2 (and other acid gases), alkaline pyrogallol for O_2, and acidic cuprous chloride for CO. Nitrogen is determined by difference.

GC Analysis—In many places, gas chromatographic (GC) analyses are used to determine effluent composition. Generally a sample is caught in a glass bomb or plastic bag and returned to the laboratory for analysis. This technique has the advantage of measuring minor constituents accurately, as well as major ones.

O_2 and CO_2—Continuous monitoring of O_2 and CO_2 is possible using electrometric and nondispersive infrared (NDIR) analyzers, respectively. Normally, these continuous measurements are used for monitoring the operation of process equipment and are not justified for pollution monitoring alone.

Carbon Monoxide

Of the fixed gases, CO is the only pollutant, and so is the only one for which very accurate or continuous analysis may be necessary for pollution reasons alone. The major source of CO is automotive emissions, but significant emissions also occur from stationary-source fuel combustion and a myriad of industrial processes.

The classical procedure for measuring CO has been by passage of the gas sample over hot iodine pentoxide, followed by titration of the iodine generated. In general, gas chromatography (GC) has supplanted this method for source measurements. For very low CO levels (less than 50 ppm.), it is necessary to convert the CO to methane prior to GC analysis, since the very sensitive flame ionization detector does not respond to CO. Infrared spectrophotometry is also often used for spot CO analysis.

Continuous monitoring for CO is usually performed by nondispersive infrared (NDIR) analyzers. These instruments require that the gas sample be filtered and cooled, but no other pretreatment is necessary. Often a narrow-pass optical filter is included in the instrument to minimize CO_2 and H_2O interference. NDIR monitors have the advantages of rapid response and good sensitivity over a wide range of concentrations. Unfortunately, they are prone to drift, and fairly frequent zeroing and calibration may be necessary.

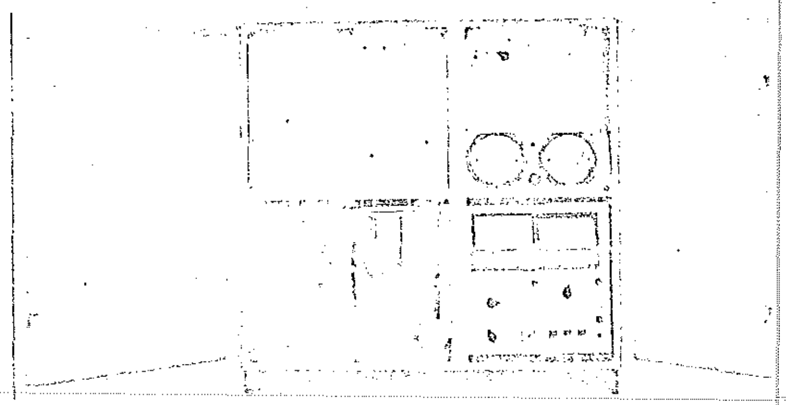
Sulfur Compounds

The sulfur compounds (SO_2, SO_3, H_2S, and mercaptans) comprise a major class of pollutants. They are generated during combustion, and also ore roasting, paper manufacture, and a wide range of other industrial operations. In many stacks, only one type of sulfur compound is present. In these situations, a total-sulfur analyzer may be preferable to a measurement specific for SO_2 or H_2S. Most of the wet-chemical systems are total-sulfur analyzers in any case, but instrumental monitors also exist. One that is finding increasing use is the flame photometric analyzer. In this device, the gas sample is burned in a hydrogen flame, and the intensity of a sulfur emission line is measured by a photomultiplier. This device is very sensitive, requires little sample pretreatment, and is not much different than a flame ionization detector (which many process instruments use). However, it does drift and is sensitive to small variations in gas pressures and flows.

Sulfur Oxides

In general, the measurement of sulfur dioxide involves two problems: obtaining a valid sample and eliminating interferences. Because of its reactivity, SO_2 is best captured by using bubblers. A heated or well-insulated, and flushed, sample line is best so as to prevent losses to the walls of the line. The probe system should contain a filter, which could be packed with quartz or Pyrex wool, in order to remove particulates.

Meloy Lab Inc. photo

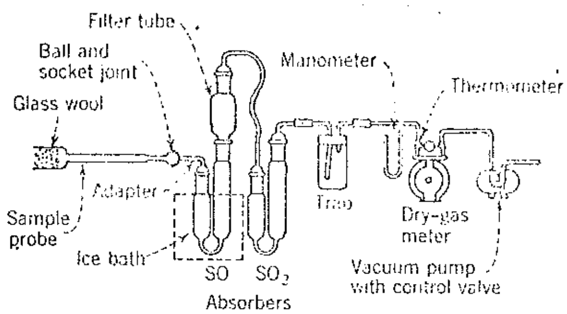


FLAME photometric analyzer for sulfur compounds.

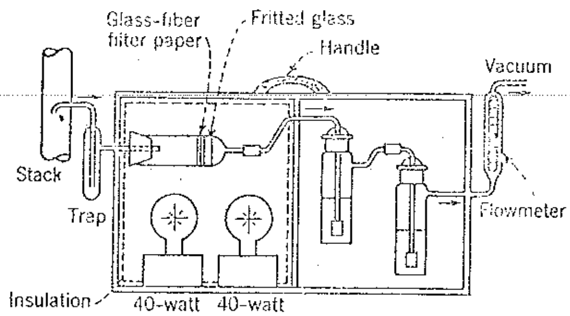
Perhaps the most widely used scrubber for SO_2 collection is hydrogen peroxide. This solution converts the SO_2 to sulfate, which can be determined by a number of standard analytical methods. Since this scrubber is not specific for sulfur dioxide, a sulfate-specific analytical procedure is best. A popular technique is titration with barium perchlorate, using thorin as an indicator. A pink coloration indicates the endpoint. Alternatively, the sulfate ion can be determined colorimetrically with barium chloroanalate reagent, which releases highly colored chloroanalate ion on reaction with sulfate. Color intensity is measured at 530 nanometers. In all these analyses, it must be remembered that SO_3 (but not sulfuric-acid mist, which is trapped on the filter) and H_2S will be measured along with SO_2.

In the sulfuric acid industry, and in some industrial processes using sulfuric acid, there are emissions of SO_2, SO_3, and/or sulfuric acid mist. A variety of sampling schemes, some of which are illustrated in Fig. 9,[12] have evolved for determining SO_3 and SO_2 separately. Sulfur trioxide and sulfuric acid mist are collected and separated from SO_2 by either filtration above the dewpoint of water or absorption in 80% isopropyl alcohol. In either case, the SO_2 passes through. The sulfate is analyzed colorimetrically or by titration as mentioned above for SO_2. Ref. 12 details sulfuric-acid-industry air-pollution problems, and many of the measurement methods used to characterize them.

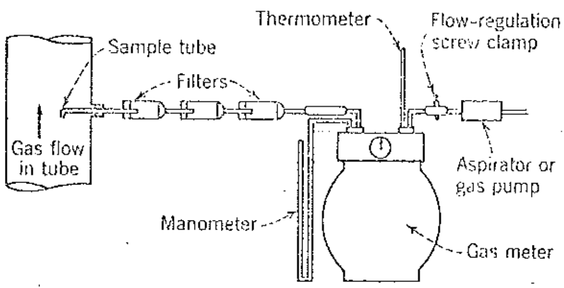
Since sulfur dioxide was one of the first pollutants to be regulated, considerable effort has been devoted to instrumental monitors. Table IV lists some of the commercially available instruments. In general, all of these suffer from a lack of adequate sampling and sample pretreatment. Thus, they are frequently fouled by mist and particulates, interfered with by unremoved gases and water vapor, or overloaded by widely fluctuating sample concentrations, temperatures or pressures. If installation of a monitor is required, it must be individually selected for the specific stack it will monitor, and as much attention



SAMPLING train for SO_2/SO_3 (Shell)—Fig. 9a



PORTABLE SO_2/SO_3 apparatus (Chemico)—Fig. 9b



MIST sampling train for SO_3 (Monsanto)—Fig. 9c

must be paid to the sampling system and to ease of calibration and maintenance as to the analyzer itself.

Spectrometry—The spectrometric methods are all prone to fouling by particulate. In addition, those using the IR (infrared) portion of the spectrum require removal of water from the sample. Achieving this without also removing some SO_2 is difficult.

The correlation spectrometer (which uses the ultraviolet region of the SO_2 spectrum) is worth special mention because it is a true in-stack monitor. While the other types of monitors require withdrawal of a sample from the stack, this instrument uses the stack as its optical path, thereby providing cross-stack average measurements. This approach can be a major advantage, particularly in large-diameter stacks.

In this instrument, the fine structure of the SO_2 absorption spectrum is matched against a reference pattern in such a way that other materials do not interfere, even if they have some overlapping absorptions. Unfortunately, the engineering problems associated with using this spectrometer routinely, without fouling and with adequate calibration, have not been completely resolved. These problems and its relatively high price have prevented a completely successful application of its potential.

Wet-Analysis Instruments—The many wet-analysis instruments available suffer from lack of specificity and the operational problems associated with flowing liquids. In some cases, the conductiometric analyzers require precise dilution of the sample. An advantage of these instruments, however, is the ability to calibrate the analyzer by using a liquid standard.

Electrochemical Sensors—The electrochemical sensors are a relatively new class of SO_2 analyzers. In these devices, an electrochemical reaction selectively measures the SO_2 in a gas sample, which has been extracted from the stack, cooled and had the particulates removed. These sensors are reasonably specific for SO_2, but suffer from drift problems.

Sulfides

Classically, sulfides have been determined by wet-chemical techniques. Specifically, hydrogen sulfide can be scrubbed from a gas sample and determined tritrimetrically. If, as in kraft-mill stacks, SO_2 is present, a more specific procedure, such as the colorimetric methylene blue method, can be used.

When process monitoring has been necessary, organic sulfides and hydrogen sulfide have been determined in kraft-mill stacks by first removing the sulfur oxides in a condenser and scrubber, and then oxidizing the sulfides in a quartz oven at 700 to 800 C. and analyzing them in an amperiometric titrator.

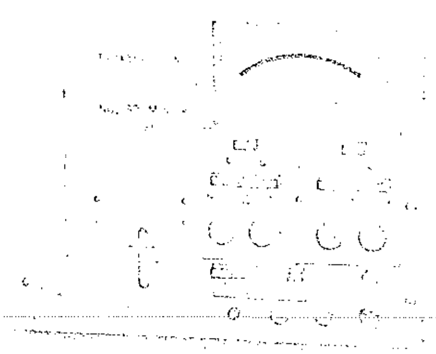
Paper-Tape Monitor—Hydrogen sulfide is frequently determined by using a paper-tape monitor. On exposure to H_2S, the lead-acetate-impregnated tape turns black. The density of the black spot is measured in a transmission photometer. This measurement gives the average H_2S concentration for the sample period (typically 1 to 4 hr.). Besides the problem of periodic tape replacement, this type of monitor requires frequent recalibration and careful tape handling. Sometimes, ambient H_2S per-

Types of SO_2 Monitors—Table IV

Approach	Manufacturers*
UV Absorption	DuPont
	Honeywell
Correlation spectrometry	CEA Barringer
NDIR	Beckman
	MSA
Titrimetric	CEC
	ITT Barton
Conductometric	Davis
	Wösthoff
Electrochemical	Dynasciences
	Theta Sensors
	EnviroMetrics
Flame photometric	Mel-Labs, Inc.

*Partial List

Theta Sensors Inc. photo



ELECTROCHEMICAL sensor for NO_x and SO_2

Types of Nitrogen Oxide Monitors—Table V

Approach	Oxides Measured	Manufacturers*
UV photometric	NO_2, NO	DuPont
	NO_2	Honeywell
Correlation spectrometry	NO	CEA Barringer
Electrochemical	NO_x, NO_2	Dynasciences
	NO, NO_2, NO_x	Environmetrics
	NO_x	Theta Sensors
Chemiluminescence	NO	Aerochem
NDIR	NO, NO_2	MSA
	NO	Beckman
	NO	Intertech
NDUV	NO	Beckman

*Partial List

meates the unexposed tape and darkens it beyond use.

Chromatography—More recently, a GC analyzer, which separates the individual sulfides, has been developed. It uses a Teflon column system and a polyphenyl-ether substrate. A sulfur-specific flame-photometric detector is employed to eliminate possible interferences from nonsulfur compounds. This technique has been successfully[13] used for process monitoring of sulfide effluents.

Nitrogen Oxides

The oxides of nitrogen play a major role in the formation of smog and accordingly are important air pollutants. The most important nitrogen oxide pollutants are nitric oxide (NO) and nitrogen dioxide (NO_2). These two gases are sometimes measured individually, but in the waste gases from stationary sources either NO or NO_2 is usually predominant and often a measurement of total nitrogen oxides (NO_x) is sufficient. Nitrogen oxides are present in the effluent gases from all combustion sources, and in the waste gases generated from the production of nitric acid, nitration processes, metal pickling, and the lead chamber process.

Laboratory Analyses—When the oxides can be determined without differentiation as NO_x, the phenoldisulfonic acid method of analysis is usually used. While this method is tedious to run, it is one of the few air pollution methods generally recognized to be accurate and reliable.

The gas sample is collected in an evacuated flask containing dilute sulfuric acid - hydrogen peroxide absorbing solution. The nitrogen oxides, except for nitrous oxide (N_2O), are oxidized to nitric acid by the hydrogen peroxide. After careful destruction of the peroxide with heat, the nitric acid produced is measured colorimetrically as nitrophenoldisulfonic acid. This method is suitable for NO_x concentrations between 15 and 1,500 ppm. by volume and has a sensitivity of about 1.5 ppm.

When no acidic gases (e.g., SO_2) other than nitrogen oxides are present, the nitrogen oxides can be determined acidimetrically. This method is much simpler and more rapid than the phenoldisulfonic-acid procedure. The gas is sampled into a gas buret and vigorously shaken with dilute peroxide and an antifoam agent. The nitrate formed is determined by titration with sodium hydroxide to the methyl-orange endpoint.

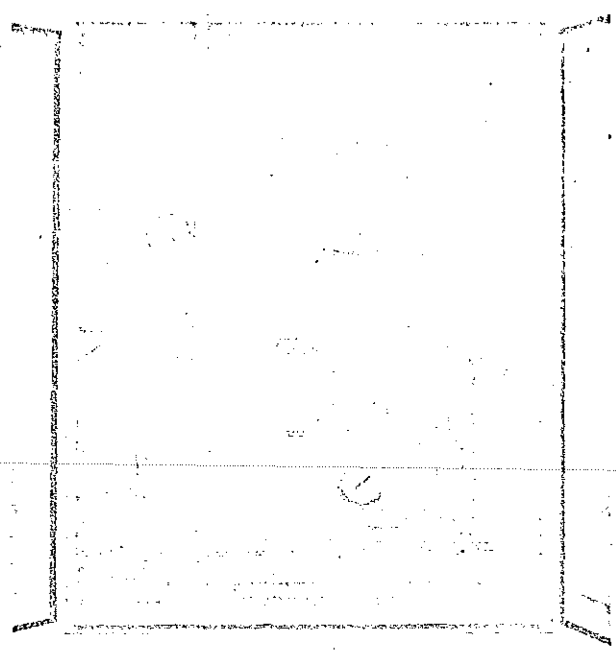
Table V lists some of the nitrogen oxide instrumentation now available. Many of these instruments were developed for automobile-emission monitoring and are untried for stack use.

Photometric Analyzer—A completely packaged split-beam photometric analyzer system, including sample handling, is available for continuous monitoring of stationary source emissions of NO_2 and NO_x. The gas sample is continuously drawn through a filtered probe. Sampling components, including the lines and the sampling cell, are kept at elevated temperature to avoid condensation. The analyzer provides automatic compensation for light decreases caused by changes in source intensity. Nitric oxide is essentially transparent in this region of the spectrum and cannot be detected directly. It is measured by quantitatively converting the NO to NO_2, using oxygen under pressure, and measuring the NO_2.

Spectroscopic Analyzer—A spectroscopic technique has been used to continuously monitor industrial emissions of NO. In this technique, the radiation source is mounted on one side of a tube that traverses the stack. This tube is slotted perpendicular to the gas stream to provide a fixed path-length of sample. This permits determination of the spatial average of the NO across the stack.

Electrochemical Method—A portable instrument is available that is based on an electrochemical transducer capable of selectively monitoring nitrogen oxides at concentrations up to 5,000 ppm. This transducer is a sealed faradic device in which the direct electro-oxidation or electro-reduction of absorbed gas molecules at a sensing electrode results in a current directly proportional to the partial pressure of the gas. In operation, the pollutant gas diffuses through a selective membrane and a thin electrolyte layer, to become absorbed at the sensing electrode

DuPont, photo



SPLIT-BEAM photometric analyzer for nitrogen oxides.

where it undergoes reaction. This is the same electrochemical device described previously for sulfur oxide measurement, except that the sensing cell itself is different. SO_2 is not differentiated from NO_x by the NO_x sensor, but NO_x does not interfere with the SO_2 sensor. Common practice, therefore, is to use both types of sensors and to correct the NO_x measurement based on the SO_2 level. In fact, the difference is taken automatically in some models of this instrument.

Chemiluminescent Detectors—An optical detection device which is based on the chemiluminescent reaction of NO with ozone has recently become available. This device is selective for the measurement of NO for concentrations up to 1,000 ppm. Application of this device has been limited to automobile-emission measurement, but extension to stationary-source monitoring can be expected to occur quickly.

Particulates

Particulates are defined as all airborne solid and liquid matter. They include solid particles and liquid aerosols. Particle diameters range from a few hundred angstroms to larger than 50 microns (50,000Å).

Particulate determinations fall into two categories: opacity measurements and mass measurements. No generally acceptable correlation between these parameters exists except in very special cases.

In some particular situations (mostly research programs), detailed breakdowns of particulates into size ranges are required. Though there are many different approaches to size classification, the most generally accepted one is the use of inertial impaction devices. Since size segregation is a very specialized problem, it will not be discussed further in this particular article.

Opacity

Ringlemann Numbers—The grossest and most widely used particulate measurement is opacity. Most pollution codes limit emissions of dark particulates by setting "Ringelmann Number" limits. In theory, such a number corresponds to the light transmittance of a plume. Zero Ringelmann indicates 100% transmittance, 1 indicates 80% transmittance, 2 indicates 60% transmittance, etc. In practice, Ringelmann "measurements" are made by "trained" observers. As a result, there is considerable variation in the measurement. Particulate size and color, background effects, time of day, distance, and other factors all affect the observer's judgment. However, these measurements have been upheld in court and are in use almost everywhere in the country.

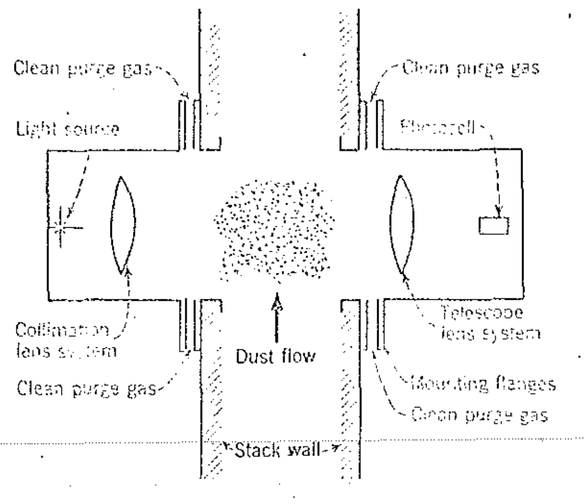
Photometers—Recently, a number of photometers have been introduced to quantify the Ringelmann measurement. While these devices are new and untested, they are expected to improve the reproducibility of the measurement. They still suffer from the basic problems of this measurement—the requirement of daylight and black smoke.

Obviously, many stacks require virtually continuous monitoring to control smoke emissions, and so continuous in-stack opacity measurements are attempted. These measurements are not useful when there is a detached plume that is essentially invisible in the stack, but becomes visible some short distance after leaving the stack. Also, when the stack gases are opaque because of condensed water vapor, this method does not serve a useful purpose. Water is generally not considered to be an air pollutant. However, the in-stack measurement of opacity is valuable in those situations where suspended particulates are the major contributor to opacity. In one State, this type of device will be required in all suitable stacks with a flow greater than 10,000 cfm. The opacity limitation will be a minimum of 70% light transmittance across the stack, which corresponds typically to a 1-2 Ringelmann Number in the plume.

In order to provide continuous opacity measurements, a large number of stacks have been outfitted with transmission photometers. As shown in Fig. 10, these devices have a light source on one side of the stack and a detector on the other side. The reduction in light intensity on the beam's passing through the stack is measured.

The major problems with these devices are their propensity for becoming fouled and the difficulties associated with *in situ* calibration. Attempts to keep the optics clean and dustfree have taken two main forms. First, the components are recessed away from the stack; second, clean air is continually swept over the exposed areas. Often these actions are inadequate and measurement accuracy suffers.

After the instrument has been in use for a time, the optics can become dirty and scratched and the detector and light-source characteristics can change. Therefore, regular recalibration is necessary. But there is no really acceptable way of doing this recalibration, except for 0% transmission, unless the stack is taken out of use. Since



TRANSMISSION PHOTOMETER schematic section—Fig. 10

shutdowns are often impossible, some systems use a tubular sleeve to connect the light source and detector. A transmission of 100% can be checked by flushing the tube with clean gas.

Setting the 100% transmission by removing the detector from the stack and calibrating separately is the normal procedure (when recalibrations are done at all), but this will not really represent 100% in a real stack, primarily because of in-stack alignment variations and differing light-source characteristics. Furthermore, no test of intermediate transmission levels is possible except under laboratory conditions.

Mass Monitors

Opacity measurements are useful for controlling particularly bad (and nuisance-type) emissions, especially black particulates, such as found in incinerators and power-plant stacks. However, newer air-pollution codes are aimed at controlling all particulates, day and night, regardless of color. To achieve this, regulations controlling the total mass of emissions have been promulgated. In order to measure mass, two factors must be known: particulate concentration in terms of weight, and the gas flowrate. In the previous discussion of sampling, determination of gas flowrate was discussed, as was isokinetic sampling. If we assume that gas flowrate has been determined and that isokinetic sampling is used, it is only necessary to determine particulate concentration to know the mass emitted.

Before discussing particulate-concentration measurements it is important to reiterate the problem of defining particulates. If the particulates are collected at stack temperature (e.g., Bay Area approach), only solids are retained. If the sample is cooled prior to collection (e.g., Los Angeles approach), condensable liquids will be included. This definition is of great concern to the chemical process industries because in many processes the condensable mass equals or exceeds the mass of solids present.

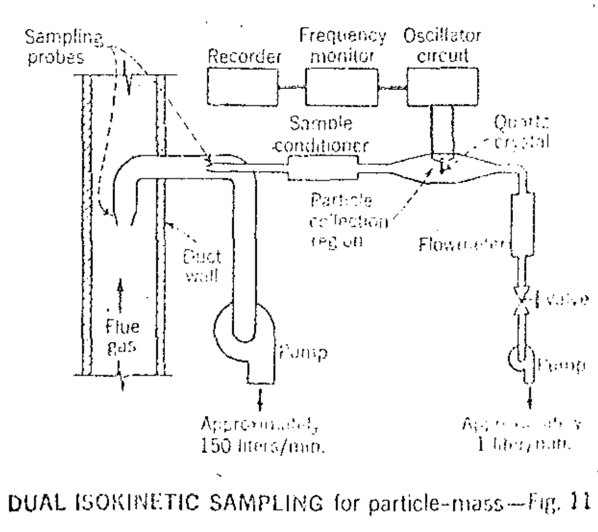
Many different approaches to particulate-mass measurements are in use, including some continuous and semicontinuous ones; but the most common method by far is collection of the particulates by filtration, followed by drying and weighing. It is generally agreed that no completely acceptable filter medium is available. However, flash-fired glass fiber is usually used in hot service, and paper is commonly used in cool service. The glass-fiber paper itself is usable to temperatures as high as 900 F. Unfortunately, this temperature limit is misleading because most commercial filter holders have a 400 F. limit.

Once a filter sample has been collected, it is possible to perform detailed particulate analysis. Most metals, for instance, can be determined by standard methods such as extraction and spectrophotometry. Often microscopic examination yields valuable data on the types, and possibly sources, of the particles.

Considering the cumbersomeness of particulate collection trains and the sampling time needed to obtain a single mass measurement, it is readily apparent why so few good data exist. Obviously, one major improvement would be a continuous measurement. Isokinetic sampling would still be required, as would sampling traverses; but the time at each sampling point and the filter pretreating and weighing times would be slashed.

Piezoelectric Monitor—One currently marketed instrument that may achieve this result is the piezoelectric mass monitor. In this device, particles in the sample stream are electrostatically deposited onto a piezoelectric sensor. The added weight of particulate changes the oscillation frequency of the sensor in a known way. This instrument cannot handle the very high particulate loadings found in many stacks without dilution of the sample. This dilution step greatly complicates the sampling problems associated with use of the device since two isokinetic samples are required: one of the stack and one of the diluted stack sample (see Fig. 11[14]). These problems are being studied under an EPA contract, and a generally applicable system could well result.

Beta Attenuation Monitor—A monitoring system that is sometimes used on stacks is beta attenuation; commer-



DUAL ISOKINETIC SAMPLING for particle-mass—Fig. 11

cial instrumentation is available that permits a particulate measurement every 15 to 30 min. In this type of device, the particulate sample is filtered using a continuous filter tape, and the mass of particulate filtered out is determined by measuring its attenuation of beta radiation. Since beta attenuation characteristics are not very different for a wide variety of stack particulate-matter compositions, a direct mass-measurement is possible. The major problem with this system is still sampling, though the difficulty is somewhat reduced because in a monitoring application the probe can be fixed and very accurate numbers are unnecessary.

Hydrocarbons

Hydrocarbons are emitted in the waste gases from numerous petroleum and chemical operations, from solvent cleaning systems, coke manufacture and many other sources. These compounds enter into atmospheric photochemical reaction processes that lead to the products and manifestations commonly associated with photochemical air-pollution. Hydrocarbon pollutants are usually determined either as a class, e.g. total hydrocarbons, or as individual chemical species. In the former case, the separate determination of methane is normally necessary, because most class regulations are based on non-methane hydrocarbons. These are determined by difference unless knowledge of the composition of the stream makes this unnecessary.

Flame Ionization Detector—The flame ionization detector (FID) is the most sensitive and most common technique for the continuous detection of total hydrocarbons. In this technique, a sensitive electrometer detects the increase in ion intensity resulting from the combustion of any organic compound in a hydrogen/air flame. Response is proportional to the number of carbon atoms combusted per unit time. As a result, FID data must be expressed with reference to the calibration gas used—e.g., "ppm. of carbon as propane."

The FID is very suitable for hydrocarbon measurement because it does not respond to other air contaminants such as CO, CO_2, H_2O, SO_2 and nitrogen oxides, but merely indicates compounds with C-H bonds. Many companies manufacture FID instruments, but their application to date has been primarily to ambient-air analysis. Thus, source-sampling systems and even explosion-proofing are only available on a special-order basis.

Spectroscopic Methods—Analysis for a specific hydrocarbon requires the isolation of the compound to be determined from a gas stream that normally contains many similar compounds. Except for a few hydrocarbons with very strong spectral adsorption bands, the interferences produced by other hydrocarbons present in the gas stream limit the application of all but very-high-dispersion, and thus very-expensive, spectral techniques.

Chromatography—Gas chromatography (GC) provides a convenient and tested method for the analysis of specific hydrocarbons. In most cases, the same type of process GC used for process monitoring can be used for measuring air emissions of a particular compound. The FID detector is generally preferable to other detectors because of its high sensitivity and good reliability. ■

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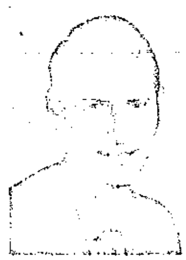
Meet the Authors



Morrow

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APPENDIX E

APPENDIX E

Particulate Emissions From Oregon Kraft Mill Recovery Furnaces

The accompanying tables present all the particulate emission data reported to the Department since 1967 by kraft mills in Oregon. Accompanying this data are descriptions of the furnaces and controls, the test methods, number of samples reported each year, stack conditions, and miscellaneous other data. The stack conditions include temperatures, flow rate in actual cubic feet per minute (acfm), i.e. at stack temperature, volumetric percent water vapor, and sulfur dioxide (SO_2) concentrations as reported in the mills' Special Reports of July, 1971. The stack conditions are as of the mills' initial monitoring reports in 1969-1970.

1. American Can; Halsey

A. Description

New generation furnace started up in Oct., 1969, Electrostatic precipitator, two parallel series of three fields each. Guaranteed 99.6% efficient, 0.01 grain per standard cubic foot (approximately 0.8 pound per ton of pulp).

B. Particulate Emissions (Number of samples in parenthesis)

	1972	1971	1970	1969
600°C	5.1 (11)	6.1 (5)		
105°C	5.8 (11)	7.3 (12)	11.6 (11)	11.4 (2)
Production tons/day	325	289	254	185

All of these are impinger train samples
Monitoring started October, 1969

C. Stack Conditions

Temperature	350° F
Flow Rate	100,000 actual cubic feet per minute
Water, volume	25%
Sulfur dioxide	100-200 ppm, 1969-1970 50 ppm 1971 to present

D. Additional Information

By letter of June, 1970, the company reported that the electrostatic precipitation vendor's test, with an alundum thimble, met the four pound per ton limit even through by the Department test method the particulate emissions substantically exceeded the limit.

2. Boise Cascade; St. Helens

A. Description

Two conventional furnaces, No. 1 built in 1951, No. 2 started up in 1969. Controlled with electrostatic precipitations, No. 1 a single-field unit, No. 2, two sections of two fields each.

B. Particulate Emissions (Number of samples in parenthesis)

	1972	1971	1970	1966
Furnace No. 1	4.22 (11)	22.8 (12)	20.7 (7)	11 (1)
Production	338	372	361	
Furnace No. 2	11.3 (11)	8.5 (12)	3.2 (7)	
Production tons/day	487	427	412	

1966 - One test with dry filter train
1970 to present - Impinger train for collection, results calculated from sodium ion in impinger catch.

Monitoring started June, 1970.

C. Stack Conditions

	No. 1	No. 2
Temperatures	250° F	250° F
Flow Rate	80,000 acfm	100,000 acfm
Water, volume	30%	30%
SO_2	Nil	Nil

D. Additional Information

The mill derived a correlation between total particulate and sodium ion in the impinger catch in preparation for continuous monitoring when a suitable system became available commercially.

3. Crown Zellerbach; Wauna

A. Description

One conventional furnace, started up in 1968. Controlled with an electrostatic precipitator having two parallel series of three fields each. The design emissions were approximately 3.5 pounds per ton.

B. Particulate Emissions (Number of samples in parenthesis)

	1972	1971	1970	1968
600°C	3.52 (11)	3.22 (9)		
105°C	5.81	4.85 (6)	4.44 (8)	4.91 (1)
Dry Train				
Production	660	701	689	

1970-1972 Impinger Train
1968 Thimble holder packed with glass wool followed by high efficiency filter.

Monitoring started May, 1970

C. Stack Conditons

Temperature	350° F
Flow Rate	274,000 acfm
Water, volume	35%
SO_2	80 ppm

D. Other Information

In tax application T-105 (acted on, Jan. 30, 1970), the company pointed out that its dry train was sufficiently more efficient than the vendor's method (presumebly, an alundum thimble) that the emissions measured were in excess of the vendor's measurements and the originally predicted performance.

4. Georgia-Pacific; Toledo

A. Description

Three conventional furnaces, each with its own electrostatic precipitatory furnaces started up at intervals between 1956 and 19-5. All three discharge through one stack. Emission data are for the combination of furnaces.

B. Particulate Emissions (Number of samples reported to DEQ in parenthesis)

	1972	1971	1970	1969	1968	1967
Impinger Train (105°C)	10.2 (8)	8.8 (11)	9.5 (12)	8.0 (2)	11.2 (1)	8 (1)
Production Tons/day	997	989	968	900	Under 900 t/d	

Monitoring started in November, 1969.
Tests in 1967 and 1968 were by special Department request.

C. Stack Data

Temperature	170° F
Flow Rate	340,000 acfm
Water, volume	34%
SO_2	Under 10 ppm

D. Other Information

The stack scrubber, of perhaps 50% efficiency, was installed in the early 1960's. Sampling data are after the scrubbing. Since the stack is wet with much entrained waterfrom the scrubbers, all data are and have been taken with impinger trains. Sample analysis based on 600°C showed no difference from results at 105°C therefore, all samples have been processed at 105°C.

5. International Paper; Gardiner

A. Description

Two furnaces, No. 1 built originally in 1930's, No. 2 built in 1963. Both are controlled with electrostatic precipitators.

B. Particulate Emissions (Number of samples in parenthesis)

	1972	1971	1970	1968
No. 1 furnace	19.6 (11)	17.7 (12)		22.8 (1)
Production tons/day	560	456		
			Both furnaces 11.4	
			Production 450	
No. 2 furnace	56.3 (10)	29.2 (12)		38.6 (1)
Production tons/day	100	105		

1970-1972 Impinger train
1968 Impinger train with filter (EPA train)
Monitoring started January, 1971

C. Stack Data

	No. 1	No. 2
Temperatures	300°F	200°F
Flow Rate	153,000 acfm	40,000 acfm
Water, volume	28%	37%
SO_2	130 ppm	130 ppm

D. Other Information

Since the emissions are to high, evaporation at 600°C would be pointless

6. Western Kraft; Albany

A. Description

One new-generation furnace started up in June, 1971. Prior to that date, there were three conventional furnaces with scrubbers.

B. Particulate Emissions (Number of samples in parenthesis)

	1972	1971	1970	1967	1965
No. 1,2 & 3 furnaces		14.5 (4)	14.4 (11)	12.0 (1)	14.1 (1)
No. 4 furnace 600°C	3.3 (10)	3.0 (8)			
105°C	9.1 (10)	6.8 (6)			

1970-1972 Impinger train
1965, 1967 Dry train

Monitoring started January, 1970

C. Stack Conditions

	No. 1, 2 & 3	No. 4
Temperature	175°F	350°F
Flow Rate	204,000 acfm	270,000 acfm
Water, volume	40%	25%
SO_2	No data, prob. under 10 ppm	No data

7. Weyerhaeuser; Springfield

A. Description

No. 1 & 2 furnaces: Conventional, with electrostatic precipitators, Retired April 2, 1971
No. 3 furnace: Conventional, with electrostatic precipitators, start up July, 1965
No. 4 furnace: New generation with electrostatic precipitators, start up August, 1971

B. Particulate Emissions (Number of samples reported to DEQ in parenthesis)

	1972	1971	1970	1969	1968	1967
No. 1 & 2			37.8 (11)	14.6 (3)	15 (1)	37 (1)
Production tons/day			280	230	300	300
No. 3	3.1 (11)	2.2 (6)	3.9 (12)	6.3 (3)	6 (1)	10 (1)
Production tons/day	616	687	791	750	700	700
No. 4	2.9 (11)	0.5 (3)				
Production tons/day	535	490				

1969-1972 Continuous Monitor
1967, 1968 Electrostatic precipitor in train

Monitoring started in 1969

C. Stack Conditions

	No. 1 & 2	No. 3	No. 4
Temperature	250°F	300°F	300 F
Flow Rate	180,000 acfm	250,000 acfm	250,000 acfm
Water, volume	30%	30%	30%
SO_2	Under 10	Under 10	Initally over 1000 since early 1972, 100-200 ppm 100-200 ppm

D. Other Information:

1967-1968: The collecting mechanism was a small electrostatic precipitator. A filter placed after it collected no particulate, therefore, it was concluded that the precipitator was collecting all the particulate in the sample gas stream.

1969-1972: A continuous monitor, based on detecting and monitoring sodium-ion losses, was used, calibrated against the electrostatic precipitator train.

APPENDIX F

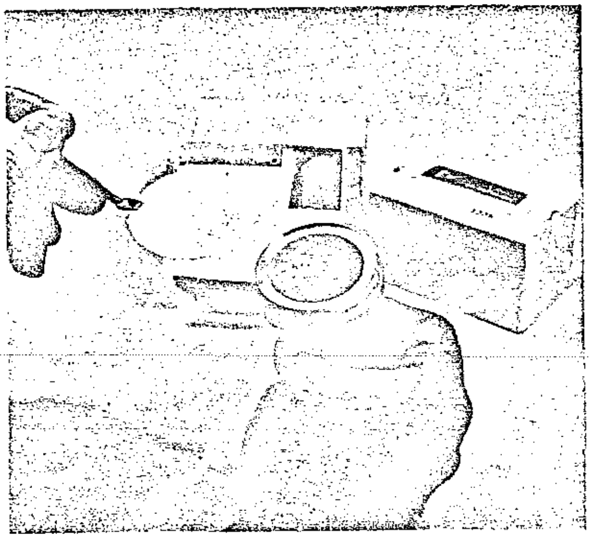
APPENDIX F

Furnace and Location	Emission lb/adt. 1972	1971	Basic Sampling Method Reported
Crown Zellerbach, Wana	3.52	3.22	Impingers 600°C basis
Western Kraft Albany	3.3	3.0	Impingers 600°C basis
Weyerhaeuser Springfield No. 3 furnace	3.1	2.2	Continuous sodium ion monitor
Weyerhaeuser Springfield No. 4 furnace	2.9	0.5	Continuous sodium ion monitor

APPENDIX G

MEMBRANE FILTERS

G



GLASS FIBER FILTERS*

Manufactured from micro-sized filaments of glass, Gelman Glass Fiber Filters are designed for specific uses. Two Glass Fiber Filters are available — Type E, which contains a small amount of organic binder to provide easy handling and high strength both dry and wet, and Type A, pure glass with no binder. Type A is treated in a muffle furnace to remove trace amounts of organic fiber contaminant.

Both Type E and Type A Glass Fiber Filters are tested to a minimum of 99.7% efficiency for particles larger than 0.3μ, as measured by the Dioctyl Phthalate Penetration (DOP) test. The efficiency of both of these filters is greater than 98% for particles as small as 0.05μ.

Type E Glass Fiber Filters:

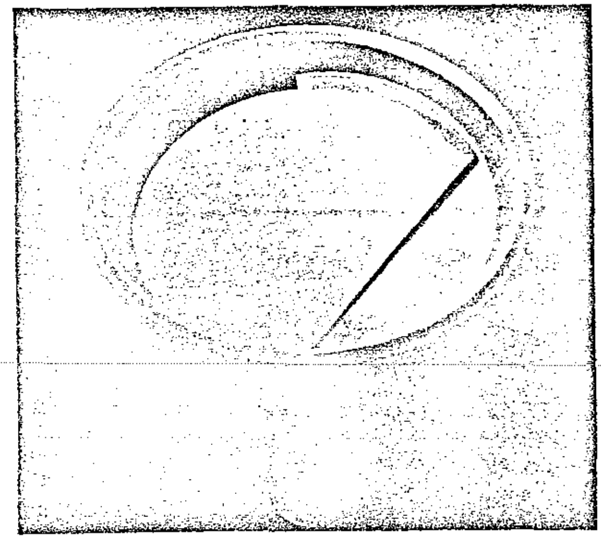
These filters are most frequently used for general prefiltration — placed on top of a membrane filter, the Glass Fiber Filter, Type E, will extend the useful life of the membrane. The filter's acrylic binder gives it high "wet strength." It will not "mush" or fall apart in liquid filtration use. Type E filters have a heat tolerance of 230°C.

Type A Glass Fiber Filters:

Type A Glass Fiber Filters form the basis for a procedure widely used for the determination of air pollution substances in municipal and industrial air. In this procedure, used by the National Air Sampling Network, samples of air can be collected on Type A filters with a high-volume sampler such as the Gelman Hurricane (Catalog No. 16003). After collection, the Type A filter is removed and determinations are made of total particulate material collected, and specifically, sulfates, nitrates and metallic constituents.

Composition of the Glass Fiber Filter used for this test is very closely controlled in order to meet critical requirements. Type A, as well as Type E Glass Fiber Filters, can also be used for gravimetric analysis.

*For list of prices and sizes, see chart on Page 49 of this catalog. Chemical Compatability on Page 48. Filter specifications on Page 47.



POLYPROPYLENE FILTERS*

Nominal pore size: 10μ

Chemically and biologically inert, Polypropylene filters withstand hydrazine, nitrous oxide, concentrated acids and alkalies, and oxidizers. The filter's nominal 10μ pore rating gives it high flow rates that make it ideal for the filtration of liquid propellants, or for contamination analysis of larger particles.

The filter has outstanding wet strength, and it can be folded and handled like laboratory filter paper. Use Polypropylene filters in Buchner funnels for lab filtration of chemically active reagents that will attack normal filter paper, to filter liquid propellants and to filter chromic acid cleaning solution for reuse. The filter can be steam-autoclaved or heat-sealed to itself or to other plastics, yet it does not stick to rubber gaskets.

VERSAPOR® EPOXY-REINFORCED FILTERS*

Versapor Filters are made of glass fibers reinforced with epoxy to assure there will be no media migration. Versapor gives the high flow rates and high contamination-loading characteristics of a depth filter.

Used as a prefilter, Versapor reduces clogging of smaller pore membranes, adding to the life and capacity of the membranes. The textured surface of Versapor is not suitable for microscopic examination; however, Versapor is commonly used for gravimetric analysis.

No fiber trap is needed with Versapor because it never sheds. Its fibers do not mat nor compress under pressure as many depth filters do.

Both grades of Versapor Epoxy-Reinforced Filters are highly resistant to reducing agents, hydrazine and to strong acids up to 50% concentration. The two grades are manufactured in the following sizes:

Versapor 6424

Mean flow pore size: 5μ

Use this filter grade for filtering acids, ketones, plasma, biological fluids, jet fuels, hydraulic fluids; as a prefilter to reduce clogging in fine pore membranes; for instrument air supply filtration and gravimetric analysis.

Versapor 6429

Mean flow pore size: 0.9μ

Versapor 6429 is ideal to filter lab rinse waters and solvents; as a prefilter, and also for high-pressure gas filtration.

GUIDE TO GELMAN MEMBRANES AND FILTERS—TYPICAL PROPERTIES

Description	Mean Flow Pore Size (Microns)	Polymer	Auto-clavable	Max. Temp.	Surface	Flow Rate** Air (1)	Flow Rate** Liquid (2)	Thickness (Microns)	B.P. Kerosene	B.P.‡ Water
Triacetate Metricel										
GA-1	5		Yes	150°C	Smooth	20.0	320	140	8″ Hg	8 psi
GA-3	1.2		Yes	150°C	Smooth	18.0	285	140	13″ Hg	11 psi
GA-4	0.8	Cellulose	Yes	150°C	Smooth	13.5	220	140	15″ Hg	14 psi
GA-6	0.45	Triacetate	Yes	150°C	Smooth	6.6	70	140	28″ Hg	22 psi
GA-7	0.3		Yes	150°C	Smooth	4.2	40	140	19 Psi	35 psi
GA-8	0.2		Yes	150°C	Smooth	3.9	30	140	24 psi	50 psi
GA-9	0.1		Yes	150°C	Smooth	1.5	4	140	50 psi	100 psi
P.E.M.	0.0075		Yes	150°C	Smooth	N/A	N/A	100	N/A	N/A
Colored Metricel										
Green-4N	0.8	Cellulose	Yes	125°C	Smooth	13.5	220	140	15″ Hg	14 psi
Green-6N	0.45	Esters	Yes	125°C	Smooth	6.6	70	140	26″ Hg	20 psi
Black-4N	0.8		Yes	125°C	Smooth	13.5	220	140	15″ Hg	14 psi
Black-6N	0.45		Yes	125°C	Smooth	6.6	70	140	26″ Hg	20 psi
Alpha Metricel										
Alpha-6	0.45	Regenerated	No	175°C	Smooth	6.6	150 (3)	120	28″ Hg	N/A
Alpha-8	0.2	Cellulose	No	175°C	Smooth	3.9	65 (3)	120	22 psi	N/A
Vinyl Metricel										
VM-1	5		No	68°C	Smooth	40.0	700	140	5″ Hg	5 psi
VM-4	0.8	Vinyl	No	68°C	Smooth	13.5	220	140	15″ Hg	15 psi
VM-6	0.45		No	68°C	Smooth	6.6	70	140	28″ Hg	27 psi
Acropor										
AN-3000	3	Acrylonitrile	Yes***	125°C	Pattern	23	300	140	3½″ Hg	3 psi
AN-1200	1.2	Polyvinyl-	Yes***	125°C	Pattern	20	240	140	7″ Hg	5 psi
AN-800	0.8	chloride	Yes***	125°C	Pattern	13	140	140	12″ Hg	8 psi
AN-450	0.45	Copolymer	Yes***	125°C	Pattern	6	70	140	24″ Hg	15 psi
AN-200	0.2		Yes***	125°C	Pattern	2.5	20	140	36″ Hg	35 psi
ANH-450	0.45		Yes***	125°C	Pattern	6	N/A	140	24″ Hg	N/A
(All Acropor grades listed, reinforced with nylon fabric)										
Epoxy Versapor										
6424	5	Epoxy Glass	Yes	200°C	Rough	24	350	450	3½″ Hg	N/A
6429	0.9		Yes	200°C	Rough	16	70	450	6″ Hg	N/A
Glass Fiber										
Type E	*99.95 DOP	Glass/Acrylic	Yes	230°C	Rough	30	490	450	3½″ Hg	3 psi
√ Type A	*99.95 DOP	Glass	Yes	480°C	Rough	30	490	450	5″ Hg	4 psi
Polypropylene	10	Polypropylene	Yes	120°C	Rough	40	700	200	N/A	25″ H_2O

*Pore Size designation is inappropriate-tested to retain 99.95% DOP at face velocity of 5 cm/sec.
(1) liters/min/cm² at a differential pressure of 70 cm Hg
(2) ml/min/cm² at a differential pressure of 70 cm Hg
(3) swells in water—liquid flow stated is for acetone

**Refer to flow rate charts for rates with Gelman filter holders
***Autoclavable in filter holder.
‡ 1 atm = 14.7 psi
Normal filtration exposure at room temperature, 25°C.
N/A = Not Applicable

Air Flow Key	Filter
1	Polypropylene, VM-1
2	Type A, Type E
3	Versapor 6424, AN-3000
4	GA-1
5	GA-3, AN-1200
6	GA-4, Green-4N, Black-4N, VM-4, AN-800
7	GA-6, Green-6N, Black-6N, VM-6, AN-450, Alpha-6, Versapor 6429
8	GA-7
9	GA-8, Alpha-8, AN-200
10	GA-9

AIR FLOW RATES

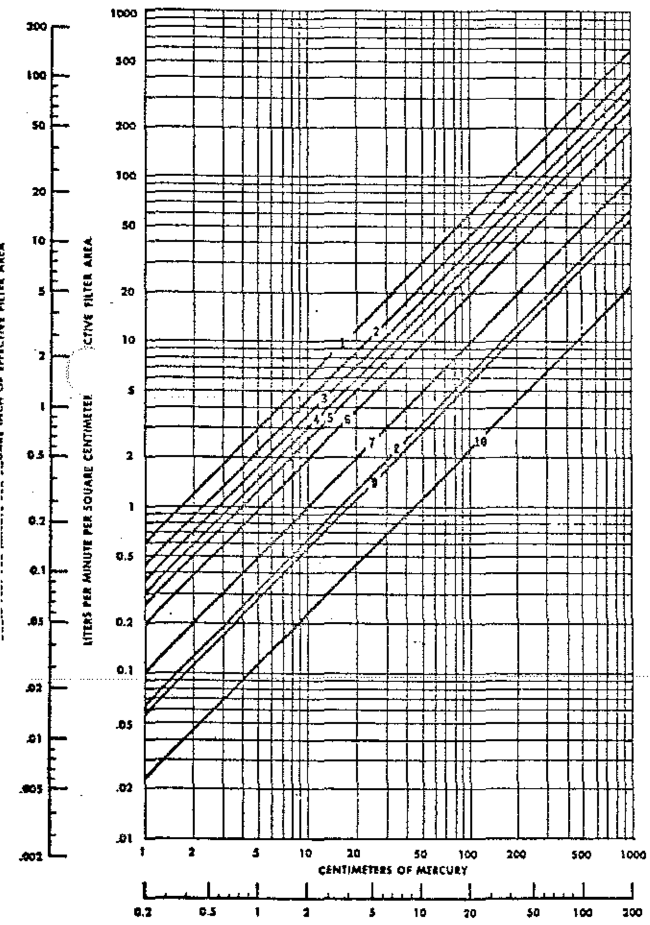


Figure 1.

EFFECTIVE FILTRATION AREA GELMAN FILTER HOLDERS

Filter Holder	Cm²	In²	Ft²
25 mm	2.8	0.44	—
47 mm	9.6	1.5	—
102 mm	61	9.4	0.065
142 mm	125	19.4	0.135
293 mm	605	93.8	0.65
8" x 10"	406	63	0.44

Table 1

HOW TO DETERMINE FLOW RATES FOR GELMAN FILTER HOLDERS WITH GELMAN FILTERS

1. Use charts to determine the flow rate for a filter at a particular psi. Figure 1 refers to air flow rates only. Figure 2 applies to water flow rates only.
2. Refer to Table 1 for the effective filtration area of the filter holder.
3. Multiply the flow rate by the effective filtration area of the filter holder.
   Note: For filter holders with effective filtration areas of 13 cm^2 or less (47 mm and 1" holders), divide this result by 2 to compensate for the effect of the filter holder on flow.
4. The result will be approximate initial flow rate for clean air or water through the filter. A progressive reduction of flow rate due to filter clogging by fluid contaminants should be expected.

See examples for water flows on page 64.

* Flow rates on chart refers to clean air at 25° C.

APPENDIX H

(a) Georgia Pacific Corporation

(b) Weyerhaeuser Company

(c) American Can Company

(d) Crown Zellerbach Environmental Services

(e) State of Washington

GEORGIA-PACIFIC
CORPORATION
PAPER DIVISION–TOLEDO
P.O. BOX 580 • TOLEDO, OREGON 97391 • 503-336-2211

December 29, 1972

Mr. L. B. Day,
Director,
Department of Environmental Quality,
1234 S. W. Morrison St.,
PORTLAND, OREGON 97205

Dear Mr. Day:

This letter is being submitted as additional comment on the proposed revised Kraft Mill Regulation, specifically in regard to Paragraph A8 (Particulate Definition).

At the Environmental Quality Control hearing in Salem last week, this item was criticized as being lenient and at variance with the EPA test methods. The critics should be made aware that in the Federal Register, Vol. 36 #247 (December 1971) the EPA Method #5 for particulate was modified and is virtually identical to the definition in Paragraph A8. This was done because of serious questions as to the validity of the original method. The definition in the proposed regulation and the modified EPA method defines particulate so that the measured quantity is what the control devices are designed to handle. There is no need to alter Paragraph A8. Furthermore, it should be noted that this method is MORE restrictive than the sampling originally performed to establish the regulation.

Yours truly,

Howard M. McDowell

Howard M. McDowell
Technical Director

HMM:TB
cc: C. R. Shaw
Matt Gould
Andre Caron - NCASI

#3

Weyerhaeuser Company

Tacoma, Washington 98401
(206) 924-2345

December 28, 1972

Mr. L. B. Day, Director
Dept. of Environmental Quality
State of Oregon
1234 S. W. Morrison Street
Portland, Oregon 97205

Dear Mr. Day:

This letter supports the new definition of particulate as proposed in the new Kraft Mill Standards.

The proposed definition specifies the sampling method on which the 4 lb./ton limit was developed and measures only solid particulate at stack conditions. Monitoring results will not be influenced by varying amounts of interfering gases or liquids present in the stack stream.

In order to guarantee performance of equipment precipitator manufacturers need a specification based on solid particle emissions. They cannot cope with the vagaries of the old definition. The wording of the particulate definition will not change the character of the particulate issuing from the mill stack. It does not reflect a loosening of the limits imposed.

At the level of 300 ppm SO_2 or less, sulfuric acid mist in the stack should be minimal - certainly less than any other industrial stack operating under a 1000 ppm limit. If the Special Studies called for in the proposed regulation should reveal significant new information regarding the effect of SO_3 and H_2SO_4, then new parameters could be established.

The argument that a precedent will be set for the aluminum and sulfite pulping industries is not relevent here. We are measuring kraft emissions and our system must be specific for kraft.

In any event, monitoring data should reflect the actual stack emission. The new definition simplifies an already difficult monitoring job and is specific for solid particulate.

Sincerely,

W. J. Hall

W. J. Hall
West Coast Director,
Environmental Resources

mhh

American Can Company

Thomas W. Orr, Manager

Box 215, Halsey, Oregon 97348

December 29, 1972

Mr. L. B. Day, Director
Department of Environmental Quality
Terminal Sales Building
1234 S.W. Morrison Street
Portland, Oregon 97205

Dear Mr. Day:

This letter is offered as a statement in support of the definition of particulate matter in the revised Kraft Mill Regulation to be considered for adoption at the January meeting of the Oregon Environmental Quality Commission.

Our reasons for this support are as follows:

1. The definition is in keeping with the method prescribed for the measurement of particulate emissions from new stationary sources for which the EPA has recently adopted standards;

2. To the best of our knowledge electrostatic precipitator manufacturers will accept the above technique for certification of performance guarantees;

3. Special studies are provided for in this regulation to determine the significance of material captured by wet impingement;

4. Results from the above (3) will allow the Commission Staff to adopt regulations on a sound technical basis, specific to emissions from the recovery furnace capturable by wet impingement, if necessary.

To assure compliance with the special studies provisions of this regulation, American Can Company, Halsey, has ordered the specialized stack sampling equipment required. Furthermore, the Technical Staff will cooperate with the Industry's effort along these lines, as it has in the past.

Despite the Halsey mill being considered one of the most advanced mills in the country, it is felt the proposed regulations will be difficult to attain and will probably require additional pollution abatement equipment.

Finally, we appreciate this opportunity to comment on the testimony presented at the Public Hearing of December 21, 1972.

Very truly yours,

TW Orr

/cs

Thomas W. Orr

cc:
Mr. J. Weathersbee - Deputy Director, Environmental Quality
Mr. H. M. Patterson - Chief, Air Quality Division

CrownZellerbach
Environmental Services

December 27, 1972

Mr. L. B. Day
Department of Environmental Quality
1234 S. W. Morrison Street
Portland, Oregon 97205

Dear Mr. Day:

Enclosed is a report prepared by Dr. J. E. Walther, which summarizes some of our experiences with particulate matter sampling. Dr. Walther has extensively surveyed all of our kraft and sulfite mills which included some 10 recovery furnaces. Our work has shown that there are significant interferences when using the wet train sampling procedure most of which result from conversion of gaseous compounds to particulate matter. It appears to us that a particulate method should measure solid particulate matter with a minimum of interference. The problem is further complicated by the fact that precipitator manufacturers refuse to bid on the basis of the wet train sampling procedure. This is to be expected since a precipitator is not expected to remove gases.

We hope the attached information will be useful to you and the Commission in the formulation of meaningful kraft mill emission regulations.

Sincerely yours,

Herman R. Amberg

HERMAN R. AMBERG/ea

Director,
Environmental Services

Attachment

Tel. (206) 834-4444
Camas, Washington 98607

Statement Submitted to

Oregon Environmental Quality Commission on

"Proposed Revised Kraft Mill Emission Regulation",

OAR Chapter 340, Sections 25-155 to 25-195

Prepared By: Dr. James E. Walther
Environmental Services
Crown Zellerbach Corporation
Camas, Washington 98607

Date: December 27, 1972

INTRODUCTION

At the December 21, 1972, Environmental Quality Commission meeting on proposed new regulations pertaining to kraft pulp mill atmospheric emissions, questions concerning the proposed definition of particulate matter were raised by other regulatory agencies. The following technical statement is submitted in support of the proposed particulate regulation:

SUMMARY

The definition of particulate in the proposed regulation prescribes the method of measuring dust emissions. A similar method has been the standard procedure endorsed by the ASME for measuring dust emissions. The basis for the original kraft mill regulation for particulate was based on a solid filtering method. This method has been updated to specify a filter which will recover 99.9% of dust particles greater than a 0.3 micron diameter. The method is similar to the EPA method required for measuring dust emissions in the 1972 regulation for new source power combustion processes. Also the technique of measuring particulate by filtering on a 0.3 micron glass fiber filter is identical to the method for obtaining ambient suspended particulate matter.

The proposed definition of particulate minimizes the known and documented interferences in the wet impinger method from sulfur dioxide and sulfur trioxide. Data is submitted to show the effect of this interference for kraft recovery furnaces, sulfite recovery furnaces, hog fuel furnaces and lime kilns. Further data will be developed in the special studies program. The interference of hydrocarbon vapor condensation in the wet train which does not occur in the ambient atmosphere is also eliminated by the filter method. Specific regulations for sulfur oxide and hydrocarbon emissions exist and should not be part of a particulate regulation.

The elimination of confusion about a sampling method should promote better selection of control equipment with safeguards to the buyer. Precipitator guarantees had been based on the proposed particulate definition. The confusion on testing methods has resulted in the present situation where equipment suppliers will not guarantee performance. The enclosed document from Joy Manufacturing Company states that no guarantees were available for new generation "low odor" recovery furnaces. Older conventional recovery furnace precipitators can be guaranteed only if the method proposed in the regulation is used.

Recent communication with the EPA has indicated that no particulate regulations for kraft mill new source standards will be proposed until further information is available.

The pulp and paper industry through the National Council for Air and Stream Improvement and the Northwest Pulp and Paper Industry is engaged in evaluating particulate methods. The data collected will be available for the special studies section of the proposed regulation.

DISCUSSION

The definition of particulate in the proposed regulation prescribes the method of measuring dust emissions. There have been two major methods of determining source particulate: an instack or heated filter method endorsed by the ASME and all precipitator companies, and methods which use water impingers (scrubbers) in the sampling train to recover particles. The wet impinger method was developed in the Los Angeles Air Pollution Control district. It should be noted that combustion sources in that area do not contain sulfur oxides. A third method developed by the EPA includes both the 0.3 micron filter and the wet impingers.

The 0.3 micron filter developed for this application has a collection efficiency of 99.9 percent for 0.3 micron particles and of course, has a high efficiency for smaller particles. It has been used in ambient methods to collect the smallest particle sizes when a distribution of particles is desired. The 0.3 micron fiberglass filter is used in the determination of suspended particulate matter for ambient testing.

The method selected to determine source particulate for EPA new source standards for power generation combustion processes was only the filter part of the sampling train. Almost six months investigation of the method was made before the method was adopted in 1972. Primary reasons for not including the wet impingers are: (1) sulfur trioxide is collected and weighed as particulate, (2) chemical reactions occur in the impinger which do not occur in the stack or in the atmosphere, (3) sulfur dioxide is catalyzed by metallic salts to form sulfur trioxide and sulfuric acid, and (4) hydrocarbon vapors are condensed which would remain as a vapor in the atmosphere. These interferences are found in pulp mill sources such as kraft recovery furnaces, sulfite recovery furnaces, hog fuel furnaces burning oil and lime kilns which have sulfur dioxide emissions. Therefore, when sulfur oxides are present, particulate should be measured by the filter method.

Examples of the interference of sulfur dioxide are shown in Table I. In all of these sources sulfur dioxide concentrations were in the 200 to 300 ppm range and sulfur trioxide less than 10 ppm. Analysis of the wet impinger catch after the filter indicated no metal ions and almost all sulfate ions. Heating the solution to 500° C. resulted in almost complete loss of solids indicating the material was sulfuric acid. The use of a filter minimizes but does not eliminate the interference of sulfur dioxide on the particulate testing method.

Data collected by R. Schmall of the NCASI at Port Townsend is shown in Table II. This data indicates that the impinger catch after a filter is primarily sulfuric acid produced in the train from sulfur oxides. It also indicates that the filter contains sulfuric acid equivalent to about 0.4 lb/ton. This could result from sulfur dioxide conversion or from collection of sulfur trioxide on the filter. The interferences of using an impinger or a filter at a temperature below the stack temperature is shown by these examples.

Other interferences with the wet impinger method have been found. Sulfur dioxide reacts with sodium carbonate to form sodium sulfate. In dissolver vents carbon dioxide can react with sodium sulfide and sodium carbonate to form a heavier particle of sodium bicarbonate or carbonate. Similar reactions in the impingers can occur in the lime kiln. These interferences can be minimized by using a filter method of analyses.

The attached letter from Joy Manufacturing Company states that they will no longer submit proposals for precipitators for new generation "low odor furnaces" since they cannot guarantee their performance. For conventional furnaces, the precipitator guarantee is based on a filter method of analysis.

JEWalther

TABLE I

PARTICULATE EMISSIONS FROM SOURCES WITH SULFUR DIOXIDE

Method: Wet Impinger

Source	Dust Emissions, lb/ton pulp: Total Catch, 105° C. Wet Impinger	Dust Emissions, lb/ton pulp: Total Catch[(1)] Dried at 500° C.
Wauna Recovery Furnace	4.5	3.0
Port Townsend Recovery Furnace	10 to 20	2.0
Camas Lime Kiln	1.5	0.9
Camas Magnefite Furnace	5.0	3.0

Method: Filter Plus Impinger

	Dust Emissions, lb/ton pulp: Filter, 105° C.	Dust Emissions, lb/ton pulp: Filter Plus Impingers, 105° C.	Dust Emissions, lb/ton pulp: Filter Plus[(1)] Impingers, 500° C.
Wauna Recovery Furnace	3.1	5.0	3.2
Port Townsend Recovery Furnace	1.6	2.0	1.6
Camas Magnefite Furnace	2.0	4.0	2.1
West Linn Hog Fuel Furnace, *gr/SDCF	0.11	0.27	0.12

(1) Loss of weight on drying dust at 500° C. is an indication of sulfur oxides captured in impinger.

TABLE II

PORT TOWNSEND RECOVERY FURNACE EMISSIONS*, gr/SDCF (0.10 gr/SDCF = 4.0 LB/TON)

Method: Filter Plus Impingers

Run No.	1	2	3	4	5	6
Filter, 105° C.	0.125	0.223	0.214	0.203	0.039	0.039
Filter Wt. Loss on Drying at 400° C.	0.008	0.010	0.008	0.010	0.007	0.008
Impingers, 105° C.	0.012	0.012	0.009	0.008	0.006	0.008
Impinger Catch Loss at 400° C.	0.011	0.011	0.007	0.005	0.003	0.007
% Loss of Total Catch on Drying at 400° C.	15	10	7	8	25	38

*NCASI data recorded by R. Schmall, November 27, 1972, filter maintained at 250°F.

WESTERN PRECIPITATION DIVISION
JOY MANUFACTURING COMPANY
1000 WEST NINTH STREET
P. O. BOX 2744, TERMINAL ANNEX
LOS ANGELES, CALIFORNIA 90051
Phone: (213) 627-4771

November 28, 1972

Crown Zellerbach Corporation
Central Engineering
6363 Airport Way South
Seattle, Washington 98108

Attention: Mr. W. G. Lowe

Subject: NO. 4 RECOVERY BOILER
CAMAS, WASHINGTON
YOUR C E D FILE 1442
OUR REFERENCE RP-8216

Gentlemen:

Our letter of January 21, 1972 and October 23, 1972 submitted budget pricing information for precipitators for 99.5% collection efficiency. On November 1, 1972 your Mr. Nick Elia phoned our office and requested price information for a 95% collection efficiency precipitator (to precede a scrubber).

The purpose of this letter is to apologize for the slow response to your latest request and to explain the reason for this delay.

A review of the operation of electrostatic precipitators on low-odor recovery units has indicated that almost without exception the effluent from this type of recovery unit has a detrimental effect on the electrostatic process beyond reasonable predictability.

Western Precipitation always stands behind their performance guarantees. Since we are unable at this time to predict with sufficient certainty the performance of the precipitator for this application we have no alternative but to decline to submit proposals.

Crown Zellerbach is a valued customer of many years and we are taking this action very reluctantly. We hope you will understand that we do so in our mutual interest.

Very truly yours,

JOY MANUFACTURING COMPANY
Western Precipitation Division

J. D. Koehr

December 28, 1972

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JAN 2 1973
AIR QUALITY CONTROL

State of Washington
Department of Ecology

Mr. B. A. McPhillips, Chairman
Environmental Quality Commission
P. O. Box 571
McMinnville, Oregon 97128

Dear Mr. McPhillips:

This letter concerns my testimony before your commission on revisions to the kraft mill emission regulation, heard on December 21, 1972 in Salem, Oregon. You have held the hearings record open for additional written testimony with respect to certain objections about the proposed change in the definition of particulate matter, section A., 8, in the November 14, 1972 draft.

At the request of Storrs S. Waterman member of the Commission, I am attaching my letter of October 18, 1972 to Jack Weathersbee and also a copy of James P. Behlke's letter of December 21, 1972 to L. B. Day, which summarizes the State of Washington's position on this matter.

Andre L. Caron of the National Council of the Paper Industry For Air and Stream Improvement testified at your hearing that the Battelle Memorial Institute of Columbus, Ohio has been doing fundamental work on the question of impinger particulates. I understand that their work is being carried out under the direction of D. B. Harris, EPA project officer, Division of Control Systems, Room L-315 Technical Center, Research Triangle Park, North Carolina 27711. The grant number is EHSD-7129. Their work was carried on to elucidate the role of the sulfur dioxide in generating artifical particulate in the impingers following a heated glass fibre filter. Although this work was primarily concerned with power boilers, I believe their findings would have a significant bearing upon the Commission's decision with respect to the definition of particulate matter, and I would urge that every effort be made to secure their findings prior to making your decision.

A brief summary of my testimony given orally also follows:

I. Effects of Redefinition

1. It may sanction the establishment of a separate sulfuric acid emission standard when we believe all solid and liquid matter should meet the 4 pound per ton emission standard for recovery furnaces.

Department of Ecology

2. It may weaken the incentive to perform the necessary studies because few industries will spend research money that may require additional control, unless they are actually faced with control requirements. It seems highly possible that the Special Studies approach to the question will result in little or no conclusive work two years from now.

3. This may set an unfortunate precedent for other industries such as the sulfite pulp and aluminum mills.

II. Control Implications

Although I agreed that the present definition of particulates may require scrubbers after electrostatic precipitators for new generation recovery furnaces, I felt that the industry would first attempt to lower sulfur oxide generation in the furnace itself as an alternative to scrubbers. As evidence of this, I submitted the work of C. J. Lang et al "Recovery Furnace Operating Parameter Effects on SO_2 Emissions" presented at the Alkaline Pulping Conference, Memphis, Tennesee, September 11 - 14, 1972.

In addition I stated that from our experience at Weyerhaeuser Company's Everett kraft mill, scrubbers after electrostatic precipitators are not such a disaster from the standpoint of plume rise and visibility.

Sincerely,

James C. Knudson

James C. Knudson
Central Operations Division

JCK:dn

cc: Clint Ayer, D.E.Q.
Vic Prodehl, MWAPCA, Salem
Ben Eusebio, Region X, EPA
Attachments (2)

To: HMP

December 21, 1972

State of Washington
Department of Ecology

Mr. L. B. Day, Director
Department of Environmental Quality
State of Oregon
Terminal Sales Building
1234 S. W. Morrison Street
Portland, Oregon 97205

Dear Mr. Day:

This letter will constitute the State of Washington's response to your public hearing on Revised Regulations for Kraft Pulp Mills. Although this Department complements the State of Oregon for progressive and forward looking revisions to the total reduced sulfur standards, I would like to re-emphasize concern over the definition of particulate matter expressed by my staff on numerous prior occasions, including J. C. Knudson's letter of October 18, 1972 to Mr. Weathersbee. It is this Department's belief that a redefinition of particulate matter to include only solid compounds caught on a heated glass fiber filter and excluding wet impingers, is done prematurely and without the necessary facts to make it a scientific judgment. Your redefinition which excludes particulate matter under 0.3 microns in size whether solid or liquid, and compounds condensed between 600°F. and 70°F. actually relaxes the particulate emission standards for the recovery furnace, lime kiln and smelt tank established jointly by the 1969 Washington-Oregon regulation.

This is not to deny that real questions have been raised about the interaction of gaseous pollutants with collecting media employed in the EPA source sampling train. If subsequent studies now being considered by the National Council on Air and Stream Improvement and the Environmental Protection Agency are successful in demonstrating such effects and in devising source test methods to account for the same, we intend to make such revisions as necessary to the State of Washington source test methods.

Until such time, we urge that the present definition of particulate matter, "a small discrete mass of solid or liquor matter but not including uncombined water," be retained and employed until the facts establish otherwise.

Sincerely,

James P. Behlke
Executive Assistant Director
Public Services Branch

JPB:dn

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item No. I , January 26, 1973, EQC Meeting

Field Burning in the Willamette Valley 1972, Report

Background

The summer of 1972 marked the sixth season that Field Burning in the Willamette Valley has been controlled by Oregon Laws and Administrative Rules. The first law went into effect on July 19, 1967. The current regulations, OAR, Chapter 340, Section 26, Agricultural Operations, have governed field burning for the past two seasons.

Discussion

The report reviews the operation and results of the 1972 summer burning season in which 270,000 acres of grassland were burned, which is comparable to the 260,000 acres burned in 1971. Visual measurements of air quality indicate that the Willamette Valley was smokier during the 1972 field burning season than it was during 1971. From an analysis of the season it is concluded that field burning did not significantly contribute to this increase in smokiness.

There were 369 complaints about field burning in 1972, continuing the annual decline from a figure of 5142 complaints in 1969.

TELEPHONE: (503) 229-5696

A high degree of cooperation among growers, fire permit agents, State Fire Marshal and Oregon Seed Council has significantly contributed to a successful season.

Conclusions

It is concluded that the program has been successful in managing field burning in a manner to minimize the visual impact of smoke in the larger population centers of the valley. Smoke in the valley will continue to be a problem as long as field burning continues.

The present program of control is deemed to be adequate until field burning is terminated on January 1, 1975 and no changes are recommended in the interim. This report is submitted for information purposes only and no action is requested.

EJWeathersbee

E. J. Weathersbee

LDB:sb
January 15, 1973

FIELD BURNING

In The

WILLAMETTE VALLEY 1972

Department of Environmental Quality
Air Quality Control Division
January 15, 1973

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FIELD BURNING IN THE WILLAMETTE VALLEY

1972

INTRODUCTION

This is the sixth annual report on agricultural field burning in the Willamette Valley. The 1972 operational program results are presented and analyzed.

The 1971 Field Burning Report provided a detailed description of the program operation under the current regulations and 1969-1971 legislation.

The information in this report provides 1972 seasonal statistics with comparisons made to operations for prior years.

SUMMARY

Environmental Quality Commission regulations, OAR Chapter 340, Division 2, Subdivision 6, Agricultural Operations, operated unchanged during 1971 and 1972. The regulations establish a plan for the management of field burning in the Willamette Valley to minimize the effect of smoke emitted from burning.

Cold wet weather in the early spring of 1972 delayed early development of the grass crop. By late July, the weather had turned hot and dry so that the fields were harvested and ready for a normal burning period from August 1st to October 1st.

Some major statistics from the field burning program:

	1971	1972
Acres registered	286,000	277,000
Acres burned	260,000	270,000
Burning days available		
August & September		
North Valley	19	16 1/2
South Valley	10	11
Quotas available		
August & September		
North Valley	34	33
South Valley	27 1/2	27
Smoky days in valley		
August & September		
Salem	11	17
Eugene	7	13
Field burning smoke complaints	785	369

Visual air quality observations in the valley indicate that overall the 1972 season was smokier than the 1971 season. It is concluded, however, that field burning did not significantly contribute to this increase.

During the summer the State Fire Marshal prohibited burning during ten days because of high fire hazard conditions. This resulted in a burning prohibition on some days when agricultural burning would have otherwise been allowed. From August 1st to September 8th when most of the burning was accomplished, South Valley burning of regular acreage was allowed on only six days that could be fully utilized by the growers, nevertheless burning opportunities during the season were sufficient to allow all of the registered fields to be burned.

Of the 270,000 acres of grassland burned in the Willamette Valley during 1972, more than 80% was burned from August 12th through September 8th.

Field burning complaints continued the annual decline from the high of 5142 in 1969 to 1733 in 1970, 785 in 1971 and to 369 in 1972.

Operational communications were improved over previous years by installation of an extensive radio network provided by the Oregon seed Council. All points of the network could communicate with a base station located in Salem.

A high degree of cooperation among growers, fire permit issuing agents, the State Fire Marshal and the Oregon Seed Council contributed to the successful operating season.

The Field Burning Committee which was legislatively established in 1971, continued in operation during 1972. The Committee met monthly during the year and extensively reviewed field burning alternatives and progress on the mobile field sanitizer. At the year's end the Committee was considering the provision of funds to further develop two competing designs for a mobile field sanitizer.

No commercial alternatives utilizing straw have been developed although interest by Japanese companies enabled the initiation of pilot straw densification programs.

Smoke will continue to be a problem somewhere so long as open burning as now practiced is continued. The Department of Environmental Quality remains committed to the policy that smoke management can only be an interim solution and must be replaced by a suitable alternative as soon as practicable.

No changes in the Department regulations for field burning are recommended for the 1973 season.

CONDUCT OF THE 1972 SEASON

Burning quotas were assigned to each fire district which had acreages to be burned and are listed in the Appendix Table III. These quotas are incremental maximum daily burning limitations on each fire district and are based upon the registered acreage in the fire district. They are adjusted each year as permitted by OAR, Chapter 340, Section 26-015 (2) (d). At the beginning of the 1972 season, quotas were based upon the 1971 registration figures. In some fire districts there was a change in the registered acreage between 1971 and 1972. Therefore, after the 1972 registration figures were known, quota adjustments were made for three fire districts to reflect the 1972 registered acreages.

Several agencies and groups are involved in a mutually cooperative effort to insure the successful conduct of a burning program. The groups having significant roles in the management of field burning are:

1. The growers and their representatives, primarily the Oregon Seed Council.
2. Fire Services Agencies, including state, county, and local organizations.
3. The Department of Environmental Quality. (DEQ)

Since the program objective is to effectively manage the impact of field fire smoke by controlling the time, location, and acreage of fields burned at one time, there can be little doubt that the program effectiveness depends to a major degree upon the liaison relationship between the growers and the fire permit issuing agents. Without full cooperation, a successful season would be impossible.

During May and June of 1972, several planning meetings sponsored by the Oregon Seed Council were held with the Willamette Valley fire chiefs, Seed Council and DEQ representatives to coordinate the various group efforts for the 1972 burning season.

As in previous years the Oregon Seed Council arranged for use of the "Skywatch" aircraft, financed by their allotted portion of the acreage burning fee.

This year the Seed Council expanded the size of the field burning radio network which they obtained by contract with the State Foresty Department. This network proved to be extremely helpful in coordinating the operational phases of the burning. It included more than 20 fire districts plus three mobile car radios, a "Skywatch" radio and a base station in the Seed Council office in Salem. The Salem base station greatly contributed to the network effectiveness because it was the only station which had contact with all other stations on the network. Messages could be relayed through the Salem station.

Each Willamette Valley county had a grower field burning organization sponsored by the Oregon Seed Council. The purpose of this organization was to provide a county chairman who could be readily contacted and who had contact with the other growers in the county. One very useful function of these county organizations was to arrange test fire fields which could be burned on short notice at DEQ request to determine smoke plume behavior on indeterminate days.

The Seed Council also published several informative news letters to growers and fire chiefs early in the season.

Another Seed Council program provided a twice daily burning announcement (8:00 AM and 1:30 PM) over Willamette Valley commercial radio stations.

Fire district personnel registered the grower's fields and collected burning fees before issuing any fire permits as required by State Law. This task represents a considerable effort and one which required many districts to hire extra help during the burning season. Fire districts were helped financially by being provided with 10 cents per acre of the burning fee. $0.40 per acre of the burning fee was sent to the State Accounting Division for distribution to the State Field Burning Committee and the Seed Council.

It was the responsibility of fire chiefs to control the acreage burned in their respective districts as permitted by DEQ regulations and the burning classification announcements for each day. Fire districts were required to submit a weekly account of the field burning activity within their district to the DEQ.

The Department of Environmental Quality was responsible for the overall smoke management program control. The decision on how much burning to allow was made at least twice daily, at 6:45 AM and 12:45 PM. This decision was broadcast through the State Fire Marshal's office to Willamette Valley fire chiefs and was usually relayed through county fire dispatch centers. The decision was also put on a code-a-phone provided by the Seed Council for use with the announcements over public broadcasting media.

DEQ personnel were in the valley observing the progress of the burning every day burning was allowed. This close monitoring made it possible to issue extra quotas when acceptable and also to order a stop to the burning when necessary.

THE 1972 OPEN FIELD BURNING SEASON

1. Seasonal Conditions

Early spring weather conditions are concluded to have contributed to delayed development of early grass varities but late spring and early summer weather contributed to accelerated development of the later grasses. Published weather records for the month of April show that the Willamette Valley was wet and cool with temperatures 4 to 5 degrees cooler than normal while rainfall averaged 6.12 inches or 86% higher than normal. Temperature and precipitation were about normal for May. June and July were considerably dryer than normal. Temperatures gradually increased so that by the end of July the valley was warmer than normal. August was hot and dry and along with the first three days of September accounted for eight of ten days this year when burning was prohibited by the State Fire Marshal due to extreme fire danger. This sequence of weather had the effect of telescoping the harvest operations so that, except for Bentgrasses, most of the harvest was completed by mid August. Most grass fields were ready for burning during August and September, the normal time of the burning season.

By mid August few acceptable South burning days had been available putting South Valley burning somewhat behind the pace of prior years.

The 11 days of South Valley burning during August and September 1972, shown in Appendix Table II, seem to indicate a season comparable to the 10 days indicated for the same period in 1971. Examination of the daily burning classifications as listed in Appendix Table I show that not all of the South quotas issued could be fully utilized to obtain effective burns. South Valley quotas issued on August 13th and 21st were not fully utilized because unfavorable meteorological conditions required the termination of burning on those days. The growers could not utilize the South quota issued on August 17th because many fields were too wet to obtain effective burns. The period of September 8th through the end of the of the month was also too wet. Thus instead of the 11 days indicated by Appendix Table II, conditions for South Valley burning during 1972 were acceptable for all concerned only on the six days of August 12, 14, 15, 19 and September 4 and 5.

This information is illustrated by the Appendix Figure I, where daily burned acreages are graphed. The plot for the South Valley shows 7 days when more than 5,000 acres were burned. These are the 6 acceptable burning days already mentioned plus August 21st on which burning was terminated due to unfavorable meterological conditions.

A plot similar to Appendix Figure I published with the 1971 report, indicates 9 days during August and September when more than 5,000 acres were burned.

There were more suitable North Valley burning days distributed throughout the season so that North Valley burning opportunities never became a significant issue.

2. Burning Accomplished

Nearly 270,000 acres of grassland and stubble were reported burned in the Willamette Valley during the 1972 burning season, representing 97% of the 277,000 acres registered for burning during 1972. The acres burned each season for the past five years are listed in Table 1.

Table 1

ACRES OPEN BURNED IN THE WILLAMETTE VALLEY

Year	1968	1969	1970	1971	1972
Burned acreage	315,000	225,000	252,000	260,000	270,000
Registered acreage	-	-	-	286,000	277,000

No particular significance is attached to the apparent 1972 increase in acres burned. One explanation may be that the apparent increase is the result of improved reporting and data gathering, a constant objective of the Department of Environmental Quality and the Oregon Seed Council.

Registered acreage totals are available only for the last two years since the enactment of ORS 449.941 by the 1971 Legistature requiring registration and collection of burning fees.

There is no known clear explanation or any known significance to the 3% drop in registered acreage between 1971 and 1972. The Department attributes this drop to more realistic pre-season acreage estimates by growers this year compared to last year.

Although field burning in the valley was reported as being accomplished as early in the season as July 3rd and as late as October 24th, over half (52%) of all burning was accomplished from August 12th through August 24th with an additional 29% accomplished from September 4th through September 8th. The most acreage burned in the valley on a single day was over 39,000 acres reported for August 19th, of which 36,000 acres were located in the South Valley.

Burning in the North Valley was fairly evenly distributed on a daily basis between mid July and mid September, and only one day, August 23rd, accounted for as much as 7% of all North Valley burning.

As explained earlier, seasonal conditions provided fair opportunity for early season burning in North Valley areas but burning in South Valley areas was essentially prohibited until August 12th because of unfavorable wind and atmospheric conditions. The total acreage burned in the South Valley on the six days of August 12, 14, 15, 19 and September 4 and 5 accounted for 75% of all burning in the South Valley. By the end of August it was apparent that 60,000 acres or more remained to be burned in the South Valley.

Two South wind days occurred on September 4th and 5th which were suitable for multiple quota burning in the South Valley. Because of forecast meteorological conditions and the general lack of availability of South burning days during the season up to that time a decision was made to utilize September 4th for general South Valley burning despite the fact that it was a holiday. A similar decision was made on September 5th. A total of more than 48,000 acres was burned in the South Valley on September 4th and 5th. As it later developed, those days were the last opportunity for large scale South Valley burning before damp weather in early September greatly reduced the likelihood of obtaining effective field sanitizing and straw removal by burning. At the end of the season the Department concluded that there was a consensus amoung growers and fire permit agents that all of the required burning had been accomplished.

Since priority area burning can normally be accomplished on either North or South conditions, opportunities for priority area burning did not present any uncommon problems during the season.

Experience in prior years has shown that the total burned acreages reported at the end of the burning season can be expected to exceed the sum of the daily reported burned acreages. Improvement in the accuracy of the daily reporting records would correct this discrepancy. This can only be accomplished with the combined efforts of fire permit agents and seed growers.

The percentage figures and daily acreages discussed in this report were developed from the tabulated daily reported acreage burned presented in Appendix Figure I and Appendix Table 1. In considering the validity of these figures it should be recognized that the sum of the burned acreages reported on a daily basis does not equal the totals reported at the end of the season. This is particulary true in Polk County where only 59% of the acreage burned for the season was reported on a daily basis. The sum of daily acreage from Appendix Table I is 246,560 compared to the 270,000 acres burned and reported in Appendix Table III.

3. Air Quality

Meaningful measurements of air quality as related to field burning are difficult to obtain. Smoke is a "particulate" emission of extremely small particle size which manifests a very strong effect on visibilities. Results of normal particulate sampling do not show a useable correlation of the effect of field burning on visibility. Two possible reasons for this as discussed in previous reports are:

1. The smoke concentrations at the sampling site are too transitory to affect the sample collected during the required sample collection period.

2. The weight or mass of trapped material responsible for smoke-caused visibility reductions is small compared to the weight of other particulates measured by the sampling techniques.

Changes in particulate concentration measured on a day-to-day basis have not been found responsive to changes in smoke concentrations.

Surface visibility measurements appear to show the smoky effects of field burning better than any other readily obtainable observation and are used by the Department of Environmental Quality as the primary indicator to monitor the effect of field burning in the Willamette Valley. Other meteorological elements monitored are wind and the ability of the atmosphere to disperse smoke.

Visibilities at the Eugene and Salem Airports are reported regularly by the National Weather Service.

Reliable regular visibility observations from other parts of the valley are not available so that effects in other parts of the valley are not easily verified. Complaints from widely separated points in the valley indicate that visibilities often became restricted below seven miles in smoke. This may be considered a consequence of the smoke management plan. Smoke will continue to be a problem somewhere so long as large acreages and quantities of straw are open burned.

A simple review of the observations at Eugene and Salem summarized in Appendix Table IV leads to the conclusion that except for July 1972, smokiness increased over 1971. For the months of August and September the increase was from 11 to 17 days at Salem while at Eugene the increase was from 7 to 13 days. The increase during October was from 11 to 16 days at Salem and 3 to 19 days at Eugene. The Department concludes that this simple analysis does not properly represent the field burning program effect upon visibility in the valley as will be discussed later. One factor affecting annual comparisons is that climatology varies from year to year and it is not unusual to find accompanying differences in visibilities and smokiness in reported data. The Department is interested in the magnitude of the effect of field burning on the air quality (smokiness) at Eugene and Salem.

Statistical analysis of Appendix Table IV data was considered to be of little value because the available sample size is too small and the variation too great to yield useable results.

The Department of Environmental Quality investigated the circumstances surrounding each smoky period occurring during July, August and September 1972. Consideration was given to:

1. Timing of smoke observation and burning periods.

2. Relative locations of the burned areas with respect to the observation point and the prevailing winds at the surface and aloft.

Using these factors and the best judgement of the Department of Environmental Quality staff, each smoky period was classified to indicate the possible effects of field fire smoke on visibilities at Eugene and Salem. The results of this analysis summarized in Appendix Table V along with the totals for a similar analysis of 1971 data indicate that in 1972 field burning contributed to five smoky periods at Eugene and seven smoky periods in Salem. Based on this method of analysis it is concluded that days when field burning contributed to smokiness were not significantly more frequent during 1972 than in 1971. For smoky days not related to field burning, however, there appears to have been an increase in frequency, especially at Eugene.

Severe visibility restrictions (visibility less than 3 miles) were apparently avoided at Eugene while in Salem the July 19th visibility problems were associated with the start-up of an industrical chemical recovery plant and the September 30th problem was associated with a period of atmospheric stability during a time when field burning was prohibited.

The high incidence of smokiness during October may be attributed to the poor conditions for atmospheric ventilation which occured and the surface accumulation of smoke from many sources. Field burning was essentially completed earlier in the season so that during October the reported burning amounted to 1047 acres in the North Valley and 858 acres in the South Valley. This amount of burning would not be expected to have the massive effect indicated by the observed visibilities. Meteorological conditions significantly contributed to very poor air quality during October which is not unusual. Upper air ridging and surface high pressure dominated the weather patterns during the month creating long periods of poor atmospheric ventilation. The situation became severe enough to prompt the National Weather Services to issue two Air Stagnation Advisories (ASA's) covering Oregon areas, including the Willamette Valley, for the periods of October 16th through October 20th and October 30th through November 1st.

4. Complaints

Despite the smokiness which occured in the Willamette Valley during 1972 the total number of public complaints directed against field burning was down from previous years. A summary of these complaints is given in Table 2.

Table 2

FIELD BURNING COMPLAINT SUMMARY

Complaints Tabulated By	Year 1968	1969	1970	1971	1972
Dept. of Environmental Quality	11	1645	306	113	93
Mid-Willamette Valley APA	6	88	186	81	50
Lane Regional APA	127	3409	1241	591	226
Totals	144	5142	1733	785	369

It should be noted that Lane Regional Air Pollution Authority received more than 100 complaints concering the smoke problems which occured in Eugene on August 2nd. The remainder of their complaints were distributed throughout the season.

5. Overall Program Results

Available records indicate that seasonal burning acreages figures are corresponding fairly closely to the early season registered acreage totals. The 270,000 acres reported burned in 1972 is 97% of the 277,000 acres registered.

During 1972 visibility restrictions attributed to field burning occurred on 5 days in Eugene and 7 days in Salem. It is concluded that there is no significant difference from 1971 when 7 days occurred in Eugene and 6 days in Salem.

Meteorological conditions were considered to be within normal climatological expectations. This included a slightly lowered opportunity for South Valley burning than was experienced during previous years but did not prevent accomplishment of the necessary burning.

Improved radio communication provided by the Oregon Seed Council was an important and helpful contribution to successful program operation. Excellent cooperation between growers and fire permit agencies also contributed to the program success.

FIELD BURNING ALTERNATIVES

The State Field Burning Committee established pursuant to State Law has the responsibility for development of feasible alternatives to open field burning, giving first priority to the development of a mobile field sanitizer. Under the Committee's leadership, two companies each built a machine for testing in 1972, but the burning accomplished by these two machines was less than 100 acres.

One machine built by Rears Inc. of Eugene was financially supported by the committee and was built to committee specifications following the OSU design. The other machine was built entirely with private capital by Turbo Cycle Inc. The Committee has proposed to make modifications to these machines this winter and has plans for extensive testing during the 1973 season.

Other alternatives are being pursued but mostly in the area of straw removal and utilization, as it appears that the final solution will include some sort of straw removal to simplify the operation of a mobile sanitizer.

The Oregon Seed Council has a program to develop alternative solutions to open field burning. These efforts are taking shape mostly in straw removal and utilization techniques.

CONCLUSIONS

The smoke management program has been successful in continuing to minimize the field fire smoke contribution to smokiness as measured at the Salem and Eugene weather observation sites. Because burning is prohibited on days when ventilation is poor the entire valley benefits from the field burning management program. When mutiple quotas are issued for field burning, some areas of the valley may continue to experience a temporary heavy concentration of smoke on those days.

It is concluded that present legislation and regulations are adequate to control field burning for the remaining two field burning seasons. No changes are recommended.

APPENDIX

Figure I

1972 DAILY FIELD BURNING TOTALS AND RAINFALL

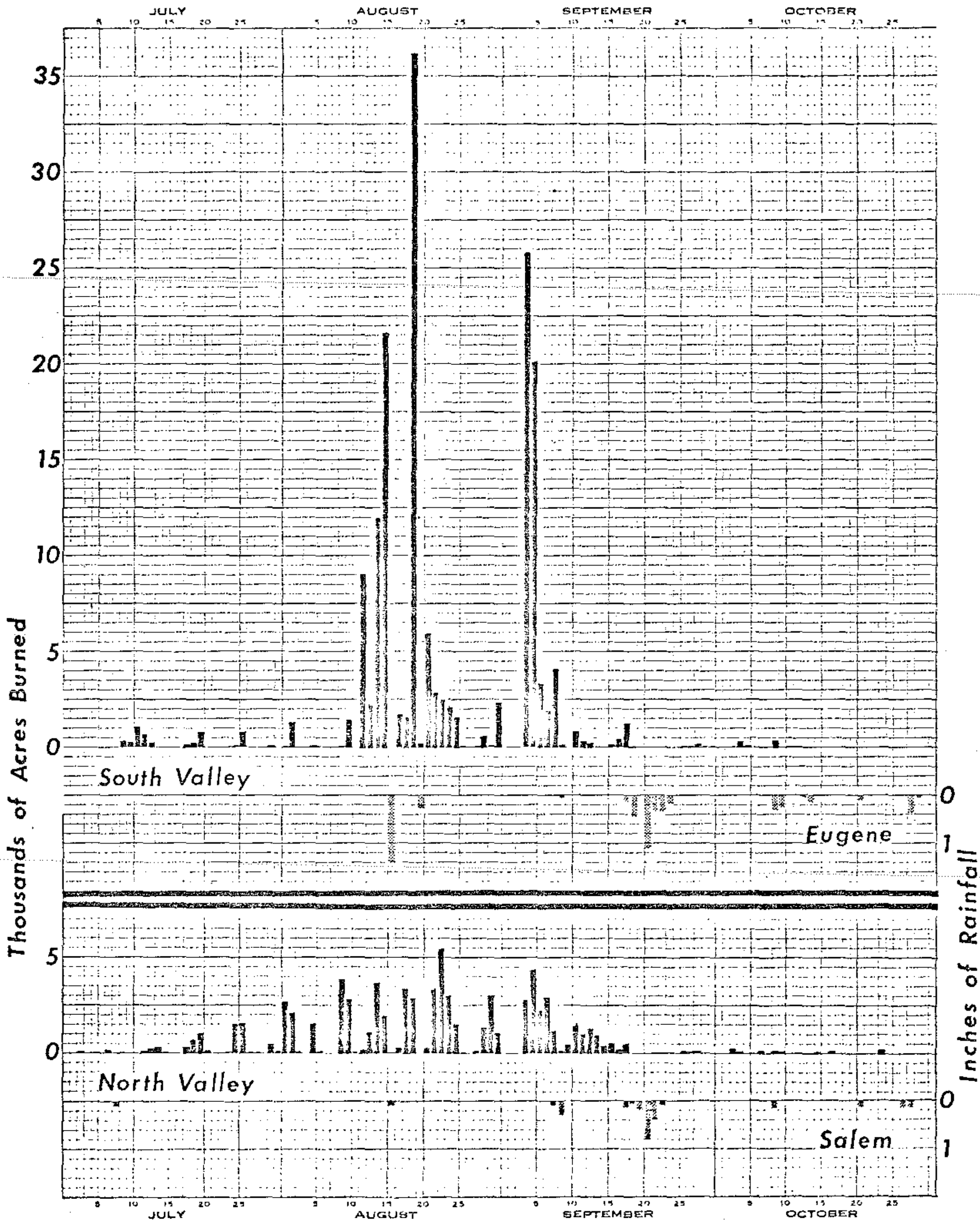

Table I

DAILY FIELD BURNING SUMMARY AND AIR QUALITY DATA

Explanation:

The data in Table I has been organized to facilitate observations at Eugene and Salem Airports. The average daytime visibility and minimum daytime visibility (excluding fog or precipitation cases) are listed for comparison with the number of smoky observations and smoke restrictions to visibility. Comparison with the analysis presented in Table V will further characterize specific smoky periods and their relationship to field burning.

Column Contents:

Column	Description
1	Date
2	Daily agricultural burning classification advisory and number of quotas released. Symbols used have the following meaning: P = Prohibition conditions. *P = Burning prohibited by State Fire Marshal because of high fire danger. N = Marginal conditions, Northerly winds. S = Marginal conditions, Southerly winds. NS = Indicates quotas issued for both North & South conditions. Numerals are the number of quotas released under N or S classification. "/" separates AM and PM classifications where a difference exists. If a second "/" appears, it denotes a change in the classification made during the afternoon.
3	Acres reported burned as indicated.
4 to 17	Apply to Eugene or Salem Airport weather station.
4 & 11	Recorded rainfall in inches at weather station. (T means trace)
5 & 12	Average hourly daytime visibility
6 & 13	Lowest daytime visibility when visibility was not restricted by fog or precipitation.
7 & 14	Number of hours during the day (24 hours) that smoke was observed.
9, 10, 11, 15, 16 & 17	Number of hours during the day (24 hours) where visibility was restricted by smoke only.

Table I

1972 Daily Field Burning Summary and Air Quality Data

(Acres Burned and Observations of Smoke and Visibility)

1	2	3		EUGENE DATA 4	5	6	7	8	9	10	SALEM DATA 11	12	13	14	15	16	17
JULY 1972	Burning Advisory and No. of Quotas (AM) / (PM)	Acres Burned South Valley	Acres Burned North Valley	Precipitation at Eugene Airport, (inches)	Avg. Vsby. (miles) 10 AM - 9 PM	Min. Vsby. (miles) 10 AM - 9 PM (excluding fog or precip. cases)	Hourly Obs. w/smoke in remarks; not necessarily restricting sfc. vsby.	# of hours Vsby. ≤5 mi. due to smoke only	# of hours Vsby. ≤3 mi. due to smoke only	# of hours Vsby. ≤1 mi. due to smoke only	Precipitation at Salem Airport, (inches)	Avg. Vsby. (miles) 10 AM - 9 PM	Min. Vsby. (miles) 10 AM - 9 PM (excluding fog or precip. cases)	Hourly Obs. w/smoke in remarks; not necessarily restricting sfc. vsby.	# of hours Vsby. ≤6 mi. due to smoke only	# of hours Vsby. ≤3 mi. due to smoke only	# of hours Vsby. ≤1 mi. due to smoke
1	N-1				40.9	30	5					50.9	30				
2	N-1				66.4	50	3					84.1	75				
3	N-1		50		70.0	70						86.4	75				
4	P				61.4	35						34.9	30				
5	P				53.6	50						28.2	20				
6	P				21.8	15						17.1	15				
7	P/N-1		129	T	45.2	10						20.5	15				
8	S-1			.02	20.5	15					.10	20.3	15				
9	S-1	315	8		67.3	50	2					29.1	20				
10	P/S-1	222			59.1	30	1				.02	13.2	10				
11	S-1	1106			68.2	60	5					38.6	15				
12	S-2	689	100		64.5	50	11					33.6	20				
13	P/N-1	228	239		57.3	30	7					45.9	30				
14	N-1		271		24.9	12	10					27.0	3	3	1	1	
15	P		25		50.0	30	14					37.7	15				
16	*P				51.8	20	11					59.5	30				
17	*P				45.9	15	11					59.5	30				
18	N-1/P	121	355		47.3	30	6					34.5	15				
19	N-1	232	689		41.1	10	15					39.1	15	7	4	1	1
20	N-2	786	1021		37.3	20	16					34.5	15	8			
21	P		109		41.4	25	7				T	35.0	15+				
22	P				30.0	20	3					29.1	15	1			
23	P				38.2	35	3					39.5	15+				
24	P		57		30.0	20	4					20.5	10				
25	P/N-1	45	1460		21.5	11	4					10.9	8	1			
26	N-1/P	758	1565		27.5	10	11					13.8	7	14			
27	P		20		30.5	20	13					31.8	30				
28	P		20		17.9	12	13					15.5	10				
29	P				47.3	30	4					54.1	20				
30	P/N-1	64	483		48.2	40	5					46.8	15				
31	P		111		21.4	15	4					19.1	15	5			
Totals		4566	6712	0.02			188	0	0	0	0.12			39	5	2	1

Table I (continued)

1972 Daily Field Burning Summary and Air Quality Data

(Acres Burned and Observations of Smoke and Visibility)

1	2	3		4	5	6	7	8	9	10	11	12	13	14	15	16	17
				EUGENE DATA							SALEM DATA						
AUGUST 1972	Burning Advisory and No. of Quotas (AM) / (PM)	Acres Burned: South Valley	Acres Burned: North Valley	Precipitation at Eugene Airport, (inches)	Avg. Vsby. (miles) 10 AM - 9 PM	Min. Vsby. (miles) 10 AM - 9 PM (excluding fog or precip. cases)	Hourly Obs. w/smoke in remarks; not necessarily restricting sfc. vsby.	# of hours Vsby. ≤6 mi. due to smoke only	# of hours Vsby. ≤3 mi. due to smoke only	# of hours Vsby. ≤1 mi. due to smoke only	Precipitation at Salem Airport, (inches)	Avg. Vsby. (miles) 10 AM - 9 PM	Min. Vsby. (miles) 10 AM - 9 PM (excluding fog or precip. cases)	Hourly Obs. w/smoke in remarks; not necessarily restricting sfc. vsby.	# of hours Vsby. ≤6 mi. due to smoke only	# of hours Vsby. ≤3 mi. due to smoke only	# of hours Vsby. ≤1 mi. due to smoke only
1	P/N-1	90	2697		18.5	10	6					19.7	10	6			
2	N-1/P	1476	2045		13.2	3	11	3	2			14.5	4	8	5		
3	P		80		13.9	5	13	3				10.5	3	10	8	5	
4	P				18.2	15	11					11.5	7	1			
5	P/N-1/P	70	1504		25.9	25	7					32.3	15	4			
6	*P		50		26.8	15	10					30.9	15				
7	*P				23.0	6	10	1				18.5	8	8			
8	*P				30.5	20						19.0	12				
9	P/N-2	94	4118		43.2	25	8					39.5	15	9			
10	P/N-1	1443	2959		41.8	20	12					17.3	10	12			
11	P		80		28.8	12	14					14.7	3	10	4	2	
12	P/S-1	9097	195		40.0	40	3					46.8	15				
13	S-1/P	2185	1123		23.3	7	15	1				34.1	15	6			
14	N-1/S-1	11954	3630	.02	32.5	15	10				T	28.2	15	4			
15	P/S-3	21582	2009	T	39.1	30	6				.02	22.7	15				
16	P		50	1.41	5.5	6	7	3			.12	7.5	6	3	2		
17	S-1	1614	277	T	62.7	40	5				T	26.8	15+				
18	N-1	1571	3357		19.1	8	1					14.9	5	6	3		
19	P/S-5 N-1	36166	3026		44.5	40	14					14.7	8	7			
20	P	170		.27	40.9	10	7					19.2	6	2	2		
21	P/S-1/P	5961	203		35.0	15	3				T	27.7	15	3			
22	P/N-3	2806	3314		37.7	15	9					31.4	15	5			
23	P/N-3	2476	5415		22.9	12	12					10.3	6	8	2		
24	P/N-2/P	2151	2992		13.7	5	12	1				17.6	7	7			
25	P/N-1/P	1564	1524		15.2	12	17					16.8	10	4			
26	P	30	32		15.4	7	10					22.3	15				
27	P				26.4	15	10					19.1	15				
28	*P	25	115		27.7	15	6					28.6	10	2			
29	P/(N-2)	566	1396		30.0	15	13					21.8	15	3			
30	P/N-1	60	3008		33.2	15	9					27.7	4	6	1		
31	P/N-1/*P	2341	1116		21.2	5	10	2				46.4	15+	3			
Total		105492	46315	1.70			269	14	2	0	0.14			137	27	7	0

Table I (continued)

1972 Daily Field Burning Summary and Air Quality Data

(Acres Burned and Observations of Smoke and Visibility)

1	2	3		EUGENE DATA 4	5	6	7	8	9	10	SALEM DATA 11	12	13	14	15	16	17
SEPTEMBER 1972	Burning Advisory and No. of Quotas (AM) / (PM)	Acres Burned South Valley	Acres Burned North Valley	Precipitation at Eugene Airport, (inches)	Avg. Vsby. (miles) 10 AM - 9 PM	Min. Vsby. (miles) 10 AM - 9 PM (excluding fog or precip. cases)	Hourly Obs. w/smoke in remarks; not necessarily restricting sfc. vsby.	# of hours Vsby. ≤6 mi. due to smoke only	# of hours Vsby. ≤3 mi. due to smoke only	# of hours Vsby. ≤1 mi. due to smoke only	Precipitation at Salem Airport, (inches)	Avg. Vsby. (miles) 10 AM - 9 PM	Min. Vsby. (miles) 10 AM - 9 PM (excluding fog or precip. cases)	Hourly Obs. w/smoke in remarks; not necessarily restricting sfc. vsby.	# of hours Vsby. ≤6 mi. due to smoke only	# of hours Vsby. ≤3 mi. due to smoke only	# of hours Vsby. ≤1 mi. due to smoke only
1	*P				20.5	15+	8					50.5	15				
2	*P				32.7	25	8					35.5	15+				
3	*P				41.4	25+	4					18.2	15				
4	P/S-5	28381	2711		33.2	25	7					17.7	15				
5	P/S-6/P	20046	4301	T	25.5	15	6				T	11.4	10	2			
6	P {NS-3 Priority Only	3374	2267		30.9	20	9				T	16.8	10	3	1		
7	P/N-2	1835	2937		39.3	12	19				T	22.7	15	2			
8	S-1	4070	1168	.02	16.4	10	7				.07	9.4	10	1			
9	{S-2 N-1	138	114	.06	22.7	15	5				.29	30.0	15+	1	1		
10	N-1		489		35.0	10	3					29.1	15+				
11	N-1	796	1491		17.2	5	9	3				21.4	10	6	3		
12	P/N-1	223	1013		50.0	30						30.9	15				
13	P/N-1	211	1231		16.4	10	16					12.9	5	11	4	2	
14	P/N-2	48	953		14.7	12	17					12.5	10	5			
15	P/N-1		416		8.9	5	20	5				9.6	5	16	5		
16	N-1	73	497		19.2	7	12	2				20.9	15	6			
17	N-2	440	128	T	38.6	25	1				.03	21.4	15+	1			
18	{S-4 N-1	1211	435	.13	26.8	15	3				.13	14.9	10	1			
19	NS-1	10		.45	25.5	20					.06	22.3	15				
20	NS-1			.04	40.6	12					.18	18.4	15				
21	NS-1			1.12	15.7	10					.80	22.7	15				
22	NS-1			.34	21.9	20					.40	12.7	20				
23	NS-1			.37	24.1	15					.08	15.5	15				
24	NS-1			.18	42.3	30	2				.03	21.8	10				
25	NS-1				44.1	10	2					17.4	5	1	1		
26	NS-1	25	110		30.5	15	1					25.0	15				
27	NS-1	50	50		30.5	10	5					18.9	8	1	1		
28	NS-1	98	74		15.1	5	9	4				15.9	10				
29	P	8			28.4	4	15	3				13.4	4	6	6	2	
30	P	15			8.9	4	19	6				7.4	2 1/2	9	9	4	
Total		61052	20385	2.71			207	23	0	0	2.07			72	31	8	0

Table I (continued)

1972 Daily Field Burning Summary and Air Quality Data

(Acres Burned and Observations of Smoke and Visibility)

1	2	3		EUGENE DATA 4	5	6	7	8	9	10	SALEM DATA 11	12	13	14	15	16	17
OCTOBER 1972	Burning Advisory and No. of Quotas (AM) / (PM)	Acres Burned South Valley	Acres Burned North Valley	Precipitation at Eugene Airport, (inches)	Avg. Vsby. (miles) 10 AM - 9 PM	Min. Vsby. (miles) 10 AM - 9 PM (excluding fog or precip. cases)	Hourly Obs. w/smoke in remarks; not necessarily restricting sfc. vsby.	# of hours Vsby. ≤6 mi. due to smoke only	# of hours Vsby. ≤3 mi. due to smoke only	# of hours Vsby. ≤1 mi. due to smoke only	Precipitation at Salem Airport, (inches)	Avg. Vsby. (miles) 10 AM - 9 PM	Min. Vsby. (miles) 10 AM - 9 PM (excluding fog or precip. cases)	Hourly Obs. w/smoke in remarks; not necessarily restricting sfc. vsby.	# of hours Vsby. ≤6 mi. due to smoke only	# of hours Vsby. ≤3 mi. due to smoke only	# of hours Vsby. ≤1 mi. due to smoke only
1	P				6.7	2 1/2	7	4	2			10.7	4	11	8	3	
2	P				4.7	4	14	13				3.9	2 1/2	14	14	6	
3	P/NS-1	38	236		13.0	10	3					11.3	7	4	2		
4	NS-1	303	97		14.4	8	14					15.9	15	2			
5	P	52			22.5	6	13	4				19.7	7	3	3		
6	P				16.7	10	20	1				18.2	15	9			
7	P/NS-1		126		16.7	10	20	1				16.4	15	2			
8	P				27.7	20	10	1				11.3	7	2			
9	NS-1	370	129	.30	9.4	5	11	5			.16	4.8	5	1	1		
10	NS-1		89	.24	11.6	12					.04	22.7	15				
11	NS-1	10	4	T	18.2	7	3				.03	26.4	15+				
12	P/NS-1	15		T	28.6	15	14					25.9	15+				
13	P			.06	13.7	7	10	1			T	11.9	5	7	6		
14	P			.14	31.5	3	1	1	1		T	29.8	8	1	1		
15	NS-1		50		47.3	30	3					22.3	15+	2			
16	P				16.2	5	15	3				23.6	15				
17	P		116		9.9	5	10	4				10.8	5	3	3		
18	P				5.1	3	14	5	1			5.0	4	13	11		
19	P			T	5.7	3	13	9	1			4.7	2	14	11		
20	P				5.0	4	12	9				2.5	2 1/2	10	10	5	
21	P			.11	6.1	5	3	3			.13	4.1	2 1/2	13	13	11	
22	P			T	10.9	4	4	4				13.2	3	8	8	6	
23	P				29.5	15	10				T	30.5	15				
24	P/NS-1	70	192		15.4	10	6					28.5	8	4	2		
25	P/NS-1			.01	15.7	3	7	4			.03	12.1	8	3			
26	NS-1			T	37.3	30	7				.02	19.5	15+				
27	NS-1		8	.02	21.5	15	1				.14	13.5	12				
28	NS-1			.38	20.6	15					.15	15.5	10				
29	NS-1			.05	28.6	15						13.7	10				
30	P				3.2	4	5	5				4.8	5	9	7		
31	P			T	4.0	3	11	10	2		T	4.0	4	14	13		
Total		858	1047	1.31			261	87	7	0	0.70			149	113	31	0

Table II

BURNING DAYS AVAILABLE AND QUOTAS AUTHORIZED

		July 15-31		August		September		October 1-15		Totals	
	Year	Days	Quotas	Days	Quotas	Days	Quotas	Days	Quotas	Days	Quotas
North Valley	1970	9 1/2	10	12	13	7	12	4	4	32 1/2	39
	1971	5	5	8 1/2	12	10 1/2	22	1 1/2	3	25 1/2	42
	1972	4	7	8 1/2	21	* 8	*12	5	5	25 1/2	45
South Valley	1970	3 1/2	7	6	9	3 1/2	6	2	2	15	24
	1971	1/2	1	6	16 1/2	4	11	1	2	11 1/2	30 1/2
	1972	0	0	4	12	* 7	*15	5	5	16	32

The quotas were designed such that 33 basic quotas in the North Valley and 22 basic quotas in the South Valley were required to accomplish the burning of perennial and annual grass seed fields, assuming 100% utilization. Prohibition days or days with rain were not considered to be available for burning.

*On September 6, three priority only quotas North & South are not included.

Table III

FIRE DISTRICT BURNING QUOTAS AND REPORTED ACREAGES

1972 SEASON

County/Fire District	Quota Basic	Quota Priority	Reported Registered Acreage	Acres Burned
North Valley Counties				
Clackamas County				
Boring RFPD	50	0	8	8
Canby RFPD	50	50	644	644
Clackamas County #2	50	0	914	884
Clackamas - Marion FPA	50	0	948	893
Clarks	50	50	448	
Estacada RFPD	75	0	2622	2622
Molalla RFPD	50	0	512	512
Monitor RFPD	50	0	1116	1000
Sandy RFPD	50	0	160	160
Scotts Mills RFPD	50	0	883	883
Total	525	100	8255	7606
Marion County				
Aumsville RFPD	50	0	1780	1760
Aurora-Donald RFPD	50	50	1382	1216
Drakes Crossing RFPD	50	0	927	930
Hubbard RFPD	50	0	538	538
Jefferson RFPD	225	50	6691	5500
Marion County #1	100	50	3732	3732
Marion County Unprotected	50	50	1174	1221
Mt. Angel RFPD	50	0	373	373
St. Paul RFPD	150	0	4730	4710
Salem City	50	50	1930	1944
Silverton RFPD	300	0	9270	8920
Stayton RFPD	150	0	4917	4881
Sublimity RFPD	250	0	8597	8597
Turner RFPD	50	50	1817	1817
Woodburn RFPD	125	50	4499	4233
Total	1700	350	52357	50372

Table III (continued)

FIRE DISTRICT BURNING QUOTAS AND REPORTED ACREAGES

1972 SEASON

County/Fire District	Quota Basic	Quota Priority	Reported Registered Acreage	Acres Burned Acres Burned
North Valley Counties				
Polk County				
Polk County Non-District	50	0	690	680
Southeast Rural Polk	425	50	11894	11297
Southwest Rural Polk	175	50	4320	3339
Total	650	100	16904	15316
Washington County				
Cornelius RFPD	50	50	107	135
Forest Grove RFPD	50	0	579	614
Forest Grove FPD	50	0	10	10
Washington County FD #1	50	50	170	170
Washington County FPD #2	50	50	1774	1774
Total	250	150	2640	2703
Yamhill County				
Amity RFPD	100	50	3099	2920
Carlton RFPD	50	50	858	848
Dayton RFPD	75	50	1767	1767
Dundee RFPD				
McMinnville RFPD	125	75	4440	4258
Newberg RFPD	50	0	117	117
Sheridan RFPD	100	50	2542	2000
Yamhill RFPD	50	0	559	559
Total	550	275	13382	12469
North Valley Total	3675	975	93538	88466

Table III (continued)

FIRE DISTRICT BURNING QUOTAS AND REPORTED ACREAGES

1972 SEASON

County/Fire District	Quota Basic	Quota Priority	Reported Registered Acreage	Acres Burned
South Valley Counties				
Benton County				
County Non-District	425	175	9645	9560
Corvallis RFPD	200	125	3802	3711
Monroe RFPD	300	50	6927	6074
Philomath RFPD	125	100	2800	2730
Western Oregon FPD	100	50	1567	1567
Total	1150	500	24741	23642
Lane County				
Coburg RFPD	150	50	3008	3008
Creswell RFPD	100	100	1850	1850
Eugene RFPD (Zumwalt RFPD)	50	50	510	510
Junction City RFPD	325	50	7037	6965
Lane County Non-District	100	50	1328	1323
Lane County RFPD #1	325	50	7365	7365
Santa Clara RFPD	50	50	131	131
Thurston-Walterville	50	50	70	70
West Lane FPD	50	0	412	412
Total	1700	450	21711	21634
Linn County				
Albany RFPD (inc. N. Albany, Palestine, Co. Unprotected Areas)	625	125	12959	12959
Brownsville RFPD	750	50	16369	16369
Halsey-Shedd RFPD	2175	200	44529	44529
Harrisburg RFPD	1400	50	29436	29015
Lebanon RFPD	450	225	9512	9191
Lyons RFPD	50	0	967	967
Scio RFPD	150	0	3447	3100
Tangent RFPD	925	325	19889	19831
Total	6525	975	137108	135961
South Valley Total	9375	1925	183560	181237
All Valley Total	--	--	277098	269703

TABLE IV

SMOKINESS IN SALEM AND EUGENE

	SALEM					EUGENE				
Year--	'68	'69	'70	'71	'72	'68	'69	'70	'71	'72
JULY										
Smoky Days	3	6	4	4	2	3	5	3	3	0
Smoky Hours										
Visibility 6 mi. or less	10	8	8	16	5	10	12	8	12	0
Visibility 3 mi. or less	0	0	0	0	2	0	4	4	2	0
Visibility 1 mi. or less	0	0	0	0	1	0	0	1	1	0
AUGUST										
Smoky Days	5	10	10	5	8	4	11	7	4	7
Smoky Hours										
Visibility 6 mi. or less	11	16	53	14	27	15	40	14	8	14
Visibility 3 mi. or less	0	3	16	2	7	8	30	3	3	2
Visibility 1 mi. or less	0	0	0	0	0	0	10	0	1	0
SEPTEMBER										
Smoky Days	15	8	6	6	9	17	9	6	3	6
Smoky Hours										
Visibility 6 mi. or less	92	66	50	19	31	170	51	35	9	23
Visibility 3 mi. or less	18	16	10	1	8	62	42	1	1	0
Visibility 1 mi. or less	0	0	0	0	0	6	4	0	0	0
OCTOBER										
Smoky Days	11	13	10	11	16	16	15	10	3	19
Smoky Hours										
Visibility 6 mi. or less	53	85	65	59	113	67	39	47	5	87
Visibility 3 mi. or less	5	35	16	8	31	50	25	3	0	7
Visibility 1 mi. or less	0	0	0	0	0	8	3	0	0	0
SEASON TOTAL SMOKY DAYS	34	32	30	26	35	40	40	26	13	32

Note: Smoky days are those days showing a restriction to visibility at the airport by smoke only, haze only, or smoke and haze on one or more hourly observations.

Smoky hours are those hourly observations showing restrictions to visibility by smoke only, haze only, or smoke and haze.

A weather element is listed as restricting visibility when it reduces prevailing visibility to six miles or less.

TABLE V

Smoky Periods, 1972

EUGENE AIRPORT						SALEM AIRPORT					
DATE	TIME PERIOD BEGAN (24 hr. clock)	DURATION OF PERIOD (hours)	MINIMUM VISIBILITY (miles)	SMOKE JUDGED CONTRIBUTED BY FIELD BURNING		DATE	TIME PERIOD BEGAN (24 hr. clock)	DURATION OF PERIOD (hours)	MINIMUM VISIBILITY (miles)	SMOKE JUDGED CONTRIBUTED BY FIELD BURNING	
				YES	NO					YES	NO
						7/14	1358	1	3	X	
						7/19	0258	4	3/4		X
8/2	1227	3	3	X		8/2	1158	8	4	X	
8/3	0755	4	5		X	8/3	0540	7	3		X
8/7	0855	1	6		X						
						8/11	0958	4	3		X
8/13	0755	2	5	X							
8/16	0934	3	6	X		8/16	1155	2	6	X	
						8/18	1755	3	5	X	
						8/20	0856	2	4	X	
						8/23	0855	2	5	X	
8/24	1334	1	5	X							
						8/30	1224	1/2	4	X	
8/31	1006	2	5	X							
						9/6	0658	1	6		X
						9/9	0558	1	6		X
9/11	0756	3	4		X	9/11	0630	3	4		X
						9/13	0758	4	3		X
9/15	0755	5	5		X	9/15	0655	5	4		X
9/16	0755	2	6		X						
						9/25	1050	1	5		X
						9/27	0755	1	5		X
9/28	0755	4	5		X						
9/29	0255	8	5		X	9/29	0545	8	3		X
9/30	0455	6	4		X	9/30	0065	9	2 1/2		X
Total				5	8					7	12
		1971 Totals		7	3					6	9

Explanation:

Smoky periods identified by visibilities of six miles or less in Table I are listed for the months of July, August and September. A judgement that smoke was not related to field burning was made only if the situation was clear. Questionable or uncertain cases were attributed to field burning.

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item No. J , January 26, 1973, EQC Meeting

Proposed General Services Administration 200-Space Underground Parking Facility, Portland

Background

At the October 25, 1972 EQC meeting, the Commission considered the application of the General Services Administration to construct a 200-space underground parking facility on block 55 (one block east of City Hall) in downtown Portland.

The proposed facility will be constructed ancillary to a new Federal Building which will be located on the block immediately east of the project. The Federal Building will be occupied by approximately 1525 personnel, most of whom are being re-located from existing Federal facilities in Portland. No commuter parking space is being provided for these employees.

The project site is presently occupied by several old buildings and off-street parking for approximately 20 motor vehicles. These will be removed during construction. In addition, the block to be occupied by the new Federal Building presently has a surface parking facility on it with a rated capacity of 200 motor vehicles. This facility will also be removed during construction. Thus, a net decline of 20 off-street parking spaces (200 + 20 - 200 = 20) will result in the vicinity of the proposed parking facility.

TELEPHONE: (503) 229-5696

The proposed facility is intended to provide parking space for government vehicles and privately-owned vehicles used on official business. The Director's October 25, 1972 report to the Commission regarding this facility indicated concern that the construction of a motor pool type of facility, with its' associated large volume of daily vehicles trips, in an area where the achievement of national air quality standards by 1975 will be fairly difficult, would not be entirely consistent with the efforts of the State and local governmental agencies to reduce air pollution in downtown Portland.

The Commission deferred action upon the GSA application for construction of the proposed parking facility until a feasibility study could be made by GSA to determine if a more suitable location could be found for the facility outside of downtown Portland, with provisions for shuttle bus service between the parking facility and new Federal Building.

On November 22, 1972, the Director met with GSA officials to discuss preparation of the feasibility study. At that time GSA provided additional information on the intended use of the parking facility which indicated that it would not have the large volume of daily vehicle trips associated with a motor pool type of facility.

On December 4, 1972, the Department received a detailed report from GSA delineating information about the operation of the parking facility and the type and use of vehicles which will be assigned parking space in the facility.

Discussion

The use of the GSA 200-space parking facility will be limited to Government-owned vehicles, a few privately-owned vehicles used on official business, several spaces for Federal Judges, members of Congress and large agency heads, and a limited number of spaces for the physically handicapped. The following is a breakdown of the 200 spaces to be provided:

Assigned vehicles	115
Dispatch vehicles	50
P.O.V. used on official business	10

Judges, Congressional and other V.I.P.	10
Handicapped and miscellaneous	15
Total	200

The assigned vehicles will be under the control of the individual agencies occupying the Federal building. These vehicles may be used daily or they may be idle or out of the facility for several days.

The dispatch vehicles are controlled by GSA and will probably be used more extensively than the assigned vehicles.

The facility will also provide for two lube racks, one wash stall, and one tire service stall. However, no major overhaul or body repair facilities will be provided and gasoline dispensing will not be permitted.

Based upon the fact that the dispatch vehicles are the only type of vehicles provided space in this facility that would be expected to be used frequently during the day and the fact that major overhaul and gasoline dispensing facilities are not being provided, the impact of this parking facility upon air quality would be expected to be less than that associated with an equivalent sized motor pool.

Conclusions

1. The construction of the proposed 200-space parking facility and new Federal Building will result in a net decline of 20 off-street parking spaces in the vicinity of the project.
2. The majority of the vehicles to be assigned to the proposed parking facility will not normally be parked and unparked frequently during the day.
3. The proposed parking facility will not provide major overhaul and gasoline dispensing facilities.
4. The impact upon air quality of the proposed facility would be expected to be significantly less than an equivalent sized motor pool used mainly by dispatch type vehicles with associated major overhaul and gasoline dispensing facilities.

Director's Recommendation

In view of the fact that the Transportation Control Strategy is expected to achieve complaince with national air quality standards in the vicinity of the proposed parking facility and Federal Building;

And in view of the fact that the proposed parking facility is consistent with the Commission's guidelines for review of parking facilities;

The Director recommends that the Commission approve construction of the 200-space underground parking facility.

EJWeathersbee

E. J. Weathersbee
Acting Director

MJD:sb
January 15, 1973

DEPARTMENT OF
ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item K, January 26, 1973, EQC Meeting.

Status Report - Lincoln County Sewerage Planning

Background

Attached for your information is the Department of Environmental Quality staff report which was submitted to Governor McCall on January 17, 1973 in response to his November 1972 letters to the Lincoln County Board of Commissioners and the cities in the county. The Department of Environmental Quality, along with the State Health Division, was requested to review the matter of sewage disposal and water supply conditions in Lincoln County and to submit a report of the findings to the Governor. The Governor requested the County Commissioners and the cities to immediately adopt a policy of denying all requests for building permits which would require water and sewage or septic tank connections unless approved by the Administrator of the State Health Division and the Director of the Department of Environmental Quality.

The State Health Division has prepared a report which identifies water supply problems and sewage discharges to the beaches and evaluates sub-surface sewage disposal conditions for all subdivisions approved since 1970.

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The Department of Environmental Quality prepared a report which identifies areas presently served by existing sewerage facilities as well as those areas which need sewers and makes recommendations for development and adoption of a county-wide sewerage program.

Our findings determined that there is a definite need for a county-wide sewerage program in order to eliminate existing problems and prevent future problems. The report recommends that high-density development be allowed only where sewer service is available and that the county adopt a definite interim sub-surface sewage disposal policy and procedure so that types and densities of development are carefully controlled in areas where sewers cannot be made available in the near future. It is also recommended that maximum assistance be given Lincoln County and other units of local government to help them develop and implement an adequate county-wide sewerage plan.

As a result of these reports, the Governor has scheduled a public hearing in Salem for February 20, 1973. The purpose of this hearing is to provide Lincoln County and the city officials and citizens an opportunity to present testimony as to why the state of Oregon should not assume land-use planning and zoning responsibilities in Lincoln County.

The staff will review the findings of the State Health Division and the Department of Environmental Quality studies and summarize these reports at the January 26 Environmental Quality Meeting.

EJWeathersbee

E. J. Weathersbee

FMB:bw
1/18/73

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

January 15, 1973

The Honorable Tom McCall
Governor, State of Oregon
207 State Capitol
Salem, Oregon 97310

Dear Governor McCall:

As requested, the Department of Environmental Quality working closely with the State Health Division has reviewed sewage treatment and disposal conditions in Lincoln County and prepared the attached report. The report identifies areas presently served by existing sewerage facilities as well as those areas which need sewers and makes recommendations for development and adoption of a county-wide sewerage program.

Our findings determined that there is a definite need for a county-wide sewerage program in order to eliminate existing problems and prevent future problems. The report recommends that high-density development be allowed only where sewer service is available and that the county adopt a definite interim sub-surface sewage disposal policy and procedure so that types and densities of development are carefully controlled in areas where sewers cannot be made available in the near future. It is also recommended that maximum assistance be given Lincoln County and other units of local government to help them develop and implement an adequate county-wide sewerage plan.

If further assistance is required, please feel free to contact our Department.

Sincerely,

EJWeathersbee

E.J. Weathersbee
Acting Director

EJW:vt
Enc.

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THE STATUS OF SEWAGE DISPOSAL

IN LINCOLN COUNTY, OREGON

AND

RECOMMENDED SEWAGE STRATEGY PLAN

State of Oregon
Department of Environmental Quality
January 1973

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I. REQUEST FOR STUDY

Because of strong evidence that development of certain areas within Lincoln County was getting ahead of water supply and sewage disposal capabilities, Governor Tom McCall sent letters to the Lincoln County Board of Commissioners and to the respective city administrations requesting them to deny all requests for building permits which would require water and sewer or septic tank connections until such requests could be reviewed and approved by the State Health Division (SHD) and the Department of Environmental Quality (DEQ). The Governor also instructed the SHD and DEQ to review the water, sewer and septic tank situation in Lincoln County and submit a report by January 1, 1973, and to assist the county and cities and special service districts in every way possible in the development of county-wide water supply and sewage disposal facilities.

As a result of the Governor's request the DEQ immediately reviewed the sewerage situation in Lincoln County and submitted to the Governor a memorandum report dated November 24, 1972, entitled, "Proposed Lincoln County Sewage Disposal Strategy Plan". This present report is a more detailed follow-up to the November 24 preliminary report.

Since the SHD presently has statutory jurisdiction over water supplies, this report deals only with surface and sub-surface sewage disposal matters within the cities and adjacent unincorporated areas of Lincoln County. The county-wide sewerage situation is reviewed, conclusions are drawn based on DEQ's experiences and review of sewage disposal in the county and recommendations are made concerning a sewerage strategy plan that the county, cities, and service districts in Lincoln County should implement.

The SHD is preparing a separate report which deals with the adequacy of existing water supply systems and sub-surface sewage disposal systems and makes recommendations for needed improvements regarding these matters.

II. BACKGROUND

Lincoln County has approximately 55 miles of ocean frontage along the Central Oregon Coast of the Pacific Ocean, extending from Tillamook County at Cascade Head north of the Salmon River to Lane County at Cape Perpetua south of the city of Yachats. The stable population of the county is 26,100. There was a 4.5 percent increase in population during the 1960-1970 decade. Of that total, just under 20,000 people, or 77 percent of the county's total population, reside in the county's six cities of Lincoln City, Siletz, Newport, Toledo, Waldport, and Yachats. Approximately 85 percent of the county's population resides in a narrow strip along the coast line from Lincoln City to Yachats. The two inland cities of Toledo and Siletz account for a combined population of approximately 4,000.

The coastal attractions account for an increase of population to approximately 175,000 during the summer months. There are also population peaks in the winter seasons, but these are very limited compared to the summer peaks. The trend is toward rapid increases in both year-round and seasonal peak populations which heavily tax all services now provided in the county.

Approximately 58 percent of the Lincoln County stable population is presently served by five municipal and seven non-municipal sewer systems and treatment plants and the remaining 42 percent are served by individual sub-surface disposal systems, (septic tanks, cesspools and pit privies). The percentage served by sub-surface systems is greatly increased during peak population periods. The present sewerage systems serve only approximately 10 miles of the 55 mile long coastal strip. Planned sewerage systems to serve Depoe Bay and Yachats will serve an additional 5 miles of coastal strip. The remaining 40 miles has no firm plans for providing sewerage services.

The densely populated areas of the county experience approximately 60 inches of rainfall which occurs mostly in the winter. This heavy rainfall contributes to severe problems with sewage disposal. Sub-surface conditions in the county consist generally of shallow soils, high groundwater tables, rock formations, perched water tables, steep slopes, poor drainage characteristics, and sand areas all of which are generally adverse to sub-surface sewage disposal.

The following five existing municipal sewerage facilities in Lincoln County are considered susceptible of being expanded to serve as regional systems and serve adjacent developed and developable areas:

Lincoln City	Toledo
Newport	Siletz
Waldport	

Three new municipal sewerage systems are planned for construction in the near future which could also be expanded with regional systems, as follows:

Depoe Bay Sanitary District
Gleneden Sanitary District
Yachats

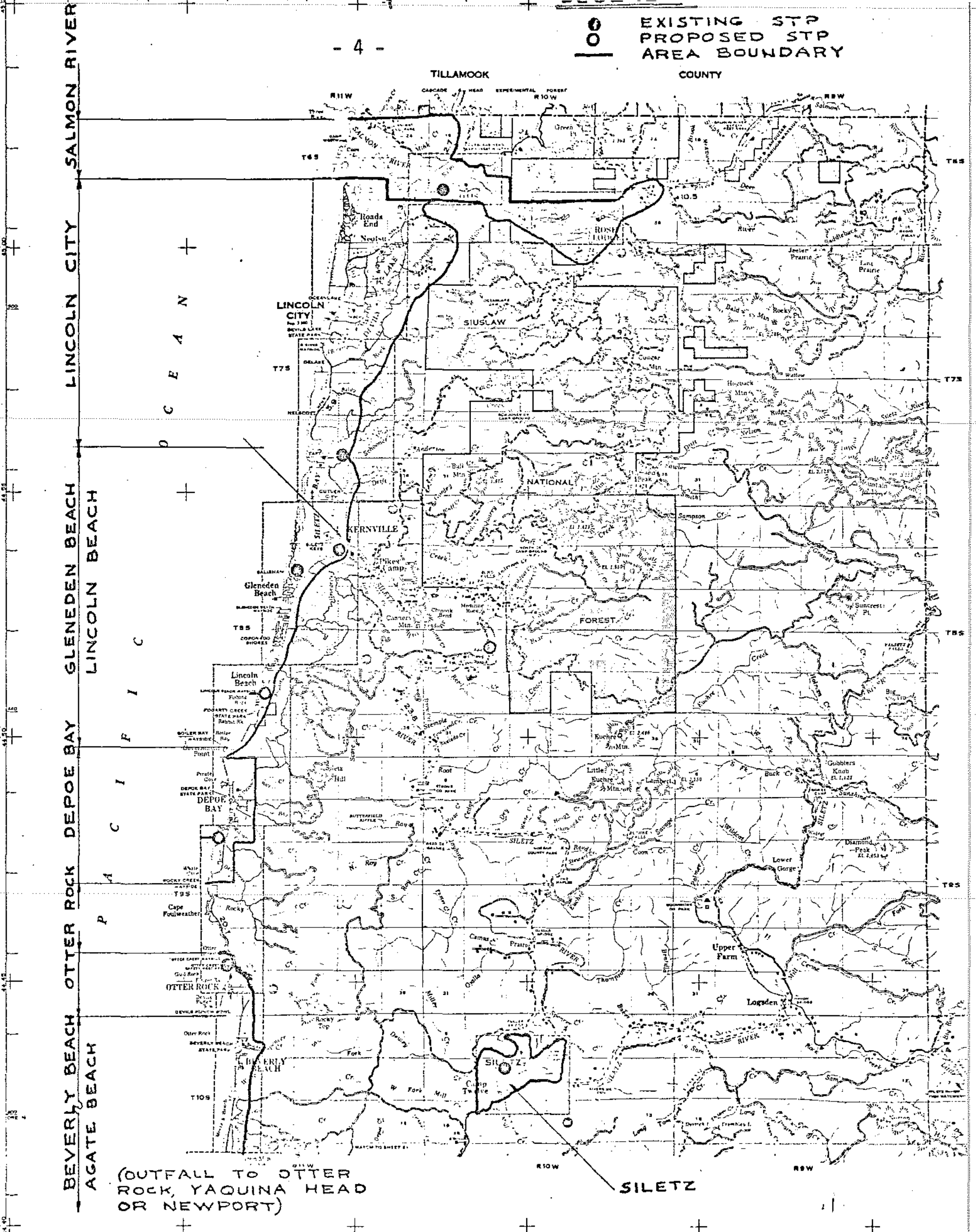
Of the seven operating and proposed non-municipal sewage treatment plants listed below, only the Inn-at-Otter Crest plant is considered expandable to serve a regional sewerage system:

Pixieland	Camp Angel
Salishan	Cape Perpetua
Inn at Otter Crest	

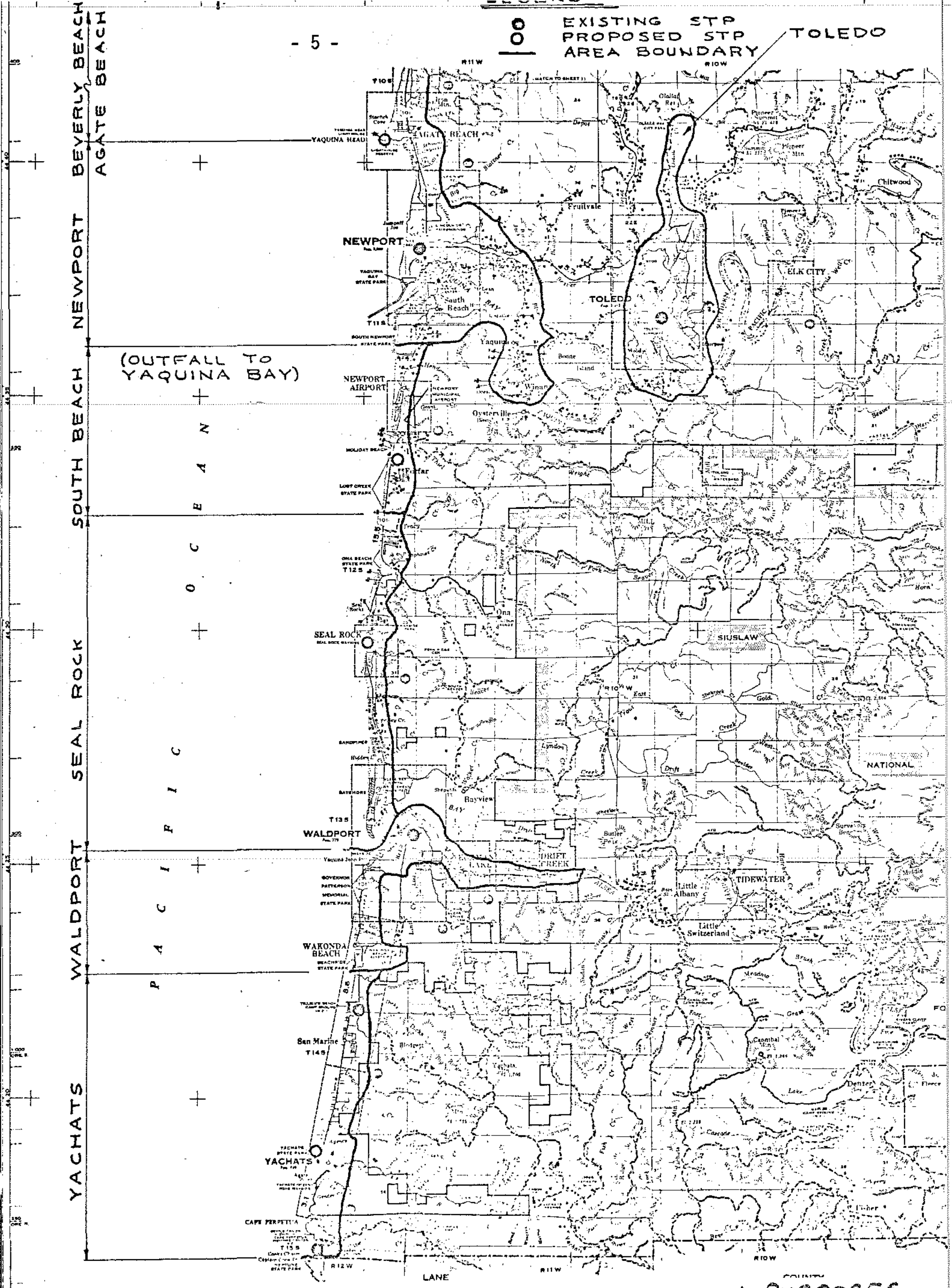
(1) Siletz River Estates

(1) Holiday Beach

(1) Proposed



DEQ - STUDY AREAS FOR DISCUSSION PURPOSES



DEQ - STUDY AREAS FOR DISCUSSION PURPOSES

III. DISCUSSION OF EXISTING CONDITIONS

In order to follow the evaluation section of this report please refer to the maps on pages 4 and 5 showing the regional areas to be discussed.

A. Salmon River Area

Presently in this area only Pixieland has sewage collection and treatment. The Pixieland complex is a recreational facility and trailer court located at the junction of Oregon Highway 18 and U. S. 101 on the Salmon River. This complex has a package sewage treatment plant designed for 0.035 million gallons per day (MGD). The Department has requested that Pixieland provide a polishing pond following the package plant with a capacity equal to three times the average daily sewage flow. This is to be installed by July 1973 and should provide some improvement to water quality in the Salmon River at the discharge point. Pixieland and several other high-density projects are being developed in this area without the benefit of an overall regional sewerage plan.

Major housing developments in the area include the Cascade Head area of 160 lots, Sea River tract of 30 lots, Echo Mountain Park with 70 lots, and Panther Creek subdivision of approximately 700 lots, all of which are being served by septic tank and tile field disposal systems.

Just downstream of Pixieland is Tamara Quays, which originally was to be a trailer camp to serve 107 units. A septic tank and disposal field to serve this project was approved by the SHD and constructed in 1971. Since then the developer decided to turn this project into a housing tract and proposes to sell individual lots. This completely altered the sewage system's waste water loading and consequently the system, provided to serve the previously proposed 107 unit trailer camp, cannot serve the presently proposed 75 residential units. The Lincoln County Planning Commission is withholding final plat approval until an approved water supply system and sewage disposal system is provided.

The Otis community and the Salmon River Mobile Home Park are located upstream from Pixieland. The Otis community is quite stable but the Mobile Home Park is in the process of expanding from eight spaces to 38 spaces on a sub-surface disposal system. Numerous other subdivisions occur on upstream. The Rose Lodge Community, Salmon River Heights (31 lots), Bear Creek Hideout with 92 lots, Boulder Creek's 129 lots and the 67 lot River Bend Park are examples of considerable building potential alongside these streams. All of this growth is occurring utilizing sub-surface sewage disposal systems.

The Salmon River area has sewage disposal problems resulting from small lot sizes and building in close proximity to the streams. Continued development on septic tank and disposal fields should not be allowed to continue without the guidance of an overall regional sewerage plan and implementation schedule.

A detailed study is needed to determine if a separate regional sewage system should serve this area or if the area should be served by connection to the Lincoln City regional facility.

For the short-range situation Pixieland should not be allowed any enlargement of its system. No additional subdividing should be allowed on sub-surface systems and development in existing subdivisions should be reviewed by the County Health Department, the SHD and DEQ to determine if and on what basis development should proceed.

B. Lincoln City Regional Area

Devils Lake Area

Practically all of the perimeter of the lake just east of the Oceanlake area has been platted and many of those lots have substantially built homes of relative late date. Perhaps only a dozen lots are in the city and thus have sanitary sewer service. The remaining lots are served by septic tank systems.

The residents of the Devils Lake area have become concerned about water quality of the lake from this residential impact and have organized the Devils Lake Association which had an engineering study made on the possibility of getting sewer service. That 1970 report estimated the cost for the project to connect to the Lincoln City sewer system at $1.7 million. The city is very interested in working with the Devils Lake Association to bring sewer service to the Devils Lake area.

There has not been an intensive sanitary survey made of that area; however, several lake sampling runs have been made and vegetative growth in the lake indicates sewage enrichment.

Small lot sizes and sewage disposal fields near the lake likely result in sewage discharges to the lake.

Due to the rate of population growth along the perimeter of the lake, sewage service to this area is definitely a top priority matter and Lincoln City sewers should be extended to that area. Just recently Devils Lake residents have petitioned the Health Division for a health hazard survey. If such a hazard is found to exist, forced connection will be recommended by that Division under Oregon Revised Statutes, Chapter 222.

Roads End Area

The Roads End area is just to the north of Lincoln City and there are no sewers in the area. Most of the older homes are on small lots, the soil structure is very marginal for sewage disposal fields and area drainageways are very close to disposal systems. There have been numerous complaints of observed failures of both old and new sub-surface systems in this area. A new development at the south end of Roads End is the Griffin Park tract consisting of approximately 40 lots.

This area needs an in-depth evaluation in regard to the present sewage disposal practices. The Department of Environmental Quality has tentatively scheduled a detailed survey of this area in February, June, and September, 1973. As the area is occupied on a limited basis during the wintertime, summer surveys will be required.

The only solutions to the sewage problems in the Roads End area would be to curtail development or provide an area-wide sewage collection system.

Regional sewerage service to this area could best be provided by the Lincoln City system. The method of transmitting sewage through the presently over-taxed North Lincoln City sewerage system would have to be resolved. One of the City's engineering reports had recommended that sewage from the Roads End area be routed through a new sewer system that would be constructed to serve the Devils Lake area. This would prevent further overloading of the old Oceanlake sewer system.

Sal-La-Sea

Sal-La-Sea is a proposed housing development of some 1,400 lots on a 450-acre tract just a short distance north of Lincoln City and lying east of Roads End. This proposal has a planned residential density nearly equivalent to normal city residential development. The proposed density of development, coupled with soil conditions which are not well suited for subsurface sewage disposal resulted in the Lincoln County Health Department recommending against that method of disposal and recommending a public sewer system.

This area faces the same sewage treatment and waste discharge problems as Roads End and development should not proceed until a plan for dealing with the regional sewerage problems has been developed. A sewer system to serve this area would be most difficult to provide at this time because the area is quite remote from Lincoln City and there does not appear to be a readily available discharge point in the area to accommodate a separate sewerage facility.

Lincoln City

Lincoln City was incorporated in 1964, combining the former cities of Oceanlake, Delake and Taft and the communities of Nelscott and Cutler City. Thus it extends six miles along U. S. 101 from the north end of Devils Lake to Drift Creek on Siletz Bay. It has a resident population of approximately 4,500.

The city's sewerage system consists of a collection system, which makes sewer service available to practically all residences in the city, and a lagoon system designed for a population of 10,000. Thirteen pumping stations are needed to deliver the sewage to the lagoons. The Oceanlake sewers were constructed in the late 1940's and present severe infiltration problems. The former city of Taft's sewer system was constructed in the early 1960's, including the presently used two-cell secondary lagoon. The rest of the sewer system was constructed in 1968-70.

Infiltration and overloading of sewers and pumping stations has caused two problems: 1) by-passing of raw sewage to the beach and drainageways in the Oceanlake section of the system; and 2) surcharging and by-passing of the lagoon and thus discharging improperly treated sewage into Schooner Creek.

This Department has been working with the city for some time in attempting resolution of these problems. Since the change to the city manager form of government in July 1972, this work has been properly programmed into a solution-type procedure and good progress is now being made. Major items of improvement include: 1) installation of a telemetry system to all city sewage pump stations with central alarm at the police station, manned 24 hours a day; 2) all of the field notes from previous TV inspections of the sewer system have been brought together in a "White Book" record to serve as a guide for the continuing sewer repair work; 3) the sewer repair program in the Oceanlake system has been augmented; 4) the replacement of broken sewer pipe and sealing of lines has been accelerated; 5) a smoke testing program was started and roof drains found connected to the sewer are required to be disconnected; 6) some parking lot drainage to the sanitary sewer system has been found and its separation is being accomplished; 7) personnel changes have been made in the sewer department and personnel is now definitely assigned twice daily surveillance responsibility of pumping stations and lagoon operation.

All of the repair work is being evaluated to note the net effect in elimination of excess flow, and although there has been infiltration reduction the actual "gain" to the system has not been as much as expected. The city management uses all the information in further planning of the corrective action program. There are still some sewage flows in the city that are discharging to area drainageways and to the beach, but the city is presently working on the correction of these. The city has a policy that all new buildings must be connected to the city sewer system if at all practicable.

The Department has requested the city to submit a detailed program and time schedule for eliminating all of the presently known sewer system's problems by February 1, 1973.

A cursory survey of the system was made by a staff engineer of the Department personnel in December, 1972 (See appendix Item E). As a result of the December 1972 inspection recommendations relative to the sewerage system are made as follows:

1. All pumping stations along the beach must be secured against overflowing, as well as secured against unauthorized personnel. Locations of all private pumping stations must be determined and their overflowing must also be prevented.
2. The city should continue repair and replacement of the Oceanlake system problems.
3. All manholes must be sealed to prevent taking water from the "D" River.
4. A hydraulic balance must be made between the aeration lagoon and the secondary lagoons.
5. An immediate analysis of the entire sewerage system is necessary and a complete and detailed improvement program and implementation schedule should be adopted. This analysis should include what should constitute a logical sewerage service area to be served by the Lincoln City system.

6. No further high density connections can be permitted to the system north of "D" River until the sewerage system capacity problems have been resolved.

General

An officially adopted regional sewerage plan and program is needed and the Devils Lake and Roads End areas should be served by this regional sewer system as soon as possible. Other adjacent areas presently outside the city should be considered for sewer service by the regional sewer system. However, developments in the planning stage outside of the reach of the sewerage system should be delayed until compatibility with the regional plan can be assured.

Inasmuch as Lincoln City has an established and operating sewerage system in this area, it is recommended that the city be designated as the appropriate regional sewerage implementing authority.

C. Gleneden Beach - Lincoln Beach Regional Area

Salishan Area

The Salishan complex of condominium residences and the Salishan Lodge located adjacent to Siletz Bay's Sijoto Creek has its own sewerage system with a package treatment plant of design flow of 0.11 MGD. Construction was started in 1965 and the existing plant was installed in 1968. Although the plant is very well operated and is loaded considerably below its design capacity, its outfall is located at the mouth of Sijota Creek which in turn is at a point of practically no flushing action in Siletz Bay. The Department does not propose permitting further expansion of a plant at this location. This area should be phased into a regional system in conjunction with the planned Gleneden Sanitary District located immediately south of Salishan.

Siletz Keys Sanitary District

The Siletz Keys Sanitary District was organized in 1966 to provide sewage service for a housing development of 40 homes (120 people). This District is located on the tide flats immediately south of the U.S. 101 Siletz River Bridge. A 0.015 MGD plant has been installed and the outfall discharges to a channel of Siletz Bay adjacent to the mouth of the Siletz River.

Although two homes have been built and connected to the sewer system the plant has not been properly operated. This Department has recommended building permits be denied pending proper plant operation.

This area should be phased into the Salishan-Gleneden regional sewerage system.

Gleneden Sanitary District

The Gleneden Sanitary District was officially formed in May of 1970. This District extends from the Salishan development, south to the Fogarty Creek State Park, a distance of about three miles. It includes the Gleneden Beach and Lincoln Beach areas.

This Department continues to get complaints of faulty sewage disposal facilities in this area. Very shallow top soil, high ground water problems, small lots, shallow underlying sandstone and heavy rainfall dictate that a sewer system should be constructed.

A large high-rise housing development is planned for the northerly area of the Lincoln Beach. In 1970 the County Health Department approved an extensive plan of dry wells for this development, which it feels will serve for an interim period until the sanitary district's sewer project is built. The approval stipulated that this development must connect to the sewer system as soon as it is made available to the site.

Several trailer parks have recently been built in the Lincoln Beach area with a variety of subsurface disposal systems. Numerous large homes have been built with expansive black-top driveways which further limit location of subsurface disposal facilities. The potential for further building of this area is large.

A preliminary engineering sewage system report has been prepared for the Sanitary District. However, the district voted down a general bond issue in the amount of $1.3 million in November 1971. (63 yes to 44 no). Financing is the big difficulty with implementing the construction of this system. At the present time, the project needs to be reactivated.

No more approvals for high density developments nor enlargements to any such existing or approved projects should be allowed until public sewers are available in this district.

General

Inasmuch as the Salishan development will not be permitted to enlarge its treatment plant and since it is necessary that the Siletz Keys Sanitary District treatment plant be replaced as soon as possible, the entire area including Salishan, Siletz Keys, Gleneden Beach and Lincoln Beach should be served by the Gleneden Sanitary District regional sewerage system.

D. Depoe Bay Regional Area

The Depoe Bay Sanitary District was officially organized in February of 1971 as a follow-up to the DEQ's recommendations that a governmental body be formed to provide sewerage service to that area. A DEQ field investigation in 1970 found a sewage collection and treatment system was very definitely needed to correct the many improper sewage discharges on the ground and into Depoe Bay and the Pacific Ocean.

This Sanitary District extends from the Boiler Bay State Park on south to approximately Whale Cove.

Preliminary engineering plans have been prepared. The Department recently assisted the district in gaining a $48,000 loan from the State Emergency Board for the purpose of preparation of final engineering plans and specifications for this project.

Practically every business establishment in Depoe Bay community discharges raw sewage to the ocean or the bay. Both the Boiler Bay State Park and the Depoe Bay Wayside Ocean State Park discharge septic tank effluents to the ocean. Subsurface sewage disposal is impossible in much of the community because of the preponderance of rock and absence of soil.

The Whale Cove area with its contemplated 500 unit condominium development immediately south of the Depoe Bay Sanitary District should be required to annex to and obtain sewer service from this district. Also, existing sewage disposal problems at the Whale Cove Inn restaurant-motel establishment located less than a mile south of the district boundary should be corrected by connection to this district's system when it is available.

The Shell Cove Sanitary District is within the Depoe Bay Sanitary District and the sewage problems in that area will be eliminated when Depoe Bay constructs its system.

Inasmuch as the Depoe Bay area is very picturesque and has a considerable potential for development, no further development should be allowed without connection to public sewers.

E. Otter Rock Regional Area

Condominiums Northwest, Inc. (CNW) built a package sewage treatment plant for the Inn-at-Otter-Crest in 1971 with a design capacity of 0.125 MGD. At present the treated effluent is being hauled to the Newport sewer system pending construction of an approved ocean outfall.

CNW is interested in regionalization of this sewage treatment plant and transferring operations to an appropriate governmental entity. The DEQ considers this plant site and outfall location appropriate for a regional sewage treatment plant.

As the Otter Rock community (served by individual subsurface sewage disposal systems) reportedly had a number of faulty sewage disposal installations, a survey by the DEQ and the County Health Department in November of 1972 (see appendix E) revealed that sixty-three (63) percent of the sewage disposal facilities for the occupiable structures in the Otter Rock area were less than satisfactory. Forty-three (43) percent were questionable, while twenty (20) percent was found to be definitely unsatisfactory and in violation of state statutes and regulations. The Lincoln County Health Department lists Otter Rock as a problem area due to its high water table, shallow soils and shallow rock formation.

Since a definite public health hazard was found to exist, immediate planning to correct the situation by means of a communtiy sewerage system is necessary.

The CNW treatment plant is only committed to approximately two-thirds of its capacity and the balance of that capacity could be available to the Otter Rock area. With total development in the Otter area, the plant would have to be expanded. The present plant site and ocean outfall could accommodate this enlargement.

F. Beverly Beach - Agate Beach Regional Area

The area from Otter Rock to Newport has a coastal length of six miles of beach with the only break being Yaquina Head. Built-up sections include the Beverly Beach State Park on Spencer Creek, Beverly Beach, the Moolach Beach area, and Agate Beach. No sewers are available but subsurface sewage disposal is a problem in that area due to small lots, perched water tables, and shallow soils. Several subdivisions have been developed in the area within recent years and others have been contemplated.

This area cannot provide proper subsurface sewage disposal for high-density developments. The only possible locations for treated sewage disposal would be at Otter Crest, Newport, or a separate ocean outfall. In each case effluent would have to be well treated. Any of these alternatives could be very costly according to specific situations and length of sewer involved.

A detailed study should be made to determine how these areas could most logically be provided sewerage services.

G. Newport Regional Area

Newport

Newport's sewage treatment plant was built in 1964 and was designed for a population equivalent of 11,000 and a dry weather flow of 1.6 MGD. The outfall line discharges into the ocean about 1,000 feet from the end of Beach Drive, Northwest. The plant was designed to serve until 1990; however, the connected and contemplated waste loads indicate that plant enlargement will be required sooner than anticipated. The plant is very well operated and presently has some unused capacity.

The city has a policy that any new construction has to connect to the city sewer system if the area is sewerable. Otherwise, building permits must first clear the County Health Department where subsurface disposal systems are proposed. There is yet one known raw sewage discharge to the beach in Newport which the city has been trying to get connected to the sewer system. Remonstrances against the project had prevented its completion. The DEQ has initiated action to eliminate this discharge.

Recently the city annexed 160 acres of Port of Newport property on the south side of Yaquina Bay including the OSU Marine Science Center. It is planned to construct an 8" force main across Yaquina Bay. This line would serve a portion of the South Beach area which has a sewage disposal problem due to small lots and high ground water table.

A portion of the Agate Beach area to the north of the city, now served by subsurface sewage disposal, recently defeated annexation to the city of Newport. No further development should be allowed in the Agate Beach area until the area can be served by sewers.

Several major subdivisions have been platted outside of Newport on the north bank of the Yaquina Bay. However, they are within the perimeter of the preliminarily proposed regional sewerage plan.

The city of Newport is considered as the logical provider of regional sewerage services to the Agate Beach area, Yaquina Bay Development area, and the South Beach area of Yaquina Bay.

No high density developments and subdivisions should be permitted in the Newport and Yaquina Bay area unless public sewers are available with connection to Newport.

<u>South Beach - Seal Rock Area (Newport to Waldport)</u>

From Newport to Waldport the approximately 13 miles of ocean beach is broken only by the Seal Rock Promontory. The city of Newport is presently planning to serve the area immediately south of Yaquina Bay, including the community of South Beach. The Holiday Beach 500 unit subdivision project with sewerage facilities is planned at Thiel Creek. There are no sewerage facilities planned to serve the remaining eleven (11) mile beach frontage.

Much of the area has been subdivided. South Beach is a community of more than 100 residents. It was considering formulation of a sanitary district several years ago to correct its numerous sewage problems. The Forfar subdivision is an old platting and lots are too small for subsurface sewage disposal. A considerable acreage at Lost Creek has been platted for homes and also there is the Makai housing development just north of the mouth of Beaver Creek.

The Holiday Beach plant is an interim plant and must be replaced by a regional plant whenever one can be made available. A regional sewerage system is needed and service from Yaquina Bay to Beaver Creek should logically be considered. Treatment plant discharges with a high degree of treatment would have to be to the Yaquina Bay unless cost of an extended ocean outfall across a usable beach area can be justified.

The Seal Rock community has a headland feature which affords one of the very few potential, economical ocean discharge points. Economical practicable discharge points are very scarce in this coastal strip. There is much interest in development in that area; however, sewage disposal on small lots is again a critical problem.

South of the Seal Rock area, the Sandpiper Village and Bayshore Estates and other smaller tracts have developed in the last several years. Sewage disposal problems are numerous in this area because of small lots, high groundwater tables, rough topography, and drainage basins.

Again high density development should not be permitted until sewers can be made available.

H. Waldport Regional Area

Waldport

The city of Waldport is served by a sewage collection system and now is constructing a new secondary treatment plant which should be in operation by May 1973. This plant will have a capacity of 0.18 MGD or a population equivalent of 1,800. Present Waldport population is 720. This plant, with discharge to Lint Slough, a tributary of Alsea Bay, will have capacity to adequately handle the city's immediate sewerage needs and adjacent areas which would be developed. There is no need to allow development on subsurface sewage disposal systems in the vicinity of Waldport.

Except for the area to the east of Lint Slough, most of the city has sewers available. There are approximately 40 homes located outside the present sewage collection system. The present cost of sewering such areas has been the factor precluding such construction. It is the policy of the city of Waldport to not provide sewer service outside its city limits. However, the city is presently working with the U.S. Forest Service in order to provide sewer service to the Waldport Ranger Station complex immediately to the southwest of the city. This sewer construction could also provide needed sewerage services to the Yaquina John Point area and the proposed Fairway Heights development.

Additionally, the area to the east of the city along Highway 34 to Eckman Lake, a distance of about two miles, has a population nearly equal to that of Waldport. Many lots along the Alsea Bay are small, some are in flood plain and 50-foot setbacks from streams render some lots too small. The Health Department lists this area as a serious sewage problem area. Sewer service to this area should be provided because soil conditions in much of the lower Alsea Bay are not suited to subsurface sewage disposal.

There should be no high density development in the Waldport area unless public sewers are available to serve the proposed development. For sewer map and additional information see Appendix E.

I. Area South of Waldport

This is another section of almost 8 miles of continuous beach. There is one sewer system in that area which serves the U.S. Forest Service's Camp Angell Job Corps in Big Creek; otherwise all other development is on subsurface sewage disposal. Waconda Beach, just south of Waldport, and the San Marine area are the principal community developments. However, the entire strip is spotted with many residences. Numerous major subdivisions have been started in recent years, such as the Wakeetum Green (58 lots) tract in 1972. The Southwest Lincoln County Water District has 750 services between Yachats and Waldport, which is a measure of the considerable residential development in that area.

There are many sewage disposal problems along this strip because of clay, soil groundwater drainage problems, high water tables, small lots, and perched water tables. Some sewage discharges to the beach have been documented.

A regional sewerage system must be considered for this area but connection to the Waldport system or the Yachats system must be reviewed along with the possibility of an ocean outfall somewhere in the vicinity of Big Creek.

Camp Angell

This Job Corps Camp operated by U.S. Forest Service is located half-way between Waldport and Yachats just east of U.S. 101. It was built in 1966 and is served by its own advanced treatment plant (a secondary plant with effluent polishing by a sand filter) designed for a population of 200 and a flow of 0.02 MGD. It discharges ultimately to Big Creek and to the Pacific Ocean.

This plant should be connected into the Yachats sewer system if and when that system becomes available to the Camp Angell.

J. Yachats Regional Area

Yachats

The city of Yachats was incorporated in 1966 to solve that area's severe sewage disposal problems as numerous sewage discharges to Yachats River and the ocean. Sewerage system plans have been prepared to serve the city except some hill lots which engineer's cost estimates prevented addition at this time. The secondary treatment plant will discharge directly to the ocean on the treacherous rock section near the north side of the Yachats State Park. In July 1971 the city voted a $450,000 bond issue for construction of this project. However, part of the finance schedule was tied to federal assistance (FHA) which has been delayed and now eliminated. It is projected that the construction will get underway in July 1973 with sewer service available under the DEQ-EPA grant program within one year.

As all of the sewerage system will be new, the engineers estimate that the plant will be sufficient to serve the city and adjacent area for a number of years. The plant is designed on the basis of a waste flow of 0.133 MGD, an estimated population of 1,330. Present population is 460 and summer peak population was estimated at 900. Although it is counter to the city's present attitude of planning no sewer service outside of the city, there would be capacity in the system to accommodate service beyond the city limits. This plant should be considered and established as a regional plant.

As sewage problems continue and will continue in the Yachats area until the sewerage system is constructed, future building and subsurface sewage disposal construction in Yachats must be refused unless specifically approved by this Department or the Health Division, and high density development should be considered for approval after construction of the sewer system.

U.S. Forest Service Cape Perpetua

The Forest Service's Visitors' Information Station at Cape Perpetua waste disposal facility consists of an aerated lagoon from which all effluent is irrigated onto adjacent forest land. This project is approximately two miles south of the city of Yachats. As this area is on rugged coastal topography, it would be very difficult to phase this facility into the Yachats system. Because of these conditions, this system will have to be retained and must serve the present facilities.

K. Siletz Area

City of Siletz

The city of Siletz has just completed construction of a new sewerage system including collector system and lagoons. Although costs prevented construction of all of the collection system as proposed, those sewer lines will be provided soon. The initial lagoon design is for an estimated 1980 population of 700 or an average sewage flow of 0.07 MGD. The present population is 625. The city has acquired ample space at the lagoon site for expansion of that facility.

Although the city does not have a building permit or control program subsurface sewage disposal should not be allowed in the city unless by specific approval of this Department or the State Health Division. Additionally, no high density developments should be allowed in the Siletz area unless public sewers and treatment capacity are available.

Siletz River Estates

This proposed 66 lot housing tract is located approximately 12 miles up the Siletz River or about one-third of the way up to Siletz. A lagoon with a design population of 175 has been proposed and there has been no activity since the Department gave concept approval in November 1970. This is an isolated installation and regionalization is not possible.

L. Toledo Regional Area

Toledo

The city of Toledo completed construction of a new sewage treatment plant in 1970 at 0.6 MGD capacity for a population equivalent of 6,000. This plant thus will have the capacity to handle sewage waste loads of that city for a number of years or for the Toledo Regional area for quite several years.

Although sewers are not yet available to all parts of the city, work is being accomplished to meet that objective. Thus, with the construction of the East Slope Sewer Interceptor scheduled for 1973, 95 percent of the city's area will have sewers available. The only portion of Toledo then being without sewers would be the old sawmill area. The city has an ordinance requiring sewer connection for all new buildings unless sewers are not available. In that case, new buildings can only be constructed if subsurface sewage disposal is approved by the County Health Department. There has only been one such installation in the last five years.

There is potential buildable area just outside the city but it would need sewers because shallow shale and clay, and numerous drainageways, steep topography, shallow soils all preclude proper subsurface sewage disposal. The Yaquina Bay Regional Sewerage Plan, dated December 1969, has been adopted by the city of Toledo and the city has agreed to provide sewer service in the general Toledo area. High density development should not be permitted in the Toledo area unless connection is made to the city sewer.

With the recent removal of the sewage discharge to Yaquina Bay from the Georgia-Pacific sawmill power plant all sewage from the Georgia-Pacific complex is now properly controlled.

Immediately adjacent to Toledo, sewage discharges have been or are being corrected. Criteser Moorage raw sewage discharge to the Yaquina Bay has been eliminated. The Toledo Shingle Company is working on removing its sewage discharges to the Bay by pumping sewage to the Toledo sewer system. The Toledo High School's waste discharge permit requires removal of the inadequately treated sewage discharge to Olalla Slough by connection to the Toledo sewer system by October 1974. Cascadia Lumber Company is planning to remove inadequately treated sewage discharge to Yaquina Bay by pumping to the city of Toledo.

This Department feels that no further domestic waste disposal plants should be built in the upper Yaquina Basin with the possible exception of facilities to serve already located communities at Eddyville and Elk City.

IV. EVALUATION

The entire Lincoln County coast line is vulnerable to ultimate high density development unless the county takes specific action to regulate the types and densities of development that it determines should be allowed to take place in the respective coastal reaches.

The county should move as rapidly as possible to adopt a land-use and development plan, backed up by proper implementing authority, that will assuredly produce the kind of development and overall environment in Lincoln County during the next 10, 20 and 30 years that its citizens and the citizens of Oregon want.

The various reaches of Lincoln County coastline are herein preliminarily categorized as to proposed short-term development potential, based on sewerage considerations only, in the schematic diagram presented in Figure 1, for which these two paragraphs are explanatory:

Sewerage Classifications

A. Served or proposed to be served by municipal sewerage system.

B. Served or proposed to be served by private sewerage systems.

C. Existing or proposed sub-surface systems; conditions poor to marginal; servable by present, proposed, or expanded municipal system.

D. Existing or proposed sub-surface systems; conditions marginal; no sewers available.

E. Existing or proposed sub-surface systems; conditions poor; no sewer available.

Development Classifications

1. Development allowed on existing or a constructed proposed municipal sewerage system.
2. Development allowed on existing private sewerage system, or a constructed proposed private sewerage system.
3. Limited development allowed on sub-surface disposal systems in accordance with conservative sub-surface criteria; upgrade existing inadequate sub-surface systems.

4. No additional development; upgrade existing inadequate sub-surface systems.
5. No development at this time unless the area does connect to a regional sewerage system.

FIGURE 1

DEVELOPMENT POTENTIAL BASED ON SEWERAGE CONSIDERATIONS

Development Entity or Area	Sewerage Classification	Development Classification
Salmon River area	E	4
Pixieland **	B	2
Sal-La-Sea	E	5
Roads End	C	3
Devils Lake	C	3
Lincoln City *	A	1
Area between	E	5
Siletz Keys S. D. *	B	5
Area between	E	5
Salishan **	B	2
Gleneden S. D. * (Proposed)	C	1
Area between	E	4
Depoe Bay S. D. * (Proposed)	C	1
Area between	E	4
Inn at Otter Crest **	B	2
Otter Rock	E	5
Area between	D	4
Agate Beach	D	5
Newport *	A	1
South Beach	C	1
Area between	E	4
Holiday Beach (Proposed)**	B	2
Area between	D	4
Seal Rock	D	4
Area between	D	4

Development Entity or Area	Sewerage Classification	Development Classification
Waldport *	A	1
Area between	E	4
Camp Angell ** (USFS)	B	2
Area between	E	4
Yachats * (Proposed)	A	1
Area between	E	5
Cape Perpetua ** (USFS)	B	2
Area between Toledo & Newport	E	5
Toledo *	A	1
Siletz *	A	1
Siletz River Estates ** (Proposed)	B	2

KEY

* Municipal System

** Private System

The Figure 1 diagram is very preliminary and is presented as a possible format to be used in developing a detailed, workable, interim county sewerage policy and as a potential basis for preparation and adoption, after further detailed study, of a county-wide sewerage plan.

In the relatively short-term future, it is proposed that sewerage services, in general, be provided by extending sewers from established and presently proposed publicly owned (municipal) systems.

There are five existing municipal sewage treatment facilities in Lincoln County (Lincoln City, Newport, Waldport, Siletz and Toledo) which are considered susceptable of expansion to serve adjacent developed and developable areas. There are also three proposed municipal sewage treatment facilities (Depoe Bay S. D., Gleneden S. D. and Yachats) that will meet existing needs and are capable of serving adjacent developable areas. In addition, there are seven non-municipal owned operating sewage treatment plants. Only one non-municipal facility, the Inn-at-Otter Crest Plant, is considered expandable to serve adjacent areas.

Development is occurring along the remainder of almost the entire coastal strip to varying degrees of density on sub-surface sewage disposal systems without adequate planning guidance regulations.

A list of apparent, logical treated sewage discharge points including existing and proposed systems is shown in Table A. Most of these points have a rocky shoreline with little or no usable beach area in the immediate vicinity of the proposed discharge. The alternative to using these points would be to construct extended ocean outfalls across usable beach areas at considerable costs.

Table A

Apparent, Logical Sewage Outfall Points

Service Area	Potential Discharge Point
Roads End	Possible extended ocean outfall North of Wecoma Beach
Lincoln City	Schooner Creek - Siletz
Gleneden Sanitary District	Fishing Rock
Depoe Bay Sanitary District	Shell Road
Otter Rock	Elephant Rock
Newport	Extended ocean outfall Possible second outfall on south side of Yaquina Bay
Seal Rock	Seal Rock or extended ocean outfall
Waldport	Lint Slough - Alsea Bay
Yachats	North of Yachats State Park

V. SUMMARY AND CONCLUSIONS

1. The coastal attractions of Lincoln County have resulted in great pressures for development to accommodate both permanent resident and seasonal populations.
2. Relatively unplanned and unrestrained growth and development has resulted in serious water supply and sewage disposal deficiencies which pose potential hazards to the health of residents and visitors and a threat to the overall high environmental quality of Lincoln County.
3. The physical characteristics of the county cause difficulties in providing adequate sub-surface sewage disposal because of high rainfall, steep slopes, small lots, high ground water tables, perched water table, shallow soils, impervious soil structures, and small drainage basins.
4. Of the approximately 55 miles of coastline in Lincoln County, only approximately 10 miles are presently served by the three existing coastal municipal sewer systems of Lincoln City, Newport and Waldport. An additional 5 miles of coastline will be served by the proposed Gleneden Sanitary District and Depoe Bay Sanitary District and Yachats sewerage systems. The remaining approximately 40 miles of Lincoln County coastline has no firm plan for sewer services.
5. Approximately 58% of the resident population of Lincoln County are presently served by sewers. The remaining 42% are served by septic tanks and pit privies, many of which do not function adequately. During seasonal population peaks, the percentage of the total population served by sub-surface sewage disposal systems becomes even greater.

6. There are considerable problems with the Lincoln City sewerage system and treatment facilities due to inadequate sewer line capacity and excessive infiltration which the present city administration is working diligently to correct. The Roads End area to the north of Lincoln City and the Devils Lake area have sub-surface sewage disposal problems and need to be served by sewers and sewage treatment facilities.

7. The Depoe Bay area and the city of Yachats presently have many raw sewage discharges to the ground surface and the Pacific Ocean. Immediate construction of sewage collection and treatment facilities are essential to both areas.

8. In the Otter Rock area a recent survey by DEQ and the County Health Department staffs found that a health hazard existed due to sewage discharging in the ground surface and to drainageways. This problem should be corrected by construction of a collection system and connection to a regional treatment facility to be merged with the Inn at Otter Crest system.

9. The South Beach area needs sewer service and this is scheduled by the city of Newport soon. The city of Newport is faced with eliminating the combined sewers in the southeast area of the city.

10. There are inadequately treated sewage discharges to Yaquina Bay and the ocean, in and around the city of Newport and Toledo, connections need to be made to the Newport and Toledo sewer systems immediately.

11. All cities need to correct existing infiltration problems by adopting a specific program and time schedule with a financing scheme for storm water separation and sewer line improvement.

12. There are many present and proposed high density developments and subdivisions, and residential communities, immediately outside of and adjacent to the cities, where no provisions have been made for sewage service and where sewage disposal problems exist or would be caused by high density development.

13. Development of residential tracts and subdivisions is being allowed where sewer service will be very costly and financially difficult to provide.

14. There is a definite need for regional sewerage plans in areas in the county that are presently being proposed for development.

VI RECOMMENDATIONS

1. That no high-density development (in excess of three single-family residential units per acre or equivalent) shall be permitted except where connections can be made to DEQ approved sewer systems.
2. It is recommended that the County adopt a definite interim sub-surface sewage disposal policy and procedure whereby building permits would not be issued, without prior coordinating approval of the State Health Division and the Department of Environmental Quality, for the following:
   a. Subdivisions, condominiums, mobile home parks and other high density developments where sub-surface sewage disposal systems are proposed.
   b. Building on individual lots of less than 5 acres where both water supply and sewage disposal are proposed to be provided by individual systems located on the premises.
   c. Building on individual lots of less than one acre where water supply is proposed to be provided by an approved public water supply system and where sub-surface sewage disposal is proposed.
3. It is recommended that Lincoln County and the cities and districts therein take the following steps to properly plan and develop a county-wide sewerage program, consistent with the County's and State's land-use planning and development objectives.
   a. Establish appropriate Regional Sewerage Implementing Authorities. Existing and proposed municipal sewers should be expanded into the regional sewerage system, where practicable. (Lincoln County Board of Commissioners approved on December 6, 1972, a motion that they would implement the conception of a county-wide service district within five (5) months.) (*By May 1, 1973.)
   b. Refine and formally adopt Regional sewerage Service Area Boundaries for the developing areas (*By February 1, 1973).

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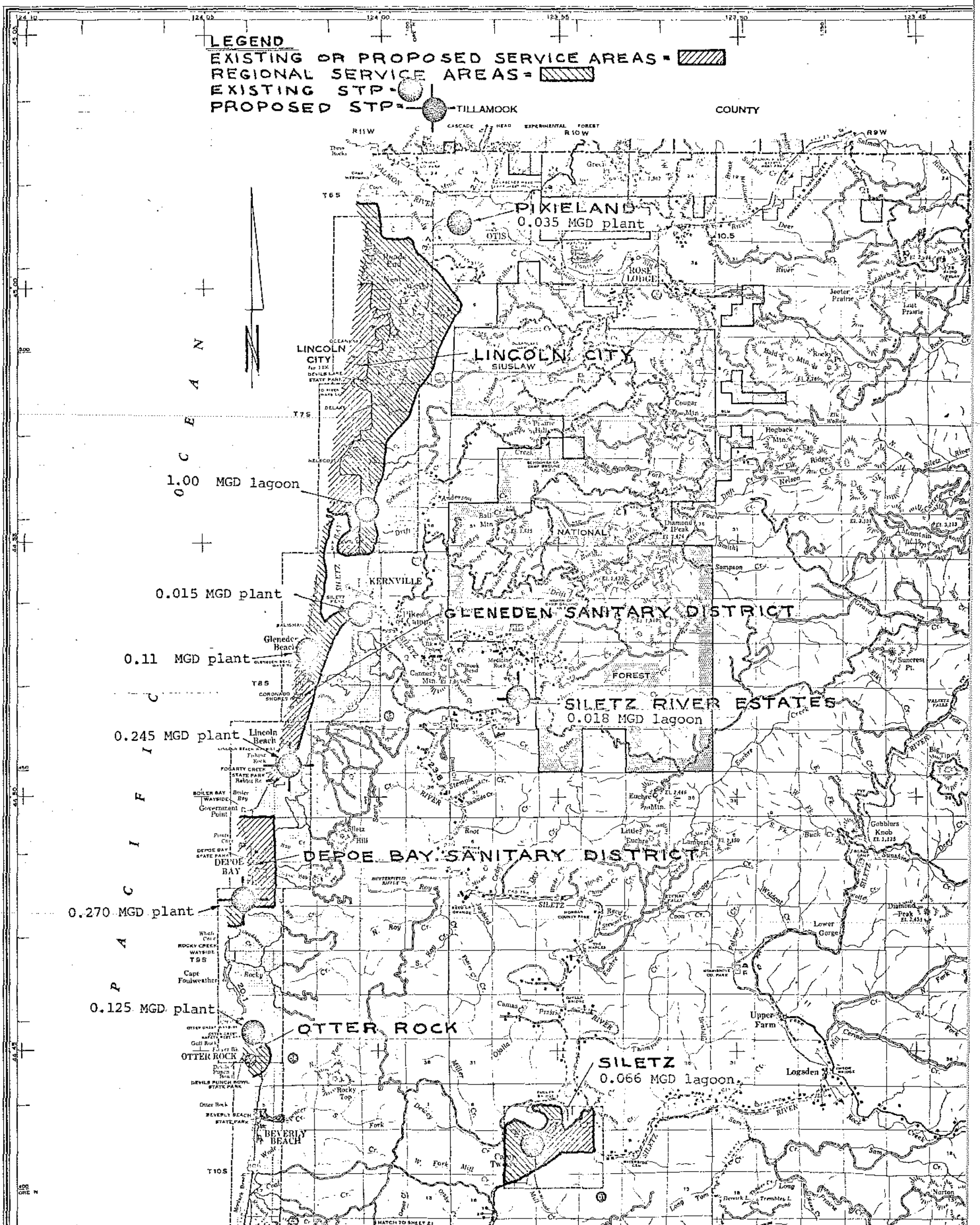
*Proposed dates of accomplishment.

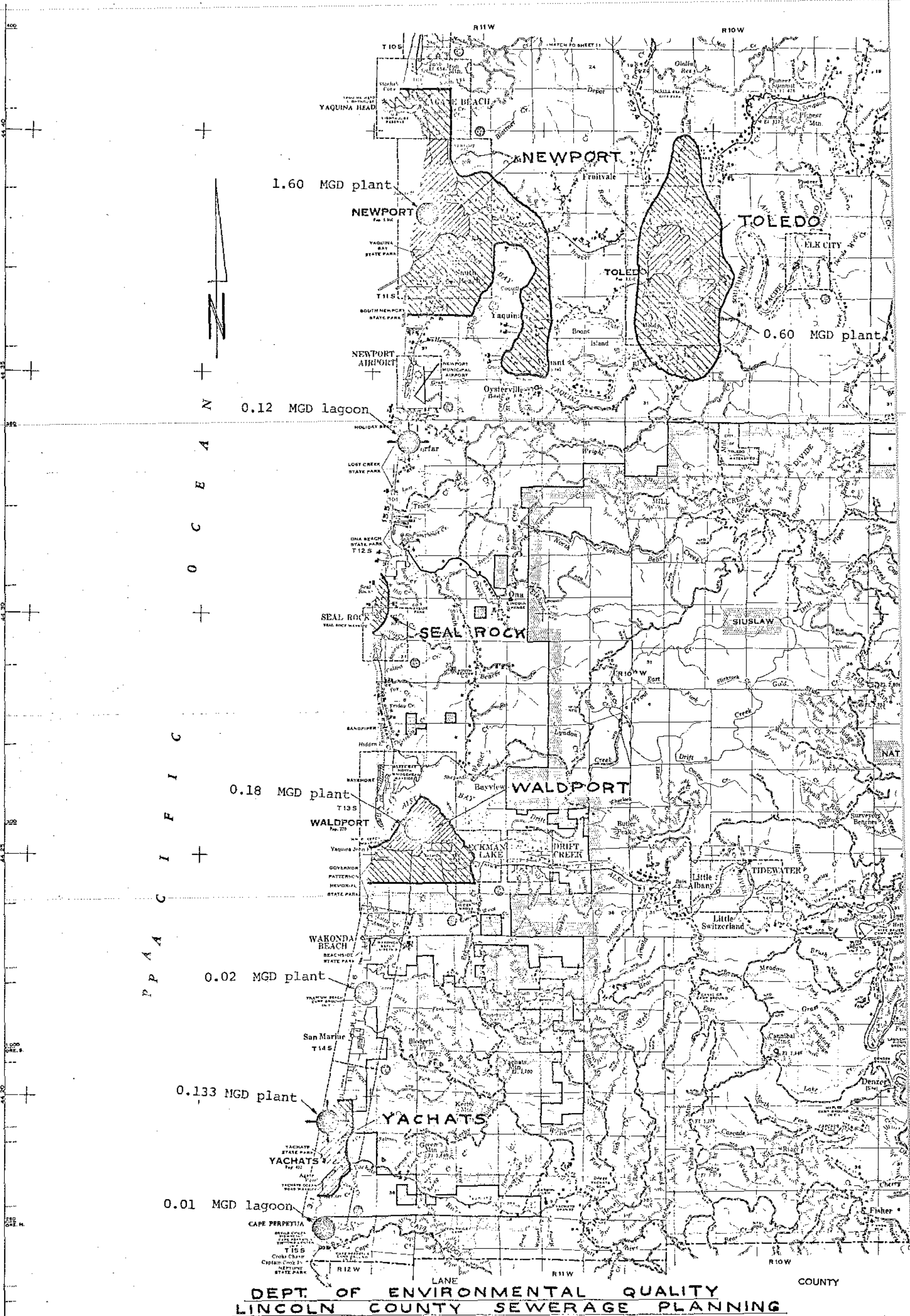
c. Develop detailed engineering plans for regional sewerage systems. (*By June 1, 1973)

d. Adopt detailed implementation programs, time schedules and financing schemes. (*By July 1, 1973).

4. That the State of Oregon give maximum grants and other assistance to Lincoln County and other units of local government, to help them to develop and implement an adequate county-wide sewerage plan.



DEPT. OF ENVIRONMENTAL QUALITY
LINCOLN COUNTY SEWERAGE PLANNING
JANUARY 1973



DEPT. OF ENVIRONMENTAL QUALITY
LINCOLN COUNTY SEWERAGE PLANNING
JANUARY 1973

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item No. L, January 26, 1973, EQC Meeting

Pacific Carbide and Alloys Company - Proposed Modification of Waste Discharge Permit

Background

Pacific Carbide and Alloys Company operates a plant on the Columbia Slough in North Portland which produces calcium carbide and acetylene from limestone and coke. The process employs an arc furnace which uses cooling water and scrubber water. The scrubber water effluent contains some carbon, calcium hydrate, and calcium carbonate. A settling pond had been used since 1956 to remove settleable solids prior to discharging to the slough.

On December 20, 1970, the settling pond dike failed allowing inorganic settled sludge to flow into the Columbia Slough. The Department was notified of the failure by letter dated December 24, 1970. A staff inspection of the dike failure was conducted on December 28, 1970. The sludge created a fan in the Columbia Slough about 150 feet by 90 feet.

By a letter dated December 31, 1970, the Department requested plans and a construction timetable for rebuilding the settling ponds and providing recirculation of scrubber water. Plans were submitted February 17, 1971 and approved March 3, 1971. The new settling pond was completed and placed into operation July 1, 1971. Recirculation of scrubber water commenced on August 8, 1971

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which significantly reduced the amount of scrubber water discharged to the slough.

With the new settling pond rapidly filling with solids, it became apparent that an additional pond was necessary in order to allow for dewatering and cleaning of the existing pond. The Waste Discharge Permit issued September 1972 required completion of the second pond by October 1, 1972. This was done.

The Waste Discharge Permit issued September 1972 also required removal of the solids which had flowed into the slough at the time of the dike failure in 1970. The permit required removal of the solids within 60 days.

Pacific Carbide and Alloys Company has been negotiating with various parties to take stockpiled solids at the site so that room can be made for the slough solids. They objected to the short time schedule they had for removal of the solids and requested a hearing before the Commission.

On November 22, 1972, members of the Water Quality staff, Solid Waste staff, Pacific Carbide, City of Portland, and Corps of Engineers met and reviewed the alternatives for dredging the scrubber solids out of the slough. At that time Pacific Carbide was told that the matter would be scheduled before the Commission as soon as possible and that if they presented a definite plan and timetable for removing the solids by August 1973 that the Department staff would support their proposal. A letter dated December 4, 1973, was sent to Pacific Carbide summarizing the things discussed at the meeting.

In a letter dated December 20, 1972, Pacific Carbide did submit a program and timetable for removing the solids from the slough by August 31, 1973.

Evaluation

Prior to July 1, 1971, Pacific Carbide's settling pond was quite inadequate and resulted in repeated failures and violations of Waste Discharge Permit conditions.

Pacific Carbide has always been cooperative and responsive to departmental requests. They have made extensive efforts to solve liquid waste problems and to improve the waterfront along their property.

The waste water control facilities as presently constructed appear to be adequate and should prevent the type of failures which have been experienced in the past.

The problems associated with removal of the sludge in the slough are not easily solved. The material is very hard to work with and cannot be easily stockpiled. Existing stockpiled sludge will have to be removed to make room for the sludge to be dredged from the slough. The stockpiles will be difficult to work with until July or August. Once sufficient stockpiled material has been removed the slough can be dredged. It appears that the most reasonable method of disposing of the solids would be to apply them to some useful purpose. There are several possibilities which are being investigated by Pacific Carbide but none are immediately available. The City of Portland has expressed a desire for the sludge for leachate control at landfill sites. They will not be able to take any of the sludge until after July 1, 1973.

Other than being a continued aesthetic nuisance and minor navigation impediment the sludge is causing no degradation to the slough. However, it should be removed as soon as possible.

Although the schedule submitted by Pacific Carbide in their letter of December 20, 1972 did not specify a specific method of disposal, it did establish a completion date of August 31, 1973.

Conclusions and Summary

Pacific Carbide and Alloys Company was issued a permit September 27, 1972, which required removal of waste solids from the slough within 60 days. At the time the permit was issued Pacific Carbide had no definite plan for removal of the solids and were not willing to establish a definite schedule for removing them. In a letter dated October 13, 1972, they requested an extension of the deadline and requested a hearing before the Commission.

Pacific Carbide is now making extensive studies for utilizing or disposing of the material and have agreed to have the material removed by August 31, 1973.

The Department has not determined any significant problems which might be created by allowing the solids to remain in the slough for another eight months.

Recommendation

It is recommended that Condition 7 of the Waste Discharge Permit issued to Pacific Carbide and Alloys Company September 27, 1972, be amended to require removal by August 31, 1973 of waste solids which exist in the Columbia Slough as a result of pond wall failure.

EJWeathersbee

E. J. Weathersbee

CKA:ljb
1/17/73

TELEPHONE: (503) 289-1186

CABLE ADDRESS "PACIFIC"

Pacific Carbide & ALLOYS CO.

P. O. BOX 17008 • PORTLAND, OREGON 97217

December 20, 1972

Mr. L. B. Day, Director
Department of Environmental Quality
1234 S. W. Morrison Street
Portland, Oregon 97205

Dear Mr. Day:

This is in reply to your letter of December 4, 1972 requesting an acceptable program and timetable for the removal of waste solids from the Columbia Slough.

We will remove this material by August 31, 1973, the method and timing to be determined in the interim by the use of one or more of the many possibilities listed in our letter of November 6, 1972 to you.

Our timetable presently is as follows:

By January 31, 1973 --
Evaluate results of tests being run for us by Automation Industries, Vitro Engineering Division to determine whether the material can be recycled in our plant or sold for acid neutralization by others.

By April 30, 1973 --
Advise you of progress toward the various methods of disposal.

By July 31, 1973 --
Make a final decision regarding the method of removal of any remaining material by August 31, 1973.

We regret that at this time we are unable to be specific except as to the deadline, but we will advise your office periodically of developments in regard to timetable and methods.

We are determined to meet the deadline and are spending a great amount of effort to resolve how this clean up will be accomplished.

Very truly yours,

PACIFIC CARBIDE & ALLOYS CO.

T. J. Waters

T. J. Waters
Vice President

TJW/nja

WASTE DISCHARGE PERMIT

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Issued in accordance with the provisions of
ORS 449.083

Permit Number: 1288
Expiration Date: 9-30-74

ISSUED TO:	REFERENCE INFORMATION
Pacific Carbide & Alloys Company Post Office Box 17008 Portland, Oregon 97217	File Number: 66083 Appl. No.: 1426 Received: 8-27-71 Major Bn: Willamette Minor Bn: Receiving Stream: Columbia Slough River Mile: 5.1 County: Multnomah

Until such time as this permit expires or is modified or revoked, Pacific Carbide & Alloys Company is herewith permitted to:

a. Operate waste water collection, treatment and disposal facilities.
b. Discharge uncontaminated furnace cooling water and adequately settled scrubber and plant area wash down waters to the Columbia Slough.

All of the above activities must be carried out in conformance with the requirements, limitations and conditions which follow.

All other waste discharges are prohibited.

1. The waste water settling pond shall be maintained so that overflow effluent water will meet permit conditions and provide water satisfactory for recycling to the scrubbers. The settling pond retention time shall be sufficient to remove all settleable solids except during periods of excessive rainfall.

2. Washdown drainage waste waters from the lime plant and scrubber area shall be collected and pumped to the settling pond.

3. Other drains discharging to the slough shall be free of all settleable solids except during periods of excessive rainfall.

4. Uncontaminated cooling water shall be mixed with settling pond overflow before being discharged to the Columbia Slough.

5. The quantity and quality of effluent discharged directly or indirectly to the Columbia Slough shall be limited as follows:

   a. The monthly average suspended solids concentration in the contaminated cooling waters and scrubber waste waters discharged to Columbia Slough shall not exceed 50 mg/l.

   b. pH shall be within the range 6.5-8.5 (after dilution with furnace cooling water).

6. Prior to October 1, 1972, the permittee shall provide a second settling pond or equivalent controls to insure adequate control of waste waters when it becomes necessary to clean the existing pond.

7. Within 60 days after receipt of this permit, the deposit of waste solids which exists in the Columbia Slough as a result of pond wall failure shall be removed and disposed of in a manner approved in advance by this department.

8. All plant processes and all waste collection, treatment and disposal facilities shall be operated and maintained at all times at maximum efficiency and in a manner which will minimize waste discharges.

9. All waste solids and pond dredge spoils shall be utilized or disposed of in a manner which will prevent their entry into the waters of the state and such that health hazards and nuisance conditions are not created.

10. No petroleum base products or other substances which might cause the Water Quality Standards of the State of Oregon to be violated shall be discharged or otherwise allowed to reach any of the waters of the state.

11. Sanitary wastes shall be disposed of to a septic tank and drainfield system which has been installed in accordance with the recommendations of the Oregon State Health Division and the local county health department or by other approved means.

12. The permittee shall observe and inspect all waste handling, treatment and disposal facilities and the receiving stream above and below each point of discharge at least three times per week to insure compliance with the conditions of this permit. A written record of all such observations shall be maintained at the plant and shall be made available to the Department of Environmental Quality staff for inspection and review upon request.

13. The permittee shall effectively monitor the operation and efficiency of all treatment and control facilities and the quantity and quality of the wastes discharged. A record of all such data shall be maintained and submitted to the Department of Environmental Quality at the end of each calendar month. Unless otherwise agreed to by the Department of Environmental Quality, data collected and submitted shall include, but not necessarily be limited to, the following parameters and minimum frequencies:

Parameter	Minimum Frequency
Flow	Daily (Monday through Friday)
Suspended Solids	Daily " " "
pH	Daily " " "
Temperature	Daily " " "

14. In the event a breakdown of equipment or facilities causes a violation of any of the conditions of this permit or results in any unauthorized discharge, the permittee shall:

    a. Immediately take action to stop, contain and clean up the unauthorized discharges and correct the problem.

    b. Immediately notify the Department of Environmental Quality so that an investigation can be made to evaluate the impact and the corrective actions taken and determine additional action that must be taken.

c. Submit a detailed written report describing the breakdown, the actual quantity and quality of resulting waste discharges, corrective action taken, steps taken to prevent a recurrence and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for failure to comply.

15. Authorized representatives of the Department of Environmental Quality shall be permitted access to the premises of all facilities owned and operated by the permittee at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data and carrying out other necessary functions related to this permit.

16. Whenever a significant change in the character of the waste is anticipated or whenever a change in the waste to be discharged in excess of the conditions of this permit is anticipated, a new application shall be submitted together with the necessary reports, plans, and specifications for the proposed changes. No change shall be made until plans are approved and a new permit issued.

17. In the event that a change in the conditions of the receiving waters results in a dangerous degree of pollution, the Department of Environmental Quality may specify additional conditions to this permit.

18. This permit is subject to termination if the Department of Environmental Quality finds:

    a. That it was procured by misrepresentation of any material fact or by lack of full disclosure in the application.
    b. That there has been a violation of any of the conditions contained herein.
    c. That there has been a material change in quantity or character of waste or method of waste disposal.

DEPARTMENT OF ENVIRONMENTAL QUALITY

By (Original signed by L. B. Day)

Title Director

Date September 27, 1972

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item M, January 26, 1973 EQC Meeting

Solid Waste Management Action Plan Grant Applications and Grant Offer Status Report

BACKGROUND

At the October 25, 1972 meeting, the EQC authorized the Department to proceed with development of the State Solid Waste Management Action Plan.

On November 10, 1972 the State Emergency Board authorized the Department to grant up to $1,129,630 to assist local government with development of the regional components of the State Plan.

The Department has since been providing technical assistance to local government in completing grant applications.

The Department as its first funding action under this program made an interim grant offer of $50,000 to the Mid-Willamette Valley Council of Governments. This was done in order to sustain the ongoing planning effort from December 15, 1972 to February 15, 1973 in the Chemeketa Region comprimised of Benton, Linn, Marion, Polk and Yamhill Counties. During this interim period, the region's solid waste staff is to proceed with implementation of the region's first phase plan developed under an Environmental Protection Agency grant and complete the state grant application to fund second phase planning and begin implementation. Up to $10,000 of the $50,000 is earmarked for assisting the Oregon Seed Council in demonstrating the feasibility of cubing grass seed straw.

PRESENT STATUS

On January 24, 1973 the State Solid Waste Management Citizens' Advisory Committee (CAC) will review the Department's Solid Waste Management Division recommendations on the first group of grant applications as indicated below.

The following outlines the present status of action planning grant applications for Oregon counties and regions.

Applicant or Region	Received	Status
Chemeketa Region (Marion, Polk, Yamhill, Linn and Benton Counties)	12/11/72 signed from Marion County 1/12/73 unsigned from Mid-Willamette COG	Draft in, unsigned, by new applicant (COG); staff review in process. Official signed application expected from COG after 2/11/73. Interim $50,000 Grant Offer made. Staff recommendation under development. May be ready for CAC - 1/24/73.
Grant County	12/18/72	Staff recommendation being finalized. Scheduled for CAC - 1/24/73.
Gilliam County	12/22/72	Staff recommendation being finalized. Scheduled for CAC - 1/24/73.
Morrow County	12/26/72	Staff recommendation being finalized. Scheduled for CAC - 1/24/73.
Lane County	12/26/72	Staff recommendation being finalized. Scheduled for CAC - 1/24/73.
Douglas County	1/15/73	Staff recommendation being finalized. Scheduled for CAC - 1/24/73.
North Coast Region (Clatsop and Tillamook Counties)	1/16/73	Staff recommendation being finalized. Scheduled for CAC - 1/24/73.
MSD-CRAG Region (Clackamas, Columbia, Multnomah and Washington Counties)	1/16/73	Staff recommendation being finalized. Scheduled for CAC - 1/24/73.
Mid-Columbia Region (Hood River, Sherman and Wasco Counties)	12/26/72	Supplemental information pending. May be ready for CAC on 1/24/73.
Central Oregon Region (Crook, Deschutes, and Jefferson Counties)	12/26/72	Supplemental information pending. May be ready for CAC on 1/24/73.
Coos and Curry Counties	12/26/72	Supplemental information pending. May be ready for CAC on 1/24/73.
Union and Wallowa Counties	-	Developing; DEQ staff assisting.

Josephine County	-	Developing; DEQ staff assisting.
Umatilla County	-	Developing; DEQ staff assisting.
Jackson County	-	Will apply in February.
Wheeler County	-	Will apply in February.
Malheur County	-	EPA grant awarded; may apply for supplemental state funds.
Lincoln County	-	HUD funded planning underway; may apply for supplemental state funds.
Baker County	-	Decision on EPA grant application expected by February.
Harney, Lake, and Klamath Counties	-	No applications received, but previous indication of interest. Staff will follow-up by February 1, 1973.

Copies of all applications drafts have been forwarded to the appropriate district engineer and their comments are being incorporated into the staff recommendations.

We expect to have the statewide planning program funded and under development by March, 1973. The local and regional components of the statewide plan should be completed by December 31, 1973.

A supplemental report outlining CAC action during the January 24, 1973 meeting and any subsequent Department recommendations will be presented to the Commission at the January 26, 1973 meeting.

EJWeathersbee

E. J. Weathersbee

RDJ:mm

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

TO: Environmental Quality Commission

FROM: Acting Director

SUBJECT: Addendum to Agenda Item M. January 26, 1973 EQC Meeting

Solid Waste Management Action Plan Grant Applications and Grant Offer Status Report Update

PRESENT STATUS

The State Solid Waste Management Citizens' Advisory Committee (CAC) on January 24, 1973, by unanimous vote, recommended approval of all grant applications submitted to them for review.

The following grant applications and dollar amounts comprise the grant package as recommended for approval by the (CAC):

Applicant or Region	Amount Recommended for Approval
Grant County	$9,680
Gilliam County	$5,000
Morrow County	$19,750
Douglas County	$26,300
Lane County	$154,000
North Coast Region (Clatsop & Tillamook Counties)	$35,925
MSD-CRAG Region Clackamas, Columbia, Multnomah and Washington Counties	$325,000
Mid-Columbia Region (Hood River, Sherman and Wasco Counties)	$20,000
Central Oregon Region (Crook, Deschutes and Jefferson Counties)	$43,160
Total Grant Funds Recommended for Department Approval	$638,815

TELEPHONE: (503) 229-5696

Grant offers should be made to these applicants by mid-February.

Coos and Curry Counties' application was not complete and therefore was not considered at this CAC meeting.

The CAC will probably meet about February 15, 1973 to review the additional completed applications which may be received. Applications which are expected to be in review condition before that time are those from Chemeketa Region, Coos-Curry, Josephine County, Union and Wallowa Counties, Umatilla County, and Wheeler County. Also by that time, the Department will have been in contact with each county in Oregon and should have determined the disposition of all solid waste planning programs.

E. J. Weathersbee

GLG:mm
1/25/73

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item No. N, January 26, 1973, EQC Meeting

North Tillamook County Sanitary Authority Addition to Construction Grant Priority List

Background

North Tillamook County Sanitary Authority is preparing to initiate construction of regional sewerage facilities which will serve the cities of Nehalem and Wheeler and the surrounding area. The City of Wheeler will be served by contract. Cities of Nehalem and Wheeler originally started separate projects and received construction grant offers in Fiscal Years 70 and 71. When the regional approach was developed, procedures were initiated to transfer the Nehalem grant to North Tillamook County Sanitary Authority.

The Department has now been advised by the Environmental Protection Agency that the transfer of grant from Nehalem to North Tillamook County Sanitary Authority would constitute a change in scope of the project and that such change in scope is prohibited by the 1972 Amendments of the Federal Water Pollution Control Act. Thus, it will become necessary for EPA to withdraw the Fiscal Year 70 grant and handle the North Tillamook County Sanitary Authority as a new grant project during Fiscal Year 73. In order to accomplish this, it will be necessary to add North Tillamook County Sanitary Authority to the Fiscal Year 73 Grant Priority List.

TELEPHONE: (503) 229-5696

Evaluation

The Department does not expect this procedure to materially delay the North Tillamook County Sanitary Authority project as long as EPA and the State Legislature concur in the grant funding program concept adopted by the Commission at its last meeting.

Recommendation

It is recommended that North Tillamook County Sanitary Authority be added to the Fiscal Year 73 - 74 Construction Grant Priority List based on the following information:

Priority Points:	90
Project Name:	North Tillamook County Sanitary Authority
Project Condition:	Health hazard, untreated discharges
Needed Project Description:	Sewage Treatment Plant and Interceptor Sewers
Estimated Project Cost:	$1,225,000

E J Weathersbee

E. J. Weathersbee

HLS:ak

January 18, 1973

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission

From: Acting Director

Subject: Agenda Item No. 0, January 26, 1973, EQC Meeting

Tax Credit Applications

Attached are review reports on six Tax Credit Applications. These applications and the recommendations of the Acting Director are summarized on the attached table.

E. J. Weathersbee

WEG:ahe

January 18, 1973

TELEPHONE: (503) 229-5696

TAX CREDIT APPLICATIONS

Applicant	Appl. No.	Facility	Claimed Cost	% Allocable to Pollution Cont.	Acting Director's Recommendation
Weyerhaeuser Company Wood Products Division	T-330	Primary Settling Basins	268,793	80% or more	Issue
Lemons Millwork, Inc.	T-365	Low Pressure Dust Collection System	31,200	80% or more	Issue
Pacific Meat Company	T-392	Collection & Pretreatment System	71,714.13	80% or more of $60,639.13	Issue
Weyerhaeuser Company Timberlands	T-395	Water Sampling Devices	17,246	80% or more	Issue (Special Condition)
Weyerhaeuser Company Wood Products Group	T-396	Water Tank, Shaker Screen, Distribution Weir & Separators	22,750	80% or more	Issue
Weyerhaeuser Company Wood Products Group	T-401	Probes, Transmitting Equipment & Recording Devices	8,565	---	Denial

Appl T-330

Date 12-19-72

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

TAX RELIEF APPLICATION REVIEW REPORT

Weyerhaeuser - Klamath Falls

1. Applicant

Weyerhaeuser Company
Wood Products Division
P. O. Box 9
Klamath Falls, Oregon 97601

The applicant owns and operates a lumber and hardboard manufacturing plant south of Klamath Falls in Klamath County.

2. Description of Claimed Facility

The claimed facility consists of two (2) timber construction primary settling basins of 450,000-gallon total capacity, a sludge lagoon for the storage and dewatering of primary solids, an aerated, 7.8 million-gallon lagoon lined with 10 MM PVC liner, six 30-hp aerators, and associated pumps, piping and controls. In addition, an 8 ft. chain-link perimeter fence is also included in the claimed facility.

The claimed facility was placed in operation October, 1969. Certification is claimed under the 1969 Act with 100% allocated to pollution control.

Claimed cost: $268,793 (Accountant's certification was provided.)

3. Evaluation of Application

The claimed facility provides secondary treatment for waste process waters from the hardboard plant, hardboard finishing plant and from the power plant. With the claimed facility, Weyerhaeuser Company can limit BOD discharges into the Klamath River to well below their 900 pounds per day permit limit.

4. Recommendation

It is recommended that the cost of the perimeter fence be deducted from the total sum for which tax relief is requested and that a Pollution Control Facility Certificate bearing the cost of $268,793 with 80% or more of the cost allocated to pollution control be issued for the facilities claimed in Tax Application No. T-330.

RJN:mjb
12-19-72

Appl. T-365

Date 12-26-72

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Lemons Millwork, Inc.
224 East 13th Avenue
Albany, Oregon 97321

The applicant operates a cabinet manufacturing plant in Albany.

This application was received May 24, 1972. The report from the Mid-Willamette Valley Air Pollution Authority was received on December 21, 1972.

2. Description of Claimed Facility

The claimed facility is a low pressure dust collection system to control particulate emissions to the atmosphere and consists of the following:

1. Carter Day Model 72RJ72 Filter Unit

2. AMF No. 70S Heavy Duty Fan and 75 H.P. electric motor

The facility was completed and placed in service in February, 1972.

Certification is claimed under the 1969 Act and the percentage claimed for pollution control is 100%.

Facility costs: $31,200 (Accountant's certification was provided).

3. Evaluation of Application

The Mid-Willamette Valley Air Pollution Authority reports that this installation was made in response to public complaints of dust and particulate fallout in the vicinity of the plant. The Authority did review and approve the plans and specifications for this system and has inspected and approved the final installation.

The system filters the air discharges from previously existing cyclones and removes any fine wood particulates that are not captured by the cyclones. Since the manufacturing processes create appreciatable quanities of sawdust and sanderdust of very small particle size, the cyclones were not very effective in controlling particulate emissions to the atmosphere. The Carter Day filter unit would have an estimated collection efficiency of 96%+ with the sawdust and sanderdust material.

It is concluded that the system does operate as planned and does reduce particulate discharges to the atmosphere. The company will not be able to earn any return on this investment.

4. Director's Recommendation

It is recommended that a Pollution Control Facility Certificate bearing the costs of $31,200 with 80% or more of the costs allocated to pollution control be issued for the facility claimed in Tax Application T-365.

RAR:sb

Appl T-392

Date 11-28-72

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Pacific Meat Company
P.O. Box 17036 - Kenton Station
Portland, Oregon 97217

The applicant operates a slaughterhouse and meat processing operation located at North Columbia Boulevard and Burrage Street, Portland, Oregon, in Multnomah County. The average daily kill is 258 cattle, 387 sheep and 106 hogs with an average daily wastewater flow of 150,000 gallons.

2. Description of Claimed Facility

Pumps, piping, screens, aeration systems, and associated materials and equipment to collect and pretreat animal wastes, sanitary wastes and process water prior to discharge to a municipal sewer. The waste flow is treated for solids removal in a series of sumps and mechanical screens. The liquid wastes are piped to an existing anaerobic/aerobic lagoon series. Effluent from the aerobic lagoon is pumped through a 6 inch diameter pressure pipeline to an existing municipal sewer. All waste solids are hauled away for off-site disposal.

The claimed facility was placed in operation in June, 1971.

Certification is claimed under the 1969 Act with 100% of the cost allocated to pollution control.

Facility Cost: $71,714.13.

3. Evaluation of Application

The claimed facility was constructed to alleviate an existing pollution problem. The applicant was required by the Department of Environmental Quality to eliminate all discharges of organic wastes to the Columbia Slough by June 1, 1971.

The claimed facility is contributing to adequate control of wastes for the present scope of operations that it serves.

The applicant claims $11,075.00 for cleaning waste solids from two existing lagoons prior to operation of the claimed facility. This is a maintenance function and, as such, is not considered eligible for tax relief.

4. Recommendation

It is recommended that a Pollution Control Facility Certificate be issued for the facilities claimed in Application No. T-392, such certificate to show a cost of $60,639.13 with 80% or more of the cost allocable to pollution control.

GCS:ak
12/13/72

Appl T-395

Date 12-18-72

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

TAX RELIEF APPLICATION REVIEW REPORT

Weyerhaeuser Company
Timberlands Operations

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1. Applicant

Weyerhaeuser Company
Timberlands
P. O. Box 275
Springfield, Oregon 97477

The applicant owns and manages a commercial tree farm along the headwaters of the Middle Fork of the Santiam River in Linn County.

2. Description of Claimed Facility

Two water sampling devices along the Middle Santiam River automatically extract one-pint samples from the river and record the water temperature, pH, conductivity and dissolved oxygen content of the river every six hours. The one-pint samples and the recorded data are picked up once every week and the collected samples are analyzed for turbidity, total nitrogen and other parameters. Included with the facility are the individual shelters for each sampling device and a Cushman Traxtor all-terrain vehicle used to obtain access to the second sampling station.

The claimed facility was placed in operation in October, 1971.

Certification is claimed under the 1969 Act with 100% allocated to pollution control.

Faciltiy cost: $17,246 (Accountant's certification was submitted.)

3. Evaluation of Application

The basic function of the device is to monitor the river water quality to determine the effect of logging and road construction in the upstream drainages. The recordings and samples are retrieved once a week by a forest technician.

Actually, the sampling device does not function as a pollution abatement device nor does it function in conjunction with any other known waste control facility to abate pollution. It is foreseeable that some water quality control can be achieved by Weyerhaeuser through a trial and error method. Hopefully, through careful analysis of the stream data and watershed management data, forest logging practice can be modified to improve water quality.

4. Recommendation

It is recommended that a Pollution Control Facility Certificate bearing the actual cost of $17,246 with 80% or more allocated to pollution control be issued for the facilities claimed in Tax Application T-395, subject to the following special condition:

The Company shall submit a detailed report to the Department of Environmental Quality prior to December 31 of each year containing an analysis of the data collected together with a complete discussion of the watershed management practices which influence the data.

RJN:mjb
12-18-72

Appl T-396

Date 12-18-72

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

TAX RELIEF APPLICATION REVIEW REPORT

Weyerhaeuser Company - Springfield
Wood Products Group

1. Applicant

Weyerhaeuser Company
Wood Products Group
P. O. Box 275
Springfield, Oregon 97477

The applicant owns and operates a large wood processing complex at Springfield in Lane County. Products from this complex are plywood, lumber, pulp and paper, particleboard, ply-veneer and pres-to-logs.

2. Description of Claimed Facility

The facility consists of a 330-gallon water tank, two shaker screens (Link-Belt type NRM-148), an effluent distribution weir and two vibrating separators (SWECO LS 48586), plus the supporting steel platform for the above equipment.

The claimed facility was placed in operation May 1972.

Certification is claimed under the 1969 Act with 100% allocated to pollution control.

Facility cost: $22,750 (Accountant's certification was submitted.)

3. Evaluation of Application

The claimed facility is actually an addition to an existing barker effluent screening facility. Previously, the screening facility would remove all bark and wood particles larger than #44 mesh screen. With the addition of the claimed facility all bark and wood particles larger than #80 mesh screen (3/32" dia.) are removed from the barker effluent. This reduces the volume of bark going to the pulp mill primary settling basin by 90% (600 cubic yards reduced to 60 cubic yards). Screened bark is burned as hog fuel. Investigation reveals the facility is well designed and well operated. No problems were apparent.

It is concluded that this facility was installed for pollution control.

4. Recommendation

It is recommended that a Pollution Control Facility Certificate bearing the cost of $22,750 with 80% or more of the cost allocated to pollution control be issued for the facilities claimed in Tax Application No. T-396.

RJN:mjb
12-18-72

Appl T-401

Date 12-18-72

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

TAX RELIEF APPLICATION REVIEW REPORT

Weyerhaeuser Company - Cottage Grove
Wood Products Group

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1. Applicant

Weyerhaeuser Company
Wood Products Group
P. O. Box 275
Srpingfield, Oregon 97477

The applicant owns and operates a large wood processing complex in Cottage Grove in Lane County. Products include lumber, plywood, veneer, laminated beams and studs.

2. Description of Claimed Facility

The claimed facility consists of pH and temperature probes, electronic transmitting equipment and continual recording devices at the powerhouse for recording the transmitted data. There are two sets of probes, one at the intake of the water supply ditch and one at the outlet of the ditch.

The claimed facility was placed in operation January, 1972.

Certification is claimed under the 1969 Act with 100% allocated to pollution control.

Facility cost: $8,565 (Accountant's certification was submitted.)

3. Evaluation of Application

The Company claims that the claimed facility will alert them to spills of pollutants into the ditch, allowing them to react to the alert and correct the problems before much damage can occur. Investigation of the claimed facility showed the following:

1) The facility was poorly operated and poorly maintained. In fact, only the temperature at the intake was being recorded at the time of investigation.

2) There are no alarms built into the system to alert the powerhouse operator of pollution problems. The actual monitoring of the parameters requires the operator himself to maintain visual contact with the recorders, evaluate the readings and determine if problems have occurred.

3) No plans of the claimed facility were submitted to the Department of Environmental Quality for approval.

It is concluded that the system as installed and operated does not appear to serve any pollution control function.

4. Recommendation

It is recommended that a Pollution Control Facility Certificate be denied for the facilities claimed in Tax Application T-401.

RJN:mjb
12-18-72

DEPARTMENT OF ENVIRONMENTAL QUALITY

TERMINAL SALES BLDG. • 1234 S.W. MORRISON ST. • PORTLAND, OREGON 97205

MEMORANDUM

To: Environmental Quality Commission
From: Acting Director
Subject: Agenda Item Q, January 26, 1973, EQC Meeting

Status Report on Emergency Action Plan Activities since the report of November 31, 1972

Introduction

The Emergency Action Plan, a part of the Oregon Clean Air Act Implementation Plan, was presented to the EQC at the November 31, 1972 meeting and was approved by the Commission at that time.

Background

This report is in response to the request of the Commission for an update of the status of the Emergency Action Plan, and will answer the questions asked by the Commission about items within the plan which were incomplete or unapproved when the plan was approved on November 31, 1972.

Discussion

The following items were either incomplete or unapproved at the time the plan was approved.

1. The City of Portland Emergency Traffic Control Plan: The first reading of an ordinance implementing this plan is scheduled for the City Council meeting during the week of January 15, 1973.

TELEPHONE: (503) 229-5696

2. The City of Eugene Emergency Traffic Control Plan:
   The Eugene City Council tentatively adopted the Emergency Traffic Control Plan on January 10, 1973. Final presentation of the plan will be made at the January 22, 1973 council meeting.

3. The Port of Portland Plan for closure of Portland International Airport:
   The procedure for closure of Portland International Airport is still under discussion by the Environmental Protection Agency and the Federal Aviation Agency.

4. Source Category II sources within Mid-Willamette Air Pollution Authority not having approved Emergency Reduction Plans:
   The Mid-Willamette Air Pollution Authority has submitted all plans for the small (S.C. II) particulate sources that either did not have or had not submitted plans at the time that the EAP was approved on November 31, 1972.

Conclusions

1. The City of Portland Emergency Traffic Control Plan:
   It is expected that the ordinance implementing the plan will be adopted without difficulty.
2. The City of Eugene Emergency Traffic Control Plan:
   It is expected that the plan will receive final approval, and will be adopted without difficulty.
3. The Port of Portland Closure of Portland International Airport:
   No information has been received as to the results of the discussions between the EPA and the FAA.
4. Source Category II sources within Mid-Willamette Air Pollution Authority not having Emergency Reduction Plans:
   The plans submitted by MWVAPA complete the Emergency Action Plan requirements for sources within their jurisdiction.

Recommendations

This is an updated status report to the Commission, and no Commission action is necessary.

E. J. Weathersbee

RMJ:sb
January 15, 1973