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OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 01/23/1992

State of Oregon
Department of Environmental Quality

State of Oregon

ENVIRONMENTAL QUALITY COMMISSION

A G E N D A

REGULAR MEETING - January 23, 1992
DEQ Conference Room 3a
811 S. W. 6th Avenue
Portland, Oregon
8:30 a.m.

NOTE: ***The Public Forum is scheduled for 11:30 a.m. and will be convened as near to that time as possible.***

A. Approval of Minutes of the November 19, 1991 Special Meeting and the December 13, 1991 Regular Meeting

B. Commission Member Reports (Oral Reports)

C. Director's Report (Oral Report)

D. Approval of Tax Credit Applications

Rule Adoptions

NOTE: ***Hearings have already been held on the Rule Adoption items; therefore any testimony received will be limited to comments on changes proposed by the Department in response to hearing testimony. The Commission also may choose to question interested parties present at the meeting.***

E. Proposed Adoption of Open Field Burning Phase Down Rules

F. Proposed Adoption of Revision of the State Implementation Plan: Revision of the Source Sampling Manual, and Addition of a Continuous Emission Monitoring Manual

G. Proposed Adoption of Air Quality Major Source Emission Fee Rules

H. Proposed Adoption of Revisions to Drug Lab Cleanup Rules to Eliminate Cost Share Requirements

Other Items

I. James River Recycle Facility: Proposed Approval of Waste Load Allocation

J. City of Brookings: Request for Approval of Wastewater Mass Load Increase

11:30 a.m. Public Forum

This is an opportunity for citizens to speak to the Commission on environmental issues and concerns not a part of the agenda for this meeting. Individual presentations will be limited to 5 minutes. The Commission may discontinue this forum after a reasonable time if an exceptionally large number of speakers wish to appear.

Because of the uncertain length of time needed, the Commission may deal with any item at any time in the meeting except those set for a specific time. Anyone wishing to be heard on any item not having a set time should arrive at 8:30 a.m. to avoid missing any item of interest.

The next Commission meeting will be Thursday, March 12, 1992, in a location to be determined.

Copies of the staff reports on the agenda items are available by contacting the Director's Office of the Department of Environmental Quality, 811 S. W. Sixth Avenue, Portland, Oregon 97204, telephone 229-5395, or toll-free 1-800-452-4011. Please specify the agenda item letter when requesting.

January 9, 1992

Approved _____
Approved with corrections _____
Corrections made _____

MINUTES ARE NOT FINAL UNTIL APPROVED BY THE EQC

ENVIRONMENTAL QUALITY COMMISSION

Minutes of the Special Meeting
November 19, 1991

A special meeting of the Environmental Quality Commission was convened on Tuesday, November 19, 1991, at the Oregon Department of Fish and Wildlife Commission Hearing Room located at 2501 S. W. First Avenue in Portland, Oregon. Commission members present were: Chair Bill Wessinger, Vice Chair Emery Castle, and Commissioners Henry Lorenzen, Carol Whipple, and Anne Squier. Also present were Larry Knudsen of the Attorney General's Office, Director Fred Hansen of the Department of Environmental Quality and Department staff.

On November 8, 1991, the Commission granted the City of Klamath Falls' petition for reconsideration of the Commission's October 10, 1991, decision to adopt the Hearings Officer's proposed order affirming the Director's decision denying water quality certification for the Salt Caves hydroelectric project. The purpose of this meeting was to further consider the matter. Notice for the meeting identified the following potential actions that the Commission could take:

1. Determine the specific issue or issues that it will reconsider based upon the petition for reconsideration filed by the City of Klamath Falls.

2. Determine the specific issue or issues that it will reconsider based upon any motion for reconsideration filed by the Department or Conservation Parties and served on the individual Commissioners, the Department and the parties on or before November 15, 1991.

3. Hear evidence offered to rebut ex parte communications disclosed during the Commission's November 8, 1991 meeting or thereafter.

4. Render a decision.

The notice specified that any additional written argument should be filed and served upon the individual commissioners on or before the close of business on November 15, 1991. Finally, the notice stated that the Commission did not anticipate that it would hear oral argument, but reserved the right to put questions to counsel for the Department and the parties.

Chair Wessinger called the meeting to order at about 1:35 p.m.

Larry Knudsen, Assistant Attorney General, summarized the contents of his letter to the Commission dated November 15, 1991. This letter provided legal advise regarding the Commission's authority to interpret its own rules in the context of the appeal of the Director's denial of the Section 401 Certification for the Salt Caves project. In summary, the letter concluded that the Commission is bound by its own administrative rules unless and until it properly amends the rules. The Commission has authority to interpret a rule to the extent that it is ambiguous, but the proper interpretation of the rule remains a question of law. In the present case, it is likely that an appellate court will give careful consideration to the Commissions' interpretation. To receive such considerations, however, the Commission needs to precisely articulate the ambiguous term or terms, the preferred interpretation and the evidence or reasoning that supports its interpretation.

Commissioner Whipple asked if a numeric standard would ever qualify as an ambiguous rule. Mr. Knudsen responded that ordinarily, if a numeric standard is properly drafted, it would not be ambiguous.

Commissioner Lorenzen expressed concern that four of five commissioners had concluded that there would be no significant adverse impact on beneficial uses as a result of the project, yet recommended affirmance of a decision to deny certification. He stated there was no concrete example before the Commission when the rule was adopted, and the current example suggests there may be a shortcoming in the rule. He stated that, as a result of this proceeding, there may be a petition for rulemaking to modify the rules, and a potential for another application at the same time the present decision is being appealed through the courts. If the rule were modified, there could also be an appeal of any decision that would be made as a result of a modified rule. Commissioner Lorenzen said he interpreted the Marbet case to allow the undertaking of parallel rulemaking with contested case proceedings. He felt such action in this case would be to give the Commission the opportunity to examine the wisdom of the rule and avoid a strained interpretation in this case. He asked for further comment on the potential to stay the contested case proceeding while a parallel course of rulemaking was undertaken.

Mr. Knudsen noted that it would be possible to stay the contested case proceeding and initiate amendment of the rules. He stated there are some difficulties in such a proceeding but they can be overcome with careful procedural controls. He also noted that a potential concern would be the question of whether a waiver may occur for failure to have the process completed within one year. Commissioner Lorenzen asked if that potential problem could be handled by a stipulation of the affected parties. Mr. Knudsen responded that perhaps it could, but that would have to be explored to determine if the requirement was waivable. He also noted that a second issue was a vested rights claim that perhaps could be made if the Commission initiated rulemaking, but then decided not to change the rule.

A further concern was whether the initial contested case would be mooted. He noted that the statute vests the responsibility for the initial decision in the Director, therefore the Commission's review responsibilities are somewhat different than the more ordinary circumstance where the Commission has delegated the decision to the Director and provided an option to appeal the Director's decision to the Commission.

Commissioner Squier noted that statutory charge is for the Director to make the decision on 401 certification and asked what legal standard the EQC must use in reviewing the Director's decision.

Mr. Knudsen stated that the standard for review is not set out anywhere in the rule. He further noted that issue has not been briefed. He stated his belief that the Commission is reviewing it in the de novo fashion, and can substitute its judgment for that of the director. Commissioner Squier then asked what the legal effect would be if the Commission were to disagree with the Director since the statute directs the Director to make the decision. Mr. Knudsen stated that does raise issues, but as he understands the process, the Commission does have the authority to review the Director's decision and may override it.

Chair Wessinger asked for an explanation of Counsel's conclusion on the bottom of page two of the letter that the existence of a mixing zone and control point are not critical to the operation of the remainder of the temperature rule. Mr. Knudsen responded that it would be defensible to read OAR 340-41-965 in such a manner that the provisions relating to mixing zones and control points apply to those discharges they are applicable to, and don't apply to activities that don't contain mixing zones or control points.

Chair Wessinger then referred to the paragraph in the middle of page three and asked for an explanation of the position regarding justifications for enforcing numeric standards in the absence of harm to beneficial uses. Mr. Knudsen responded that it was his recollection that the Department and parties provided substantial analysis as to why the Commission might intend to have numeric standards that are strictly enforced. Examples were to provide for a margin of safety, or to deal with proof problems. He stated that it was not different from the example of the stop sign posed at the October meeting. There may not be an accident every time someone runs a stop sign, but society has decided that there should be a strictly enforced regulation. He concluded that there were arguments and justifications for having strict criteria, and not having just narrative standards.

Commissioner Castle distributed a handout and proceeded to discuss the handout and relationship of standards to beneficial uses. The handout set up a hypothetical example with four standards and two situations. In Situation II of the example, one of the four standards was violated, but conditions with respect to the other three standards were improved. The handout then discussed possible outcomes, possible attitudes toward the enforcement of standards, and policy issues that follow from the information presented. Finally, a decision

diagram was presented. (The handout is made a part of the record of the meeting.) Commissioiner Castle noted that based on this presentation, strict enforcement of standards can in certain circumstances lead to a result that can diminish beneficial use. He concluded that a certain amount of ambiguity is inherent and inevitable in the setting of standards.

Commissioner Squier noted it was a helpful way to think about the issue. She stated that the Commission is in an adjudicatory mode in this case where it is applying existing standards to a particular situation, and the real question is can beneficial use be considered under the existing standard. She stated that Commissioner Castle's flow chart would be the kind of thing that should be used as a guide during any kind of rulemaking because it prompts consideration of whether there should be a clear numeric standard that should be applied without regard to other balancing questions, or whether a rule should be crafted with some waiver possibilities, or with a beneficial use balancing.

Commissioner Castle agreed and continued that if the policy is to enforce standards regardless or independent of their effect on beneficial use, it will force the policy decisions into the setting of standards and into how measurements will be made. He noted that he thought the Commission had the potential here in the context of this case to help itself a great deal with respect to the future.

Commissioner Whipple stated that she agree with Commissioner Squier that there is a difference between the Commission's adjudicatory role and the Commission's rulemaking role. She noted she was uncomfortable because on the point of law, she felt one way, but felt the other way on point of policy. She noted that it wouldn't be the first time for a decision to be legally correct and still seem like the wrong decision. She was concerned about the characterization as an "absurd result", noting that it is possible for a good law to lead to a poor result when judged from the point of view of policy.

Mr. Knudsen stated that he was using the term "absurd result" almost as a term of legal art, and relates to a result for which there is no rational basis. If a statute or rule provision is clear on its face, a court is not going to set that aside unless the interpretation is not rational or the result is in fact truly absurd; it will not set it aside because the court thinks it is poor policy. The court would think that the Commission determined the policy when it wrote the rule or when it interpreted it. The Court, by and large, would not be substituting its judgement for the Commission's on the policy determination.

Commissioner Lorenzen expressed disagreement with the view that the rule is unambiguous on its face and therefore leads us to a certain result. He stated there is no indication in the rule as to whether the relevant measuring point is the average temperature during a 24 hour period, or the minimum temperature of the stream during a substantial period of an average day, or whether the relevant measuring point is the maximum temperature the stream reaches during a substantial part of the day. He noted that the stream in this case is not a

natural free flowing stream and that it pulses in temperature because the Boyle Dam is often used as a peaking project; water is not being released during a substantial portion of each day, resulting in dips and peaks in the temperature during a day. He concluded that if you applied this rule in such a fashion that you compared the maximum two hour average temperature of the stream during the day before and after the project, you could quite well come to a different conclusion. He continued that he is bothered because these rules don't tell whether one should be looking at the average temperature averaged out over a 30 day period, whether one should be looking at the average minimum temperature over a 30 day period, or whether one should be looking at the average maximum temperature during any one hour during the day averaged over a 30 day period. The results of applying the rule could be quite different depending on how one interprets the standard.

Commissioner Lorenzen also was concerned that the rule does not clearly and unambiguously define the "before condition". He wondered if one should look at the before condition as if the Boyle project didn't exist? He felt temperatures would be close to the same with and without the Salt Caves project if the Boyle project were not there. He concluded that the rule doesn't tell the Commission which way it should go.

Mr. Knudsen responded that Commissioner Lorenzen's discussion illustrated the different types of ambiguity. The rule may be ambiguous as to whether it applies to hydro at all, whether or not proof of an adverse impact to a beneficial use is required before you can find a violation, or ambiguous in terms of how the increase in temperature, if any, is measured or quantified. Those are three separate issues, and have to be resolved separately. He noted that those are particularly the types of situations where interpretation does take place by the Director and by the Commission in applying the rule.

Commissioner Squier stated that was the point she was making during the first meeting on this issue. If there was discretion, the discretion was in how one measures whether or not there is a temperature increase. She continued that she did not think that is an issue at this time because the record is very clear that everyone agrees there will be a temperature increase. There may be some disagreement about whether it is 2 or 2.5 or 4 degrees, but the testimony was clear that there would be an increase.

Commissioner Lorenzen asked whether the agreement was that the maximum temperature would increase, the minimum would increase, or the average would increase.

Commissioner Squier responded that she was not equipped to tell you what the methodologies were for measurement. Her point was that the parties were not disputing the measurement technique. She noted that if the Commission was concerned about that, they needed to ask for detail on it, and would have to go back and start over with respect to those measurements; not just make a decision without a record. Commissioner Lorenzen and Mr. Knudsen agreed.

Commissioner Lorenzen stated that he didn't see an exception for pre-existing activities in the rule. He suggested that if the Boyle Project was regulated in such a way that it wouldn't cause a temperature increase, it might result in the Salt Caves project not causing a temperature increase.

Chair Wessinger stated that he didn't agree with Commissioner Lorenzen's interpretation of the record. He noted that the Hearings Officer, who had a great deal of experience in appellate law, advised that the standard was the standard. He noted that although the Hearings Officer says there will not be a harm to the fish, he certainly did not say that fish would be benefitted. Chair Wessinger concluded that the conservative thing would be to do exactly what the Commission did previously.

Commissioner Whipple asked Commissioner Lorenzen if he would have the same concern about the ambiguity of the standard regardless of the finding of whether or not beneficial uses are impacted.

Commissioner Lorenzen responded that his concern was that the Hearings Officer and the Commission were in a situation with feet held to the fire to deny certification, because of an absolute standard, and that absolute standard is being applied even though the hearings officer concluded, and the Commission agreed, that there would be no harm to beneficial uses. He noted that the result seems contrary to the Commission's overall charge. On the other hand, if the situation were reversed and there had been no violation of the standard, and yet there had been harm to beneficial uses, Commissioner Lorenzen stated he would have trouble with that rule as well. He was concerned that the Commission was not doing what it was put in this position to do -- to make sure commerce goes on but that things are protected while it is being done. He noted that power production is being curtailed on the Columbia to protect salmon. Yet, this project would generate nearly 100 megawatts without identified harmful impact. He stated that this is a resource that is going to be valuable to the region, and he was troubled by the result of the Commission's decision. Finally, he observed that perhaps he was struggling too much to find a way to try to work within the confines of rules and apply them in a way that may seem absurd to get to the result that he thinks is appropriate.

Commissioner Castle then clarified his position with respect to earlier advice from Counsel on potential options for the Commission if the desire were to approve the project. The first options was to say that the standards don't apply. He stated that he was not prepared to do that and believes the standards are relevant. The second option was to say that the measurement is ambiguous somehow or other. He indicated he was not interested in embarking on different measurement procedures on an ad hoc basis. The third option related to the ambiguity of the standard. He stated that he believes the standard is ambiguous and that this option would be his choice of a basis for proceeding. He noted that, as his diagram indicated, a strict interpretation of the standard can lead to an absurd

result, and he didn't want to see the Commission get into a position where that could happen.

Commissioner Castle stated there was one other issue that troubled him and he would appreciate it if Counsel and other members of the Commission would speak to it a bit. He stated at the last meeting that he felt that the decision before the Commission was not the same as the decision that faced the Director. He asked for further exploration of this in light of previous discussion. He stated that he did not feel that the Director made an inappropriate decision. However, when the Director's decision comes to the Commission as a lay board, the Commission must have a right to apply its judgment and discharge its responsibilities relative to this matter. On the other hand, if the matter before the Commission is simply whether or not the Director made an appropriate decision, that is a very different matter compared to approaching the decision as the Commission's own. Commissioner Castle stated that this was the only legal area where he felt uncomfortable. He stated he didn't feel uncomfortable arguing this matter on the grounds of ambiguity; he thinks it is ambiguous.

Chair Wessinger stated that he agreed that there is a difference in what the Director does and what the Commission does.

Mr. Knudsen noted that the statute and the rules are not clear on the standard for review that the Commission uses when it's reviewing the Director's decision in this context. The Department's position, has been that the Commission reviews the Director's decision, and can substitute its judgement for that of the Director. Mr. Knudsen stated that isn't to say that they can't also give deference, where appropriate to the Director's decision, but it is to say that as a lay board, the Commission does exercise its responsibilities and can make a different decision even thought it does not find that the Director's decision was particularly inappropriate.

Commissioner Squier expressed the view that Commission members seem troubled by the policy implications of having a numeric standard and then applying it. She suggested that the only way to cure that is by engaging in rulemaking to change the standard. She stated that the Commission's function in this case is to apply the standard, and noted that she was not as uncomfortable as some others were in applying it. She summarized her understanding that DEQ must not issue the water quality certification unless the city demonstrates that the proposed project would not violate water quality standards. She noted that she spent the weekend going through the whole record as well as the points she had reviewed before, and based on that review, believed the antidegradation standard had not been met. Given that result, she stated that she had a lot of trouble characterizing the application of the standard as reaching an absurd result.

Commissioner Squier further stated that she remained convinced that if the Commission wanted to do something other than apply the numeric standard, given the implications that not applying the standard would have for all kinds of other standards, it should either back off and do some rule making, or go ahead and make a decision and then do some rulemaking.

Commissioner Lorenzen noted again that one alternative would be to engage in rulemaking but stay the present proceeding while rulemaking was undertaken on an expedited basis, then restart the contested case applying the modified rule. He saw this option as an opportunity to quickly examine this particular rule while the policy relating to this rule was fresh in the Commission's mind. He noted that the consensus of the Commission may be that there is a good reason to have an absolute standard as opposed to requiring a look at beneficial uses. It also may be that the Commission would reach a contrary result. He felt there was an opportunity to gain some additional efficiencies by such action. He stated that the likely alternative appeared to be to issue the ruling on the contested case affirming the Director's denial decision; and then receive a petition for rulemaking and grant that petition so that the policy issues could be examined. If that is done and the rule does get changed, there would be another application submitted for Department consideration, and the decision on such an application would in all likelihood be appealed to the Commission, and the process would continue.

Commissioner Whipple stated that the issue remained as a close call for her, but the Commission needed to come to a decision. She indicated there was no question in her mind that the issue needs to be visited by the Commission in some sort of rulemaking form. She noted that she had reviewed the matter carefully and there was not yet a compelling presentation that suggested she should change her original vote to uphold the Director's decision. She stated she was not comfortable with that, but in a context of this hearing, that was the position that she felt she must take. She noted that reasons for and against the project had been articulated. She felt that both the Department and the Commission have an obligation to play as straight as possible with all the parties in the proceeding. She felt the City of Klamath Falls has done their level best to present a project that made sense and met the criteria. She hated to say that the project did not quite meet the criteria, but she concluded that the Commission could not overlook one of its own criteria.

Commissioner Castle noted that the Commission did vote to reconsider, so he assumed some kind of a motion was needed in order to discharge the responsibilities of this meeting. Director Hansen reminded the Commission that the notice of the meeting advised of the potential for making a decision during the course of the meeting.

Commissioner Castle indicated he didn't intend to make a motion, but sensed where the Commission was and suggested that someone who voted in the majority last time should offer a motion to reaffirm the earlier decision. He stated he would personally would prefer

such a motion to one that would reaffirm the Director's decision because he might vote one way on one motion and a different way on another motion.

Commissioner Squier MOVED that the Commission affirm its decision of last month. Discussion proceeded and there was no second for this motion.

Mr. Knudsen stated that such a motion would be appropriate. He also noted that the Commission would also have to take action on the Conservation Parties' motion for reconsideration and that would best be done in a separate motion. Commissioner Squier then asked if the motion was premature because the determination to reconsider last time was not specific to any issue. Mr. Knudsen noted that action last time didn't address the issue of the conservation parties motion. He further stated that he did not believe there was any particularly appropriate order for the two motions to come.

Chair Wessinger asked if it would be possible to reaffirm the previous position and take no action on the Conservation Parties' motion and let it die at the end of the 60 day period. Mr. Knudsen responded that such action was a perfectly appropriate way to do it, and the only thing that would do is affect the appeal period. Commissioner Lorenzen stated he would prefer to see all of it taken care of right now so the clock could start running and indicated he would be willing to offer a motion at the appropriate time.

Chair Wessinger asked if there was a motion on the floor. Commissioner Squier stated that she found some discontinuity in acting to reaffirm the prior decision in whole, and then have the potential to turn around and make a separate decision on whether to reconsider on a separate motion. She asked if it would be appropriate to make a motion that the Commission would reaffirm its prior decision as to the temperature standard, since that is the issue the Commission has been debating?

Mr. Knudsen suggested that the Commission might limit the motion to the petition for review filed by the City of Klamath Falls.

Commissioner Squier MOVED that with respect to the petition for review filed by the City of Klamath Falls, the Commission affirms its previous decision. The motion was seconded by Commissioner Whipple. The motion was approved by a 3-2 vote with Commissioners Squier and Whipple and Chair Wessinger voting yes and Commissioners Castle and Lorenzen voting no.

Commissioner Lorenzen MOVED that the petition for reconsideration filed by the Conservation Parties be denied. The motion was seconded by Commissioner Whipple. The motion was approved by a 4-1 vote with Commissioner Squier voting no.

Mr. Knudsen stated he would prepare a written order that takes care of both of those actions for signature by the Chair.

In response to a question from Director Hansen, Mr. Knudsen stated that the pendency of an appeal should not create any problem with respect to ex parte communications. He stated that the Commission can have whatever contacts it might want to have on this issue, especially if it decides to go into rulemaking. He cautioned, however, that it would be good to wait the 60 day period on the chance that an additional motion for reconsideration could be filed.

Chair Wessinger then asked if the Commission wanted to take up the question of the standard now rather than having a request come from outside. He suggested that a review would be highly technical, would take a lot of staff time, and would not be done over night. Director Hansen suggested several potential approaches, each requiring a different level of effort. These included (1) enacting some sort of a variance requirement to the numeric criteria if the Commission concluded that beneficial uses were protected, (2) a broader look at the numeric standard in general, and (3) a more holistic look at a series of standards and how they interrelate to an overall effect on beneficial use. He noted that the temperature standard is being reviewed as part of the next triennial standards review and the literature review phase of that process is now underway. He also suggested that the matter could be discussed at a future work session of the Commission. By consensus, the Commission concluded that a work session discussion on the matter would be appropriate some time in the next few months.

Commissioner Castle stated that he was not advocating review on a holistic basis. He simply wanted to make clear that philosophically, the establishment of standards is inherently ambiguous and strict adherence to any set of standards can lead to absurd results.

There was no further business and the meeting was adjourned at about 2:50 p.m.

Approved	____
Approved with corrections	____
Corrections made	____

Minutes are not final until approved by the EQC.

ENVIRONMENTAL QUALITY COMMISSION

Minutes of the Two Hundred and Seventeenth Meeting
December 13, 1991

Regular Meeting

The Environmental Quality Commission regular meeting was convened at 8:30 a.m. on Friday, December 13, 1991, in Conference Room 3A, Oregon Department of Environmental Quality (DEQ), 811 S. W. Sixth Avenue in Portland, Oregon. The following commission members were present:

William Wessinger, Chair
Dr. Emery Castle, Vice Chair
Henry Lorenzen, Commissioner
Anne W. Squier, Commissioner
Carol Whipple, Commissioner

Also present were Larry Knudsen, Assistant Attorney General, Oregon Department of Justice, Fred Hansen, Director, DEQ, and other DEQ staff.

Note: Staff reports represented at this meeting, which contain the Department's recommendations, are on file in the Office of the Director, DEQ, 811 S. W. Sixth Avenue, Portland, Oregon 97204. Written material submitted at this meeting is made a part of this record and is on file at the above address. These written materials are incorporated into the minutes of the meeting by reference.

Chair Wessinger called the meeting to order.

A. Approval of Minutes of the October 10, 1991, and November 7-8, 1991, EQC Meeting.

A corrected page 4 for the October 10 meeting minutes had been forwarded to the Commission prior to the meeting.

Commissioner Castle commented that the October 10 meeting minutes were well written and reflected the complex issues of that meeting.

Commissioner Castle moved that the October 10 and November 7 and 8 EQC minutes be approved; Commissioner Squier seconded the motion that the minutes be approved as corrected by Harold Sawyer's December 9, 1991, memorandum containing a corrected page 4 to the October 10 minutes. The corrected October 10 minutes and the minutes of the November 7 work session and November 8 EQC meeting were unanimously approved.

Chair Wessinger advised the audience that when Agenda Item E, the mining rules were taken up, the Commission would proceed with that agenda item as follows:

- The department would provide an overview of the mining rules.
- The mining industry and environmental groups would each be given 15 minutes to present technical points only.
- After the presentations, the Commission would dissertate about the action to take.

B. Director's Report.

Director Hansen indicated that the director's report was still being streamlined in order to represent substantive discussion of issues and to provide an exchange between the Commission and the director.

Director Hansen reported on the Governor's Task Force and hearing authorizations. In regard to the Governor's Task Force on the restructuring of the natural resource agencies, Chair Wessinger asked Director Hansen how much of the restructuring would need to be approved by the Legislature. Director Hansen indicated that most restructuring of the natural resource agencies would require statutory action.

Hearing Authorizations

The following hearing authorizations had been approved by the Director since the last Commission meeting:

1) Environmental Cleanup Rules: The amendments and proposed additional rules would provide for optional cleanup levels and a streamlined process for Potentially Responsible (PRP) to clean up releases of hazardous substances at simple sites.

2) Field Burning Rules: The proposed rules would implement House Bill 3343 which will phase down field burning in the Willamette Valley from the current maximum of 250,000 acres to a maximum of 40,000 to 65,000 acres by 1998.

3) Underground Storage Tank - Groundwater Cleanup Standards: The rule amendments would establish numeric groundwater cleanup standards for petroleum underground storage tank (UST) releases. The standards establish requirements for the investigation, cleanup and monitoring of sites where groundwater has been contaminated by petroleum released from an underground storage tank.

4) Prevention of Significant Deterioration Rules: The proposed rules would amend existing rules to include new Prevention of Significant Deterioration (PSD) increments for nitrogen dioxide. The amendments are required by the U. S. Environmental Protection Agency in order for the state to maintain full delegation of the New Source Review program.

A copy of the Director's Report is included as a part of the meeting record.

C. **Commission Member Reports.**

Commissioner Whipple reported that the Governor's Watershed Enhancement Board will be holding a conference in Portland on January 9 and 10, 1992, which will deal with "who will catch the rain."

Commissioner Squier reported about the Martha Pagel meeting for Board and Commission members held in Salem on December 12. Two items were discussed:

1) Task Force Reorganization meeting. Commissioner Squier said that there was a great deal of discussion about the implications of the single agency recommendation. The idea of a single agency and commission and the resulting workload problems were items of discussion.

2) Water Policy Review Process. Commissioner Squier reported on the upcoming Water Policy Project that will be occurring through the Strategic Water Management Group (SWMG). Three work groups will be created: one group will deal with policy issues, a second group will examine proposals for restructuring the state's natural resource agencies and the third group will

study existing funding sources for water management programs. Martha Pagel will be appointing an EQC member to work on the group dealing with the oversite and policy issues.

D. Approval of Tax Credit Applications.

Purpose: Approval of tax credit applications, approval of transfer of tax credit certificate and approval of extension for filing application for tax credits.

Recommendation: Issue Tax Credit Certificates for Pollution Control Facilities as noted in the following list; approve application filing extension for RFD Publications, Inc.; approve certificate transfer from Grant's Petroleum, Inc. to Grant's Fast Service, Inc.

TC-2336 Van Beek Dairy Farms	Manure control facility.
TC-2443 Atochem North America	Secondary containment wall.
TC-2598 Charles H. Lilly Co.	Hazardous waste Koch membrane filtration unit.
TC-2599 Bohemia, Inc.	Electrostatic precipitator; multiple cyclone unit.
TC-2610 Neste Resin	Catalytic converter.
TC-2614 Times Litho, Inc.	Tec Phoenix Thermal 700 afterburner.
TC-2656 Atochem North America	Two-stage emergency chlorine seal scrubber.
TC-2660 P P & L	Oil spill containment system.
TC-2678 P P & L	Oil spill containment system.
TC-2781 PGE	Secondary containment structures.

TC-2790 Willamette Industries, Inc.	Western pneumatic baghouse.
TC-2791 Willamette Industries, Inc.	Western pneumatic baghouse.
TC-2835 P P & L	Oil spill containment system.
TC-2861 RFD Publications, Inc.	Natural gas fired thermal afterburner.
TC-2913 Boise Cascade Corp.	Electrostatic precipitator
TC-3059 Atochem North America	Ceilcote scrubber.
TC-3522 Willamette Industries, Inc.	Installation of one doublewall, fiberglass tank, doublewall fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, monitoring wells, sumps and automatic shutoff valves.
TC-3303 Indepak, Inc.	Reclaimed plastic product equipment.
TC-3365 Hermiston Foods, Inc.	Wastewater treatment system.
TC-3471 Chemical Waste Management	Landfill cover liner.
TC-3472 Chemical Waste Management	Landfill cover liner.
TC-3473 Chemical Waste Management	Landfill cover liner.
TC-3474 Chemical Waste	

Management	14 groundwater monitoring wells.
TC-3485 David & Emily Delany	Wastewater treatment system.
TC-3507 OTT Dairy, Inc.	Manure storage and disposal system.
TC-3520 Willamette Industries, Inc.	Riding power sweeper.
TC-3521 Willamette Industries, Inc.	Western pneumatics bagfilter.
TC-3534 Boise Cascade Corp.	Two gas fired steam generators.
TC-3535 Atochem North America	Norcore packed tower scrubber.
TC-3560 Gresham Transfer, Inc.	Vacuum cleaning equipment for trailer tanks.
TC-3562 J. C. Pitts Aviation, Inc.	Installation of fiberglass piping, cathodic protection on two tanks, spill containment basins and underground preparation for a tank monitor system.
TC-3580 Capital City Companies, Inc.	Installation of four fiberglass tanks, fiberglass piping, spill containment basins, tank monitor, line leak detectors, overfill alarm, monitoring wells, automatic shutoff valves and Stage I vapor recovery equipment.
TC-3596 Welt & Welt, Inc.	Installation of four STI-P3 tanks, a containment trench for exposed steel piping, a containment dike for two aboveground tanks, spill containment basins, turbine leak detectors, vapor monitoring wells with an automatic leak sensor

	system and an oil/water separator.
TC-3597 Oregon Metallurgical Corp.	Hydrated lime facility for Ph adjustment.
TC-3602 B & Z Auto Body	Auto air conditioning reclaim equipment.
TC-3606 Pendleton Grain Growers, Inc.	Installation of fiberglass piping, Spill containment basins, tank monitor and line leak detectors.
TC-3611 Mainstop Mini Market, Inc.	Installation of spill containment basins and a tank monitor system on four tanks.
TC-3647 The Halton Co.	Auto air conditioning reclaim equipment.
TC-3648 Custom Automotive & Alignment, Inc.	Auto air conditioning reclaim equipment.
TC-3649 Auto Body Clinic	Auto air conditioning reclaim equipment.
TC-3650 McMinnville Auto Body, Inc.	Auto air conditioning reclaim equipment.
TC-3651 A & M Auto Body & Fender Service	Auto air conditioning reclaim equipment.
TC-3652 Kronke's Portland Star Service	Auto air conditioning reclaim equipment.

TC-3653 McKenzie Tire, Inc.	Auto air conditioning reclaim equipment.
TC-3654 Brookings Union 76	Auto air conditioning reclaim equipment.
TC-3655 Truax Corporation	Installation of a tank monitor system on the tanks.
TC-3656 Truax Corporation	Installation of spill containment basins and a tank monitor system.
TC-3657 Truax Corporation	Installation of doublewall fiberglass piping, epoxy tank lining, spill containment basins, line leak detectors and sumps.
TC-3658 Truax Corporation	Installation of spill containment basins and Stage I vapor recovery equipment.
TC-3659 Truax Corporation	Installation of three doublewall fiberglass tanks and piping, spill containment basins, tank monitor, line leak detectors, automatic shutoff valves and monitoring wells.
TC-3660 Truax Corporation	Installation of a tank monitor system for three underground storage tanks.
TC-3661 Truax Corporation	Installation of epoxy lining in four underground storage tanks.
TC-3662 Truax Corporation	Installation of epoxy lining in four underground storage tanks.

TC-3663 Truax Corporation	Installation of a tank monitor system for three underground storage tanks.
TC-3664 Pankratz Auto Service	Auto air conditioning reclaim equipment.
TC-3665 Western Stations Co.	Installation of fiberglass piping, cathodic protection, spill containment basins, tank monitor, automatic shutoff valves, overfill alarm, sumps, and Stage II vapor recovery piping.

Discussion: Commissioner Squier noted questions she had referred to staff about meeting procedural requirements and stated that unless staff indicated otherwise, she would presume that all issues were checked and there were no problems; Roberta Young, Management Services Division, confirmed that the procedural items were corrected.

Commissioner Squier also indicated she had problems with tax credits for groundwater wells where a citation was issued for noncompliance with a permit requirement. She was aware that the Commission had had a discussion on this subject previously and did not require discussion on the issue today but wanted to indicate that she had some difficultly with the concept. Mike Downs, Administrator, Environmental Cleanup Division, spoke to Commission about the tax credits rules which he helped develop.
Director Hansen stated that this was an issue that the Legislature, at the Department's request, narrowed so that a groundwater monitoring well, used to characterize the extent of contamination, would not be considered a facility for pollution prevention and would not be considered eligible for a tax credit; such a situation would be characterized as a release and as a part of a cleanup effort. Groundwater monitoring that was part of a comprehensive monitoring system for pollution prevention would be eligible similar to liner.

Commissioner Squier stated that she believed groundwater monitoring was in a different category than pollution prevention or cleanup. She indicated that she did not see the tax credit program to cover all issues; for instance, it may be required in a permit that was not related to a cleanup requirement. Mr. Downs responded that tax credit law indicates that the first criteria for eligibility as a pollution control facility is that the facility is required

by the Department. Groundwater monitoring devices are only required by the Department as a prevention-type of facility to gain the earliest information possible as to whether the facility is having a problem and to detect contamination in the groundwater. It can also be used to determine if contamination has occurred and cleanup is required.

Director Hansen stated that a liner system (either a cover liner or a bottom liner) is a requirement, and, therefore is eligible for tax credits. He further said that questions exist about the return on investment from the liner system. Commissioner Lorenzen asked how the triple liner system for gold heap leach mining would be treated for tax credits. Director Hansen replied that the liner would be eligible: if the leachate could be saved, reintroduced and used to save on the purchase of new cyanide, the savings amount would be included in the return on investment calculation to determine the percent allocable to pollution control.

Harry Demaray, Salem, told the Commission that he was amazed at what the Department was doing in the way of tax credits. He focused on the Boise Cascade tax credit, No. 3534, for a veneer mill in Independence, Oregon. The tax credit was for replacing a wood-fired boiler with two gas-fired steam generators. Mr. Demaray stated that he could not understand the justification for a gas-fired, steam boiler as a pollution control device. He further questioned the Department's report and indicated that the report contained contradictions and errors. His main objection to the tax credit was that the principle purpose of facility was not pollution control but production of dry veneer. Mr. Demaray stated that he believed the entire tax credit program was out of control, and he would make an effort to get the program eliminated from the Department. He stated that the tax credit program had served its purpose which he believed was to ease the transition from no control into statutory controls back in the early 1970s; now the tax credit program had evolved into a public subsidy of industrial development.

Chair Wessinger stated that many would probably agree with Mr. Demaray; however, the law existed. Mr. Demaray replied that the law was not being followed. Ms. Young replied that this tax credit was an example of an alternative to a scrubber that was chosen as a pollution control facility which was why the percent allocable was 47 percent. She added that the processing staff had taken the cost of the scrubber and had applied that cost to the overall investment. The applicant would received tax credit only on the portion allocated to the pollution control function and not for the overall investment. Ms. Young indicated that

this type of tax credit was consistent with Department policy where a less expensive alternative exists. Mr. Demaray stated that the facility was in compliance with no control. Ms. Young replied that the facility was required through their air contaminant discharge permit to install controls equivalent to scrubbers to meet the Reasonably Available Control Technology (RACT) standards.

The Commission requested that the Department investigate Mr. Demaray's question about the applicability of the generators as pollution control devices and report back at the end of the meeting.

Commissioner Squier stated concern that tax credit applicants be treated equitably and wanted to hold out the liner issues for further discussion. Commissioner Whipple said that as a Commissioner she did not want to get into the business of interpreting if each applications was eligible. Commissioner Whipple agreed that there are substantial concerns about policy issues within the tax credit program.

Action: Commissioner Lorenzen moved that all tax credits excluding the Boise Cascade tax credit, No. 3534, be approved; Commissioner Castle seconded the motion. The motion was passed by Commissioners Wessinger, Castle, Whipple and Lorenzen voting yes; Commissioner Squier voted no.
Commission Castle stated that he was uncomfortable with the tax credit program and agreed with Commissioner Squier that the Commission needs to examine the policy issues.

(The Boise Cascade tax credit application was considered further at the end of the meeting.)

Rule Adoptions

E. Proposed Adoption of Rules for Mining Operations using Chemicals to Extract Metals from Ores.

Purpose: Adopt the proposed mining rules.

Background: The proposed rules require mining operations using cyanide or other toxic chemicals to protect soils, groundwater, surface waters and wildlife from contamination or harm by process solutions and waste waters. The protective measures required by the proposed rules include cyanide recovery and re-use, chemical detoxification of cyanide residues and extensive lining and engineered closure of waste disposal facilities.

Discussion: The department provided the Commission with a background summary of the proposed rules. Commissioner Lorenzen questioned the use of the term **disposal facility** on page A-10 of the proposed rules and asked that the wording be removed. Lydia Taylor, Administrator, Water Quality Division, responded that the term **disposal facility** would be removed from the proposed rules. Commissioner Lorenzen asked how reporting requirements listed in the rules would be handled. Ms. Taylor replied that reporting requirements would be dealt with on a permit-by-permit basis.

Ivan Urnovitz, Northwest Mining Association, **Mike Filio**, Tek Corporation, Vancouver, B. C., and **John Parks**, Atlas Precious Metals, represented the mining industry in a consolidated presentation.

Mr. Urnovitz expressed concerns regarding the following items:

- The mandatory requirement of a 36-inch clay liner.
- The tailings must be handled as hazardous waste.
- The controls were overly redundant and more requirements were in the rules than needed by the state of Oregon.
- The tests required were inappropriate. Mining wastes should be tested differently than municipal wastes.
- The wetlands requirements were arbitrary.
- The AVR system in regard to the liquid storage criteria was arbitrary and over redundant.

Mr. Filio stated that the rules were overly stringent and had caused the suspension of a negotiation with Atlas Precious Metals on the Grassy Mountain project. His concerns were as follows:

- The method of reusing and recycling cyanide was not proven.
- That determining the potential of acid-water formation from the tailings added little benefit to the environment and was costly.
- That environmental benefits must justify added costs.

Mr. Parks complimented the staff on their efforts. He stated that he supported 80% of the rule proposals, but

indicated that the 20% where disagreement exists cannot be quickly resolved. He stated that the "one size fits all" approach of the rules is not appropriate and results in unnecessary costs. He urged the Commission to take additional time to resolve the issues.

Mr. Urnovitz concluded that the rules would create a rigid, inflexible program with added costs to the mining industry. He said that added expense had not been considered, and that industry proposals met state requirements. Mr. Urnovitz suggested that an impartial review panel be established which would include the Commission chair, mining experts from Nevada or California and DEQ staff.

Larry Tuttle, The Wilderness Society, told the Commission that liner systems for tailings and heaps had been used in other states for a long time. He said that the rules would provide the mining industry the ability to prove that other approaches would provide equal protection. Mr. Tuttle added that early detection systems with triple liners would prevent cyanide from entering the soil. He said what was missing from the rules was a third-party verification of baseline data and that removing heavy metals should be a part of cyanide removal. Mr. Tuttle added that wetlands should not be risked and should not be considered at this meeting. He indicated that hazardous waste rules should apply to the tailings, and that EPA is looking at mining with that approach. He further added that the state would learn if the rules are too strict as mining activities occur. Mr. Tuttle concluded by stating that the rules should be adopted and that although the rules were not perfect, changes could evolve over time; the rules would protect the state and give the mining industry a chance to prove the rules were unnecessary.

Commissioner Squier stated that the term waste on page A-7 of the proposed rules was too narrow and needed to be clarified. Commissioner Whipple said that when the rules were being developed, the Commission was pushing the edge in terms of environmental protection. However, she stated, that she had concerns that more responsibility had been placed on the Commission to assure technical feasibility. She suggested that the department research the implications of mining activities and try to use the universities in this endeavor. Commissioner Whipple further added that the department should take the time to make sure the rules are technically feasible and correct. She also noted the risk of finding that the rules aren't stringent enough.

Commissioner Lorenzen expressed his general preference for performance standards rather than design standards but noted

that there was no perfect performance measuring system. He expressed a desire for a third party review to examine the following issues to determine whether the proposed rules meet Commission goals:

- The requirements for liners under the heap.

- The recycling of cyanide.

- The treatment and long-term stability of tailing ponds.

He added that an independent opinion was needed on the question of whether the proposed rules were overly protective.

Commissioner Squier asked the department about the reuse of cyanide. Staff responded that reuse minimizes the use of cyanide and reduces the amount used; however, it is cheaper to buy cyanide and dispose of it. Staff further stated that by recycling cyanide the toxicity of the tailings can be reduced. Commissioner Lorenzen asked if there was another methodology in place other than the AVR system. Staff replied that the rules do not require AVR but do support removal and reuse.

Commissioner Castle said that the perception of the process was mostly economic. However, he stated, that this was not the purpose of their review. Commissioner Castle supported the idea of a third-party review but stated that the review should be confined to the technical issues relating to environmental protection. Chairman Wessinger expressed his desire not to use an industry committee but rather to find an individual or company with no ties to either side to evaluate the proposed rules. He further requested that the Department get back to the Commission as soon as possible regarding the steps for an independent review.

Director Hansen questioned the Commission about whether they wanted the third-party evaluation to be in the form of addressing applicable policy questions. He suggested that a review could focus on a review of technical issues in relation to the policy including assessment of the level of certainty that the technical requirements would meet the policy, and the technical feasibility of the requirements.

He further stated that the intent of House Bill 2244 was that rules be developed that were necessary and practical. He stated that the term "necessary" was in relation to protecting the environment and was without regard to cost. The term "practicable" applies to selection of

alternatives, were available, to meet the "necessary" requirements.

Commissioner Squier noted that a third-party review would be expensive and would require time. She voiced her opinion that the **alternate methods** wording in the proposed rules allowed the department enough flexibility and favored adopting rules now.

Commissioner Lorenzen suggested that the review focus on narrow technical issues and then questioned if the department had the necessary funds to conduct the review. Commissioner Castle noted that the Department should spend whatever is necessary. Commissioner Lorenzen suggested that the third-party review should address the technical means of achieving the Commission's policies.

Action: Commissioner Whipple, after some discussion and questioning of staff, moved that the Commission direct, with a high degree of specificity, that a third-party review be conducted on the issues of liner systems, removal and reuse of cyanide, and reduction of toxicity of the waste to the greatest degree possible. Commissioner Lorenzen seconded the motion with the understanding that closure of the various ponds, heap leach and tailings facility as well as the possible redundancy of the clay liner thickness was included within the context of the motion.

Director Hansen then summarized the issues to be addressed in relation to the policies: technical feasibility, level of certainty, other technologies.

He then noted that contracting with a third party would be a complex process, and suggesteed that the matter be further discussed by the Commission through a conference call within the next week.

Commissioner Squier made it clear that she wanted detection and repair of leaks before chemicals escaped into the environment to be reviewed. Chairman Wessinger, Commissioners Castle, Whipple and Lorenzen voted yes; Commissioner Squier voted no.

Water Quality Division Administrator Lydia Taylor then asked if it would be appropriate to defer action on any mining permit applications received pendint completion of the third-party review and adoption of rules. The Commission agreed, and Commissioner Lorenzen noted that the Commission could very quickly adopt rules if a permit application was filed.

Public Forum

The public forum was scheduled for 11:30 a.m. No one wished to speak at the public forum.

Discussion During Lunch

Chair Janet McLennan, Chair of the Oregon Board of Forestry, and James Brown, State Forester, Oregon Department of Forestry, spoke to the Commission about the history of the Board of Forestry and the changing composition of the board. She indicated that the board defined their mission and went through a strategic planning process which resulted in the document called "Forestry Program for Oregon." While the emphasis of the previous board was almost exclusively on the issue of timber supply, as the new board came together, it looked at other uses of the forest, other resources and obligations and interests as well as the timber supply for Oregon.

She said that about a year ago, prompted by a newspaper article on the Oregon Forest Practices Act, the board organized a public forum and heard from members of the public and state officials. That meeting identified a number of concerns. In response to the forum, a forum report was developed. The report provided for the Legislature what the Board heard from the forum, identified where rules needed to be revised, and identified where people thought that legislation was needed. The Legislature was considered several measures of significant revision of the Forest Practices Act. One of those, Senate Bill 1125, dealt with the relationship between the EQC and the Board of Forestry.

Mr. Brown briefly discussed the "Forest Log, Special Report." This document is out for review and comment and will be presented to the Board of Forestry for adoption in January.

Chair Wessinger asked Chair McLennan if the Forestry Department would stay involved in federal forest planning procedures. Chair McLennan replied that that process continues, centered in the Governor's Office, and the Department of Forestry provides staff assistance to that effort. The Department of Forestry has continued the process with the Bureau of Land Management as they have started their planning process. Mr. Brown said that the Department of Forestry is involved in the forest plans and will continue to be involved. Chair Wessinger and Commissioner Squier stated that Oregon's involvement in the plans were very worthwhile and helpful.

Commissioner Whipple asked Ms. McLennan and Mr. Brown about the working relationship between the Department of Forestry and the Department of Agriculture in regard to nonpoint sources. Ms. McLennan said that their visit to DEQ was the fourth of five

visits with other boards and commissions and thought that visiting the Department of Agriculture's commission was a good idea. Mr. Brown indicated that Forestry is working with DEQ staff similar to their work on the Tualatin.

Commissioner Squier also asked about harvesting and cumulative effects. Ms. McLennan replied that cumulative effects can mean different things. In this case, cumulative effects is exclusive to forestry activity and does not include agricultural activities. Mr. Brown added that concern existed about forestry activities and what impact, if any, would these activities have on turbidity and fisheries.

Director Hansen asked about the listings of water bodies that potentially have problems as a result of forest practices. Mr. Brown indicated that Forestry has viewed the Department's assessment of water quality as a part of their monitoring program. Forestry is committed to work along side DEQ through that list. Director Hansen said that not long ago that effort would have been seen as a confrontational effort to be able to question Forestry's ability to properly manage the resource. He said that the work accomplished by the Board and Forestry Department has been dramatic in those areas.

Director Hansen asked Mr. Brown to briefly discuss the smoke management plan and how slash burning could affect nonattainment areas. Mr. Brown said that from a forestry stand point, fire has historically played an important part of ecology. The question has evolved as to how can fire can be brought back to the landscape to maintain forest health and reforestation consistent with other environmental concerns.

Commissioner Whipple excused herself from the remainder of the meeting.

Rule Adoptions (Continued)

F. Proposed Adoption of Increase in Solid Waste Tipping Fee as Required by Senate Bill 66.

Purpose: Adoption of rule amendments to implement a 35/31 cent per ton fee increase.

Background: The per-ton disposal fee increase is 35 cents between January 1, 1992, and December 31, 1993. This will be added to the existing 50 cents per ton disposal fee so that as of January 1, 1992, the total solid waste disposal fee will be 85 cents per ton on both domestic and out-of-state solid waste disposed on in Oregon. The 31 cent fee would go into effect after December 31, 1993.

Action: Commissioner Squier moved that the Department's recommendation be approved; Commissioner Castle seconded the motion. Chair Wessinger, Commissioners Squier, Castle and Lorenzen voted yes.

G. Proposed Adoption of Rules to Establish the Process for Making Application to the Water Resources Department for Instream Water Rights for Pollution Abatement.

Purpose: Adoption of proposed administrative rules establishing DEQ policy and procedures for instream water right applications for pollution abatement.

Background: The Instream Water Rights rules were new rules proposed for adoption. Debra Sturdevant provided some background and an overview of the rules.

Discussion: David Moon, representing Water for Life, testified that the proposed rules were an improvement over the first draft taken to public hearing. Mr. Moon suggested four changes to the proposed rules and expressed concern about the impact of the rules on agricultural growth.

Commissioner Lorenzen began the questioning by asking whether staff anticipated that an instream water right in a Total Maximum Daily Load (TMDL) situation like the Columbia would preclude further appropriation. Staff responded that the Columbia is a complex example but that an instream water right request on a TMDL stream would be anticipated to include much or all of the remaining flow during the summer low flow periods and could, therefore, preclude further out-of-stream appropriation during those times. Commissioner Lorenzen expressed some additional concerns.

Commissioner Castle suggested that the Commission be included in the review of draft applications before they are submitted to the Water Resources Department. He requested that an analysis of policy issues and implications be provided to the Commission for review with each draft application.

Commissioner Lorenzen added that he would also be more comfortable if the Commission was notified, at least in the beginning, until they see how the instream rights program will unfold. Neil Mullane, Water Quality Division, suggested the following wording be added to section 340-56-300 of the rule which was satisfactory to the Commission.

(9) The Department will prepare a policy analysis of the draft application and provide this analysis to

the Commission for comment prior to submitting the application to WRD.

Commissioner Squire asked several specific questions and suggested two changes to the rules which were satisfactory to the Commission and staff. Section 340-56-200(1)(c) will read **all other waters being beneficially used.** In section 340-56-320(2), the words **the pollution abatement use and, therefore,** will be deleted.

Action: Commissioner Castle moved approval of Agenda Item G with Neil Mullane's suggested rewording and the changes suggested by Commissioner Squier; Commissioner Squier seconded the motion. The Commission adopted the proposed rules with the three specified changes. Chair Wessinger, Commissioners Castle, Squier and Lorenzen voted yes.

Other Items

I. **Underground Storage Tank (UST) Financial Assistance: Proposed Adoption of Temporary Rules.**

Purpose: Adoption of temporary rules to implement Underground Storage Tank Financial Assistance Programs enacted in Senate Bill 1215.

Background: Richard Reiter, Hazardous and Solid Waste Division, discussed the need to adopt temporary rules and identified key issues identified during development of the rules with the Underground Storage Tank Financial Assistance Advisory Committee.

Temporary rules are required to fully implement Senate Bill 1215 so that existing funds in the Underground Storage Tank Compliance and Corrective Action Fund can be used for financial assistance and to insure rules are in place for the April 1, 1992, Letter of Intent. Mr. Reiter proposed two rule amendments: removal of above ground storage tanks as UST project work and the requirement to calculate financial need ratios to two decimal places.

Mr. Reiter informed the Commission that the primary revenue source for the financial assistance program, a 1 cent per gallon assessment on motor fuel for resale from an underground storage tank, is the subject of an Oregon Supreme Court review. The issue is whether or not it is a tax that is constitutionally dedicated to the Highway Trust Fund. The Court will hear the case on January 8, 1992, and a decision is expected by March 1, 1992. In the meantime, businesses are collecting the revenue and holding in escrow accounts pending a court decision. If the UST assessment is

constitutionally dedicated, a backup fee is designated--a $65 fee collected on loading of petroleum removed from a storage terminal. However, if the UST assessment is constitutionally dedicated to the Highway Trust Fund, the loading fee may also be judged to be constitutionally dedicated.

The department and the advisory committee could not reach agreement on application of the financial need criteria. The department recommended that an applicant qualify under two of three financial ratios; the advisory committee recommended only qualifying under one of three. The Commission adopted the Department's recommendation of two of three.

Action: Commissioner Castle moved that Agenda Item I with the proposed amendments be approved; Commissioner Lorenzen seconded the motion. The Commission adopted the Statement of Need and Emergency Justification for adoption of temporary rule, Fiscal and Economic Impact Statement and the amended temporary UST financial assistance rules with four yes votes.

J. **Discussion: Eligibility of Agricultural Practices for Pollution Control Tax Credit Certification.**

Purpose: Discussion of eligibility of facilities used in agricultural practices for pollution control tax credits.

Background: The initial aim of the pollution control tax relief legislation was to ease the financial burden of compliance with new environmental regulations. Two other categories of facilities are eligible for tax credits: alternative practices to open field burning and recycling facilities. These categories are eligible without regard to the principal or sole purpose criteria, however, a determination of the percent of facility cost allocable to pollution control is still required. These types of facilities are presently being evaluated under the principal purpose and sole purpose criteria, respectively. A specific application for certification of a straw mulching machine was presented as an example for possible rule interpretations. The application is pending before the Department.

The primary purpose of straw mulching was to reduce erosion. A tax credit application for the straw mulching equipment for use in Malheur County had been submitted by Mr. Louis Wettstein. The application claimed that air pollution was prevented by the use of straw that would otherwise be burned and that the practice of mulching

reduces phosphorus and nitrate from surface water runoff. The practice of straw mulching has a surface water pollution benefit. However, the application did not substantiate groundwater pollution control benefit since no identified or planned reductions in water and fertilizer application rates had been included. Research study information provided by Mr. Hobson, inventor of the straw mulching machine, indicated that the practice of straw mulching provided potential benefits other than pollution control. Those potential benefits included increased crop yield, reduced fertilizer application needs and reduction of the loss of productive topsoil.

Agricultural and other non-point source facilities that are installed to meet the requirements of an adopted TMDL could be eligible under the current interpretation for principal purpose. Storm water non-point source facilities that may be installed to meet new permit requirements or TMDL requirements may also be eligible. Field burning applications have been processed under the principal purpose criteria, even though the alternative methods to open field burning are considered outright to be eligible by provision of law.

In the Wettstein application, the Department did not identify an enforceable requirement that necessitated purchase and use of the claimed facility. Mr. Wettstein's farm is in the Malheur County Groundwater Management area which has a plan in place calling for voluntary action; implementation is not required. Further, reduction of pollutant discharges to groundwater by reducing water and fertilizer application rates was not substantiated. There is currently no plan or requirement for implementation on nonpoint source pollution control measures to protect surface water, and there is no requirement to reduce open field burning in the area.

Discussion: Director Hansen explained the Department's interpretation of principal and sole purpose applications and provided further detail about the Wettstein tax credit application. Director Hansen suggested that the Commission may want to change the policy for approving this type of application.

The Commission discussed differing definitions of sole and principal purpose. Commissioner Lorenzen suggested that sole purpose might mean that the process or activity would not be undertaken but for the pollution abatement purpose. Commissioner Lorenzen also stated that there is a distinction between purpose and result. Director Hansen said that the Department would rather not make judgments

about the purpose but rather make judgments about the facts.

Commissioner Castle said that the Commission is on the verge of providing tax credits for agricultural practices. He indicated that the Commission may be opening the door to a large number of agricultural practices that would be undertaken because it is the conservative way to farm. Commissioner Lorenzen replied that this would probably not happen since there are other conservation practices accomplished. Mr. Downs talked about the legislative intent when the sole purpose criterion was adopted. He said that the specific purpose of the department which was expressed to the legislature was to significantly narrow the tax credit eligibility of voluntary facilities.

Director Hansen indicated that the goal would not be to grant these types of tax credits on an individual property-by-property basis. He suggested that the Soil Conservation Service or another similar agency make a finding about the overall purpose of the facility. Chair Wessinger expressed the need that the determination must specify pollution control.

Marshall Coba, Oregon Farm Bureau, presented written comments to the Commission about supporting pollution control tax credits for equipment or facilities that would reduce nonpoint source pollution in farming operations. A copy of Mr. Coba's statement is made a part of this meeting record.

Joe Hobson, Ontario, spoke to the Commission about tax relief eligibility for the machine he invented to spread straw mulch between the rows in cultivated fields. He indicated that he supported the adoption of a policy that would extend pollution control tax credit to pollution control facilities that are constructed to reduce nonpoint water pollution. Mr. Hobson provided the Commission with a copy of his statement, accompanying pictures and information. This material is made a part of this meeting record. Mr. Hobson stated that his machine had only one purpose and that was straw mulching.

Director Hansen said that based on the department's evaluation and research, this type of tax credit application did not meet the requirements of the traditional approach of interpreting sole and principal purpose. He added that if the Commission wanted to approve a tax credit for this type of activity, the department would need direction from the Commission on interpreting sole or principal purpose.

Director Hansen remarked that the original intent of the tax credit program was not meant to be an incentive program but to take the financial "sting" out of pollution control requirements. He said that if the Commission would like to see this program as an incentive program, legislation would need to be changed. Commissioner Castle asked what the department would be asking SCS to prepare. Director Hansen said that SCS would provide the farmer with a certificate to the effect that the use the claimed facility and a particular practice would result in no more than a de minimis return on investment for the type of crops being utilized.

Director Hansen indicated that the Commission had several options relative to this item: if the Commission did not act to modify current rule interpretations, the department would owe Mr. Hobson an opportunity to submit a specific application which would be considered at the next meeting; however, unless more facts were received, the department would deny the application under the current interpretation. Another option that could be taken would be for the Commission to provide further direction regarding the sole purpose definition and would provide the department a different approach which would allow the application to be revaluated.

Commissioner Squier stated she did not believe it appropriate to explore this application under principal purpose and was unsure about the sole purpose category. Hal Sawyer, Director's Office, told the Commission that they could look at four categories of facilities that were eligible: sole purpose, principal purpose, recycling, and specific field burning facilities. He said that the department had put recycling and field burning into the framework of principal and sole purpose. Mr. Sawyer gave the Commission a brief summary of the history of the tax credit program. Director Hansen added that the tax credit program was an off-budget item and was a way to provide benefit back to businesses.

Commissioner Castle said that he found the discussion constructive but disturbing. He indicated that the issue of nonpoint source pollution was very fundamental and needed to be discussed in that context.

Director Hansen summarized this issue by saying that there is an inequity that exists between the traditional point source type of regulations which have been handled under principal purpose and that inequity has disadvantaged some activities that are beneficial to pollution control. He went on to say that a statutory provision would need to be

written to specify eligibility for voluntary agricultural practices that reduce or prevent pollution in surface or groundwater.

Action: The Commission requested that this issue be returned as a future work session item. Director Hansen urged Mr. Hobson to consider facts that could allow the Department to evaluate the straw mulching machine under the sole purpose criterion, and give the department assurance that reduction in pollution would continue to occur over time.

D. **Approval of Tax Credits (Continued) - Boise Cascade, Tax Credit NO. 3534.**

In regard to the Boise Cascade application, Director Hansen summarized the facility's enforcement status. In 1975, Boise Cascade had recorded opacity readings which were in compliance. The department asked the facility, since they had submitted an application for an increase in their production levels, to perform a source test. In that determination, it was discovered that they were not in compliance and would not be able to comply. The department suggested that the facility install a scrubber. The department researched the cost of a scrubber on a similar facility in another part of the state ($148,000). Boise Cascade chose the alternative of a natural-gas fired powered boiler. By doing so, the facility had freed up hog fuel that they sold which is a return on investment. However, it was more than off set by the cost of natural gas they were buying to burn in the industrial boiler. Consequently, no gain was achieved. Boise Cascade chose to purchase a more expensive but equally effective device.

Chair Wessinger asked if in the Medford area, where facilities are changing to natural gas from wood burners, the department would be receiving many tax credit applications. Director Hansen said that if so, it would be the limited to the additional costs of retrofiting their existing hog fuel boiler for meeting permit requirements. He indicated that the issue was the new RACT standards being applied; if facilities bought pollution equipment to meet those standards, that equipment would be eligible for tax credit.

Action: Commissioner Lorenzen moved that the Boise Cascade tax credit, No. 3534, be approved; Dr. Castle seconded the motion. Chair Wessinger, Commissioners Squier, Castle and Lorenzen voted yes.

The meeting was adjourned at 4:20 p.m.

SOURCE SAMPLING

MANUAL

VOLUME I

January, 1976

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April, 1979

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State of Oregon
Department of Environmental Quality
Air Quality Division

FORWARD

The test methods described in this manual are currently being used by the Oregon Department of Environmental Quality and are considered to be the methods on file and approved for demonstration of compliance in accordance with Oregon Administrative Rules, Chapter 340, Section 20-040. These methods have been reviewed and accepted by the Environmental Protection Agency. While it is recognized that these procedures may not be necessarily consistent with other published methods, strict adherence to the enclosed methods is advisable to eliminate the possibility that a test may be rejected by the Department because of the test procedures used.

In the event that a tester prefers to utilize a method other than the one described in this manual, the tester must receive permission from the Department in writing in advance of the test. A copy of the alternate procedure along with the intended application must be forwarded to the Department for review. At its discretion, the Department may require that the equivalency of the alternate method be demonstrated through simultaneous testing or by other means.

Since the state of the art in source sampling is constantly changing, and new or refined methods may be developed, the Department will provide revisions to this manual as they are completed. All users of this manual are encouraged to forward their comments, suggestions, and corrections.

The Source Sampling Manual is in two Volumes. Volume I contains the general source testing requirements and methods for the criteria and hazardous air pollutants. Volume II contains Volatile Organic Compound (VOC) test methods pertaining to gasoline vapor control systems and chemical mass balances.

Source Sampling Manual
Volume I
Table of Contents

1.0 INTRODUCTION

1.1 Purpose

The purpose of this manual is to identify and describe the source sampling methods on file at the Department of Environmental Quality (DEQ) in accordance with OAR 340-20-040.

1.2 Applicability

The methods identified in this manual are suitable for use in conducting stationary source emissions testing for the purpose of demonstrating compliance (or non-compliance) with Air Contaminant Discharge Permit (ACDP) emission limits. The October, 1991 revision of the Source Sampling Manual supersedes all previous versions of this manual.

The methods in this manual are primarily for measuring emissions of the criteria pollutants and some hazardous air pollutants. Methods for other hazardous and toxic air pollutants could be approved on a case-by-case basis at the time of reviewing the source test plan (see section 2). A copy of any method used for DEQ approved source testing shall be retained on file at the Air Quality Division Headquarters

1.3 Manual Organization

Section 2 of this manual provides general source testing requirements. Unless otherwise specified in an Oregon Administrative Rule, Air Contaminant Discharge Permit, or DEQ letter, these general requirements shall be followed when conducting source testing in Oregon.

Section 3 lists the specific source sampling methods for criteria pollutants either by reference or described in detail in this manual.

Section 4 lists the specific source sampling methods for hazardous air pollutants.

Many of the U.S. Environmental Protection Agency (EPA) reference source sampling methods have been included by reference because they are identical to Oregon's methods and there is no need for redundancy which could lead to confusion and inconsistency. Copies of these methods can be obtained from government book stores, the DEQ, or directly from EPA. All methods included in this manual by reference are on file at the DEQ. The EPA methods are incorporated by reference as found in 40 CFR Part 51 Appendix M, 40 CFR Part 60 Appendix A, and 40 CFR Part 61 Appendix B published on July 1, 1991.

2.0 SOURCE TESTING GENERAL REQUIREMENTS

2.1 Department Notification

The DEQ Source Testing Coordinator shall be notified of all compliance source tests at least 15 days in advance of the source test date. The notification should be in writing and accompanied by a source test plan.

2.2 Source Test Plan

A source test plan must be approved by the Department in advance of all compliance source testing. As stated above, the DEQ should be provided at least 15 days to review and approve source test plans. In more complex source testing programs, it may be necessary to allow up to 30 days to receive DEQ approval. The source test plan may be generated by the source testing consultant, source operator, or the DEQ. The source test plan will be reviewed by the DEQ Source Testing Coordinator.

A source test plan shall include, as a minimum, the following information:

1. Source Name and address.
2. Source site personnel: contact name and phone number.
3. Source testing personnel: company, contact name, and phone number.
4. Scheduled date of the source test
5. Source Description including a description of the pollution control device and sample locations.
6. Pollutant to be measured.
7. Test Methods
8. Number of sampling replicates
9. Applicable process/production information to be collected during the source test.
10. Control device operating parameters to be monitored during the testing.
11. Fuel samples and type of analysis: who will collect them and who will perform the analysis.
12. Visible emissions measurements: who will take opacity readings during the source test and are they certified.
13. Other sampling considerations.
14. Other process considerations.
15. The source test plan shall include the following statements unless otherwise specified by an ACDP condition or DEQ letter:

    a. It is assumed today, but it will be confirmed on or before the test day, that the duct air flow measuring meets criteria in EPA Methods 1 and 2.

b. In no case will sampling replicate(s) be accepted if separated by a time duration of twenty-four (24) or more hours, unless prior authorization is granted by the Department.

c. The source to be tested must operate at a normal production rate during testing. Rates not in agreement with those stipulated in the Air Contaminant Discharge Permit can result in test rejection for application to determine compliance. Imposed process limitations could also result from atypical rates.

d. The Department must be notified of any changes in source test plans prior to testing. Significant changes not acknowledged by the Department which could affect accuracy and reliability of results could result in test report rejection.

e. Method-specific quality assurance/quality control (QA/QC) procedures must be performed to ensure that the data is valid for determining source compliance. Documentation of the procedures and results shall be presented in the source test report for review. Omission of this critical information may result in rejection of the data, requiring a retest.

f. Source test reports must be submitted to the Department within thirty (30) days of the test dates, unless another deadline has been stipulated, either by permit condition, or by Department letter approval.

g. Two (2) copies of the completed source test report must be sent to the Department; one (1) to the DEQ Regional Operations staff person responsible for the source and the second copy to the Source Testing Coordinator, Department of Environmental Quality Headquarters in Portland, OR.

2.3 Sample Replicates

Unless otherwise specified by the ACDP or Department letter, a compliance source test shall consist of a minimum of three (3) individual tests with the pollutant emissions determined from the arithmetic average of the three tests. Pollutant emissions may be determined from the arithmetic average of two tests in the event that one of the samples was lost or unusual operating conditions (upset conditions) occurred during the testing.

2.4 Sample time, volumes, and detection limits

In general, compliance source tests shall be a minimum of one (1) hour long and the sample volume shall be sufficient to ensure a minimum detection limit of one half of the emission limit.

For particulate emissions testing, the gravimetric analytical procedure minimum detection limit is considered to be 20 mg (100 mg for high volume samplers) per sample. For Methods 5, 7, and 17, the minimum sample volume shall be the greater of 31.8 dry standard cubic feet (dscf) or 20 mg divided by one half of the emission standard converted to mg/dscf. Sample times shall be a minimum of 60 minutes and a maximum of 480 minutes (8 hours). For Oregon Method 8 (high volume sampler), the minimum sample volume shall be the greater of 150 dry standard cubic feet (dscf) or 100 mg divided by one half of the emission standard converted to mg/dscf. Sample times shall be a minimum of 15 minutes and a maximum of 60 minutes.

2.5 Reporting and Record Keeping

2.5.1 Reporting

Unless otherwise specified by the ACDP, OARs, or DEQ letter, source test reports shall be submitted to the Department within 30 days following the source tests. Each source test report shall include as a minimum the following information:

A. Name and location of the source.
B. Date and time of individual tests.
C. Description of the process, including:
    1. manufacturer and maximum capacity of the process
    2. technology type
    3. pollution control devices.
D. Production rates during the testing.
E. Fuel characteristics (if applicable).
F. Visible emissions (if applicable).
G. Pollutants
H. Test Methods
I. Source sampling equipment
J. Method specific equipment calibration data and results.
K. Field data sheets
L. Laboratory data sheets
M. Calculated results
N. Example calculations
O. Discussion of testing and/or process problems encountered during the testing.

2.5.2 Record Keeping

The following records shall be maintained for a minimum of one year:

A. Equipment Calibrations
B. Analytical results

Unused portions of the source test samples shall be preserved and archived for a minimum of 6 months.

3.0 TEST METHODS

3.1 Sample locations/Traverse Points

EPA Method 1 (40 CFR Part 60 Appendix A, 7-1-91 edition) is incorporated by reference.

3.2 Gas Velocity and Flow rate

EPA Methods 2, 2A, 2B, 2C, and 2D (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference.

3.3 Gas Composition Analysis

EPA Methods 3 and 3A (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference.

3.4 Moisture Content of Gas

EPA Method 4 (40 CFR Part 60 Appendix A, 7-1-91 edition) is incorporated by reference.

3.4.1 Oregon Method 4 (wet bulb/dry bulb)

State of Oregon

Department of Environmental Quality

Source Sampling Method 4

Determination of Moisture Content of Stack Gases
(Alternate Method)

1. Principle. The water vapor in a non-saturated gas stream causes a depression of the wet bulb temperature which is proportional to the fraction of moisture present.

2. Procedure.

2.1 Measure the dry bulb temperature in the conventional way using either a thermometer or thermocouple.

2.2 Wrap the end of the temperature measuring device in a cloth sock with water. Insert the sock and temperature measuring device into the flowing gas stream and allow the temperature to reach a steady state. Caution: after the water on the sock has evaporated, the temperature will rise to the dry bulb temperature. (Figure 4-1). The wet bulb temperature must be taken while the sock is saturated with moisture.

2.3 Apply the wet bulb and dry bulb readings to the appropriate graph (Figure 4-2, 4-3, or 4-4) and determine the approximate water vapor content if the barometric pressure is near 29.92 inches of mercury (in. Hg).

2.4 Alternately, apply the wet bulb and dry bulb readings to equation 4-1 in figure 4-5.

3. Interferences

3.1 The following conditions may drastically change the wet bulb reading causing erroneous results:

3.1.1 The presence of acid gases in the gas stream, i.e. SO_2, SO_3, Hcl.

3.1.2 The presence of hydrocarbons in the gas stream.

3.1.3 Marked differences from atmospheric pressure (29.9 in. Hg) of the gas stream (if the graphs

are used).

3.2 Should any of the above interferences be present, the tester should consider another approach to determining moisture content.

3.3 Additionally, the following conditions can lead to difficulties:

3.3.1 Very high dry bulb temperature (in excess of 500°F).

3.3.2 Very high or very low gas velocities.

3.3.3 High concentrations of particulate matter which may adhere to the wet sock.

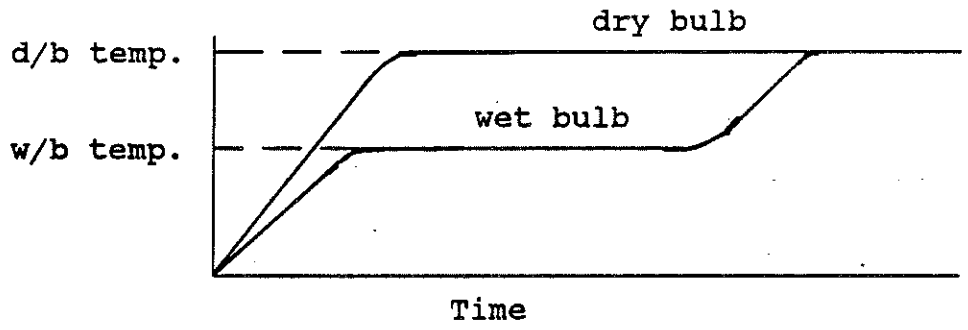


Figure 4-1

3.4 Moisture Equation:

$$\% H_2O = \frac{e'' - \frac{(P_a - e'')(t_d - t_w)}{2800 - [1.3t_w]}}{P_a} \times 100 \qquad (4\text{-}1)$$

where:

e'' = Vapor pressure of H_2O @ t_w, in. Hg (See Figure 4-5)

P_a = Absolute barometric pressure, in. Hg

t_d = Dry bulb temperature, °F

t_w = Wet bulb temperature, °F

VAPOR PRESSURE OF WATER AT SATURATION*
(Inches of Mercury)

Temp. Deg.F	0	1	2	3	4	5	6	7	8	9
-20	.0126	.0119	.0112	.0106	.0100	.0095	.0089	.0084	.0080	.0075
-10	.0222	.0209	.0199	.0187	.0176	.0168	.0158	.015	.0142	.0134
- 0	.0376	.0359	.0339	.0324	.0306	.0289	.0275	.0259	.0247	.0233
0	.0376	.0398	.0417	.0441	.0463	.0489	.0517	.0541	.0571	.0598
10	.0631	.0660	.0696	.0728	.0768	.0810	.0846	.0892	.0932	.0982
20	.1025	.108	.1127	.1186	.1248	.1302	.1370	.1429	.1502	.1567
30	.1647	.1716	.1803	.1878	.1955	.2035	.2118	.2203	.2292	.2383
40	.2478	.2576	.2677	.2782	.2891	.3004	.3120	.3240	.3364	.3493
50	.3626	.3764	.3906	.4052	.4203	.4359	.4520	.4586	.4858	.5035
60	.5218	.5407	.5601	.5802	.6009	.6222	.6442	.6669	.6903	.7144
70	.7392	.7648	.7912	.8183	.8462	.8750	.9046	.9352	.9666	.9989
80	1.032	1.066	1.102	1.138	1.175	1.213	1.253	1.293	1.335	1.378
90	1.422	1.467	1.513	1.561	1.610	1.660	1.712	1.765	1.819	1.875
100	1.932	1.992	2.052	2.114	2.178	2.243	2.310	2.379	2.449	2.521
110	2.596	2.672	2.749	2.829	2.911	2.995	3.081	3.169	3.259	3.351
120	3.446	3.543	3.642	3.744	3.848	3.954	4.063	4.174	4.289	4.406
130	4.525	4.647	4.772	4.900	5.031	5.165	5.302	5.442	5.585	5.732
140	5.881	6.034	6.190	6.350	6.513	6.680	6.850	7.024	7.202	7.384
150	7.569	7.759	7.952	8.150	8.351	8.557	8.767	8.981	9.200	9.424
160	9.652	9.885	10.12	10.36	10.61	10.86	11.12	11.38	11.65	11.92
170	12.20	12.48	12.77	13.07	13.37	13.67	13.98	14.30	14.62	14.96
180	15.29	15.63	15.98	16.34	16.70	17.07	17.44	17.82	18.21	18.61
190	19.01	19.42	19.84	20.27	20.7	21.14	21.5	22.05	22.52	22.99
200	23.47	23.96	24.46	24.97	25.48	26.00	26.53	27.07	27.62	28.18
210	28.75	29.33	29.92	30.52	31.13	31.75	32.38	33.02	33.67	34.33
220	35.00	35.68	36.37	37.07	37.78	38.50	39.24	39.99	40.75	41.52
230	42.31	43.11	43.92	44.74	45.57	46.41	47.27	48.18	49.03	49.93
240	50.84	51.76	52.70	53.65	54.62	55.60	56.60	57.61	58.63	59.67

* Methods for Determination of Velocity, Volume, Dust, and Mist Content of Gases, Bulletin WP-50, Western Precipitation Corp., Los Angeles, Calif.

figure 4-5

The following equation can be substituted for the above table for determining vapor pressures (e") from measured wet bulb (t_w) temperatures:

$$e'' = 6.08764*10^{-6}*t_w^3 - 1.00431*10^{-3}*t_w^2 + 0.0756026*t_w - 1.69343$$

3.5 Particulate Matter

EPA Methods 5, 5A, 5B, 5D, 5E, 5F, 5G, 5H, and 17 (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference for measuring particulate emissions from specific sources as required in Oregon Administrative Rules, Air Contaminant Discharge Permits, and 40 CFR Part 60 regulations.

3.5.1 Oregon Method 5

State of Oregon
Department of Environmental Quality

Source Sampling Method 5

Sampling Particulate Emissions From Stationary Sources

1. Principle and Applicability

1.1 Principle. Particulate matter including condensible gases are withdrawn isokinetically from a flowing gas stream. The particulate matter is determined gravimetrically after removal of combined water.

1.2 Applicability. This method is applicable to the determination of particulate emissions from stationary sources except those sources for which specified sampling methods have been devised and are on file with the Department.

2. Acceptability. Results of this method will be accepted as demonstration of compliance (or non-compliance) provided that the methods included or referenced in this procedure are strictly adhered to and a report containing at least the minimum amount of information regarding the source is included as described in Section 2.5.1. Deviations from the procedures described herein will be permitted only if permission from the Department is obtained in writing in advance of the tests. EPA Method 5 combined with EPA Method 202 may be substituted for this method.

3. Apparatus

3.1 Sampling Train: Same as EPA Method 5 Sections 2.1.1 to 2.1.10 with the following exception:

3.1.1 The condenser shall consist of four impingers as described in EPA Method 5 Section 2.1.7.

3.2 Sample Recovery: Same as EPA Method 5 Sections 2.2.1 to 2.2.8.

3.3 Analysis: Same as EPA Method 5 Sections 2.3.1 to 2.3.7 with the following addition:

3.3.1 Glass separatory funnel (500 - 1000 ml) with

teflon stopcock and plug.

4. Reagents

4.1 Sampling: Same as EPA Method 5 Sections 3.1.1 to 3.1.5 with the following condition:

4.1.1 Distilled water with a residue content of less than 0.001% (0.01mg/ml) shall be used in the impingers.

4.2 Sample Recovery: Same as EPA Method 5 Section 3.2.

4.3 Analysis: Same as EPA Method 5 Section 3.3 with the following addition:

4.3.1 Methylene Chloride (dichloromethane) reagent grade, with a maximum total residue content of 0.001% (0.013 mg/ml).

5. Procedure

5.1 Sampling: Same as EPA Method 5 Section 4.1.

5.2 Sample Recovery: Same as EPA Method 5 Section 4.2 with the following additions:

5.2.1 The contents of the impingers, excluding the silica gel impinger, shall be transferred to container No. 4 along with a distilled water rinse of the impingers and interconnects from the back filter holder to the silica gel impinger.

5.2.2 Rinse all sample exposed glassware between the filter (excluding the glass frit filter support) and the fourth impinger with acetone and store in container No. 5.

5.3 Analysis: Same as EPA Method 5 Section 4.3 with the following additions:

5.3.1 Transfer the contents of container No. 4 to a separatory funnel (Teflon[1] stoppered). Rinse the container with distilled water and add to the

[1]Mention of trade names or specific products does not constitute endorsement of the Department of Environmental Quality.

separatory funnel. Add 50 ml of methylene chloride, stopper, and vigorously shake the separatory funnel 1 minute, let separate and transfer the methylene chloride (lower layer) into a tared beaker or evaporating dish. Repeat twice more.

NOTE: Always leave a small amount of methylene chloride in the separatory funnel to ensure that water does not get into the extracted sample. It water is present in the extracted sample, it will be difficult to completely evaporate the sample to dryness for gravimetric analysis.

5.3.2 Transfer the remaining water in the separatory funnel to a tared beaker or evaporating dish and evaporate at 105°C. Desiccate for 24 hours and weigh to a constant weight.

5.3.3 Evaporate the combined impinger water extracts from section 5.3.1 at laboratory temperature (≤70°F) and pressure, desiccate for 24 hours and weigh to a constant weight.

5.3.4 Transfer the contents of container No. 5 to a tared beaker or evaporating dish, evaporate at laboratory temperature and pressure, desiccate for 24 hours, and weigh to a constant weight.

5.3.5 Evaporate a portion of the solvents in a manner similar to the sample evaporation to determine the solvent blanks.

5.4 Quality Control Procedures: Same as EPA Method 5 Section 4.4.

6. Calibration

6.1 Same as EPA Method 5 Section 5 with the following addition:

6.1.1 The calibration data and/or calibration curves shall be included in the source test report.

7. Calculations

Same as EPA Method 5 Section 6 with the following changes:

7.1 Additions to EPA Method 5 Section 6.1 Nomenclature:

C_m = Methylene chloride blank residue concentration, mg/g.

m_m = Mass of residue of methylene chloride after evaporation, mg.

V_m = Volume of methylene chloride blank, ml.

V_{mw} = Volume of methylene chloride used for extracting the impinger water, ml.

W_m = Weight of residue in methylene chloride, mg.

ρ_m = Density of methylene chloride, mg/ml (see label on bottle).

7.2 Add Section 6.6a: Methylene Chloride Blank Concentration.

$$C_m = \frac{m_m}{V_m \rho_m}$$

7.3 Add Section 6.7a: Methylene Chloride Wash Blank.

$$W_m = C_m V_{mw} \rho_m$$

7.4 Change Section 6.8 to read:

Total Particulate Weight. Determine the total particulate matter catch from the sum of the weights obtained from Containers 1, 2, 4, 5, and the methylene chloride extract of the water from container 4 less the acetone or methylene chloride blanks (see attached figure 5.3a).

8. Alternative Procedures, Bibliography, sampling train schematic, example data sheets, etc.:

Same as EPA Method 5 Sections 7, 8 and figures 5.1 through 5.12, excluding figure 5.3 (use 5.3a in place of 5.3).

Figure 5.3a - page 1

METHOD 5 DATA ANALYSIS FORM

Plant_____ Run Number_____

Sample Location_____ Test Date_____

Sample Recovered by_____

Front Half:	Date/Time	Weight(g)	Audit*	T-°F	RH-%	By
Filter						
Filter ID_____						
Tare Wt._____						
Date/time into dessicator_____						
Acetone						
Beaker ID_____						
Tare Wt._____						
Solv. Vol._____						
Solv. ID_____						
Date/time into dessicator_____						
Back Half:						
Acetone						
Beaker ID_____						
Tare Wt._____						
Solv. Vol._____						
Solv. ID_____						
Date/time into dessicator_____						
Water						
Beaker ID_____						
Tare Wt._____						
Solv. Vol._____						
Solv. ID_____						
Date/time into dessicator_____						
DCM extract						
Beaker ID_____						
Tare Wt._____						
Solv. Vol._____						
Solv. Wt._____						
Date/time into dessicator_____						

* 0.5000 g ± tolerance - NIST traceable Class S weight

Figure 5.3a - Page 2

METHOD 5 BLANK ANALYSIS DATA FORM

Samples Prepared by_____ Date_____

Front Half:	Date/Time	Weight(g)	Audit*	T-°F	RH-%	By
Filter Filter ID_____ Tare Wt._____						
Acetone Beaker ID_____ Tare Wt._____ Solv. Vol._____ Solv. ID_____						
Water Beaker ID_____ Tare Wt._____ Solv. Vol._____ Solv. ID_____						
DCM Beaker ID_____ Tare Wt._____ Solv. Vol._____ Solv. Wt._____						

* 0.5000 g ± tolerance - NIST traceable Class S weight

Figure 5.3a - Page 3

METHOD 5 TARE WEIGHT RECORD

Indicate: filters or evaporation containers (beakers)

(°F) (%) (grams)	Date ____ Time ____ Temp. ____ R.H. ____ Audit ____ By ____	Date ____ Time ____ Temp. ____ R.H. ____ Audit ____ By ____	Date ____ Time ____ Temp. ____ R.H. ____ Audit ____ By ____	Date ____ Time ____ Temp. ____ R.H. ____ Audit ____ By ____
I.D.	Weight (g)	Weight (g)	Weight (g)	Weight (g)

3.5.2 Oregon Method 7

State of Oregon

Department of Environmental Quality

Source Sampling Method 7

Sampling Condensible Emissions From Stationary Sources

1. Principle and Applicability

1.1 Principle: Particulate matter including condensible gases is withdrawn isokinetically from a flowing gas stream. The particulate matter is determined gravimetrically after extraction with an organic solvent and evaporation.

1.2 Applicability: This method is applicable to stationary sources whose primary emissions are condensible gases. It should be considered a modification of Source Sampling Method 5 and applied only when directed to do so by the Department.

2. Sampling Apparatus (Figure 7.1)

2.1 Sampling train: Same as Oregon Source Sampling Method 5 Section 3.1 with the following exceptions:

2.1.1 The heated filter and cyclone are optional, but should be used if a significant quantity of solid particulate matter is present.

2.1.2 An unheated glass fiber filter is placed between the third and fourth impingers.

2.2 Sample Recovery and Analysis: Same as Oregon Source Sampling Method 5 Section 3.2 and 3.3

3. Reagents

Same as Oregon Source Sampling Method 5 Section 4.1 - 4.3.

4. Procedure

4.1 Sampling: Same as Oregon Source Sampling Method 5 Section 5.1 with the following addition:

4.1.1 Insert numbered and pre-weighed filters into each

of the front (if used) and rear filter holders.

4.2 Sample Recovery: Same as Oregon Source Sampling Method 5 Section 5.2 with the following addition:

4.2.1 Transfer the rear filter to container No. 6.

4.3 Sample Analysis: Same as Oregon Source Sampling Method 5 Section 5.3 with the following addition:

4.3.1 Desiccate the rear filter in container No. 6 for 24 hours at 70°F or less. Weigh the filter to a constant weight.

NOTE: In some cases, desiccation may give rise to a slow vaporization of the condensible material. Therefore, it is not recommended that an attempt to weigh to constant weight be made. This will be evident after 3 successive weights. If the weights continue to decrease over time and the sample is obviously dry, use the average of the first three weights to determine the particulate matter catch.

5. Calibrations

5.1 Same as Oregon Source Sampling Method 5 Section 6.

6. Calculations

6.1 Same as Oregon Source Sampling Method 5 Section 7 with the following exception:

6.1.1 Section 7.4 shall be changed as follows:

Total Particulate Weight. Determine the total particulate matter catch from the sum of the weights obtained from Containers 1 (optional), 2, 4, 5, 6, and the methylene chloride extract of the water from container 4 less the acetone or methylene chloride blanks (see attached figure 7.2).

7. Alternative Procedures and example data sheets: Same as Oregon Source Sampling Method 5 Section 8 (Figure 7.2 replaces Figure 5.3a).

Figure 7.1

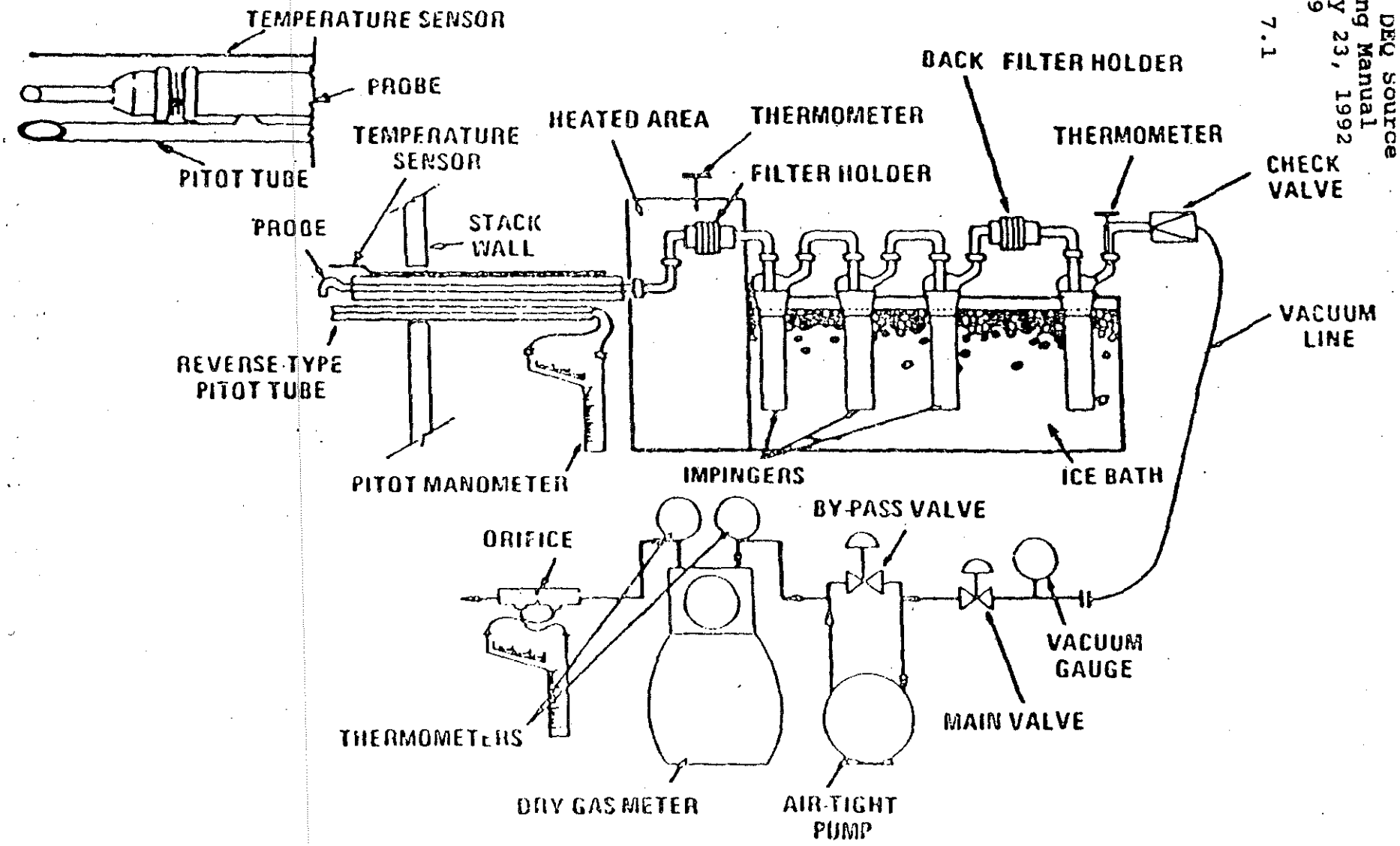


Figure 7.1 .. METHOD 7 PARTICULATE/CONDENSIBLES SAMPLING TRAIN

Figure 7.2 - page 1

METHOD 7 DATA ANALYSIS FORM

Plant _____ Run Number _____

Sample Location _____ Test Date _____

Sample Recovered by _____

Front Half:	Date/Time	Weight(g)	Audit*	T-°F	RH-%	By
Filter Filter ID _____ Tare Wt. _____ Date/time into dessicator _____						
Acetone Beaker ID _____ Tare Wt. _____ Solv. Vol. _____ Solv. ID _____ Date/time into dessicator _____						
Back Half:						
Filter Filter ID _____ Tare Wt. _____ Date/time into dessicator _____						
Acetone Beaker ID _____ Tare Wt. _____ Solv. Vol. _____ Solv. ID _____ Date/time into dessicator _____						
Water Beaker ID _____ Tare Wt. _____ Solv. Vol. _____ Solv. ID _____ Date/time into dessicator _____						
DCM extract Beaker ID _____ Tare Wt. _____ Solv. Vol. _____ Solv. Wt. _____ Date/time into dessicator _____						

* 0.5000 g ± tolerance - NIST traceable Class S weight

3.5.3 Oregon Method 8

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

Source Sampling Method 8

Sampling Particulate Emissions From Stationary Sources
(High Volume Method)

1. Principle and Applicability

1.1 Principle: Particulate matter is withdrawn isokinetically from a flowing gas stream and deposited on a glass fiber filter. The particulate matter is determined gravimetrically after removal of uncombined water.

1.2 Applicability: This method is applicable to stationary sources whose primary emissions are solid particulate. It's primary application is intended to be wood product handling cyclone and baghouse exhaust systems. Prior approval of the Department is required before this method can be applied to other type of source emissions for the purpose of demonstrating compliance.

2. Acceptability

2.1 Results from this method will be accepted as a demonstration of compliance (or non-compliance) provided that the methods included or referenced in this procedure are strictly adhered to and a report containing at least the minimum amount of information regarding the source is included. Deviations from the procedures described herein will be permitted only if permission from the Department is obtained in writing in advance of the tests.

3. Sampling Apparatus (Figure 8.1)

3.1 Nozzle - smooth metal construction with sharp leading edge. The nozzle shall be connected to the probe by means of a joint designed to minimize particulate matter deposition.

3.2 Probe - smooth metal construction. The probe shall be attached to the nozzle and filter holder with air tight joints designed to minimize particulate matter

deposition. The probe should be as short as possible.

3.3 Filter holder - air tight with support screen for the filter.

3.4 Metering system - a calibrated orifice followed by a thermometer or thermocouple and flow control device. The metering system shall be connected to the filter holder by means of an air tight joint.

3.5 Pitot tube - P type or S type or equivalent, calibrated as described in EPA Method 2 (40 CFR Part 60 Appendix A).

3.6 Blower - high capacity (typically 60 cfm free air). The blower may be connected to the metering system by a flexible hose if desired.

3.7 Probe Brush - flexible, nylon bristle brush at least as long as the probe and nozzle.

3.8 Differential Pressure Gauges - liquid manometer, Magnehelic1[2], or equivalent. Differential pressure gauges other than liquid manometers shall be calibrated against a liquid manometer.

3.9 Barometer - mercury, aneroid, or other type capable of measuring atmospheric pressure to within 0.1 in Hg. If the barometric pressure is obtained from a nearby weather bureau station, the true station pressure (not corrected for elevation) must be obtained and an adjustment for elevation differences between the station and sampling site must be applied.

3.10 Temperature Gauges - as described in EPA Method 2.

3.11 Timer - integrating type, accurate and readable to the nearest 5 seconds per hour.

3.12 Filter Storage Container - clean manilla envelopes and tagboards or suitable equivalent.

3.13 Sample Storage Containers - glass with leak tight cap that is resistent to attack by the solvent used and allows complete recovery of particulate matter.

---

[2]Mention of trade names or specific products does not constitute endorsement of the Department of Environmental Quality

Polyethylene bottles are also acceptable.

4. Reagents

4.1 Filters - glass fiber filters, free of pinhole leaks or other imperfections and exhibiting at least 99.95% efficiency on 0.3 micron DOP smoke particles. Desiccate individually numbered filters for 24 hours and weigh to the nearest 0.5 mg before use.

4.2 Probe Wash Solvent - acetone, reagent grade with 0.001% (0.008 mg/ml) residue. For aluminum probes and nozzles, methanol may be substituted for acetone. The same purity is required.

5. Sample Train Preparation

5.1 All parts of the sampling train shall be cleaned and properly calibrated as directed in Section 10.

5.2 Place a filter in the filter holder with the coarse side facing the flow, being careful not to damage it. Be certain that the filter is positioned so that no air can be drawn around the filter.

5.3 Assemble the sample train with the appropriate nozzle and length of probe. Perform a leak check by plugging the nozzle, turning on the blower, and observing the deflection of the flow orifice pressure gauge. The acceptable leakage rate shall not exceed 5% of the expected sample flow rate.

6. Sample Collection

6.1 Use a pitot tube to roughly map the velocity distribution across the face of the exhaust opening or duct. Areas of zero or negative flow should also be indicated if present. At each point at which the velocity is measured, measure the flow in the direction giving maximum deflection of the pitot pressure gauge. Record the data on Form 3.

6.2 Select six or more points of outgoing (positive) flow from the points measured in section 6.1 to sample. The points shall be representative of the flow pattern and shall include the point of maximum velocity. If six points of positive flow cannot be obtained, use the maximum number possible. Do not choose any points closer than 2 inches to the exhaust duct wall.

6.3 Measure the exhaust temperature.

6.4 Determine the nozzle size required for isokinetic sampling. An estimate of the orifice temperature is required. For low temperature exhausts, the orifice temperature is usually very close to the exhaust temperature. For higher temperature exhausts, a trial run may be necessary to determine the expected orifice temperature.

6.5 Calculate the required orifice pressure drop for each chosen sampling point to obtain an isokinetic sample rate. With the probe out of the exhaust stream, turn on the blower and adjust the flow rate to that calculated for the first sampling point in section 6.2. Locate the probe nozzle at the first sampling point and immediately start the timer. Move the probe around until the velocity pressure matches that for which the sampling flow rate was pre-set. The probe nozzle must be pointing directly into the flow.

6.6 Continually monitor the velocity during the sampling period and move the probe around as required to keep it in an area where the velocity matches the original velocity used to calculate the pre-set sampling rate. Record the sampling time, the orifice temperature, and orifice pressure drop on the data sheet. Record data every 5 minutes or once per sampling point, whichever is more frequent. Sample for a length of time so that the total sampling time for all points is at least 15 minutes and a minimum of 100 mg of particulate matter is collected.

6.7 Repeat steps 6.5 and 6.6 for each sampling point. The blower need not be turned off between points if readjustment to the new sampling rate can be made rapidly (less than 15 seconds).

6.8 Care should be taken so that the nozzle does not touch the walls of the exhaust stack because particulate matter may be dislodged and enter the sample train. If there is reason to believe this has happened, discontinue the sample, clean the train, and restart the test.

6.9 If excessive loading of the filter should occur, or the pressure drop should increase such that isokinetic conditions cannot be maintained, replace the filter and continue the test.

6.10 At the conclusion of the sampling period, remove the probe from the exhaust and turn off the blower (do not reverse this order because the filter may be broken and sample lost). Plug the nozzle to prevent sample loss and transport to the sample recovery area.

6.11 Conduct a post-test leak check (section 5.3).

6.12 Measure the moisture content, molecular weight, and the barometric pressure (absolute) of the exhaust gas. In most cases, the moisture may be measured by the wet bulb/dry bulb technique as described in Oregon Source Sampling Method 4. The molecular weight shall be measured by EPA Method 3 or 3a. If ambient air is the gas being sampled, the molecular weight can be assumed to equal 29 lbs/lb mole (29 g/g mole).

7. Sample Recovery

7.1 Remove the nozzle plug, turn on the blower, insert the probe brush into the nozzle and brush the particulate from the nozzle and probe onto the filter. Do not insert the brush so far in that it will come into contact with the filter. Turn off the blower.

7.2 Open the filter holder and carefully remove the filter. Inspect the filter for holes or tears or places where the samples are deposited up to the edge of the filter indicating a leak around the filter. If any are found, clean the train and repeat the run. Fold the filter once lengthwise with the dirty side in and place in a folded manilla tagboard, folded edge down. Fasten the outside edge of the tagboard with a paper clip and place in the manilla envelope.

7.3 Rinse the inside front of the filter holder, the probe and the nozzle with acetone or methanol while brushing. Repeat the rinsing/brushing until all particulate is removed as evidenced by a lack of visible residue on the inside surfaces after evaporation of the acetone or methanol. Retain the acetone or methanol rinse and a blank sample of the acetone or methanol in labelled containers for laboratory analysis.

8. Analysis

8.1 Desiccate the filter for 24 hours at room temperature (70°F or less) and weigh to a constant weight to the nearest 0.5 mg.

NOTE: Make certain that any particulate that may have dislodged from the filter into the tagboard or envelope is returned to the filter before weighing.

NOTE: Since the relatively large filter and particulate catch may be hygroscopic, weigh immediately upon removal from the desiccator.

8.2 Blanks shall be run in the field before and after the complete source testing activity. A minimum of 2 blanks shall be collected for each source test. This is accomplished by inserting a pre-weighed filter into the filter holder, performing a leak check, removing the filter and treating it as a sample filter in accordance with section 7.2.

8.3 Quantitatively transfer the solvent rinse and blank solvent to tared beakers or evaporating dishes, evaporate at room temperature (70°F or less) and pressure, desiccate and weigh to a constant weight to the nearest 0.5 mg.

8.4 Record the data on Form 4.

9. Exhaust Gas Flow Rate Measurement

9.1 Since the air flow pattern at the location of the sampling points may preclude an accurate flow rate measurement, a point upstream of the sampling point shall be selected for a velocity traverse. The flow rate at the velocity sampling point should accurately represent the flow rate to the atmosphere at the particulate sampling point (i.e., no air flows should be added to or removed from the system between the velocity and the particulate sampling points).

9.2 Select a suitable velocity sampling location in accordance with EPA Method 1.

9.3 Measure the gas velocity and flow rate in accordance with EPA Method 2.

10. Calibration

10.1 The orifice flow meter shall be calibrated at least once a year using a primary standard or a device which has been calibrated against a primary standard. The calibration data and calibration curves for the orifice

and intermediate standard shall be included in the source test report along with documentation of the primary standard.

10.2 The pitot tube, differential pressure gauges, and thermometers or thermocouples shall be calibrated at least every six months. The calibration data and/or calibration curves shall be included in the source test report.

10.3 The calibration records shall include the date, place, and method of calibration.

11. Calculations

11.1 Total particulate emissions from the system shall be calculated by multiplying the particulate concentration measured at the exhaust by the flow through the system.

11.2 Particulate Concentration. The following calculations shall be conducted for each test run:

11.2.1 Total Sample Weight: Calculate the total sample weight from laboratory results by adding the net weight gain of the filter sample(s), adjusted for a blank value, to the net weight of particulate matter collected in the acetone rinse, corrected for an acetone blank. If the acetone rinse represents more than one test run, the particulate mass should be pro-rated for each test run according to the relative net weights of particulate matter collected on the filters. Record the results on a laboratory form such as figure 8.2.

11.2.2 Total Sample Gas Volume: Calculate the sample gas volume for each sample point by multiplying the duration of the sample in minutes, times the average sample flow rate (actual cubic feet per minute - acfm). Add the volume of all sample points to get the total sample gas volume for the test run.

Sample flow rates for each point shall be determined from the orifice calibration curve. Typically, the orifice calibration curve is generated for flows at standard temperature and pressure, using 68°F and

29.92 in. Hg. as standard conditions. In order to obtain actual flows through the orifice, it is necessary to correct the calibration curve flows for the orifice temperature and pressure.

$$q_a = q_s x \frac{T_o}{528} x \frac{29.92}{P_o}$$

where;

q_o = actual flow rate through the orifice, acfm

q_s = calibration flow rate through the orifice, scfm

T_o = orifice temperature, °F

P_o = orifice pressure, "Hg

11.2.3 Calculate the particulate concentration in gr/dscf by the following equation:

$$C_g = 0.0154 x \frac{m_n}{V_{std}}$$

Where;

C_s = particulate concentration, gr/dscf

m_n = total particulate weight, mg.

V_{std} = total sample volume, dscf.

= q_s x (1 - Bws) x t

Bws = fraction moisture content in the

sampled gas

t = sample time, minutes

11.3 Total Exhaust Gas Flow Rate

Use EPA Method 2 calculations to determine the total exhaust gas flow rate using the data obtained from section 9. For some cyclones, the total flow may be adjusted to account for air purposely vented out the bottom of the cyclone.

11.4 Total Emissions

Calculate the total particulate emission rate (lb/hr) by the following equation, using Form 5:

$$E=2.205E-6x\frac{m_n}{V_{std}}xQ_{sd}$$

where;

2.205E-6 = conversion factor, lb/mg

Q_{sd} = Total Exhaust Gas Flow Rate, dscf/hr

11.5 Percent Isokinetic

Use the tabular computing equations in Form 5 to compute the percent isokinetic (I), defined as the ratio of the average velocity of the sample gas entering the sample nozzle to the average local velocity at the sampling points. In order to achieve acceptable results, the value of this parameter must be between 82 and 120%. Test results falling outside this range shall be discarded and the test repeated.

12. Test Reports

The test report shall include as a minimum the information requested in section 2.5.1 of this manual.

Figure 8.1

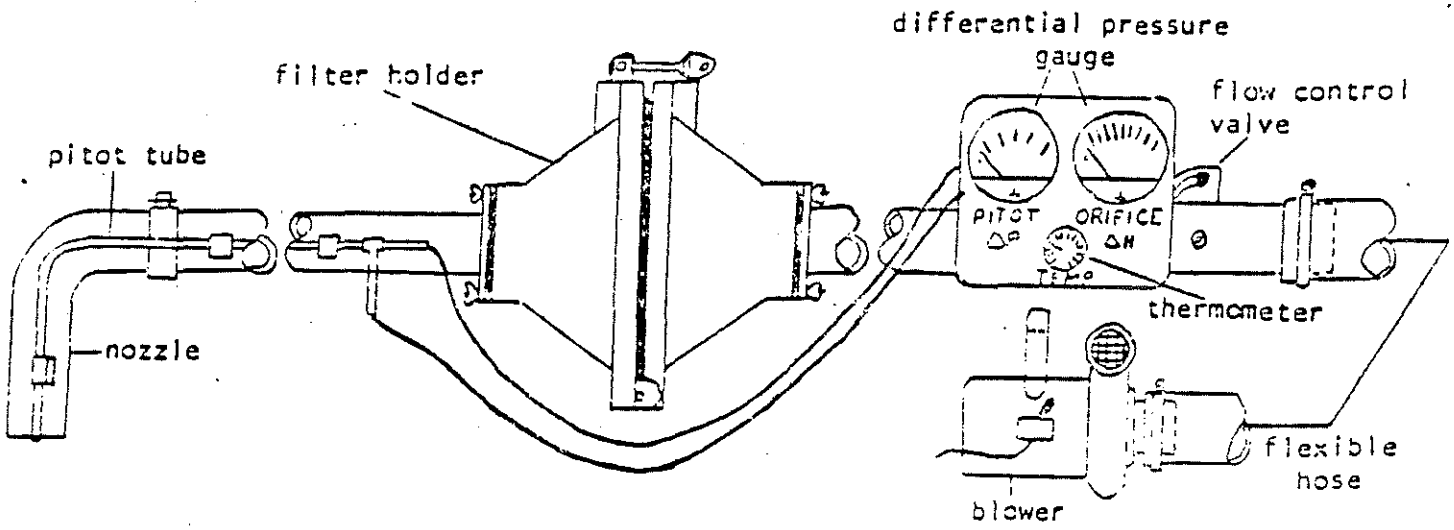


FIGURE 8.1 Typical Hi-Vol Particulate Sampling Train

Figure 8.2 - page 1

METHOD 8 DATA ANALYSIS FORM

Plant_____ Run Number_____

Sample Location_____ Test Date_____

Sample Recovered by_____

	Date/Time	Weight(g)	Audit*	T-°F	RH-%	By
Filter						
Filter ID_____						
Tare Wt._____						
Date/time into dessicator_____						
Acetone						
Beaker ID_____						
Tare Wt._____						
Solv. Vol._____						
Solv. ID_____						
Date/time into dessicator_____						

* 0.5000 g ± tolerance - NIST traceable Class S weight

METHOD 8 BLANK ANALYSIS DATA FORM

Samples Prepared by_____ Date_____

Front Half:	Date/Time	Weight(g)	Audit*	T-°F	RH-%	By
Filter						
Filter ID_____						
Tare Wt._____						
Acetone						
Beaker ID_____						
Tare Wt._____						
Solv. Vol._____						
Solv. ID_____						

* 0.5000 g ± tolerance - NIST traceable Class S weight

Figure 8.2 - Page 2

METHOD 8 TARE WEIGHT RECORD

Indicate: filters or evaporation containers (beakers)

(°F) (%) (grams)	Date____ Time____ Temp.____ R.H.____ Audit____ By____	Date____ Time____ Temp.____ R.H.____ Audit____ By____	Date____ Time____ Temp.____ R.H.____ Audit____ By____	Date____ Time____ Temp.____ R.H.____ Audit____ By____
I.D.	Weight (g)	Weight (g)	Weight (g)	Weight (g)

Oregon Source Sampling Method 8
High Volume Sampling Data
Form 1 of 4

EXHAUST GAS FLOW RATE DATA

Plant Name and Location _____
Sampling Location or Identification _____
Volume Measurement: Date _____ Time _____ By(name) _____
Duct I.D. _____ in; Area (A) _____ ft^2; No. of traverse points _____; Pitot calib. factor(C_p) _____
Temperature: Dry Bulb _____ °F/°R; Wet bulb _____ °F; Ambient _____ °F; $\%CO_2$ _____; $\%O_2$ _____
Static Pressure _____ in.H_2O; Barometric Pressure (P_b) _____; %Moisture _____

Sketch the sampling location showing the distance from disturbances and the numbered travers points:

Point No.	% Dia.	Distance from inside wall, in.	ΔP_1 in.	$\sqrt{\Delta P_1}$ in.	ΔP_2 in.	$\sqrt{\Delta P_2}$ in.	comments
1							
2							
3							
4							
5							T_s avg. = °R
6							ΔP avg. = in. H_2O
7							M_d = (.44 x $\%CO_2$) + (.32 x $\%O_2$) + (.28 x [100 - $\%O_2$ - $\%CO_2$])
8							= lb/lb mole
9							
10							Pitot tube leak check:
11							Initial:
12							Final:

Oregon Source Sampling Method 8
High Volume Sampling Data
Form 2 of 4

VELOCITY PRE-SURVEY

Plant Name and Location _____

Date _____ Time _____ By(name) _____

Source Location or Identification _____

☐ Low Pressure System ☐ High Pressure System

Type of Exhaust:

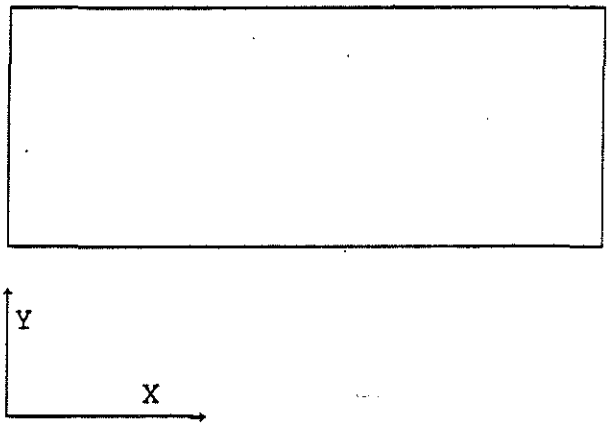
☐ Straight Vertical ☐ China Hat

☐ Goose-neck ☐ Other (specify) _____

Temperature: Dry Bulb _____ °F Wet Bulb _____ °F

Velocity Survey: Record velocity head at enough points to roughly map the velocity distribution across the exhaust cross-section. Select six points for sample collection and show in diagram.

Point	X inches	Y inches	▲P in.H_2O	Check if selected ( )
1				
2				
3				
4				
5.				
6				
7				
8				
9				
10				
11				
12				
avg'.				



SAMPLING DATA AND FIELD ANALYSIS

Plant Name and Location _____ Source Identification _____

Date _____; Time _____; By(name) _____; Process Operation During test _____

Temperature: Dry bulb _____ °F/°R; Wet bulb _____ °F; %Moisture _____; Ambient _____ °F

Gas composition: $\%O_2$ _____; $\%CO_2$ _____; Pitot factor (C_p) _____; Static Press(P_g) _____ "H_2O

Nozzle Dia. _____ in.; Nozzle area (A_n) _____ $in.^2$; Barometric Pressure(P_b) _____ in Hg

Pt.	location x	location y	Velocity Pressure ▲P	Velocity Pressure √▲P	Orifice ▲H Pre-set in.H_2O	Orifice ▲H Actual in.H_2O	Orifice Temp. (°F)	Sample Time (min.)	Rate at Orifice Temp. (acfm)	Vol. at Orifice Temp. (cu. ft)
1										
2										
3										
4										
5										
6										
Avg or Total										

Filter Number				Probe washings	
Filter & Sample Weight					
Filter Tare weight					
Sample Weight					
Blank Weight					
Sample Adjusted Weight					

Data summaries and calculations

T_o = avg. orifice temp. + 460
= °R

V_o = total sample volume at orifice temperature
= ft^3

B_{ws} = fraction moisture content
= %moisture/100
=

V_{std} = total sample volume at standard conditions
= $V_o \times 528/T_o \times P_b/29.92 \times (1 - B_{ws})$
= dscf

C_s = particulate concentration
= $m_n/V_{std} \times 0.0154$
= gr/dscf

m_n = total mass of particulate matter
= mg

EMISSION CALCULATION AND SUMMARY

Plant Name and Location _____

Date _____ By(name) _____

Exhaust Gas Flow Rate Calculations:						
ΔP	average velocity pressure, "H_2O	Form 1				
T_s	average stack gas temperature, °R	Form 1				
P_b	barometric pressure, "Hg	Form 1				
P_g	stack static pressure, "H_2O	Form 1				
P_s	stack absolute pressure, "Hg	$P_g/13.6 + P_b$				
B_{ws}	water vapor in the gas stream, proportion by volume	$\%H_2O/100$, Form 1				
M_d	Molecular weight of stack gas, dry basis, lb/lb mole	$(0.44 \times \%CO_2) + (0.32 \times \%O_2) + 0.28 \times (100 - \%CO_2 - \%O_2)$				
M_s	molecular weight of stack gas, wet basis, lb/lb mole	$M_d \times (1 - B_{ws}) + 18 \times B_{ws}$				
K_p	Pitot tube constant	85.49				
V_s	Average stack gas velocity, ft/sec	$K_p \times C_p \times SQRT\{(\Delta P \times T_s)/(M_s \times P_s)\}$				
A	Cross sectional area of stack, ft^2	Form 1				
Q_{sd}	Dry volumetric stack gas flow rate corrected to standard conditions, dscf/hr	$V_s \times (1 - B_{ws}) \times A \times 528/T_s \times P_s/29.92$				

EMISSION CALCULATION AND SUMMARY

Plan Name and Location _____

Date _____ By(name) _____

Sample Point Gas Velocity Calculations:						
ΔP	average velocity press. at sample point, "H_2O	Form 3				
T_s	average stack gas temp. at sample point, °R	Form 3				
P_b	barometric press., "Hg	Form 3				
P_g	stack static press. at sample point, "H_2O	Form 3				
P_s	stack absolute pressure, "Hg	$P_g/13.6 + P_b$				
B_{ws}	water vapor in the gas stream at the sample point, proportion by volume	$\%H_2O/100$, Form 3				
M_d	Molecular weight of stack gas at sample point, dry basis, lb/lb mole	$(0.44 \times \%CO_2) + (0.32 \times \%O_2) + 0.28 \times (100 - \%O_2 - \%CO_2)$, Form 3				
M_s	molecular weight of stack gas at sample point, wet basis, lb/lb mole	$M_d \times (1 - B_ws) + 18 \times B_ws$				
K_p	Pitot tube constant	85.49				
V_s	Average stack gas velocity, ft/sec	$K_p \times C_p \times SQRT((\Delta P \times T_s)/(M_s \times P_s))$				

EMISSION CALCULATION AND SUMMARY

Plant Name and Location _____

Date _____ By(name) _____

Particulate emissions and sampling isokinetic calculations:						
q_o	avg. sample rate, acfm	Form 3				
t	total sample time, min.	Form 3				
V_o	Sample volume @ orifice temperature, acf	q_o x t				
T_o	avg. orifice temp., °R	Form 3				
B_{ws}	water vapor in the gas stream at the sample point, proportion by volume	$\%H_2O/100$, Form 3				
V_{std}	Sample volume corrected to standard conditions, scf	V_o x (1-B_ws) x 528/T_o x P_b/29.92				
m_n	mass of particulate matter collected, mg	Form 3				
C_s	Particulate concentration, gr/dscf	0.0154 x m_n/V_std				
E	Particulate emission rate, lb/hr	m_n/V_std x 2.205E^{-}6 x Q_sd				
A_n	Cross sectional area of the sampling nozzle, in^2	Form 3				
T_s	Avg. temp. of the exhaust gas at the sample point, °R	Form 3				
V_n	Velocity of sample gas through the nozzle, ft/min.	q_o/A_n x T_s/T_o x 144				
V_s	Avg. exhaust gas velocity at the sample point, ft/min	Form 4, Page 2				
I	Percent isokinetic	100 x V_n/V_s				

3.6 PM_{10} Particulate Matter

EPA Methods 201, 201A, 202 (40 CFR Part 51 Appendix M, 7-1-91 edition) are incorporated by reference.

3.7 Sulfur Dioxide

EPA Methods 6, 6A, 6B, 6C, 8, and 19 (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference.

3.8 Oxides of Nitrogen

EPA Methods 7, 7A, 7B, 7C, 7D, 7E, 19, and 20 (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference.

3.9 Visible Emissions

EPA Methods 9, Alternate Method 1 (LIDAR), and 22 (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference.

EPA Method 9 observation periods and data reduction shall be modified to demonstrate compliance with specific Oregon regulations and permit limits.

3.10 Carbon Monoxide

EPA Methods 10, 10A, and 10B (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference.

3.11 Reduced Sulfur

EPA Methods 11, 15, 15A, 16, 16A, and 16B (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference.

3.12 Lead

EPA Method 12 (40 CFR Part 60 Appendix A, 7-1-91 edition) is incorporated by reference.

3.13 Fluoride

EPA Methods 13A, 13B, and 14 (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference.

3.14 Volatile Organic Compounds

EPA Methods 18, 21, 24, 24A, 25, 25A, and 25B (40 CFR Part 60 Appendix A, 7-1-91 edition) are incorporated by reference. Volume II of the source sampling manual contains VOC methods

specific to gasoline vapor control systems and chemical mass balances.

3.15 Polychlorinated Dibenzo-p-Dioxins Polychlorinated Dibenzonfurans

EPA Method 23 (40 CFR Part 60 Appendix A, 7-1-91 edition) is incorporated by reference.

3.16 Hydrogen Chloride

EPA Method 26 (40 CFR Part 60 Appendix A, 7-1-91 edition) is incorporated by reference.

3.17 Woodstoves

EPA Method 28 (40 CFR Part 60 Appendix A, 7-1-91 edition) is incorporated by reference.

4.0 Test Methods for National Emission Standards for Hazardous Air Pollutants (NESHAP)

4.1 Mercury

EPA Methods 101, 101A, 102, and 105 (40 CFR Part 61 Appendix B, 7-1-91 edition) are incorporated by reference.

4.2 Beryllium

EPA Methods 103 and 104 (40 CFR Part 61 Appendix B, 7-1-91 edition) are incorporated by reference.

4.3 Vinyl Chloride

EPA Methods 106, 107, and 107A (40 CFR Part 61 Appendix B, 7-1-91 edition) are incorporated by reference.

4.4 Arsenic

EPA Methods 108, 108A, 108B, and 108C (40 CFR Part 61 Appendix B, 7-1-91 edition) are incorporated by reference.

SOURCE SAMPLING

MANUAL

VOLUME II

December, 1980

Revised

May, 1981

January, 1992

State of Oregon
Department of Environmental Quality
Air Quality Division

Source Sampling Manual
Volume II
Volatile Organic compounds

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DEQ METHOD 30

Test Procedures for Determining the Efficiency of Gasoline Vapor Recovery Systems at Service Stations

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

DEQ Air Quality Program
Portland, Oregon
December 1, 1980

Revisions
May 15, 1981
January 23, 1992

METHOD 30

TABLE OF CONTENTS

METHOD 30

Test Procedures for Determining the Efficiency of Gasoline Vapor Recovery Systems at Service Stations and Similar Facilities with Small Storage Tanks

1.0 INTRODUCTION:

The following test procedures are for determining the efficiency of vapor recovery systems for controlling gasoline vapors emitted during the filling of small storage tanks.

The test procedure for determining the efficiency of systems for controlling gasoline vapors displaced during filling of storage tanks requires determination of the weight of gasoline vapors vented through the storage tank vent and the volume of gasoline dispersed. The percentage effectiveness of control is then calculated from these values.

During the performance test, maintenance, adjustment, replacement of components or other such alteration of the control system is not allowed unless such action is specifically called for in the system's maintenance manual. Any such allowable alteration shall be recorded and included in the test report. During the testing, the control system will be sealed in such a manner that unauthorized maintenance may be detected. Maintenance is to be performed only after notification of the person in charge of the testing, except in case of emergency. Unauthorized maintenance may be reason for immediate failure of the test.

For systems which are identical in design and include the same components as systems tested and found to comply with the test procedures, but differ, primarily in size, the owner or vendor may demonstrate compliance capability and obtain approval by submitting engineering and/or test data demonstrating the relationship between capacity and throughput of each component whose performance is a function of throughput. Examples of such components include: blowers, catalyst, carbon or other absorbent, compressors, heat exchangers, combustors, piping, etc.

For the purpose of determining compliance with applicable Administrative Rules, equipment on systems with 90 percent or greater control efficiency shall be considered to be vapor tight.

2.0 ACCEPTANCE OF TEST RESULTS:

2.1 Results of this method will be accepted as a demonstration of compliance status of the equipment tested, provided that the methods included or referenced in this procedure are strictly adhered to. A statement containing at least the minimum amount of information regarding the test procedures applied should be included with the results.

Deviations from the procedure described herein will be permitted only if permission from the Department is obtained in writing in advance of the test.

3.0 SMALL STORAGE TANK FILLING (PHASE I SYSTEMS):

3.1 Principle and Applicability:

3.1.1 Principle:

During a fuel delivery, the volume of gasoline delivered from the tank to the storage tank is recorded and the concentration of gasoline vapor returning to the tank truck is measured. The weight of gasoline vapor discharged from the vent of the storage tank and, if applicable, from the vent of the vacuum assisted secondary processing unit during the same period is determined. The efficiency of control is calculated from these determinations.

3.1.2 Applicability:

The method is applicable to all control systems which have a vapor line connecting the storage tank to the tank truck.

The storage tank is filled by submerged fill.

3.2 Test Equipment:

3.2.1 For each vent, including restricted vents and vents of any processing units, a positive displacement meter, with a capacity of 3,000 standard cubic feet per hour (SCFH), a pressure drop of no more than 0.,05 inches of water at an air flow of 30 SCFH, and equipped

with an automatic data gathering system that can differentiate direction of flow and record volume vented in such a manner that this date can be correlated with simultaneously recorded hydrocarbon concentration data. A manifold for meter outlet with taps for an hydrocarbon (HC) analyzer, a thermocouple, and a pressure sensor is to be used with the positive displacement meter.

3.2.2 Coupling for the vent vapor line to connect the gas meter. Coupling to be sized so as to create no significant additional pressure drop in the system.

3.2.3 Coupling for the vent of the vacuum assisted secondary processing unit to connect the gas meter. Coupling to be sized as to create no significant additional pressure drop on the system.

3.2.4 Coupling for tank truck vapor line with thermocouple, manometer and HC analyzer taps. Coupling to be the same diameter as the vapor return line.

3.2.5 Coupling for tank truck fuel drop line with thermocouple tap. Coupling to be the same diameter as the fuel line.

3.2.6 Two (2) hydrocarbon analyzers (Flame Ionization Detector, FID, or Department approved equivalent) with recorders and with a capacity of measuring total gasoline vapor concentration of 100 percent as propane. Both analyzers to be of same make and model.

3.2.7 Three (3) flexible thermocouples or thermistors (0-150°F) with a recorder system.

3.2.8 Explosimeter

3.2.9 Barometer

3.2.10 Three (3) manometers or other pressure sensing devices capable of measuring zero to ten inches of water.

3.2.11 Thermometer

3.3 Testing Procedure:

3.3.1 The test during filling operating will be conducted under, as closely as feasible, normal conditions for the station. Normal conditions will include delivery time and station operating conditions.

3.3.2 Connect manifold to outlet of positive displacement meter and restriction to system vent of underground tank using the coupler, or if the vent has a restriction, remove the restriction and connect the coupler, manifold and outlet. If appropriate, connect another manifold and meter to the vent of the vacuum assisted secondary processing unit. If the system uses an incinerator to control emissions, use test procedures set forth in Section 4.

3.3.3 Connect the HC analyzer with recorder, thermocouple and manometer to the vent manifold. Calibrate the equipment in accordance with section 6.0.

3.3.4 Connect the couplers to the tank truck fuel and vapor return lines.

3.3.5 Connect an HC analyzer with a recorder, a manometer and a thermocoupler to the taps on the coupler on the vapor return line.

3.3.6 Connect tank fuel and vapor return lines to appropriate underground tank lines in accordance with written procedure for the system.

3.3.7 Check the tank truck and all vapor line connections for a tight seal before and during the test with the explosimeter.

3.3.8 Record the initial reading of gas meter(s).

3.3.9 Start filling of the storage tank in accordance with manufacturers' established normal procedure.

3.3.10 Hydrocarbon concentrations, temperature and pressure measurements should be recorded using stripchart recorders within the first 15 seconds of the unloading period. The gas meter reading is to be taken at 120 second intervals.

3.3.11 Record at the start and the end of the test, barometric pressure and ambient temperature.

3.3.12 At the end of the drop, disconnect the tank truck from the storage tank in accordance with manufacturers' instructions (normal procedures). Leave the underground vent instrumentation in place.

3.3.13 Continue recording hydrocarbon concentrations, temperature, pressure and gas meter readings at the storage tank vent and/or the exhaust of any processing unit at 20 minute intervals. Do this for one hour for balance systems and until the system returns to normal conditions as specified by the manufacturer for secondary systems.

3.3.14 Disconnect instrumentation from the vent(s).

3.3.15 Record volume of gasoline that is delivered.

3.3.16 Record final reading of gas meter.

3.4 Calculations:

3.4.1 Volume of gas discharged through "i_{th}" vent (V_{vi}). This includes underground tank vent and any other control system vent.

$$V_{vsi} = \frac{V_{vi} \times 528 \times P_b}{T_{vi} \times 29.92} \quad (Ft^3)$$

where:

V_{vsi} = Volume of gas discharged through "i_{th}" vent, corrected to 68°F and 29.92 in. Hg; (Ft^3).

P_b = Barometric Pressure, (in. Hg).

V_{vi} = Volume of gas recorded by meter on "i_{th}" vent, corrected for amount of vapor removed for the hydrocarbon analysis, (Ft^3).

T_{vi} = Average temperature in "i_{th}" vent line, ($^\circ R$).

"i_{th}" = The vent under consideration.

3.4.2 Volume of gas returned to the tank truck, (V_t) corrected to 68°F and 29.92 in. Hg.

$$V_t = \frac{0.1337 \times G_t \times [528(P_b + \Delta H)]}{T_t \times 29.92} \quad (Ft^3)$$

where:

G_t = Volume of gasoline delivered, (gal)

H = Final gauge pressure of truck tank, (in Hg)

T_t = Average temperature of gas returned to tank truck, ($^\circ R$)

P_b = Barometric pressure, (in. Hg)

H = Final gauge pressure of truck tank, (in. Hg)

T_t = Average temperature of gas returned to tank truck, ($^\circ R$)

P_b = Barometric pressure, (in. Hg)

0.1337 = Conversion factor gallons to Ft^3

3.4.3 Control Efficiency (E%):

$$E\% = \frac{V_t \times C_t \times 100}{(V_t \times C_t) + \Sigma(C_{vi} \times V_{vsi})}$$

where:

E% = the efficiency of control in percent.

V_t = 3.4.2 above

C_t = The average fractional volume concentration of gasoline vapor in the return line to the truck as determined by the hydrocarbon analyzer, (decimal fraction).

C_{vi} = The average fractional volume concentration of gasoline vapor in the "i_{th}" vent as determined by the hydrocarbon analyzer, (decimal fraction).

V_{vsi} = From 3.4.1. above.

4.0 TEST PROCEDURE FOR DETERMINING THE CONTROL EFFICIENCY OF GASOLINE VAPOR INCINERATORS

4.1 Principle and Applicability:

4.1.1 Principle:

Hydrocarbon and carbon dioxide concentrations in the exhaust gases, and gas volume and HC concentrations in the inlet vapor, and ambient carbon dioxide concentrations are measured. These values are used to calculate the incinerator HC control efficiency and mass emission rate based on a carbon balance.

4.1.2 Applicability:

This method is applicable as a performance test method for gasoline vapor control incinerators.

4.2 Test Scope and Conditions:

4.2.1 Station Status:

The procedure is designed to measure incinerator control efficiency under conditions that may be considered normal for the station under test. All dispensing pumps interconnected with or sharing the control system under test shall remain open as is normal. Vehicles shall be fueled as is

normal for the test period.

4.2.2 Fuel Reid Vapor Pressure (RVP):

The RVP of the fuel dispensed during the test shall be within the range normal for the geographic location and time of the year.

4.3 Test Equipment:

4.3.1 HC Analyzers:

HC analyzers using flame ionization detectors calibrated with known concentrations of propane in air are used to measure HC concentrations at both the incinerator inlet and exhaust. A suitable continuous recorder is required to record real-time output from the HC analyzers.

4.3.2 Sample System:

The sample probe is to be of a material unaffected by combustion gases (S.S. 307, 316, 3365, etc.). The sample pump should be oil-less and leak-tight. Sample lines are to be inert, teflon is recommended. A thermocouple (0-2000°F) shall be used to monitor temperature of exhaust gases at the inlet to sampling system.

4.3.3 Carbon Dioxide Analyzer:

A nondispersive infrared analyzer calibrated with known quantities of CO_2 concentrations in the exhaust gas.

4.3.4 Other equipment is specified in Section 3.2.

4.4 Test Procedure:

4.4.1 The sampling point should be located in the exhaust stack down-stream of the burner far enough to permit complete mixing of the combustion gases. For most sources, this point is at least eight stack diameters downstream of any interference and two

diameters upstream of the stack exit. There are many cases where these conditions cannot be met. The sample point should be no less than one stack diameter from the stack exit and one stack diameter above the high point of the flame and be a point of maximum velocity head as determined by the number of equal areas of a cross-section of the stack. The inlet sampling location is in the system inlet line routing vapors to the burner. A HC sample tap, a pressure sensor tap, and a thermocouple connection to monitor gas temperature must be installed on the inlet side of the volume meter.

4.4.2 Span and calibrate all monitors. Connect sampling probes, pumps and recorders to the monitors and mount sampling probes in the stack and at the inlet.

4.4.3 Mark strip charts at the start of the test period and proceed with HC, CO_2, and volume measurements for at least three burning cycles of the system. The total sampling time should be at least three hours. Sampling for HC's and CO_2 must occur simultaneously. At the end of each cycle, disconnect CO_2 instrument and obtain an ambient air sample. This step requires that the CO_2 instrument be calibrated for the lower concentrations expected at ambient levels.

4.4.4 The quantity of gasoline dispensed during each test shall be recorded.

4.5 Calculations:

CO_{2e} = Carbon dioxide concentration in the exhaust gas (ppmv).

CO_{2a} = Average carbon dioxide concentration in the ambient air (ppmv).

HC_i = Hydrocarbon concentration in the inlet gas to the burner (ppmv as propane).

HC_e = Hydrocarbon concentration in the exhaust

(ppmv as propane).

L_d = Gasoline liquid volume dispensed during test period (gallons).

P_i = Static pressure at inlet meter (in Hg).

T_i = Temperature of gas at inlet meter (°R).

V_i = Inlet gas volume ($ft.^3$).

F = Dilution Factor.

51.8×10^{-6} = Multiplication factor to convert parts per million by volume as propane to grams per cubic foot at 68°F. (52.7×10^{-6} at 68°F)

4.5.1 Calculate the standard total gas volume (V_s) at the burner inlet for each test. (Standard temperature 68°F, standard pressure 29.92 in Hg)

$$V_s = V_i \times \frac{(P_i + P_b)}{(T_i)} \times \frac{528}{29.92}, \text{ (SCF)} \quad (1)$$

4.5.2 Calculate an average vapor volume to liquid volume (v/l) at the inlet for each test.

$$(v/l)_i = \frac{V_s}{L_d}, \text{ (SCF/gal)} \quad (2)$$

4.5.3 Calculate the mass emission rate $(m/l)_i$ at the inlet for each test.

$$(m/l)_i = 51.8 \times 10^{-6} \times HC_i \times (v/l)_i, \text{ (g/gal)} \quad (3)$$

4.5.4 A carbon dilution factor (F) can be calculate for the incinerator using the inlet and outlet HC concentrations and the ambient CO_2 concentration. The important criterion for this is that all the significant carbon sources be measured. The values used in the calculation should represent average values obtained from strip chart readings using integration techniques. Some systems have more than one burning mode of operation. For these, it is desirable to have high and low

emission levels calculated. This requires that corresponding dilution factors, (v/l) values and $(m/l)_i$ values be calculated for each period in question.

$$F = \frac{HC_i}{HC_e + \frac{(CO_{2e} - CO_{2a})}{3}}, \quad (4)$$

4.5.5 The mass emission rate at the exhaust, $(m/l)_e$, is calculated using the inlet $(m/l)_i$ from equation (3) and the carbon dilution factor from equation (4). The exhaust HC concentration will vary with time and operation of the system. It is likely that, in addition to an overall average mass emission rate using an average HCi, several peak values of $(m/l)_e$ will be required as discussed above. If some correlations between HC_i and HC_e occurs over the burning cycle of the system, this calculation should be used to show the change in mass emission rate.

$$(m/l)_e = F \times \frac{HC_e}{HC_i} \times (m/l)_i \text{ g/gal} \quad (5)$$

4.5.6 Mass control efficiency (E%) can be calculated for an average value over each interval. It represents the reduction of hydrocarbon mass achieved by the incinerator system and this efficiency can vary depending on the loading cycle or the inlet loading.

$$E\% = 100\ [1 - (F \times HC_e)/(HC_i)] \quad (6)$$

5.0 ACCEPTANCE OF SYSTEMS:

When a system is accepted, it will have certain physical features, such as piping sizes and configurations, which may have to be modified to accommodate the requirements of each installation. Because the pressure drops and other characteristics of the system are influenced by these features and these in turn influence effectiveness, it may be necessary to condition acceptance upon certain criteria which account for physical parameters such as pressure drops and flow rates. When systems are tested for acceptance, these parameters must be ascertained. Some of the

conditions that may be imposed upon an acceptance are:

5.1 Allowable pressure drop in the lines leading from the dispensing nozzle to the underground tank.

5.2 The method of calculating the pressure drop.

5.3 The model of dispensing nozzle which may be used.

5.4 The manner in which vapor return lines may be manifolded.

5.5 The type of restriction to be placed on the vent of the underground tank.

5.6 The number of dispensing nozzles which may be serviced by a secondary system.

5.7 Allowable delivery rates.

5.8 Use of the system on full-service stations only.

6.0 CALIBRATION OF EQUIPMENT:

6.1 Standard methods of equipment shall be used to calibrate the flow meters. The calibration curves to be traceable to National Institute of Standards & Technology (NIST) standards.

6.2 Calibrate temperature recording instruments immediately prior to test period and immediately following test period using ice water (32°F) and a known temperature source about 100°F.

6.3 Calibrate pressure sensing and recording instructions (transducers) prior to the Phase I test with a static pressure calibrator for a range of -3 to +3 inches water or appropriate range of operation. Zero the transducers after each individual test.

6.4 Flame ionization detectors or equivalent total hydrocarbon analyzers are acceptable for measurement of exhaust hydrocarbon concentrations. Calibrations should be performed following the manufacturer's instructions for warm-up time and adjustments. Calibration gases should be propane in hydrocarbon-free air prepared with measured quantities of 100 percent propane. A calibration curve shall be produced using a

minimum of five (5) prepared calibration gases in the range of concentrations expected during testing. The calibration of the instrument need not be performed on site, but shall be performed prior to and immediately following the test program. During the test program, the HC analyzer shall be spanned on site with zero gas (3 ppmv C) and with 30 percent and 70 percent concentrations of propane in hydrocarbon-free air at a level near the highest concentration expected. The spanning procedure shall be performed at least twice each test day.

The HC calibration cylinders must be checked against a reference cylinder maintained in the laboratory before each field test. This information must be entered into a log identifying each cylinder by serial number. The reference cylinder must be checked against a primary standard every six months and the results recorded. The reference cylinder is to be discarded when the assayed value changes more than one percent. And, cylinder is to be discarded when the cylinder pressure drops to 10 percent of the original pressure.

6.5 Nondispersive infrared analyzers are acceptable for measurement of exhaust CO_2 concentrations. Calibrations should be performed following the manufacturer's instructions. Calibration gases should be known concentrations of CO_2 in the air. A calibration shall be prepared using a minimum of five prepared calibration gases in the range of concentration expected. The calibration of the instrument need not be performed on site but shall be performed immediately prior to and immediately following the test program. During the testing, the analyzer shall be spanned with a known concentration of CO_2 in the air at a level near the highest concentration expected. The spanning procedure shall occur at least twice per test day.

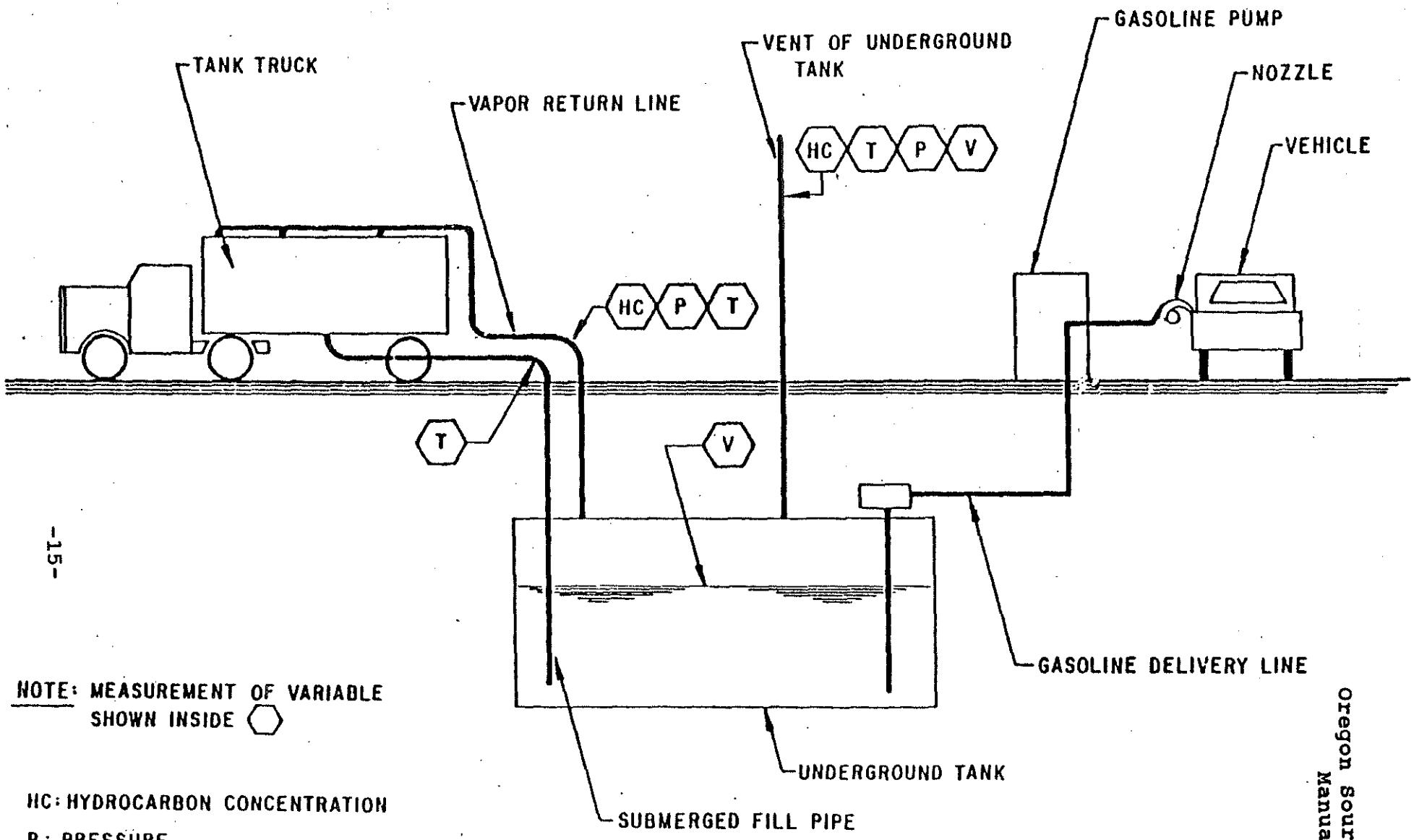
6.6 The barometer shall be calibrated against an NIST traceable standard at least once every 6 months.

6.7 A record of all calibrations must be maintained and submitted with the test report.

7.0 Alternate equipment and techniques may be used if prior written approval is obtained from the Department.

8.0 RECORD KEEPING:

A record of the results for tests which are performed for compliance determination shall be maintained at the facility site according to OAR Chapter 340-22-120 and -137.



NOTE: MEASUREMENT OF VARIABLE SHOWN INSIDE ⬡

HC: HYDROCARBON CONCENTRATION

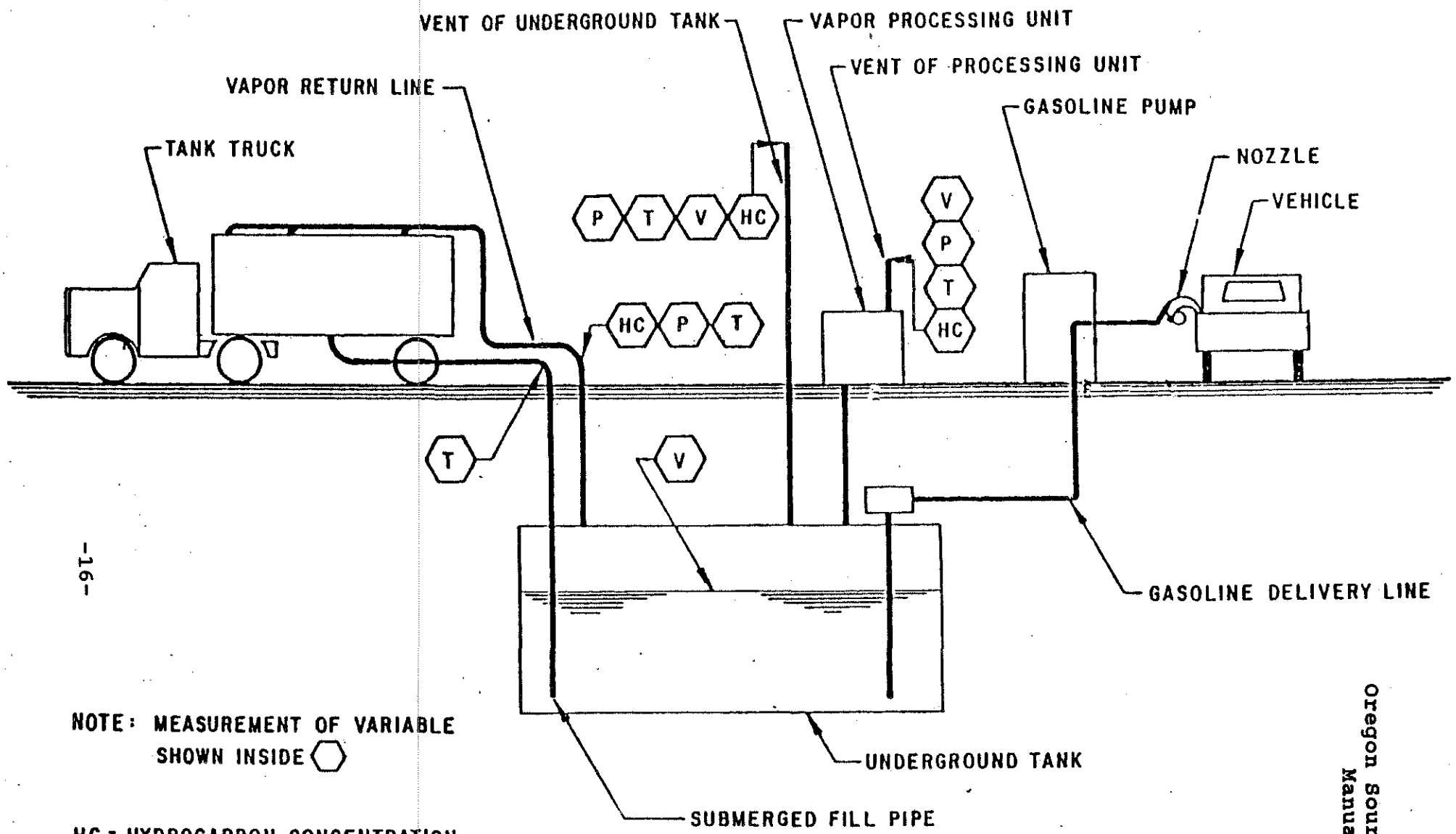
P: PRESSURE

R: REID VAPOR PRESSURE

T: TEMPERATURE

V: VOLUME

FIGURE A DISPLACEMENT SYSTEM



NOTE: MEASUREMENT OF VARIABLE SHOWN INSIDE ⬡

HC = HYDROCARBON CONCENTRATION

P = PRESSURE

R = REID VAPOR PRESSURE

T = TEMPERATURE

V = VOLUME

FIGURE B VACUUM ASSISTED SECONDARY

DEQ METHOD 31

Test Procedures for Determining the Efficiency of Vapor Control Systems at Gasoline Bulk Plants

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

DEQ Air Quality Program
Portland, Oregon
December 1, 1980

Revisions
May 15, 1981
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METHOD 31

TABLE OF CONTENTS

METHOD 31

Test Procedures for Determining the Efficiency of Vapor Control Systems at Gasoline Bulk Plants

1.0 INTRODUCTION:

1.1 Principle:

Hydrocarbon mass emissions are determined directly using flowmeters and hydrocarbon analyzers.

The mass of hydrocarbon vapor to be controlled or recovered is determined from the volume of gasoline dispensed (either to the bulk storage tank or delivery tank) by pressure, temperature, and concentration measurements of the vapor.

The efficiency of the gasoline vapor control system is determined from the mass of the hydrocarbons emitted and the mass of hydrocarbons controlled.

For purposes of determinin compliance with applicable Administrative Rules, equipment on sytems with 90 percent or greater control efficiency shall be considered to be vapor tight.

1.2 Applicability:

These procedures are applicable for testing gasoline vapor recovery systems installed at bulk plants for controlling gasoline vapors emitted during the load of bulk storage tanks and for loading of delivery tanks from bulk tanks. Filling of storage tanks will be by submerged fill.

2.0 ACCEPTANCE OF TEST RESULTS:

2.1 Results of this method will be accepted as a demonstration of compliance of the equipment tested, provided that the methods included or referenced in this procedure are strictly adhered to. A statement containing at least the minimum amount of information regarding the test procedures applied should be included with the results.

Deviations from the procedure described herein will be

permitted only if permission from the Department is obtained in writing in advance of the test.

3.0 DEFINITIONS:

3.1 Bulk Gasoline Plant:

"Bulk Gasoline Plant" means a gasoline storage and distribution facility which receives gasoline from bulk terminals by railroad car or trailer transport, stores it in tanks, and subsequently dispenses it via account trucks to local farms, businesses, and service stations.

3.2 Delivery Vessel:

"Delivery Vessel" means any tank truck or trailer including associated pipes and fittings used for the transport of gasoline from sources of supply to stationary storage tanks.

3.3 Vapor Balance System:

"Vapor Balance System" means a combination of pipes and/or hoses which create a closed system between the vapor spaces of an unloading tank and a receiving tank such that vapors displaced from the receiving tank are transferred to the tank being unloaded.

3.4 Secondary Processing Unit:

"Secondary Processing Unit" means a gasoline vapor control system which utilizes some process as a means of elimination or recovering gasoline vapors which otherwise would be vented to the atmosphere during the transfer of gasoline to or from a bulk plant.

4.0 TEST OF VAPOR RECOVERY SYSTEM FOR DELIVERY OF GASOLINE TO THE BULK PLANTS:

4.1 Application:

The following test procedures are for determining the efficiency of vapor recovery systems controlling gasoline vapors emitted during the loading of bulk plant storage tanks.

4.2 Principle and Test Conditions:

4.2.1 Principle:

During a fuel delivery to the bulk plant, direct measurements of hydrocarbon concentrations and volume of hydrocarbon vapors vented (including emissions from any vapor processing unit) are made. All possible points of emission are checked for vapor leads. The volume of gasoline delivery from the delivery tank to the bulk plant is recorded and the concentration of the hydrocarbon vapors returned to the delivery tank is measured. The efficiency of control is calculated from these determinations.

4.2.2 Test Conditions:

The number of transport deliveries to be tested shall be established by the Department based on an engineering evaluation of the system. As close as possible, the system shall be tested under normal operating conditions. (Dispensing rates shall be at the maximum rate possible consistent with safe and normal operating practices. The processing unit, if any, shall be operated in accordance with the manufacturer's established parameters. Simultaneous use of more than one dispenser during loading of bulk storage tanks shall occur to the extent that such would normally occur.)

4.3 Equipment Required for Bulk Plant Testing:

4.3.1 Two (2) positive displacement dry gas meters each with a capacity of 3,000 standard cubic feet per hour (SCFH) a readability of one cubic foot and a maximum pressure drop of not more than 0.50 inches of water at a flowrate of 30 SCFH.

4.3.2 Two (2) hydrocarbon (HC) analyzers with recorders and with the capability of measuring total gasoline vapor concentration of 100 percent as propane. Both analyzers to be of same make and model, either Flame Ionization Detector or a Department approved equivalent.

4.3.3 Three (3) flexible thermocouples or thermistors (0-150°F) with a temperature recorder system having a readability of 1°.

4.3.4 Barometer (Aneroid or Mercury), ± 0.1 in. Hg. readability.

4.3.5 Two (2) manometers or other pressure sensing devices capable of measuring zero to ten inches of water with a readability of 0.1 inches of water.

4.3.6 Coupling for the vent vapor line to accommodate the gas meter, with thermocouple and pressure taps. Coupling to be sized for a minimum pressure drop.

4.3.7 Coupling for the vent of the secondary processing unit, if used, to accommodate the flow measuring device with the thermocouple, pressure and hydrocarbon analyzer taps. Coupling to be sized for a minimum pressure drop.

4.3.8 Coupling for delivery tank vapor return line with thermocouple, pressure and hydrocarbon analyzer taps. Coupling to be the same diameter as the vapor return line.

4.3.9 Two (2) adjustable pressure/vacuum (PV) relief valves capable of replacing the PV relief valve on the storage tank vent.

4.3.10 Coupling for attaching the PV value to the dry gas meter. (Appendix Figure A)

4.3.11 Explosimeter.

4.4 Bulk Plant Storage Tank Loading Test Procedure (Appendix Figure B):

4.4.1 Connect appropriate coupler to vent of bulk plant, or if the vent has a PV valve, remove the PV valve and then connect the coupler to the vent. If a Secondary Processing Unit is used, also connect a coupler to the vent of the secondary processing unit.

4.4.2 Connect the appropriate gas meter, HC analyzer with recorder, thermocouple and manometer to the vent coupler and connect the PV valve to the gas meter.

4.4.3 Connect appropriate coupler to the delivery tank vapor return lines.

4.4.4 Connect the HC analyzer with a recorder, a manometer and a thermocouple to the taps on the vapor return line.

4.4.5 Connect delivery tank fuel and vapor return lines to appropriate bulk tank lines in accordance with the owner's or operator's established procedures for the system.

4.4.6 Check the delivery tank and all connections for a tight seal with explosimeter before and during the test.

4.4.7 Record the initial reading of the gas meter(s).

4.4.8 Start loading of the bulk tank in accordance with owner's or operator's established normal procedure.

4.4.9 Hydrocarbon concentrations, temperature and pressure measurements should be recorded starting after the first 15 seconds of the loading periods followed by 60 second intervals. The gas meter readings must be taken at least every 120 seconds.

4.4.10 Record barometric pressure and ambient temperature during the test.

4.4.11 At the end of the bulk tank delivery, disconnect the delivery tank from the bulk tank in accordance with owner's or operator's instructions (normal procedure). Leave the bulk tank vent instrumentation in place.

4.4.12 Continue recording hydrocarbon concentrations, temperature, pressure, and gas meter readings at the bulk tank vent at 20 minute intervals for one hour after the

last bulk transfer is made.

4.4.13 Disconnect instrumentation from the vent.

4.4.14 Record volume of gasoline that is delivered.

4.4.15 Record final reading of gas meter(s).

4.5 Calculations:

4.5.1 Volume of gas discharged through "i th" vent. This includes bulk tank vent and any control system vent.

$$V_{vsi} = \frac{V_{vi} \times 528 \times P_b}{T_{vi} \times 29.92}$$

Where:

V_{vsi} = Volume of gas discharged through "i th" vent corrected to 68°F and 29.92 in. Hg, (ft^3).

P_b = Barometric pressure, (in. Hg).

V_{vi} = Volume of gas recorded by meter on "ith" vent corrected for amount of vapor removed for the hydrocarbon analysis, (ft^3).

T_{vi} = Average temperature in "i th" vent line, (°R).

4.5.2 Volume of gasoline vapor returned to the tank truck.

$$V_t = \frac{0.1337G_t \times 528(P_b + P)}{T_t \times 29.92}$$

Where:

P_b = Barometric pressure, (in. Hg).

V_t = Volume of gasoline vapor, corrected to 68°F and 29.92 in. Hg., (ft^3)

G_t = Volume of gasoline delivered, (gal.).

P = Final Gauge pressure of tank truck, (in. Hg).

T_t = Average temperature of vapor returned to tank truck (°R).

0.1337 = Conversion factor, (gallons to ft^3). 1 US gal. = 0.1337 ft^3.

4.5.3 Efficiency of Vapor Control System

$$E = \frac{V_t \times C_t - (C_{vi} \times Vsi) \quad 100}{(V_t \times C_t)}$$

Where:

E is the efficiency of control in percent.

C_t = The average fractional volumetric concentration of gasoline vapors in the return line to the truck as determined by the hydrocarbon analyzer, (decimal fraction).

C_{vi} = The average fractional volumetric concentration of gasoline vapors in the "i_{th}" vent as determined by the hydrocarbon analyzer, (decimal fraction).

5.0 TESTING OF VAPOR RECOVERY SYSTEM FOR FILLING OF A DELIVERY TANK AT A BULK PLANT:

5.1 Application:

The following test procedures shall be used for determining the efficiency of vapor recovery systems controlling gasoline vapors emitted during the filling of delivery tanks at a bulk plant.

5.2 Principle and Test Conditions:

5.2.1 Principle:

During loading of a delivery tank at the bulk plant, direct measurements of hydrocarbon concentrations and volume of hydrocarbons vented (including emissions from any vapor processing unit) are made. All possible points of emission are checked for vapor leaks. The volume of gasoline dispensed to

the delivery tank is recorded and the concentration of the hydrocarbon vapors returned to the bulk storage tank is measured. The efficiency of control is calculated from these determinations.

5.2.2 Test Conditions:

The number of delivery tank loadings to be testing shall be established by the Department based on an engineering evaluation. The system shall be tested under normal operating conditions as close as possible. (Dispensing rates shall be at the maximum rate possible consistent with safe and normal operating practices, and simultaneous use of more than one dispenser during loading of delivery tanks shall occur to the extent that such use would represent normal operation of the system).

5.3 Equipment Required for Delivery Tank Testing at the Bulk Plant:

5.3.1 Same as that required in Section 4.3.

5.4 Delivery Tank Loading Test Procedures:

5.4.1 Connect coupler to vent of bulk tank, or if the vent has a PV valve, remove the PV valve and then connect the coupler to the vent. If a secondary processing unit is used, also connect a coupler to the vent of the secondary processing unit.

5.4.2 Connect the appropriate gas meter, HC analyzer with recorder, thermocouple and manometer to the vent coupler and connect the PV valve to the gas meter.

5.4.3 Connect a coupler to the bulk storage tank vapor return lines.

5.4.4 Connect a HC analyzer with a recorder, a manometer and a thermocouple to the taps on the coupler on the vapor return line.

5.4.5 Connect bulk storage tank fill and vapor

return lines to the delivery tank in accordance with owner's or operator's established procedures for the system.

5.4.6 Check the delivery tank and all connections for a tight seal with the explosimeter before and during the test.

5.4.7 Record the initial reading of the gas meter(s).

5.4.8 Start fueling of the delivery tank in accordance with manufacturer's established normal procedure.

5.4.9 Hydrocarbon concentrations, temperature and pressure measurements are to be recorded starting after the first 15 seconds of the unloading period followed by 60 second intervals. The gas meter readings may be taken at 120 second intervals.

5.4.10 Record the barometric pressure and ambient temperature before and after the test.

5.4.11 At the end of the delivery tank loading disconnect the delivery tank from the bulk tank in accordance with owner's or operator's instructions (normal procedure). Leave the bulk tank vent instrumentation in place.

5.4.12 Continue recording hydrocarbon concentrations, temperatures, pressure and gas meter readings at the bulk tank vent at 20 minute intervals for one hour, or until the system returns to normal conditions as specified by the manufacturer.

5.4.13 Disconnect instrumentation from the vent.

5.4.14 Record volume of gasoline that is delivered.

5.4.15 Record final reading of gas meter.

5.4.16 Repeat procedure as necessary for additional delivery tank loading.

5.5 Calculations:

5.5.1 Volume of gas discharged through "i th" vent. This includes bulk tank vent and any control system vent.

$$V_{vsi} = \frac{V_{vi} \times 528 \times P_b}{T_{vi} \times 29.92}$$

Where:

V_{vsi} = Volume of gas discharged through "i_{th}" vent corrected to 68° F and 29.92 in. Hg, (ft^3).

P_b = Barometric pressure, (in. Hg).

V_{vi} = Volume of gas recorded by meter on "i_{th}" vent (Ft^3, corrected for amount of vapor removed for the hydrocarbon analysis).

T_{vi} = Average temperature in "i_{th}" vent line, (°R).

"i_{th}" = The vent under consideration.

5.5.2 Volume of gas returned to the bulk storage tank.

$$V_t = \frac{0.1337 G_t \times 528 (P_b + P)}{T_t \times 29.92}$$

Where:

P_b = Barometric pressure, (in. Hg).

V_t = Volume of gas returned to the bulk storage tank corrected to 68°F and 29.92 in. Hg, (ft^3).

G_t = Volume of gasoline delivered, (gallons).

P = Final Gauge pressure of bulk storage tank, (in. Hg).

T_t = Average temperature of vapor returned to bulk storage tank, (°R).

0.1337 = Conversion factor, (gallons to Ft^3). 1 US gal. = 0.1337 ft^3.

5.5.3 Efficiency of Vapor Control System

$$E_j = \frac{V_t \times C_t - \Sigma(C_{vi} \times V_{vsi}) \times 100}{(V_t \times C_t}$$

Where:

E_j = The efficiency of control per individual fueling in percent.

C_t = The average fractional volume concentration of gasoline vapors in the return line to the bulk storage tank as determined by the hydrocarbon analyzer, (decimal fraction).

C_{vi} = The average fractional volume concentration of gasoline vapors in the "i_{th}" vent as determined by the hydrocarbon analyzer, (decimal fraction).

$_j$ = The individual loading considered.

$$E_{ave} = \frac{\sum_{j=1}^{n} E_j}{n}$$

Where:

E_{ave} = The average efficiency of control in percent.

E_j = From 5.5.3 above.

n = Number of Loadings Tested.

6.0 CALIBRATIONS

6.1 Flow meters. Standard methods and equipment shall be used to calibrate the flow meters within thirty (30) days prior to any test or test series. The calibration curves are to be traceable to NIST.

6.2 Temperature measuring instruments. Calibrate immediately prior to any test period and immediately following test period using ice water (32°F.) and a known temperature source of about 100°F.

6.3 Pressure measuring instruments. Calibrate pressure transducers within thirty (30) days prior to the test period and immediately after the test period with a static pressure calibrator of known accuracy.

6.4 Total hydrocarbon analyzer. Follow the manufacturer's instruction concerning warm-up time and adjustments. On each test day prior to testing and at the end of the day's testing, zero the analyzer with a zero gas (3 ppm C) and span with 30 percent and 70 percent concentrations of propane.

6.5 A record of all calibrations made is to be maintained.

7.0 RECORD KEEPING

A copy of the results of these tests which are performed for compliance determination shall be maintained at the facility site according to OAR Chapter 340-22-120 and -137

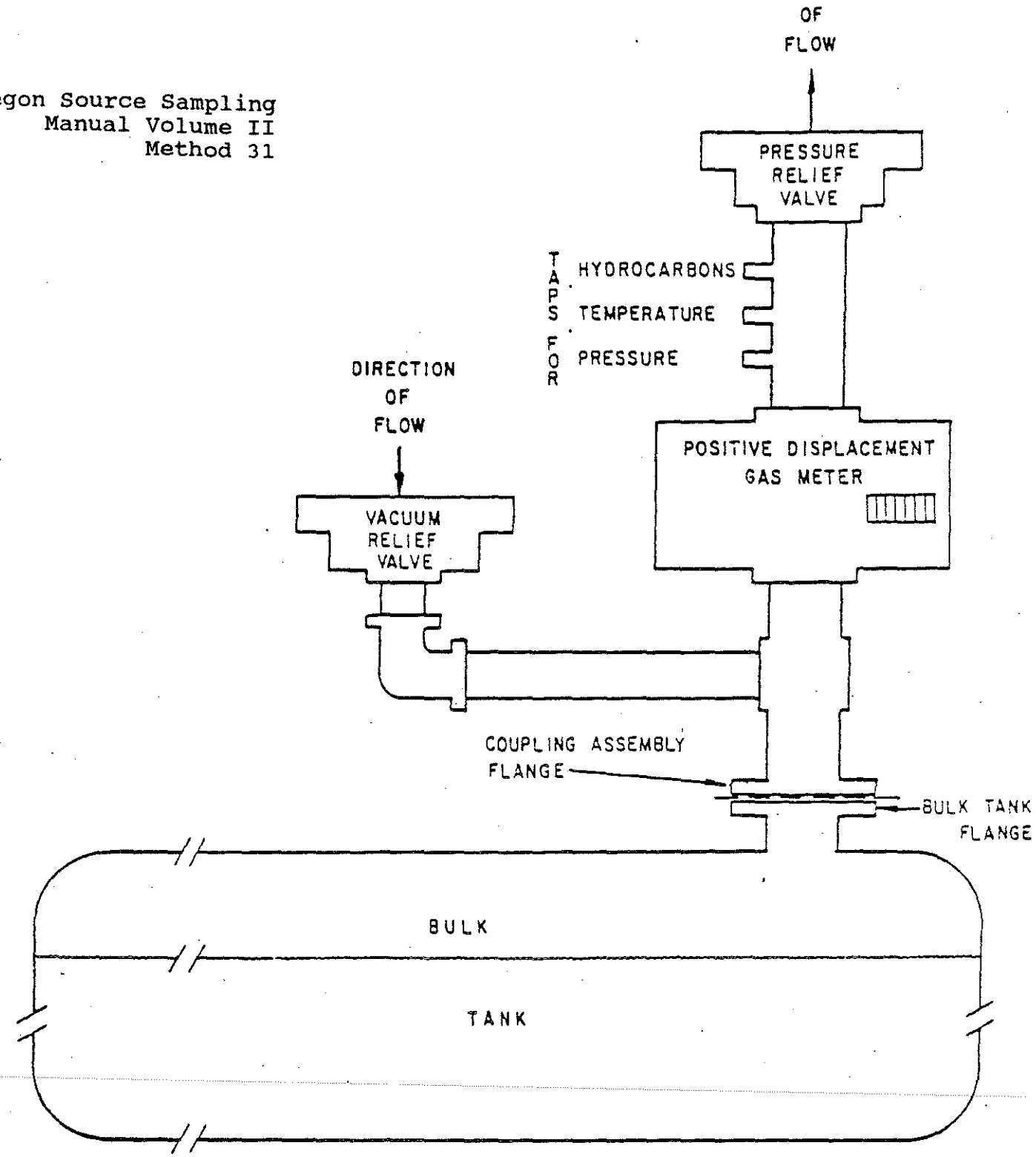

FIGURE A
BULK TANK
TEST APPARATUS

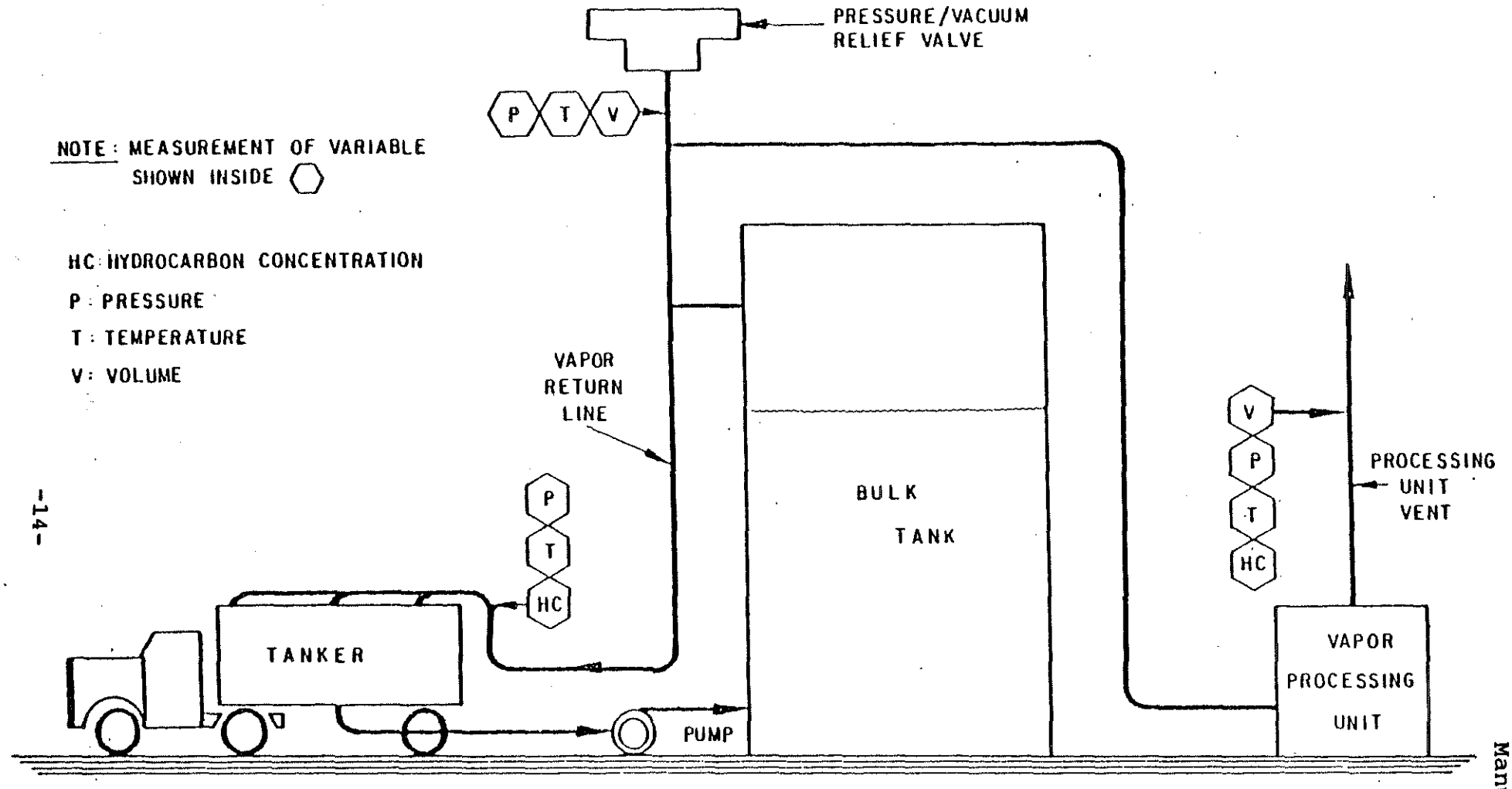

FIGURE B
GASOLINE TRANSFER
FROM DELIVERY TANK TO BULK PLANT

FIGURE-C
GASOLINE TRANSFER
FROM BULK PLANT TO DELIVERY TANK

Gasoline Vapor Control Equipment Test Method # ____________

Date of Test ____________________

Ambient Temperature ____________ °F

Barometric Pressure ____________ In.Hg

Plant ____________________

Address ____________________

Operator ____________________

Gasoline Handling Process:

Start Time: Finish Time: Test Time: Test Run # Gals Del.

Test Equipment Location:

#	Time	Meter Reading	Press	Temp	HC	#	Time	Meter Reading	Press	Temp	HC

FIGURE·

Vapor Control Equipment Efficiency Determination

Test Method: _____ Plant _____
Date: _____ Address _____
Test Run # _____ _____

Test Equipment Location: _____

Calculations: (Refer to Paragraphs 4.5 or 5.5 in test Procedure.)

Volume of gas discharged through "i th" vent.

$$V_{si} = \frac{V_{vi} \times 520 \times P_h}{T_{vi} \times 29.92}$$

Volume of gasoline vapor returned to bulk tank or tank truck

$$V_t = \frac{0.1337\ G_t \times 520\ (P_h + \Delta P)}{T_t \times 29.92}$$

Efficiency of Vapor Control System

$$E \text{ or } E_j = \frac{\left[V_t \times C_t - \sum(C_{vi} \times V_{vs})\right]}{V_t \times C_t} \times 100$$

E = Bulk Plant Loading Test
E_j = Delivery Tank Loading Test

Average Efficiency of All Loadings Tested

$$E_{ave} \quad \frac{\sum_{j=1}^{n} E_j}{n}$$

METHOD 31
FIGURE E
Rev. 5/15/81

DEQ METHOD 32

Test Procedures for Vapor Control Effectiveness of Gasoline Delivery Tanks

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

DEQ Air Quality Program
Portland, Oregon
December 1, 1980

Revisions
May 15, 1981
January 23, 1992

METHOD 32

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METHOD 32

TEST PROCEDURES FOR VAPOR CONTROL EFFECTIVENESS OF GASOLINE DELIVERY TANKS

1.0 INTRODUCTION

1.1 Principles:

Pressure and vacuum are applied to the compartments of gasoline truck tanks and the change in pressure/vacuum is recorded after a specified period of time.

1.2 Applicability:

This method is applicable to determining the leak tightness of gasoline truck tanks in use and equipped with vapor collected equipment.

2.0 ACCEPTANCE OF TEST RESULTS

2.1 Results from this method will be accepted as a demonstration of compliance provided that the methods included or referenced in this procedure are strictly adhered to. A report containing at least the minimum amount of information regarding the test should be included with the results. Deviations from the procedures described herein will be permitted only if permission from the Department is obtained in writing in advance of the test.

3.0 DEFINITIONS

3.1 Delivery Tank:

Any container, including associated pipes and fittings, that is used for the transport of gasoline.

3.2 Compartment

A liquid-tight division in a delivery tank.

3.3 Delivery Tank Vapor Collection System

The entire delivery tank, including domes, dome vents, cargo tank, piping,hose connections, hoses and delivery

elbow, and vapor recovery lines.

4.0 APPARATUS

4.1 Pressure Source (See Figure 1)

Pump or compressed gas cylinder of air or inert gas sufficient to pressurize the delivery tank to 6250 pascals (25 inches H_2O) above atmospheric pressure.

4.2 Regulator

Low pressure regulator for controlling pressurization tank.

4.3 Vacuum Source

Vacuum pump of sufficient capacity to evacuate a tank to 2500 pascals (10 inches H_2O) below atmospheric pressure. (The intake manifold of an "idling" gasoline engine is a very good vacuum source).

4.4 Manometer

Liquid manometer, or equivalent, capable of measuring up to 6250 pascals (25 inches H_2O) gauge pressure with $\pm$ 25 pascals ($\pm$ 0.1 inches H_2O) readability. Manometer must be positioned vertically.

4.5 Test Cap for Vapor Recovery Hose Fittings

This cap should have a tap for the manometer connection with a fitting with shut-off valve and pressure/vacuum relief valves for connection to the pressure/vacuum supply hose.

4.6 Cap for Liquid Delivery Hose Fitting

4.7 Pressure/Vacuum Supply Hose

4.8 Pressure/Vacuum Relief Valves

The test apparatus shall be equipped with an in-line pressure/vacuum relief valve set to activate at 7000 pascals (28 inches H_2O) above atmospheric pressure or 3000 pascalsl (12 inches H_2O) below atmospheric pressure, with a capacity equal tao the pressurizing or

evacuating pumps.

5.0 PRETEST CONDITION

5.1 Purging of Vapor

The delivery tank shall be purged of gasoline vapors and tested empty. The tank may be purged by any safe method such as flushing with diesel fuel, heating fuel or jet fuel. (Hauling a load of above fuel before test may be performed.)

5.2 Location

The delivery tank shall be tested where it will be protected from direct sunlight or any other heat source which may affect the pressure/vacuum test results.

6.0 VISUAL INSPECTION

6.1 Inspection Procedure

The entire delivery tank including domes, dome vents, cargo tank, piping, hose connections, hoses and delivery elbow shall be inspected for any7 evidence of wear, damage or misadjustment that could be a potential lead source. Any part found to be defective shall be adjusted, repaired or replaced, as necessary, before the test.

7.0 PRESSURE TEST PROCEDURE

7.1 Pressure Test

7.1.1 The dome covers are to be opened and closed.

7.1.2 Connect static electrical ground connections to delivery tank. Attach the delivery and vapor hoses, remove the delivery elbows and plug the liquid delivery hose fitting with cap.

7.1.3 Attach the test cap vapor recovery hose of the delivery tank.

7.1.4 Connect the pressure/vacuum supply hose

to the pressure/vacuum relief valve and the shut-off valve. Attach the pressure source to the supply hose. Attach a manometer to the pressure tap.

7.1.5 Connect compartments of the tank internally to each other, if possible.

7.1.6 Applying air pressure slowly, pressurize the tank, or alternatively the first compartment, to 4500 pascals (18 inches of water).

7.1.7 Close the shut-off valve, allow the pressure in the delivery tank to stabilize. Adjust the pressure, if necessary, to maintain 4500 pascals (18 inches of H_2O). Record the initial time and pressure.

7.1.8 At the end of five minutes, record the final time and pressure and then slowly vent tank to atmospheric pressure.

7.1.9 Repeat for each compartment if they were not interconnected.

7.1.10 If the reading is less than 3750 pascals (15 inches of water), the tank or compartment fails the test. Delivery tanks which do not pass the pressure test are to be repaired and retested.

8.0 VACUUM TEST PROCEDURE

8.1 Connect vacuum source to pressure and vacuum supply hose.

8.2 Slowly evacuate the tank, or alternatively the first compartment to 1500 pascals (6 inches of H_2O) vacuum.

8.3 Close the shut-off valve, allow the pressure in the delivery tank to stabilize. Adjust the vacuum, if necessary, to maintain 1500 pascals (6 inches of water). Record initial time and pressure.

8.4 At the end of five minutes, record the final time and

pressure and then slowly vent back to atmospheric pressure.

8.5 Repeat for each compartment if they were not interconnected.

8.6 If the reading is less than 750 pascals (3 inches of water) vacuum, the tank or compartment fails the test. Delivery tanks which do not pass the vacuum test are to be repaired and retested.

9.0 ALTERNATIVE TEST METHODS

9.1 Techniques, other than those specified above, may be used for purging, pressurizing, or evacuating the delivery tanks, if prior approval is obtained from the Department. Such approval will be based upon demonstrated equivalency with the methods above.

10.0 TEST REPORTS

The contents of the following report form example shall be considered the minimum acceptable contents for reporting the results of the tests.

11.0 RECORD KEEPING

A copy of the results of these tests which are performed for compliance determination shall be maintained at the facility site and by the delivery tank owner according to OAR Chapter 340-22-120 and -137.

TANK LEAK CHECK DATA SHEET

I. GENERAL

1. Truck/Trailer Owner _____

   Address _____

2. Test Site _____ Date _____

3. Owner's Unit No. _____

4. Truck TP* or AP* Oregon License No. _____

5. Tank Trailer HTP* or ATP* Oregon License No. (1981) _____

6. Tank DOT* Certification Plate - Mfg. Serial No. _____

   - Specification - MC _____

II. PRESSURE CHECK (INITIAL)

1. Pressure Readings	Initial (In H_2O)	After 5 min. (In H_2O)	Pressure Change	Tank (Compart.) Volume
(a) Complete Tank	18			
(b) Compartment #1				
(c) " #2				
(d) " #3				
(e) " #4				
(f) " #5				

(g) Pass _____ Fail _____

(h) Reason for failure _____

2. PRESSURE CHECK (after rework - if failure noted above)

(a) Complete Tank				
(b) Compartment #1				
(c) Compartment #2				
(d) Compartment #3				

FIGURE A(

	Initial ($In H_2O$)	After 5 min. ($In H_2O$)	Pressure Change	Tank (Compart.) Volume
(e) Compartment #4	_____	_____	_____	_____
(f) Compartment #5	_____	_____	_____	_____

(g) Pass _____ Fail _____

(h) Reason for failure _____

_____

3. VACUUM CHECK

(a) Complete Tank	_____	_____	_____	_____
(b) Compartment #1	_____	_____	_____	_____
(c) Compartment #2	_____	_____	_____	_____
(d) Compartment #3	_____	_____	_____	_____
(e) Compartment #4	_____	_____	_____	_____
(f) Compartment #5	_____	_____	_____	_____

(g) Pass _____ Fail _____

(h) Reason for Failure _____

_____

Signature of Person Conducting Test _____

Date _____

*TP - Truck Plate (use Item 4 if truck and tank are on the same chassis)
AP - Apportionment Plate (use Item 4 if truck and tank are on the same chassis)
HTP - Heavy Trailer Plate (use Item 5 for a tank trailer)
ATP - Apportionment Trailer Plate (use Item 5 for a tank trailer)
DOT - Department of Transportation

FIGURE A (2)

FIGURE B

GASOLINE DELIVERY TANKS
PRESSURE & VACUUM TEST LAYOUT
(TYPICAL)

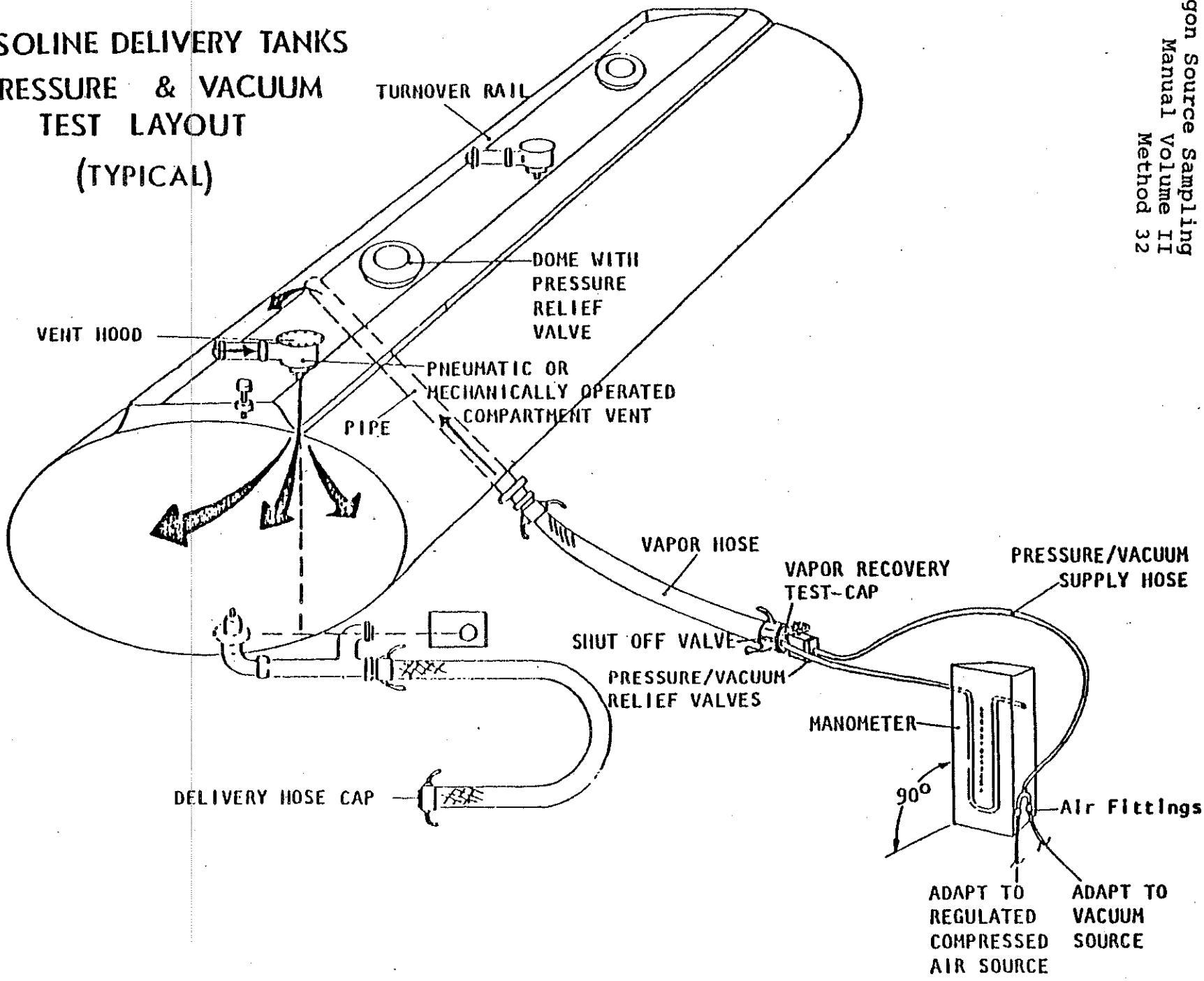

FIGURE B

DEQ METHOD 33

Test Procedures for Gasoline Vapor Control Systems at Bulk Gasoline Terminals

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

DEQ Air Quality Program
Portland, Oregon
December 1, 1980

Revisions
January 23, 1992

METHOD 33

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METHOD 33

1.0 INTRODUCTION

1.1 Principle:

Hydrocarbon mass emissions are determined directly, using flowmeters and hydrocarbon analyzers.

The mass of hydrocarbon vapor to be controlled or recovered is determined from the volume of gasoline dispensed (either to the bulk terminal facilities or to delivery tanks), and by temperature, pressure and concentration measurements of the released vapor.

The efficiency of the gasoline vapor control systems is determined from the mass of the hydrocarbons emitted and the mass of the hydrocarbons controlled.

1.2 Applicability:

These test procedures are applicable for gasoline vapor recovery systems installed at bulk gasoline terminals for controlling gasoline vapors emitted during the loading of delivery tanks or from the loading of fixed roof gasoline storage tanks as a result of fixed roof tank breathing. These procedures are also applicable for marketing operations at refineries.

2.0 ACCEPTANCE OF TEST RESULTS

2.1 Results of these tests will be accepted as a demonstration of compliance determination of the equipment tested provided that the methods included or referred to in this procedure are strictly adhered to. A statement containing at least the minimum amount of information regarding the test procedures applied should be included with the report of the test results.

Deviations from the procedure described herein will be permitted only if permission from the Department is obtained in writing in advance of the test.

3.0 DEFINITIONS

3.1 Bulk Gasoline Terminal

"Bulk gasoline terminal" means a gasoline storage

facility which receives gasoline from refineries primarily by pipeline, rail, ship, or barge, and delivers gasoline to bulk gasoline plants or to commercial or retail accounts primarily by tank truck.

3.2 Delivery Vessel

"Delivery vessel" means any tank truck or trailer unit for the transport of gasoline from sources of supply to stationary storage tanks.

3.3 Vapor Balance System

"Vapor balance system" means a combination of pipes or hoses which create a closed system between the vapor spaces of an unloading tank and receiving tank such that vapors displaced from the receiving tank are transferred to the tank being unloaded.

4.0 TEST PROCEDURES FOR DETERMINING THE EFFICIENCY OF GASOLINE VAPOR CONTROL SYSTEMS AT TERMINALS

4.1 Application

The following test procedures are for determining the efficiency of vapor recovery systems controlling gasoline vapors emitted during the storage of gasoline and the filling of delivery tanks at terminals.

4.2 Principle

During the normal operations at a terminal (loadings of delivery tanks and loadings of the storage tanks), all possible points of emission are checked for vapor leaks. The volume of gasoline delivered from the terminal storage tanks to the delivery tanks is recorded, the volume of gasoline delivered to any fixed roof storage tank(s) is recorded (as required), and the mass of the hydrocarbon vapors emitted from the processing unit measured. The mass emission of hydrocarbons is calculated from these determinations.

4.3 Test Conditions

The processing unit may be tested for a series of 24 consecutive one hour periods and pressures in the vapor holder and any fixed roof gasoline storage tanks may be monitored for 30 consecutive days. The Department

shall determine whether testing for longer or shorter periods may be necessary for properly evaluating any system's compliance with performance3 standards. During the test of the processing unit, the pressure during the filling of a number of delivery tanks will be monitored. As much as possible, the system shall be tested under normal operating conditions. Dispensing rate shall be at the maximum rate possible consistent with safe and normal operating practices. Simultaneous use of more than one dispenser during transfer operations shall occur to the extent that such would normally occur and the processing unit shall be operated in accordance with the manufacturer's established parameters as well as in accordance with the owner's or operator's established operating procedures.

4.4 Calibrations

4.4.1 Flowmeters

Standard methods and equipment shall be used to calibrate the flowmeters every month or every five tests, whichever comes first. The calibration curves are to be traceable to NIST standards.

4.4.2 Temperature measuring instruments

Calibrate prior4 to test period and immediately following test period using ice water (32°F) and a known temperature source of about 100°F.

4.4.3 Pressure measuring instruments

Calibrate pressure transducers every month and immediately after each test with a static pressure calibrator of known accuracy.

4.4.4 Total hydrocarbon analyzer

Follow the manufacturer's instructions concerning warm-up time and adjustments. On each test day prior to testing and at the end of the day's testing, zero the analyzer with a zero gas (<3ppm C) and span with 5, 10, 30, and 70 percent concentrations of propane.

4.4.5 A record of all calibration is to be maintained by the source testing person for at least 1 year.

5.0 TESTING VAPOR CONTROL SYSTEMS (OTHER THAN INCINERATION UNITS) WHEN LOADING DELIVERY TANKS

5.1 Equipment Required

5.1.1 Flowmeter with a capacity sufficient to determine the volume of exhaust from the vent of processing unit.

5.1.2 Coupler for attaching the flowmeter to vent of processing unit with thermocouple and HC analyzer taps.

5.1.3 Coupler for delivery tank vapor return line with pressure tap.

5/1/4 One hydrocarbon analyzer (either FID or Department approved equivalent) with recorder and with a capability of measuring total gasoline vapor concentration of 30 percent as propane.

5.1.5 One (1) flexible thermocouple or thermistor (0-150°F) with recorder system having a readability of 1°F.

5.1.6 Two (2) pressure sensing devices (transducers or equivalent) capable of measuring zero to ten inches of water with recorder systems having a readability of 0.01 in. H_2O.

5.1.7 Coupler with pressure tap for use between pressure-vacuum (PV) relief valve and fixed roof storage tank vent.

5.1.8 Coupler with pressure tap for use between PV valve and vent on vapor holder tank.

5.1.9 One manometer capable of measuring zero to ten inches of water with a readability of 0.1 in. H_2O.

5.1.10 Explosimeter.

5.1.11 Barometer (Aneroid or Mercury), ± 0.1 in. Hg. readability.

5.2 Test Procedure

5.2.1 Connect app5ropriate coupler to vent of processing unit and connect flowmeter.

5.2.2 Connect hydrocarbon analyzer, with recorder, to appropriate tap on coupler on processing unit vent.

5.2.3 Connect thermocouple with recorder to appropriate tap on coupler on processing unit vent.

5.2.4 Connect coupler between PV valve and vent of vapor holder tank and connect pressure sensing device, with recorder, to coupler.

5.2.5 Connect coupler between PV valve and fixed roof bulk storage tank and connect pressure sensing device, with recorder, to coupler.

5.2.6 Connect the appropriate coupler to vapor return line from delivery tank. Connect the manometer to the coupling in vapor return line from delivery tank. Check the delivery tank and all connections for a tight seal, before and during fueling, with the explosimeter. Record the pressure in the vapor return line from the delivery tank at 5 minute intervals during the filling of the delivery tank. Repeat for the required number of delivery tanks.

5.2.7 Record the pressure on the bulk storage at the start and finish of the test period.

5.2.8 Record the pressure on the vapor-holder tank at the start and the finish of the test period.

5.2.9 Record the hydrocarbon concentrations, temperature and exhaust gas flowrate from the processor vent at the start and the finish of the test period.

5.2.10 At the end of the specified times, disconnect all instrumentation and couplings from the vapor recovery systems.

5.2.11 Recor4d the volume of gasoline that is delivered over the time of the test period.

5.3 Calculations

5.3.1 Review pressures recorded during the filling of delivery tanks to determine if any equaled or exceeded one (1) pound per square inch.

5.3.2 Volume of gas discharged through the processing unit vent.

$$V = \frac{V_p \times 528 \times P_b}{T_p \times 29.92}$$

Where:

V = Volume of gas discharged through processor vent, corrected to 68°F and 29.92 in. Hg, (ft^3).

P_b = Barometric pressure, (in. Hg).

V_p = Volume of gas determined by flowmeter on the processing vent, corrected for amount of vapor removed for the hydrocarbon analysis, (ft^3).

T_p = Average temperature in the processing vent line, (°R.)

5.3.3 Weight of hydrocarbons discharged through the processing vent per 1,000 gallons of gasoline loaded into the delivery tanks.

$$W = \frac{C \times V \times M \times 1000}{379 \times G}$$

Where:

W = Weight of hydrocarbons discharged through the processor vent per 1000 gallons of gasoline loaded into delivery tanks, (lbs).

C = Average fractional concentration of hydrocarbons at vent, (decimal fraction)

V = From 5.3.2 above.

M = Molecular weight of hydrocarbon compound used to calibrate hydrocarbon analyzer, (lbs/lb Mole).

G = Total quantity of gasoline loaded into delivery tanks (gals).

Review the pressure recording from the transducers on the storage tanks and vapor holder and determine the number of times and total time (hours), if any, that the pressure exceeded the seeting of the PV valve on either the vapor holder or on the fixed roof storage tank.

6.0 TESTING VAPOR CONTROL SYSTEMS (OTHER THAN INCINERATION UNITS) WHEN LOADING FIXED ROOF STORAGE TANKS

6.1 Equipment Required

Same equipment as in Section 5.1.

6.2 Test Procedures

6.2.1 Connect appropriate coupler to vent of processing unit and connect flowmeter.

6.2.2 Connect hydrocarbon analyzer, with recorder, to appropriate tap on coupler on processing unit vent.

6.2.3 Connect thermocouple with recorder to appropriate tap on coupler on processing unit vent.

6.2.4 Connect coupler between PV valve and vent of vapor holding tank and connect pressure sensing device, with recorder, to coupler.

6.2.5 Connect coupler between PV valve and fixed roof storage tank and connect pressure sensing device, with recorder, to coupler.

6.2.6 Record the pressure on the bulk storage tank and connect pressure sensing device, with recorder, to coupler.

6.2.7 Record the pressure on the vapor-holding tank at the start and finish of the test period.

6.2.8 Record the hydrocarbon concentration, temperature and exhaust gas flowrate from the processor vent at the start and finish of the test.

6.2.9 At the end of the specified times, disconnect all instr4umentation and couplings from the vapor5 recovery systems.

6.2.10 Record the volume of gasoline that is delivered during the specified testing times.

6.2.11 Pressure monitoring of delivery tanks is to be performed, as appropriate, in accordance with Section 5.2.6.

6.3 Calculations

6.3.1 Volume of gas discharged through the processing unit vent.

$$V = \frac{V_p \times 528 \times P_b}{T_p \times 29.92}$$

Where:

V = Volume of gas discharged through processor vent, corrected to 68°F and 29.92 in. Hg, (ft^3).

P_b = Barometric pressure, (in. Hg).

V_p = Volume of gas determined by flow meter on the processing vent, corrected for amount of vapor removed by hydrocarbon analysis, (ft^3).

T_p = Average temperature in the processing vent line, (°R).

6.3.2 Weight of hydrocarbons discharged through the processing vent per 1000 gallons loaded into

the delivery tanks.

$$W = \frac{C \times V \times M \times 1000}{379 \times G}$$

Where:

W = Weight of hydrocarbons discharged through the processor vent per 1000 gallons of gasoline loaded into delivery tanks, (lbs).

C = Average fractional concentration of hydrocarbons at vent, (decimal fraction).

V = From 6.3.1 above.

M = Molecular weight of hydrocarbon compound used to calibrate hydrocarbon analyzer, (lbs/lb Mole); (44 for propane).

G = Total quantity of gasoline loaded into fixed roof storage tank(s), (gals).

Review the pressure recording from the transducers on the storage tanks and vapor holder and determine the number of times and total time (hours), if any, that the pressure exceeded the setting of the PV valve on either the vapor holder or on the fixed roof storage tank.

7.0 TESTING EXHAUST EMISSIONS FROM INCINERATION-TYPE PROCESSING UNIT

7.1 Equipment Required

7.1.1 One (1) positive displacement flowmeter (capacity of 11,000 SCFH) with a coupler with pressure and temperature taps.

7.1.2 One (1) hydrocarbon analyzer (FID or Department approved equivalent) capable of measuring hydrocarbons in the range 0 to 10 percent as propane.

7.1.3 One (1) oxygen analyzer (paramagnetic or Department approved equivalent) capable of measuring oxygen in the range 0 to 25 percent by volume.

7.1.4 Apparatus for performing the State of Oregon, DEQ source sampling Method #2 (Determination of Stack Velocity and Volumetric Flow Rate).

7.1.5 One (1) sample conditioner capable of adjusting the temperature of the exhaust gas sample to a range acceptable to the hydrocarbon and oxygen analyzers.

7.1.6 One (1) 1/4" ID stainless steel sampling probe (SS316 or equivalent), of appropriate length.

7.1.7 One (1) dry gas meter sufficiently accurate to measure the sample volume within one percent.

7.1.8 One (1) needle valve, or equivalent, to adjust flow rate.

7.1.9 One (1) rotameter, or equivalent, to measure a 0 to 10 SCFH flow range, with a readability of 0.1°.

7.1.10 One (1) pump of a leak-free, vacuum type.

7.1.11 One (1) thermocouple with recorder, 0 - 150°F with a readability of 1°.

7.1.12 One (1) pressure sensor with recorder for a range of -2 to +2 psig.

7.1.13 Calibration of test equipment according to recommended procedure, Section 4.4, page 3.

7.2 Test Procedure

7.2.1 Insert the flowmeter (0-11,000 SCFH) into the pipe supplying the incinerator, connect thermocouple and pressure sensor and record initial volume.

7.2.2 Using the appar4atus and procedure for Method 2, 7.1.4, perform a velocity traverse of the incinerator exhaust vapor.

7.2.3 Insert the sample probe to the location of the average exhaust velocity, leaving the

Method 2 apparatus in place. Connect the sample conditioner, hydrocarbon analyzer, oxygen analyzer, sample pump, rotameter, needle valve and dry gas meter to the sample probe.

7.2.4 Start analyzer recorders.

7.2.5 Adjust the sample flow rate proportional to the stack gas velocity and sample until the dry gas meter registers one (1) $ft.^3$. Mark on analyzer recorder strip charts beginning and ending of sample period.

7.2.6 At the end of the test period, record the total volume of vapors going to the incinerator and average temperature and pressure.

7.2.7 Record the average hydrocarbon and oxygen concentration in the incinerator exhaust. Repeat as required.

7.2.8 Record the volume of gasoline delivered during the test period.

7.2.9 Pressure monitoring of delivery tanks and fixed roof storage tanks is to be performed, as appropriate, in accordance with Section 5.2.6 and 6.2.6.

7.3 Calculations

7.3.1 $$V_p = \frac{V \times 528 \times PA}{T \times 29.92}$$

Where:

V_p = Volume of vapor going to the incinerator ($ft.^3$)

V = Volume of gas recorded by meter ($ft.^3$).

PA = Absolute pressure in the pipe going to the incinerator, (in. Hg).

T = Average absolute temperature of the vapor, (°R).

7.3.2 $EA = \frac{O_{2\%}}{.264N_2\% - O_2\%}$

Where:

EA = Excess air in the incinerator exhaust gas.

$O_2\%$= Percent by volume oxygen in the incinerator exhaust.

$N_2\%$= Percent by volume nitrogen in the incinerator exhaust.

7.3.3 $W = \frac{V_p \times C \times M \times (EA) \times 1000}{379 \times G}$

Where:

W = Weight of hydrocarbons discharged through the incinerator vent per 1000 gallons of gasoline into delivery tanks, or, as appropriate, fixed roof tanks, (lbs).

V_p = From 7.3.1 above.

M = Molecular wright of hydrocarbon compound used to calibrate hydrocarbon analyzer, (lbs/lb Mole).

EA = From 7.3.2 above.

G = Total quantity of gasoline loaded into delivery tanks, or, as appropriate, fixed roof storage tanks, (gals).

C = Average fractional concentration of hydrocarbons at vent, (decimal fraction).

8.0 ALTERNATIVE TEST METHODS

Techniques, other than those specified above, may be used for testing vapor recovery systems at terminals if prior written approval is obtained from the Department. Such approval will be based upon demonstrated equivalency with the methods in Section 5 through Section 8.

9.0 RECORD KEEPING

A record of the results for tests which are performed for compliance determination shall be maintained at the facility site according to OAR Chapter 340-22-120 and -137.

Vol. II., Appendix I, Submerged Fill Inspection Guideline, May 1, 1981

Department of Environmental Quality
Air Program
VOC Compliance Determination Guideline
OAR 340-22-110 and 120 Submerged Fill

VOC Rules, 340-22-110 to 137, require submerged fill for gasoline storage tanks (service stations, motor polls, etc.) marketing in the Portland AQMA, the Salem SATS area, and the Medford-Ashland AQMA. This means that "splash fill" is forbidden, as it generates considerably more VOC emissions.

"Submerged Fill" is defined in 340-22-102(40) as "any fill pipe or hose, the discharge opening of which is entirely submerged when the liquid is 6 inches above the bottom of the tank; or when applied to a tank which is loaded from the side, shall mean any fill pipe, the discharge of which is entirely submerged when the liquid level is 28 inches, or twice the diameter of the fill pipe, whichever is greater, above the bottom of the tank."

Rules 340-22-110(1)(a) and rule 340-22-120(1)(a), require submerged fill, at small gasoline storage tanks at bulk gasoline plants, respectively.

The technique to determine compliance with submerged fill rules is:

(1) For underground tanks, open the fill pipe and determine that a submerged fill pipe extends down into the tank.

(2) Take a 20 foot measure tape or equivalent stick with an L extension ont he bottom (11) and lower it down the fill tube, forcing the tape catch to scrape against the tube side, or catch on the bottom of the fill pipe.

(3) Note when scraping ceases; the bottom of the fill tube has been reached. Read the tape or mark the stick.

(4) Extend the tape on down to the bottom of the tank. Read the tape, or marking stick.

(5) If the difference in tape readings is 6 inches or less the source is in compliance with the submerged fill pipe rule.

(6) Bulk plants or above-ground-tanks which are bottom filled can be considered in compliance, so long as the top of the fill line is less than twice the diameter of fill pipe or less than 18 inches above the tank bottom.

(7) Cylindrical tanks with horizontal fill pipes that do not meet requirements of (6) but have an elbow extending down toward the bottom of the tank must meet the requirements of (6).

(8) Horizontal tanks with side fill which do not meet the requirements of (6) but which have an elbow extending toward the bottom shall meet the requirements of (5).

(9) Remember gasoline is explosive, dangerous, toxic and non-spark measuring devices shall be used. Close all openings which were opened to conduct the test. A clean rag should be available for wiping during the test process to prevent gasoline burns to hands, etc.

(10) Good judgment relative to safety and courtesy is a must at all times.

(11) A 20-foot Lufkin Tape, Oil Gauging Long Taper, and brass plumb are measuring devices carried by N.W. Pump and Equipment Company.[1]

[1]Mention of trade names or specific products does not constitute endorsement of the Department of Environmental Quality

JANUARY 1992

THIRD ANNUAL

ENVIRONMENTAL CLEANUP REPORT

SUBMITTED TO:

GOVERNOR BARBARA ROBERTS

OREGON LEGISLATIVE ASSEMBLY

ENVIRONMENTAL QUALITY COMMISSION

SUBMITTED BY:

FRED HANSEN, DIRECTOR
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHAEL DOWNS, ADMINISTRATOR
ENVIRONMENTAL CLEANUP DIVISION

THIS REPORT IS PRINTED ON RECYCLED PAPER

Foreword

This document represents the third annual report on corrective action at uncontrolled or abandoned hazardous waste sites in Oregon. The report summarizes accomplishments of the environmental cleanup program, the program's major issues, and forthcoming activities.

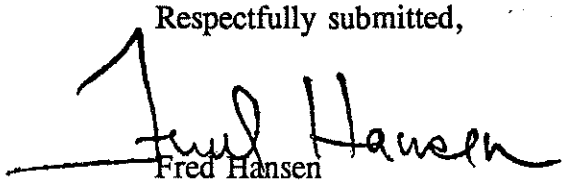
We have learned a great deal about the complexity and expense of dealing with improperly managed hazardous waste and we have made substantial gains in our ability to prevent future problems and address existing problems. On the other hand, fundamental questions for Oregon's program remain, including the issue of how best to identify and clean up more sites without sacrificing the level of protectiveness envisioned by the state legislature when it adopted the environmental cleanup law.

With the support of the Governor and the State Legislature, steps have been taken to enhance the responsiveness and effectiveness of Oregon's environmental cleanup program. Prominent among these efforts has been the provision of resources to support the voluntary cleanup program. Also, Oregon is preparing for implementation of the Orphan Site Account, which will facilitate the cleanup of sites when responsible parties are unknown, unable or unwilling.

Finally, the Department is proposing numeric cleanup standards for petroleum substances in groundwater and for hazardous substances in soil. Particularly in the case of cleanup standards for hazardous substances in soil, the scientific and technical issues have proven difficult, but important. As always, we look forward to your participation in the review and consideration of these proposals.

We hope that you will find this report to be informative and that you will contact us if you have questions or suggestions.

Respectfully submitted,



Fred Hansen
Director
Department of Environmental Quality

Accomplishments

The Environmental Cleanup Division's mission is to discover, assess, investigate and clean up sites contaminated by a release of hazardous substances. The following information summarizes accomplishments since adoption of Oregon's environmental cleanup law, with particular attention given to cleanup activities underway during the most recent fiscal year (July 1990-June 1991). More detailed information is provided in Appendix A and B.

A Glossary of Terms

If DEQ determines hazardous substances have been released and site cleanup is needed, a remedial investigation and feasibility study may be required. A Remedial Investigation (RI) is designed to determine the full extent and nature of the contamination.

A Feasibility Study (FS) develops options for remedial action. Options considered range from total cleanup to no action. An RI/FS usually requires one to three years, since this is the phase during which site conditions, chemical transport mechanisms, risk assessment and remedial options are comprehensively evaluated.

Selected options are engineered during the "Remedial Design" phase. Removals may occur at any time during the investigation or cleanup process.

Site Response

The Site Response Section (SRS) is presently overseeing remedial activities at 40 sites, including 8 projects on the National Priorities List (NPL). Appendix C describes SRS projects.

During the preceding fiscal year, 3 remedial investigations, 3 feasibility studies, 3 remedial design/cleanups, and 5 removals (or interim cleanups) were completed. SRS also initiated 6 remedial investigations, 5 feasibility studies, 4 remedial designs and 2 removals. These results, and current forecasts, are consistent with the established Four-Year Plan as presented in the 1991 Legislative Report.

Voluntary Cleanup

A Voluntary Cleanup Section (VCS) was established in February 1991, explicitly for the purpose of accommodating property owners who are anxious to get going on their cleanups and want DEQ oversight. Although the program is still getting off the ground, VCS is currently overseeing work at 21 projects. The existing VCS projects are described in Appendix D.

From February through June of 1991, VCS provided oversight for completion of 4 preliminary assessments. Also during this period, work was initiated on 3 additional preliminary assessments, 8 remedial investigations and 1 removal project. The rapid emergence of the Voluntary Cleanup Program (approximately four new projects are being initiated each month) is likely to result in exceeding the state's target goals for environmental cleanup activities as expressed in the Four-Year Plan.

Site Assessment

Oregon has established an electronic filing system known as the "Environmental Cleanup Site Information System", which provides public information on about 1,010 sites which may have been contaminated with hazardous substances.

Rules pertaining to the Confirmed Release List (CRL) and Inventory of Sites Requiring Further Action (Inventory) were adopted in June 1990 followed by Inventory ranking rules in March 1991. During the fiscal year ending June 1991, 33 sites were added to the CRL. 24 were placed on the Inventory. State PAs were completed at 48 sites.

Underground Storage Tanks

Cleanups of petroleum releases from leaking underground storage tanks (UST) are handled separately from other hazardous substances due to their well-defined characteristics and the widespread use of underground tanks to store petroleum products. During the fiscal year ending June 1991, 988 releases of petroleum from tanks were reported. 488 investigations and 343 cleanups were completed. Compared to the Four-Year Plan, more releases were reported and cleanups completed than anticipated. Slightly fewer investigations were completed. Many of the remaining sites have more extensive contamination problems and others are owned by parties with limited resources for cleanup.

Separately, soil matrix rules were amended to clarify reporting requirements and modify the methods used for soil sample analysis. In addition, the UST Cleanup Section entered into a cooperative agreement with the Oil Heat Commission to provide technical assistance to Oregon's oil heat customers. Under the program, UST Cleanup will assist residents in prevention, containment and cleanup of releases from home heating oil tanks. Finally, over 350 contractors attended a "Contractor's Day", which provided an opportunity to respond to questions about the soil matrix rules and the soil cleanup process. Additional training sessions are currently being planned.

Spill Response

Although hundreds of spills are reported annually to DEQ, only in a few instances are responsible parties unknown, unable or unwilling to cleanup a spill of hazardous substances. If cleanup is required and a responsible party will not perform the work, DEQ will authorize the clean up. During fiscal year 1990-91, the 30 incidents requiring DEQ assistance cost a total of $71,670 in contracted cleanup expenses.

Drug Lab Cleanup

DEQ provides assistance to law enforcement agencies in cleaning up drug lab chemicals, as authorized by the Oregon legislature in 1987. At the request of law enforcement agencies, arrangements are made for packaging and disposal of wastes confiscated at illegal drug lab sites. During the fiscal year, 89 drug lab cleanups were completed at a cost of $216,830.

DEQ will request the Environmental Quality Commission (EQC) to adopt administrative rules rescinding the requirement for local funding for half of the drug lab cleanup costs in January 1992. The state will provide full financial support for the proper disposal of law enforcement-confiscated drug precursors and products. Efforts to find alternatives to General Fund support of the program will continue.

Issues

The Environmental Cleanup Division (ECD) was established in 1988 by the Department of Environmental Quality (DEQ) and charged with implementing Oregon's environmental cleanup law. The following information highlights major issues and challenges which the Division believes will impact Oregon's environmental cleanup program during the next few years.

Voluntary Cleanup

The new Voluntary Cleanup Section is up and running with more than 20 participants. The program, established in February 1991, is designed to accommodate property owners who want oversight for conducting property preliminary assessments, site investigations and cleanups. Program costs are borne by those requesting Department oversight.

In November, the Legislative Emergency Board approved steps designed to shorten the "waiting list" period. For the current biennium, an expenditure limitation of $7.3 million and authorization to hire additional staff was approved.

Soil Cleanup Standards

With the assistance of the Environmental Cleanup Advisory Committee (ECAC) and a technical advisory committee, DEQ has proposed modifying soil cleanup rules for "simple sites". Numeric cleanup levels have been proposed for about 75 compounds.

It is hoped the standards will encourage focused site investigations and eliminate the need to conduct a risk assessment and feasibility study at eligible sites. However, issues associated with specifying numeric cleanup levels or modification of the existing environmental cleanup process are inherently complex. DEQ's advisory committees recommended the proposed rule changes go forward for public comment, but some members have expressed reservations about the proposal as drafted.

DEQ will conduct public hearings throughout the state in January 1992 and written comments will be accepted through January 31. DEQ intends to present the final rule for Environmental Quality Comission (EQC) consideration in March 1992.

Petroleum Groundwater Standards

The Underground Storage Tank Cleanup program is also proposing amendments to improve its cleanup process. The proposed amendments would establish numeric cleanup levels for underground petroleum releases in groundwater. If approved, these changes should make it easier for owners to develop corrective action plans.

Public hearings will be held in January at locations around the state. Also, written comments will be accepted through January 31, 1992.

Lender Liability

At the direction of the 1991 Legislature, DEQ will be creating an advisory committee to draft regulations clarifying the scope of exemption from cleanup liability for financial institutions and other persons who hold security interests in property. The advisory committee is expected to begin work in early 1992, with a goal of completing its recommendations within 6-9 months. At the federal level, similar efforts to clarify and/or expand existing limitations from liability have not yet been adopted. If federal regulations are approved, the Legislature has instructed DEQ and the new advisory committee to consider those results when formulating recommendations.

Orphan Sites

Since initiation of the environmental cleanup program, the state has invested over $6 million at facilities requiring environmental cleanup in instances where the responsible parties are unknown, unwilling or unable to clean up the site. DEQ believes the existing source of funds for this work, the Hazardous Substance Remedial Action Fund (HSRAF), is inadequate.

The Oregon Legislature concurred with this assessment in addressing orphan site financing in 1989. The Legislature established three Orphan Site Account fees: solid waste tipping, petroleum loading, and hazardous substances possession. Each of the fees was designed to raise approximately equivalent revenue up to $1 million per year.

In 1991, DEQ received Legislative budget approval and Emergency Board budget expenditure limitation for initiation of the Orphan Site Account. This action is contingent, however, upon issuance of a Pollution Control Bonds by the State Treasurer. DEQ received Legislative authorization for a $7.3 million Orphan Site Account bond sale and expenditure limitation for the current biennium.

At this time, ECD is working with the State Treasurer and other officials preparing for a bond sale in 1992. If bonds are not issued, ECD will be forced to immediately stop work at four existing projects, and scale back work on the remaining two projects. Also, without a bond sale, DEQ will need to assume that orphan site funding may not occur during the current biennium and immediately cut other project activities to remain within existing resources.

Left unaddressed, environmental conditions at orphan sites are potentially dangerous and unstable. Additionally, projects cannot be inexpensively shut down, delayed or mothballed. If project shutdown is required, much of the investment made to date may be forfeited and cleanup costs will escalate. In sum, orphan site financing is a critical issue to the long-term success of the environmental cleanup program.

Four-Year Plan

In January of 1991, a four-year plan of action for the state's environmental cleanup report was submitted to the Governor, the Legislature and the Environmental Quality Commission as required by ORS 465.235. The following information provides a condensed version of the plan. Except as noted, the January 1991 Legislative Report's Four-Year Plan has not been amended.

Four-Year Plan Activities

Two major trends in the future of environmental cleanup activities can be anticipated. First, the total number of activities will increase because the infrastructure and rules for implementing the environmental cleanup program have been established. Second, a shift in the types of activities completed is expected as sites move from investigative to cleanup stages.

Figures 1-5 depict the number of DEQ projects which will be initiated and completed. Figure 1, for example, shows that the number of completed preliminary assessments is expected to climb from 77 in the 1989-91 biennium to approximately 100 in 1991-93 and 200 in 1993-95.

In contrast to the anticipated steady growth in completion of preliminary assessments, a different trend is anticipated for remedial investigations and feasibility studies. As shown in Figure 2, DEQ projected that 10 remedial investigations would be completed in the 1989-91 biennium, followed by 15 in 1991-93 and 8 in 1993-95.

Likewise, 6 feasibility studies were scheduled for completion in 1989-91, followed by 13 in 1991-93 and 5 in 1993-95 as shown in Figure 3. This anticipated short-term surge in completion of remedial investigations and feasibility studies reflects movement of sites currently under investigation to cleanup stages.

Figure 4 demonstrates the combined effect of increasing environmental cleanup activity and the movement of individual sites from investigation to cleanup phases. As shown, DEQ estimates the number of completed remedial actions will increase from 2 in the 1989-91 biennium to 11 in 1991-93 with an additional 12 completed in 1993-95.

Hundreds of sites contaminated by petroleum products already have been identified and cleaned up, primarily sites where petroleum product contamination has been limited to soils. Figure 5 summarizes the number of UST cleanups completed per biennium and projections for the program's future.

Figure 1

PRELIMINARY ASSESSMENTS

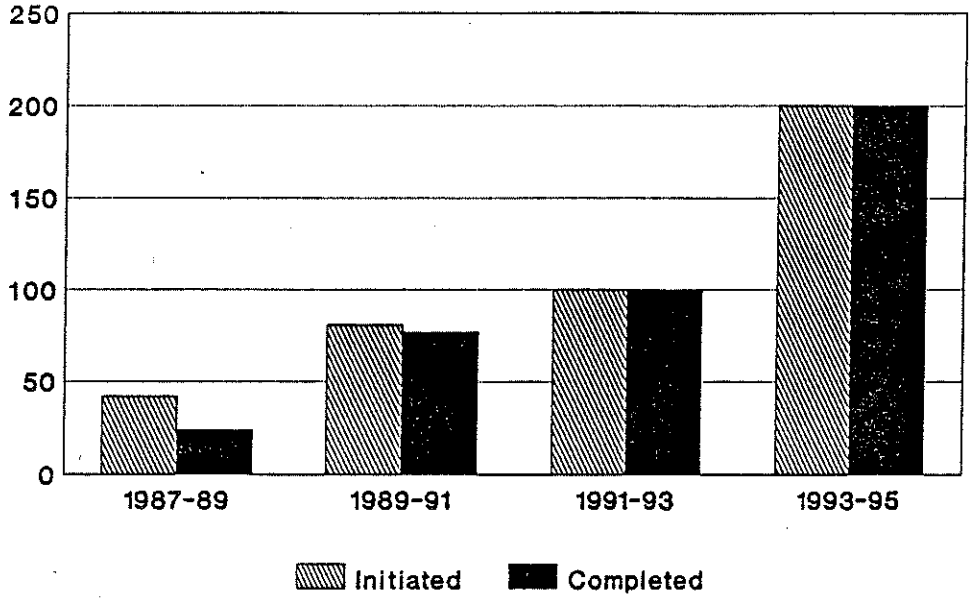


Figure 2

REMEDIAL INVESTIGATIONS

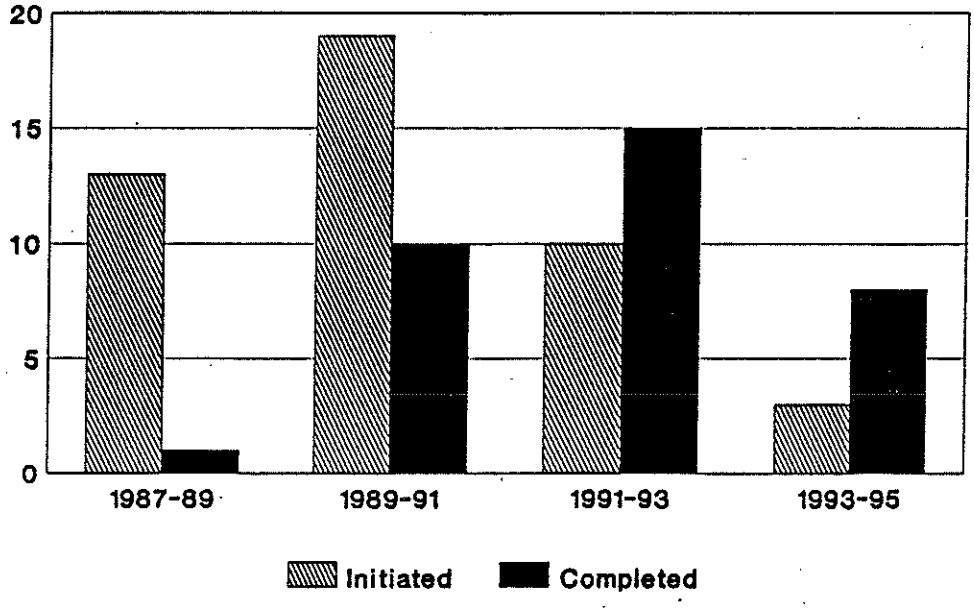


Figure 3

FEASIBILITY STUDIES

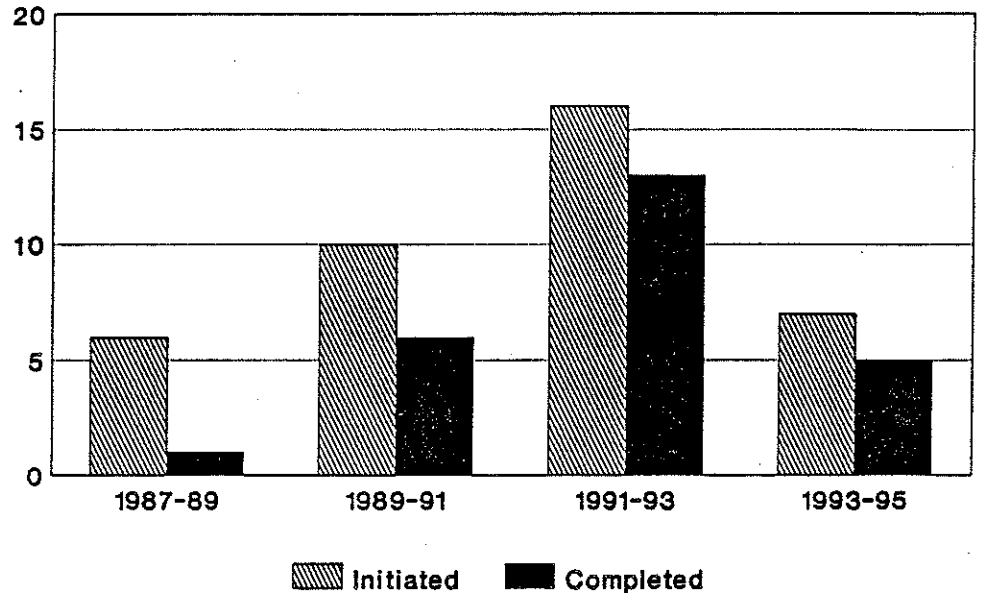


Figure 4

REMEDIAL ACTIONS

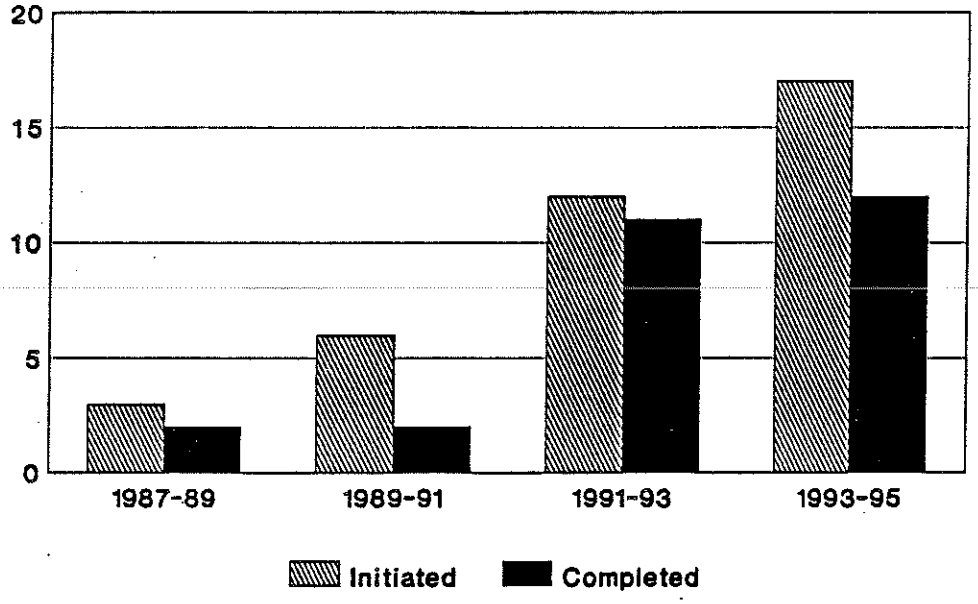
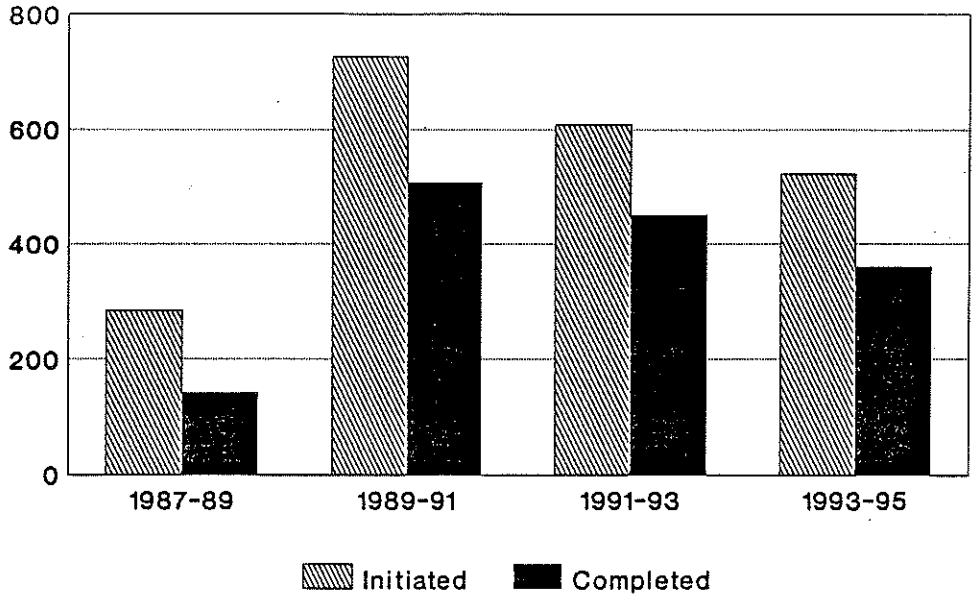


Figure 5

UST CLEANUPS



Funding and Staffing Levels

The approved environmental cleanup budget authorizes expenditures of $26.8 million and 101.75 full time equivalent (FTE) staff during the current biennium.

Table 1 presents a general breakdown of expenditures and staffing by major program activities as follows:

Table 1
Current Funding and Staffing
(1991-93)

Activity	Approved Budget	FTE	Funding Sources
Cleanup of hazardous substances	$11.64 million	46.40	HSRAF, federal and cost recovery
UST cleanup	$4.09 million	28.63	Federal, UST regulatory fees, Oil Heat Commission, well monitoring fees, HSRAF and cost recovery
Spill response	$0.33 million	2.25	HSRAF, cost recovery and petroleum product withdrawal fee
Drug lab	$1.16 million	0.25	General Fund, cost recovery and federal cost-share
Voluntary cleanup	$2.23 million	18.41	Cost recovery and HSRAF
Orphan site cleanup	$7.35 million	5.81	Pollution control bonds
TOTALS	$26.80 million	101.75	

NOTE: Includes the Legislatively-approved budget and Emergency Board additions for orphan site account, voluntary cleanup and well monitoring. The Four-Year Plan from last year's Legislative Report, in contrast, presents the Governor's recommended budget.

As part of the 1991 Legislative Report's Four-Year Plan, budget and staffing projections were presented. These estimates, shown in Table 2, represent resources which the Department believes will be necessary to achieve projected environmental cleanup activities cited in Figures 1-5. These estimates were prepared as part of the 1991 Legislative Report, but DEQ believes they remain generally applicable and relevant to future state environmental cleanup costs.

Table 2
Budget and Staff Projections
(1993-95)

Activity	Projected Budget	Projected FTE	Funding Sources
Cleanup of hazardous substances	$18.18 million	77.9	HSRAF, federal and cost recovery
UST cleanup	$4.6 million	26.0	Federal, HSRAF, petroleum loading, and cost recovery
Spill response	$1.23 million	4.0	Petroleum load fee and cost recovery
Drug lab	$2.1 million	1.0	General Fund and law enforcement matching funds
Orphan site cleanups	$27.07 million	18.0	Pollution control bonds
TOTALS	$53.18 million	126.9	

APPENDIX A: PROJECTS COMPLETED

Site Assessment

	1/88-6/90	7/90-6/91	7/91-6/92[a]	TOTAL
Suspected releases added	883	74	100	1057
Confirmed Release List additions	0	33	90	123
Facilities added to Inventory	0	24	50	74
Preliminary Assessments	51	48	56	155

Site Response/Voluntary Cleanup

Removals	6	5	8	19
Remedial Investigations	4	3	20	27
Feasibility Studies	3	3	7	13
Remedial Design & Remedial Action	3	3	6	12

Underground Storage Tank Cleanup

Releases reported	1499	988	810	3297
Investigations	1165	488	500	2153
Cleanups	403	343	249	995

Drug Lab/Spill Response

Drug Lab Cleanups	216	89	96	401
Spill Response Cleanups	109	30	30	169

[a]-Projected results

APPENDIX B: PROJECTS INITIATED

Site Assessment

	1/88-6/90	7/90-6/91	7/91-6/92[a]	TOTAL
Preliminary Assessments	73	45	40	152

Site Response/Voluntary Cleanup

Removals	11	3	6	20
Remedial Investigations	29	14	16	59
Feasibility Studies	13	5	11	29
Remedial Design & Remedial Action	7	4	10	21

Underground Storage Tank Cleanup

Cleanups	627	545	356	1528

[a]-Projected results

APPENDIX C: SITE RESPONSE SECTION
PROJECT STATUS

PROJECT NAME / LOCATION	LEAD AND FUND SOURCE	CURRENT PHASES	% COMPLETED	CONTAMINANTS OF CONCERN	MEDIA CONTAMINATED	PROJECT ACTIVITY STATUS
Alkali Lake Lake County	STATE STATE	RI FS	< 25% < 25%	2,4,-D, Chlorinated phenols, dioxins, furans, herbicide (MCPA)	Groundwater Soil Surface water	RI currently on hold pending funding status of orphan account.
Allied Plating Portland	FED FED	RI	75%	Heavy metals	Groundwater Soil	RI field work completed. Method of cleanup decision expected by mid-1992.
Bergsoe Metal Corporation St. Helens	STATE PRP	PM RI	75% 50%	Lead, Cadmium, Chromium	Groundwater Soil	The removal work plan and draft RI report were received.
Broadway Cab Portland	STATE PRP	RI	75%	Polynuclear aromatics, Benzene, toluene, xylene	Groundwater Soil	Currently undergoing one year of quarterly water and vapor sampling and monthly water level measurements to determine extent of contamination.
Carlton Company Milwaukie	STATE PRP	RI FS	< 50% < 25%	1,1-dichlorethylene (1-1-DCE), Perchloroethylene (PCE), Trichloroethylene (TCE), Vinyl Chloride (VC)	Groundwater Soil	The first phase of the RI will be completed in spring, 1992.
Cascade Corporation Troutdale	STATE PRP	RI FS	50% < 25%	DCE, PCE, TCE, Total Petroleum Hydrocarbons (TPH)	Groundwater Soil Surface Water	Interim cleanup measures design to be completed soon.
Columbia Steel Sludge Pond Portland	STATE PRP	RI FS	< 75% < 25%	Creosote, Pentachlorophenol, (PCP), TPH	Groundwater Soil	The first draft RI report is near completion.
Dant and Russell Mill Site North Plains	STATE PRP	RI FS	75% 75%	Arsenic, Chromium, Copper, PCP, dioxin, creosote	Groundwater Soil Surface Water	Draft RI/FS report for groundwater, surface water and sediment received.
Dant and Russell Soils Unit North Plains	STATE PRP	RD	< 25%	Arsenic, Chromium, PCP, Polyaromatic Hydrocarbons, (PAHs), Dioxin	Soil	Cleanup method for soils contamination approved. RD/RA underway at site for soils.
Doane Lake Study Portland	STATE PRP	RI	75%	PNA, Volatile Organic Compounds (VOCs), metals, pesticides, phenols	Groundwater Soil Surface Water	DEQ has received final RI report and has requested additional information.
Dow Corning Corp. Springfield Plant Springfield	STATE PRP	PD RI	75% < 25%	1,1,1-Trichlorethane (1,1,1-TCA), 1,1-Dichlorethane (1,1-DCA), 1,1-Dichlorethylene (1-1-DCE), Perchlorethylene (PCE), Trichlorethylene (TCE)	Groundwater Soil	Negotiating consent order to conduct additional site investigations.

PROJECT NAME / LOCATION	LEAD AND FUND SOURCE	CURRENT PHASES	% COMPLETED	CONTAMINANTS OF CONCERN	MEDIA CONTAMINATED	PROJECT ACTIVITY STATUS
East Multnomah Co. Area Troutdale	STATE STATE	RI	50%	DCE, PCE, TCA, TCE,	Groundwater Soil Surface Water	Regional water level measurements taken monthly to determine extent of contamination. Extensive investigation underway.
Elixir Industries Aurora	STATE PRP	PD RI	75% < 25%	1,1,2,2-tetrachloroethane, toluene	Septic System	Contamination in septic system and on adjacent property is under investigation.
Forrest Paint Co. Eugene	STATE PRP	RD RA	< 25% < 25%	Methyl Ethyl Ketone (MEK), ethyl benzene, xylene	Groundwater Soil	Groundwater extraction and treatment and removal of contaminated perched water from underneath select buildings at the site is underway.
Gould, Inc./N.L. Portland	FED PRP	RD	75%	Cadmium (Cd), Lead (Pb), Zinc (Zn)	Groundwater Soil Surface Water	Cleanup design completed. EPA has received responses from majority of the PRP's regarding RA settlement. EPA must now determine if offers are acceptable and if negotiations are appropriate.
Guilds Lake Site Portland	STATE PRP	RD	< 25%	Lead	Soil	Cleanup method consists of an asphalt-concrete cap and institutional controls (deed restrictions).
Hilyard Landfill Eugene	STATE PRP	PD	< 25%	Undetermined	Undetermined	Draft RI/FS consent agreement with city pending.
Illinois Tool Works, Inc. Milwaukie	STATE PRP	RI	< 25%	Trichloroethene	Groundwater Soil	Analyses of soil and groundwater under way. Analytical results will determine if additional samples will be needed.
J. H. Baxter & Co. Eugene	STATE PRP	RI	25%	Arsenic (As), Copper (Cu), Chromium (Cr), Pentachloro-phenol (PCP), Creosote	Groundwater Soil	Groundwater sampling and well installations to determine extent of migration off-site of wood preservatives is being conducted.
Joseph Forest Products Joseph	FED MIXED	RI FS	50% < 25%	Arsenic, Chromium, Copper	Groundwater Soil	Efforts are underway to conduct interim cleanup measures for highly contaminated soils. EPA's removal program began soil excavation activities and interim measures were completed.
L. D. McFarland Eugene	STATE PRP	RI	75%	Polyaromatic Hydrocarbons (PAH), Pentachlorophenol (PCP)	Groundwater Soil	Final RI report and endangerment assessment completed.
Lakewood Estates Aurora	STATE STATE	PD PM RI	75% 50% 25%	Organics	Groundwater	Treatment system for main water supply well planned for completion by early 1992. Final field investigation report will be submitted in December. (See Elixir Industries project).
Laurence-David, Inc. Eugene	STATE PRP	RI	50%	Chlorinated solvents, non-chlorinated solvents	Groundwater Soil	RI/FS work plan and beneficial use survey are being prepared.

PROJECT NAME / LOCATION	LEAD AND FUND SOURCE	CURRENT PHASES % COMPLETED	CONTAMINANTS OF CONCERN	MEDIA CONTAMINATED	PROJECT ACTIVITY STATUS
Malarkey Roofing Co. Portland	STATE PRP	Closeout	Lead, Zinc	Soil	Cleanup completed. Deed restrictions and long-term monitoring in effect.
Martin Marietta Reduction Facility The Dalles	FED PRP	RA 75%	Cyanide, Polyaromatic Hydrocarbons, sulfates, fluorine	Groundwater Soil	Cleanup work to be completed including well abandonment, institutional controls, and report preparation.
McCormick & Baxter Creosoting Portland	STATE STATE	RI 50% FS < 25%	Metals, Polyaromatic Hydrocarbons, Pentachlorophenol, creosote	Air, Soil Groundwater Sediment Surface Water	Plant closed. Portions of RI postponed to allow emergency actions to stabilize site.
Milwaukie Public Water Supply Milwaukie	STATE STATE	PD < 25% RI < 25%	Trichloroethylene, chlorinated solvents	Groundwater	Work plan for hydrogeologic investigation submitted to DEQ. Preliminary assessments of area industries underway to determine sources.
Northwest Pipe and Casing Clackamas	STATE MIXED	PD 75% RI < 25%	Polychlorinated biphenyls, Polynuclear aromatics, Volatile organic carbons	Groundwater Soil Surface Water	Security fencing has been completed and continues to be maintained by current owner. Ranking and NPL status from EPA listing site inspection results underway.
Nu Way Oil Co. Portland	STATE STATE	RI < 25%	Polychlorinated biphenyls, Volatile organic carbons, Heavy metals, petroleum Hydrocarbons	Groundwater Soil	Project on hold pending orphan site status.
Pacific Detroit Diesel Allison Springfield	STATE PRP	RI < 25%	Trichlorethane, total petroleum hydrocarbons, chlorobenzene	Groundwater Soil	Work plan for site investigation has been submitted.
Pendleton Grain Growers Hermiston	STATE PRP	RD < 25% RA < 25%	2,4-D, Chlordane, alachlor, atrazine	Soil	Cleanup plans have been approved. Construction completed on cap.
Portable Equipment Salvage Company Clackamas	STATE PRP	FS 75%	Copper, Polychlorinated biphenyls, Lead, Dioxin	Soil	The cleanup method was approved by the director on 11/22/91. Excavation and off-site disposal of contaminated soils to be initiated.
Portland General Electric Station L - Op Unit 3 Portland	STATE PRP	RI 75%	Polyaromatic Hydrocarbons, Polychlorinated Biphenyls, Metals	Groundwater Soil	Investigation plans due in the near future. Soil removal underway.
Rhone-Poulenc, Inc. Phase 1 Area Portland	STATE PRP	RI 75% FS 25%	Pesticides, Volatile organic carbons, chlorinated benzenes, chlorinated phenolics, metals	Groundwater Soil Surface Water	First phase of sampling completed. Report received and under review by DEQ.
Schnitzer Investment Corporation-Moody Portland	STATE PRP	RI 75% FS 25%	Cadmium, polychlorinated biphenyls, Lead, Volatile organic carbons, pesticides	Soil	Awaiting work plan & schedule for groundwater work. Interim report on technology screening to be submitted in December.

PROJECT NAME / LOCATION	LEAD AND FUND SOURCE	CURRENT PHASES % COMPLETED		CONTAMINANTS OF CONCERN	MEDIA CONTAMINATED	PROJECT ACTIVITY STATUS
Swift Adhesives Portland	STATE PRP	RI FS	50% < 25%	1,1,-Trichloroethane, 1,1-Dichloroethylene, Trichoroethylene, 1,1-Dichoroethane	Groundwater Soil	Quarterly groundwater monitoring completed. Samples collected from off-site wells. Awaiting data report.
Teledyne Wah Chang Albany	FED PRP	RI FS	75% 25%	Polychlorinated biphenyls, radionuclides, metals solvents	Groundwater Soil Surface Water	Field work of Phase II of remedial investigation completed.
Teledyne Wah Chang Sludge Ponds Albany	FED PRP	RD RA	75% 75%	Metals, solvents, radionuclides	Sludges	Sludge removal and landfilling completed.
Umatilla Army Depot Activity Umatilla	FED PRP	RI FS	75% 50%	Explosives, metals, pesticides	Groundwater Soil	Final draft risk assessment for lagoon soils received and additional lagoon soils sampling to take place. Portions of overall site RI report received.
Union Pacific Railroad The Dalles	STATE PRP	RI FS	75% 50%	Metals, Pentachlorophenol, Volatile organic carbons, Creosote	Groundwater Soil	First Draft RI report received. Additional sampling in Riverfront Park completed. Meeting held to discuss draft RI report comments.
United Chrome Products, Inc. Corvallis	FED MIXED	RA OM	< 25% < 25%	Chromium (VI)	Groundwater Soil	Operation and maintenance of groundwater treatment plant ongoing. Cost recovery negotiations with city underway.
Willamette Oaks Building Portland	STATE PRP	RI	75%	PCE, Trichloroethylene, Long-chain hydrocarbons	Groundwater Soil	Work plan for RI has been submitted.

Key:
FS - Feasibility Study
OM - Operation and Maintenance
PD - Pre-Remedial Measures
PM - Removal
PRP - Potentially Responsible Party
RA - Remedial Action
RD - Remedial Design
RI - Remedial Investigation

APPENDIX D: VOLUNTARY CLEANUP SECTION
PROJECT STATUS

PROJECT NAME / LOCATION	LEAD AND FUND SOURCE	CURRENT PHASES	% COMPLETED	CONTAMINANTS OF CONCERN	MEDIA CONTAMINATED	PROJECT ACTIVITY STATUS
3M Medical Imaging Systems White City	STATE PRP	RI	< 25%	Volatile organic carbons (VOC)	Groundwater Soil	VCS approved Phase I Site Investigation and Phase II Investigation Work Plan. Groundwater monitoring wells installed.
Ace/Pacific Portland	STATE PRP	PD	50%	Undetermined	Undetermined	VCS has approved the site investigation work plan. Initial field work is being conducted.
Bend Millwork Systems Bend #323	STATE PRP	SI	< 25%	Chloropyriphos, Pentachlorophenol	Soil	VCS has overseen preliminary work to characterize extent of PCP contamination.
Catellus Development Corp. Milwaukie	STATE PRP	RI	< 25%	Creosote	Soil Groundwater	DEQ conducted site visit and requested installation of fence in July 1991. Consent Order for further investigation between DEQ and Catellus being drafted.
Coos - Curry Electric Coop. Coquille	STATE PRP	PD	25%	Undetermined	Undetermined	VCS requested additional information on work conducted to date in order to complete the file review and provide recommendations. All the information has not yet been provided.
Dobyns-Hart Warehouse Pendleton	STATE PRP	PM	75%	Pesticides	Fire Debris Soil	Investigation and cleanup proceeding as a result of a pesticide warehouse fire. Fire debris has been disposed of.
Durametal Corporation Tualatin	STATE PRP	PD	75%	Petroleum, hydrocarbons, Phenol, Polychlorinated biphenyls (PCB's), Metals	Groundwater Soil	Consent Agreement covering additional work is being drafted by VCS. Potential Responsible Party (PRP) is preparing plans for additional work.
GNB - Beaverton Beaverton	STATE PRP	RI	< 25%	Lead (Pb)	Soil	VCS approved plans to remove lead-contaminated soils at loading dock construction zone.
GNB - Salem Salem	STATE PRP	PD	< 25%	Lead Oxide, Petroleum	Soil	Preliminary assessment is currently being prepared.
Gunderson, Inc. Portland	STATE PRP	PD	< 25%	Undetermined	Undetermined	Initial site characterization report to be reviewed in early 1992.
Infiniti-Beaverton Honda Beaverton	STATE PRP	PD	< 25%	Chlorinated solvents, gasoline	Groundwater Soil	The proposed conceptual scope of work did not include the Honda UST area. VCS has advised that this area must be included in the investigation.
National Guard Armory Salem	STATE PRP	PD	< 25%	TPH, halogenated compounds, metals	Groundwater Soil	Consultant to submit report describing previous work results. VCS to prepare letter agreement and begin review upon receipt of report.

PROJECT NAME / LOCATION	LEAD AND FUND SOURCE	CURRENT PHASES % COMPLETED		CONTAMINANTS OF CONCERN	MEDIA CONTAMINATED	PROJECT ACTIVITY STATUS
North Marine Drive Portland	STATE PRP	PD	< 25%	TPH, PCB, pesticides, solvents	Groundwater Soil	Project review plans to be finalized with city by mid-December.
Northwest Aviation Independence	STATE PRP	PD	50%	Undetermined	Undetermined	State contractor task order is being developed to begin investigation.
Pendleton Airport Business Industries Park Pendleton #779	STATE PRP	RA	< 25%	Metals, Petroleum, Hydrocarbons, Volatile organics	Soil	Cleanup of the east and west foundation is proceeding.
Riedel Compost Facility Portland	STATE PRP	PD	75%	Hydrocarbons, Petroleum	Soil	Site investigation has been conducted and partial cleanup has been performed.
Riverfront Research Park Eugene	STATE PPD	PD	25%	Undetermined	Undetermined	Work conducted to date on the remaining three parcels is currently under VCS review.
South Waterfront Redevelopment - 1 Portland	STATE PRP	RI	50%	Barium, Chromium, Copper, PCB, Lead, Zinc, Petroleum Hydrocarbons	Groundwater Soil	Steam plant demolition has been completed. Screen chamber and intake pipe have been sealed to prevent discharge of contaminated water and sediment to river. Progress on RI pending VCS receipt of site planning document.
South Waterfront Redevelopment - II Portland	STATE PRP	RA	50%	Metals, PCB, Volatile organics	Groundwater Soil	Completing construction activities for cleanup of portion of Parcel II.
Throwaway Bit Corporation Portland	STATE PRP	SI	< 25%	1,1 dichloroethane, 1,1,1-trichlorethane, Petroleum Hydrocarbons. Tetra-Chloroethene	Soil	Soil sampling occurred in August. The results are currently being revised.
Time Oil Company Portland	STATE PRP	PD	< 25%	Undetermined	Undetermined	Reports summarizing previous work have been received.

Key:
FS - Feasibility Study
OM - Operation and Maintenance
PD - Pre-Remedial Measures
PM - Removal
RA - Remedial Action
RD - Remedial Design
RI - Remedial Investigation
SI - Site Investigation

State of Oregon

DEPARTMENT OF ENVIRONMENTAL QUALITY

REQUEST FOR PROPOSALS
FOR
TECHNICAL ADVICE ON MINING RULES

February 7, 1992

TABLE OF CONTENTS

ATTACHMENTS

I. GENERAL INFORMATION

A. Introduction

The Environmental Quality Commission (Commission) is considering adoption of rules to require mining operations using cyanide or other toxic chemicals to protect soils, groundwater, surface waters, and wildlife from contamination or harm by process solutions and waste waters. The protective measures required by the proposed rules include cyanide recovery and re-use, chemical detoxification of cyanide residues, and extensive lining and engineered closure of waste disposal facilities.

During the public participation process on the proposed rules, mining companies and associations have argued that some of the requirements are unnecessarily stringent or are unproven or are unavailable. Environmental protection organizations have argued that the proposed rules may not be adequately protective in certain respects.

The Commission has studied the proposed rules and the public comments received, and has extensively debated the policy issues associated with the rule proposal. Prior to final action to adopt proposed rules, the Commission has elected to seek an evaluation and advice on specific technical questions from an independent, knowledgeable contractor.

The entire record of the rulemaking proceeding is available for inspection as background material for this proposal request. The record can be reviewed in the headquarters office of the Department of Environmental Quality (DEQ or Department or Agency). A full copy of the draft proposed rules being considered by the Environmental Quality Commission is attached as Attachment B.

B. Proposed Project Timeline

Date	Action
February 7, 1992	Mail Request for Proposal
February 28, 1992	Information Exchange (to take place only between mailing of the RFP and this date)
March 10, 1992	Written Proposals Due
March 20, 1992	Selection of Contractor (written notice of award to successful proposer)

March 30, 1992	Protest Period (protests must be filed by this date)
April 10, 1992	Execution of Standard State Personal Service Contract (target date)
Within 15 calendar days of Contract Execution:	Participate in Public Meeting.
Within 45 calendar days of Contract Execution:	Draft Written Report submitted to DEQ.
Within 15 calendar days of Receipt of Comments from DEQ:	Submit Final Report.

C. Services Requested

DEQ is requesting proposals from individuals acting as independent contractors (see attached Independent Contractor Certification Statement form), firms, joint ventures or teams for providing advice to the Commission on technical issues related to proposed rules for mining operations using chemicals to extract metals from ores. Companies interested in pooling their resources through contractor/subcontractor, joint ventures or team arrangements can do so provided that one entity is identified which ultimately will bear total contract responsibility.

D. Scope of Work

Three policies have been established by the Commission. The selected contractor shall evaluate and address specific technical questions surrounding these policies. The Commission is not asking for alternative policy recommendations or evaluation of economic issues. The task of the contractor is to answer the questions posed in the following paragraphs based on their knowledge, expertise, experience, review of current published technical data, and technical evaluation of the issues.

1. Questions on Liners, Leak Detection, and Leak Collection Systems

a. Statement of Policy:

The Commission establishes as policy that a liner, leak detection and leak collection system are necessary to assure that any leak will be detected before toxic materials escape from the liner system and are released to the environment. These systems must assure that if a leak is found, sufficient time is available to allow for the repair of the leak and clean up of any leaked material before there is a release to the environment. Natural

conditions, such as depth to groundwater or net rainfall, shall be considered as additional protection but not in lieu of the protection required by the required engineered protection.

NOTE: Definition of "environment" or use of defining qualifiers is central to the issue. The Commission considers that the environment begins at the bottom of the last liner.

b. Issue:

In the proposed rule contained in 340-43-065(4), the requirements for heap leach pad liners are as follows:

(4) The heap leach pad liner system shall be of triple liner construction with between liner leak detection consisting of:

(a) An engineered, stable, low permeability soil/clay bottom liner (maximum coefficient of permeability of 10^{-7} cm/sec) with a minimum thickness of 36 inches;

(b) Continuous flexible membrane middle and top liners of suitable synthetic material separated by a minimum of 12 inches of permeable material (minimum permeability of 10^{-2} cm/sec);

(c) A leak detection system between the synthetic liners capable of detecting leakage of 400 gallons/day acre within ten weeks of leak initiation.

As opposed to this liner system, the Oregon Mining Council has proposed a liner characterized either as a composite liner or as a double liner and generally described as follows:

Composite Liner -- a composite liner system construction with between liner leak detection consisting of:

- An engineered, stable, low-permeability soil/clay bottom liner (maximum coefficient of permeaability of 10^{-7} cm/sec) with a minimum thickness of 12 inches;

- Continuous flexible membrane top liner of suitable synthetic material;

- A geotextile layer between the liner materials for leak detection. The leak detection and recovery system would also include collector pipes tied to the geotextile, spaced at appropriate intervals to achieve the 10-week leak initiation detection performance standard.

c. Question:

Will either or both liner systems meet the stated policy objective of the Commission?

d. Method to Answer or Address Question:

(1) Are each of the various liner systems proposed technically feasible?

(2) Will each of the various liner systems meet the stated Commission policy?

(3) For those liner systems which will meet the stated Commission policy, what level of certainty for achieving this policy do you assign to each system?

(4) Are there other liner systems which will achieve this policy and what level of certainty for achieving this policy do you assign to each?

The consultant is also asked to provide a simple comparison of typical costs for installation of the various liner configurations.

2. Questions on Tailings Treatment to Reduce the Potential for Release of Toxics

a. Statement of Policy:

The Commission establishes as policy that the toxicity and potential for long-term cyanide and toxic metals release from mill tailings should be reduced to the greatest degree practicable through tailings treatment.

b. Issue:

The proposed rules in 340-43-070(1) state the following:

(1) Mill tailings shall be treated by cyanide removal and re-use prior to disposal to reduce the amount of cyanide introduced into the tailings pond. Chemical oxidation or other means shall be additionally used, if necessary, prior to disposal to reduce the WAD cyanide level in the

liquid fraction of the tailings. The permittee shall conduct laboratory column tests on mill tailings to determine the lowest practicable concentration to which the WAD cyanide (weak-acid dissociable cyanide as measured by ASTM Method D2036-82 C) can be reduced. In no event, shall the permitted WAD cyanide concentration in the liquid fraction of the tailings be greater than 30 ppm.

The rules do not require removal of potentially toxic metals from tailings prior to placement in the tailings pond. The rules do require steps to control acid formation in the tailings pond and require covering upon closure with a composite cover designed to prevent water and air infiltration.

c. Question:

Do the requirements for **removal** and **reuse** of cyanide materially reduce toxicity and potential for long-term cyanide and toxic metals release from mill tailings?

d. Method to Answer or Address Question:

(1) Are **removal** and **reuse** technically feasible?

Potential factors for consideration include:

- Is the process technically defined and understood?
- Has the process been demonstrated in practical application, and if so, where?
- Are engineering firms available to design and oversee construction?
- Are materials and equipment available to construct?

(2) Do **removal** and **reuse** (evaluated separately) materially reduce the toxicity and potential for long-term cyanide and toxic metals release from mill tailings?

(3) What is the level of certainty you give to the answers provided above?

(4) Are there other tailings treatment technologies which will equally, or more effectively achieve the policy of the Commission?

3. Questions on Closure of the Heap Leach and Tailings Facilities

a. Statement of Policy:

The Commission establishes as policy that the closure of the heap leach and tailings disposal facilities will prevent release to the environment of toxic chemicals contained in the facility.

b. Issue:

Rule 340-43-080(4)(a), as proposed, requires that the heap shall be "... detoxified over a suitable period of time prior to closure, using rinse/rest cycles of rinsing and chemical oxidation, if necessary. The WAD cyanide concentration in the rinsate shall be no greater than 0.2 ppm."

In 340-43-080(4)(b), the proposed rules require that the closure of the heap shall be "... by covering the heap with a cover designed to prevent water and air infiltration."

In 340-43-080(5), the proposed rules state that "The tailings disposal facility shall be closed by covering with a composite cover designed to prevent water and air infiltration and be environmentally stable for an indefinite period of time."

c. Question:

Do the requirements of detoxification (cyanide removal by rinsing) of the heap and covering of the heap and tailings facility to exclude air and water materially reduce the likelihood of any release to the environment of toxic chemicals and metals contained in the heap over the long term?

d. Method to Answer or Address Question:

(1) Are detoxification and covering (as prescribed in this rule) technically feasible?

(2) Do detoxification and covering (evaluated separately and together) materially reduce the likelihood of a release of toxic chemicals and metals to the environment?

(3) What is the level of certainty you give to the answers provided above?

(4) Are there other technologies which can equally or more effectively achieve the policy of the Commission?

4. Public Meeting

In addition to answering the above questions, the selected contractor will be expected to participate in a meeting with persons who have expressed an interest in the rulemaking proceeding by presenting testimony at public hearings. The purpose of this meeting will be to:

- Inform the interested public on the contractors approach and schedule for addressing the questions posed.

- Identifying any anticipated need to contact persons who presented testimony in the proceeding for additional information to assist in addressing the questions posed. The Commission expects an open process where all interested parties will have the opportunity to attend the meeting.

This meeting will be scheduled at a time and place mutually agreeable to DEQ and the selected contractor. DEQ will arrange the meeting and provide notice to interested parties.

5. Written Report

A written report shall be submitted as the final product of this contract. The report shall state the question being answered, summarize the methodologies for evaluating and responding to the question, and clearly state the results of the evaluation and answer given.

A draft report shall be submitted to the Department for review. The Department will provide written comments to the contractor. The contractor will then complete the report and file a single master copy, ready for reproduction, with the Department. The report shall become the property of the Department. The Department may copy and distribute the report as it deems appropriate.

E. Type of Contract

DEQ anticipates awarding a fixed price contract. The State of Oregon standard personal service contract will be signed.

DEQ will, in its sole discretion, reserve the right to renew the contract.

F. Payment Procedure

Payment schedules for any contract entered into as a result of the RFP will be mutually agreed upon by DEQ and the prime contractor.

G. Managing Conflict of Interest

Proposing contractors (including subcontractors) shall disclose any potential conflicts of interest. A potential conflict of interest includes, but is not limited to, any involvement during the past five years with mining companies, mining industry groups, or environmental groups active in working on mining regulations and permitting or holding any interest in property in Oregon that may have mineral development potential. During the proposal development period and, if awarded the contract, during the contract period, the selected contractor shall maintain an arm's length relationship with all parties who are or could be interested in the rule making procedure before the Commission. The selected contractor is required to disclose all contacts, either to or by them, during the proposal process and the life of the contract.

II. INSTRUCTIONS FOR PREPARATION OF PROPOSALS

A. General Instructions

Each proposer's submittal shall be prepared on standard 8 1/2-inch by 11-inch paper and limited to 50 pages, exclusive of resumes. Charts and spread sheets may be larger. Standard brochures are not to be included in the proposal. To be considered responsive, the proposal must be organized in the same order that the information is requested in Section III and clearly identified with appropriate headings. There should be no unnecessary attachments, enclosures, or exhibits.

B. Questions regarding the RFP may be directed to:

Department of Environmental Quality
Attention: Harold Sawyer, Inter/Intra Program Coordinator
811 S. W. Sixth Avenue
Portland, OR 97204
Telephone: (503) 229-5776

Questions will be received between the hours of 8:00 a.m. and 5:00 p.m. through February 28, 1992.

C. Number of Proposals to Submit, Deadline, Mail and Hand Delivery Addresses

Seven copies of the proposal must be submitted in a sealed package prominently marked: **"Confidential: Proposal for Technical Advice on Mining Rules"**. Proposals must be received by Mr. Sawyer at DEQ Headquarters, Portland, Oregon, no later that 4:00 p.m., Pacific Standard Time, March 10, 1992. Proposals will be time stamped upon arrival at DEQ. Telegraphic, telephonic facsimile, or telephone proposals will not be accepted. For hand or courier deliveries, the street address is The Executive Building, 811 SW Sixth Ave., 6th Floor, Portland, Oregon. The mailing address is:

State of Oregon
Department of Environmental Quality
Attention: Harold L. Sawyer (6th Floor)
811 SW Sixth Avenue
Portland, OR 97204

Any proposal or part thereof received after the designated time will not be considered.

The DEQ may reject any proposal not in compliance with all prescribed public bidding procedures and requirements, and may reject for good cause any or all bids upon a finding by the DEQ it is in the best interest to do so.

D. Changes in Proposals

Modification of proposals already received by DEQ may be made if they are received by DEQ prior to the scheduled deadline for proposal submission. All modifications must be made in writing over the signature of the proposer.

E. Public Disclosure of Information Contained in Proposals

Proposals received shall remain confidential until the written notice of award of the contract has been made to the successful proposer. Thereafter, all proposals submitted in response to this request shall be deemed public record as defined in ORS 192.410 (4). Any actual proposer to this request who is adversely affected or aggrieved by the Agency's award of the contract to another proposer shall have ten (10) calendar days from the date of the award to file a written protest to the notice of award. No protest shall be entertained that is submitted after this time period.

If the protest is not settled or resolved by mutual agreement, the Director of DEQ, or his designee, shall promptly issue a written decision on this protest.

In the event that a proposer desires to claim portions of its proposal as exempt from disclosure under the provisions of ORS 192.410 et seq., it is incumbent upon the proposer to identify those portions in the transmittal letter. The transmittal letter must identify the page and particular exception(s) from disclosure upon which it is making its claim. Each page claimed to exempt from disclosure must clearly be identified by the "CONFIDENTIAL" printed in bold print on the top of the page.

DEQ will consider a proposer's request(s) for exemption from disclosure; however, DEQ will make a decision predicated upon applicable laws. An assertion by a proposer that the entire proposal is exempt from disclosure will not be honored.

F. Incurring Costs

DEQ will not be liable for any costs associated with the preparation and presentation of a proposal submitted in response to this RFP.

III. CONTENTS OF PROPOSAL

The proposal shall address the information contained in the following paragraphs. The information shall be presented in the order presented below:

A. Description of Project Team.

This section shall include the following for the prime contractor and each subcontractor or team member: name, areas of expertise, and summary of proposed project roles and services to be provided in performance of this contract. Also, if applicable, include a brief history of the firm; size; financial background and capability.

Disclosure of potential conflicts of interest, must be made in this section. As described in Section G of Part I, a potential conflict of interest includes, but is not limited to, any involvement during the past five years with mining companies, mining industry groups, or environmental groups active in working on mining regulations and permitting or holding any interest in property in Oregon that may have mineral development potential. Proposing contractors shall clearly state: a) whether any such involvement produced a substantial portion of their income, and; b) their approach to assuring that results of this study would not be biased by any such prior involvement.

The name, address, and telephone number of one person to contact regarding the proposal shall be included.

MBE/WBE/ESB Participation:

The Department of Environmental Quality is committed to acting affirmatively to encourage and facilitate the participation of Emerging Small Businesses (ESB), Minority Business Enterprises (MBE), and Women Business Enterprises (WBE). All businesses which are to be counted as a minority, women, or emerging small business must be registered with the Office of Minority, Women's, and Emerging Small Business Enterprises. A list of firms may be obtained from that office by calling (503) 378-5651.

B. Description of Project Management Plan.

This section shall include the proposer's schedule and approach to responding to each of the questions listed in Section D of Part I. A description of project considerations and problems perceived by the proposer shall be identified. Communication methods within the proposer's project team and with the DEQ shall be discussed. Each proposer shall provide a list of proposed key personnel and their proposed office location during the contract period.

C. Description of Team Members Experience and Capabilities.

This section shall include relevant management and technical experience, and capabilities of the proposer and team members (firms). Briefly discuss your experience and capabilities in the following areas:

1. Regulatory Experience

   Provide a description of demonstrated project experience in dealing with interpretation and compliance with environmental laws and regulations.

2. Scientific/Technical Knowledge

   Provide a description of project experience which reflects knowledge and skills in the following scientific/technical areas. The proposal must address each area clearly and concisely.

   - Liner technology, including design, installation, and repair.
   - Chemical processing technology, including technology specifically related to cyanide destruction, recovery and reuse.

3. Project Experience

   Provide names, addresses, and telephone numbers of professional references from no more than three different projects for which key personnel proposed for work on this contract have also performed.

   The presentation of project experience in this section shall provide a clear description of the work involved. This description shall include a concise statement of prime and subcontractor roles and responsibilities on each of the projects listed. Each project described shall include references that can be checked by DEQ. All representative project descriptions provided shall include the month and year the project was completed, the location of the project, employing agency/firm, the name and telephone number of a knowledgeable contact person.

4. Personnel.

   Submit resumes for each person identified to perform under this contract.

D. Project Budget.

IV. EVALUATION OF PROPOSALS

Each proposal will be reviewed and evaluated on the basis of the criteria listed below. A committee consisting of Department staff and one or more advisors external to the Department will make a recommendation to the Director of the Department. The Director will make the final determination on contractor selection.

A. Proposer's organizational (team) framework and relationship between the prime and subcontractors are defined and appropriate.

B. Approach to planning, organizing and managing this project to meet scope objectives and schedules.

C. Experience and capabilities to perform all scientific and technical phases of requested activities.

D. Project experience and reference responses.

E. Adequacy and expertise of project management and technical staff.

F. Conciseness, quality, clarity and thoroughness of the written proposal.

G. The approach to managing potential conflict of interest.

H. Price

The Department reserves the right to conduct interviews with selected proposers prior to making a final selection.

DEQ reserves the right to reject any or all proposals and to award the contract to the firm or firms which in DEQ's sole and absolute judgment, will best serve the needs of the state.

2/7/92
1

INDEPENDENT CONTRACTOR CERTIFICATION STATEMENT *

State agency certifies the contracted work meets the following standards:

1. Contractor will provide labor and services free from direction and control, subject only to the accomplishment of specified results.
2. Contractor is responsible for obtaining all assumed business registrations or professional occupation licenses required by state or local law.
3. Contractor will furnish the tools or equipment necessary to do the work.
4. Contractor has the authority to hire and fire employees to perform the work.
5. Contractor will be paid on completion of the project or on the basis of a periodic retainer.

_____ _____

Agency Signature Date

Independent contractor certifies he/she meets the following standards as required by ORS chapters 316, 656, 657 and 670:

1. You filed federal and state income tax returns for the business for the previous year, if you performed labor or services as an independent contractor in the previous year.
2. You represent to the public that you are an independently established business by meeting four (4) or more of the following:

_____ A. You work primarily at a location separate from your residence, or work primarily in a specific portion of the residence, which portion is set aside as the location of the business.

_____ B. You have purchased commercial advertising, business cards, or have a trade association membership.

_____ C. You use a telephone listing and service separate from your personal residence listing and service.

_____ D. You perform labor or services only pursuant to written contracts.

_____ E. You perform labor or services for two or more different persons within a period of one year.

_____ F. You assume financial responsibility for defective workmanship or for service not provided as evidenced by the ownership of performance bond, warranties, errors and omission insurance or liability insurance relating to the labor or services to be provided.

Contractor Signature _____ Date _____

Entity _____

***Corporations are not required to complete this form.**

RULES PROPOSAL:

OREGON ADMINISTRATIVE RULES

CHAPTER 340

DIVISION 43

CHEMICAL MINING

OAR 340-43-065	Guidelines for Design, Construction, and Operation of Heap-Leach Facilities
OAR 340-43-070	Guidelines for Disposal of Mill Tailings
OAR 340-43-075	Guidelines for Disposal or Storage of Wasterock, Low-Grade Ore and Other Mined Materials
OAR 340-43-080	Guidelines for Heap-Leach and Tailings Disposal Facility Closure
OAR 340-43-085	Post-Closure Monitoring
OAR 340-43-090	Land Disposal of Wastewater
OAR 340-43-095	Guidelines for Open-Pit Closure

PURPOSE

340-43-005

The purpose of these rules and guidelines is to protect the quality of the environment and public health in Oregon by requiring application of "... all available and reasonable methods...", Oregon Revised Statutes (ORS) 468.710, for control of wastes and chemicals relative to design, construction, operation, and closure of mining operations which use cyanide or other toxic chemicals to extract metals or metal-bearing minerals from the ore and which produce wastes or wastewaters containing toxic materials.

DEFINITIONS

340-43-010

Unless the context requires otherwise, as used in this Division:

(1) "Chemical process mine" means a mining and processing operation for metal-bearing ores that uses chemicals to dissolve metals from ores.

(2) "Department" means the Department of Environmental Quality.

(3) "Guidelines" means this body of rules contained in 340-43-045 through 340-43-100.

(4) "Positive exclusion of wildlife" means the use of such devices as tanks, pipes, fences, netting, covers and heap-leach drip-irrigation emitters or covered emitters.

(5) "Tailings" means the spent ore resulting from the milling and chemical extraction process.

PERMIT REQUIRED

340-43-015

(1) A person proposing to construct a new chemical mining operation, commencing to operate an existing non-permitted operation, or proposing to substantially modify or expand an existing operation shall first apply for, and receive, a permit from the Department. The permit may be an NPDES (National Pollutant Discharge Elimination System) permit if there is a point-source discharge to surface waters or a WPCF (Water Pollution Control Facility) permit if there is no discharge. Consideration may be given to site-specific conditions such as climate, proximity to water, and type of wastes to establish the final permit type and requirements for the facility.

(2) The permit application shall comply with the requirements of OAR Chapter 340, Divisions 14 and 45 and be accompanied by a report that fully addresses the requirements of this Division .

PERMIT APPLICATION

340-43-020

(1) The permit application shall fully describe the existing site and environmental conditions, with an analysis of how the proposed operation will affect the site and its environment. The Department shall, at a minimum, require the information specified for the DOGAMI consolidated application under Section 13, Chapter 735, 1991 Oregon Laws. The Department will also use the information contained in NEPA (National Environmental Policy Act), EA (Environmental Assessment), or EIS (Environmental Impact Statement) documents, if they are required by the project, as partial fulfillment of the requirements of this paragraph.

(2) The permit application shall, in addition to the information described in Paragraph (1) above, include the following information, unless the information has been otherwise submitted:

(a) Climate/meteorology characterization, with supporting data;

(b) Soils characterization, with supporting data;

(c) Surface water hydrology study, with supporting data;

(d) Characterization of surface water and groundwater quality;

(e) Inventory of surface water and groundwater beneficial uses;

(f) Hydrogeologic characterization of groundwater, with supporting data;

(g) Geologic engineering, hazards and geotechnical study, with supporting data;

(h) Characterization of mine materials and wastes which include, for example, overburden, waste rock, stockpiled ore, leached ore and tailings. Characterization of mine materials and wastes shall include, but not be limited to the following:

(A) Chemical and mineral analysis related to toxicity;

(B) Determination of the potential for acid water formation;

(C) Determination of the potential for long-term leaching of toxic materials from the wastes;

(i) Characterization of wastewater (quantity and chemical and physical quality) produced by the operation;

(j) Assessment of the potential for acid-water formation from waste disposal facilities, low-grade ore stockpiles, waste rock piles and for surface water or groundwater accumulation in open pits that will remain after mining is ended.

(3) Data submitted by the permit applicant should be based on analysis of the actual materials, when possible, or may be based on estimates from knowledge of similar operations and professional judgment.

PLANS AND SPECIFICATIONS

340-43-025

(1) A person constructing or commencing to operate a chemical process mine or substantially modifying or expanding an existing chemical process mine shall first submit plans and specifications to the Department for construction, operation and maintenance of the facilities intended for treatment, control and disposal of wastes.

(2) The Department shall approve the plans, in writing, before construction of the facilities may be started. The plans shall address all applicable requirements of this Division and shall include, but not be limited to, the following:

(a) A description of the facilities to be constructed, including tanks, pipes and other storage and conveyance means for processing chemicals and solutions and wastewaters;

(b) A management plan for control of surface water;

(c) A management plan for treatment and disposal of excess wastewater, including provisions for reuse and wastewater minimization;

(d) A facility construction plan including, as applicable, the design of low-permeability soil barriers, the type of geosynthetics to be used and a description of their installation methods, the design of wastewater treatment facilities and processes, a quality assurance plan for applicable phases of construction and a listing of construction certification reports to be provided to the Department;

(e) A preliminary closure plan;

(f) A preliminary post-closure monitoring and maintenance plan;

(g) A spill containment and control plan.

DESIGN, CONSTRUCTION, OPERATION AND CLOSURE REQUIREMENTS

340-43-030

(1) All chemical process and waste disposal facilitiesand facilities for mixing, distribution, and application of chemicals associated with on-site mining operations; ore preparation and beneficiation facilities; and processed -ore

disposal facilities shall be designed, constructed, operated and closed in accordance with the guidelines contained in this Division.

(2) A groundwater monitoring plan shall be submitted to, and be approved by the Department. Monitoring wells shall be installed for detection of groundwater contamination as required by OAR Chapter 340, Division 40, unless the hydrogeology of the site or other technical information indicates that an adverse impact on groundwater quality is not likely to occur.

(3) Alternative methods of control of wastes may be acceptable if the permit applicant can demonstrate that the alternate methods will provide fully-equivalent environmental protection. The burden of proof of fully-equivalent protection lies with the permit applicant.

(4) The Department may, in accordance with a written compliance schedule, grant reasonable time for existing facilities to comply with these rules.

EXEMPTION FROM STATE PERMIT FOR HAZARDOUS WASTE TREATMENT OR DISPOSAL FACILITIES

340-43-035

(1) The state hazardous waste program requires a permit for the "treatment", "storage" or "disposal" of any "hazardous waste" as identified or listed in OAR Chapter 340, Division 101 from the Department, prior to the treatment and disposal of wastes. Permitting requirements can be found in OAR Chapter 340, Division 105, Hazardous Waste Management.

(2) However, any operation permitted under this Division, which would otherwise require the neutralization or treatment of hazardous waste and would require a permit pursuant to OAR Chapter 340, Division 105, shall be exempt from the requirement to obtain such hazardous waste treatment permit.

(3) All mined materials disposed of under this Division shall pass Oregon's hazardous waste rule criteria or they will be considered a state hazardous waste and must be disposed of accordingly.

GUIDELINES FOR THE DESIGN, CONSTRUCTION, OPERATION AND CLOSURE OF CHEMICAL MINING OPERATIONS

PURPOSE

340-43-040

(1) This Division establishes criteria for the design, construction, operation and closure of chemical mining operations and supplements the provisions of OAR 340-43-005 through OAR 340-43-035.

(2) Any disapproval of submitted plans or specifications, or imposition of requirements by the Department to improve existing facilities or their operation will be referenced when appropriate, to applicable guidelines or rules.

GENERAL PROVISIONS

340-43-045

(1) Facilities permitted under either a WPCF or NPDES permit shall not discharge wastewater or process solutions to surface water, groundwater or soils, except as expressly allowed by the permit.

(2) Facilities subject to these rules shall not be sited in 100-year floodplainsor wetlands. A buffer zone (a minimum of 200 feet wide) shall be established between waste disposal facilities and surface waters.

(3) All chemical conveyances (ditches, troughs, pipes, etc.) shall be equipped with secondary containment and leak detection means for preventing and detecting release of chemicals to surface water, groundwater or soils.

(4) Acid water accumulation in open pits resulting from the mining operation must be prevented by appropriate mining practices, by measures taken in the closure process, or be treated to control pH and toxicity, for the life of the pit.

(5) Construction of surface impoundment liner systems shall conform generally to the principles and practices described in EPA/600/2-88/052, Lining of Waste Containment and Other Impoundment Facilities, September 1988.

(6) The Department may require the permittee to hire a third-party contractor to perform the functions set forth below. Selection of the contractor shall be subject to Department approval.

(a) Review and evaluate the design and construction specifications of all mined-materials disposal facilities permitted under this Division for functional adequacy and conformance with Department requirements. The Department shall not approve construction of the disposal facilities until the design and construction specifications have been evaluated.

(b) Monitor the course of construction of all mined-materials disposal facilities for compliance with the approved design and construction specifications. The third-party contractor shall regularly document the progress of construction and the Department shall require the permittee to take corrective action if construction does not satisfactorily conform to the approved design and construction specifications.

CONTROL OF SURFACE WATER RUN-ON AND RUN-OFF

340-43-050

(1) Surface water run-on and run-off shall be controlled such that it will not endanger the facility or become contaminated by contact with process materials or loaded with sediment. The control systems shall be designed to accommodate a 100-year, 24-hour storm event, or any other defined climatic event that is more appropriate to the site, and be placed so as to allow for restoration of the natural drainage network, to the maximum extent practicable, upon facility closure.

(2) All mined materials shall be properly placed and protected from surface water and precipitation so as not to be eroded and contribute sediment to site stormwater run-off or to otherwise contaminate surface water.

PHYSICAL STABILITY OF RETAINING STRUCTURES AND EMPLACED MINE MATERIALS

340-43-055

(1) Permit applicants must demonstrate to the Department that the design of chemical processing facilities and waste disposal facilities is adequate to ensure the stability of all structural components of the facilities during operation, closure and post closure.

(2) Retaining structures, foundations and mine materials emplacements shall be designed by a qualified, registered professional and be constructed for long-term stability under anticipated loading and seismic conditions.

(3) Temporary structures and materials emplacements may, with written approval from the Department, be constructed to a lesser standard if it can be shown that they pose no, or minimal, threat to public safety or the environment.

PROTECTION OF WILDLIFE

340-43-060

(1) Wildlife shall be positively excluded from contact with chemical processing solutions and wastewaters containing chemicals.

(2) The Department may waive the positive exclusion requirement if the Oregon Department of Fish and Wildlife (ODF&W) certifies to the Department that the project is designed such that it will adequately protect wildlife.

GUIDELINES FOR DESIGN, CONSTRUCTION, AND OPERATION OF HEAP-LEACH FACILITIES

340-43-065

(1) This paragraph applies to heap-leach facilities using dedicated, or expanding, pads. Heap-leach facilities using on-off, reusable pads may require variations from these rules; they shall be approved on a case-by-case basis by the Department.

(2) The heap-leach facility (pad and associated ponds, pipes and tanks) shall be sized to prevent flooding of any of its components.

(3) TABLE 1 of this Division establishes minimum capacity-sizing criteria for the leach-pad and ponds. The pad and ponds may be designed to act separately or in conjunction with each other to obtain the required storage volumes. Other design criteria may be used, with Department approval, if local conditions warrant. The best available climatic data shall be used to confirm the critical design storm event and estimate the liquid levels in the system over a full seasonal cycle. The liquid mass balance may include provision for evaporation.

(4) The heap-leach pad liner system shall be of triple liner construction with between-liner leak detection consisting of:

(a) An engineered, stable, low permeability soil/clay bottom liner (maximum coefficient of permeability of 10^{-7} cm/sec) with a minimum thickness of 36 inches;

(b) Continuous flexible-membrane middle and top liners of suitable synthetic material separated by a minimum of 12 inches of permeable material (minimum permeability of 10^{-2} cm/sec);

(c) A leak-detection system between the synthetic liners capable of detecting leakage of 400 gallons/day-acre within ten weeks of leak initiation.

(5) The processing-chemical pond liners shall be of triple liner construction with between-liner leak detection consisting of:

(a) An engineered, stable, low permeability soil/clay bottom liner (maximum permeability of 10^{-7} cm/sec) with a minimum thickness of 36 inches;

(b) Continuous flexible-membrane middle and top liners of suitable synthetic material separated by a permeable material (minimum coefficient of permeability of 10^{-2} cm/sec);

(c) A leak detection system between the synthetic liners capable of detecting leakage of 400 gallons/day-acre, within ten weeks of leak initiation.

(6) Emergency ponds may be constructed as an alternative to larger pregnant and barren ponds. The emergency pond may be constructed to a lesser standard, with the limitation that it is to be used only infrequently and for short periods of time. The Department will specify reporting and use limitations for the ponds in the permit. A between-liner leak detection system is not required for the emergency pond.

(7) The emergency-pond liner shall be of composite construction consisting of:

(a) An engineered, stable, low permeability soil/clay bottom liner (maximum permeability of 10^{-6} cm/sec) with a minimum thickness of 12 inches, and

(b) A single flexible-membrane synthetic top liner of suitable material.

(6) The heap-leach pad shall be provided with a process chemical collection system above the upper-most liner that will prevent an accumulation of process chemical within the heap greater than 24 inches in depth.

(7) The permittee shall prepare a written operating plan for safe temporary shut-down of the heap-leach facility and train employees in its implementation.

(8) The permittee shall respond to leakage collected by the heap-leach and processing-chemical storage pond leak-collection systems according to the process defined in TABLE 2.

(9) The permittee shall determine the acid-generating potential of the spent ore by acid\base accounting and other appropriate static and dynamic laboratory tests. If the spent ore is shown to be potentially acid generating under the conditions expected in the heap at closure, the permittee shall submit a plan for acid correction for Department approval prior to loading the heap.

GUIDELINES FOR DISPOSAL OF MILL TAILINGS

340-43-070

(1) Mill tailings shall be treated by cyanide removal and re-use prior to disposal to reduce the amount of cyanide introduced into the tailings pond. Chemical oxidation or other means shall be additionally used, if necessary, prior to disposal to reduce the WAD cyanide level in the liquid fraction of the tailings. The permittee shall conduct laboratory column tests on mill tailings to determine the lowest practicable concentration to which the WAD cyanide (weak-acid dissociable cyanide as measured by ASTM Method D2036-82 C) can be reduced. In no event, shall the permitted WAD cyanide concentration in the liquid fraction of the tailings be greater than 30 ppm.

(2) (Deleted)

(3) The permittee shall determine the potential for acid-water formation from the tailings by means of acid-base accounting and other suitable laboratory static and dynamic tests. If acid formation can occur, basic materials shall be added to the tailings in the amount of three (3) times the acid formation potential or to give a net neutralization potential of at least 20 tons of $CaCO_3$ per 1000 tons of tailings, whichever is greater, before placing tailings in the disposal facility.

(4) The disposal facility shall be lined with a composite double liner consisting of a flexible-membrane synthetic top liner in tight contact with an engineered,

stable, soil/clay bottom liner (maximum coefficient of permeability of 10^{-7} cm/sec) having a minimum thickness of 36 inches.

Construction of the liner shall generally follow the principles and practices contained in EPA/600/2-88/052, "Lining of Waste Containment and Other Impoundment Facilities, September, 1988.

(5) The disposal facility shall be provided with a leachate collection system above the liner suitable for monitoring, collecting and treating potential acid drainage.

GUIDELINES FOR DISPOSAL OR STORAGE OF WASTEROCK, LOW-GRADE ORE AND OTHER MINED MATERIALS

340-43-075

The permittee shall determine the acid-producing and metals-release potential of the wasterock, low-grade ore or other mined materials by acid/base accounting and other appropriate static and dynamic laboratory tests. If the mined materials are shown to be potentially acid forming, or capable of releasing toxic metals, the permittee shall submit a plan for correction and disposal for Department approval prior to permanently placing the materials.

GUIDELINES FOR HEAP-LEACH AND TAILINGS DISPOSAL FACILITY CLOSURE

340-43-080

(1) The waste disposal facilities shall be closed under these rules in conjunction with the reclamation requirements of DOGAMI (Oregon Department of Geology and Mineral Industries).

(2) An up-dated closure plan and post-closure monitoring and maintenance plan shall be submitted to the Department by the permittee at least 180 days prior to beginning closure operations or making any substantial changes to the operation. The closure plan must be compatible with DOGAMI's reclamation plan and may be part of it.

(3) Chemical conveyances (ditches, troughs, pipes, etc.) not necessary for post-closure monitoring shall be removed. The secondary containment systems shall be checked before closure for process-chemical contamination, and contaminated soil or other materials, if any, shall be removed to an acceptable disposal facility.

(4) Closure of the heap-leach facility.

(a) The heap shall be detoxified over a suitable period of time prior to closure, using rinse/rest cycles of rinsing and chemical oxidation, if necessary. The WAD cyanide concentration in the rinsate shall be no greater than 0.2 ppm.

(b) Following detoxification as defined in (a) above, the heap shall be closed in place on the pad by covering the heap with a cover designed to prevent water and air infiltration. The cover should consist, at a minimum, of a low-permeability layer and suitable drainage and soil layers to prevent erosion and damage by animals and to sustain vegetation growth, in accordance with DOGAMI's reclamation rules.

(c) The ponds associated with the heap shall be closed by folding in the synthetic liners and filling and contouring the pits with inert material. Residual sludge may be disposed of in one of the on-site waste disposal facilities, provided it meets the criteria for such wastes in these guidelines. The process chemical collection system of the heap shall be maintained in operative condition so that it can be used to monitor the amount and quality of infiltrated water, if any, draining from the heap.

(5) The tailings disposal facility shall be closed by covering with a composite cover designed to prevent water and air infiltration and be environmentally stable for an indefinite period of time. Maximum effort shall be made to isolate the tailings from the environment. Construction of the cover shall generally follow the principles and practices contained in EPA/530-SW-89-047, Technical Guidance Document -- Final Covers on Hazardous Waste Landfills and Surface Impoundments.

POST-CLOSURE MONITORING

340-43-085

(1) The Department may continue its permit in force for thirty (30) years after closure of the operation and will include permit requirements for periodic monitoring to determine if release of pollutants is occurring.

(2) Monitoring data will be reviewed regularly by the Department to determine the effectiveness of closure of the disposal facilities. The Department will consult with DOGAMI on release of security funds that would otherwise be needed to correct problems resulting from ineffective closure.

LAND DISPOSAL OF WASTEWATER

340-43-090

(1) To qualify for land disposal of excess wastewater, the permit applicant shall demonstrate to the Department that the process has been designed to minimize the amount of excess wastewater that is produced, through use of water-efficient processes, wastewater treatment and reuse, and reduction by natural evaporation. Excess wastewater that must be released shall be treated and disposed of to land under the conditions specified in the permit.

(2) A disposal plan shall be submitted as part of the permit application that, at a minimum, includes:

(a) Wastewater quantity and quality characterization;

(b) Soils characterization and suitability analysis;

(c) Drainage and run-off characteristics of the site relative to land application of wastewater;

(d) Proximity of the disposal site to groundwater and surface water and potential impact;

(e) Wastewater application schedule and water balance;

(f) Disposal site assimilative capacity determination;

(g) Soils, surface water and groundwater monitoring plan;

(h) Potential impact on wildlife or sensitive plant species.

(3) The Department will evaluate the disposal plan and set site-specific permit conditions for the wastewater discharge.

GUIDELINES FOR OPEN-PIT CLOSURE

340-43-095

(1) Open pits that will be left as a result of the mining operation shall be assessed prior to, and following, mining operations for the potential to contaminate

water to the extent that it might not meet water-quality standards due to build-up of acid or toxic metals.

(2) If the Department finds that the potential for water accumulation in the pit(s) exists, the permit applicant shall submit a closure plan for the pit that will address contamination prevention and possible remedial treatment of the water. The closure plan shall, at a minimum, examine the following alternatives:

(a) Avoidance, during mining, of acid-generating materials that can be left in place, rather than being exposed to oxidation and weathering;

(b) Removal from the pit and disposal, during or after the mining operation, of residual acid-generating materials that would otherwise be left exposed to oxidation and weathering;

(c) Protective capping in-situ of residual acid-generating materials;

(d) Treatment methods for correcting acidity and toxicity of accumulated water;

(e) Installation of an impermeable liner under ponded water to prevent groundwater contamination;

(f) Backfilling of the pit(s) above the water table to reduce oxidation of residual acid-generating materials.

TABLE 1

Heap-Leach Liquid Storage Criteria

Component	Pregnant-Solution Pond	Barren-Solution Pond
Operating Volume	Minimum necessary to maintain recirculation	Minimum necessary to maintain recirculation
Operational Surge	Anticipated draindown and rinse volume	Anticipated draindown and rinse volume
Climatic Surge	100-yr, 24-hr storm plus 10-yr snowmelt	100-yr, 24-hr storm plus 10-yr snowmelt
Safety Factor	2-ft dry freeboard	2-ft dry freeboard

TABLE 2

Required Responses to Leakage Detected from the Leach Pad

Leakage Category	Response
Zero leakage to 200 gal/day-acre	Notify the Department; increase pumping and monitoring
Leakage from 200 gal/day-acre to 400 gal/day-acre	Change operating practices to reduce leakage
Leakage in excess of 400 gal/day-acre	Repair leaks under Department schedule.

TED CALOURI
WASHINGTON COUNTY
REPLY TO ADDRESS INDICATED:
☐ House of Representatives
Salem, Oregon 97310
☐ 14785 NW. Bonneville Loop
Beaverton, Oregon 97006

HOUSE OF REPRESENTATIVES
SALEM, OREGON
97310

January 22, 1992

Environmental Quality Commission
Hearing Room 3A
DEQ Building
Portland, Oregon

Dear Members of the Commission:

I have over the past few months followed the process which suggests that certain sections of rules be removed from OAR 340.140 Section 010-100 which relate to drug labs and the ability to recapture funds from cities and counties.

I understand fully that the cities and counties to date have not participated as expected. This item was discussed at length in the Ways and Means Committee of which I am a member. My recollection of that discussion is that most members, including myself, were disturbed that the situation existed and that the governmental entities had not participated. I felt reluctant at the time to support the motion to back away from the collection process. We then agreed to not pursue collections but to allow a voluntary process for counties and cities to act responsibility. It was the clear direction of the committee that this issue be revisited in the future to see if there was not a way to reenact the intent of the rules as written for collection of the funds.

As you know, the cleanup activities can be extremely expensive so therefore to turn our backs on possible resources seems a shame and will ultimately reduce the overall ability to provide these valued services. I cannot in anyway support the removal of these rules because of this limiting effect and because I believe this is not what the sub-committee intended.

I appreciate the opportunity to provide you with information you may have not previously had at your disposal for your decision making. I understand how difficult each of these areas are to deal with and hope that my suggestions will provide some positive input into the ever difficult decision making arena of services versus resources.

Sincerely,

Ted Calouri

Ted Calouri
State Legislator

Mr. William Wessinger, Chairman
Environmental Quality Commission
c/o Department of Environmental Quality
811 SW 6th Ave.
Portland, OR 97204

January 21, 1992

Dear Mr. Wessinger:

On behalf of the Air Quality Industrial Source Advisory Committee, I am pleased to recommend adoption by the Environmental Quality Commission of the proposed Interim Air Emission Fee Rules. The committee's recommendation to adopt the rules, made unanimously at its January 6 meeting, was accompanied by a request to staff to address several minor technical issues in the final draft. It is my understanding that these issues have been resolved.

The committee was greatly assisted in its efforts by a technical working group which developed an alternative to the "standard" source testing criteria for categories of sources. The alternative criteria are found in section 340-20-550(4). Their effect is to provide a means for the department to approve actual emission calculations from categories of sources. The ability to calculate emissions from categories of sources should, we hope, encourage more permittees to elect to report actual emissions.

The committee would have been unable to meet its deadlines without the able assistance of Department staff, particularly Sara Laumann, Wendy Sims, Mark Fisher and Eunice Hopkins. Throughout the process, they demonstrated a firm grasp of technical details, thoughtful consideration of the committee's concerns, a patient willingness to keep searching for solutions to problems, and a remarkable ability to turn drafts around in record time.

We have appreciated the opportunity to be involved in the development of the interim rules, and look forward to working with the Department and the Commission on the next phase of Oregon's implementation of the Clean Air Act.

Sincerely,

Pamela G. Wiley, Chair
Air Quality Industrial Source Advisory Committee

c. Air Quality Industrial Source Advisory Committee Members

OSPIRG
The Oregon State Public Interest Research Group
1536 SE 11th Portland, Oregon 97214 (503) 231-4181, FAX: (503) 231-4007

Statement from
Quincy Sugarman, Environmental Advocate
Oregon State Public Interest Research Group
regarding
Pollution Control Tax Credit
1-23-92

Thank you for the opportunity to make a statement. My name is Quincy Sugarman, and I am an environmental advocate for the Oregon State Public Interest Research Group. OSPIRG is a statewide consumer and environmental research and lobbying organization with 35,000 members. I am speaking today about the pollution control tax credit program administered by the Department of Environmental Quality.

The pollution control tax credit program began in 1968 to "assist in the prevention, control and reduction of air, water, and noise pollution and solid waste, hazardous waste and used oil" (from ORS 468.160). Tax credits are a form of government assistance, using the tax code to implement policy. It can be difficult to control financial impact of these credits, and they favor large capitol investments and passing on the savings to products from large, polluting technologies. It is not clear that such tax credits are any sort of incentive to bring economic development to the state.

The Oregon program gives a tax credit of up to 50% of the certified costs of a facility. The basic qualification is that the facility must be constructed primarily to meet a state or federal pollution control requirement or the sole function of the facility must be control or prevention or reduction of pollution or material recovery.

Since 1968, and through 1990, 2,114 tax credits have been applied for and have totaled over $362 million. For 1991, 424 tax credits were applied for, totaling $21.5 million. The aggregate total for the whole program through 1991 is over $383 million dollars in tax credits or money lost from the state government, much of it just to meet statutory requirements.

Of particular concern are those projects which are undertaken to comply with federal or state statutory requirements. One example of this is before the Environmental Quality Commission today. The principle purpose of the facility which is applying for the tax credit is to comply with state and federal regulations to prevent groundwater pollution.

The facility is the liner for a chemical hazardous waste landfill in Arlington owned and operated by Chemical Waste Management of the Northwest. The liner's construction was undertaken to comply with state and federal requirements to prevent groundwater pollution. The total cost of the liner is $10,119,299. Under the current rules, the entire cost of the facility allocable to pollution control is 100%. The owner of the facility is eligible for a tax credit of 5% of that cost per year for 10 years or a total of $5,059,649.50.

We would welcome the opportunity to work with the EQC to examine this program and recommend changes to the 1993 Legislature.

Testimony of 1000 Friends of Oregon

before the Environmental Quality Commission

January 23, 1992

Pacific Development recently held a preapplication conference with the City of Portland for a land use permit that, among other items, would allow the construction of an 11-story parking structure containing approximately 1400 spaces. To the best of our knowledge, this structure, if built, would be the largest parking garage in Oregon. Pacific Development has yet to file a formal application for the construction of the garage, but it appears from reports in the press that the application filing is imminent.

1000 Friends of Oregon has serious reservations about the proposed erection of this garage. We request the EQC to adopt temporary regulations applying the current parking standards now in place for the Portland Central Business District (CBD) to the entire metropolitan region. We urge the Commission to direct its staff today to prepare draft temporary rules that can be adopted by the Commission at a future meeting.

The corner stone of the State Implementation Plan for Air Quality in the Portland area is the Downtown Parking and Circulation Plan, better known as the "parking lid." The lid, which places strict limitations on the construction of new parking spaces, has been very successful at reducing carbon monoxide (CO) emissions downtown: there has not been a single CO violation recorded since 1984.

The lid, however, is in danger--and all of Portland's air quality with it. Currently, the lid applies only in the limited area of Portland's CBD. At the time of the lid's inception (1975), this may have made sense: approximately 90% of the multi-tenant office buildings in the region were located in the CBD. Because these buildings represented the destination of a significant percentage of the region's workforce, limiting the restrictions on parking to the CBD was logical.

In 1992, however, the picture is quite different. Today, the Central City's share of the region's multi-tenant office market is only 50%--the other 50% has sprawled out, away from the central core of the city and its hub of transit service. The

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result? Massive suburban traffic congestion and worsening regional air quality.

Last year, DEQ reported that in the tri-county metropolitan area the amount of vehicle miles traveled (VMT) on state highways increased by over 40% between 1982 and 1988; the area's population during the same period, however, grew by only 5%. In other words, VMT increase was eight times greater than the increase in population. Where was all of this extra driving occurring? Not in the CBD, but in the far flung reaches of the region.

The air quality impact of these enormous increases in driving has been dramatic. DEQ's 1990 Annual Air Quality Report shows 6 days of ozone excedences between 1988 and 1990: "On hot summer days during 1990, ozone levels rose above the standard four times at an ozone monitoring site southeast of Portland. This represents the worst year in terms of the number of days above the standard since 1981 and the third worst in terms of peak ozone levels (at that site)." The primary cause of these excedences? Automobiles.

If left unchecked, we can expect these dire circumstances only to get worse. It is time we revisit our approach to air quality in the Portland region. Specifically, our air quality strategies must to treat the region as a whole. In short, we must regionalize the parking lid.

The City of Portland's Central City Transportation Management Plan indicates that the uneven application of the parking lid is largely responsible for the office flight from the CBD. Placing a restriction on a desired activity in one area and providing no restrictions on the same activity in another area will tend to focus the activity were the restrictions are the least. Technical literature and universal experience have shown that the best urban form for alternative modes of transportation is one that is based on a single, high density central core.

If the region and the state wish to promote decentralization of the Portland area, and thereby increase the amount of automobile driving and ozone pollution, the answer is simple. Do nothing; the uneven application of the parking lid appears to be a sufficient incentive to assure continued flight from the CBD. If, however, we wish to reverse the current trends of increased driving and decreased air quality, we must start treating the region uniformly. The first and most obvious step is to apply parking restrictions region-wide.

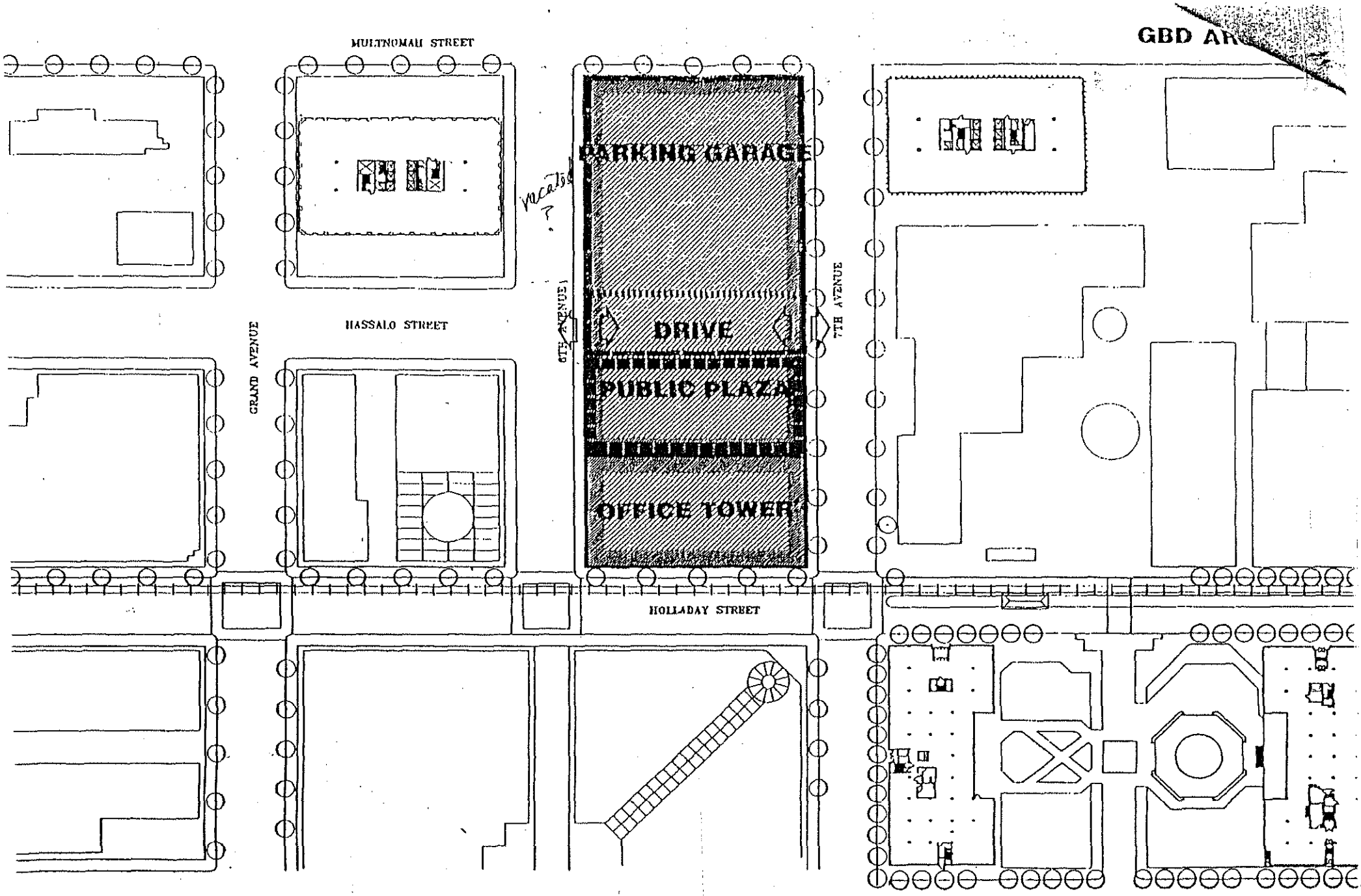
The proposal by Pacific Development is a good starting place for EQC. The proposed parking lot is located in the Lloyd District, just outside of the CBD and its parking lid. It is immediately adjacent to a station on the Banfield MAX line and is within walking distance of the Coliseum Transit Center. With this abundance of transit service, the opportunities for transit-

oriented development on the site are enormous. Allowing the construction of a 1400 space parking is probably the worst thing that could happen for this property. First, it will greatly reduce the amount of land available for transit-oriented development. Second, it is likely that the lot would serve as a remote parking site for downtown businesses, thereby reducing the effectiveness of the existing CBD parking lid.

Currently, builders of parking structures containing more than 150 spaces must obtain an indirect source permit from DEQ. Because there are very few standards that apply outside of the CBD, however, the process of getting an indirect source permit for an extra-CBD site is not much more than a formality. The Central City Transportation Management Plan is designed to develop a series of regionwide strategies for air quality management. That process, however, is likely to take two years or more before the new standards are in place. In the meantime, there is a policy vacuum.

To fill that vacuum and to ensure that the region does slide not further into ozone polluted sprawl, 1000 Friends of Oregon urges the EQC to adopt temporary regulations covering indirect source permits for parking structures. For the sake of simplicity and expediency, we recommend that the Commission adopt the current standards now in place for the Portland CBD, and apply them to the entire metropolitan region. We urge the Commission to take the first step in this direction today by directing its staff to prepare draft temporary rules that can be adopted by the Commission at an upcoming meeting.

Thank you.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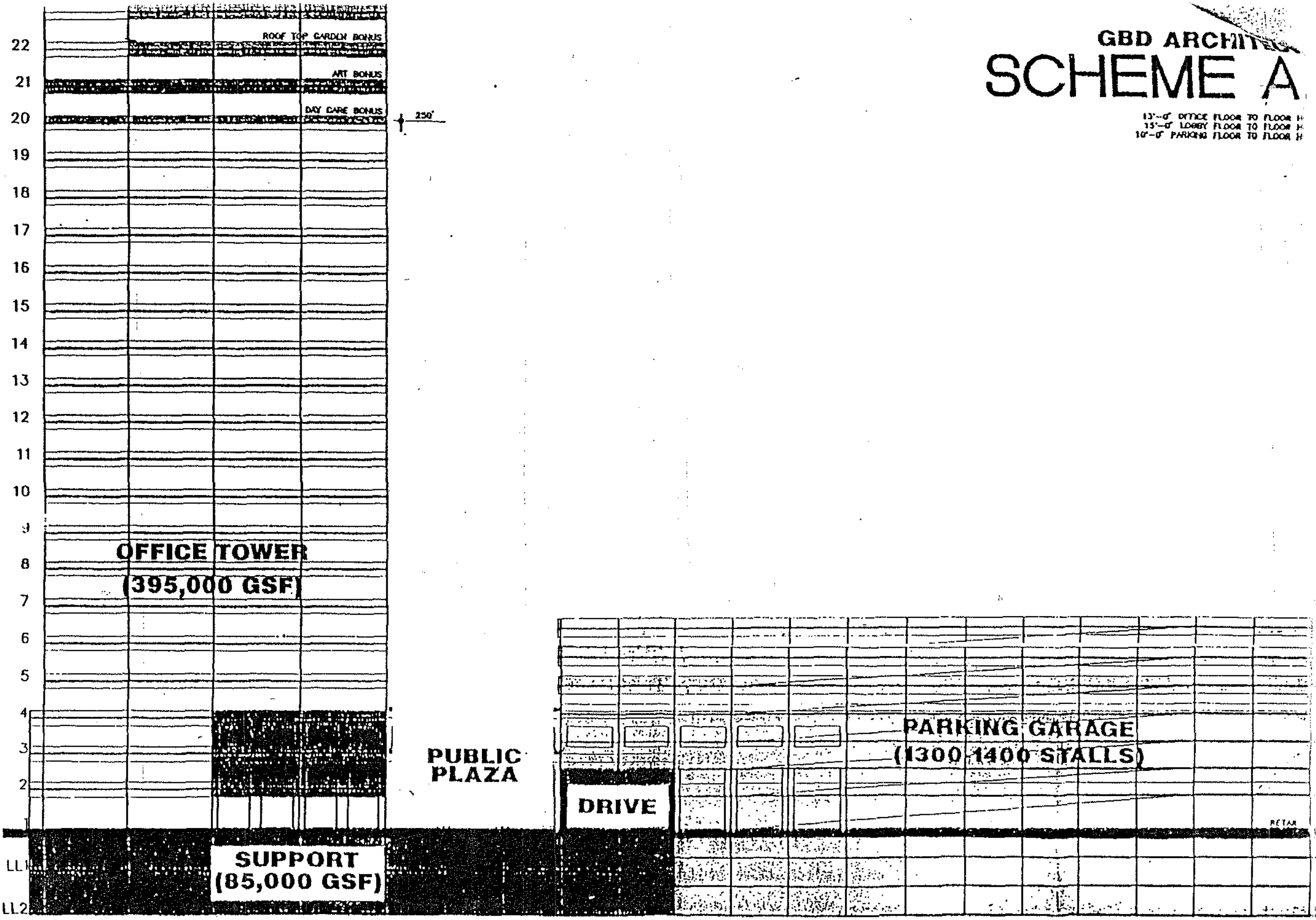
SCHEME A

13'-0" OFFICE FLOOR TO FLOOR H
15'-0" LOBBY FLOOR TO FLOOR H
10'-0" PARKING FLOOR TO FLOOR H



PC251-91

CONTINUOUS MONITORING MANUAL

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
811 SW SIXTH AVENUE
Portland, Oregon 97204

January 23, 1992

Continuous Monitoring Manual
Table of Contents

1.0 INTRODUCTION

Continuous Monitoring Systems (CMS) are required to be installed in facilities specified by Oregon Department of Environmental Quality (DEQ) Air Contaminant Discharge Permits (ACDP), Oregon Administrative rules (OAR), and Federal Environmental Protection Agency (EPA) New Source Performance Standards (NSPS-40 CFR Part 60). The CMS are used to continuously monitor the effectiveness of air pollution control techniques and to determine if source control requirements are being met.

This manual has been prepared to specify the requirements for CMS operation, reporting, and quality assurance/quality control (QA/QC). For the purposes of this manual, continuous monitoring system is defined as the total equipment (sample interface, analyzer, and data recording) required for determining emissions and/or operating parameters. There are three basic categories of CMS. These are continuous opacity monitoring systems (COMS), continuous emission monitoring systems (CEMS), and continuous parameter monitoring systems (CPMS). The CMS may be required for continuously monitoring compliance with a specific pollutant emission limit or may be required to monitor compliance with source and pollution control device operating limits.

Effective January 23, 1992, this manual supercedes any previously existing continuous monitoring manual, draft or otherwise, provided by the DEQ.

2.0 DEFINITIONS

A. "Calibration gas" means any gas containing a known concentration of pollutant and traceable to the National Institute of Standards and Technology (NIST) - standard reference materials (SRM), Environmental Protection Agency (EPA) - certified reference material (CRM), or certified according to EPA Protocol - 1.

B. "Continuous Emissions Monitoring System (CEMS)" means a CMS used for measuring and recording gaseous pollutant emissions (i.e. SO_2, NO_x, CO, etc.).

C. "Continuous Monitoring System (CMS)" means the total equipment required for measuring and recording an emission and/or operating parameter at a source.

D. "Continuous Opacity Monitoring System (COMS)" means a CMS used for measuring and recording visible emissions.

E. "Continuous Parameter Monitoring System (CPMS)" means a CMS

used for measuring and recording the operating conditions of a source or pollution control device (i.e. steam pressure, scrubber pressure drop, temperatures, etc.).

F. "Monitor" means the analyzer component of the CMS (i.e. CO analyzer, transducer, etc.)

G. "Out-of-control" means the CMS is not operating within performance specifications and the data is invalid.

H. "Site" means the entire plant regulated by an Air Contaminate Discharge Permit.

I. "Source" means the regulated process at a site (i.e. hogged fuel boiler #1).

J. "Span gas" means any gas containing a known concentration of pollutant as certified by the manufacturer of the gas.

K. "Zero Gas" means any calibration gas containing less than 0.25% of the span of the monitor for the pollutant being measured.

3.0 CONTINUOUS MONITORING SYSTEMS REQUIREMENTS

The source operator shall prepare and maintain written standard operating procedures (SOP) and a quality assurance plan (QAP) for each CMS used at a source. The SOP and QAP shall be written by the permittee, and approved by the DEQ, prior to operation of a CMS and revised as necessary based on operator experience with the CMS. The SOP and QAP shall contain detailed, complete, step-by-step written procedures. Appendix B contains further explanations and requirements for the SOP and QAP. Both documents shall be made available to DEQ personnel for inspection upon request.

3.1 Standard operating procedures

Standard operating procedures shall be written for each CMS. The contents of the SOP shall include, as a minimum, the following information:

A. Source owner or operator name and address.

B. Identification, description, and location of monitors in the CMS.

C. Description and location of the sample interface (i.e. sample probe).

D. Manufacturer and model number of each monitor in the CMS.

E. Equipment involved in sample transport, sample conditioning, analysis, and recording.

F. Procedures for routine operation checks, including daily zero and span calibration drift (CD) check.

G. Procedures for routine preventive maintenance. Initially, these procedures can be taken from the manufacturer's installation and operation manuals. However, as the CMS operators gain more experience with the CMS, it may be necessary or desirable to modify these procedures to increase or decrease frequency of maintenance and add or delete some procedures.

H. Routine maintenance spare parts inventory.

I. Procedures for calculating and converting CMS data into units of the standard.

J. Documentation of the activities described in 3.1 A - I.

3.2 Quality Assurance Plan

A quality assurance plan (QAP) shall be written for each CMS or for the entire site when more than one CMS exists. The contents of the QAP shall include as a minimum the following information:

A. Data quality objectives.

B. Chain of responsibility for CMS operation, corrective action, and training program.

C. Procedure for measuring the CMS accuracy and precision including the following:

1. CMS calibrations

2. Zero and span drift checks

3. Performance audits

4. System audits

D. Procedures for quality control activities

E. Procedures for quality control documentation

F. Procedures for data recording, calculations, and reporting

G. Criteria for corrective action

H. Procedures for corrective action

4.0 SPECIFIC CMS OPERATING REQUIREMENTS

This section addresses specific requirements for the operation of CMS, including performance criteria, location, installation, calibrations, routine maintenance, and data recording. These are minimum requirements. The source operator is encouraged to add additional requirements for their specific CMS that will improve data quality and completeness.

4.1 Continuous Opacity Monitoring Systems (COMS)

A. Existing COMS installed prior to 6/1/91 shall be maintained and operated in accordance with ACDP requirements; and, unless otherwise specified, are not subject to the requirements of this manual.

B. COMS installed after 6/1/91 and/or installed on NSPS sources shall continuously monitor and record the opacity of emissions discharged into the atmosphere from the regulated emission point. Single pass or double pass transmissometers may be used in the COMS as long as the calibration drift can be measured and recorded daily. The Span of COMS for non-NSPS sources shall be set at 100% Opacity, or a span agreed upon by the source and DEQ. Sources which must follow NSPS requirements must set COMS span at the value specified in the applicable subpart of 40 CFR Part 60.

C. COMS put into service after 6/1/91 on non-NSPS sources shall be installed at a location in the stack or duct work where opacity measurements are representative of emissions, as far as practicable from bends and obstructions; in an area of the stack or duct work where condensed water vapor is absent; shielded from interference by ambient light (if the transmissometer is responsive to ambient light); and be accessible for routine maintenance including lens cleaning, alignment checks, calibration checks, blower maintenance, and audits.

COMS put into service to replace existing COMS may be installed at the same location as the previous COMS with the approval of the DEQ.

COMS for all NSPS sources and COMS installed after 6/1/91 must comply with the provisions of Performance Specification 1 (PS-1), 40 CFR 60 Appendix B (Appendix D).

D. COMS installed after 6/1/91 shall be calibrated prior to installation to cover the appropriate opacity range using a minimum of three (3) optical filters with neutral spectral characteristics (calibrated according to procedures in 40 CFR 60, Appendix B, Performance Specification 1, section 7.1.2 - 7.1.3); and of sufficient size to attenuate the entire light beam received by the transmissometer detector.

1. Transmissometers shall be calibrated to measure percent opacity at the stack exit (i.e. the point where emissions are released into the environment). Although this correction is frequently made electronically, when the instrument is installed it must be documented and verifiable. Measurements shall be corrected for Stack Taper Ratio (STR) - the ratio of the optical pathlength at the stack exit (L_2) to the optical pathlength at the transmissometer (L_1) - using Eq-A1:

$$\text{Opacity} = 1 - 10^{-(STR)(D)} \qquad \text{Eq-A1}$$

where: $STR = L_2/L_1$ = "Stack Taper Ratio"
D = optical density of attenuator @ L_1
L_1= transmissometer pathlength (feet)

L_2= stack exit pathlength (feet)

Note: For circular stacks, the stack exit pathlength is the diameter at the outlet. For noncircular stacks, the stack exit pathlength equals (2LW)/(L+W), where L is the length of the outlet and W is the width of the outlet.

2. Correction of calibration filters is necessary to compensate for the Stack Taper Ratio (STR). Since the measurements are being made upstream of the emission point, the measured opacity must be adjusted to reflect the opacity at the emission point by calibrating the COMS with optical density filters corrected for the stack taper ratio. Correction is accomplished using Eq-A2, knowing the Certified Optical Density of the calibration filters (O.D.), the stack exit pathlength at the emission point (L_2), and the transmissometer pathlength at the measurement point (L_1). Each calibration filter must be corrected. Appendix A

contains a table (A-1) listing correction values.

$$\text{Corrected \%Op} = \{1-[1-(Op_c/100)]^{(STR)}\}x100 \qquad \text{Eq-A2}$$

where:

Corrected %Op	=	corrected calibration filter opacity
Op_c	=	certified %Op value of calibration filter
STR	=	L_2/L_1
L_1	=	transmissometer pathlength (feet)
L_2	=	stack exit pathlength (feet)

3. Calibration attenuators (filters) shall be selected based on the appropriate span value using Table 1-2, 40 CFR 60 Appendix B, PS-1. Calculate the specific filter attenuator optical density needed, using Eq-A3, and purchase certified neutral density filters closest to the calculated values.

$$D_1 = D_2\ (L_1/L_2) \qquad \text{Eq-A3}$$

where:

D_1 = Optical density of required calibration filter.
D_2 = Nominal attenuator optical density from Table (Table 1-2, 40 CFR 60 Appendix B, PS-1).
L_1 = Transmissometer pathlength (feet).
L_2 = Stack exit pathlength (feet).

D. The zero and span calibration drift shall be measured and recorded daily when the COMS is in operation. (See appendix B for details of this procedure.)

4.1.1 Correlating opacity with mass emission rates

It may be possible to correlate opacity measurements with mass emission rates by assuming that the density, particle size distribution, and optical properties of the particulate material remain reasonably constant. In order to determine the relationship between opacity and mass emission rates for non-NSPS sources, these guidelines must be followed:

A. The relationship between opacity and mass emission rate must be documented.

1. Each data pair must consist of a one-hour particulate sample collected using pre-approved EPA or DEQ Methods and a one-hour average %Opacity monitored during that same time period. Each one-hour average %Opacity must have at least 90% data recovery.

2. Sufficient data pairs must be collected to show a reasonable correlation between particulate emissions and opacity. This may vary from source to source and may require tests at several different operating rates. A plan for determining the relationship shall be prepared and approved by the DEQ prior to testing. The final correlation constants must be approved by the DEQ.

3. For this relationship to be acceptable to the Department the source must demonstrate the COMS to be operating within EPA's Performance Specification 1 (40 CFR 60, Appendix B).

4.2 Sodium ion electrode continuous emission monitoring system

When sodium is a major constituent of the particulate effluent, present at a known and nearly constant percentage, the sodium concentration in a measured volume of stack gas may be relatable to effluent particulate concentration. Such is the case for some Kraft Process recovery furnaces.

A. The sampling probe must be installed in the stack to obtain a sample which is representative of the average particulate concentration (normally the point of average velocity).

B. A material balance shall be performed and documented monthly, according to a written operating procedure.

C. The CEMS shall be inspected for fouling of electrode(s) and cleaned weekly.

D. Accuracy must be demonstrated monthly by documentation of instrument response to challenges from two solutions of known sodium concentration; at between 10 - 20% and 90% of full-scale range.

E. Due to the effect of pH on sodium ion electrode measurements it is necessary to buffer the scrubbing solution at pH 10. The pH of the scrubbing solution shall be checked daily with a calibrated pH meter.

1. The temperature of the pH electrode must be known and constant because pH varies with electrode temperature.

2. The pH electrode shall be calibrated before each use, using pH 7 and pH 10 buffers, according to a written procedure.

F. Gas flow rates, in and out of the system, must be checked and documented three times each week. Liquid flow rates must be checked once per month. There must be a written procedure for checking flows, and a procedure for correcting those flows found to be out of limits.

G. Flow measurement devices for liquids and gases must be calibrated at least annually, and the calibration documented. Flow measurement accuracy must be within ± 3%.

H. Water vapor content (i.e. absolute humidity) of the gas exiting the CEMS and the particulate scrubbing efficiency of the CEMS shall be verified and documented annually. The particulate scrubbing efficiency shall be determined by measuring the amount of particulate matter collected on a one-hour glass-fiber filter sample of the CEMS exiting gas stream.

I. The percent sodium in the stack particulate shall be measured annually using an isokinetic impinger sample train and flame atomic absorption analysis. The sampling and analytical method shall be described in a written procedure and results documented.

4.3 Continuous Emissions Monitoring Systems (CEMS)

4.3.1 NSPS sources and CEMS installed after 6/1/91

A. The CEMS shall continuously monitor and record the concentration of gaseous pollutant emissions on a wet or dry basis discharged into the atmosphere consisting of subsystems for sample extraction, conditioning, detection, analysis, and data recording/processing.

B. All CEMS must meet the performance specifications of 40 CFR 60, Appendix B. (Included for reference in Appendix D of this manual). The specific performance specifications are listed below:

1. SO_2 and NO_x CEMS - Performance Specification 2

2. CO_2 and O_2 CEMS - Performance Specification 3

3. CO CEMS - Performance Specification 4 and 4a

4. TRS CEMS - Performance Specification 5

C. The span of the CEMS shall be set at 200% of the emission standard or a level specified by a specific subpart of 40 CFR Part 60 and approved by the DEQ.

1. The CEMS must be capable of recording down-scale drift below zero (see Appendix B).

D. Sample probes for all CEMS shall be installed downstream of the control device(s); in a location representative of emissions from the source; accessible for routine maintenance, cleaning, calibration, and audits.

E. Extractive CEMS operating procedures shall include automatic back-flushing of the sample line and probe to purge condensed moisture and particulate material.

F. The CEMS analyzer must be installed and maintained in an environment conducive to analyzer stability.

G. The calibration drift must be measured and recorded daily when the CEMS is in operation. Span gases used for this procedure need not be NIST traceable. However, the concentration of the gases should be verified by an analyzer calibrated with SRM or CRM calibration gases. It may be necessary to periodically respecify the concentration of the zero and span drift check gases.

H. The CEMS must be audited at least once each quarter. Successive audits shall occur no closer than 2 months apart. (See Appendix B for auditing procedures.)

I. Data shall be recorded in units of the ACDP limits.

1. CEMS installed for demonstrating compliance with concentration standards shall report concentrations on a dry basis.

2. Equations for correcting emissions measured on a wet basis to a dry basis are found in Appendix A.

4.3.2 CEMS installed prior to 6/1/91

A. The CEMS shall continuously monitor and record the

concentration of gaseous pollutant emissions discharged to the atmosphere from any stationary source using CEMS approved by the Department of Environmental Quality.

B. The span of the CEMS shall be set:

1. At 200% of the permit requirement concentration or the emission standard, whichever is lower. The span may be set at alternative values with DEQ approval.

2. The CEMS must be capable of recording down-scale drift below zero (See Appendix B).

C. The CEMS shall be pollutant specific and free from interferences. (e.g.: For TRS CEMS, a method must be used to monitor TRS which excludes SO_2)

D. The CEMS analyzer must be maintained in an environment conducive to analyzer stability.

E. Extractive CEMS operating procedures shall include automatic back-flushing of sample line and probe to purge condensed moisture and particulate material.

F. If the emissions must be corrected for diluent oxygen, periodically test and record the concentration of oxygen in the exhaust gases using an oxygen CEMS, Orsat Analyzer, or equivalent.

1. An Oxygen CEMS, if used, must be calibrated according to written procedures, approved by the Department, at least twice each year using two calibration gases having oxygen concentrations of approximately 5 and 15 volume percent, and accurate to within 0.5% oxygen.

2. Oxygen must be measured at least semi-annually, after any major maintenance/repair on duct work, and frequently enough to be representative of average oxygen concentration.

G. The zero and span drift of CEMS must be measured and recorded daily when the CEMS is in operation. Span gases used for this procedure need not be NIST traceable. However, the concentration of the gases should be verified by an analyzer calibrated with SRM or CRM calibration gases. It may be necessary to periodically respecify the concentration of the zero and span drift check gases.

H. A cylinder gas audit (CGA) of the CEMS shall be performed

weekly with successive CGAs performed no closer than six days apart. The CGA shall include a "zero" gas and a minimum of one upscale gas concentration at approximately 60 percent of analyzer full-scale.

1. If 4 consecutive CGAs result in the CEMS being within specifications (see appendix B), the frequency of the CGAs may be reduced to once each month with successive CGAs performed no closer than 21 days apart.

2. If three consecutive monthly CGAs result in the CEMS being within specifications, the frequency of the CGAs may be reduced to once each quarter with successive CGAs performed no closer than two months apart.

3. If two consecutive quarterly CGAs result in the CEMS being within specifications, the CGA frequency may be reduced to once every six months with successive CGAs no closer than five months apart.

4. The minimum CGA frequency shall be once every six months with successive CGAs no closer than five months apart.

5. The CGA frequency shall revert back to a weekly frequency if a CGA results in the CEMS failing to meet the performance specifications (Appendix B).

    a. The concentration of the cylinder audit gases must be traceable to National Institute of Standards and Technology (NIST) standard reference materials (SRM) or EPA certified reference materials (CRM) and reanalyzed every 6-months using EPA Reference Methods (40 CFR 60, Appendix A). Gases may be analyzed at less frequent intervals if the manufacturer guarantees their certified concentration for longer time periods.

    b. Cylinder gases must be introduced to include as much of the monitoring system as feasible, in no case shall gas conditioning subsystems (i.e. SO_2 scrubbers for TRS CEMS) be excluded or by-passed.

I. A Relative Accuracy Audit (RAA) shall be performed at least once each year. The RAA may satisfy one of the CGA requirements. (See Appendix B for auditing procedures)

J. Data shall be recorded in units of the standard.

4.4 Continuous Parameter Monitoring Systems (CPMS)

A CPMS shall continuously monitor source or pollution control device operating parameters. These may include, but are not limited to: fuel consumption rates; production rates; exhaust gas flow rates; process temperatures; pollution control device pressure drop, voltages, water flow and pressure, etc. There are three basic types of CPMS: 1) CPMS used for the purpose of determining pollutant emissions rates (i.e. stack gas flow monitoring devices); 2) CPMS used for the purpose of monitoring pollution control device operations; and, 3) CPMS used for the purpose of monitoring source operations. It is not the intention of this manual to cover each and every possible CPMS. General requirements for CPMS are provided below.

4.4.1 CPMS general requirements:

A. CPMS shall be installed in a location that is representative of the monitored process and free from interferences.

B. CPMS shall be installed and maintained in an environment conducive to CPMS stability and data reliability.

C. CPMS shall be calibrated and certified by the manufacturer prior to installation. (Applies to CPMS installed after 6/1/91)

4.4.2 Pollutant emissions related CPMS

A. CPMS for the purpose of determining emission rates (i.e. stack gas flow monitoring devices) require the highest level of QA/QC.

1. CPMS installed after 6/1/91 must meet 40 CFR Part 60 Appendix B performance specification 6. The reference methods for determining relative accuracy (RA) shall be EPA or DEQ methods 1 through 4.

2. Performance audits shall be conducted quarterly in conjunction with the CEMS audits (see Appendix B). It may not be possible to conduct audits on some CPMS. Exemption from this requirement must be approved by the DEQ.

B. Stack Gas Flow Monitoring

CPMS data are necessary for converting emission concentrations to units of the standard. This is accomplished by continuously monitoring stack gas flow rates

to calculate the emissions as a rate (pounds per hour) in addition to the CEMS output (percent or parts per million).

There are several acceptable procedures and equipment for measuring flow rates (pitot tubes, hot wire anemometers, process rates - steam, air flows, etc.). The CPMS shall include the capability to measure and/or assume the six variables for determining the stack gas flow rate. These variables are: 1) stack gas temperature, 2) stack absolute pressure, 3) stack gas moisture content, 4) stack gas molecular weight, 5) stack gas velocity, and 6) the cross-sectional area of the stack at the point of velocity measurements.

Provided below is a discussion of each of these variables and one or more methods for measuring their values. As mentioned before, there are other acceptable methods for determining stack gas flow rates. Each method must be approved by the DEQ.

1. The stack gas temperature should be continuously monitored with a temperature monitoring device.

2. The absolute stack pressure is the static pressure, usually measured in inches of water converted to inches of mercury, added to the barometric pressure, measured in inches of mercury.

3. The stack gas moisture content can be determined by one of three alternative methods:

   a. EPA method 4: A sample of the stack gas is extracted from the stack and passed through a condensing chamber to collect the moisture in the stack gas. The moisture collected is measured in milliliters or grams and converted to cubic feet. The moisture content is determined by dividing the moisture collected (cubic feet) by the quantity: dry gas sampled (cubic feet) plus the volume of moisture collected (cubic feet). (40 CFR Part 60 Appendix A Method 4).

      It is recommended that this test be performed in triplicate at least once per week at normal operating rates.

   b. Wet bulb/dry bulb alternative method: The temperature of the stack gas is measured with a standard temperature measuring device (dry bulb)

and with a temperature measuring device altered to include a wetted sock over the tip (wet bulb). The relationship of the wet bulb, dry bulb, and stack absolute pressure will determine the moisture content of the stack gas using vapor pressure tables. (Oregon Source Sampling Manual Method 4).

It is recommended that this procedure be performed in triplicate at least once per week at normal operating rates.

c. The third alternative is to use an assumed value for stack gas moisture content based on operating parameters. This method must be demonstrated to be accurate within ±2 percent moisture by conducting a series of tests as described in either option 1 or 2 above. A plan for determining the assumed moisture shall be submitted to the DEQ for approval prior to collecting data.

4. Stack gas dry molecular weight can be determined or assumed by two methods.

a. Extract a dry gas sample from the stack and measure the oxygen and carbon dioxide content of the gas with an Orsat analyzer. The balance of the gas is considered to be nitrogen. (EPA method 3).

This procedure should be performed in triplicate at least once per week.

b. If the source has an oxygen and/or carbon dioxide CEMS, the percent composition of gases can be determined from this system. It is important, however, that the gases are measured in the stack and not in the combustion zone. All gas concentrations must be measured as dry volume percents, or converted to dry volume percents. If only one analyzer is available, the percent oxygen or carbon dioxide can be determined by subtracting the known gas concentration from 20 to obtain the unknown gas concentration. This will be an approximation of the stack gas composition. Calculate the molecular weight in accordance with Method 3.

Since the gas analyzers are CEMS it would be possible to determine the dry gas molecular weight on a continuous basis.

c. A constant molecular weight may be assumed for some sources. Contact the DEQ for approval.

5. Stack gas velocity may be measured with a pitot tube and pressure gauge. Other types of instruments and technologies are available.

The pitot tube method involves inserting a pitot tube (type S) into the stack at some predetermined point of average velocity and measuring continuously the velocity pressure. The pitot tube is connected to a pressure gauge (transducer) with tubing. Initially, the stack shall be traversed to determine the point of average velocity. In addition, due to the harsh environment, the pitot tube shall be back purged at least daily and the tubing shall be inspected for plugging by particulate matter and/or moisture. In erratic velocity stacks, it may be necessary to include a pressure damping device in the connecting tubing. This consists simply of an air- tight plastic or glass jar in line with the tubing. Prior to installation of the pitot tube, it must be calibrated against a standard pitot tube or, if constructed properly, assigned a pitot tube coefficient. The manufacturer can assist or provide documentation of this coefficient. (Refer to EPA Method 2 for more detailed explanation.)

Since the transducer can continuously measure the velocity pressure, the stack gas velocity can be recorded continuously.

6. Cross-sectional area of the stack:

Measure the diameter (circular stacks) or dimensions (rectangular stacks) of the stack at the point where the stack gas temperature, moisture content, dry molecular weight, and velocity pressure are measured. Calculate the area of the stack from the measurements.

Note: All flow rate variables shall be measured at approximately the same location in the stack.

4.4.3 Pollution control device related CPMS.

A. Pollution control device related CPMS include but are not limited to scrubber pressure drop, water flow, temperature, and pressure, gas temperature, electrostatic precipitator current and voltage, etc.

B. Calibration checks shall be performed in accordance with the manufacturer's procedures at least once per month. Depending on the CPMS, an exemption from this requirement may be obtained from the DEQ upon written request. For example, water flow devices are typically calibrated prior to installation and not calibrated again.

4.4.4 Source related CPMS.

A. Source related CPMS include but are not limited to steam flow meters, fuel meters, temperatures, etc. As a minimum, source related CPMS shall meet the general CPMS requirements listed above. Depending on the CPMS, an exemption from this requirement may be obtained from the DEQ upon written request. Temperature CPMS shall be calibrated during each planned maintenance outage or annually, whichever is more frequent.

5.0 RECORD KEEPING AND REPORTING

5.1 Record keeping

The source owner or operator shall maintain records of all CMS activities in a file and/or log book. This record shall be used by the CMS operator to ensure that the CMS is operating correctly. The record must also be made available to DEQ personnel upon request. The record shall include as a minimum the following information:

A. Records of routine observation checks.

B. Records of routine maintenance and adjustments.

C. Records of parts that are replaced.

D. Spare parts inventory for the CMS.

E. Records of CMS calibrations.

F. Records of CMS daily calibration drift.

G. Records of CMS audits.

H. Records of corrective action taken to bring an out-of-

control CMS into control.

I. Records of date and time when CMS is inoperative or out-of-control.

5.2 Reporting Requirements

As a condition of installing a CEMS, the source owner or operator will be required to submit reports to the DEQ. These reports shall include as a minimum the following information:

A. Reporting period (determined by permit condition or 40 CFR Part 60).

B. CMS type, manufacturer, serial number, and location.

C. Specific CMS reporting requirements:

1. All continuous opacity monitoring systems (COMS) shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period (15 seconds for non-NSPS sources if approved by the DEQ). Unless otherwise specified by an ACDP, the data shall be reduced and reported as follows:

   a. 6-minute (clock) averages (NSPS sources only)

   b. Hourly (clock) averages

   c. averages of 10 or 15-second data that exceed the emission limit when the aggregate period is greater than 3-minutes in a 1-hour (clock) period, and the aggregate period (OAR 340-21-015).

   d. Monthly average of the hourly averages.

2. All continuous emissions monitoring systems (CEMS) and continuous parameter monitoring systems (CPMS) shall complete a minimum of one cycle of sampling and analyzing for each successive 15-minute period unless the DEQ has specified a different frequency (i.e. Medford AQMA requires one minute cycle). The data shall be reduced and reported as:

   1. Hourly (clock) averages.

   2. Monthly average of the hourly averages.

D. For a CMS data average to be accepted, a minimum of 75% of the data for a 6-minute or 1-hour period and 90% of a 24-hour or monthly period must be included in the average. Insufficient data completeness, excluding CMS downtime due to daily zero and span checks and performance audits, will void that data period. All data collected shall be reported. Non-valid data shall be highlighted.

E. Data recorded during periods of CMS breakdowns, repairs, audits, calibration checks, and zero and span adjustments shall not be included in the data averages.

F. The magnitude of excess emissions computed in accordance with any conversion factor(s), and the date and time of commencement and completion of each period of excess emissions.

G. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected source. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

H. The date and time identifying each period during which the CMS was inoperative (out-of-control) except for zero and span checks and the nature of the CMS repairs or adjustments.

I. Results of all CMS audits conducted during the reporting period.

J. DEQ approved reporting forms are provided in Appendix C. Additional reporting requirements may be stipulated in an Air Contaminate Discharge Permit or DEQ communication.

6.0 REFERENCES

A. Useful Quality Control/Quality Assurance information and criteria to maintain CMS data quality at an acceptable level can be found in EPA's Quality Assurance Handbook for Air Pollution Measurement Systems: Volume 3. Stationary Sources Specific Methods, sections 3.0.4, 3.0.7, 3.0.9, and 3.0.10 (Nov. 26, 1987), EPA/600/4-77/027b.

B. Other references:

1. Code of Federal Regulations: 40 CFR Part 60 Appendices A, B, and F.

2. Continuous Emission Monitoring: Present and Future, Air and Waste Management Association International Specialty Conference SP-71, Nov. 1989.

3. Field Inspectors Audit Techniques: Gas CEMS's Which Accept Calibration Gases; EPA/340/1-89-003, June 1989.

7.0 GLOSSARY OF ACRONYMS

ACDP	=	Air Contaminate Discharge Permit
CD	=	Calibration Drift
CEMS	=	Continuous Emissions Monitoring System
CGA	=	Cylinder Gas Audit
CMS	=	Continuous Monitoring System
CO	=	Carbon Monoxide
CO_2	=	Carbon Dioxide
COMS	=	Continuous Opacity Monitoring System
CPMS	=	Continuous Parameter Monitoring System
CRM	=	Certified Reference Material
DEQ	=	Department of Environmental Quality (Oregon)
EPA	=	Environmental Protection Agency (U.S.)
NIST	=	National Institute of Standards and Technology
NO_x	=	Oxides of Nitrogen
NSPS	=	New Source Performance Standard
OAR	=	Oregon Administrative Rules
O_2	=	Oxygen
QA/QC	=	Quality Assurance and Quality Control
QAP	=	Quality Assurance Plan
SOP	=	Standard Operating Procedures
SO_2	=	Sulfur Dioxide
SRM	=	Standard Reference Material
STR	=	Stack Taper Ratio
TRS	=	Total Reduced Sulfur

APPENDIX A
CMS Data Corrections

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Appendix A
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CMS Data Corrections

A.1.0 MOISTURE CORRECTION

A. Stack gas concentrations measured by CEMS are to be reported on a dry basis (dry gas concentration by volume). The CEMS may be designed to measure concentrations on either a wet basis or dry basis. If concentrations are measured on a dry basis, no correction is necessary. However, if the stack gas sample is measured wet, the CMS response must be corrected for the moisture content of the gases.

Correcting CEMS response from wet basis to dry basis:

$$C_{dry} = \frac{C_{wet}}{(1-B_{ws})}$$

where:

C_{dry} = concentration in stack gas corrected to dry conditions

C_{wet} = concentration in stack gas as measured on wet basis

B_{ws} = stack gas moisture content as a volume fraction (% volume moisture/100)

B. All concentrations (pollutants and/or diluent gases) shall be corrected for moisture before any other corrections are performed (i.e. diluent gas corrections).

A.2.0 DILUENT GAS CORRECTIONS

A regulation may require that an emission concentration be corrected to a standard diluent gas (oxygen or carbon dioxide) concentration. The formulas for these corrections are presented below.

A.2.1 Correction of measurements for percent oxygen

$$C_{corr} = C_{meas}\ (20.9 - X)/(20.9 - Y)$$

where: C_{corr} = concentration corrected for oxygen.

C_{meas} = concentration measured by CMS.

X = Percent volumetric oxygen concentration to be corrected to.

Y = Measured average percent volumetric oxygen concentration.

A.2.1 Correction of measurements for percent carbon dioxide

$$C_{corr} = C_{meas} (12/Y)$$

where: C_{corr} = concentration corrected for CO_2.

C_{meas} = concentration measured by CEMS.

Y = Measured average percent volumetric CO_2 concentration.

A.3.0 MEASUREMENT CORRECTION EXAMPLE

Situation: A CEMS measures 200 ppm carbon monoxide (CO), 5% oxygen, and 12% carbon dioxide. The CEMS measures concentrations on a wet basis. The stack gas moisture is 20%. Correct the CO concentration to a dry concentration, 3% oxygen, and 12% carbon dioxide.

Solution:

$$C_{co,dry} = C_{co,wet}/(1-B_{ws})$$
$$= 200/(1 - 20/100)$$
$$= 200/(1-.2)$$
$$= 200/.8$$
$$= 250 \text{ ppm, dry}$$

$$C_{oxygen, dry} = C_{oxygen, wet}/(1-B_{ws})$$
$$= 5/.8$$
$$= 6.25\%, \text{ dry}$$

$$C_{carbon\ dioxide, dry} = C_{carbon\ dioxide, wet}/(1-B_{ws})$$
$$= 12/.8$$
$$= 15\%, \text{ dry}$$

$$C_{co,3\%O2} = C_{co,dry}[(20.9-3)/(20.9-6.25)]$$
$$= 250(17.9/14.65)$$
$$= 250 * 1.2222$$
$$= 305.5 \text{ ppm, dry at 3\% oxygen}$$

$$C_{co,12\%CO2} = C_{co,dry}(12/15)$$
$$= 250 * 0.80$$
$$= 200 \text{ ppm, dry at 12\% carbon dioxide}$$

A.4.0 TRANSMISSOMETER CALIBRATION WITH ADJUSTMENT FOR STACK EXIT

Table A-1, page A-3, shows corrected % Opacity for calibration filters from 10 - 80%, for different stack exit diameters and transmissometer pathlengths, which are corrected for the actual Stack Taper Ratio.

TABLE A-1. Calibration filters corrected to "L_2" STACK DIAMETER

			%OP OF CALIBRATION FILTERS CORRECTED TO "L_2" STACK EXIT DIAMETER							
L_2	L_1	STR=	NOM.%OP: 10	20	30	40	50	60	70	80
FT	FT	L_2/L_1	O.D.= 0.0458	0.0969	0.1549	0.2218	0.3010	0.3979	0.5229	0.6990
10	10	1.000	10.0%	20.0%	30.0%	40.0%	50.0%	60.0%	70.0%	80.0%
10	12	0.833	8.4%	17.0%	25.7%	34.7%	43.9%	53.4%	63.3%	73.8%
10	14	0.714	7.2%	14.7%	22.5%	30.6%	39.0%	48.0%	57.7%	68.3%
10	16	0.625	6.4%	13.0%	20.0%	27.3%	35.2%	43.6%	52.9%	63.4%
10	18	0.556	5.7%	11.7%	18.0%	24.7%	32.0%	39.9%	48.8%	59.1%
10	20	0.500	5.1%	10.6%	16.3%	22.5%	29.3%	36.8%	45.2%	55.3%
10	22	0.455	4.7%	9.6%	15.0%	20.7%	27.0%	34.1%	42.1%	51.9%
10	24	0.417	4.3%	8.9%	13.8%	19.2%	25.1%	31.7%	39.4%	48.9%
12	12	1.000	10.0%	20.0%	30.0%	40.0%	50.0%	60.0%	70.0%	80.0%
12	14	0.857	8.6%	17.4%	26.3%	35.5%	44.8%	54.4%	64.4%	74.8%
12	16	0.750	7.6%	15.4%	23.5%	31.8%	40.5%	49.7%	59.5%	70.1%
12	18	0.667	6.8%	13.8%	21.2%	28.9%	37.0%	45.7%	55.2%	65.8%
12	20	0.600	6.1%	12.5%	19.3%	26.4%	34.0%	42.3%	51.4%	61.9%
12	22	0.545	5.6%	11.5%	17.7%	24.3%	31.5%	39.3%	48.1%	58.4%
12	24	0.500	5.1%	10.6%	16.3%	22.5%	29.3%	36.8%	45.2%	55.3%
14	14	1.000	10.0%	20.0%	30.0%	40.0%	50.0%	60.0%	70.0%	80.0%
14	16	0.875	8.8%	17.7%	26.8%	36.0%	45.5%	55.1%	65.1%	75.5%
14	18	0.778	7.9%	15.9%	24.2%	32.8%	41.7%	51.0%	60.8%	71.4%
14	20	0.700	7.1%	14.5%	22.1%	30.1%	38.4%	47.3%	56.9%	67.6%
14	22	0.636	6.5%	13.2%	20.3%	27.8%	35.7%	44.2%	53.5%	64.1%
14	24	0.583	6.0%	12.2%	18.8%	25.8%	33.3%	41.4%	50.5%	60.9%
16	16	1.000	10.0%	20.0%	30.0%	40.0%	50.0%	60.0%	70.0%	80.0%
16	18	0.889	8.9%	18.0%	27.2%	36.5%	46.0%	55.7%	65.7%	76.1%
16	20	0.800	8.1%	16.3%	24.8%	33.5%	42.6%	52.0%	61.8%	72.4%
16	22	0.727	7.4%	15.0%	22.8%	31.0%	39.6%	48.6%	58.3%	69.0%
16	24	0.667	6.8%	13.8%	21.2%	28.9%	37.0%	45.7%	55.2%	65.8%
18	18	1.000	10.0%	20.0%	30.0%	40.0%	50.0%	60.0%	70.0%	80.0%
18	20	0.900	9.0%	18.2%	27.5%	36.9%	46.4%	56.2%	66.2%	76.5%
18	22	0.818	8.3%	16.7%	25.3%	34.2%	43.3%	52.7%	62.7%	73.2%
18	24	0.750	7.6%	15.4%	23.5%	31.8%	40.5%	49.7%	59.5%	70.1%
20	20	1.000	10.0%	20.0%	30.0%	40.0%	50.0%	60.0%	70.0%	80.0%
20	22	0.909	9.1%	18.4%	27.7%	37.1%	46.7%	56.5%	66.5%	76.8%
20	24	0.833	8.4%	17.0%	25.7%	34.7%	43.9%	53.4%	63.3%	73.8%

L_2=STACK EXIT DIAMETER L_1=STACK DIAMETER AT TRANSMISSOMETER

STR=STACK TAPER RATIO FOR CORRECTING ACTUAL STACK DIAMETER = L_2/L_1

CORRECTED % OPACITY = $[1-(1-OP)^{STR}]*100$

APPENDIX B
Quality Assurance

Continuous Monitoring Manual
Appendix B
Table of Contents

GENERAL
CMS Quality Assurance Plan

B.1.0 QUALITY ASSURANCE AND QUALITY CONTROL

The terms "Quality Assurance" (QA) and "Quality Control" (QC) are frequently applied very loosely (sometimes interchangeably) without clear understanding of the differences between them. In these guidelines, the terms are defined as follows:

A. "Quality Control" refers to an activity carried out during routine internal operations to ensure that the data produced are within known limits of accuracy and precision. Examples of QC activities include periodic calibrations, routine zero and span checks, routine leak checks, routine check of optical alignment, etc. QC represents the core activity in a Quality Assurance program.

B. "Quality Assurance" refers to all of the planned and systematic activities carried out externally and independent of routine operation to document data quality. QA activities include written documentation of operation, calibration, and QC procedures; independent system and performance audits; data validation; evaluation of QC data; etc. QA requires documentation of every aspect of the CMS effort, from responsibilities of each person involved to how the data is reported.

B.2.0 QUALITY ASSURANCE PROJECT PLANNING

Implementation of a Quality Assurance program calls for detailed planning to identify and control critical characteristics of the total measurement system.

A. The planning process may include any or all of the following activities:

1. Sampler location and environment
2. Sample handling, pretreatment, conditioning
3. Sample analysis method & equipment
4. Method parameters, criteria for performance, limits
5. Data retrieval, data validation, etc
6. Equipment specifications and acquisition
7. Reference standards for calibration, span check, zero check, etc.

B. Questions typically asked during the planning process may

include the following:

1. Which activities are most critical to data quality?
2. What acceptance limits are necessary to ensure control of the activity?
3. How frequently should the activity be checked?
4. What methods should be used to check?
5. What should be done if the acceptance limits are not met?

C. Once the plan is developed it must be communicated to those whose job it is to implement and follow it. This takes the form of a written Quality Assurance Plan (QAP) which, for CMS, shall address the following elements:

1. Data Quality Objectives; completeness, precision, accuracy,etc.

2. Chain of responsibility for CEMS operation, maintenance, data reduction and reporting.

3. Procedures for assessing precision and accuracy: control charts, calibration checks, secondary standards, audits, CRM or SRM calibration gas traceability documentation, etc.

4. Routine Quality control checks, and frequency, to assess zero or span drift, flow rates, calibration, data retrieval, etc.

5. Criteria for corrective actions.

6. Procedures for corrective action if criteria exceeded.

7. Procedures for documenting activities in 1 - 6.

After the QAP is written it shall not be considered a static document but rather a dynamic one which can be changed to reflect what is learned as it is used. If the CEMS system is modified, operating procedures changed, or the organization of the group responsible for the system changed the QAP shall be revised to reflect these changes; as a minimum, the entire CEMS system and QAP shall be reviewed in detail on an annual basis (see System audit).

B.3.0 QUALITY ASSURANCE PLAN

B.3.1 Data Quality Objectives

Each quality assurance plan (QAP) shall include specific data quality objectives. These are data completeness, representativeness, accuracy, and precision. A brief description and general requirements are provided below.

A. Completeness is the measure of the number of valid data points collected over the possible number of data points in a period of time. For continuous measurements, the data is considered complete when at least 75% of the possible observations in an hour and 90 percent of the daily or monthly hourly averages are present and valid. This means that at least 45 minutes of continuously monitoring data must be present and valid to report an hourly average; likewise, at least 22 hourly averages must be valid to report a daily average, and 648 hourly averages for a 30 day month.

B. Representativeness refers to measurements which accurately depict the condition of interest. One aspect of representativeness involves the method chosen to perform the monitoring; it must be accurate in a qualitative, as well as quantitative, sense. If the permit calls for monitoring SO_2 the CMS must be specific for SO_2...a CMS that measures "total sulfur" would not be adequate. CEMS for "Total Reduced Sulfur (TRS) shall report data which represents TRS only, not TRS and sulfur dioxide.

Representativeness can be expressed by describing the CMS components by type, manufacturer, identification number, and location.

C. Accuracy describes how close the measurement is to the "true concentration" of the quantity being measured. The difference between the CEMS response to the standard (Y) and the true value of the certified standard (X) is expressed as a percentage of the certified standard value and describes the CEMS "bias."

$$\text{Accuracy} = \% \text{ Bias} = (Y - X)/X \times 100$$

1. Bias may arise from changes in procedure, instrument malfunction, leak in the sample line, dirty optics, contaminated reference standard, etc..

2. Minimum accuracy limits are listed in the "criteria for corrective action" section of this document.

3. Accuracy is measured by conducting routine performance

audits.

D. Precision is a measure of variability, or scatter, of the CEMS response to repeated challenges by the same standard. It is not necessary for the concentration of a precision test sample to be known, as long as it remains stable. However, the concentration of the precision test sample should periodically be verified by an analyzer calibrated with either CRM or SRM calibration gases. Normal variability may be attributable to small random changes in flow rate, temperature, pressure, intermittent electrical loading, etc.. Precision is commonly measured as standard deviation (s), variance (s^2), or relative standard deviation (RSD) [sometimes called the coefficient of variation].

Precision measures:

$$\text{standard deviation} = s = [\Sigma(x_i - x_{avg})^2/(n-1)]^{1/2}$$

$$\text{variance} = s^2$$

$$\text{relative standard deviation (RSD)} = (s/x_{avg})100$$

where: $x_{avg.}$ = mean of measurements
n = number of measurements
x_i = individual measurement

1. The goal for any monitoring activity is to obtain data with minimum bias and scatter. Regardless of what is being monitored it is important to document the quality of data being produced to ensure that it is adequate for the intended purpose: in this instance, compliance with the conditions of the ACDP.

2. Minimum precision limits are listed in the "criteria for corrective action" section of this document.

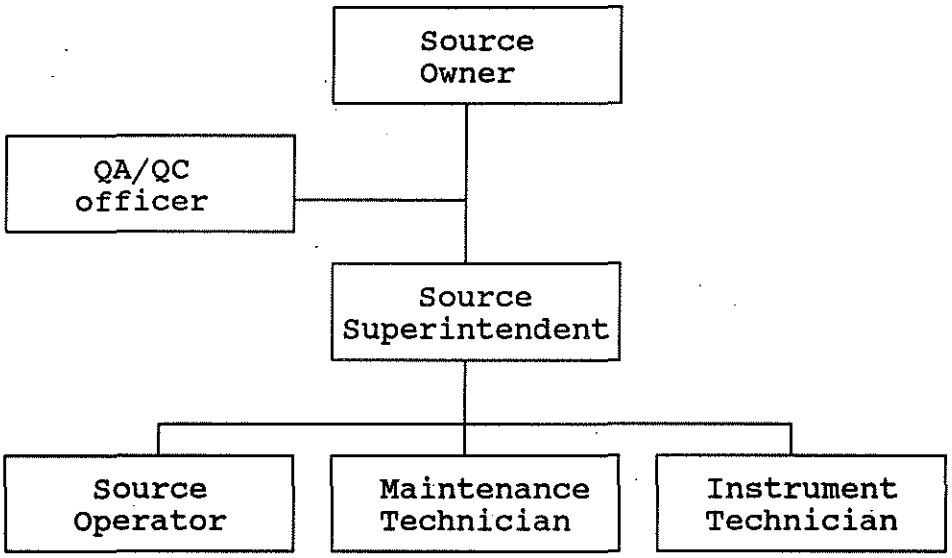
3. Precision is measured by conducting routine zero and span drift checks.

B.3.2 Chain of Responsibility and Training

The individuals and their responsibilities involved with the CMS shall be clearly defined in the QAP. This can be accomplished by means of flow charts and position descriptions. An example of a typical flow chart is provided below with descriptions of the personnel involved in the operation, maintenance, and reporting of CMS. The number of people involved and titles will depend on

the complexity and number of CMS and the existing plant organization.

A. Flow Chart



B. Responsibilities

1. The source operator uses the CMS data for correct operation of the process being controlled, including the pollution control device. This person is the first one to detect problems with the CMS. Should problems develop, and the CMS data be considered invalid, the source superintendent would be notified so that a maintenance or instrument technician would be sent to correct the problem. In some cases, it may be advantageous to have the source operator communicate directly with the technicians.

2. The maintenance technician is responsible for conducting routine maintenance on the CMS. This would require daily inspections of the CMS. Any problems not corrected immediately would be communicated to the source superintendent. Generally, the maintenance technician is concerned with the mechanics of the system, such as pumps, sample lines, filters, etc. The maintenance technician would be responsible for maintaining records of all quality control and maintenance activities that he or she performs, including maintaining an inventory of spare parts necessary for the CMS.

3. The instrument technician would be responsible for conducting the daily zero and span checks, cylinder gas audits, electronic tests, etc. Should a problem be detected that cannot be immediately corrected, the source superintendent would be notified. Like the maintenance technician, the instrument technician is also responsible for maintaining a record of all quality control activities such as the results of zero and span checks, performance audits, and corrective action that he or she performs.

4. The source superintendent is responsible for the correct operation of the CMS and coordinates all activities associated with maintenance, quality control, and data recording. This person shall be familiar enough with the CMS to correct just about any problem that occurs and develop procedures for ensuring that problems do not occur. The source superintendent would most likely also be responsible for preparing reports to source management and DEQ. The source superintendent must have the authority to authorize appropriate corrective action if necessary.

5. The QA/QC officer is responsible for reviewing the data and reports prepared by the source superintendent; assessing the data completeness, precision, and accuracy; and performing annual system audits. The QA/QC officer would develop the quality assurance plan and ensure that the quality control activities are being performed and documented. The QA/QC officer shall not be directly involved in the day-to-day operation of the CMS.

6. The source owner is ultimately responsible for the source operation and validity of CMS data. The source owner shall be periodically apprised of the CMS working condition and quality of data through summary reports prepared by the source superintendent and reviewed by the QA/QC officer.

C. Each individual involved with the CMS shall be made aware of the CMS goals and criteria for corrective action (see section B.3.6) so that they can effectively make decisions about corrective action. The QAP shall include a training program consisting of the type (e.g. in-house, certificate, etc.) and frequency of the training. Records of training shall be maintained at the site and made available to DEQ personnel upon request.

B.3.3 Measures of Accuracy and Precision

There are four distinct activities for measuring and ensuring the accuracy and precision of the CMS. Provided below is a description of each of these activities and the frequency at which they shall occur.

A. CMS Calibration

1. Calibration procedures shall be in written form in the SOP. These procedures must be available to both source personnel, who operate the system, and Agency personnel for review. Simple reference to the instrument manual is inadequate unless procedures are identical to those of the manufacturer.

2. Calibration of a CEMS shall include running "zero" and two upscale points using reference standards. The upscale standards shall be between 10 - 20 and 80 - 90 percent of the full-scale response. Single upscale point calibrations are not acceptable: they assume a linear response, which must be demonstrated.

3. Calibrations shall be fully documented and take place on a schedule. At a minimum, the CMS must be calibrated prior to installation or just after installation, whichever is most appropriate for the CMS. Whenever the CMS requires major maintenance or repair a full calibration shall be performed before data is declared valid. The actual schedule for calibrations will be determined by the source operator. The frequency will depend upon CMS performance and audit results.

4. Calibration standards

   a. For COMS, the reference standards are neutral density optical filters which have optical densities certified to be traceable to National Institute of Standards and Technology (NIST) reference material (40 CFR Part 60, Appendix B, sec 3.4 & 7.1.3).

   b. For CEMS (SO_2, NO_2, CO_2 and O_2, TRS, CO), the reference standards can be either Certified compressed gases; a permeation device (for SO_2, NO_x, TRS) whose permeation rate is Certified at some fixed temperature; or a sealed gas cell

containing a gas whose concentration is Certified. Certified standards must be traceable to NIST standards.

i. Calibration accuracy is dependent on the quality of the reference standard used. Ideally, compressed gas standards shall be either NIST-Standard Reference Materials (SRMs), EPA- Certified Reference Material (CRMs), or Primary Standard quality. Calibration gases analyzed by the user employing the appropriate EPA Reference Method and at least one NIST traceable standard would be acceptable providing the necessary documentation is available. Permeation device permeation rates must be certified by the manufacturer or the user, either gravimetrically or by Reference Method analysis. Permeation devices must be used in an oven capable of maintaining the set temperature within $\pm$ 0.1°C.

c. For CPMS, typical reference standards would be liquid (water or mercury) manometers, NIST traceable thermometers, NIST traceable pitot tubes, etc.

B. Zero (low level) & span checks (Calibration Drift)

1. Zero (low level) and span checks, sometimes referred to as Calibration Drift (CD) checks, must be performed daily. The CMS response to zero or low level and span (high level) standards must be recorded to evaluate the performance of the CMS over a period of time. The CD checks are the first criteria for determining the degree of control of the CMS.

The drift must be checked at two levels: zero and high. If the instrument technology is such that it is not possible to check the zero level, a low level point shall be checked instead. The calibration drift levels are defined as follows:

a. Zero = <0.25% of instrument span
b. Low level = 0 to 20% of instrument span
c. High level = 50 to 100% of instrument span

2. Daily span standards need not be certified reference

materials, but they should be reanalyzed immediately after each full-scale calibration or audit and their nominal concentration "renamed" to match the instrument response.

3. On some CMS the CD can be performed automatically at preset times. The zero and span trace on the strip chart shall be verified for timing as well as magnitude of response; the observed/reference values shall be written directly on the strip chart as documentation.

4. For CMS that automatically correct for drift, the CMS must be designed to record the observed zero and span values prior to any adjustments.

C. Performance audits for data accuracy

1. The performance audit shall be conducted independently of normal calibrations and calibration drift checks using specially assigned reference standards.

2. For CMS installed on NSPS sources and all CMS installed after 6/1/91, the performance audit shall be conducted at least quarterly. Successive audits shall be conducted no closer than 2 months apart. There are three types of audits: Relative Accuracy Test Audit (RATA), Relative Accuracy Audit (RAA), and the Cylinder Gas Audit (CGA). At least one of the four required audits in one year shall be a RATA. The other three audits may be RAAs or CGAs. If the RATA is performed once per year, the RATA shall not be conducted in successive quarters.

3. For CMS installed on non-NSPS sources and prior to 6/1/91, the performance audit shall be conducted at least two times per year. The source operator may want to conduct audits more frequently to ensure that a minimum amount of data is not put in jeopardy.

4. If it is demonstrated by a compliance source test that the emissions monitored by a CMS are less than 50% of the ACDP limit, the permittee may petition the DEQ to change the annual RATA requirements to once every 3 years. This option does not apply to CMS installed specifically for demonstrating compliance with an ACDP limit.

5. A description of each type of audit is provided below.

These are explained in detail in 40 CFR Part 60 Appendix F.

a. Relative Accuracy Test Audit (RATA)

i. The RATA is conducted upon initial startup of the CMS and at least annually thereafter.

ii. The RATA consists of conducting a minimum of nine reference method test runs and comparing the results to the CMS output using a 95% confidence coefficient. The reference methods are from 40 CFR Part 60 Appendix A. The CMS specific reference methods are listed below:

(1) SO_2 CEMS - Reference Method 6 or 6c
(2) NO_x CEMS - Reference Method 7 or 7e
(3) CO CEMS - Reference Method 10
(4) TRS CEMS - Reference Method 16 or 16a
(5) O_2 CEMS - Reference Method 3 or 3a
(6) CO_2 CEMS - Reference Method 3 or 3a

iii. For SO_2, TRS, and NO_x testing, EPA audit samples shall be analyzed by the same individual that performs the reference method sample analysis. The audit samples may be obtained from the DEQ. Contact the Source Testing Coordinator (503) 229-5069.

iv. When the emissions are reported as emission rates (lb/hr), the RATA shall include methods 1 through 4 for determining stack gas flow rates.

b. Relative Accuracy Audit (RAA)

i. Three of the required 4 audits performed each year may be the RAA.

ii. The RAA procedure is identical to the RATA procedure except that a minimum of three reference method test runs instead of nine are required. The reference methods are the same as for the RATA.

iii. The sample analysis shall include analysis of audit samples as described for the RATA.

c. Cylinder Gas Audit (CGA)

i. Three of the required 4 audits performed each year may be a CGA.

ii. A CGA consists of challenging the CMS three times with each audit standard: an independent "zero" and two independent upscale Certified Standards (at approximately 1 and 0.5 times the permitted emission standard). **Audit standards used must not be the same ones used for daily checks or calibration.** Standards which are acceptable include those from the National Institute of Standards and Technology-Standard Reference Materials (NIST-SRMs), gas vendor Certified Reference Materials (CRM), or a Primary Standard gas which is traceable to NIST-SRMs or CRMs using EPA's Revised Traceability Protocol No.1 (DEQ Lab can provide copy).

iii. CGA audit samples shall be introduced into the CEMS operating in the normal sampling mode to include as much of the system as possible (e.g. at or as close as possible to the sampling probe for extractive systems). Most in-situ CEMS incorporate a gas fitting at the point the sampling probe penetrates the stack wall for introduction of audit gases.

iv. Results of each audit shall be available to DEQ for review.

4. NSPS sources with SO_2, NO_x, or TRS CEMS must audit the pollutant channel and the diluent (O_2 or CO_2) CEMS because the emission standard is based on both the pollutant and diluent CEMS.

D. System Audits

1. System audits shall be done at least annually.

2. A System audit is performed by a person other than the person who does routine daily checks, repair and maintenance, or data reporting; preferably a supervisor who is familiar with the CEMS but does not have daily contact with it. Generally, system audits

are "paper audits," concerned with verifying the existence of documentation, adherence to procedures as written, verifying complete documentation and the physical condition of the CEMS operation. All documentation and procedures called for in the QAP shall be examined for completeness and timeliness. Data resulting from routine daily checks shall be reviewed for completeness.

3. The system audit shall result in a written report to management indicating whether the QAP is being followed, the quality of CEMS data, and recommending changes.

B.3.4 Quality Control

A. Internal Quality Control Checks

Internal quality control check procedures and the frequency with which they are conducted will vary depending on the type of CMS, its history, and its operating environment. The following checks shall be made at the indicated frequency on all CMS:

1. Daily

Daily checks shall be limited to relatively simple aspects of the CMS and may vary depending on the parameter being monitored and the type of monitor being used. Manuals provided by the manufacturer will normally indicate what needs to be inspected and how to test it.

a. Zero & span checks. Sometimes referred to as Zero or Calibration Drift (CD) checks. The monitor response to zero and span standards shall be recorded. Daily span standards need not be certified reference materials but they should be reanalyzed immediately after each full-scale calibration or performance audit and their nominal concentration "renamed" to match the instrument response.

On some CMS the zero and span can be performed automatically at preset times. The zero and span trace on the strip chart shall be verified for timing as well as magnitude of response; the observed/reference values shall be written directly on the strip chart as documentation.

b. Flow rate shall be checked in the probe, for extractive monitors, and at the analyzer sampling point to ensure that the sample is getting to the monitor. In-line filter plugging or a leak could cause reduced flow. Condensed water traps shall be emptied or checked for proper drainage.

c. Sample conditioning equipment shall be checked for effectiveness, leaks or condensation; particulate filters shall be checked for integrity and plugging; thermal converter temperatures shall be verified; etc.

d. Fault indicators shall be checked to make certain that they are functioning properly; if any are activated, the cause shall be determined and corrected immediately. In computerized CMS, "error messages" on the printout shall be followed up.

e. Auxiliary monitor performance parameters shall be checked and values noted. Many CMS have electronic reference or zero compensation values which can be monitored. They can be used to evaluate stability of the electronics and reliability of the fault indicators. After some history is obtained, frequency of checking may be reduced.

2. Weekly

QC checks that are performed on a weekly, monthly, or quarterly frequency shall be designed to identify developing or existing problems which cannot be detected in the daily checks and will usually incorporate some preventative maintenance activities. The integrity of sampling lines are verified; in-line filters are checked or changed; pump and motor bearings are lubricated; optical path alignment is verified; optical surfaces are cleaned; purge system checked; replacement of expendable supplies (chart paper, recorder ink, printer ribbon,etc); etc. Preventative maintenance activities on the schedule recommended by the CMS component manufacturer shall be performed and the date of completion documented.

a. Data recording/display devices shall be checked

for accuracy and stability. Most CMS have a panel meter (digital or analog) and a strip chart recorder; some use a computer to log data and perform calculations. The recording/display device used to obtain the data which is reported to DEQ shall be of primary concern. A check shall be done to verify that the panel meter and the strip chart are displaying the same value; the "zero" of the display device has not drifted appreciably; the proper strip chart paper is being used; the recorder is responsive to changes in CMS output; and the recorder is set for the proper full-scale range.

The recorder "zero" may be offset upscale by 5% of full-scale to permit observation of down-scale drift in CMS response (e.g. for a COMS monitoring 0 - 100% Opacity on a strip chart having 100 scale divisions, set the recorder zero at 5 scale divisions). Although the upper 5% of the monitoring range is lost, it is an acceptable trade-off for the ability to observe negative zero drift on the low end. Values are not routinely expected in the upper 5% of the range anyway.

3. Monthly

   a. Plumbing associated with sample handling and conditioning shall be inspected for leaks, corrosion, etc. Fittings, valves, and gas regulators also need to be checked. Solenoid valves, commonly used to automate flow systems, shall be tested to ensure they function properly.

   b. Electrical cables and heat traced lines shall be inspected regularly. In an industrial environment physical damage can occur easily, and exposure to chemicals or weather can cause insulation to deteriorate rapidly.

B.3.5 Quality Control Documentation

A. Calibrations, QA and QC activities, routine maintenance, or repair activities shall be documented in a bound laboratory notebook with pre-numbered pages dedicated to each CMS monitor. A brief description of the activity and data is written any time anything is done to the CMS; each entry is initialed and dated by the person performing the activity.

The complete chronological history of the CMS is then available in one document for review. The notebook is kept with the CMS at all times.

B. All data resulting from daily QC checks (e.g. zero, span, flow rates, fault lamp condition, probe vacuum, etc.) must be recorded because they document the operating condition of the CMS. If several persons are involved in performing the daily checks, a change in these parameters is easier to monitor if the data is plotted on a control chart.

B.3.6 Data Recording, Calculations, and Reporting

The QAP must include detailed procedures for recording and reporting CMS data, including all calculations used to obtain emissions in units of the standard.

A. Recording

There are several techniques for recording CMS data ranging from manually recorded data to computer recorded data. Many CMS will utilize more than one technique to ensure that data is not lost. This might include a strip chart recorder combined with an electronic data logger. The QAP will include the following information:

1. Type, manufacturer, identification number, and location of all equipment used for recording the CMS data.

2. Equipment maintenance procedures such as changing chart paper and pens, computer printer paper, cleaning, etc.

3. Electronic check procedures

4. Calibration procedures if necessary.

B. Calculations

All calculations used to convert CMS data to reporting values shall be clearly defined in the QAP. Each formula shall be written out with explanations of the variables and constants. Constants that have been estimated or assumed shall be highlighted and the rational or justification for using the value provided. Example calculations shall be provided. The accuracy of the calculations shall be periodically reviewed.

C. Reporting

The QAP shall include examples of the specific reporting formats for all CMS data, performance audits, CMS out-of-control periods, and excess emissions. Reporting summaries are provided in Appendix C.

B.3.7 Criteria for Corrective Action

For QC/QA activities to serve the purpose of maintaining and documenting data quality it is necessary to set up performance criteria which trigger or initiate some corrective action when the limits are exceeded. In the case of daily drift checks it is necessary to set an "allowable" standard; as long as the CMS drift is within the limits nothing is done; as soon as the limit is exceeded some action must be taken to get the system back into control, and a decision must be made regarding the quality of the data that has been produced since the last acceptable check.

A. Performance Specifications

1. The Environmental Protection Agency (EPA) has established Performance Specifications (PS) for CMS installed after March 30, 1983 as a requirement of a subpart in 40 CFR Part 60, to generate data of acceptable quality: PS-1,-2,-3,-4, and -5 deal with Opacity, SO_2 & NO_x, diluent gases (O_2 & CO_2), CO, and Total Reduced Sulfur (TRS) CMS, respectively. A summary of these PS's (from 40 CFR Part 60, Appendix B) are shown in Table B-1 on page B-17. The State of Oregon DEQ has adopted these performance specifications for CMS installed for the purpose of demonstrating continuous compliance with emission limits.

2. CPMS performance specifications (40 CFR Part 60 Appendix B specification 6) are as follows:

   a. Flow rate and pressure analyzers shall not drift or deviate from either of their reference values by more than 3% of 1.25 times the average potential absolute value for that measurement.

   b. A temperature analyzer shall not drift or deviate from its reference value by more than 1.5% of 1.25 times the average potential absolute value for that measurement.

c. The relative accuracy (RA) for CPMS shall be not greater than 20% of the mean value of the reference method's test data in terms of the units of the emission standard, or 10% of the applicable standard, whichever is greater.

d. For existing CPMS, the DEQ may approve less stringent performance specifications on a case by case basis.

3. These Performance Specifications are goals for operation of the CMS; whenever they are exceeded, data quality deteriorates and something must be done to restore the system to control. When the CMS is "out-of-control" the data shall be invalidated until "control" can be restored.

B.3.8 Corrective Action

A. There are three degrees of "control" for setting action and data quality criteria: "acceptable," "marginal," and "out-of-control." "Acceptable" data is self-explanatory; the data is valid and the CMS is operating within specifications. "Marginal" data is still valid but some action needs to take place to prevent further deterioration to the point where the data is invalid and the CMS is out of specification. When the third level of control is reached a serious problem exists in the system and data shall be invalidated until the problem can be identified and fixed.

Criteria	Degree of Control	Action
CD≤(2xspec) or Accuracy audit OK	"acceptable"	valid data, proceed as normal until next CD
CD≤(4xspec) but CD≥(2xspec) for four consec.days	"marginal"	valid data, identify problem, correct, may adj. zero & span with due care, repeat CD check
CD≥(4xspec) or CD≥(2xspec) for five consec. days	"out-of-control"	invalid data, identify problem, correct, recalibrate, repeat CD check
RA specification exceeded	"out-of-control" invalidate data, repair, repeat accuracy audit	

B. When CD≥(2xspec), adjustment of both the zero and span of the CMS are permitted to regain control. This must be done carefully as it is possible to make the situation worse without realizing it by "chasing" an instrument response to an erroneous standard. Recheck the zero and/or span gas supply system for leaks, excess/reduced flow, permeation tube temperature, etc. before making any adjustments.

C. If, for whatever reason, a CMS is declared out-of-control, data shall be invalidated back to the last check which was not out-of-control and shall remain invalid until a check is performed which is within criteria.

D. The QAP shall include contingency procedures for anticipated problems with the CMS. Initially, this may be very brief until source personnel become more familiar with CMS and problems that could be encountered.

Table B-1. Summary of 40 CFR 60, Appendix B, Performance Specifications

Parameter	PS-1	PS-2	PS-3	PS-4	PS-5
Calibration error	≤3%OP[a]	≤5%Span	≤5%Span	≤5%Span	≤5%Span
Calibration drift(CD)	≤2%OP[a]	≤2.5% Span	≤0.5%O_2 or CO_2	≤5%Span	≤5%Span (1.5ppm/ 30ppmFS)
Relative Accuracy(RA)	-------	≤20%RM[b] ≤10%Std	≤20%RM[b] or ≤1%O_2CO_2	≤10%RMb or 5% Std	≤20%RMb or 10% Std

Where: %OP = % opacity
Std = emission standard
Span = FS = full scale range of CMS
RM = concentration of pollutant by reference method.

and

a = sum of absolute value of mean and absolute value of confidence coefficient(95%)

$$= |x_{avg}| + |t_{.975} * s/\sqrt{n}|$$

b = % mean difference between RM concentration and CMS response plus 2.5% confidence coefficient divided by the RM concentration.

$$= [|d_{avg}| + |t_{.975}s/\sqrt{n}|] * 100/RM$$

$$|d| = |\text{CEMS resp} - RM|$$

APPENDIX C
Reporting Forms

Continuous Monitoring Manual
Appendix C
Table of Contents

C.1.0 CONTINUOUS MONITORING REPORT

I. Source Information

Reporting Period: From_____ To_____
Company name: _____
Plant name: _____
Source: _____
ACDP#: _____
Operation time (hrs) _____

II. Continuous Monitor Information

Continuous Monitor	Manufacturer	ID#	Type	Span	Location

III. Continuous Monitor Operation Summary+

Continuous Monitor	Downtime* From	To	Reason	Corrective Action

* Excluding zero and span checks (calibration drifts)
Total monitor downtime as a percent of source operating time ____

IV. Excess Emissions Summary+

Pollutant/ Parameter	Excess Period From	To	Average Excesses	Reason

Total excess emissions as a percent of source operating time ___

+ Attach extra sheets if necessary

V. Data Averages

Attach summaries of 1-hour data averages of pollutant emissions for the reporting period. Note the overall emissions average for the reporting period below.

Pollutant	Average Emissions	Units

VI. Accuracy Assessment Results

Complete forms A, B, or C for each CMS or for each pollutant and diluent analyzer, as applicable. If the quarterly audit results show the CMS to be out-of-control, report the results of both the quarterly audit and the audit following corrective action showing the CMS to be operating properly. Attach the forms to this report.

VII. Calibration Drift Assessment

Continuous Monitor	Out-of-Control Periods From	To	Corrective Action Taken

Report Prepared by _____ Date_____

C.1.1 Continuous Monitoring Report Instructions

I. Source Information

Enter the reporting period (i.e. 1/1/91 to 1/21/91), the company name, the plant name or location, the facility (i.e. hogged fuel boiler #1), and the Oregon Air Contaminate Discharge Permit (ACDP) number.

II. Continuous Monitor Information

Enter the manufacturer of the major component(s) of the CMS (i.e. Horiba for a CO analyzer), the serial number and model number, the type (i.e. in-situ or extractive non-dispersive infrared), the span (i.e 1000 ppm), and the location (i.e. downstream of the wet scrubber in the stack). This information will remain the same for each report unless a component is changed.

III. Continuous Monitor Operation Summary

If the monitor was inoperative for any reason other than routine calibration drift checks and maintenance, note the time period the CMS was down, the reason, and the corrective action taken to get the CMS back on line. The reason and corrective action explanations shall be provided in detail.

IV. Excess Emissions Summary

List the duration and magnitude of all excess emissions for regulated pollutants (i.e. CO) and operating parameters (i.e. scrubber pressure differential). Provide a detailed explanation for the excess emissions if there is a discernible reason (i.e. feed water pump failure, grate cleaning, etc.).

V. Data Averages

Attach a summary of the data collected during the reporting period. The format for the data summary shall be developed by the source operator and approved by the DEQ. It shall include some means of "high-lighting" excess emission periods. List the reporting period average emissions for all regulated pollutants (i.e. opacity, carbon monoxide, etc.) and the units of the emissions (i.e. lbs/hr).

VI. Accuracy Assessment Results

If performance audits were required during the reporting period, complete and attach the appropriate section (A, B, or C and D if

applicable) of the accuracy assessment form showing the results of the audit and the accuracy of the CMS.

VII. Calibration drift assessment

List any periods of CMS out-of-control during the reporting period due to excessive calibration drift and a detailed explanation of the corrective action taken to bring the CMS into control.

C.2.0 ACCURACY ASSESSMENT RESULTS REPORT

A. Relative Accuracy Test Audit (RATA) for _____

1. Date of audit _____
2. Reference methods (RM's) used _____
3. Average RM value _____
4. Average CMS value _____
5. Absolute value of mean difference (d) _____
6. Confidence coefficient (CC) _____
7. Percent relative accuracy (RA) _____
8. EPA performance audit results:
   a. Audit lot number (1)_____, (2)_____
   b. Audit sample number (1)_____, (2)_____
   c. Results (mg/dscm) (1)_____, (2)_____
   d. Actual value (mg/dscm) (1)_____, (2)_____
   e. Relative error (1)_____, (2)_____

B. Relative accuracy audit (RAA) for _____

1. Date of audit _____
2. Reference methods (RM's) used _____
3. Average RM value _____
4. Average CMS value _____
5. Percent accuracy _____
6. EPA performance audit results:
   a. Audit lot number (1)_____, (2)_____
   b. Audit sample number (1)_____, (2)_____

c. Results (mg/dscm) (1)_____,(2)_____

d. Actual value (mg/dscm) (1)_____,(2)_____

e. Relative error (1)_____,(2)_____

C. Cylinder gas audit (CGA) for _____

	Audit Point 1	Audit Point 2
1. Date of audit		
2. Cylinder ID number		
3. Date of certification		
4. Type of certification		
5. Certified audit value		
6. CMS response value		
7. Accuracy (percent)		

D. Corrective Action for excessive inaccuracy:

1. Out of control periods: Dates

2. Number of days

3. Corrective action taken _____

_____

_____

4. Results of audit following corrective action. (Use A, B, or C above, as applicable, to report results.)

C.2.1 Accuracy Assessment Report Instructions

Complete section A, B, or C, and D if applicable, each time a performance audit is conducted. Attach the report to the monthly continuous monitoring report.

Line-by-line instructions:

A. Enter the continuous monitoring system (i.e. carbon monoxide) that is being checked by a RATA

1. Enter the date of the audit (i.e. 1/1/91)

2. Enter the reference methods used (i.e. EPA methods 1 through 4 for stack gas volumetric flow and method 10 for carbon monoxide, write them as follows: EPA M 1-4, 10).

3. Average the reference method values (at least 9 results and reported in units of the permit limit: i.e. lbs/hr).

4. Average the CMS values (in units of the permit limit) during the testing.

5. Calculate the arithmetic mean of the difference (d) between the RM and CMS.

6. Enter the confidence coefficient (CC) as calculated from the following formula and the t-value table.

$$CC = t_{0.975} * S_d/\sqrt{n}$$

where;

$t_{0.975}$ = t-value from table

n = number of test RM results

S_d = standard deviation

$= \{[\Sigma\ d_i^2 - (\Sigma\ di)^2/n]/(n-1)\}^{1/2}$

where;

n = number of RM test results

d = difference between individual RM and CMS results

7. Calculate the relative accuracy (RA) by the following formula:

$$RA = 100 * (|\bar{d}| + |CC| / \overline{RM})$$

where;

$|\bar{d}|$ = absolute value of the arithmetic mean of the RM and CMS difference.

$|CC|$ = absolute value of the confidence coefficient calculate above.

$\overline{RM}$ = Average reference method value or applicable standard.

t-values:

n^a	$t_{0.975}$	n^a	$t_{0.975}$	n^a	$t_{0.975}$
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.262	15	2.145
6	2.571	11	2.228	16	2.131

[a] The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of individual values.

8. If it is required that EPA audit samples be analyzed during the reference method testing (i.e. Method 6 and 7, SO_2 and NO_x), enter the results in the space provided. The actual value will be entered by the DEQ and the relative error will be calculated by the DEQ. The DEQ will notify the source operator and testing company if the percent error is greater than 5%. Results of the audit analysis are available upon request.

B. Relative accuracy audit (RAA)

The instruction for lines 1 through 4 and 6 are the same as for lines 1 through 4, and 8 above.

5. Calculate the percent accuracy (A) using the following formula:

$$A = (C_m - C_a)/C_a * 100$$

where;

C_m = Average of CMS response during the audit in units of the standard.

C_a = Average audit value (reference method results) in units of the standard.

C. Cylinder gas audit (CGA)

Complete the table as follows:

1. Enter the date of the audit.

2. Enter the calibration gas identification number.

3. Enter the date that the cylinder gas was certified.

4. Enter the type of certification (i.e. NIST-SRM, EPA-CRM, Protocol-1, reference method).

5. Enter the certified audit value (concentration: percent or parts per million).

6. Enter the CMS response value.

7. Calculate the accuracy (A) using the following formula:

$$A = (C_m - C_a)/C_a * 100$$

where;

C_m = Average of CMS response during the audit in units of the appropriate concentration.

C_a = Average audit value (CGA certified value) in units of the appropriate concentration.

Note: audit point 1 shall be 20-30% of the span value, audit point 2 shall be 50-60% of the span value.

D. Corrective action for excessive inaccuracy

1. Enter the dates that the CMS is out-of-control due to excessive inaccuracy.

2. Enter the number of days that the CMS is out-of-control due to excessive inaccuracy.

3. Describe in detail the corrective action taken to bring the CMS back into control (i.e. replaced leaking sample line, replaced detector, etc.)

4. Complete the appropriate form (A, B, or C) to show that the CMS successively completed an audit and is back in control.

Appendix D
Code of Federal Regulations
Appendices B and F

6.3 Dry Moles of Exhaust Gas. Use Equation 28a-2 to calculate the total moles of dry exhaust gas produced per kilogram of dry wood burned.

$$N_T = \left(\frac{42.5}{(Y_{CO_2} + Y_{CO} + Y_{HC})} \right) \quad \text{Eq. 28a-2}$$

6.4 Air to Fuel Ratio. Use Equation 28a-3 to calculate the air to fuel ratio on a dry mass basis.

$$A/F = \left(\frac{(N_T \times M_d) \quad (510)}{(1000)} \right) \quad \text{Eq. 28a-3}$$

6.5 Burn Rate. Calculate the fuel burn rate as in Method 28, Section 8.3.

7. Bibliography

Same as Method 3, Section 7, and Method 5H, Section 7.

APPENDIX B—PERFORMANCE SPECIFICATIONS

Performance Specification 1—Specifications and test procedures for opacity continuous emission monitoring systems in stationary sources

Performance Specification 2—Specifications and test procedures for SO_2 and NO_x continuous emission monitoring systems in stationary sources

Performance Specification 3—Specifications and test procedures for O_2 and CO_2 continous emission monitoring systems in stationary sources

Performance Specification 5—Specifications and test procedures for TRS continous emission monitoring systems in stationary sources

PERFORMANCE SPECIFICATION 1—SPECIFICATIONS AND TEST PROCEDURES FOR OPACITY CONTINUOUS EMISSION MONITORING SYSTEMS IN STATIONARY SOURCES

[Specification 1 amended and corrected by 52 FR 34639, September 14, 1987]

1. Applicability and Principle

1.1 Applicability. This specification contains requirements for the design, performance, and installation of instruments for opacity continuous emission monitoring systems (CEMS's) and data computation procedures for evaluating the acceptability of a CEMS. Certain design requirements and test procedures established in this specification may not apply to all instrument designs. In such instances, equivalent design requirements and test procedures may be used with prior approval of the Administrator.

Performance Specification 1 (PS 1) applies to opacity monitors installed after March 30, 1983. Opacity monitors installed before March 30, 1983, are required to comply with the provisions and requirements of PS 1 except for the following:

(a) Section 4, "Installation Specifications."

(b) Sections 5.1.4., 5.1.6., 5.1.7., and 5.1.8. of Section 5, "Design and Performance Specifications."

[1.1(b) amended by 52 FR 34639, September 14, 1987; 55 FR 47472, November 14, 1990]

(c) Section 6.4 of Section 6 "Design Specifications Verification Procedure."

An opacity monitor installed before March 30, 1983, need not be tested to demonstrate compliance with PS 1 unless required by regulatory action other than the promulgation of PS 1. If an existing monitor is replaced with a new monitor, PS 1 shall apply except that the new monitor may be located at the old measurement location regardless of whether the location meets the requirements of Section 4. If a new measurement location is to be determined, the new location shall meet the requirements of Section 4.

[1.1(c) amended by 55 FR 47472, November 14, 1990]

1.2 Principle. The opacity of particulate matter in stack emissions is continuously monitored by a measurement system based upon the principle of transmissometry. Light having specific spectral characteristics is projected from a lamp through the effluent in the stack or duct, and the intensity of the projected light is measured by a sensor. The projected light is attenuated because of absorption and scatter by the particulate matter in the effluent; the percentage of visible light attenuated is defined as the opacity of the emission. Transparent stack emissions that do not attenuate light will have a transmittance or 100 percent of an opacity of zero percent. Opaque stack emissions that attenuate all of the visible light will have a transmittance of zero percent or an opacity of 100 percent.

This specification establishes specific design criteria for the transmissometer system. Any opacity CEMS that is expected to meet this specification is first checked to verify that the design specifications are met. Then, the opacity CEMS is calibrated, installed, and operated for a specified length of time. During this specified time period, the system is evaluated to determine conformance with the established performance specifications.

2. Definitions

2.1 Continuous Emission Monitoring System. The total equipment required for the determination of opacity. The system consists of the following major subsystems:

2.1.1 Sample Interface. That portion of CEMS that protects the analyzer from the effects of the stack effluent and aids in keeping the optical surfaces clean.

2.1.2 Analyzer. That portion of the CEMS that senses the pollutant and generates an output that is a function of the opacity.

2.1.3 Data Recorder. That portion of the CEMS that provides a permanent record of the analyzer output in terms of opacity. The data recorder may include automatic data-reduction capabilities.

2.2 Transmissometer. That portion of the CEMS that includes the sample interface and the analyzer.

2.3 Transmittance. The fraction of incident light that is transmitted through an optical medium.

2.4 Opacity. The fraction of incident light that is attenuated by an optical medium. Opacity (Op) and transmittance (Tr) are related by: $Op = 1 - Tr$.

2.5 Optical Density. A logarithmic measure of the amount of incident light attenuated. Optical density (D) is related to the transmittance and opacity as follows:

$D = -\log_{10} Tr = -\log_{10} (1-Op)$

2.6 Peak Spectral Response. The wavelength of maximum sensitivity of the transmissometer.

2.7 Mean Spectral Response. The wavelength that is the arithmetic mean value of the wavelength distribution for the effective spectral response curve of the transmissometer.

2.8 Angle of View. The angle that contains all of the radiation detected by the photodetector assembly of the analyzer at a level greater than 2.5 percent of the peak detector response.

2.9 Angle of Projection. The angle that contains all of the radiation projected from the lamp assembly of the analyzer at a level of greater than 2.5 percent of the peak illuminance.

2.10 Span Value. The opacity value at which the CEMS is set to produce the maximum data display output as specified in the applicable subpart.

2.11 Upscale Calibration Value. The opacity value at which a calibration check of the CEMS is performed by simulating an upscale opacity condition as viewed by the receiver.

2.12 Calibration Error. The difference between the opacity values indicated by the CEMS and the known values of a series of calibration attenuators (filters or screens).

2.13 Zero Drift. The difference in the CEMS output readings from the zero calibration value after a stated period of normal continuous operation during which no unscheduled maintenance, repair, or adjustment took place. A calibration value of 10 percent opacity or less may be used in place of the zero calibration value.

2.14 Calibration Drift. The difference in the CEMS output readings from the upscale calibration value after a stated period of normal continuous operation during which no unscheduled maintenance, repair, or adjustment took place.

2.15 Response Time. The amount of time it takes the CEMS to display on the data recorder 95 percent of a step change in opacity.

2.16 Conditioning Period. A period of time (168 hours minimum) during which the CEMS is operated without any unscheduled maintenance, repair, or adjustment prior to initiation of the operational test period.

2.17 Operational Test Period. A period of time (168 hours) during which the CEMS is expected to operate within the established performance specifications without any unscheduled maintenance, repair, or adjustment.

2.18 Path Length. The depth of effluent in the light beam between the receiver and the transmitter of a single-pass transmissometer, or the depth of effluent between the transceiver and reflector of a double-pass transmissometer. Two path lengths are referenced by this specification as follows:

2.18.1 Monitor Path Length. The path length (depth of effluent) at the installed location of the CEMS.

2.18.2 Emission Outlet Path Length. The path length (depth of effluent) at the location where emissions are released to the atmosphere. For noncircular outlets, $D=(2LW)\div(L+W)$, where L is the length of the outlet and W is the width of the outlet. Note that this definition does not apply to pressure baghouse outlets with multiple stacks, side discharge vents, ridge roof monitors, etc.

3. *Apparatus*

3.1 Opacity Continuous Emission Monitoring System. Any opacity CEMS that is expected to meet the design and performance specifications in Section 5 and a suitable data recorder, such as an analog strip chart recorder or other suitable device (e.g., digital computer) with an input signal range compatible with the analyzer output.

3.2 Calibration Attenuators. Minimum of three. These attenuators must be optical filters or screens with neutral spectral characteristics selected and calibrated according to the procedures in Sections 7.1.2 and 7.1.3, and of sufficient size to attenuate the entire light beam received by the detector of the transmissometer.

3.3 Upscale Calibration Value Attenuator. An optical filter with neutral spectral characteristics, a screen, or other device that produces an opacity value (corrected for path length, if necessary) that is greater than or equal to the applicable opacity standard but less than or equal to one-half the applicable instrument span value.

3.4 Calibration Spectrophotometer. A laboratory spectrophotometer meeting the following minimum design specifications:

Parameter	Specification
Wavelength range	400–700 nm.
Detector angle of view	<10°.
Accuracy	<0.5 percent transmittance, NBS traceable calibration.

4. *Installation Specifications*

Install the CEMS at a location where the opacity measurements are representative of the total emissions from the affected facility. These requirements can be met as follows:

4.1 Measurement Location. Select a measurement location that is (a) downstream from all particulate control equipment, (b) where condensed water vapor is not present, (c) free of interference from ambient light (applicable only if transmissometer is responsive to ambient light), and (d) accessible in order to permit routine maintenance. Accessibility is an important criterion because easy access for lens cleaning, alignment checks, calibration checks, and blower maintenance will help assure quality data.

4.2 Measurement Path. The primary concern in locating a transmissometer is determining a location of well-mixed stack gas. Two factors contribute to complete mixing of emission gases: turbulence and sufficient mixing time. The criteria listed below define conditions under which well-mixed emissions can be expected.

Select a measurement path that passes through a centroidal area equal to 25 percent of the cross section. Additional requirements or modifications must be met for certain locations as follows:

4.2.1 If the location is in a straight vertical section of stack or duct and is less than 4 equivalent diameters downstream from a bend, use a path that is in the plane defined by the upstream bend (see Figure 1-1).

4.2.2 If the location is in a straight vertical section of stack or duct and is less than 4 equivalent diameter upstream from a bend, use a path that is in the plane defined by the bend (see Figure 1-2).

[4.2.2 amended by 52 FR 34639, September 14, 1987]

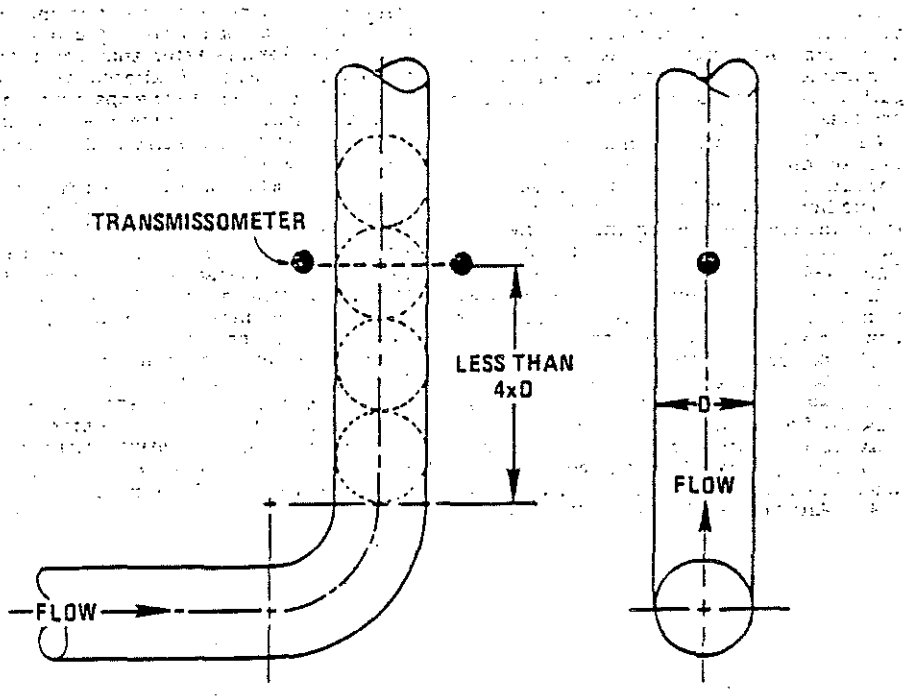


Figure 1-1. Transmissometer location downstream of a bend in a vertical stack.

[Appendix B, Spec. 1]

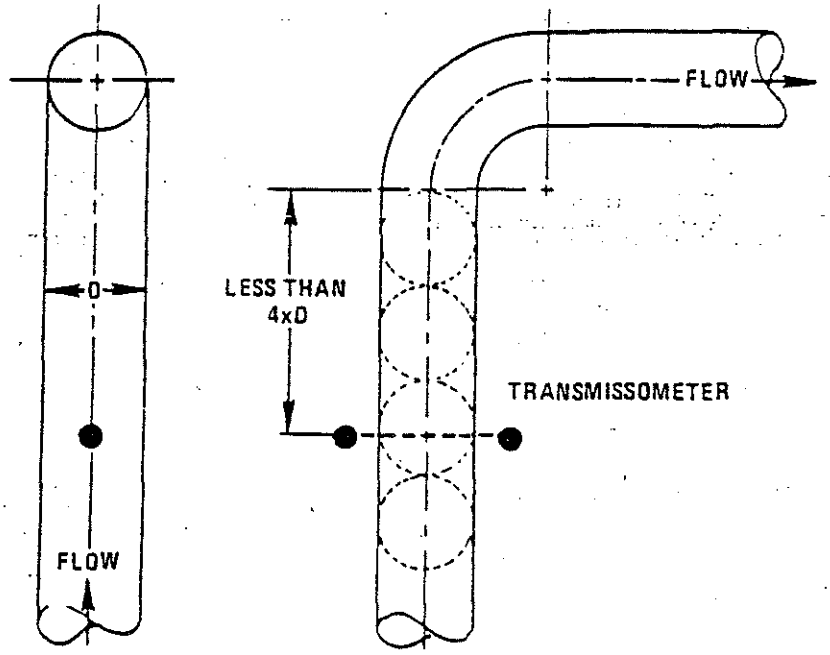


Figure 1-2. Transmissometer location upstream of a bend in a vertical stack.

4.2.3 If the location is in a straight vertical section of stack or duct and is less than 4 diameters downstream and is also less than 1 diameter upstream from a bend, use a path in the plane defined by the upstream bend (see Figure 1-3).

4.2.4 If the location is in a horizontal section of duct and is at least 4 diameters downstream from a vertical bend, use a path in the horizontal plane that is between one-third and one-half the distance up the vertical axis from the bottom of the duct (see figure 1-4).

4.2.5 If the location is in a horizontal section of duct and is less than 4 diameters downstream from a vertical bend, use a path in the horizontal plane that is between one-half and two-thirds the distance up the vertical axis from the bottom of the duct for upward flow in the vertical section, and is between one-third and one-half the distance up the vertical axis from the bottom of the duct for downward flow (Figure 1-5).

4.3 Alternative Locations and Measurement Paths. Other locations and measurement paths may be selected by demonstrating to the Administrator that the average opacity measured at the alternative location or path is equivalent to the opacity as measured at a location meeting the criteria of Sections 4.1 and 4.2. The opacity at the alternative location is considered equivalent if the average value measured at the alternative location is within the range defined by the average measured opacity ± 10 percent at the location meeting the installation criteria in Section 4.2, or if the difference between the two average opacity values is less than 2 percent opacity. To conduct this demonstration, measure the opacities at the two locations or paths for a minimum period of 2 hours and compare the results. The opacities of the two locations or paths may be measured at different times, but must be measured at the same process operating conditions. Alternative procedures for determining acceptable locations may be used if approved by the Administrator.

[4.3 amended by 55 FR 47472, November 14, 1990]

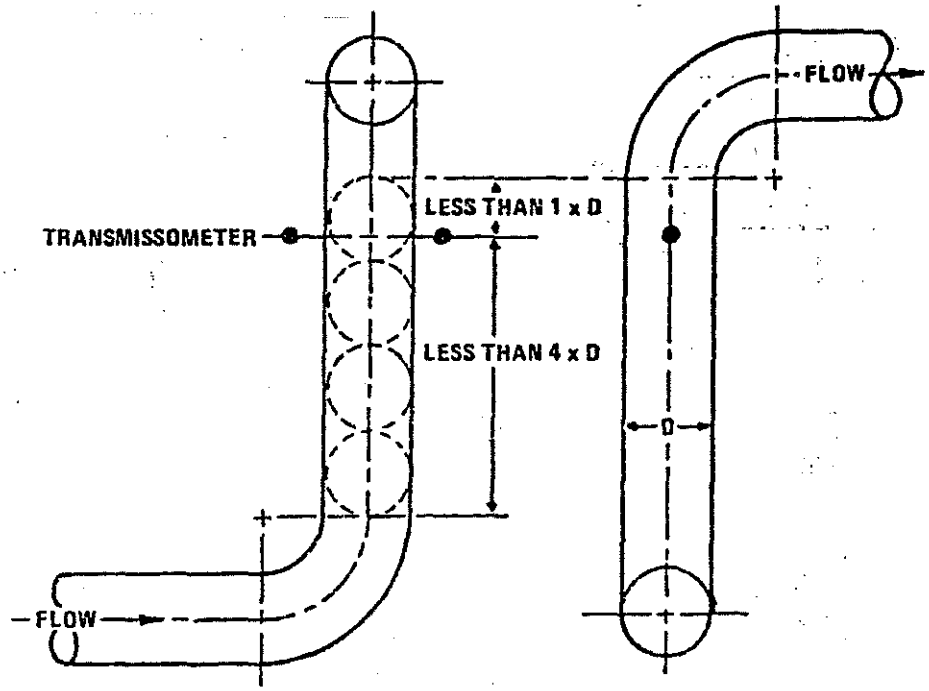


Figure 1-3. Transmissometer location between bends in a vertical stack.

[Figure 1-3 revised by 52 FR 34639, September 14, 1987]

[Appendix B, Spec. 1]

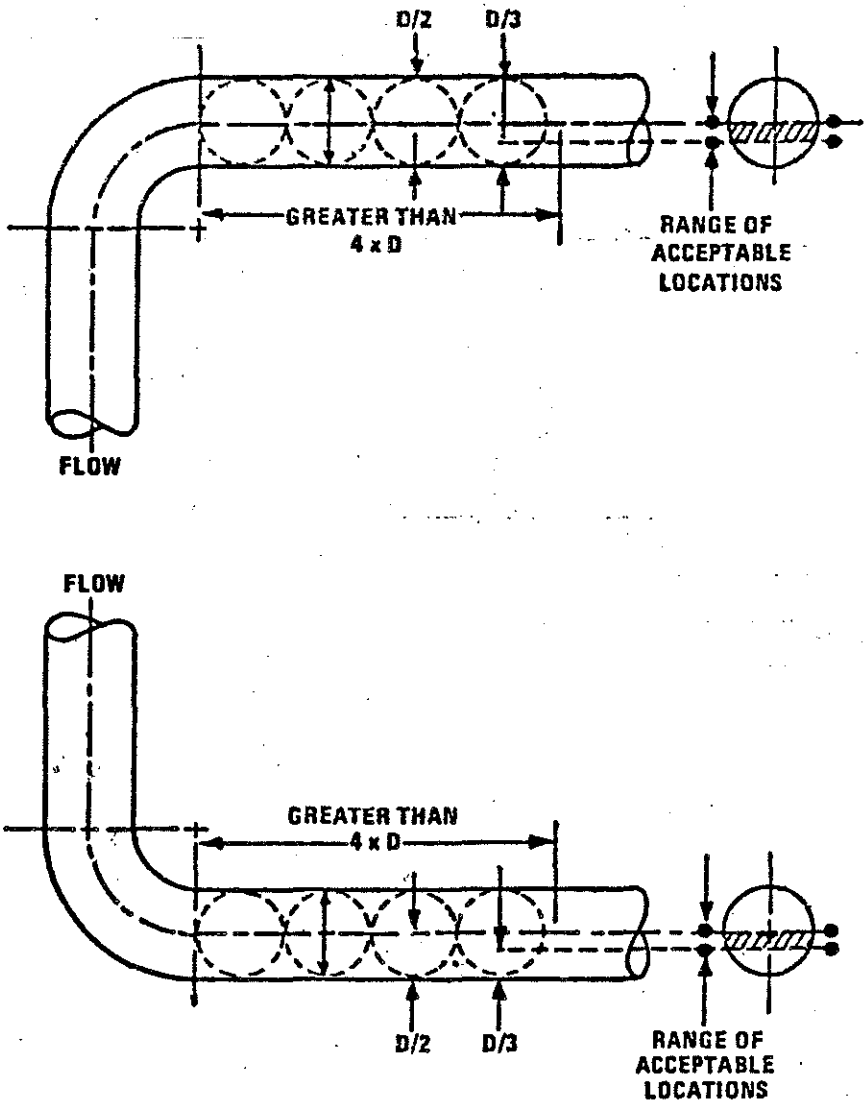


Figure 1-4. Transmissometer location greater than four diameters downstream of a vertical bend in a horizontal stack.

[Figure 1-4 revised by 52 FR 34639, September 14, 1987]

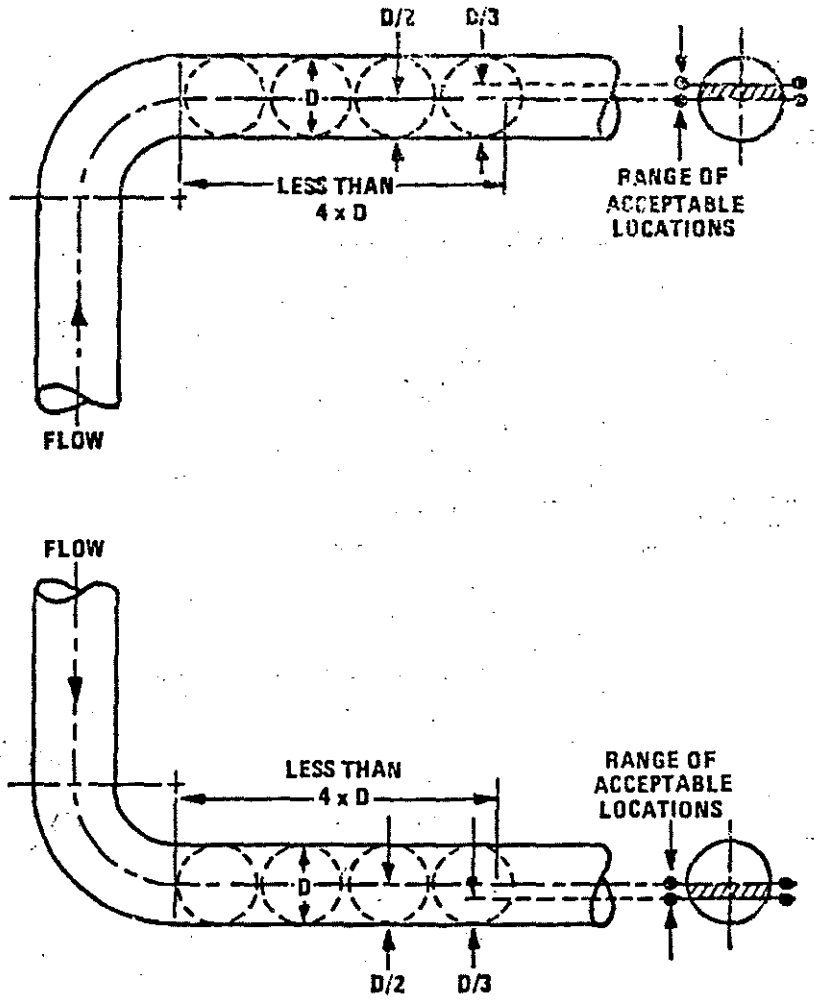


Figure 1-5. Transmissometer location less than four diameters downstream of a vertical bend in a horizontal stack.

[Figure 1-5 revised by 52 FR 34639, September 14, 1987]

[Appendix B, Spec. 1]

5. *Design and Performance Specifications.*

5.1 Design Specifications. The CEMS for opacity shall comply with the following design specifications:

5.1.1 Peak and Mean Spectral Responses. The peak and mean spectral responses must occur between 500 nm and 600 nm. The response at any wavelength below 400 nm or above 700 nm shall be less than 10 percent of the peak spectral response.

5.1.2 Angle of View. The total angle of view shall be no greater than 5 degrees.

5.1.3 Angle of Projection. The total angle of projection shall be no greater than 5 degrees.

5.1.4 Optical Alignment Sight. Each analyzer must provide some method for visually determining that the instrument is optically aligned. The method provided must be capable of indicating that the unit is misaligned when an error of +2 percent opacity occurs due to misalignment at a monitor path length of 8 meters. Instruments that are capable of providing an absolute zero check while in operation on a stack or duct with effluent present, and while maintaining the same optical alignment during measurement and calibration, need not meet this requirement (e.g., some "zero pipe" units).

5.1.5 Simulated Zero and Upscale Calibration System. Each analyzer must include a calibration system for simulating a zero (or no greater than 10 percent) opacity and an upscale opacity value for the purpose of performing periodic checks of the transmissometer calibration while on an operating stack or duct. This calibration system will provide, as a minimum, a system check of the analyzer internal optics and all electronic circuitry including the lamp and photodetector assembly.

5.1.6 Access to External Optics. Each analyzer must provide a means of access to the optical surfaces exposed to the effluent stream in order to permit the surfaces to be cleaned without requiring removal of the unit from the source mounting or without requiring optical realignment of the unit.

5.1.7 Automatic Zero Compensation Indicator. If the CEMS has a feature that provides automatic zero compensation for dirt accumulation on exposed optical surfaces, the system must also provide some means of indicating when a compensation of 4 percent opacity has been exceeded. This indicator shall be at a location accessible to the operator (e.g., the data output terminal). During the operational test period, the system must provide some means (manual or automated) for determining the actual amount of zero compensation at the specified 24-hour intervals so that the actual 24-hour zero drift can be determined (see Section 7.4.1).

5.1.8 Slotted Tube. For transmissometers that use slotted tubes, the length of the slotted portion(s) must be equal to or greater than 90 percent of the effluent path length (distance between duct or stack walls). The slotted tube must be of sufficient size and orientation so as not to interfere with the free flow of effluent through the entire optical volume of the transmissometer photodetector. The manufacturer must also show that the transmissometer minimizes light reflections. As a minimum, this demonstration shall consist of laboratory operation of the transmissometer both with and without the slotted tube in position.

Should the operator desire to use a slotted tube design with a slotted portion equal to less than 90 percent of the monitor path length, the operator must demonstrate to the Administrator that acceptable results can be obtained. As a minimum demonstration, the effluent opacity shall be measured using both the slotted tube instrument and another instrument meeting the requirement of this specification but not of the slotted tube design. The measurements must be made at the same location and at the same process operating conditions for a minimum period of 2 hours with each instrument. The shorter slotted tube may be used if the average opacity measured is equivalent to the opacity measured by the nonslotted tube design. The average opacity measured is equivalent if it is within the opacity range defined by the average opacity value ±10 percent measured by the nonslotted tube design, or if the difference between the average opacities is less than 2 percent opacity.

5.1.9 External Calibration Filter Access (optional). Provisions in the design of the transmissometer to accommodate an external calibration filter assembly are recommended. An adequate design would permit occasional use of external (i.e., not intrinsic to the instrument) neutral density filters to assess monitor operation.

5.2 Performance Specifications. The opacity CEMS specifications are listed in Table 1-1.

6. *Design Specifications Verification Procedure.*

These procedures will not apply to all instrument designs and will require modification in some cases; all procedural modifications are subject to the approval of the Administrator.

Test each analyzer for conformance with the design specifications of Sections 5.1.1-5.1.4, or obtain a certificate of conformance from the analyzer manufacturer as follows:

6.1 Spectral Response. Obtain detector response, lamp emissivity, and filter transmittance data for the components used in the measurement system from their respective manufacturers, and develop the effective spectral response curve of the transmissometer. Then determine and report the peak spectral response wavelength, the mean spectral response wavelength, and the maximum response at any wavelength below 400 nm and above 700 nm expressed as a percentage of the peak response.

Alternatively, conduct a laboratory measurement of the instrument's spectral response curve. The procedures of this laboratory evaluation are subject to approval of the Administrator.

TABLE 1-1—PERFORMANCE SPECIFICATIONS

Parameter	Specifications
1. Calibration error [a]	<3 percent opacity.
2. Response time	<10 seconds.
3. Conditioning period [b]	<168 hours.
4. Operational test period [b]	<168 hours.
5. Zero drift (24-hour) [a]	<2 percent opacity.
6. Calibration drift (24-hour) [a]	<2 percent opacity.
7. Data recorder resolution	<0.5 percent opacity.

[a] Expressed as the sum of the absolute value of the mean and the absolute value of the confidence coefficient.
[b] During the conditioning and operational test periods, the CEMS must not require any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as routine and required in the operation and maintenance manuals.

6.2 Angle of View. Set up the receiver as specified by the manufacturer's written instructions. Draw an arc with radius of 3 meters in the horizontal direction. Using a small (less than 3 centimeters) nondirectional light source, measure the receiver response at 5-centimeter intervals on the arc for 30 centimeters on either side of the detector centerline. Repeat the test in the vertical direction. Then for both the horizontal and vertical directions, calculate the response of the receiver as a function of viewing angle (26 centimeters of arc with a radius of 3 meters equals 5 degrees), report relative angle of view curves, and determine and report the angle of view.

6.3 Angle of Projection. Set up the projector as specified by the manufacturer's written instructions. Draw an arc with a radius of 3 meters in the horizontal direction. Using a small (less than 3 centimeters) photoelectric light detector, measure the light intensity at 5-centimeter intervals on the arc for 30 centimeters on either side of the light source centerline of projection. Repeat the test in the vertical direction. Then for both the horizontal and vertical directions, calculate the response of the photoelectric detector as a function of the projection angle (26 centimeters of arc with a radius of 3 meters equals 5 degrees), report the relative angle of projection curves, and determine and report the angle of projection.

6.4 Optical Alignment Sight. In the laboratory set the instrument up as specified by the manufacturer's written instructions for a monitor path length of 8 meters. Align, zero, and span the instrument. Insert an attenuator of 10 percent (nominal opacity) into the instrument path length. Slowly misalign the projector unit by rotating it until a positive or negative shift of 2 percent opacity is obtained by the data recorder. Then, following the manufacturer's written instructions, check the alignment. The alignment procedure must indicate that the instrument is misaligned. Repeat this test for lateral misalignment of the projector.

Realign the instrument and follow the same procedure for checking misalignment of the receiver or retroreflector unit (lateral misalignment only).

6.5 Manufacturer's Certificate of Conformance (alternative to above). Obtain from the manufacturer a certificate of conformance stating that the first analyzer randomly sampled from each month's production was tested according to Sections 6.1 through 6.4 and satisfactorily met all requirements of Section 5 of this specification. If any of the requirements were not met, the certificate must state that the entire month's analyzer production was resampled according to the military standard 105D sampling procedure (MIL-STD-105D) inspection level II; was retested for each of the applicable requirements under Section 5 of this specification; and was determined to be acceptable under MIL-STD-105D procedures, acceptable quality level 1.0. The certificate of conformance must include the results of each test performed for the analyzer(s) sampled during the month the analyzer being installed was produced.

7. *Performance Specification Verification Procedure.*

Test each CEMS that conforms to the design specifications (Section 5.1) using the following procedures to determine conformance with the specifications of Table 1-1. These tests are to be performed using the data recording system to be employed during monitoring. Prior approval from the Administrator is required if different data recording systems are used during the performance test and monitoring.

7.1 Preliminary Adjustments and Tests. Before installing the system on the stack, perform these steps or tests at the affected facility or in the manufacturer's laboratory.

7.1.1 Equipment Preparation. Set up and calibrate the CEMS for the monitor path length to be used in the installation as specified by the manufacturer's written instructions. For this specification, the mounting distance between the transmitter and receiver/reflector unit at the source must be measured prior to performing the calibrations (do not use distances from engineering drawings). If the CEMS has automatic path length adjustment, follow the manufacturer's instructions to adjust the signal output from the analyzer in order to yield results based on the emission outlet path length. Set the instrument and data recording system ranges so that maximum instrument output is within the span range specified in the applicable subpart.

Align the instrument so that maximum system response is obtained during a zero (or upscale) check performed across the simulated monitor path length. As part of this alignment, include rotating the reflector unit (detector unit for single pass instruments) on its axis until the point of maximum instrument response is obtained.

Follow the manufacturer's instructions to zero and span the instrument. Perform the zero alignment adjustment by balancing the response of the CEMS so that the simulated zero check coincides with the actual zero check performed across the simulated monitor path length. At this time, measure and record the indicated upscale calibration value. The calibration value reading must be within the required opacity range (Section 3.3).

7.1.2 Calibration Attenuator Selection. Based on the span value specified in the applicable subpart, select a minimum of three calibration attenuators (low, mid, and high range) using Table 1-2.

If the system is operating with automatic path length compensation, calculate the attenuator values required to obtain a system response equivalent to the applicable values shown in Table 1-2; use Equation 1-1 for the conversion. A series of filters with nominal optical density (opacity) values of 0.1(20), 0.2(37), 0.3(50), 0.4(60), 0.5(68), 0.6(75), 0.7(80), 0.8(84), 0.9(88), and 1.0(90) are commercially available. Within this limitation of filter availability, select the calibration attenuators having the values given in Table 1-2 or having values closest to those calculated by Equation 1-1.

$$D_t = D_s (L_t/L_s) \qquad \text{(Eq. 1-1)}$$

TABLE 1-2—REQUIRED CALIBRATION ATTENUATOR VALUES (NOMINAL)

Span value (percent opacity)	Calibrated attenuator optical density (equivalent opacity in parenthesis)—D_s		
	Low-range	Mid-range	High-range
40	0.05 (11)	0.1 (20)	0.2 (37)
50	0.1 (20)	0.2 (37)	0.3 (50)
60	0.1 (20)	0.2 (37)	0.3 (50)
70	0.1 (20)	0.3 (50)	0.4 (60)
80	0.1 (20)	0.3 (50)	0.6 (75)
90	0.1 (20)	0.4 (60)	0.7 (80)
100	0.1 (20)	0.4 (60)	0.9 (87.5)

Where:

D_t = Nominal optical density value of required mid, low, or high range calibration attenuators.

D_s = Desired attenuator optical density output value from Table 1-2 at the span required by the applicable subpart.

L_t = Monitor path length.

L_s = Emission outlet path length.

7.1.3 Attenuator Calibration. Select a laboratory calibration spectrophotometer meeting the specifications of Section 3.4. Using this calibration spectrophotometer, calibrate the required filters or screens. Make measurements at wavelength intervals of 20 nm or less. As an alternative procedure, use the calibration spectrophotometer to measure the C.I.E. Daylight$_C$ luminous transmittance of the attenuators. Check the attenuators several times, at different locations on the attenuator.

The attenuator manufacturer must specify the period of time over which the attenuator values can be considered stable, as well as any special handling and storing procedures required to enhance attenuator stability. To assure stability, recheck attenuator values at intervals less than or equal to the period stability guaranteed by the manufacturer. Recheck at least every 3 months. If desired, perform the stability checks with an instrument (secondary) other than the calibration spectrophotometer. This secondary instrument must be a high-quality laboratory transmissometer or spectrophotometer, and the same instrument must always be used for the stability checks. If a secondary instrument is to be used for stability checks, the value of the calibrated attenuator must be measured on this secondary instrument immediately following initial calibration. If over a period of time an attenuator value changes by more than ±2 percent opacity, recalibrate the attenuator on the calibration spectrophotometer or replace it with a new attenuator.

If this procedure is conducted by the filter or screen manufacturer or by an independent laboratory, obtain a statement certifying the values and certifying that the specified procedure, or equivalent, is used.

7.1.4 Calibration Error Test. Insert the calibration attenuators (low, mid, and high range) in the transmissometer path at or as near the midpoint of the path as feasible. Place the attenuator in the measurement path at a point where the effluent will be measured; i.e., do not place the calibration attenuator in the instrument housing. If the instrument manufacturer recommends a procedure wherein the attenuators are placed in the instrument housing, the manufacturer must provide data showing this alternative procedure is acceptable. While inserting the attenuator, assure that the entire beam received by the detector will pass through the attenuator and that the attenuator is inserted in a manner which minimizes interference from reflected light. Make a total of five nonconsecutive readings for each filter. Record the monitoring system output readings in percent opacity (see example Figure 1-6). Then, if the path length is not adjusted by the measurement system, subtract the actual calibration attenuator value from the value indicated by the measurement system recorder for each of the 15 readings obtained. If the path length is adjusted by the measurement system, subtract the "path adjusted" calibration attenuator values from the values indicated by the measurement system recorder (the "path adjusted" calibration attenuator values are calculated using Equation 1-6 or 1-7). Calculate the arithmetic mean difference, standard deviation, and confidence coefficient of the five tests at each attenuator value using Equations 1-2, 1-3, and 1-4 (Sections 8.1-8.3). Calculate the sum of the absolute value of the mean difference and the absolute value of the confidence coefficient for each of the three test attenuators report these three values as the calibration error.

1.4 amended by 52 FR 34639, September 14, 1987]

[Appendix B, Spec. 1]

Person Conducting Test _____ Analyzer Manufacturer _____

Affiliation _____ Model/Serial No. _____

Date _____ Location _____

Monitor Pathlength, L_1 _____ Emission Outlet Pathlength, L_2 _____

Monitoring System Output Pathlength Corrected? Yes ____ No ____

Calibrated Neutral Density Filter Values

Actual Optical Density (Opacity):

Low-Range _____ (_____)
Mid-Range _____ (_____)
High Range _____ (_____)

Path Adjusted Optical Density (Opacity):

Low-Range _____ (_____)
Mid-Range _____ (_____)
High-Range _____ (_____)

Run Number	Calibration Filter Value (Path-Adjusted Percent Opacity)	Instrument Reading (Opacity), percent	Arithmetic Difference (Opacity), percent		
			Low	Mid	High
1 – Low				–	–
2 – Mid			–		–
3 – High			–	–	
4 – Low				–	–
5 – Mid			–		–
6 – High			–	–	
7 – Low				–	–
8 – Mid			–		
9 – High			–	–	
10 – Low				–	–
11 – Mid			–		–
12 – High			–	–	
13 – Low				–	–
14 – Mid			–		–
15 – High			–	–	–
Arithmetic Mean (Equation 1-2): $\bar{X}$					
Confidence Coefficient (Equation 1-4): CC					
Calibration Error $\bar{X} + \lvert CC \rvert$					

Figure 1-6. Calibration error determination.

7.1.5 System Response Test. Insert the high-range calibration attenuator in the transmissometer path five times, and record the time required for the system to respond to 95 percent of final zero and high-range filter values (see example Figure 1-7). Then calculate the mean time of the 10 upscale and downscale tests and report this value as the system response time.

Person Conducting Test_____ Analyzer Manufacturer_____

Affiliation_____ Model/Serial No._____

Date_____ Location_____

High Range Calibration Filter Value: Actual Optical Density (Opacity) (_____)

Path Adjusted Optical Density (Opacity) (_____)

Upscale Response Value (0.95 x filter value)_____ percent opacity

Downscale Response Value (0.05 x filter value)_____ percent opacity

Upscale	1	_____ seconds
	2	_____ seconds
	3	_____ seconds
	4	_____ seconds
	5	_____ seconds
Downscale	1	_____ seconds
	2	_____ seconds
	3	_____ seconds
	4	_____ seconds
	5	_____ seconds
	Average response	_____ seconds

Figure 1-7. Response time determination.

7.2 Preliminary Field Adjustments. Install the CEMS on the affected facility according to the manufacturer's written instructions and the specifications in Section 4, and perform the following preliminary adjustments:

7.2.1 Optical and Zero Alignment. When the facility is not in operation, optically align the light beam of the transmissometer upon the optical surface located across the duct or stack (i.e., the retroflector or photodetector, as applicable) in accordance with the manufacturer's instructions; verify the alignment with the optical alignment site. Under clear stack conditions, verify the zero alignment (performed in Section 7.1.1) by assuring that the monitoring system response for the simulated zero check coincides with the actual zero measured by the transmissometer across the clear stack. Adjust the zero alignment, if necessary. Then, after the affected facility has been started up and the effluent stream reaches normal operating temperature, recheck the optical alignment. If the optical alignment has shifted, realign the optics. Note: Careful consideration should be given to whether a "clear stack" condition exists. It is suggested that the stack be monitored and the data output (instantaneous real-time basis) be examined to determine whether fluctuations from zero opacity are occurring before a clear stack condition is assumed to exist.

7.2.2 Optical and Zero Alignment (Alternative Procedure). The procedure given in 7.2.1 is the preferred procedure and should be used whenever possible; however, if the facility is operating and a zero stack condition cannot practicably be obtained, use the zero alignment obtained during the preliminary adjustments (Section 7.1.1) before installing the transmissometer on the stack. After completing all the preliminary adjustments and tests required in Section 7.1, install the system at the source and align the optics, i.e., align the light beam from the transmissometer upon the optical surface located across the duct or stack in accordance with the manufacturer's instruction. Verify the alignment with the optical alignment site. The zero alignment conducted in this manner must be verified and adjusted, if necessary, the first time a clear stack condition is obtained after the operation test period has been completed.

7.3 Conditioning Period. After completing the preliminary field adjustments (Section 7.2), operate the CEMS according to the manufacturer's instructions for an initial conditioning period of not less than 168 hours while the source is operating. Except during times of instrument zero and upscale calibration checks, the CEMS must analyze the effluent gas for opacity and produce a permanent record of the CEMS output. During this conditioning period there must be no unscheduled maintenance, repair, or adjustment. Conduct daily zero calibration and upscale calibration checks; and, when accumulated drift exceeds the daily operating limits, make adjustments and clean the exposed optical surfaces. The data recorder must reflect these checks and adjustments. At the end of the operational test period, verify that the instrument optical alignment is correct. If the conditioning period is interrupted because of source breakdown (record the dates and times of process shutdown), continue the 168-hour period following resumption of source operation. If the conditioning period is interrupted because of monitor failure, restart the 168-hour conditioning period when the monitor becomes operational.

7.4 Operational Test Period. After completing the conditioning period, operate the system for an additional 168-hour period. The 168-hour operational test period need not follow immediately after the 168-hour conditioning period. Except during times of instrument zero and upscale calibration checks, the CEMS must analyze the effluent gas for opacity and must produce a permanent record of the CEMS output. During this period, there will be no unscheduled maintenance, repair, or adjustment. Zero and calibration adjustments, optical surface cleaning, and optical realignment may be performed (optional) only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic zero and calibration adjustments made by the CEMS without operator intervention or initiation are allowable at any time. During the operational test period, record all adjustments, realignments, and lens cleanings. If the operational test period is interrupted because of source breakdown, continue the 168-hour period following resumption of source operation. If the test period is interrupted because of monitor failure, restart the 168-hour period when the monitor becomes operational. During the operational test period, perform the following test procedures:

7.4.1. Zero Drift Test. At the outset of the 168-hour operational test period, record the initial simulated zero (or no greater than 10 percent) and upscale opacity readings (see example Figure 1-8). After each 24-hour interval, check and record the final zero reading before any optional or required cleaning and adjustment. Zero and upscale calibration adjustments, optical surface cleaning, and optical realignment may be performed only at 24-hour intervals (or at such shorter intervals as the manufacturer's written instructions specify), but are optional. However, adjustments and cleaning must be performed when the accumulated zero calibration or upscale calibration drift exceeds the 24-hour drift specification (±2 percent opacity). If no adjustments are made after the zero check, record the final zero reading as the initial zero reading for the next 24-hour period. If adjustments are made, record the zero value after adjustment as the initial zero value for the next 24-hour period. If the instrument has an automatic zero compensation feature for dirt accumulation on exposed lenses and the zero value cannot be measured before compensation is entered, then record the amount of automatic zero compensation (as opacity) for the final zero reading of each 24-hour period. (List the indicated zero values of the CEMS in parenthesis.) From the initial and final zero readings, calculate the zero drift for each 24-hour period. Then calculate the arithmetic mean, standard deviation, and confidence coefficient of the 24-hour zero drift and the 95 percent confidence interval using Equations 1-2, 1-3, and 1-4. Calculate the sum of the absolute value of the mean and the absolute value of the confidence coefficient, and report this value as the 24-hour zero drift.

Person Conducting Test _____ Analyzer Manufacturer _____

Affiliation _____ Model, Serial No. _____

Date _____ Location _____

Monitor Pathlength, L_1 _____ Emission Outlet Pathlength, L_2 _____

Monitoring System Output Pathlength Corrected:? Yes _____ No _____

Upscale Calibration Value: Actual Optical Density (Opacity) _____ (____)

Path Adjusted Optical Density (Opacity) _____ (____)

Date	Time		Percent Opacity										Alignment	
			Zero Reading*		Zero Drift	Zero adjusted?	Upscale Calibration Reading		Upscale Drift	Calibration Drift	Span adjusted?	Lens cleaned?	Checked?	Adjusted?
	Begin	End	Initial A	Final B	C = B−A		Initial D	Final E	F = E−D	G = F−C**				

Arithmetic Mean	(Eq. 1-2)		Arithmetic Mean (Eq. 1-2)	
Confidence Coefficient	(Eq. 1-4)		Confidence Coefficient (Eq. 1-4)	
Zero Drift	(Eq. 1-5)		Calibration Drift (Eq. 1-5)	

* without automatic zero compensation

**if zero was adjusted (manually or automatically) prior to upscale check, then use C = 0.

Figure 1-8. Zero calibration drift determination.

[Appendix B, Spec. 1]

7.4.2 Upscale Drift Test. At each 24-hour interval, after the zero calibration value has been checked and any optional or required adjustments have been made, check and record the simulated upscale calibration value. If no further adjustments are made to the calibration system at this time, record the final upscale calibration value as the initial upscale value for the next 24-hour period. If an instrument span adjustment is made, record the upscale value after adjustment as the initial upscale value for the next 24-hour period. From the initial and final upscale readings, calculate the upscale calibration drift for each 24-hour period. Then calculate the arithmetic mean, standard deviation, and confidence coefficient of the 24-hour calibration drift and the 95 percent confidence interval using Equations 1-2, 1-3, and 1-4. Calculate the sum of the absolute value of the mean and the absolute value of the confidence coefficient, and report this value as the 24-hour calibration drift.

8. *Equations*

8.1 Arithmetic Mean. Calculate the mean, $\bar{x}$, of a set of data as follows:

$$\bar{x}=\frac{1}{n}\sum_{i=1}^{n}x_i \qquad \text{(Eq. 1-2)}$$

Where:

n = Number of data points.

$\sum_{i=1}^{n} x_i$ = Algebraic sum of the individual measurements, x_i

where:

n = Number of data points.

$\sum_{i=1}^{n} x_i$ = Algebraic sum of the individual measurements x_i.

[8.1 amended by 55 FR 47472, November 14, 1990]

8.2 Standard Deviation. Calculate the standard deviation S_d as follows:

$$S_d=\sqrt{\frac{\sum_{i=1}^{n}x_i^2-\frac{(\sum_{i=1}^{n}x_i)^2}{n}}{n-1}} \qquad \text{(Eq. 1-3)}$$

8.3 Confidence Coefficient. Calculate the 2.5 percent error confidence coefficient (one-tailed), CC, as follows:

$$CC=t_{0.975}\frac{S_d}{\sqrt{n}} \qquad \text{(Eq. 1-4)}$$

Where:

$t_{0.975}$ = t-value (see Table 1-3).

8.4 Error. Calculate the error (i.e., calibration error, zero drift, and calibration drift), Er, as follows:

$$Er=|\bar{x}|+|CC| \qquad \text{(Eq. 1-5)}$$

TABLE 1-3—T=VALUES

n[a]	$t_{0.975}$	n[a]	$t_{0.975}$	n[a]	$t_{0.975}$
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.262	15	2.145
6	2.571	11	2.228	16	2.131

[a] The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of individual values.

8.5 Conversion of Opacity Values from Monitor Path Length to Emission Outlet Path Length. When the monitor path length is different than the emission outlet path length, use either of the following equations to convert from one basis to the other (this conversion may be automatically calculated by the monitoring system):

$$\log(1-Op_2)=(L_2/L_1)\log(1-Op_1) \qquad \text{(Eq. 1-6)}$$

$$D_2=(L_2/L_1)\,D_1 \qquad \text{(Eq. 1-7)}$$

Where:

Op_1 = Opacity of the effluent based upon L_1.

Op_2 = Opacity of the effluent based upon L_2.

L_1 = Monitor path length.

L_2 = Emission outlet path length.

D_1 = Optical density of the effluent based upon L_1.

D_2 = Optical density of the effluent based upon L_2.

9. *Reporting.*

Report the following (summarize in tabular form where appropriate).

9.1 General Information

a. Facility being monitored.

b. Person(s) responsible for operational and conditioning test periods and affiliation.

c. Instrument manufacturer.

d. Instrument model number

e. Instrument serial number.

f. Month/year manufactured.

g. Schematic of monitoring system measurement path location.

h. Monitor pathlength, meters.

i. Emission outlet pathlength, meters.

j. System span value, percent opacity.

k. Upscale calibration value, percent opacity.

l. Calibrated Attenuator values (low, mid, and high range), percent opacity.

9.2 Design Specification Test Results

a. Peak spectral response, nm.

b. Mean spectral response, nm.

c. Response above 700 nm, percent of peak.

d. Response below 400 nm, percent of peak.

e. Total angle of view, degrees.

f. Total angle of projection, degrees.

g. Results of optical alignment site test.

h. Serial number, month/year of manufacturer for unit actually tested to show design conformance.

9.3 Performance Specification Test Results

a. Calibration error, high-range, percent opacity.

b. Calibration error, mid-range, percent opacity.

c. Calibration error, low-range, percent opacity.

d. Response time, seconds.

e. 24-hour zero drift, percent opacity.

f. 24-hour calibration drift, percent opacity.

g. Lens cleanings, clock time.

h. Optical alignment adjustments, clock time.

9.4 Statements. Provide a statement that the conditioning and operational test periods were completed according to the requirements of Sections 7.3 and 7.4. In this statement, include the time periods during which the conditioning and operational test periods were conducted.

9.5 Appendix. Provide the data tabulations and calculations for the above tabulated results.

10. *Retest.*

If the CEMS operates within the specified performance parameters of Table 1-1, the PS tests will be successfully concluded. If the CEMS fails one of the preliminary tests, make the necessary corrections and repeat the performance testing for the failed specification prior to conducting the operational test period. If the CEMS fails to meet the specifications for the operational test period, make the necessary corrections and repeat the operational test period; depending on the correction made, it may be necessary to repeat the design and preliminary performance tests.

11. *Bibliography*

[Redesignates former 11.1, 11.2 as 1, 2 by 55 FR 47472, November 14, 1990]

1. Experimental Statistics. Department of Commerce. National Bureau of Standards Handbook 91. Paragraph 3-3.1.4 1963. pp. 3-31.

2. Performance Specifications for Stationary-Source Monitoring Systems for Gases and Visible Emissions. U.S. Environmental Protection Agency. Research Triangle Park, N.C. EPA-650/2-74-013. January 1974.

PERFORMANCE SPECIFICATION 2—SPECIFICATIONS AND TEST PROCEDURES FOR SO_2 AND NO_x CONTINUOUS EMISSION MONITORING SYSTEMS IN STATIONARY SOURCES

1. *Applicability and Principle.*

1.1 Applicability. This specification is to be used for evaluating the acceptability of SO_2 and NO_x continuous emission monitoring systems (CEMS's) at the time of or soon after installation and whenever specified in the regulations. The CEMS may include, for

certain stationary sources, a diluent (O_2 or CO_2) monitor.

This specification is not designed to evaluate the installed CEMS performance over an extended period of time nor does it identify specific calibration techniques and other auxiliary procedures to assess the CEMS performance. The source owner or operator, however, is responsible to properly calibrate, maintain, and operate the CEMS. To evaluate the CEMS performance, the Administrator may require, under Section 114 of the Act, the operator to conduct CEMS performance evaluations at other times besides the initial test. See § 60.13(c).

1.2 Principle. Installation and measurement location specifications, performance and equipment specifications, test procedures, and data reduction procedures are included in this specification. Reference method tests and calibration drift tests are conducted to determined conformance of the CEMS with the specification.

2. *Definitions.*

2.1 Continuous Emission Monitoring System. The total equipment required for the determination of a gas concentration or emission rate. The system consists of the following major subsystems:

2.1.1 Sample Interface. That portion of the CEMS used for one or more of the following: sample acquisition, sample transportation, and sample conditioning, or protection of the monitor from the effects of the stack effluent.

2.1.2 Pollutant Analyzer. That portion of the CEMS that senses the pollutant gas and generates an output proportional to the gas concentration.

2.1.3 Diluent Analyzer (if applicable). That portion of the CEMS that senses the diluent gas (e.g., CO_2 or O_2) and generates an output proportional to the gas concentration.

2.1.4 Data Recorder. That portion of the CEMS that provides a permanent record of the analyzer output. The data recorder may include automatic data reduction capabilities.

2.2 Point CEMS. A CEMS that measures the gas concentration either at a single point or along a path equal to or less than 10 percent of the equivalent diameter of the stack or duct cross section.

2.3 Path CEMS. A CEMS that measures the gas concentration along a path greater than 10 percent of the equivalent diameter of the stack or duct cross section.

2.4 Span Value. The upper limit of a gas concentration measurement range specified for affected source categories in the applicable subpart of the regulations.

2.5 Relative Accuracy (RA). The absolute mean difference between the gas concentration or emission rate determined by the CEMS and the value determined by the RM's plus the 2.5 percent error confidence coefficient of a series of tests divided by the mean of the RM tests or the applicable emission limit.

2.6 Calibration Drift (CD). The difference in the CEMS output readings from the established reference value after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

2.7 Centroidal Area. A concentric area that is geometrically similar to the stack or duct cross section and is no greater than 1 percent of the stack or duct cross-sectional area.

2.8 Representative Results. As defined by the RM test procedure outlined in this specification.

3. *Installation and Measurement Location Specifications.*

3.1 The CEMS Installation and Measurement Location. Install the CEMS at an accessible location where the pollutant concentration or emission rate measurements are directly representative or can be corrected so as to be representative of the total emissions from the affected facility or at the measurement location cross section. Then select representative measurement points or paths for monitoring in locations that the CEMS will pass the RA test (see Section 7). If the cause of failure to meet the RA test is determined to be the measurement location and a satisfactory correction technique cannot be established, the Administrator may require the CEMS to be relocated.

Suggested measurement locations and points or paths that are most likely to provide data that will meet the RA requirements are listed below.

3.1.1 Measurement Location. It is suggested that the measurement location be (1) at least two equivalent diameters downstream from the nearest control device, the point of pollutant generation, or other point at which a change in the pollutant concentration or emission rate may occur and (2) at least a half equivalent diameter upstream from the effluent exhaust or control device.

3.1.2. Point CEMS. It is suggested that the measurement point be (1) no less than 1.0 meter from the stack or duct wall or (2) within or centrally located over the centroidal area of the stack or duct cross section.

3.1.3 Path CEMS. It is suggested that the effective measurement path (1) be totally within the inner area bounded by a line 1.0 meter from the stack or duct wall, or (2) have at least 70 percent of the path within the inner 50 percent of the stack or duct cross-sectional area, or (3) be centrally located over any part of the centroidal area.

3.2 Reference Method (RM) Measurement Location and Traverse Points. Select, as appropriate, an accessible RM measurement point at least two equivalent diameters downstream from the nearest control device, the point of pollutant generation, or other point at which a change in the pollutant concentration or emission rate may occur, and at least a half equivalent diameter upstream from the effluent exhaust or control device. When pollutant concentration changes are due solely to diluent leakage (e.g., air heater leakages) and pollutants and diluents are simultaneously measured at the same location, a half diameter may be used in lieu of two equivalent diameters. The CEMS and RM locations need not be the same.

Then select traverse points that assure acquisition of representative samples over the stack or duct cross section. The minimum requirements are as follows: Establish a "measurement line" that passes through the centroidal area and in the direction of any expected stratification. If this line interferes with the CEMS measurements, displace the line up to 30 cm (or 5 percent of the equivalent diameter of the cross section, whichever is less) from the centroidal area. Locate three traverse points at 16.7, 50.0, and 83.3 percent of the measurement line. If the measurement line is longer than 2.4 meters and pollutant stratification is not expected, the tester may choose to locate the three traverse points on the line at 0.4, 1.2, and 2.0 meters from the stack or duct wall. This option must not be used after wet scrubbers or at points where two streams with different pollutant concentrations are combined. The tester may select other traverse points, provided that they can be shown to the satisfaction of the Administrator to provide a representative sample over the stack or duct cross section. Conduct all necessary RM tests within 3 cm (but no less than 3 cm from the stack or duct wall) of the traverse points.

4. *Performance and Equipment Specifications.*

4.1 Data Recorder Scale. The CEMS data recorder response range must include zero and a high-level value. The high-level value is chosen by the source owner or operator and is defined as follows:

For a CEMS intended to measure an uncontrolled emission (e.g., SO_2 measurements at the inlet of a flue gas desulfurization unit), the high-level value must be between 1.25 and 2 times the average potential emission level, unless otherwise specified in an applicable subpart of the regulations. For a CEMS installed to measure controlled emissions or emissions that are in compliance with an applicable regulation, the high-level value must be between 1.5 times the pollutant concentration corresponding to the emission standard level and the span value. If a lower high-level value is used, the source must have the capability of measuring emissions which exceed the full-scale limit of the CEMS in accordance with the requirements of applicable regulations.

The data recorder output must be established so that the high-level value is read between 90 and 100 percent of the data recorder full scale. (This scale requirement may not be applicable to digital data recorders.) The calibration gas, optical filter, or cell values used to establish the data recorder scale should produce the zero and high-level values. Alternatively, a calibration gas, optical filter, or cell value between 50 and 100 percent of the high-level value may be used in place of the high-level value provided the data recorder full-scale requirements as described above are met.

The CEMS design must also allow the determination of calibration drift at the zero and high-level values. If this is not possible or practical, the design must allow these determinations to be conducted at a low-level value (zero to 20 percent of the high-level value) and at a value between 50 and 100 percent of the high-level value. In special cases, if not already approved, the Administrator may approve a single-point calibration-drift determination.

4.2 Calibration Drift. The CEMS calibration must not drift or deviate from the reference value of the gas cylinder, gas cell, or optical filter by more than 2.5 percent of the span value. If the CEMS includes pollutant and diluent monitors, the calibration drift must be determined separately for each in terms of concentrations (see PS 3 for the diluent specifications).

4.3 The CEMS RA. The RA of the CEMS must be no greater than 20 percent of the mean value of the RM test data in terms of the units of the emission standard or 10 percent of the applicable standard, whichever is greater. For SO_2 emission standards between 130 and 86 ng/J (0.30 and 0.20 lb/million Btu), use 15 percent of the applicable standard; below 86 ng/J (0.20 lb/million Btu), use 20 percent of emission standard.

5. Performance Specification Test Procedure

5.1 Pretest preparation. Install the CEMS, prepare the RM test site according to the specifications in Section 3, and prepare the CEMS for operation according to the manufacturer's written instructions.

5.2 Calibration drift Test Period. While the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart, determine the magnitude of the calibration drift (CD) once each day (at 24-hour intervals) for 7 consecutive days according to the procedure given in Section 6. To meet the requirement of Section 4.2, none of the CD's must exceed the specification.

5.3 RA Test Period. Conduct the RA test according to the procedure given in Section 7 while the affected facility is operating at more than 50 percent or normal load, or as specified in an applicable subpart. To meet the specifications, the RA must be equal to or less than 20 percent of the mean value of the RM test data in terms of the units of the emission standard or 10 percent of the applicable standard, whichever is greater. For instruments that use common components to measure more than one effluent gas constituent, all channels must simultaneously pass the RA requirement, unless it can be demonstrated that any adjustments made to one channel did not affect the others.

The RA test may be conducted during the CD test period.

6. The CEMS Calibration Drift Test Procedure

The CD measurement is to verify the ability of the CEMS to conform to the established CEMS calibration used for determining the emission concentration or emission rate. Therefore, if periodic automatic or manual adjustments are made to the CEMS zero and calibration settings, conduct the CD test immediately before these adjustments, or conduct it in such a way that the CD can be determined.

Conduct the CD test at the two points specified in Section 4.1. Introduce to the CEMS the reference gases, gas cells, or optical filters (these need not be certified). Record the CEMS response and subtract this value from the reference value (see example data sheet in Figure 2-1).

7. Relative Accuracy Test Procedure

7.1 Sampling Strategy for RM Tests. Conduct the RM tests in such a way that they will yield results representative of the emissions from the source and can be correlated to the CEMS data. Although it is preferable to conduct the diluent (if applicable), moisture (if needed), and pollutant measurements simultaneously, the diluent and moisture measurements that are taken within a 30- to 60-minute period, which includes the pollutant measurements, may be used to calculate dry pollutant concentration and emission rate.

In order to correlate the CEMS and RM data properly, mark the beginning and end of each RM test period of each run (including the exact time of the day) on the CEMS chart recordings or other permanent record of output. Use the following strategies for the RM tests:

7.1.1 For integrated samples, e.g., Method 6 and Method 4, make a sample traverse of at least 21 minutes, sampling for 7 minutes at each traverse point.

7.1.2 For grab samples, e.g., Method 7, take one sample at each traverse point, scheduling the grab samples so that they are taken simultaneously (within a 3-minute period) or are an equal interval of time apart over a 21-minute (or less) period. A test run for grab samples must be made up of at least three separate measurements.

NOTE: At times, CEMS RA tests are conducted during new source performance standards performance tests. In these cases, RM results obtained during CEMS RA tests may be used to determine compliance as long as the source and test conditions are consistent with the applicable regulations.

7.2 Correlation of RM and CEMS Data. Correlate the CEMS and the RM test data as to the time and duration by first determining from the CEMS final output (the one used for reporting) the integrated average pollutant concentration or emission rate for each pollutant RM test period. Consider system response time, if important, and confirm that the pair of results are on a consistent moisture, temperature, and diluent concentration basis. Then, compare each integrated CEMS value against the corresponding average RM value. Use the following guidelines to make these comparisons.

7.2.1 If the RM has an integrated sampling technique, make a direct comparison of the RM results and CEMS integrated average value.

7.2.2 If the RM has a grab sampling technique, first average the results from all grab samples taken during the test run and then compare this average value against the integrated value obtained from the CEMS chart recording or output during the run. If the pollutant concentration is varying with time over the run, the tester may choose to use the arithmetic average of the CEMS value recorded at the time of each grab sample.

7.3 Number of RM Tests. Conduct a minimum of nine sets of all necessary RM tests. Conduct each set within a period of 30 to 60 minutes.

NOTE: The tester may choose to perform more than nine sets of RM tests. If this option is chosen, the tester may, at his discretion, reject a maximum of three sets of the test results so long as the total number of test results used to determine the RA is greater than or equal to nine, but he must report all data including the rejected data.

7.4 Reference Methods. Unless otherwise specified in an applicable subpart of the regulations, Methods, 3B, 4, 6, and 7, or their approved alternatives, are the reference methods for diluent (O_2 and CO_2), moisture, SO_2 and NO_X respectively.

[7.4 amended by 55 FR 18876, May 7, 1990]

7.5 Calculations. Summarize the results on a data sheet. An example is shown in Figure 2-2. Calculate the mean of the RM values. Calculate the arithmetic differences between the RM and the CEMS output sets. Then calculate the mean of the difference, standard deviation, confidence coefficient, and CEMS RA, using Equations 2-1, 2-2, 2-3, and 2-4.

8. Equations

8.1 Arithmetic Mean. Calculate the arithmetic mean of the difference, d, of a data set as follows:

$$\bar{d} = \frac{1}{n}\sum_{i=1}^{n} d_i \qquad \text{(Eq. 2-1)}$$

Where:

n=Number of data points.

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual differences d_i.

When the mean of the differences of pairs of data is calculated, be sure to correct the data for moisture, if applicable.

8.2 Standard Deviation. Calculate the standard deviation, S_d, as follows:

$$S_d = \left[\frac{\sum_{i=1}^{n} d_i^2 - \frac{\left(\sum_{i=1}^{n} d_i\right)^2}{n}}{n-1}\right]^{1/2} \qquad \text{(Eq. 2-2)}$$

8.3 Confidence Coefficient. Calculate the 2.5 percent error confidence coefficient (one-tailed), CC, as follows:

$$CC = t_{0.975}\frac{S_d}{\sqrt{n}} \quad \text{(Eq. 2-3)}$$

Where:

$t_{0.975}$ = t-value (see Table 2-1)

TABLE 2-1—t-VALUES

n*	$t_{0.975}$	n*	$t_{0.975}$	n*	$t_{0.975}$
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.262	15	2.145
6	2.571	11	2.228	16	2.131

*The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of individual values.

8.4 Relative Accuracy. Calculate the RA of a set of data as follows:

$$RA = \frac{|\bar{d}| + |CC|}{\overline{RM}} \times 100 \quad \text{(Eq. 2-4)}$$

Where:

$|\bar{d}|$ = Absolute value of the mean of differences (from Equation 2-1).

$|CC|$ = Absolute value of the confidence coefficient (from Equation 2-3).

$\overline{RM}$ = Average RM value or applicable standard.

9. *Reporting*

At a minimum (check with the appropriate regional office, or State, or local agency for additional requirements, if any) summarize in tabular form the results of the CD tests and the relative accuracy tests or alternative RA procedure as appropriate. Include all data sheets, calculations, charts (records of CEMS responses), cylinder gas concentration certifications, and calibration cell response certifications (if applicable), necessary to substantiate that the performance of the CEMS met the performance specifications.

[9. revised by 51 FR 21765, June 16, 1986]

[Former 10. redesignated as 11. and new 10. added by 51 FR 21765, June 16, 1986]

10. *Alternative Procedures*

10.1 Alternative to Relative Accuracy Procedure in Section 7. Paragraphs 60.13(.) (1) and (2) contain criteria for which the reference method relative accuracy may be waived and the following procedure substituted.

[10.1 amended by 52 FR 17555, May 11, 1987]

10.1.1 Conduct a complete CEMS status check following the manufacturer's written instructions. The check should include operation of the light source, signal receiver, timing mechanism functions, data acquisition and data reduction functions, data recorders, mechanically operated functions (mirror movements, zero pipe operation, calibration gas valve operations, etc.), sample filters, sample line heaters, moisture traps, and other related functions of the CEMS, as applicable. All parts of the CEMS shall be functioning properly before proceeding to the alternative RA procedure.

10.1.2 Challenge each monitor (both pollutant and diluent, if applicable) with cylinder gases of known concentrations or calibration cells that produce known responses at two measurement points within the following ranges:

MEASUREMENT RANGE

Measurement point	Pollutant monitor	Diluent monitor for	
		CO_2	O_2
1	20-30 percent of span value.	5-8 percent by volume.	4-6 percent by volume
2	50-60 percent of span value.	10-14 percent by volume.	8-12 percent by volume

Use a separate cylinder gas or calibration cell for measurement points 1 and 2. Challenge the CEMS and record the responses three times at each measurement point. Do not dilute gas from a cylinder when challenging the CEMS. Use the average of the three responses in determining relative accuracy.

Operate each monitor in its normal sampling mode as nearly as possible. When using cylinder gases, pass the cylinder gas through all filters, scrubbers, conditioners, and other monitor components used during normal sampling and as much of the sampling probe as practical. When using calibration cells, the CEMS components used in the normal sampling mode should not be by-passed during the RA determination. These include light sources, lenses, detectors, and reference cells. The CEMS should be challenged at each measurement point for a sufficient period of time to assure adsorption-desorption reactions on the CEMS surfaces have stabilized.

Use cylinder gases that have been certified by comparison to National Bureau of Standards (NBS) gaseous standard reference material (SRM) or NBS/EPA-approved gas manufacturer's certified reference material (CRM) (See Citation 2 in the Bibliography) following EPA traceability protocol Number 1 (See Citation 3 in the Bibliography). As an alternative to protocol Number 1 gases, CRM's may be used directly as alternative RA cylinder gases. A list of gas manufacturers that have prepared approved CRM's is available from EPA at the address shown in Citation 2. Procedures for preparation of CRM are described in Citation 2.

Use calibration cells certified by the manufacturer to produce a known response in the CEMS. The cell certification procedure shall include determination of CEMS response produced by the calibration cell in direct comparison with measurement of gases of known concentration. This can be accomplished using SRM or CRM gases in a laboratory source simulator or through extended tests using reference methods at the CEMS location in the exhaust stack. These procedures are discussed in Citation 4 in the Bibliography. The calibration cell certification procedure is subject to approval of the Administrator.

10.1.3 The differences between the known concentrations of the cylinder gases and the concentrations indicated by the CEMS are used to assess the accuracy of the CEMS.

The calculations and limits of acceptable relative accuracy (RA) are as follows:

(a) For pollutant CEMS:

$$RA = \left| \frac{d}{AC} \times 100 \right| \quad < 15 \text{ percent}$$

Where:

d = Difference between response and the known concentration/response.

AC = The known concentration/response of the cylinder gas or calibration cell.

(b) For diluent CEMS:

RA = $|d| < 0.7$ percent O_2 or CO_2, as applicable.

NOTE: Waiver of the relative accuracy test in favor of the alternative RA procedure does not preclude the requirements to complete the calibration drift (CD) tests nor any other requirements specified in the applicable regulation(s) for reporting CEMS data an performing CEMS drift checks or audi s

11. *Bibliography*

[11. revised by 55 FR 47472, November 14, 1990]

1. Department of Commerce. Experimental Statistics. Handbook 91. Washington, D.C. p. 3-31, paragraphs 3-3.1.4.

2. "A Procedure for Establishing Traceability of Gas Mixtures to Certain National Bureau of Standards Standard Reference Materials." Joint publication by NBS and EPA. EPA-600/7-81-010. Available from U.S. Environmental Protection Agency, Quality Assurance Division (MD-77), Research Triangle Park, North Carolina 27711.

3. "Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors. (Protocol Number 1)." June 1978. Protocol Number 1 is included in the *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods.* EPA-600/4-77-027b. August 1977. Volume III is available from the U.S. EPA, Office of Research and Development Publications, 26 West St. Clair Street, Cincinnati, Ohio 45268.

4. "Gaseous Continuous Emission Monitoring Systems — Performance Specification Guidelines for SO_2, NO_x, CO_2, O_2, and TRS." EPA-450/3-82-026. Available from U.S. Environmental Protection Agency, Emission Standards and Engineering Division (MD-19), Research Triangle Park, North Carolina 27711.

	Day	Date and time	Calibration value	Monitor value	Difference	Percent of span value
Low-level						
High-level						

Figure 2-1. Calibration drift determination.

Run No.	Date and time	SO_2			NO_x[b]			CO_2 or O_2[a]		SO_2[a]			NO_x[a]		
		RM	M	Diff	RM	M	Diff	RM	M	RM	M	Diff	RM	M	Diff
		ppm[c]			ppm[c]			%[c]	%[c]	mass/GCV			mass/GCV		
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
Average															
Confidence Interval															
Accuracy															

[a] For steam generators; [b] Average of three samples; [c] Make sure that RM and M data are on a consistent basis, either wet or dry.

Figure 2-2. Relative accuracy determination.

PERFORMANCE SPECIFICATION 3—SPECIFICATIONS AND TEST PROCEDURES FOR O_2 AND CO_2 CONTINUOUS EMISSION MONITORING SYSTEMS IN STATIONARY SOURCES

1. *Applicability and Principle.*

1.1 Applicability. This specification is to be used for evaluating acceptability of O_2 and CO_2 continuous emission monitoring systems (CEM's) at the time of or soon after installation and whenever specified in an applicable subpart of the regulations. The specification applies to O_2 or CO_2 monitors that are not included under Performance Specification 2 (PS 2).

This specification is not designed to evaluate the installed CEMS performance over an extended period of time, nor does it identify specific calibration techniques and other auxiliary procedures to assess the CEMS performance. The source owner or operator, however, is responsible to calibrate, maintain, and operate the CEMS properly. To evaluate the CEMS performance, the Administrator may require, under Section 114 of the Act, the operator to conduct CEMS performance evaluations in addition to the initial test. See Section 60.13(c).

The definitions, installation and measurement location specifications, test procedures, data reduction procedures, reporting requirements, and bibliography are the same as in PS 2, Sections 2, 3, 5, 6, 8, 9, and 10, and also apply to O_2 and CO_2 CEMS's under this specification. The performance and equipment specifications and the relative accuracy (RA) test procedures for O_2 and CO_2 CEMS do not differ from those for SO_2 and NO_x CEMS, except as noted below.

1.2 Principle. Reference method (RM) tests and calibration drift tests are conducted to determine conformance of the CEMS with the specification.

2. *Performance and Equipment Specifications.*

2.1 Instrument Zero and Span. This specification is the same as Section 4.1 or PS 2.

2.2 Calibration Drift. The CEMS calibration must not drift by more than 0.5 percent O_2 or CO_2 from the reference value of the gas, gas cell, or optical filter.

2.3 The CEMS RA. The RA of the CEMS must be no greater than 20 percent of the mean value of the RM test data or 1.0 percent O_2 or CO_2, whichever is greater.

3. *Relative Accuracy Test Procedure.*

3.1 Sampling Strategy for RM Tests, Correlation of RM and CEMS Data, Number of RM Tests, and Calculations. This is the same as PS 2, Sections 7.1, 7.2, 7.3, and 7.5, respectively.

3.2 Reference Method. Unless otherwise specified in an applicable subpart of the regulations, Method 3B of Appendix A or any approved alternative is the RM for O_2 or CO_2.

PERFORMANCE SPECIFICATION 4—SPECIFICATIONS AND TEST PROCEDURES FOR CARBON MONOXIDE CONTINUOUS EMISSION MONITORING SYSTEMS IN STATIONARY SOURCES

[Added by 50 FR 31701, August 5, 1985]

1. *Applicability and Principle*

1.1 Applicability. This specification is to be used for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of or soon after installation and whenever specified in an applicable subpart of the regulations.

This specification is not designed to evaluate the installed CEMS performance over an extended period of time nor does it identify specific calibration techniques and other auxiliary procedures to assess CEMS performance. The source owner or operator, however, is responsible to calibrate, maintain, and operate the CEMS. To evaluate CEMS performance, the Administrator may require, under section 114 of the Act, the source owner or operator to conduct CEMS performance evaluations at other times besides the initial test. See Section 60.13(c).

The definitions, installation specifications, test procedures, data reduction procedures for determining calibration drifts (CD) and relative accuracy (RA), and reporting of Performance Specification 2 (PS 2), sections 2, 3, 5, 6, 8 and 9 apply to this specification.

1.2 Principle. Reference method (RM), CD, and RA tests are conducted to determine that the CEMS conforms to the specification.

2. *Performance and Equipment Specifications*

2.1 Instrument Zero and Span. This specification is the same as Section 4.1 of PS 2.

2.2 Calibration Drift. The CEMS calibration must not drift or deviate from the reference value of the calibration gas, gas cell, or optical filter by more than 5 percent of the established span value for 6 out of 7 test days (e.g., the established span value is 1000 ppm for Subpart J affected facilities).

2.3 Relative Accuracy. The RA of the CEMS shall be no greater than 10 percent of the mean value of the RM test data in terms of the units of the emission standard or 5 percent of the applicable standard, whichever is greater.

3. *Relative Accuracy Test Procedure*

3.1 Sampling Strategy for RM Tests, Correlation of RM and CEMS Data, Number of RM Tests, and Calculations. These are the same as PS 2, Sections 7.1, 7.2, 7.3, and 7.5, respectively.

3.2 Reference Methods. Unless otherwise specified in an applicable subpart of the regulation, Method 10 is the RM for this PS. When evaluating nondispersive infrared continuous emission analyzers, Method 10 shall use the alternative interference trap specified in section 10.1 of the method. Method 10A or 10B is an acceptable alternative to method 10.

[3.2 revised by 52 FR 30675, August 17, 1987; 53 FR 41333, October 21, 1988; amended by 55 FR 18876, May 7, 1990]

4. *Bibliography*

[Redesignates 4.1–4.3 as 1–3 by 55 FR 47472, November 14, 1990]

1. Ferguson, B.B., R.E. Lester, and W.J. Mitchell. Field Evaluation of Carbon Monoxide and Hydrogen Sulfide Continuous Emission Monitors at an Oil Refinery. U.S. Environmental Protection Agency. Research Triangle Park, N.C. Publication No. EPA-600/4-82-054. August 1982, 100 p.

2. Repp, M. Evaluation of Continuous Monitors for Carbon Monoxide in Stationary Sources. U.S. Environmental Protection Agency. Research Triangle Park, N.C. Publication No. EPA-600/2-77-063. March 1977/155 p.

3. Smith, F., D.E. Wagoner, and R.P. Donovan. Guidelines for Development of a Quality Assurance Program: Volume VIII — Determination of CO Emissions from Stationary Sources by NDIR Spectrometry. U.S. Environmental Protection Agency. Research Triangle Park, N.C. Publication No. EPA-650/4-74-005-h. February 1975. 96 p.

PERFORMANCE SPECIFICATION 5—SPECIFICATIONS AND TEST PROCEDURES FOR TRS CONTINUOUS EMISSION MONITORING SYSTEMS IN STATIONARY SOURCES

1. *Applicability and Principle.*

1.1 Applicability. This specification is to be used for evaluating the acceptability of total reduced sulfur (TRS) and whenever specified in an applicable subpart of the regulations. (At present, these performance specifications do not apply to petroleum refineries, Subpart J).) Sources affected by the promulgation of the specification shall be allowed 1 year beyond the promulgation date to install, operate, and test the CEMS. The CEMS's may include O_2 monitors which are subject to Performance Specification 3 (PS 3).

The definitions, installation specifications, test procedures, and data reduction procedures for determining calibration drifts (CD's) and relative accuracy (RA), and reporting of PS 2, Sections 2, 3, 4, 5, 6, 8, and 9 also apply to this specification and must be consulted. The performance and equipment specifications do not differ from PS 2 except as listed below and are included in this specification.

1.2 Principle. The CD and RA tests are conducted to determine conformance of the CEMS with the specification.

2. *Performance and Equipment Specifications.*

2.1 Instrument Zero and Span. The CEMS recorder span must be set at 90 to 100 percent of recorder full-scale using a span level between 1.5 times the pollutant concentration corresponding to the emission standard level and the span value. The CEMS design shall also allow the determination of calibration at the zero level of the calibration curve. If zero calibration is not possible or is impractical, this determination may be conducted at a low level (up to 20 percent of span value) point. The components of an acceptable permeation tube system are listed on pages 87-94 of Citation 4.2 of the bibliography.

2.2 Calibration Drift. The CEMS detector calibration must not drift or deviate from the reference value of the calibration gas by more than 5 percent (1.5 ppm) of the established span value of 30 ppm for 6 out of 7 test days. If the CEMS includes pollutant and diluent monitors, the CD must be determined separately for each in terms of concentrations (see PS 3 for the diluent specifications).

2.3 The CEMS Relative Accuracy. The RA of the CEMS shall be no greater than 20 percent of the mean value of the reference method (RM) test data in terms of the units of the emission standard or 10 percent of the applicable standard, whichever is greater.

3. *Relative Accuracy Test Procedure.*

3.1 Sampling Strategy for RM Tests, Correlation of RM and CEMS Data, Number of RM Tests, and Calculations. This is the same as PS 2, Sections 7.1, 7.2,

7.3, and 7.5, respectively. Note: For Method 16, a sample is made up of at least three separate injects equally spaced over time. For Method 16A, a sample is collected for at least 1 hour.

3.2 Reference Methods. Unless otherwise specified in an applicable subpart of the regulations, Method 16, Method 16A, or other approved alternative, shall be the RM for TRS.

4. Bibliography.

[Redesignates 4.1–4.3 as 1–3 by 55 FR 47472, November 14, 1990]

1. Department of Commerce. Experimental Statistics. National Bureau of Standards. Handbook 91. 1963. Paragraph 3-3.1.4, p. 3-31.

2. A Guide to the Design, Maintenance and Operation of TRS Monitoring Systems. National Council for Air and Stream Improvement Technical Bulletin No. 89. September 1977.

3. Observation of Field Performance of TRS Monitors on a Kraft Recovery Furnace. National Council for Air and Stream Improvement Technical Bulletin No. 91. January 1978.

Performance Specification 6—Specifications and Test Procedures For Continuous Emission Rate Monitoring Systems in Stationary Sources

1. Applicability and Principle

1.1 Applicability. The applicability for this specification is the same as Section 1.1 of Performance Specification 2 (PS 2), except this specification is to be used for evaluating the acceptability of continuous emission rate monitoring systems (CERMS's). The installation and measurement location specifications, performance specification test procedure, data reduction procedures, and reporting requirements of PS 2, Section 3, 5, 8, and 9, apply to this specification.

1.2 Principle. Reference method (RM), calibration drift (CD), and relative accuracy (RA) tests are conducted to determine that the CERMS conforms to the specification.

2. Definitions

The definitions are the same as in Section 2 of PS 2, except that this specification refers to the continuous emission rate monitoring system rather than the continuous emission monitoring system. The following definitions are added:

2.1 Continuous Emission Rate Monitoring System (CERMS). The total equipment required for the determination and recording of the pollutant mass emission rate (in terms of mass per unit of time).

2.2 Flow Rate Sensor. That portion of the CERMS that senses the volumetric flow rate and generates an output proportional to flow rate. The flow rate sensor shall have provisions to check the CD for each flow rate parameter that it measures individually (e.g., velocity pressure).

3. Performance and Equipment Specifications

3.1 Data Recorder Scale. Same as Section 4.1 of PS 2.

3.2 CD. Since the CERMS includes analyzers for several measurements, the CD shall be determined separately for each analyzer in terms of its specific measurement. The calibration for each analyzer used for the measurement of flow rate except a temperature analyzer shall not drift or deviate from either of its reference values by more than 3 percent of 1.25 times the average potential absolute value for that measurement. For a temperature analyzer, the specification is 1.5 percent of 1.25 times the average potential absolute temperature. The CD specification for each analyzer for which other PS's have been established (e.g., PS 2 for SO_2 and NO_x), shall be the same as in the applicable PS.

3.3 CERMS RA. The RA of the CERMS shall be no greater than 20 percent of the mean value of the RM's test data in terms of the units of the emission standard, or 10 percent of the applicable standard, whichever is greater.

4. CD Test Procedure

The CD measurements are to verify the ability of the CERMS to conform to the established CERMS calibrations used for determining the emission rate. Therefore, if periodic automatic or manual adjustments are made to the CERMS zero and calibration settings, conduct the CD tests immediately before these adjustments, or conduct them in such a way what CD can be determined.

Conduct the CD tests for pollutant concentration at the two values specified in Section 4.1 of PS 2. For each of the other parameters that are selectively measured by the CERMS (e.g., velocity pressure), use two analogous values: one that represents zero to 20 percent of the high-level value (a value that is between 1.25 and 2 times the average potential value) for that parameter, and one that represents 50 to 100 percent of the high-level value. Introduce, or activate internally, the reference signals to the CERMS (these need not be certified). Record the CERMS response to each, and subtract this value from the respective reference value (see example data sheet in Figure 6-1).

5. RA Test Procedure

5.1 Sampling Strategy for RM's Tests, Correlation of RM and CERMS Data, Number of RM's Tests, and Calculations. These are the same as PS 2, Sections 7.1, 7.2, 7.3, and 7.5, respectively. Summarize the results on a data sheet. An example is shown in Figure 6-2. The RA test may be conducted during the CD test period.

5.2 Reference Methods (RM's). Unless otherwise specified in the applicable subpart of the regulations, the RM for the pollutant gas is the Appendix A method that is cited for compliance test purposes, or its approved alternatives. Methods 2, 2A, 2B, 2C, or 2D, as applicable are the RM's for the determination of volumetric flow rate.

6. Bibliography

1. Brooks, E.F., E.C. Beder, C.A. Flegal, D.J. Luciani, and R. Williams. Continuous Measurement of Total Gas Flow Rate from Stationary Sources. U.S. Environmental Protection Agency. Research Triangle Park, North Carolina. Publication No. EPA-650/2-75-020. February 1975. 248 p.

Performance Specification 7—Specifications and Test Procedures for Hydrogen Sulfide Continuous Emission Monitoring Systems in Stationary Sources

[Added by 55 FR 40175, October 2, 1990]

1. Applicability and Principle

1.1 *Applicability.* 1.1.1 This specification is to be used for evaluating the acceptability of hydrogen sulfide (H_2S) continuous emission monitoring systems (CEMS's) at the time of or soon after installation and whenever specified in an applicable subpart of the regulations.

1.1.2 This specification is not designed to evaluate the installed CEMS performance over an extended period of time nor does it identify specific calibration techniques and other auxiliary procedures to assess CEMS performance. The source owner or operator, however, is responsible to calibrate, maintain, and operate the CEMS. To evaluate CEMS performance, the Administrator may require, under Section 114 of the Act, the source owner or operator to conduct CEMS performance evaluations at other times besides the initial test. *See* § 60.13(c).

1.1.3 The definitions, installation specifications, test procedures, data reduction procedures for determining calibration drifts (CD) and relative accuracy (RA), and reporting of Performance Specification 2 (PS 2), Sections 2, 3, 5, 6, 8, and 9 apply to this specification.

1.2 Principle. Reference method (RM), CD, and RA tests are conducted to determine that the CEMS conforms to the specification.

2. Performance and Equipment Specifications

2.1 *Instrument zero and span.* This specification is the same as Section 4.1 of PS 2.

2.2 *Calibration drift.* The CEMS calibration must not drift or deviate from the reference value of the calibration gas or reference source by more than 5 percent of the established span value for 6 out of 7 test days (e.g., the established span value is 300

ppm for subpart J fuel gas combustion devices).

2.3 *Relative accuracy.* The RA of the CEMS shall be no greater than 20 percent of the mean value of the RM test data in terms of the units of the emission standard or 10 percent of the applicable standard, whichever is greater.

3. Relative Accuracy Test Procedure

3.1 Sampling Strategy for RM Tests, Correlation of RM and CEMS Data Number of RM Tests, and Calculations. These are the same as that in PS 2, § 7.1, 7.2, 7.3, and 7.5, respectively.

3.2 Reference Methods. Unless otherwise specified in an applicable subpart of the regulation, Method 11 is the RM for this PS.

4. Bibliography

1. U.S. Environmental Protection Agency. Standards of Performance for New Stationary Sources; Appendix B; Performance Specifications 2 and 3 for SO_2, NO_x, CO_2, and O_2 Continuous Emission Monitoring Systems; Final Rule. 48 CFR 23608. Washington, DC U.S. Government Printing Office. May 25, 1983.

2. U.S. Government Printing Office. Gaseous Continuous Emission Monitoring Systems—Performance Specification Guidelines for SO_2, NO_x, CO_2, O_2, and TRS. U.S. Environmental Protection Agency. Washington, D.C. EPA–450/3–82–026. October 1982. 26p.

3. Maines, G.D., W.C. Kelly (Scott Environmental Technology, Inc.), and J.B. Homolya. Evaluation of Monitors for Measuring H_2S in Refinery Gas. Prepared for the U.S. Environmental Protection Agency. Research Triangle Park, N.C. Contract No. 68–02–2707. 1978. 60 p.

4. Ferguson, B.B., R.E. Lester (Harmon Engineering and Testing), and W.J. Mitchell. Field Evaluation of Carbon Monoxide and Hydrogen Sulfide Continuous Emission Monitors at an Oil Refinery. Prepared for the U.S. Environmental Protection Agency. Research Triangle Park, N.C. Publication No. EPA–600/4–82–054. August 1982. 100 p.

Appendix C—Determination of Emission Rate Change

1. Introduction.

1.1 The following method shall be used to determine whether a physical or operational change to an existing facility resulted in an increase in the emission rate to the atmosphere. The method used is the Student's *t* test, commonly used to make inferences from small samples.

2. Data.

2.1 Each emission test shall consist of n runs (usually three) which produce n emission rates. Thus two sets of emission rates are generated, one before and one after the change, the two sets being of equal size.

2.2 When using manual emission tests, except as provided in § 60.8(b) of this part, the reference methods of Appendix A to this part shall be used in accordance with the procedures specified in the applicable subpart both before and after the change to obtain the data.

2.3 When using continuous monitors, the facility shall be operated as if a manual emission test were being performed. Valid data using the averaging time which would be required if a manual emission test were being conducted shall be used.

3. Procedure.

3.1 Subscripts a and b denote prechange and postchange respectively.

3.2 Calculate the arithmetic mean emission rate, E, for each set of data using Equation 1.

$$E=\sum_{\frac{i=1}{n}}^{n} E_i=\frac{E_1+E_2\ldots+E_n}{n} \quad (1)$$

Where:

E_i = Emission rate for the i th run.

n = number of runs.

3.3 Calculate the sample variance, S^2, for each set of data using Equation 2.

$$S^2=\frac{\sum_{i=1}^{n}(E_i-E)^2}{n-1}=\frac{\sum_{i=1}^{n}E_i^2-\left(\sum_{i=1}^{n}E_i\right)^2\Big/n}{n-1} \quad (2)$$

3.4 Calculate the pooled estimate, S_p, using Equation 3.

$$S_p=\left[\frac{(n_a-1)\,S_a^2+(n_b-1)\,S_b^2}{n_a+n_b-2}\right]^{1/2} \quad (3)$$

3.5 Calculate the test statistic, t, using Equation 4.

$$t=\frac{E_b-E_a}{S_p\left[\frac{1}{n_a}+\frac{1}{n_b}\right]^{1/2}} \quad (4)$$

4. Results.

4.1 If $E_b>E_a$ and $t>t'$, where t' is the critical value of t obtained from Table 1, then with 95% confidence the difference between E_b and E_a is significant, and an increase in emission rate to the atmosphere has occurred.

TABLE 1

Degrees of freedom (n_a+n_b-2)	t' (95 percent confidence level)
2	2.920
3	2.353
4	2.132
5	2.015
6	1.943
7	1.895
8	1.860

For greater than 8 degrees of freedom, see any standard statistical handbook or text.

5.1 Assume the two performance tests produced the following set of data:

	Test a	Test b
Run 1.	100	115
Run 2.	95	120
Run 3.	110	125

5.2 Using Equation 1—

$E_a=100+95+110/3=102$

$E_b=115+120+125/3=120$

5.3 Using Equation 2—

$S_a^2=(100-102)^2+(95-102)^2+(110-102)^2/3-1=58.5$

$S_b^2=(115-120)^2+(120-120)^2+(125-120)^2/3-1=25$

5.4 Using Equation 3—

$S_p=[(3-1)(58.5)+(3+1)(25)/3+3-2]^{1/2}=6.46$

5.5 Using Equation 4—

$$t=\frac{120-102}{6.46\left[\frac{1}{3}+\frac{1}{3}\right]^{1/2}}=3.412$$

5.6 Since $(n^1+n^2-2)=4$, $t'=2.132$ (from Table 1). Thus since $t>t'$ the difference in the values of E_a and E_b is significant, and there has been an increase in emission rate to the atmosphere.

6. Continuous Monitoring Data.

6.1 Hourly averages from continuous monitoring devices, where available, should be used as data points and the above procedure followed.

Appendix D—Required Emission Inventory Information

(a) Completed NEDS point source form(s) for the entire plant containing the designated facility, including information on the applicable criteria pollutants. If data concerning the plant are already in NEDS, only that information must be submitted which is necessary to update the existing NEDS

record for that plant. Plant and point identification codes for NEDS records shall correspond to those previously assigned in NEDS; for plants not in NEDS, these codes shall be obtained from the appropriate Regional Office.

(b) Accompanying the basic NEDS information shall be the following information on each designated facility:

(1) The state and county identification codes, as well as the complete plant and point identification codes of the designated facility in NEDS. (The codes are needed to match these data with the NEDS data.)

(2) A description of the designated facility including, where appropriate:

(i) Process name.

(ii) Description and quantity of each product (maximum per hour and average per year).

(iii) Description and quantity of raw materials handled for each product (maximum per hour and average per year).

(iv) Types of fuels burned, quantities and characteristics (maximum and average quantities per hour, average per year).

(v) Description and quantity of solid wastes generated (per year) and method of disposal.

(3) A description of the air pollution control equipment in use or proposed to control the designated pollutant, including:

(i) Verbal description of equipment.

(ii) Optimum control efficiency, in percent. This shall be a combined efficiency when more than one device operates in series. The method of control efficiency determination shall be indicated (e.g., design efficiency, measured efficiency, estimated efficiency).

(iii) Annual average control efficiency, in percent, taking into account control equipment down time. This shall be a combined efficiency when more than one device operates in series.

(4) An estimate of the designated pollutant emissions from the designated facility (maximum per hour and average per year). The method of emission determination shall also be specified (e.g., stack test, material balance, emission factor).

APPENDIX E—[RESERVED]

APPENDIX F—QUALITY ASSURANCE PROCEDURES

PROCEDURE 1. QUALITY ASSURANCE REQUIREMENTS FOR GAS CONTINUOUS EMISSION MONITORING SYSTEMS USED FOR COMPLIANCE DETERMINATION

1. Applicability and Principle

1.1 Applicability. Procedure 1 is used to evaluate the effectiveness of quality control (QC) and quality assurance (QA) procedures and the quality of data produced by any continuous emission monitoring system (CEMS) that is used for determining compliance with the emission standards on a continuous basis as specified in the applicable regulation. The CEMS may include pollutant (e.g., SO_2 and NO_x) and diluent (e.g., O_2 or CO_2) monitors.

This procedure specifies the minimum QA requirements necessary for the control and assessment of the quality of CEMS data submitted to the Environmental Protection Agency (EPA). Source owners and operators responsible for one or more CEMS's used for compliance monitoring must meet these minimum requirements and are encouraged to develop and implement a more extensive QA program or to continue such programs where they already exist.

Data collected as a result of QA and QC measures required in this procedure are to be submitted to the Agency. These data are to be used by both the Agency and the CEMS operator in assessing the effectiveness of the CEMS QC and QA procedures in the maintenance of acceptable CEMS operation and valid emission data.

Appendix F, Procedure 1 is applicable December 4, 1987. The first CEMS accuracy assessment shall be a relative accuracy test audit (RATA) (see section 5) and shall be completed by March 4, 1988 or the date of the initial performance test required by the applicable regulation, whichever is later.

1.2 Principle. The QA procedures consist of two distinct and equally important functions. One function is the assessment of the quality of the CEMS data by estimating accuracy. The other function is the control and improvement of the quality of the CEMS data by implementing QC policies and corrective actions. These two functions form a control loop: When the assessment function indicates that the data quality is inadequate, the control effort must be increased until the data quality is acceptable. In order to provide uniformity in the assessment and reporting of data quality, this procedure explicitly specifies the assessment methods for response drift and accuracy. The methods are based on procedures included in the applicable performance specifications (PS's) in Appendix B of 40 CFR Part 60. Procedure 1 also requires the analysis of the EPA audit samples concurrent with certain reference method (RM) analyses as specified in the applicable RM's.

Because the control and corrective action function encompasses a variety of policies, specifications, standards, and corrective measures, this procedure treats QC requirements in general terms to allow each source owner or operator to develop a QC system that is most effective and efficient for the circumstances.

2. Definitions

2.1 Continuous Emission Monitoring System. The total equipment required for the determination of a gas concentration or emission rate.

2.2 Diluent Gas. A major gaseous constituent in a gaseous pollutant mixture. For combustion sources, CO_2 and O_2 are the major gaseous constituents of interest.

2.3 Span Value. The upper limit of a gas concentration measurement range that is specified for affected source categories in the applicable subpart of the regulation.

2.4 Zero, Low-Level, and High-Level Values. The CEMS response values related to the source specific span value. Determination of zero, low-level, and high-level values is defined in the appropriate PS in Appendix B of this part.

2.5 Calibration Drift (CD). The difference in the CEMS output reading from a reference value after a period of operation during which no unscheduled maintenance, repair or adjustment took place. The reference value may be supplied by a cylinder gas, gas cell, or optical filter and need not be certified.

2.6 Relative Accuracy (RA). The absolute mean difference between the gas concentration or emission rate determined by the CEMS and the value determined by the RM's plus the 2.5 percent error confidence coefficient of a series of tests divided by the mean of the RM tests or the applicable emission limit.

3. QC Requirements

Each source owner or operator must develop and implement a QC program. As a minimum, each QC program must include written procedures which should describe in detail, complete, step-by-step procedures and operations for each of the following activities:

1. Calibration of CEMS.
2. CD determination and adjustment of CEMS.
3. Preventive maintenance of CEMS (including spare parts inventory).
4. Data recording, calculations, and reporting.
5. Accuracy audit procedures including sampling and analysis methods.
6. Program of corrective action for malfunctioning CEMS.

As described in Section 5.2, whenever excessive inaccuracies occur for two consecutive quarters, the source owner or operator must revise the current written procedures or modify or replace the CEMS to correct the deficiency causing the excessive inaccuracies.

These written procedures must be kept on record and available for inspection by the enforcement agency.

4. CD Assessment

4.1 CD Requirement. As described in 40 CFR Part 60.13(d), source owners and operators of CEMS must check, record, and quantify the CD at two concentration values at least once daily (approximately 24 hours) in accordance with the method prescribed by the manufacturer. The CEMS calibration must, as minimum, be adjusted whenever the daily zero (or low-level) CD or the daily high-level CD exceeds two times the limits of the applicable PS's in Appendix B of this regulation.

4.2 Recording Requirement for Automatic CD Adjusting Monitors. Monitors that automatically adjust the data to the corrected calibration values (e.g., microprocessor

control) must be programmed to record the unadjusted concentration measured in the CD prior to resetting the calibration, if performed, or record the amount of adjustment.

4.3 Criteria for Excessive CD. If either the zero (or low-level) or high-level CD result exceeds twice the applicable drift specification in Appendix B for five, consecutive, daily periods, the CEMS is out-of-control. If either the zero (or low-level) or high-level CD result exceeds four times the applicable drift specification in Appendix B during any CD check, the CEMS is out-of-control. If the CEMS is out-of-control, take necessary corrective action. Following corrective action, repeat the CD checks.

4.3.1 Out-Of-Control Period Definition. The beginning of the out-of-control period is the time corresponding to the completion of the fifth, consecutive, daily CD check with a CD in excess of two times the allowable limit, or the time corresponding to the completion of the daily CD check preceding the daily CD check that results in a CD in excess of four times the allowable limit. The end of the out-of-control period is the time corresponding to the completion of the CD check following corrective action that results in the CD's at both the zero (or low-level) and high-level measurement points being within the corresponding allowable CD limit (i.e., either two times or four times the allowable limit in Appendix B).

4.3.2 CEMS Data Status During Out-of-Control Period. During the period the CEMS is out-of-control, the CEMS data may not be used in calculating emission compliance nor be counted towards meeting minimum data availability as required and described in the applicable subpart [e.g., § 60.47a(f)].

4.4 Data Recording and Reporting. As required in § 60.7(d) of this regulation (40 CFR Part 60), all measurements from the CEMS must be retained on file by the source owner for at least 2 years. However, emission data obtained on each successive day while the CEMS is out-of-control may not be included as part of the minimum daily data requirement of the applicable subpart [e.g., § 60.47a(f)] nor be used in the calculation of reported emissions for that period.

5. Data Accuracy Assessment

5.1 Auditing Requirements. Each CEMS must be audited at least once each calendar quarter. Successive quarterly audits shall occur no closer than 2 months. The audits shall be conducted as follows:

5.1.1 Relative Accuracy Test Audit (RATA). The RATA must be conducted at least once every four calendar quarters. Conduct the RATA as described for the RA test procedure in the applicable PS in Appendix B (e.g., PS 2 for SO_2 and NO_x). In addition, analyze the appropriate performance audit samples received from EPA as described in the applicable sampling methods (e.g., Methods 6 and 7).

5.1.2 Cylinder Gas Audit (CGA). If applicable, a CGA may be conducted in three of four calendar quarters, but in no more than three quarters in succession.

To conduct a CGA: (1) Challenge the CEMS (both pollutant and diluent portions of the CEMS, if applicable) with an audit gas of known concentration at two points within the following ranges:

Audit point	Audit range		
	Pollutant monitors	Diluent monitors for—	
		CO_2	O_2
1	20 to 30% of span value.	5 to 8% by volume.	4 to 6% by volume.
2	50 to 60% of span value.	10 to 14% by volume.	8 to 12% by volume.

Challenge the CEMS three times at each audit point, and use the average of the three responses in determining accuracy.

Use of separate audit gas cylinder for audit points 1 and 2. Do not dilute gas from audit cylinder when challenging the CEMS.

The monitor should be challenged at each audit point for a sufficient period of time to assure adsorption-desorption of the CEMS sample transport surfaces has stabilized.

(2) Operate each monitor in its normal sampling mode, i.e., pass the audit gas through all filters, scrubbers, conditioners, and other monitor components used during normal sampling, and as much of the sampling probe as is practical. At a minimum, the audit gas should be introduced at the connection between the probe and the sample line.

(3) Use audit gases that have been certified by comparision to National Bureau of Standards (NBS) gaseous Standard Reference Materials (SRM's) or NBS/EPA approved gas manufacturer's Certified Reference Materials (CRM's) (See Citation 1) following EPA Traceability Protocol No. 1 (See Citation 2). As an alternative to Protocol No. 1 audit gases, CRM's may be used directly as audit gases. A list of gas manufacturers that have prepared approved CRM's is available from EPA at the address shown in Citation 1. Procedures for preparation of CRM's are described in Citation 1. Procedures for preparation of EPA Traceability Protocol 1 materials are described in Citation 2.

The difference between the actual concentration of the audit gas and the concentration indicated by the monitor is used to assess the accuracy of the CEMS.

5.1.3 Relative Accuracy Audit (RAA). The RAA may be conducted three of four calendar quarters, but in no more than three quarters in succession. To conduct a RAA, follow the procedure described in the applicable PS in Appendix B for the relative accuracy test, except that only three sets of measurement data are required. Analyses of EPA performance audit samples are also required.

The relative difference between the mean of the RM values and the mean of the CEMS responses will be used to assess the accuracy of the CEMS.

5.1.4 Other Alternative Audits. Other alternative audit procedures may be used as approved by the Administrator for three of four calendar quarters. One RATA is required at least once every four calendar quarters.

5.2 Criteria for Excessive Inaccuracy. If the RA, using the RATA, exceeds 20 percent or 10 percent of the applicable standard, whichever is greater, the CEMS is out-of-control. For SO_2 emission standards between 130 and 86 ng/J (0.30 and 0.20 lb/million Btu), use 15 percent of the applicable standard; below 86 ng/J (0.20 ng/J (0.20 lb/million Btu), use 20 percent of emission standard. If the inaccuracy exceeds ±15 percent using the CGA or the RAA, or, for the RAA, 7.5 percent of the applicable standard, whichever is greater, the CEMS is out-of-control. If the CEMS is out-of-control take necessary corrective action to eliminate the problem. Following corrective action, the source owner or operator must audit the CEMS accuracy with a RATA, CGA, or RAA to determine whether the CEMS is operating properly. A RATA must always be used following an out-of-control period resulting from a RATA. The audit following corrective action does not require analysis of EPA performance audit samples. If accuracy audit results show the CEMS to be out-of-control, the CEMS operator shall report both the audit showing the dems to be out-of-control and the results of the audit following corrective action showing the CEMS to be operating within specifications.

5.2.1 Out-Of-Control Period Definition. The beginning of the out-of-control period is the time corresponding to the completion of the sampling for the RATA, RAA, or CGA. The end of the out-of-control period is the time corresponding to the completion of the sampling of the subsequent successful audit.

5.2.2. CEMS Data Status During Out-Of-Control Period. During the period the monitor is out-of-control, the CEMS data may not be used in calculating emission compliance nor be counted towards meeting minimum data availabilty as required and described in the applicable subpart [e.g., § 60.47a(f)].

5.3 Criteria for Acceptable QC Procedure. Repeated excessive inaccuracies (i.e., out-of-control conditions resulting from the quarterly audits) indicates the QC procedures are inadequate or that the CEMS is incapable of providing quality data. Therefore, whenever excessive inaccuracies occur for two consective quarters, the source owner or operator must revise the QC procedures (see Section 3) or modify or replace the CEMS.

6. Calculations for CEMS Data Accuracy

6.1 RATA RA Calculation. Follow the equations described in Section 8 of Appendix B, PS 2 to calculate the RA for the RATA. The RATA must be calculated in units of the applicable emission standard (e.g., ng/J).

6.2 RAA Accuracy Calculation. Use Equation 1-1 to calculate the accuracy for the RAA. The RAA must be calculated in units of the applicable emission standard (e.g., ng/J).

6.3 CGA Accuracy Calculation. Use Equa-

[Appendix F]

tion 1-1 to calculate the accuracy for the CGA, which is calculated in units of the appropriate concentration (e.g., ppm SO_2 or percent O_2). Each component of the CEMS must meet the acceptable accuracy requirement.

$$A = \frac{C_m - C_a}{C_a} \times 100 \qquad \text{Eq. 1-1}$$

where:

A = Accuracy of the CEMS, percent.

C_m = Average CEMS response during audit in units of applicable standard or appropriate concentration.

C_a = Average audit value (CGA certified value or three-run average for RAA) in units of applicable standard or appropriate concentration.

6.4 Example Accuracy Calculations. Example calculations for the RATA, RAA, and CGA are available in Citation 3.

7. *Reporting Requirements*

At the reporting interval specified in the applicable regulation, report for each CEMS the accuracy results from Section 6 and the CD assessment results from Section 4. Report the drift and accuracy information as a Data Assessment Report (DAR), and include one copy of this DAR for each quarterly audit with the report of emissions required under the applicable subparts of this part.

As a minimum, the DAR must contain the following information:

1. Source owner or operator name and address.

2. Identification and location of monitors in the CEMS.

3. Manufacturer and model number of each monitor in the CEMS.

4. Assessment of CEMS data accuracy and date of assessment as determined by a RATA, RAA, or CGA described in Section 5 including the RA for the RATA, the A for the RAA or CGA, the RM results, the cylinder gases certified values, the CEMS responses, and the calculations results as defined in Section 6. If the accuracy audit results show the CEMS to be out-of-control, the CEMS operator shall report both the audit results showing the CEMS to be out-of-control and the results of the audit following corrective action showing the CEMS to be operating within specifications.

5. Results from EPA performance audit samples described in Section 5 and the applicable RM's.

6. Summary of all corrective actions taken when CEMS was determined out-of-control, as described in Sections 4 and 5.

An example of a DAR format is shown in Figure 1.

8. *Bibliography*

1. "A Procedure for Establishing Traceability of Gas Mixtures to Certain National Bureau of Standards Standard Reference Materials." Joint publication by NBS and EPA-600/7-81-010. Available from the U.S. Environmental Protection Agency, Quality Assurance Division (MD-77), Research Triangle Park, North Carolina 27711.

2. "Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol Number 1)" June 1978. Section 3.0.4 of the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods. EPA-600/4-77-027b. August 1977. U.S. Environmental Protection Agency, Office of Research and Development Publications, 26 West St. Clair Street, Cincinnati, Ohio 45268.

3. Calculation and Interpretation of Accuracy for Continuous Emission Monitoring Systems (CEMS). Section 3.0.7 of the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods. EPA-600/4-77-027b. August 1977. U.S. Environmental Protection Agency, Office of Research and Development Publications, 26 West St. Clair Street, Cincinnati, Ohio 45268.

FIGURE 1. EXAMPLE FORMAT FOR DATA ASSESSMENT REPORT

Period ending date _____
Year _____

Company name _____
Plant name _____
Source unit no. _____
CEMS manufacturer _____
Model no. _____
CEMS serial no. _____
CEMS type (e.g., in situ) _____
CEMS sampling location (e.g., control device outlet) _____
CEMS span values as per the applicable regulation, SO_2 _____ ppm, O_2 _____ percent, NO_x _____ ppm, CO_2 _____ percent

I. Accuracy assessment results (Complete A, B, or C below for each CEMS or for each pollutant and diluent analyzer, as applicable.) If the quarterly audit results show the CEMS to be out-of-control, report the results of both the quarterly audit and the audit following corrective action showing the CEMS to be operating properly.

A. Relative accuracy test audit (RATA) for _____ (e.g., SO_2 in ng/J).

1. Date of audit _____
2. Reference methods (RM's) used (e.g., Methods 3 and 6). _____
3. Average RM value _____ (e.g., ng/J, mg/dsm³, or percent volume).
4. Average CEMS value _____
5. Absolute value of mean difference [d] _____
6. Confidence coefficient [CC] _____
7. Percent relative accuracy (RA) _____ percent.
8. EPA performance audit results:
a. Audit lot number (1) _____ (2) _____
b. Audit sample number (1) _____ (2) _____
c. Results (mg/dsm³) (1) _____ (2) _____
d. Actual value (mg/dsm³)* (1) _____ (2) _____
e. Relative error* (1) _____ (2) _____

B. Cylinder gas audit (CGA) for _____ (e.g., SO_2 in ppm).

	Audit point 1	Audit point 2	
1. Date of audit			
2. Cylinder ID number			
3. Date of certification			
4. Type of certification.			(e.g., EPA Protocol 1 or CRM).
5. Certified audit value.			(e.g., ppm).
6. CEMS response value.			(e.g., ppm).
7. Accuracy			percent.

C. Relative accuracy audit (RAA) for _____ (e.g., SO_2 in ng/J).

1. Date of audit _____.
2. Reference methods (RM's) used _____ (e.g., Methods 3 and 6).
3. Average RM value _____ (e.g., ng/J).
4. Average CEMS value _____.
5. Accuracy _____ percent.
6. EPA performance audit results:
a. Audit lot number (1) _____ (2) _____
b. Audit sample number (1) _____ (2) _____
c. Results (mg/dsm³) (1) _____ (2) _____
d. Actual value (mg/dsm³) *(1) _____ (2)
e. Relative error* (1) _____ (2) _____

D. Corrective action for excessive inaccuracy.

1. Out-of-control periods.
a. Date(s) _____.
b. Number of days _____.
2. Corrective action taken _____

3. Results of audit following corrective action. (Use format of A, B, or C above, as applicable.)

II. Calibration drift assessment.

A. Out-of-control periods.
1. Date(s) _____.
2. Number of days _____.

B. Corrective action taken _____

APPENDIX G—PROVISIONS FOR AN ALTERNATIVE METHOD OF DEMONSTRATING COMPLIANCE WITH 40 CFR 60.43 FOR THE NEWTON POWER STATION OF CENTRAL ILLINOIS PUBLIC SERVICE COMPANY

1. *Designation of Affected Facilities*

1.1 The affected facilities to which this alternative compliance method applies are the Unit 1 and 2 coal-fired steam generating units located at the Central Illinois Public Service Company's (CIPS) Newton Power Station in Jasper County, Illinois. Each of these units is subject to the Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Commenced After August 17, 1971 (Subpart D).

* To be completed by the Agency.

[Appendix G]

Environmental Quality Commission

☐ Rule Adoption Item
☐ Action Item
☐ Information Item

Agenda Item E
January 29, 1992 Meeting

Title:

Status Report of the Total Maximum Daily Load (TMDL) Program

Summary:

In carrying out the work items listed in the 1987 Consent Decree there are several issues that the Department would like to bring to the attention of the Commission:

- Total number of Water Quality Limited segments (WQLs) requiring TMDLs,
- Work to date listing waterbodies and segments,
- Whether TMDLs are counted on a single parameter basis (as the Dept. interprets) or as all parameters in a given waterbody,
- Integration of the TMDL program into the Water Quality Program,
- Tier levels of TMDL development and
- Status of the waterbodies listed in the plaintiff's second notice.

The Department believes that it has taken a reasonable approach to the process and has made steady progress in its implementation of the TMDL program.

Department Recommendation:

Accept this report.

Report Author	Division Administrator	Director
Elizabeth Thomson, Robert Baumgartner, Neil Mullane	Michael Downs	Fred Hansen

January 12,1993

State of Oregon
Department of Environmental Quality Memorandum †

Date: January 12, 1992

To: Environmental Quality Commission

From: Fred Hansen, Director

Subject: Agenda Item E, January 29, 1993, EQC Meeting

Status Report on the Total Maximum Daily Load (TMDL) Program

Statement of Purpose

The purpose of this informational item is to give the Commission a status report on the Department's progress in establishing Total Maximum Daily Loads (TMDLs) and distributing waste load allocations (WLAs) and load allocations (LAs) for water quality limited waterbodies as identified in the Statewide Water Quality Status Assessment Report (305(b) Report) (see Attachment A for background information on the TMDL program).

This informational item will also identify several issues and concerns regarding the establishment of TMDLs and the implementation of the Consent Decree under which this program operates.

Background

In 1986, the Northwest Environmental Defense Center (NEDC) brought suit against the U.S. Environmental Protection Agency (EPA) over Oregon's implementation of the Clean Water Act. Specifically, the suit contended that the state did not have the discretion whether or not to establish TMDLs on waterbodies identified as water quality limited, that is waterbodies not meeting water quality standard even after the implementation of standard wastewater treatment technology for pollution sources. In June 1987, a Consent Decree (Attachment B) was signed between EPA and NEDC to settle the suit. The Consent Decree identified several specific work items for EPA and the State. The key items included:

1. Submitting loading capacities for the water quality limited segments identified in the Consent Decree as needing TMDLs (Section 4A of the decree).

† A large print copy of this report is available upon request.

2. Adopting TMDLs/WLAs/LAs on the waterbodies identified in the Decree and subsequent listings of WQLs in the 305(b) Report at a rate of 20 percent a year, but in no case less than 2 per year (Section 4B of the decree).

3. Determining by August 1988 whether any of the other waterbodies remaining in the plaintiff's second notice were water quality limited.

This informational report will specifically identify the work the Department has conducted to complete these Consent Decree items.

Authority of the Commission with Respect to the Issue

The Commission is responsible for implementing the Clean Water Act in Oregon. Included in the provisions of the Act is Section 303(d) which requires the development of Total Maximum Daily Loads (TMDLs) for water quality limited streams (WQLs). The authority to protect water quality is presented in Oregon Revised Statutes (ORS) 468B. The authority to implement the Clean Water Act is presented in ORS 468B.035.

Alternatives and Evaluation

The TMDL program was completely new to Oregon in 1986. The Department prior to that date had no experience with the program and had little if any working knowledge of the technical and policy issues surrounding this water pollution control approach. During the past six years, the Department has gained considerable experience with this program and it now has a much better idea of what is needed to adequately implement a water quality based program. Below is a review of the progress made to date on consent decree items and a discussion of the various issues/concerns with the decree and the TMDL program.

1. **Submitting loading capacities for the water quality limited segments identified in the Consent Decree as needing TMDLs (Section 4A of the decree).**

   Under this commitment the Department developed and submitted to EPA loading capacities for the water quality limited waterbodies listed in the consent decree. Below is a list of these waterbodies and the date the loading capacities were submited.

Tualatin River	4/87
Yamhill River	8/87
Bear Creek	11/87
South Umpqua River	11/87
Coquille River	2/88
Pudding River	8/87
Garrison Lake	2/88
Klamath River	4/88
Umatilla River	4/88
Grande Ronde River	6/88

*** Calapooia River was eliminated from the list after additional study showed that it was not water quality limited

2. **Determining by August 1988 whether any of the other waterbodies remaining in the plaintiff's second notice were water quality limited.**

The Department conducted a review of the remaining waterbodies as per the decree. Problem assessments were written and sent to EPA. This information along with the review of the ambient data provided the basis for the development of the 1990 Water Quality Status Assessment Report Appendix A list of water quality limited segments.

3. **Adopting TMDLs/WLAs/LAs on the WQLS identified in the Decree and subsequent listings of WQLS in the 305(b) Report at a rate of 20 percent a year, but in no case less than 2 per year (Section 4B of the decree).**

Work conducted to date is outlined in Attachment D (Tables 4.1-2a and b from the 1992 305(b) Report). The tables list the waterbodies in Oregon requiring TMDLs and the water quality parameters for which standards have been violated. The tables identify the status of each waterbody and the work left.

There are several disagreements over this Consent Decree item and how the Department has moved forward with implementation. The Department would like to review how it has viewed this item and consequently how it has implemented this provision.

The first issue relates to the listing of water quality limited segments in the Consent Decree. It should be noted that the Consent Decree identifies its list as "water quality limited segments" when it actually lists **waterbodies** and **not** the specific water quality limited segments within these waterbodies that need TMDLs. This is a very important distinction because the list establishes the basis for how we account for what segments need TMDLs. It also incorrectly implies that Consent Decree waterbodies are equal to each other when they are vastly different in severity and complexity of problem. For example, the Tualatin River has nine WQLS where as the Pudding River has one. But by listing just waterbodies, the Consent Decree implies that the Tualatin River is equal to the Pudding River. This is completely erroneous in the number of streams and river segments violating water quality standards and consequently the resources needed to establish TMDLs.

The Department in developing the water quality limited segment list in Appendix A of the Water Quality Status Assessment reports (305b reports) has specifically listed the WQLS in each waterbody and each individual parameter violating standards for which TMDLs are needed.

The second issue is the number of parameters violating water quality standards in a WQLS for which TMDLs need to be developed. Some WQLSs have a single parameter violating standards where others have multiple parameters violating standards. Again by listing waterbodies the Consent Decree implies that a waterbody with one parameter violating standards is equal to a waterbody with multiple parameter violations.

It is the Department's interpretation that a submitted TMDL for a single parameter is counted as one completed TMDL. Others feel that the Consent Decree is open to interpretation as to whether all TMDL parameters for a given waterbody must be completed or whether a single parameter must be completed before counting as a completion with respect to the Decree requirements. For example, Bear Creek TMDLs were developed for phosphorus, ammonia, and BOD. Bear Creek has one water quality limited segment listed in the 305(b) Report but it actually required the development of three separate TMDLs. Attachment C is a draft list of waterbodies, WQLS and parameters.

4. **How does the Department determine if a segment is WQL?**

The 1992 305(b) Report has a listing in Appendix A of stream segments identified as water quality limited. These are segments where data have indicated violations of water quality standards in 25 percent or more of the samples analyzed where we have more than 10 total data points. On a subset of these streams, TMDLs are required (see column M in Appendix A of the Report). The subset is determined by DEQ staff review as to severity and numbers of occurrence of violations, by the treatment processes in use by the sources on the stream, and by any other relevant factors. Forty segments were listed as water quality limited in the 1992 Report (see Attachment C for a summary list). This includes an increase of seven resulting from the listing of the Columbia and Willamette Rivers (seven segments) for 2,3,7,8 TCDD (dioxin).

5. **Different levels of TMDL development:**

The complexity of analysis and the time required for the development of a TMDL will vary depending on the specific waterbody and the parameter of concern. There are five prime factors which determine how difficult a TMDL study will be:

1) number of standards violated
2) size of the affected watershed
3) data needed to describe the problem
4) number of potential sources
5) state-of-the-art in establishing a TMDL for a particular parameter.

Each of these factors will affect study length and the confidence placed in final TMDLs. The Department uses three categories to identify the different levels of analysis required (the time estimates are approximations):

Tier 1: 18 months to 2 years for data collection and TMDL development. Example: Tualatin River--Ammonia.

Tier 2: 3 years (2 years for data collection and 1 year for TMDL development). Example: Coquille River--Dissolved Oxygen.

Tier 3: 4 to 6 years (3 to 5 years for data collection and 1 to 2 years for TMDL development). Example: Columbia Slough--Bacteria, Nutrients, Toxics.

6. **Integration of the TMDL program into the Water Quality Program**

The TMDL program has significantly impacted the Water Quality Program. Integration of the water quality based approach has been occurring in the development of load and waste load allocations, in other permit modifications, in construction of new facilities, and in Memorandums of Agreement with other agencies.

Summary of Public Input Opportunity

The public has been involved in the state's TMDL process in many different ways, tailored to each specific waterbody being evaluated: Technical Advisory Committees, informational meetings, public hearings, public notices, and chances to comment. The issues discussed above have been key issues raised in the public involvement process. All TMDLs and allocations are presented in public notices prior to submittal to EPA.

Conclusions

The Department has made steady progress in its implementation of the TMDL program and the requirements of the Consent Decree, as seen by the work outlined in Attachment D. The development and submittal of TMDLs and allocations can be a lengthy and complex process. For many of the affected waterbodies, this process requires extensive resources in terms of staff and funding. The Department believes that it has taken a reasonable approach to the process given the limitations in resources and has sought to conduct reliable, accurate analyses. The economic and environmental consequences of the allocations necessitates a careful approach to the process, with adequate time for review by affected parties and the public.

At the beginning of the TMDL program implementation in 1987, the Department had very limited information and experience with the process. Over the past five years, the Department believes that considerable gains have been made in the sophistication of analyses being applied to the development of TMDLs; considerable progress has been made in working with point and nonpoint sources in the affected watersheds.

Intended Future Actions

Future action in the TMDL program will include work on those segments and parameters which are currently in progress or not yet begun. For the completed TMDLs and those which will be submitted in the near future, the Department is in the process of preparing problem assessment reports in the recommended EPA format. Reports are currently being prepared for submittal for the Pudding and Coquille Rivers. A public notice/chance to comment for the Memorandum of Agreement between DEQ and the City of Portland regarding the Columbia Slough has been prepared and will be distributed in January. The public hearing for that notice is tentatively scheduled for February.

Department Recommendation

It is recommended that the Commission accept this report, discuss the matter, and provide advice and guidance to the Department as appropriate.

Attachments

A. TMDL Background Information
B. Consent Decree
C. Summary List of TMDL Waterbodies & Completion Status
D. TMDL Program Status Tables

Reference Documents (available upon request)

Individual Critical Basin Staff Reports and Summaries

Approved:

Section: Neil Mullane

Division: Michael Downs

Report Prepared By: Elizabeth Thomson
Robert Baumgartner
Neil Mullane

Phone: 229-5358
Date Prepared: 12/29/92

Neil Mullane:crw
SA\WC10\WC11074.5
January 14, 1992

ATTACHMENT A--Agenda Item E

Total Maximum Daily Loads--Background

DEQ is in the process of establishing total maximum daily loads (TMDLs) on waters of the state which have been designated as "water quality limited." That designation is given to waters (predominantly streams) where the established water quality standards are not being met and there is a need for increased treatment of wastes (beyond secondary treatment) prior to discharge to the stream. EPA and DEQ are required to set TMDLs on the water quality limited streams or stream segments.

A TMDL is the total amount of a pollutant that can enter a waterbody without causing it to violate the water quality standard for that pollutant. Once a TMDL is established, the "load" is divided into load allocations (that part of the load which is either from natural background sources or from nonpoint sources) and waste load allocations (that part of the load that is allocated to point sources of pollution, such as sewage treatment plants). The allocations apply to existing and future sources. Once the allowable pollutant loadings have been allocated, various strategies for achieving those loadings will be evaluated and selected.

The act of setting TMDLs for water quality limited streams is required by Section 303 of the Clean Water Act. According to the Clean Water Act, TMDLs are to be developed on those waters where minimum treatment controls for point sources are not stringent enough to meet the established water quality standards, i.e., on those waters which are "water quality limited." A lawsuit by the Northwest Environmental Defense Council in 1986 has obligated EPA and DEQ to comply with that requirement at the rate of two streams per year. DEQ chose to develop the TMDLs rather than have them established by EPA, thus allowing greater public participation in the process. TMDLs have been established for the Tualatin River, the Yamhill River, Bear Creek, the Pudding River, Garrison Lake, and Clear Lake.

The Environmental Protection Agency has established a TMDL for dioxin for the Columbia River. Because the Columbia River forms a boundary between Oregon and Washington and also runs through Idaho and British Columbia, the TMDL process was determined to be the responsibility of the federal agency (EPA) rather than the state agencies. A TMDL for dioxin for the lower Willamette River will, however, be set by DEQ.

RECEIVED

Copies to Strang, ... Kirk + ...

U. S. DISTRICT COURT
DISTRICT OF OREGON
FILED
JUN 3 1987
ROBERT M. CHRIST, CLERK
BY DEPUTY

Beth S. Ginsberg, Attorney
United States Department of Justice
Land and Natural Resources Division
Environmental Defense Section
P.O. Box 23986
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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON

NORTHWEST ENVIRONMENTAL DEFENSE CENTER ~~(NEDC) and JOHN~~ R. CHURCHILL, Plaintiffs, v. LEE THOMAS, in his official capacity as Administrator of the Environmental Protection Agency, Defendant.	Civil No. 86-1578-BU CONSENT DECREE

WHEREAS, on December 12, 1986, the Northwest Environmental Defense Center ("NEDC") filed a complaint, as amended on March 20, 1987 in the above-captioned case against Lee Thomas, in his official capacity as Administrator of the Environmental Protection Agency ("EPA");

WHEREAS, NEDC alleges that EPA has violated sections 303 and 505 of the Clean Water Act ("CWA") by failing to perform certain mandatory duties, and EPA denies all liability under the CWA, the Administrative Procedure Act ("APA"), or common law;

WHEREAS, by entering into this decree, EPA in no way agrees with NEDC's allegations that Oregon's failure to make the requisite submissions under CWA section 303 constitutes a "constructive submission" that no submissions are necessary, and that EPA had subsequently issued a constructive approval of the same,

WHEREAS, it is the intent of EPA to see that the goals set forth under CWA section 303 are accomplished, including the designation of water quality limited segments ("WQLS") and the establishment of total maximum daily loads ("TMDL"), including both waste load allocations ("WLA") and load allocations ("LA");

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MAR 73

WHEREAS, the parties agree that in accordance with the statutory intent of the CWA, the primary responsibility for accomplishing the goals under section 303 lies with the States;

WHEREAS, the State of Oregon and EPA will annually incorporate elements of this agreement into the State's comprehensive water quality program through the State/EPA ("SEA") negotiation process;

WHEREAS, EPA will not award CWA funds to Oregon for the development of TMDLs, including WLA's and LAs if the elements of this agreement are not identified in the SEA;

WHEREAS, promulgation of the TMDL/WLA/LA constitutes "new information" and EPA understands that it is the intent of the State of Oregon to modify, N.P.D.E.S. permits on the basis of the respective permit reopener clauses and 40 C.F.R. § 122.62(a)(2);

WHEREAS, the parties wish to resolve this action without litigation, and have, therefore, agreed to entry of this Consent Decree, without the admission or adjudication of any issue of fact or law.

NOW, THEREFORE, it is hereby ordered, adjudged, and decreed as follows:

1. The Court has jurisdiction over this matter and the parties to the decree.

2. That the following terms shall have the meanings provided below:

A. "EPA" means the United States Environmental Protection Agency.

B. "NEDC" means the Northwest Environmental Defense Center.

C. "Loading Capacity" is that which is defined at 40 C.F.R. § 130.2(e).

D. "Water Quality Limited Segments" ("WQLS") is that which is defined at 40 C.F.R. § 130.2(i).

E. "Total Maximum Daily Loads" is that which is defined at 40 C.F.R. § 130.2(h).

F. "State/EPA Agreement" is that which is defined at 40 C.F.R. 122.2.

G. Waste load allocation ("WLA") is that which is defined at 40 C.F.R. § 130.2(g)

H. Load allocation ("LA") is that which is defined at 40 C.F.R. § 130.2(f).

I. "New Information" is that which is defined at 40 C.F.R. § 122.62(a)(2).

3. That in accordance with the current State/EPA agreement, the State of Oregon has lead responsibility for the designation of Water Quality Limited Segments and the promulgation of Total Maximum Daily Loads pursuant to CWA section 303, 33 U.S.C. § 1313.

4. That, in the event the State of Oregon fails to undertake the following regulatory actions according to the schedule set out below, EPA will notice in the federal register proposed agency action in accordance with 33 U.S.C. § 1313(d)(2) no later than ninety days following Oregon's inaction. The regulatory actions and the dates by which they will be completed by the State of Oregon are as follows:

A. submission of the loading capacity as defined at 40 C.F.R. § 130.2(e) for the following Water Quality Limited Segments as set forth below:

Water Body	Date
Tualatin River	5/87
Yamhill River	8/87
Bear Creek	11/87
South Umpqua River	11/87
Coquille River	2/88
Pudding River	2/88
Garrison Lake	2/88
Klamath River	4/88
Umatilla River	4/88
Calapooia River	6/88
Grande Ronde River	6/88

B. adoption of TMDLs WLA's/LA's on those WQLS which are identified in paragraph A and subsequent listings of WQLS provided by the State of Oregon in water quality reports prepared in accordance with CWA section 305(b), at the rate of 20% annually, but in no event less than 2 annually.

C. determination by August, 1988 as to whether the remaining water bodies listed in the plaintiffs' second notice letter of intent to sue dated January 6, 1987, and not identified in EPA's approval on February 20, 1987, of Oregon's January 5, 1987 submission to EPA of Water Quality Limited Segments, are water quality limited.

5. That EPA understands that it is the intent of the State of Oregon to initiate modification of the Rock Creek N.P.D.E.S. permit on the basis of the permit reopener clause and 40 C.F.R. §. 122.62(a)(2) within 90 days of promulgation of the phosphorus TMDL/WLA/LA for the Tualatin River.

6. That, it is the intent of the State of Oregon and EPA to reevaluate, in accordance with CWA § 305(b), the waters of the State of Oregon under CWA § 303(d).

7. That defendant will pay plaintiff reasonable costs, including attorney's fees, incurred to date.

8. That this consent decree will expire upon completion of the obligations set forth in paragraph 4 as to the waters identified in subsections (a) and (c) of paragraph 4.

IT IS SO ORDERED.

6-3-87 James M. Burns

JAMES M. BURNS
UNITED STATES DISTRICT JUDGE

Plaintiffs and Defendant consent to the entry of this Consent Decree without further notice or hearing.

Respectfully submitted,

NORTHWEST ENVIRONMENTAL DEFENSE CENTER and JOHN R. CHURCHILL
Plaintiffs

LEE THOMAS, ADMINISTRATOR
U.S. Environmental Protection Agency
Defendant

B4

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DRAFT

Preliminary

TMDL Development Status for Oregon's §303(d) Waters

Waterbody Name			Pollutants	Loading Capacity	TMDL Established	Submit to EPA	EPA Appro.
North Coast Basin	Columbia River (RM 0 - 86)		2,3,7,8-TCDD		06/90	EPA TMDL	02/91
Mid Coast Basin	Clear Lake		Phosphorus		12/90	08/91	03/92
South Coast Basin	Garrison Lake		Phosphorus	02/88	6/88	09/88	9/88
	Coquille River (RM 0 - 39)		BOD	02/88	12/91	Winter 92/93*	
Umpqua Basin	South Umpqua River (RM 0 - 15)		Ammonia	11/87			
	South Umpqua River (RM 0 - 15)		Phosphorus	11/87			
	South Umpqua River (RM 15 - 47)		Phosphorus	11/87			
	South Umpqua River (RM 47 - 75)		Phosphorus	11/87			
Rogue Basin (Bear Creek Drainage)	Bear Creek (RM 0 - 27)		BOD	11/87	07/89	08/92	03/92
	Ashland Creek (RM 0 - 9)		BOD	11/87	07/89	08/91	03/92
	Bear Creek (RM 0 - 27)		Ammonia	11/87	07/89	08/91	03/92
	Ashland Creek (RM 0 - 9)		Ammonia	11/87	07/89	08/91	03/92
	Bear Creek (RM 0 - 27)		Phosphorus	11/87	07/89	08/91	03/92
	Ashland Creek (RM 0 - 9)		Phosphorus	11/87	07/89	08/91	03/92
Willamette Basin	C.F. Willamette River (RM 0 - 29)		BOD	08/88	Preliminary		
	C.F. Willamette River (RM 0 - 29)		Phosphorus	08/88	Preliminary		
	Willamette River (RM 0 - 147)		2,3,7,8-TCDD		06/90	EPA TMDL	02/91
	Rickreall Creek		BOD				
	Yamhill Drainage	Yamhill River (RM 0 - 11)	Phosphorus	08/87	06/89	08/91	03/92
		S. Yamhill River (RM 0 - 5)	Phosphorus	08/87	06/89	08/91	03/92
		S. Yamhill River (RM 5 - 25)	Phosphorus	08/87	06/89	08/91	03/92
	Pudding (RM 0 - 30)		BOD	08/87	12/91	Winter 92/93*	

* Scheduled for 06/92 — delayed to place in new format and decide on policy issues.

Preliminary

TMDL Development Status for Oregon's §303(d) Waters

Waterbody Name			Pollutants	Loading Capacity	TMDL Developed	Submit to EPA	EPA Appro.
Willamette Basin (Continued)	Tualatin Drainage	Tualatin River (RM 0 - 39)	Ammonia	04/87	04/88	09/88	09/88
		Tualatin River (RM 0 - 39)	Phosphorus	04/87	04/88	09/88	——
		Tualatin River (RM 39 - 45)	Phosphorus	04/87	04/88	09/88	——
		Tualatin River (RM 45 - 63)	Phosphorus	04/87	04/88	09/88	——
		McKay Creek (RM 0 - 12)	Phosphorus	04/87	04/88	09/88	——
		Dairy Creek (RM 0 - 11)	Phosphorus	04/87	04/88	09/88	——
		Beaverton Creek (RM 0 - 11)	Phosphorus	04/87	04/88	09/88	——
		Rock Creek (RM 0 - 13)	Phosphorus	04/87	04/88	09/88	——
		Fanno Creek (RM 0 - 14)	Phosphorus	04/87	04/88	09/88	——
	Columbia Slough (RM 0 - 15)		Bacteria	08/88	12/91	Spring 93	
	Columbia Slough (RM 0 - 15)		Phosphorus	08/88	12/91	Spring 93	
	Columbia Slough (RM 0 - 15)		Toxics	08/88	12/91	Spring 93	
	Columbia River (RM 86 - 120)		2,3,7,8-TCDD		06/90	EPA TMDL	02/91
Sandy Basin	Columbia River (RM 120 - 203)		2,3,7,8-TCDD		06/90	EPA TMDL	02/91
Deschutes Basin	Columbia Basin (RM 203 - 218)		2,3,7,8-TCDD		06/90	EPA TMDL	02/91
John Day Basin	Columbia River (RM 218 - 247)		2,3,7,8-TCDD		06/90	EPA TMDL	02/91
Umatilla Basin	Umatilla River (RM 0 - 35)		Phosphorus	04/88			
	Umatilla River (RM 35 - 57)		Phosphorus	104/88			
	Umatilla River (RM 57 - 79)		Phosphorus	04/88			
	Umatilla River (RM 247 - 309)		2,3,7,8-TCDD			EPA TMDL	02/91
Grande Ronde	Grande Ronde River (RM 82 - 160)		Phosphorus	06/88	Summer 93	Winter 93/94	
	Grande Ronde River (RM 160 - 179)		Phosphorus	06/88	Summer 93	Winter 93/94	
	G.R. State Ditch (RM 0 - 4)		Phosphorus		Summer 93	Winter 93/94	
	Catherine Creek (RM 0 - 19)		Phosphorus		Summer 93	Winter 93/94	
	Spring Creek		Phosphorus		Summer 93	Winter 93/94	
Klamath Basin	Klamath River (RM 250 - 255)		BOD	04/88			
	Klamath River (RM 250 - 255)		Ammonia	04/88			
	Link River (RM 0 - 5)		Ammonia	04/88			

SA\WH5260.5 (1/93)

Table 4.1-2a: Total Maximum Daily Load (TMDL) Program — Implementation and Compliance Schedule

Waterbody (in Priority Order)	Status of Initial Problem Assessment	Status of Intensive Water Quality Studies	Status of TMDLs	Status of Implementation and Compliance
Tualatin River	Completed	Completed	Established for Phosphorus, Ammonia, Nitrogen EPA Approval for N, P Review of Program Plan	• WQ Criteria finalized and adopted by EQC. TMDL for phosphorus approved by EPA. • Point and NPS Program Plans completed; awaiting review and modification. • Ongoing studies by DEQ/USA/OGI for review of TMDL. • Compliance required by June 1993.
Garrison Lake	Completed	Completed Clean Lakes Grants	Established for Phosphorus	• Present policy of "no discharge". • TMDL approved by EPA.
Bear Creek	Completed	Completed	Established for Phosphorus, BOD, and NH_3	• WQ Criteria finalized and adopted by EQC. • Point Source Program Plan submitted by Ashland; Facilities Plan Report due in September 1992; Program Plans for Log Ponds received. • NPS Program Plan compliance deadline extended to June 1, 1992.
Clear Lake	Completed	No Action	Established for Phosphorus	• WQ Criteria development in progress. • County preparing watershed management plan.
Yamhill River	Completed	Completed	Established for Phosphorus WLAs being developed for Permit for McMinnville for Ammonia Nitrogen, CBOD, Chlorine	• WQ Criteria finalized and adopted by EQC. • Point Source Program Plan submitted. • Compliance date June 1994. (NPS Plan is voluntary.) • Facilities plans for McMinnville and Lafayette have been completed. • Additional allocations for NH_3\BOD for McMinnville per program plans.
Rickreall Creek	Completed	In Progress	Preliminary TMDL	• No criteria or EQC action required. • Implementation through permit compliance conditions.

Table 4.1-2a: Total Maximum Daily Load (TMDL) Program — Implementation and Compliance Schedule (Continued)

Waterbody (in Priority Order)	Status of Initial Problem Assessment	Status of Intensive Water Quality Studies	Status of TMDLs	Status of Implementation and Compliance
Pudding River	Completed	Completed	Evaluations Complete Public Input Process Pending	• WQ Criteria under public review. • EQC action anticipated September 1992. • Implementation through permit conditions for Woodburn.
Columbia Slough	Completed for Fecal/Algae Additional Work Needed on Toxics	Data Collection/ Analysis for Fecal/Algae in Progress (MOA with City of Portland) Additional Work needed on Toxics	In Progress for Fecal/Algae and Toxics	• WQ Criteria identified in MOA. • Implementation by MOA with City of Portland (permit approved with compliance conditions — CSOs, urban runoff) and by contract with Metro (urban runoff, upstream sources).
Coquille River	In Progress	Completed	Pending Permit Process	• WQ Criteria under assessment.
Klamath River	Completed	Completed	Pending Resources	
Coast Fork Willamette River	Completed	Initial Data Collection Completed Also a Component of Willamette River Basin Study	Pending Further Study	• Implementation pending Willamette River Basin Study.
Columbia & Willamette Rivers		Consultant Modeling River for EPA — In Progress	Established by EPA	• EPA standard/criteria values adopted by EQC. • Load allocation via permit for Willamette.
Grande Ronde River	Completed	Currently in Progress (Second Year)	Preliminary TMDL	
Umatilla River	Completed	No Action	Preliminary TMDL	
South Umpqua River	Completed	No Action by DEQ USGS in 2nd Year of Study	Preliminary TMDL	

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Table 4.1-2b: Total Maximum Daily Load (TMDL) Program — Parameters of Concern

Waterbody	Numeric Standards Violated	Other Parameters of Concern	Beneficial Uses Affected	TMDL Parameters	Season Applicable	Suspected Point Sources	Suspected Nonpoint Sources
Tualatin River	DO, pH, Ammonia & Chlorine Toxicity	Nuisance Aquatic Growth, Total Dissolved Solids, Toxins	Aquatic Life, Aesthetics, Water-Contact Recreation, Fishing	Phosphorus, Ammonia Nitrogen 2	May 1 - Oct 31 May 1 - Nov 15	STPs, CAFOs	Urban, Agriculture, Forestry, Background
Garrison Lake	pH	Nuisance Aquatic Growth	Aquatic Life, Aesthetics, Water Supply, Boating	Phosphorus 1	All Year	STP	Septic
Bear Creek	DO, pH, Ammonia & Chlorine Toxicity, Bacteria	Nuisance Aquatic Growth, Suspended Solids	Aquatic Life, Aesthetics, Water-Contact Recreation	Ammonia Nitrogen, BOD, Phosphorus 3	All Year May 11 - Nov 30	STP, Log Ponds	Agriculture, Urban
Clear Lake		Nuisance Aquatic Growth	Water Supply	Phosphorus 1	Annual Load (lbs) & In-Lake Criteria May 1 - Sep 30		Septic
Yamhill River	Fecal Bacteria, Turbidity, pH	Nuisance Aquatic Growth, DO, BOD, NH_3	Aquatic Life, Aesthetics, Water-Contact Recreation	Phosphorus 1	May 1 - Oct 31	STPs	
Rickreall Creek	DO	Chlorine	Aquatic Life	BOD 1		STPs	Agriculture
Pudding River	DO, Fecal Bacteria		Aquatic Life	BOD 1	Summer	STP, Industry	Agriculture, Other
Columbia Slough	Fecal Bacteria, Organics/Metals/ Toxins*, pH		Aquatic Life, Water-Contact Recreation, Fishing, Aesthetics	Bacteria, Phosphorus, Toxins* 3	Summer	CSOs, Urban Runoff	Landfills, Cesspools (via Ground-water), Urban
Coquille River	DO, Fecal Bacteria	Temperature	Aquatic Life, Aesthetics, Shellfish	BOD 1	Summer	STPs	Agriculture

Table 4.1-2b: Total Maximum Daily Load (TMDL) Program — Parameters of Concern **(Continued)**

Waterbody	Numeric Standards Violated	Other Parameters of Concern	Beneficial Uses Affected	TMDL Parameters	Season Applicable	Suspected Point Sources	Suspected Nonpoint Sources
Klamath River	DO, pH, Ammonia Toxicity	Nuisance Aquatic Growth	Aquatic Life, Aesthetics	BOD, Ammonia Nitrogen 2		STPs, Industry,	Agriculture, Background, Klamath Lake, Other
Coast Fork Willamette River	DO, pH, Fecal Bacteria	Nuisance Aquatic Growth	Aquatic Life, Aesthetics	BOD, Phosphorus 2		STPs	Agriculture, Other
Columbia River	2,3,7,8-TCDD		Aquatic Life, Fishing	2,3,7,8-TCDD 1	All Year	Bleach-Kraft Mills, Wood-Treating Facilities, STPs	Agriculture, Urban
Willamette River	2,3,7,8-TCDD		Aquatic Life, Fishing	2,3,7,8-TCDD 1	All Year	Bleach-Kraft Mills, Wood-Treating Facilities, STPs	Agriculture, Urban
Grande Ronde River	Fecal Bacteria, pH	Nuisance Aquatic Growth, Temperature	Aquatic Life, Aesthetics, Water-Contact Recreation, Fishing	Phosphorus 1		STPs, Log Ponds	Forestry, Agriculture, Background, Other
Umatilla River	pH, Fecal Bacteria	Nuisance Aquatic Growth	Aquatic Life, Aesthetics, Water-Contact Recreation	Phosphorus 1		STPs	Agriculture, Other
South Umpqua River	DO, pH, Fecal Bacteria, Ammonia Toxicity	Nuisance Aquatic Growth	Aquatic Life, Aesthetics, Water-Contact Recreation	Phosphorus, Ammonia Nitrogen 2		STPs	Agriculture

LEGEND:

* = Preliminary TMDLs are proposed for toxins: PCBs, Lead, Zinc, Mercury, Arsenic, Dioxin, Copper, Cadmium, and Chromium.

Other = Other suspected nonpoint sources include recreation, mines, landfills, etc.

SA\Table\WH5047.5

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: January 23, 1992

TO: Environmental Quality Commission

FROM: Fred Hansen

SUBJECT: Director's Memo

State of the State

Tonight the Governor will deliver her State of the State message. We anticipate that there will be a reduction in state general fund revenue that will affect all state agencies.

Environmental Cleanup Report to Legislature

The Environmental Cleanup Division has submitted its annual report to the Oregon legislature as required by state law. Highlights of the report include:

(1) Future issues - new rules for soil cleanup standards, petroleum groundwater cleanup standards and lender liability.

2) The Department will continue to work with the State Treasurer and others to provide additional financing for orphan sites. Approval to sell bonds this year is required to avoid mothballing high priority projects such as McCormick & Baxter.

3) The Department is on-track for completion of preliminary assessments, remedial investigations, feasibility studies, removals and cleanups and has a successful start-up of the Voluntary Cleanup program.

Enforcement Update

Annual figures on DEQ's enforcement activities are available and show a large increase in the total amount of penalties issued. The total amount of penalties issued in 1991 was $602,490. Total penalties for 1990 were $389,555. The number of penalties issued has also increased from 128 in 1990 to 149 in 1991.

Smith's Penalty

The Department issued a $75,000 penalty to Smith Frozen Foods of Weston for discharging food processing wastewater into Hay Creek and Pine Creek. The discharge came from a breach in one of Smith's wastewater transport lines and affected 23 miles of Pine Creek. One reason for the large penalty is that the

permit requires Smith's to inspect transport lines daily. Our investigation found that the discharge began at least as early as July 14, 1991, but was not discovered until July 28, 1991 when DEQ inspectors responded to odor complaints from the public.

Reidel Update

The Reidel composting facility in North Portland that is under a DEQ compliance order because of odor problems has announced that it will shut down. The facility will stop receiving garbage at the end of the month and will completely shut down when everything has been processed. We expect that odor complaints will continue as compost is removed from the site.

Oregon

ENVIRONMENTAL QUALITY COMMISSION

REQUEST FOR EQC ACTION

Meeting Date: January 23, 1992
Agenda Item: E
Division: Air Quality
Section: Field Burning

SUBJECT:

Field Burning Rule Amendments

PURPOSE:

Adopt amendments to Oregon Administrative Rules Chapter 340 Divisions 23 & 26 to carry out the provisions of House Bill 3343.

Oregon Laws Chapter 920 (House Bill 3343) requires the Department to amend Oregon Administrative Rule 340 (OAR) Division 26 to establish a schedule for reducing the acreage open field burned and limiting the acreage propane flamed, increasing the registration and burn permit fees for open field burning, and establishing fees for propane flaming, and stack and pile burning. The bill also establishes emission standards for propane flaming.

Oregon Administrative Rule 340 Division 23 is amended to coincide with the changes in Division 26 and to establish fees for open burning of perennial and annual grass seed crops in counties outside the Willamette Valley.

ACTION REQUESTED:

___ Work Session Discussion
- ___ General Program Background
- ___ Potential Strategy, Policy, or Rules
- ___ Agenda Item ___ for Current Meeting
- ___ Other: (specify)

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

___ Authorize Rulemaking Hearing
_X_ Adopt Rules
Proposed Rules (Division 26) Attachment A
Proposed Rules (Division 23) . . . . . Attachment B
Rulemaking Statements Attachment C
Fiscal and Economic Impact Statement Attachment D
Public Notice Attachment E

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order
Proposed Order Attachment ___

___ Approve Department Recommendation
___ Variance Request Attachment ___
___ Exception to Rule Attachment ___
___ Informational Report Attachment ___
___ Other: (specify) Attachment ___

DESCRIPTION OF REQUESTED ACTION:

Oregon Laws Chapter 920 (House Bill 3343) requires the Department to:

(1) Reduce the acreage open field burned to:
a. 140,000 acres for 1992 through 1993;
b. 120,000 acres for 1994 through 1995;
c. 100,000 acres for 1996 through 1997; and
d. 40,000 acres for 1998 and thereafter.

(2) Limit acreage propane flamed to 75,000 acres per year during the period 1991 through 1997. In 1998 and thereafter, propane flamers must also meet particulate emission standards. The Department will address the emission standards issue in future rule making.

(3) Increase registration fees for open field burning to $2.00/acre and burn permit fees to $8.00/acre.

(4) Establish new fees:
a. Propane flaming: $1.00/acre registration fee & $2.00/acre burn permit fee;
b. Open field burning in counties outside the Willamette Valley: $4.00/acre burn permit fee;
c. Stack or pile burn permit fees: $2.00/acre for 1992 through 1997, $4.00/acre for 1998, $6.00/acre for 1999,$8.00/acre for 2000, and $10.00/acre for 2001 and thereafter.

The proposed amendments to Divisions 23 and 26 carry out these

provisions.

AUTHORITY/NEED FOR ACTION:

X	Required by Statute: Oregon Laws Chapter 920 (HB 3343) Enactment Date: August 7, 1991	Attachment F
___	Statutory Authority: ORS 468A.550-468A.620	Attachment G
___	Pursuant to Rule: _____	Attachment ___
___	Pursuant to Federal Law/Rule: _____	Attachment ___
___	Other:	Attachment ___
X	Time Constraints: (explain)	

The legislation required the Environmental Quality Commission (EQC) to review and amend the existing Field Burning Rules and enter into a memorandum of understanding with the State Department of Agriculture to operate all or part of the field burning smoke management program by the State Department of Agriculture. The Department conducted a public hearing in December, proposes rule adoption at the January 1992 EQC meeting, and will amend the current memorandum of understanding with the Department of Agriculture in February 1992.

This accelerated schedule was adopted to insure that rule changes are made and sufficient notice is given to grass seed growers for conducting their burning activities in the 1992 season.

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
X	Hearing Officer's Report/Recommendations	Attachment H
X	Response to Testimony/Comments	Attachment I
___	Prior EQC Agenda Items: (list)	Attachment ___
___	Other Related Reports/Rules/Statutes:	Attachment ___
___	Supplemental Background Information	Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The proposed rules would reduce the practice of open field burning and limit the acreage propane flamed in the Willamette Valley. Fees are increased for open field burning, and new fees are established for propane flaming, and stack and pile burning in the Willamette Valley. New fees are also established for open field burning for all other areas of the state. The fees are intended for developing and providing alternative methods of field sanitation and alternative methods

Written testimony received during the comment period and oral testimony presented during the public hearing raised one very important issue. Several witnesses stated growers could not determine the sanitation method (i.e., open field burning, propane flaming, or stack burning) prior to the burn season and they needed flexibility to make the determination during the season. Witnesses also stated the rules should allow growers to register the acreage to be burned but not identify specific fields at the time of registration. The Department amended the rules to allow the needed flexibility.

Witnesses raised six additional issues which are summarized in the hearings report.

PROGRAM CONSIDERATIONS:

Chapter 920 requires the registration of grass seed and cereal grain acreage to be propane flamed and stack or pile burned, and requires the Department to develop a system of monitoring emissions from propane flaming. Ensuring compliance with these provisions will significantly increase the workload of both the Departments of Agriculture and Environmental Quality. Other provisions of the bill are already addressed in the current rules and do not impose additional costs or workload.

The field burning rules are an important part of the State Implementation Plan (SIP) pursuant to the Federal Clean Air Act. House Bill 3343 limits submission of field burning rules to EPA as a SIP revision to only those provisions necessary to meet the Clean Air Act requirements. It will take significant time to sort out this issue as well as provide the documentation requested by EPA. EPA wants a quantification of emissions and a demonstration, based on dispersion modeling, to insure emissions from stack burning will not cause or contribute to (1) violations of the national ambient air quality standards, (2) violation of prevention of significant deterioration increments, or (3) impairment of visibility in any mandatory Federal Class I area.

The Department, therefore, proposes to adopt these rules into state law to meet the requirements of Oregon Laws Chapter 920 and defer adoption of a revision to the SIP until these concerns can be adequately addressed. The Department estimates it will take several months to complete these activities.

The Department is also concerned that alternatives to open field burning, such as the increased use of chemicals, may pose new environmental problems. Alternatives must be carefully evaluated by the Department to ensure they are environmentally

The Department, therefore, proposes to adopt these rules into state law to meet the requirements of Oregon Laws Chapter 920 and defer adoption of a revision to the SIP until these concerns can be adequately addressed. The Department estimates it will take several months to complete these activities.

The Department is also concerned that alternatives to open field burning, such as the increased use of chemicals, may pose new environmental problems. Alternatives must be carefully evaluated by the Department to ensure they are environmentally friendly.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

. The proposed revisions reflect the provisions and amendments mandated by HB 3343 and a clarification of existing rules, therefore, no alternatives were considered.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends the proposed rules be adopted to satisfy the provisions of HB 3343 and as a revision to the State Implementation Plan.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The proposed rules are consistent with the strategic plan, agency policy, and legislative policy.

ISSUES FOR COMMISSION TO RESOLVE:

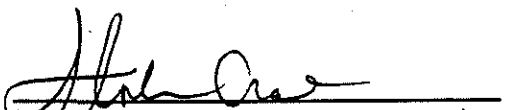
. The Department is not aware of any issues for the Commission to resolve.

INTENDED FOLLOWUP ACTIONS:

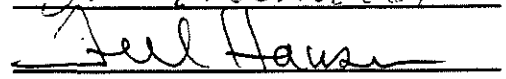
1. Submit the State Implementation Plan revisions (adopted Division 23 & 26 rules) to EPA for approval.

2. Implement and enforce rules.

Approved:

Section: 

Division: 

Director: 

Report Prepared By: Stephen Crane

Phone: 229-5353

Date Prepared: January 7, 1992

SDC:a
RPT\AH40403
January 7, 1992

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY **INTEROFFICE MEMORANDUM**

DATE: January 13, 1992

TO: Environmental Quality Commission

FROM: Stephen Crane

SUBJECT: Correction to Proposed Field Burning Rules, Agenda Item E

Attachment A page A-2 of the staff report to the Commission OAR 340-26-003 (5) (a) should read:

The Department shall record [~~for each~~] one hour of [~~the~~] intrusion [~~which causes~~] for each hour the nephelometer hourly reading exceeds a background level[~~s the average of the three hourly readings immediately prior to the intrusion~~] by [~~:~~] [~~(a) 5.0~~] 1.8 x 10-4 b-scat units or more [~~, two hours of smoke intrusion~~] but less than the applicable value in subsection b or c;

Attachment B page B-3 of the staff report to the Commission OAR 340-23-055 (2) (a) should read:

(a) "In Baker, Crook, Deschute, Gilliam, Grant, Harney, Hood River, Jefferson, Klamath, Lake, Malheur, Morrow, Sherman, Umatilla, Union, Wallowa, Wasco, and Wheeler Counties, agricultural open burning is [~~exempted from regulation~~] allowed under these rules subject to OAR 340-23-040 (5)."

ATTACHMENT A

Introduction

340-26-001 (1) These rules apply to the open field burning, propane flaming, and stack and pile burning of all perennial and annual grass seed and cereal grain crops or associated residue within the Willamette Valley[, hereinafter referred to as "open field burning"]. The open burning of all other agricultural waste material, including sanitizing perennial and annual grass seed crops by open burning in counties outside the Willamette Valley, (referred to as "fourth priority agricultural burning") is governed by OAR Chapter 340, Division 23, Rules for Open Burning. Enforcement procedure and civil penalties for open field burning, propane flaming, and stack and pile burning are established in Oregon Administrative Rules Chapter 340 Division 12.

(2) Organization of rules:

(a) OAR 340-26-003 is the policy statement of the Environmental Quality Commission setting forth the goals of these rules:

(b) OAR 340-26-005 contains definitions of terms which have specialized meanings within the context of these rules.

(c) OAR 340-26-010 lists general provisions and requirements pertaining to all open field burning, propane flaming, and stack and pile burning with particular emphasis on the duties and responsibilities of the grower registrant.

(d) OAR 340-26-012 lists procedures and requirements for registration of acreage, issuance of permits, collection of fees, and keeping of records, with particular emphasis on the duties and responsibilities of the local permit issuing agencies.

(e) OAR 340-26-013 establishes acreage limits and methods of determining acreage allocations.

(f) OAR 340-26-015 establishes criteria for authorization of open field burning, propane flaming, and stack and pile burning pursuant to the administration of a daily smoke management control program.

[(g) OAR 340-26-025 establishes civil penalties for violations of these field burning rules.]

[(h)] (g) OAR 340-26-031 establishes special provisions pertaining to field burning by public agencies for official purposes, such as "training fires".

[(i)] (h) OAR 340-26-033 establishes special provisions pertaining to "preparatory burning".

[(j)] (i) OAR 340-26-035 establishes special provisions pertaining to open field burning for experimental purposes.

[(k)] (j) OAR 340-26-040 establishes special provisions and procedures pertaining to emergency [open field burning and emergency] cessation of burning.

[(l)] (k) OAR 340-26-045 establishes provisions pertaining to [approved alternative methods of burning such as"] propane flaming [".

[(m)] (l) OAR 340-26-055 establishes provisions pertaining to "stack and pile burning".

Policy

340-26-003 In the interest of public health and welfare ~~[pursuant to ORS 468.455]~~, it is the declared public policy of the State of Oregon to reduce the practice of open field burning while developing and providing alternative methods of field sanitation and alternative methods of utilizing and marketing crop residues and to control, reduce, and prevent air pollution from open field burning, propane flaming, and stack and pile burning by smoke management. In developing and carrying out a smoke management control program it is the policy of the Environmental Quality Commission:

(1) To provide for a maximum level of burning with a minimum level of smoke impact on the public, recognizing:

(a) The importance of flexibility and judgment in the daily decision-making process, within established and necessary limits;

(b) The need for operational efficiency within and between each organizational level;

(c) The need for effective compliance with all regulations and restrictions.

(2) To study, develop, and encourage the use of reasonable and economically feasible alternatives to the practice of open field burning.

Definitions

340-26-005 As used in these rules, unless otherwise required by context:

(1) "Actively extinguish" means the direct application of water or other fire retardant to an open field fire.

(2) "Approved alternative method(s)" means any method approved by the Department to be a satisfactory alternative field sanitation method to open field burning.

(3) "Approved alternative facilities" means any land, structure, building, installation, excavation, machinery, equipment, or device approved by the Department for use in conjunction with an approved alternative method.

(4) "Commission" means the Environmental Quality Commission.

(5) "Cumulative hours of smoke intrusion in the Eugene-Springfield area" means the average of the totals of cumulative hours of smoke intrusion recorded for the Eugene site and the Springfield site. Provided the Department determines that field burning was a significant contributor to the ~~[a]~~ smoke intrusion: ~~[to have been significantly contributed to by field burning, it]~~

(a) Between June 16 and September 14 of each year, the Department shall record ~~[for each]~~ one hour of ~~[the]~~ intrusion ~~[which causes]~~ for each hour the nephelometer hourly reading exceeds a background level ~~[s]~~ ~~[(the average of the three hourly readings immediately prior to the intrusion)]~~ by ~~[:]~~ ~~[(a)]~~ ~~[5.0]~~ 1.8 x 10-4 b-scat units ~~[or more, two hours of smoke intrusion]~~;

(b) ~~[4.0 x 10-4 b-scat units or more, for intrusions after September 15 of each year,]~~ Between June 16 and September 14 of each year, two hours of smoke intrusion ~~[,]~~ shall be recorded for

each hour the nephelometer hourly reading exceeds a background level by 5.0 x 10-4 b-scat units;

(c) Between September 15 and June 15 of each year two hours of intrusion shall be recorded for each hour the nephelometer hourly reading exceeds a background level by ~~[1.8]~~ 4.0 x 10-4 b-scat units ~~[or more but less than the applicable value in subsection (a) or (b), one hour of smoke intrusion]~~.
The background level shall be the average of the three hourly readings immediately prior to the intrusion.

(6) "Department" means the Department of Environmental Quality. The Department may enter into contracts with the Oregon Department of Agriculture or other agencies to carry out the purposes set forth in these rules.

(7) "Director" means the Director of the Department or delegated employe representative pursuant to ORS 468.045(3).

(8) "District allocation" means the total amount of acreage sub-allocated annually to the fire district, based on the district's pro rata share of the maximum annual acreage limitation, representing the maximum amount for which burning permits may be issued within the district, subject to daily authorization. District allocation is defined by the following identity:

$$\text{District Allocation} = \frac{\text{Maximum annual acreage limit}}{\text{Total acreage registered in the Valley}} \times \text{Total acreage registered in the district}$$

(9) "Drying day" means a 24-hour period during which the relative humidity reached a minimum less than 50% and no rainfall was recorded at the nearest reliable measuring site.

(10) "Effective mixing height" means either the actual height of plume rise as determined by aircraft measurement or the calculated or estimated mixing height as determined by the Department, whichever is greater.

(11) "Field-by-field burning" means burning on a limited restricted basis in which the amount, rate, and area authorized for burning is closely controlled and monitored. Included under this definition are "training fires" and experimental open field burning.

(12) "Field reference code" means a unique four-part code which identifies a particular registered field for mapping purposes. The first part of the code shall indicate the grower registration (form) number, the second part the line number of the field as listed on the registration form, the third part the crop type, and the fourth part the size (acreage) of the field (e.g., a 35 acre perennial (bluegrass) field registered on Line 2 of registration form number 1953 would be 1953-2-P-BL-35).

(13) "Fire district" or "district" means a fire permit issuing agency.

(14) "Fire permit" means a permit issued by a local fire

permit issuing agency pursuant to ORS 477.515, 477.530, 476.380, or 478.960.

(15) "Fires-out time" means the time announced by the Department ~~[at which]~~ when all flames and major smoke sources associated with open field burning should be out ~~[,]~~ and prohibition conditions are scheduled to be imposed.

(16) "Fire safety buffer zone" shall have the same meaning as defined in the State Fire Marshal rules.

(17) "Fluffing" means an approved mechanical method of stirring or tedding crop residues for enhanced aeration and drying of the full fuel load, thereby improving the field's combustion characteristics.

(18) "Grower allocation" means the amount of acreage sub-allocated annually to the grower registrant, based on the grower registrant's pro rata share of the maximum annual acreage limitation, representing the maximum amount for which burning permits may be issued, subject to daily authorization. Grower allocation is defined by the following identity:

$$\text{Grower Allocation} = \frac{\text{Maximum annual acreage limit}}{\text{Total acreage registered in the Valley}} \times \text{Total acreage registered by the grower registrant}$$

(19) "Grower registrant" means any person who registers acreage with the Department for purposes of open field burning, propane flaming, or stack or pile burning.

(20) "Marginal conditions" means atmospheric conditions ~~[defined in ORS 468.450(1) under which permits for open field burning may be issued in accordance with these rules and other restrictions set forth by the Department]~~ such that smoke and particulate matter escape into the upper atmosphere with some difficulty but not such that limited additional smoke and particulate matter would constitute a danger to the public health and safety.

(21) "Marginal day" means a day on which marginal conditions exist.

~~[(21)]~~ (22) "Nephelometer" means an instrument for measuring ambient smoke concentrations.

~~[(22)]~~ (23) "Northerly winds" means winds coming from directions from 290 to 90 in the north part of the compass, averaged through the effective mixing height.

~~[(23)]~~ (24) "Open field burning" means burning of any perennial or annual grass seed or cereal grain crop, or associated residue, in such manner that combustion air and combustion products are not effectively controlled.

(25) "Open burning" means the burning of agricultural, construction, demolition, domestic, or commercial waste or any other burning which occurs in such a manner that combustion air is not effectively controlled and combustion products are not effectively vented through a stack or chimney pursuant to OAR 340-23-030.

[~~(24)~~] (26) "Open field burning permit" means a permit issued by the Department pursuant to ORS [~~468.458~~] 468A.575.

[~~(25)~~] (27) "Permit issuing agency" or "Permit agent" means the county court or board of county commissioners, or fire chief or a rural fire protection district or other person authorized to issue fire permits pursuant to ORS 477.515, 477.530, 476.380, or 478.960.

[~~(26)~~] (28) "Preparatory burning" means controlled burning of portions of selected problem fields for the specific purpose of reducing the fire hazard potential or other conditions which would otherwise inhibit rapid ignition burning when the field is subsequently open burned.

[~~(27)~~] (29) "Priority acreage" means acreage located within a priority area.

[~~(28)~~] (30) "Priority areas" means the following areas of the Willamette Valley:

(a) Areas in or within three miles of the city limits of incorporated cities having populations of 10,000 or greater.

(b) Areas within one mile of airports servicing regularly scheduled airline flights.

(c) Areas in Lane County south of the line formed by U.S. Highway 126 and Oregon Highway 126.

(d) Areas in or within three miles of the city limits of the City of Lebanon.

(e) Areas on the west and east side of and within 1/4 mile of these highways: 99, 99E, and 99W. Areas on the south and north side of and within 1/4 mile of U.S. Highway 20 between Albany and Lebanon, Oregon Highway 34 between Lebanon and Corvallis, Oregon Highway 228 from its junction south of Brownsville to its rail crossing at the community of Tulsa.

[~~(29)~~] (31) "Prohibition conditions" means conditions under which open field burning is not allowed except for individual burns specifically authorized by the Department pursuant to rule 340-26-015(2).

[~~(30)~~] (32) "Propane flaming" means an approved [~~alternative~~] method of burning which employs a mobile flamer device which meets the following design specifications and utilizes an auxiliary fuel such that combustion is nearly complete and emissions significantly reduced:

(a) Flamer nozzles shall [~~must be~~] not be more than 15 inches apart.

(b) A heat deflecting hood is required and shall [~~must~~] extend a minimum of 3 feet beyond the last row of nozzles.

(33) "Propane flaming permit" means a permit issued by the Department pursuant to ORS 468A.575 and consisting of a validation number and specifying the conditions and acreage specifically registered and allocated for propane flaming.

[~~(31)~~] (34) "Quota" means an amount of acreage established by the Department for each fire district for use in authorizing daily burning limits in a manner to provide, as reasonably as practicable, an equitable opportunity for burning in each area.

[~~(32)~~] (35) "Rapid ignition techniques" means a method of burning in which all sides of the field are ignited as rapidly as practical in order to maximize plume rise. Little or no preparatory backfire burning shall be done.

[~~(33)~~] (36) "Released allocation" means that part of a growers allocation, by registration form, that is unused and voluntarily released to the Department for first come-first serve dispersal to other grower registrants.

[~~(34)~~] (37) "Residue" means straw, stubble, and associated crop material generated in the production of grass seed and cereal grain crops.

[~~(35)~~] (38) "Responsible person" means each person who is in ownership, control, or custody of the real property on which open burning occurs, including any tenant thereof, or who is in ownership, control or custody of the material which is burned, or the grower registrant. Each person who causes or allows open field burning, propane flaming, or stack or pile burning to be maintained shall also be considered a responsible person.

[~~(36)~~] (39) "Small-seeded seed crops requiring flame sanitation" means small-seeded grass, legume, and vegetable crops, or other types approved by the Department, which are planted in early autumn, are grown specifically for seed production, and which require flame sanitation for proper cultivation. For purposes of these rules, clover and sugar beets are specifically included. Cereal grains, hairy vetch, or field peas are specifically not included.

[~~(37)~~] (40) "Smoke management" means a system for the daily [~~(~~]or hourly[~~)~~] control of open field burning, propane flaming, or stack or pile burning through authorization of the times, locations, amounts and other restrictions on burning, so as to provide for suitable atmospheric dispersion of smoke particulate and to minimize impact on the public.

[~~(38)~~] (41) "Southerly winds" means winds coming from directions from 90 to 290 in the south part of the compass, averaged through the effective mixing height.

[~~(39)~~] (42) "Stack burning" means the open burning of piled or stacked residue from perennial or annual grass seed or cereal grain crops [~~used for seed production~~].

(43) "Stack burning permit" means a permit issued by the Department pursuant to ORS 468A.575 and consisting of a validation number and specifying the conditions and acreage specifically registered for stack or pile burning.

[~~(40)~~] (44) "Test fires" means individual field burns specifically authorized by the Department for the purpose of determining or monitoring atmospheric dispersion conditions.

[~~(41)~~] (45) "Training fires" means individual field burns set by or for a public agency for the official purpose of training personnel in fire-fighting techniques.

[~~(42)~~] (46) "Unusually high evaporative weather conditions" means a combination of meteorological conditions following periods of rain which result in sufficiently high rates of evaporation, as determined by the Department, where fuel

(residue) moisture content would be expected to approach about 12 percent or less.

~~[(43)]~~ (47) "Validation number" means a unique five-part number issued by a permit issuing agency which validates a specific open field burning propane flaming, or stack or pile burning permit for a specific acreage in a specific location on a specific day. The first part of the validation number shall indicate the grower registration (form) number, the second part the line number of the field as listed on the registration form, the third part the number of the month and the day of issuance, the fourth part of the hour burning authorization was given based on a 24-hour clock, and the fifth part shall indicate the size of acreage to be burned (e.g., a validation number issued August 26 at 2:30 p.m. for a 70-acre burn for a field registered on line 2 of registration form number 1953 would be 1953-2-0826-1430-070).

~~[(44)]~~ (48) "Ventilation Index (VI)" means a calculated value used as a criterion of atmospheric ventilation capabilities. The Ventilation Index as used in these rules is defined by the following identity:

$$VI = \frac{\text{(Effective mixing height (feet))}}{1000} \times \text{(Average wind speed through the effective mixing height (knots))}$$

~~[(45)]~~ (49) "Willamette Valley" means the areas of Benton, Clackamas, Lane, Linn, Marion, Multnomah, Polk, Washington, and Yamhill counties lying between the crest of the Coast Range and the crest of the Cascade Mountains, and includes the following:

(a) "South Valley", the areas of jurisdiction of all fire permit issuing agents or agencies in the Willamette Valley portions of the counties of Benton, Lane, or Linn.

(b) "North Valley", the areas of jurisdiction of all other fire permit issuing agents or agencies in the Willamette Valley.

General Requirements

340-26-010 (1) No person shall cause or allow open field burning, propane flaming, or stack or pile burning, on any acreage unless said acreage has first been registered and mapped pursuant to rule 340-26-012(1), the registration fee has been paid, and the registration (permit application) has been approved by the Department.

(2) No person shall cause or allow open field burning, propane flaming, or stack or pile burning without first obtaining ~~[(]~~and being able to readily demonstrate~~[)]~~ a validated ~~[open field]~~ burning permit and fire permit from the appropriate permit issuing agent pursuant to rule 340-26-012(2).

(a) On the specific day of and prior to open the field burning, propane flaming, or pile or stack burning of any grass seed or cereal grain crop or associated residue the grower registrant shall obtain, in person or by telephone, a valid

burning permit and fire permit from the appropriate permit issuing agent persuant to rule 340-26-012.

(3) No person shall open field burn cereal grain acreage unless that person first issues to the Department a signed statement, and then acts to insure, that said acreage will be planted in the following growing season to a small-seeded seed crop requiring flame sanitation for proper cultivation as defined in rule 340-26-005(34).

(4) No person shall cause or allow open field burning, propane flaming, or stack or pile burning, which is contrary to the Department's announced burning schedule specifying the times, locations, and amounts of burning permitted, or to any other provision announced or set forth by the Department or these rules.

(5) Each responsible person open field burning or propane flaming shall have an operating radio receiver and shall directly monitor the Department's burn schedule announcements at all times while open field burning or propane flaming.

(6) Each responsible person open field burning, or propane flaming shall actively extinguish all flames and major smoke sources when prohibition conditions are imposed by the Department or when instructed to do so by an agent or employe of the Department.

(7) No open field burning shall be conducted within 1/4 mile of either side of any interstate freeway within the Willamette Valley or within 1/8 mile of either side of the designated roadways listed in rule 837-110-080(2)(c). In addition, no open field burning shall be conducted in any of the remaining areas within a fire safety buffer zone without prior authorization from the Department.

(8) Each responsible person open field burning, propane flaming, or stack or pile burning within a priority area or fire safety buffer zone around a designated city, airport, or highway shall refrain from burning and promptly extinguish any burning if it is likely that the resulting smoke would noticeably affect the designated city, airport or highway.

(9) Each responsible person open field burning shall make every reasonable effort to expedite and promote efficient burning and prevent excessive emissions of smoke by:

(a) Ensuring that field residues are evenly distributed and in generally good burning condition;

(b) Utilizing ignition devices, fire control equipment, and water supplies which meet the requirements of the State Fire Marshal, as specified in OAR 837-110-020 through 837-110-040.

(c) Employing rapid ignition techniques on all acreage where there are no imminent fire hazards or public safety concerns.

(10) Each responsible person open field burning shall attend the burn until effectively extinguished.

(11) Open field burning, propane flaming, or stack or pile burning in compliance with the rules of this division does not exempt any person from any civil or criminal liability for consequences or damages resulting from such burning, nor does it

exempt any person from complying with any other applicable law, ordinance, regulation, rule, permit, order or decree of the Commission or any other government entity having jurisdiction.

(12) Any revisions to the maximum acreage to be burned, allocation or permit issuing procedures, or any other substantive changes to these rules affecting open field burning, propane flaming, or stack or pile burning for any year shall be made prior to June 1 of that year. In making rule changes, the Commission shall consult with Oregon State University.

(13) Open field burning shall be regulated in a manner consistent with the requirements of the Oregon Visibility Protection Plan for Class I areas ([OAR 340-20-047,] sec. 5.2 of the State of Oregon Clean Air Act Impementation Plan adopted under OAR 340-20-047).

Certified Alternative to Open Field Burning

340-26-011 (DEQ 105, f. & ef. 12-36-75;
DEQ 114, f.6-4-76;
DEQ 138, f.6-30-77;
DEQ 140(Temp), f. & ef. 7-27-77 through 11-23-77;
DEQ 6-1978, f. & ef. 4-18-78 through 10-5-78;
DEQ 2-1980, f. & ef. 1-21-80;
DEQ 12-1980, f. & ef. 4-21-80;
DEQ 9-1981, f. & ef. 3-19-81;
Repealed by DEQ 5-1984, f. & ef. 3-7-84)

Registration, Permits, Fees, Records

340-26-012 In administering a field burning smoke management program, the Department may contract with counties or fire districts or other responsible individual to administer registration of acreage, issuance of permits, collection of fees, and keeping of records for open field burning, propane flaming, or stack or pile burning within their permit jurisdictions. The Department shall pay said authority for these services in accordance with the payment schedule provided for in ORS [468.480] 468A.615:

(1) Registration of acreage:

(a) On or before April 1 of each year, all acreage to be open burned, propane flamed, or stack or pile burned under these rules shall be registered with the Department or its authorized permit agent on registration forms provided by the Department. Said acreage shall also be delineated on specially provided registration map materials and identified using a unique field reference code. Registration and mapping shall be completed according to the established procedures of the Department. A nonrefundable registration fee of [$1] $2 for open field burning and $1 for propane flaming for each acre registered shall be paid at the time of registration. A complete registration (permit application) shall consist of a fully executed registration form, map and fee.

(A) Acreage registered by April 1 under any classification

(open field burning, propane flaming, or stack or pile burning) may be issued a burn permit under another classification if:

(i) allocation is available for the subsequent classification and;

(ii) the initial registration fee is made equal to or greater than the subsequent classification and allocation is transferred under the direction of the Department.

(b) Registration of open field burning, propane flaming, or stack or pile burning acreage after April 1 of each year shall require the prior approval of the Department and an additional $1 per acre late registration fee if the late registration is due to the fault of the late registrant or one under his control.

(c) Copies of all registration forms and fees shall be forwarded to the Department promptly by the permit agent. Registration map materials shall be made available to the Department at all times for inspection and reproduction.

(d) The Department shall act on any registration application within 60 days of receipt of a completed application. The Department may deny or revoke any registration application which is incomplete, false or contrary to state law or these rules.

(e) It is the responsibility of the grower registrant to ensure that the information presented on the registration form and map is complete and accurate.

(2) Permits:

(a) Permits for open field burning, propane flaming, or stack or pile burning shall be issued by the Department, or its authorized permit agent, to the grower registrant in accordance with the established procedures of the Department, and the times, locations, amounts and other restrictions set forth by the Department or these rules.

(b) A fire permit from the local fire permit issuing agency is also required for all open burning pursuant to ORS 477.515, 477.530, 476.380, 478.960.

(c) A valid open field burning permit shall consist of:

(A) An open field burning permit issued by the Department which specifies the permit conditions in effect at all times while burning and which identifies the acreage specifically registered and annually allocated for burning;

(B) A validation number issued by the local permit agent on the day of the burn identifying the specific acreage allowed for burning and the date and time the permit was issued; and

(C) Payment of the required ~~[$2.50]~~ $8.00 per acre burn fee.

(d) A valid propane flaming permit shall consist of:

(A) A propane flaming permit issued by the Department which specifies the permit conditions in effect at all times while flaming and which identifies the acreage specifically registered and annually allocated for propane flaming;

(B) A validation number issued by the local permit agent identifying the specific acreage allowed for propane flaming and the date and time the permit was issued; and

(C) Payment of the required $2 per acre propane flaming fee.

(e) A valid stack or pile burning permit shall consist of:

(A) A stack or pile burning permit issued by the Department which specifies the permit conditions in effect at all times while burning and which identifies the acreage specifically registered for burning;

(B) A validation number issued by the local permit agent identifying the specific acreage allowed for burning and the date and time the permit was issued; and

(C) Payment of the required $2 per acre burn fee from January 1, 1992, to December 31, 1997;

(i) $4 per acre burn fee in 1998;

(ii) $6 per acre burn fee in 1999;

(iii) $8 per acre burn fee in 2000; and

(iv) $10 per acre burn fee in 2001 and thereafter.

[~~(d)~~] (f) [~~Open-field~~] B [~~b~~]urning permits shall at all times be limited by and subject to the burn schedule and other requirements or conditions announced or set forth by the Department.

[~~(e)~~] (g) No person shall issue [~~open-field~~] burning permits for open field burning, propane flaming, or stack or pile burning of:

(A) More acreage than the amount sub-allocated annually to the District by the Department pursuant to rule 340-26-013(2);

(B) Priority or fire safety buffer zone acreage located on the upwind side of any city, airport, interstate freeway or highway within the same priority area or buffer zone.

(h) It is the responsibility of each local permit issuing agency to establish and implement a system for distributing open field burning, propane flaming, or stack or pile burning permits to individual grower registrants when burning is authorized, provided that such system is fair, orderly and consistent with state law, these rules and any other provisions set forth by the Department.

(3) Fees:

(a) Permit agents shall collect, properly document, and promptly forward all required registration and burn fees to the Department.

(b) All fees shall be deposited in the State Treasury to the credit of the Department of Agriculture Service Fund and shall be appropriated pursuant to ORS 468A.550 to 468A.620.

(4) Records:

(a) Permit agents shall at all times keep proper and accurate records of all transactions pertaining to registrations, permits, fees, allocations, and other matters specified by the Department. Such records shall be kept by the permit agent for a period of at least five years and made available for inspection by the appropriate authorities.

(b) Permit agents shall submit to the Department on specially provided forms weekly reports of all acreage burned in their jurisdictions. These reports shall cover the weekly period of Monday through Sunday, and shall be mailed and post-marked no later than the first working day of the following week.

Acreage Limitations, Allocations

340-26-013(1) Limitation of Acreage:

(a) Except for acreage and residue open field burned pursuant to rules 340-26-035, 340-26-040, 340-26-045, and 340-26-055, the maximum acreage to be open field burned annually in the Willamette Valley under these rules shall not exceed ~~[250,000]~~ 140,000 acres for 1992 and 1993;

(A) 120,000 acres for 1994 and 1995;

(B) 100,000 acres for 1996 and 1997; and

(C) 40,000 acres for 1998 and thereafter.

(b) Notwithstanding the annual limitations, up to 25,000 acres of steep terrain and species identified by the Director of Agriculture may be open burned annually and shall be considered outside the limitation.

~~[(b) The maximum acreage allowed to be open burned under these rules on a single day in the South Valley under southerly winds shall not exceed 46,934 acres.]~~

(c) Other limitations on acreage allowed to be open field burned are specified in rules 340-26-015(7), 340-26-033(2), and 340-26-035(1).

(d) The maximum acreage to be propane flamed annually in the Willamette Valley under these rules shall not exceed 75,000 acres.

(e) Other limitations on acreage allowed to be propane flamed are specified in rule 340-26-045.

(2) Allocation of Acreage:

(a) In the event that total registration as of April 1 is less than or equal to the maximum acreage allowed to be open field burned or propane flamed annually, pursuant to subsection (1)(a) and (d) of this rule, the Department may sub-allocate to growers on a pro rata share basis not more than 100 percent of the maximum acreage limit, referred to as "grower allocation". In addition, the Department shall sub-allocate to each respective fire district, its pro rata share of the maximum acreage limit based on acreage registered within the district, referred to as "district allocation".

~~[(c)]~~ (A) ~~[In order]~~ ~~[t]~~To ensure optimum permit utilization, the Department may adjust fire district allocations.

~~[(d)]~~ (B) Transfer of allocations for farm management purposes may be made within and between fire districts and between grower registrants on a one-in/one-out basis under the supervision of the Department. The Department may assist grower registrants by administering a reserve of released allocation for first come-first served utilization.

Daily Burning Authorization Criteria

340-26-015 As part of the Smoke Management Program provided for in ORS ~~[468.470]~~ 468A.590, the Department shall set forth the types and extent of open field burning, propane flaming, and stack and pile burning to be allowed each day according to the provisions established in this section and these rules:

(1) During the active ~~[field]~~ burning season and on an as needed basis, the Department shall announce the ~~[field]~~ burning schedule over the field burning radio network operated specifically for this purpose. The schedule shall specify the times, locations, amounts and other restrictions in effect for open field burning, propane flaming, and stack and pile burning. The Department shall notify the State Fire Marshal of the burning schedule for dissemination to appropriate Willamette Valley agencies.

(2) Prohibition conditions:

(a) Prohibition conditions shall be in effect at all times unless specifically determined and announced otherwise by the Department.

(b) Under prohibition conditions, no permits shall be issued and no open field burning shall be conducted in any area except for individual burns specifically authorized by the Department on a limited extent basis. Such limited burning may include field-by-field burning, preparatory burning, or burning of test fires, except that:

(A) No open field burning shall be allowed:

(i) In any area subject to a ventilation index of less than 10.0;

(ii) In any area upwind, or in the immediate vicinity, of any area in which, based upon real-time monitoring, a violation of federal or state air quality standards is projected to occur.

(B) Only test-fire burning may be allowed:

(i) In any area subject to a ventilation index of between 10.0 and 15.0, inclusive, except for experimental burning specifically authorized by the Department pursuant to rule 340-26-035;

(ii) When relative humidity at the nearest reliable measuring station exceeds 50 percent under forecast northerly winds or 65 percent under forecast southerly winds.

(3) Marginal conditions:

(a) The Department shall announce that marginal conditions are in effect and open field burning is allowed when, in its best judgment and within the established limits of these rules, the prevailing atmospheric dispersion and burning conditions are suitable for satisfactory smoke dispersal with minimal impact on the public, provided that the minimum conditions set forth in paragraphs (2)(b).

(A) and (B) of this rule are satisfied.

(b) Under marginal conditions, permits may be issued and open field burning may be conducted in accordance with the times, locations, amounts, and other restrictions set forth by the Department and these rules.

(4) Hours of burning:

(a) Burning hours shall be limited to those specifically authorized by the Department each day and may be changed at any time when necessary to attain and maintain air quality.

(b) Burning hours may be reduced by the fire chief or his deputy, and burning may be prohibited by the State Fire Marshal,

when necessary, to prevent danger to life or property from fire, pursuant to ORS 478.960.

(5) Locations of burning:

(a) Locations of burning shall at all times be limited to those areas specifically authorized by the Department, except that:

(A) No priority or fire safety buffer zone acreage shall be burned upwind of any city, airport, interstate freeway or highway within the same priority area or buffer zone;

(B) No south valley priority acreage shall be burned upwind of the Eugene-Springfield nonattainment area.

(6) Amounts of burning;

(a) In order to provide for an efficient and equitable distribution of burning, daily authorizations of acreage shall be issued by the Department in terms of single or multiple fire district quotas. The Department shall establish quotas for each fire district and may adjust the quotas of any district when conditions in its judgment warrant such action.

(b) Unless otherwise specifically announced by the Department, a one quota limit shall be considered in effect for each district authorized for burning.

(c) The Department may issue more restrictive limitations on the amount, density or frequency of burning in any area or on the basis of crop type, when conditions in its judgment warrant such action.

(7) Limitations on burning based on air quality;

(a) The Department shall establish the minimum allowable effective mixing height required for burning based upon cumulative hours of smoke intrusion in the Eugene-Springfield area as follows:

(A) Except as provided in paragraph (B) of this subsection, burning shall not be permitted whenever the effective mixing height is less than the minimum allowable height specified in Table 1, and by reference made a part of these rules.

(B) Notwithstanding the effective mixing height restrictions of paragraph (A) of this subsection, the Department may authorize burning of up to 1,000 acres total per day for the Willamette Valley, consistent with smoke management considerations and these rules.

(8) Limitations on burning based on rainfall:

(a) Open field ~~[B]~~ burning and propane flaming shall ~~[not]~~ be ~~[permitted]~~ prohibited in any area for one drying day (up to a maximum of four consecutive drying days) for each 0.10 inch increment of rainfall received per day at the nearest reliable measuring station.

(b) The Department may waive the restrictions of subsection (a) of this section when dry fields are available as a result of special field preparation or condition, irregular rainfall patterns, or unusually high evaporative weather condition.

(9) Other discretionary provisions and restrictions:

(a) The Department may require special field preparations before burning such as, but not limited to, mechanical fluffing

of residues when conditions in its judgment warrant such action.

(b) The Department may designate specified periods following permit issuance within which time active field ignition must be initiated and/or all flames must be actively extinguished before said permit is automatically rendered invalid.

(c) The Department may designate additional areas as priority areas when conditions in its judgment warrant such action.

Winter Burning Season Regulations

340-26-0020 [DEQ 29, f.6-12-71, ef. 7-12-71;
DEQ 93 (Temp), f. & ef. 7-11-75
through 11-28-75;
DEQ 114, f. 6-4-76;
DEQ 138, f. 6-30-77;
DEQ 6-1978, f. 4-18-78;
DEQ 8-1978 (Temp), f. & ef. 6-8-78
through 10-5-78;
DEQ 2-1980, f. & ef. 1-21-80;
DEQ 12-1980, f. & ef. 4-21-80;
DEQ 9-1981, f. & ef. 3-19-81;
Repealed by DEQ 5-1984, f. & ef. 3-7-84]

Tax Credits for Approved Alternative Methods, and Approved Alternative Facilities

340-26-030 [DEQ 114, f. & ef. 6-4-76;
DEQ 138, f. 6-30-77;
DEQ 6-1978, f. & ef. 4-18-78;
DEQ 8-1978 (Temp), f. & ef. 6-8-78
through 10-5-78;
DEQ 2-1980, f. & ef. 1-21-80;
DEQ 12-1980, f. & ef. 4-21-80;
DEQ 9-1981, f. & ef. 3-19-81;
DEQ 5-1984, f. & ef. 3-7-84;
Repealed by DEQ 12-1984, f. & ef. 7-13-84]

Burning by Public Agencies (Training Fires)

340-26-031 Open field burning on grass seed or cereal grain acreage by or for any public agency for official purposes, including the training of fire-fighting personnel, may be permitted by the Department on a prescheduled basis consistent with smoke management considerations and subject to the following conditions:

(1) Such burning must be deemed necessary by the official local authority having jurisdiction and must be conducted in a manner consistent with its purpose.

(2) Such burning must be limited to the minimum number of acres and occasions reasonably needed.

(3) The responsible person shall insure that [~~S~~] such burning [~~must~~] compl[~~y~~] ies with the provisions of rules 340-26-010 through 340-26-013.

Preparatory Burning

340-26-033 The Department may allow preparatory burning of portions of selected problem fields, consistent with smoke management considerations and subject to the following conditions:

(1) Such burning must, in the opinion of the Department, be necessary to reduce or eliminate a potential fire hazard or safety problem in order to expedite the subsequent burning of the field.

(2) Such burning shall be limited to the minimum number of acres necessary, in no case exceeding 5 acres for each burn or a maximum of 100 acres each day.

(3) Such burning must employ backfiring burning techniques.

(4) Such burning is exempt from the provisions of rule 340-26-015 but must comply with the provisions of rules 340-26-010 through 340-26-013.

Experimental Burning

340-26-035 The Department may allow open field burning for demonstration or experimental purposes pursuant to the provisions of ORS ~~[468.490]~~ 468A.620, consistent with smoke management considerations and subject to the following conditions:

(1) Acreage experimentally open field burned, propane flamed, or stack or pile burned shall not exceed 1 ~~[5]~~,000 acres annually.

(2) Acreage experimentally ~~[open]~~ burned shall not apply to the district allocation or to the maximum annual acreage limit specified in rule 340-26-013(1)(a)~~[.]~~ or (d).

(3) Such burning is exempt from the provisions of rule 340-26-015 but must comply with the provisions of rules 340-26-010 and 340-26-012, except that the Department may elect to waive all or part of the ~~[$2.50]~~ per acre open field burning or propane flaming fee.

Emergency ~~[Burning,]~~ Cessation

340-26-040 ~~[(1) Pursuant to ORS 468.475 and upon a finding of extreme hardship, disease outbreak, insect infestation or irreparable damage to the land, the Commission may by order, and consistent with smoke management considerations and these field burning rules, permit the emergency open burning of more acreage than the maximum annual acreage limitation specified in rule 340-26-013(1)(a). The Commission shall act upon emergency burning requests within 10 days of receipt of a properly completed application form and supporting documentation.]~~

~~[(a) Emergency open burning on the basis of extreme financial hardship must be documented by an analysis and signed statement from a CPA, public accountant, or other recognized financial expert which established that failure to allow emergency open burning as requested will result in extreme financial hardship above and beyond mere loss of revenue that would ordinarily accrue due to inability to open burn the particular acreage for which emergency open burning is requested.~~

~~The analysis shall include an itemized statement of the applicant's net worth and include a discussion potential alternatives and probable related consequences.]~~

~~[(b) Emergency open burning on the basis of disease outbreak or insect infestation must be documented by an affidavit or signed statement from the county agent. State Department of Agriculture or other public agricultural expert authority that, based on his personal investigation, a true emergency exists that can only be dealt with effectively and practicably by open burning. The statement shall also specify: time of field investigation, location and description of field, crop and infestation, extent of infestation (compared to normal) and the necessity for urgent control, availability efficacy, and practicability of alternative control procedures, and probable consequences of noncontrol.]~~

~~[(c) Emergency open burning on the basis of irreparable damage to the land must be documented by an affidavit or signed statement from the county agent, State Department of Agriculture, or other public agricultural expert authority that, based on his personal investigation, a true emergency exists which threatens irreparable damage to the land and which can only be dealt with effectively and practicably by open burning. The statement shall also specify: time of field investigation, location and description of field, crop, and soil slope characteristics, necessity for urgent control: availability, efficacy, and practicability of alternative control procedures, and probable consequences of noncontrol.]~~

~~[(2)]~~ Pursuant to ORS ~~[468.475]~~ 468A.610 and upon finding of extreme danger to public health or safety, the Commission may order temporary emergency cessation of all open field burning in any area of the Willamette Valley.

~~[Approved Alternative Methods of Burning (]~~ Propane Flaming ~~[)]~~

340-26-045 (1) The use of propane flamers, mobile field sanitizing devices, and other field sanitation methods specifically approved by the Department are ~~[considered alternatives to open field burning to the provisions of ORS 468.472 and 468.480,]~~ subject to the following conditions:

(a) The field must first be prepared as follows:

(A) Either the field must have previously been open burned and the appropriate fees paid, or

(B) The remaining field stubble must be flail-chopped, mowed, or otherwise cut close to the ground and the loose straw removed to the extent practicable and the remaining stubble will not sustain an open fire;

(b) Propane flaming operations shall comply with the following criteria:

(A) Unless otherwise specifically restricted by the Department, and except for the use of propane flamers in preparing fire breaks, propane flaming may be conducted only between the hours of 9:00 a.m. and sunset (9:00 a.m. to one-hour before sunset on or after September 1).

(B) Every effort shall be made to operate propane flamers in overlapping strips, crosswise to the prevailing wind, beginning along the downwind edge of the field.

(C) The remaining field stubble will not sustain an open fire.

(D) A fire permit must first be obtained from the local fire permit issuing agency.

(E) Every effort shall be made to conduct propane flaming in a manner which minimizes smoke emissions.

(F) No person shall cause or allow to maintain any propane flaming which results in visibility impairment on any interstate highways or roadways specified in rule 837-110-080(1) and (2). Should visibility impairment occur, all flame and smoke sources shall be immediately and actively extinguished.

(G) The acreage must be registered and permits obtained pursuant to OAR 340-26-012.

(c) In addition to the conditions specified in paragraphs (a) and (b) of this section, propane flaming operations within any fire safety buffer zone shall comply with the following criteria:

(A) Propaning shall be conducted at a vehicle speed appropriate for complete combustion and minimum smoke emissions but should not exceed 5 miles per hour.

(B) No propaning shall be allowed when either the relative humidity at the nearest reliable measuring station exceeds 65 percent or the surface winds exceed 15 miles per hour.

(C) The presence of any regrowth in the field between 6 and 12 inches in height shall be mowed or cut close to the ground, and removed providing mechanical removal of the resultant fields residue is practicable. Any regrowth exceeding 12 inches in height shall be mowed or cut close to the ground and removed.

(2) No person shall cause or allow to be initiated or maintained any propane flaming on any day or at any time if the Department has determined and notified the State Fire Marshal that propane flaming is prohibited because of adverse meteorological or air quality conditions.

(3) The Department may issue restrictive limitations on the amount, density or frequency of propane flaming in any area when meteorological conditions are unsuitable for adequate smoke dispersion, or deterioration of ambient air quality occurs.

(4) All propane flaming operations shall be conducted in accordance with the State Fire Marshal's safety requirements, as specified in OAR 837-110-100 through 837-110-160.

Stack Burning

340-26-055 (1) The open burning of piled or stacked residue from perennial or annual grass seed or cereal grain crops used for seed production is allowed, subject to the following conditions:

(a) No person shall cause or allow to be initiated or maintained any stack or pile burning on any day or at any time if the Department has notified the State Fire Marshal that such

burning is prohibited because of meteorological or air quality conditions. ~~[Unless otherwise specified by the Department, stack burning shall be subject to the same daily open burning schedule set forth and announced by the Department for "fourth priority agricultural burning" (which is separately governed under OAR Chapter 340, Division 23, Rules for Open Burning).]~~

(b) A fire permit must be obtained from the local permit issuing agency.

(c) All residue to be burned must be dry to the extent practicable and free of all other combustible and noncombustible material. Covering the stacks is advised when necessary and practicable to protect the material from moisture.

(d) It shall be the duty of each responsible person to make every reasonable effort to extinguish any stack burning which is in violation of any rule of the Commission.

(e) No stack <u>or pile</u> burning shall be conducted within any State Fire Marshal buffer zone "noncombustible ground surface" area (e.g., within 1/4 mile of Interstate I-5, or 1/8 mile of any designated roadway), as specified in OAR 837-110-080.

<u>(f) The acreage must be registered and permits obtained pursuant to OAR 340-26-012.</u>

~~[(2) Provided the conditions of this rule are met, stack burning is exempt from rules 340-26-010 through 340-26-015 and is therefore not subject to open field burning requirements related to registration, permits, fees, allocations, and acreage limitations.]~~

TABLE 1
(340-26-015)

MINIMUM ALLOWABLE EFFECTIVE MIXING HEIGHT REQUIRED FOR BURNING BASED UPON THE CUMULATIVE HOURS OF SMOKE INTRUSION IN THE EUGENE-SPRINGFIELD AREA

Cumulative Hours of Smoke Intrusion in the Eugene-Springfield Area	Minimum Allowable Effective Mixing Height (feet)
0 - 14	No minimum
15 - 19	4,000
20 - 24	4,500
25 and greater	5,500

NR*Requirements
10/91

(Revised 1-7-92)
A:\RULES.FN1

Exemptions, Statewide

340-23-035 The rules in this Division 23 shall not apply to:

(1) Fires set for traditional recreational purposes and traditional ceremonial occasions for which a fire is appropriate provided that no materials which may emit dense smoke or noxious odors as prohibited in rule 340-23-043(2) are burned.

(2) The operation of any barbecue equipment.

(3) Fires set or permitted by any public agency when such fire is set or permitted in the performance of its official duty for the purpose of weed abatement, prevention or elimination of a fire hazard or a hazard to public health or safety or instruction of employee in the methods of fire fighting which in the opinion of the agency is necessary.

(4) Agricultural open burning conducted east of the crest of the Cascade Mountains including all of Hood River and Klamath Counties.

(5) [~~Agricultural~~] Open **field** burning, **propane flaming, and stack and pile burning** in the Willamette Valley between the crests of the Cascade and Coast Ranges [~~so long as it is in compliance with~~] **pursuant to** OAR Chapter 340, Division 26, Rules for [~~Open~~] Field Burning [~~(Willamette Valley)~~].

(6) Open burning on forest land permitted under the forest practices Smoke Management Plan filed with the Secretary of State pursuant to ORS 477.515.

(7) Fires set pursuant to permit for the purpose of instruction of employees of private industrial concerns in methods of fire fighting, or for civil defense instruction.

Stat.Auth.: ORS Ch. 468
Hist.: DEQ 123.f. & ef. 10-20-76; DEQ 23-1979.f. & ef. 7-5-79; DEQ 24-1981.f. & ef. 9-8-81; DEQ 10-1984.f.5-29-84. ef.6-16-84

General Requirements Statewide

340-23-040 This rule applies to all open burning within the purview of these rules whether authorized, permitted or prohibited by the rules in this Division 23 (unless expressly limited therein), or by any other rule, regulation, permit, ordinance, order or decree of the Commission or other agency having jurisdiction.

(1) All open burning shall be constantly attended by a responsible person or an expressly authorized agent until extinguished.

(2) Each person who is in ownership, control or custody of the real property on which open burning occurs, including any tenant thereof, or who is in ownership, control or custody of the material which is burned, shall be considered a responsible person for the open burning. Any person who causes or allows open burning to be initiated or maintained shall also be considered a

responsible person.

(3) It shall be the duty of each responsible person to promptly extinguish any burning which is in violation of any rule of the Commission or of any permit issued by the Department unless the Department has given written approval to such responsible person to use auxiliary combustion equipment or combustion promoting materials to minimize smoke production and the responsible person complies with the requirements in the written approval. However, nothing in this section shall be construed to authorize any violation of OAR 340-23-042(1) or (2).

(4) To promote efficient burning and prevent excessive emission of smoke, each responsible person shall, except where inappropriate to agricultural open burning:

(a) Assure that all combustible material is dried to the extent practicable. This action shall include covering the combustible material when practicable to protect the material from deposition of moisture in any form, including precipitation or dew. However, nothing in this section shall be construed to authorize any violation of OAR 340-23-042(1) or (2).

(b) Loosely stack or windrow the combustible material in such a manner as to eliminate dirt, rocks and any other noncombustible material and promote an adequate air supply to the burning pile, and provide the necessary tools and equipment for the purpose.

(c) Periodically restack or feed the burning pile and ensure that combustion is essentially completed and smoldering fires are prevented and provide the necessary tools and equipment for this purpose.

(5) Not withstanding OAR 340-23-035(4), each person sanitizing perennial or annual grass seed crops by open burning, in counties outside the Willamette Valley, shall pay the Department $4.00 for each acre burned.

(a) The Department may contract with counties, rural fire protection districts, or other responsible individuals for the collection of the fees.

(b) All fees collected under this section shall be deposited in the State Treasury to the credit of the Department of Agriculture Service Fund.

~~(5)~~ (6) Open burning in compliance with the rules in this Division 23 does not exempt any person from any civil or criminal liability for consequences or damages resulting from such burning, nor does it exempt any person from complying with any other applicable law, ordinance, regulation, rule, permit, order, or decree of this or any other governmental entity having jurisdiction.

Open Burning Prohibitions
Baker, Clatsop, Crook, Curry, Deschutes, Gilliam, Grant, Harney, Hood River, Jefferson, Klamath, Lake, Lincoln, Malheur, Morrow, Sherman, Tillamook, Umatilla, Union, Wallowa, Wasco, and Wheeler Counties

340-23-055 Open burning prohibitions for the counties of Baker, Clatsop, Crook, Curry, Deschutes, Gilliam, Grant, Harney, Hood River, Jefferson, Klamath, Lake, Lincoln, Malheur, Morrow, Sherman, Tillamook, Umatilla, Union, Wallowa, Wasco, and Wheeler:

(1) Industrial open burning is prohibited except as provided in OAR 340-23-070.

(2) Agricultural open burning:

(a) In Baker, Crook, Deschutes, Gilliam, Grant, Harney, Hood River, Jefferson, Klamath, Lake, Malheur, Morrow, Sherman, Umatilla, Union, Wallowa, Wasco, and Wheeler Counties, agricultural open burning ~~is exempted from regulation~~ is allowed under these rules subject to OAR 340-23-040(4).

NOTE: The remainder of OAR 340-23-055 remains unchanged.

Benton, Linn, Marion, Polk, **and Yamhill Counties**

340-23-060 Open burning prohibitions for Benton, Linn, Marion, Polk, and Yamhill Counties which form a part of the Willamette Valley open burning control area described in OAR 340-23-115:

(1) Industrial open burning is prohibited except as provided in OAR 340-23-100.

(2) [~~Agricultural open burning of grass and cereal grain fields for seed production is regulated by OAR Chapter 340, Division 26, Rules for Open Field Burning (Willamette Valley). All other~~] Agricultural open burning is allowed subject to OAR 340-23-040 and 340-23-042, and the requirement and prohibitions of local jurisdictions and the State Fire Marshal:

(a) Agricultural open burning within the purview of this rule will be prohibited between July 15 and September 15 unless specifically authorized by the Department on a particular day.

(b) Burning hours are during daylight hours unless otherwise set by the Department. Large piles of land clearing debris or stumps shall be handled accordance with OAR 340-23-040(4)(c) and may be allowed, without addition of new waste material, to burn after hours and into prohibition conditions days.

(3) Commercial open burning is prohibited except as provided in OAR 340-23-100.

(4) Construction and Demolition open burning is allowed subject to the requirements and prohibitions of local jurisdictions, the State Fire Marshal, OAR 340-23-040 and 340-23-042, except that unless authorized pursuant to OAR 340-23-100, Construction and Demolition open burning is prohibited within special control areas including the following:

(a) Areas in or within six (6) miles of the corporate city limit of Salem in Marion and Polk Counties.

(b) Areas in or within three (3) miles of the corporate city limit of:

(A) In Benton County, the Cities of Corvallis and Philomath.

(B) In Linn County, the Cities of Albany, Brownsville, Harrisburg, Lebanon, Mill City and Sweet Home.

(C) In Marion County the Cities of Aumsville, Hubbard,

Gervais, Jefferson, Mill City, Mt. Angel, Silverton, Stayton, Sublimity, Turner and Woodburn.

(D) In Polk County, the Cities of Dallas, Independence and Monmouth.

(E) In Yamhill county, the cities of Amity, Carlton, Dayton, Dundee, Lafayette, McMinnville, Newberg, Sheridan and Willamina.

(5) Domestic open burning:

(a) As generally depicted in Figure 1 of OAR 340-23-115, domestic open burning is prohibited in the special control areas named in section (4) of this rule except that open burning of yard debris is allowed beginning March first and ending June fifteenth inclusive, and beginning October first and ending December fifteenth, inclusive, subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(b) Domestic open burning is allowed outside of special control areas named in section (4) of this rule subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(c) No person shall cause or allow to be initiated or maintained any domestic open burning other than during daylight hours between 7:30 a.m. and two hours before sunset unless otherwise specified by the Department pursuant to OAR 340-23-043.

Stat. Auth.: ORS Ch. 468 & 477
Hist.: DEQ 27-1981, f. & ef. 9-8-81; DEQ 10-1984, f. 5-29-84. ef 6-16-84

Clackamas County

340-23-065 Open burning prohibitions for Clackamas County:

(1) Industrial open burning is prohibited except as provided in OAR 340-23-100.

(2) [~~Agricultural open burning of grass and cereal grain fields for seed production is regulated by OAR Chapter 340, Division 26, Rules for Open Field Burning (Willamette Valley). All other~~] Agricultural open burning is allowed subject to OAR 340-23-040 and 340-23-042, and the requirements and prohibitions of local jurisdictions and the State Fire Marshal:

(a) Agricultural open burning within the purview of this rule will be prohibited between July 15 and September 15 unless specifically authorized by the Department on a particular day.

(b) Burning hours are during daylight hours unless otherwise set by the Department. Large piles of land clearing debris or stumps shall be handled in accordance with OAR 340-23-040(4)(c) and may be allowed, without addition of new waste material, to burn after hours and into prohibition condition days.

(3) Commercial open burning is prohibited except as may be provided by OAR 340-23-100.

(4) Construction and Demolition open burning is allowed subject OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal except that unless authorized pursuant to OAR 340-23-100,

Construction and Demolition open burning is prohibited within special control areas including the following:

(a) Areas in or within six (6) miles of the corporate city limits of Gladstone, Happy Valley, Lake Oswego, Milwaukie, Oregon City, Portland, Rivergrove and West Linn.

(b) Areas in or within three (3) miles of the corporate city limits of Canby, Estacada, Gresham, Molalla, Sandy and Wilsonville.

(5) Domestic open burning:

(a) As generally depicted in Figure 1A of OAR 340-23-115, domestic open burning is always prohibited within the following fire districts unless authorized pursuant to OAR 340-23-100; Clackamas County RFPD #1, that portion of Clackamas County RFPD #54 which lies within the Metropolitan Service District, that portion of Clackamas County RFPD #71 which lies west of a line extending due north of the western tip of Beebe Island in the Clackamas River, Glenmorrie RFPD #66, Gladstone, Lakegrove RFPD #57, Lake Oswego, Milwaukie, Oregon City, Oak Lodge, Portland, Riverdale RFPD #60, Rosemont RFPD #67, that part of Tualatin RFPD #64 which lies north of I-205 and West Linn.

(b) Areas of Clackamas County generally depicted in Figure 1 of OAR 340-23-115 and not included in the area where burning is prohibited by OAR 340-23-065(5)(a), domestic open burning is prohibited except that open burning of yard debris is allowed within the following fire districts between March first and June fifteenth inclusive and between October first and December fifteenth inclusive, subject to OAR-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal:

(A) Beaver Creek RFPD #55

(B) Boring RFPD #59

(C) Canby,

(D) Canby RfPD #62,

(E) That portion of Clackamas Co. RFPD #54 which lies outside the Metropolitan Service District, outside the Metropolitan Service District,

(F) That portion of Clackamas RFPD #71 which lies east of a line extending due north of the western tip of Beebe Island in the Clackamas River,

(G) Happy Valley RFPD #65,

(H) Sandy RFPD #72,

(I) That part of Tualatin RFPD #64 which lies south of I-205

(c) Domestic open burning is allowed in all other areas of Clackamas County subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(d) No person shall cause or allow to be initiated or maintained any domestic open burning other than during daylight hours between 7:30 a.m. and two hours before sunset unless otherwise specified by Department pursuant to OAR 340-23-043.

Stat. Auth.: OAR Ch. 468 & 477

Hist.: DEQ 27-1981.f. & ef. 9-8-81; DEQ 10-1-1984, f. 5-29-84, ef. 6-16-84

Multnomah County

340-23-070 Open burning prohibitions for Multnomah County:

(1) Industrial open burning is prohibited except as provided in OAR 340-23-100.

(2) [~~Agricultural open burning of grass and cereal grain fields for seed production is regulated by OAR Chapter 340, Division 26, Rules for Open Field Burning (Willamette Valley). All other~~] Agricultural open burning is allowed subject to OAR 340-23-040 and 340-23-042, and the requirements and prohibitions of local jurisdictions and the State Fire Marshal:

(a) Agricultural open burning within the purview of this rule will be prohibited between July 15 and September 15 unless specifically authorized by the Department on a particular day.

(b) Burning hours are during daylight hours unless otherwise set by the Department. Large piles of land clearing debris or stumps shall be handled in accordance with OAR 340-23-040(4)(c) and may be allowed, without addition of new waste material, to burn after hours and into prohibition condition days.

(3) Commercial open burning is prohibited except as provided in OAR 340-23-100.

(4) Construction and Demolition open burning, unless authorized pursuant to OAR 340-23-100, is prohibited west of the Sandy River but is allowed east of the Sandy River subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(5) Domestic open burning:

(a) As generally depicted in Figure 1A of OAR 340-23-115, open burning is always prohibited within the following area of Multnomah County unless authorized pursuant to OAR 340-23-100: west of a line beginning at the eastern most point where the Portland city limit meets the Multnomah-Clackamas Counties line, thence northward and eastward along the Portland city limits to Johnson Creek, thence continuing eastward and northward along Johnson Creek to the Gresham city limit, thence northward and eastward along the Gresham city limit to 182nd Avenue, thence northward along 182nd Avenue to its junction with 181 Avenue, thence northward along 181st Avenue to Sandy Boulevard, thence eastward along Sandy Boulevard to 185th Avenue, thence northward along 185th Drive and its extension to the Columbia River and the state line, but excluding that portion of western Multnomah County included in Skyline RFPR #20, Sauvie island, Burlington Water District and all other areas in northwestern Multnomah County which are outside the Fire Protection District.

(b) As generally depicted in Figure 1 of OAR 340-23-115, domestic open burning is prohibited in areas of Multnomah County west of the Sandy River not included in the area where burning is prohibited by OAR 340-230070(5)(a), except, that open burning of yard debris is allowed from March first to June fifteenth inclusive and from October first to December fifteenth inclusive,

subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(c) Domestic open burning is allowed east of the Sandy River subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(c) No person shall cause or allow to be initiated or maintained any domestic open burning other than during daylight hours between 7:30 a.m. and two hours before sunset unless otherwise specified by Department pursuant to OAR 340-23-043.

Stat. Auth.: OAR Ch. 468 & 477

Hist.: DEQ 27-1981.f. & ef. 9-8-81; DEQ 10-1984.f. 5-29-84. ef. 6-16-84

Washington County

340-23-075 Open burning prohibitions for Washington County:

(1) Industrial open burning is prohibited except as provided in OAR 340-23-100.

(2) [~~Agricultural open burning of grass and cereal grain fields for seed production is regulated by OAR Chapter 340, Division 26, Rules for Open Field Burning (Willamette Valley). All other~~] Agricultural open burning is allowed subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal:

(a) Agricultural open burning within the purview of this rule will be prohibited between July 15 and September 15 unless specifically authorized by the Department on a particular day.

(b) Burning hours are during daylight hours unless otherwise set by the Department. Large piles of land clearing debris or stumps shall be handled in accordance with OAR 340-23-040(4)(c) and may be allowed, without addition of new waste material, to burn after hours into prohibition condition days.

(3) Commercial open burning is prohibited except as may be provided by OAR 340-23-100.

(4)Construction and Demolition open burning, unless authorized pursuant to OAR 340-23-100, is prohibited in all incorporated areas and areas within rural fire protection districts. Construction and demolition open burning is allowed in all other areas subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(5) Domestic open burning:

(a) As generally depicted in Figure 1A of OAR 340-23-115, open burning is always prohibited within the following are of Washington County unless authorized pursuant to OAR 340-23-100:

(A) That portion of Tualatin RFPD north of I-205 plus the area including the cities of Tualatin, Durham, Tigard and King City, which is north of a line starting at he point where I-205 meets the Tualatin city limit, thence westward, southward, westward and finally northward along the Tualatin city limit to Highway 99W, thence northward along Highway 99W to the Tualatin River, thence westward along the Tualatin River to its intersection with the boundary of the Metropolitan Service

District, thence generally northward and westward along the Metropolitan Service District Boundary between the Tualatin RFPD and Washington County RFPD #1.

(B) That part of Washington County Rural Fire Protection District #1 which is within the Metropolitan Service District.

(C) That part of Washington County Rural Fire Protection District #2 starting at the point where Highway 26 crosses the eastern boundary of the fire district, thence westward along Highway 26 to Cornelius Pass Road, thence northward along Cornelius Pass Road to West Union Road, thence eastward along West Union Road to the fire district boundary, thence southerly along the district boundary to the point of beginning.

(b) Excluding areas listed in subsection (a) of this section, domestic open burning is prohibited in all municipal and rural fire protection districts of Washington County excluding the Tri-Cities RFPD as generally depicted in Figure 1 of OAR 340-23-115, except that open burning of yard debris is allowed between March first and June fifteenth inclusive an between October first and December fifteenth inclusive subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(c) Domestic open burning is allowed in the Tri-Cities RFPD and in all unincorporated areas of Washington County outside of municipal or rural fire protection districts subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(d) No person shall cause or allow to be initiated or maintained any domestic open burning other than during daylight hours between 7:30 a.m. and two hours before sunset unless otherwise specified by Department pursuant to OAR 340-23-043.

Stat. Auth.: ORS Ch. 468 & 477
Hist.: DEQ 27-1981.f. & ef. 9-8-81; DEQ 10-1984.f. 5-29-84, ef. 6-16-84

Lane County

340-23-085 Open burning prohibitions for Lane County. That portion of Lane County east of Range 7 West, Willamette Meridian, forms a part of the Willamette Valley open burning control area as generally described in OAR 340-23-115(5) and depicted in Figure 2:

(1) The rules and regulations of the Lane Regional Air Pollution authority shall apply to all open burning in Lane County provided such rules are no less stringent than the provisions of these rules except that the Lane Regional Air Pollution Authority may not regulate agricultural open burning

(2) Industrial open burning is prohibited unless authorized pursuant to OAR 340-23-100.

(3) [~~Agricultural open burning of grass and cereal grain fields for seed production is regulated by OAR Chapter 340, Division 26, Rules for Open Field Burning (Willamette Valley).~~

~~All other~~] Agricultural open burning is allowed subject to OAR 340-23-040 and 340-23-042, and the requirements and prohibitions of local jurisdictions and the State Fire Marshal:

(a) Agricultural open burning within the purview of this rule will be prohibited between July 15 and September 15 unless specially authorized by the Department on a particular day.

(b) Burning hours are during daylight hours unless otherwise set by the Department. Large piles of land clearing debris or stumps shall be handled in accordance with OAR 340-23-040(4)(c) and may be allowed, without addition of new waste material, to burn after hours and into prohibition condition days.

(4) Commercial open burning, unless authorized pursuant to OAR 340-23-100, is prohibited in Lane County east of Range 7 West Willamette Meridian and in or within three (3) miles of the city limit of Florence on the coast. Commercial open burning is allowed in the remaining areas of Lane County subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(5) Construction and Demolition open burning unless authorized pursuant to OAR 340-23-100 is prohibited within all fire districts and other areas specified in this section but is allowed elsewhere in Lane County subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal. Areas where open burning of construction and demolition waste prohibited include:

(a) Bailey-Spencer RFPD;
(b) Coburg RFPD;
(c) Cottage Grove;
(d) Creswell RFPD;
(e) Crow Valley RFPD;
(f) Dexter RFPD except that portion of the Willamette Meridian;
(g) Elmira-Noti RFPD except that portion west of the line between Range 6 West and Range 7 west;
(h) Eugene Fire District;
(i) Eugene RFPD No.1;
(j) Goshen RFPD;
(k) Junction City Fire District;
(l) Junction City RFPD;
(m) Lane RFPD No.1
(n) Lowell RFPD;
(o) Marcola RFPD;
(p) McKenzie RFPD except that portion east of the Willamette Meridian;
(q) Monroe RFPD that portion within Lane County;
(r) Oakridge RFPD;
(s) Pleasant Hill RFPD;
(t) South Lane RFPD;
(u) Springfield Fire Department and those areas protected by the Springfield Fire Department;
(v) That portion of Western Lane Forest Protection district north of Section 11, T19S, R4W and bordering the City of Creswell

RFPDs;

(w) Willakenzie RFPD;

(x) Zumwalt RFPD;

(y) Those unprotected areas which are surrounded by or are bordered on all sides by any of the above listed fire protection districts or by Eastern Lane Forest Protection District.

(6) Domestic open burning;

(a) Domestic open burning outside the fire districts listed in section (5) of this rule is allowed subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(b) Domestic open burning is prohibited within all fire districts listed in section (5) of this rule except that open burning of yard debris is allowed subject to OAR 340-23-040 and 340-23-042 and the requirements and prohibitions of local jurisdictions and the State Fire Marshal.

(c) Refer to Lane Regional Air Pollution Authority open burning rules for specific seasons and hours for domestic open burning.

Stat. Auth.: ORS Ch. 468 & 477

Hist.: DEQ 27-1981,f. & ef. 9-8-81; DEQ 10-1984, f. 5-29-84, ef. 6-16-84

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY **INTEROFFICE MEMORANDUM**

DATE: January 13, 1992

TO: Environmental Quality Commission

FROM: Stephen Crane

SUBJECT: Correction to Proposed Field Burning Rules, Agenda Item E

Attachment A page A-2 of the staff report to the Commission OAR 340-26-003 (5) (a) should read:

The Department shall record [~~for each~~] one hour of [~~the~~] intrusion [~~which causes~~] for each hour the nephelometer hourly reading exceeds a background level[~~s the average of the three hourly readings immediately prior to the intrusion~~] by [~~:~~] [~~(a) 5.0~~] 1.8 x 10-4 b-scat units or more [~~, two hours of smoke intrusion~~] but less than the applicable value in subsection b or c;

Attachment B page B-3 of the staff report to the Commission OAR 340-23-055 (2) (a) should read:

(a) "In Baker, Crook, Deschute, Gilliam, Grant, Harney, Hood River, Jefferson, Klamath, Lake, Malheur, Morrow, Sherman, Umatilla, Union, Wallowa, Wasco, and Wheeler Counties, agricultural open burning is [~~exempted from regulation~~] allowed under these rules subject to OAR 340-23-040 (5)."

Attachment C

RULEMAKING STATEMENTS FOR PROPOSED FIELD BURNING RULES

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(7), this statement provides information on the intended action to amend a rule.

(1) Legal Authority

This proposal amends Oregon Administrative Rules (OAR) 340, Division 26 and Division 23. It is proposed under authority of Oregon Revised Statutes (ORS) Chapter 468A and Chapter 920 Oregon Laws, 1991.

(2) Need for these Rules

Oregon Revised Statute (ORS) 468A.595, as amended by HB 3343, directs the Environmental Quality Commission to increase fees for open field burning and establish fees for propane flaming, and stack and pile burning, adopt rules to reduce the practice of open field burning, and develop alternative methods of field sanitation and straw utilization.

Regulation of field burning is needed to obtain EPA approval of the State Implementation Plan (SIP) and to insure compliance with the Federal Clean Air Act.

Division 23 is amended to collect fees for open burning of perennial and annual grass seed crops in counties outside the Willamette Valley, and as a housekeeping measure to coincide with Division 26 amendments.

(3) Principle Documents Relied Upon

- Oregon Laws, Chapter 920 (Enrolled House Bill 3343).
- Oregon Revised Statutes (ORS) 468A.550 through 468A.620.
- Oregon Administrative Rules (OAR) 340-26-001 through 340-26-055.
- Oregon Administrative Rules (OAR) 340-23-005 through 340-23-115.
- Federal Clean Air Act Amendments of 1990, PL 101-549, November 15, 1990.

All legal documents referenced may be inspected at local County Courthouses and the Department of Environmental Quality (DEQ),

Air Quality Division, 811 S.W. 6th Avenue, Portland, Oregon, during normal business hours. The Federal Clean air Act Amendments may also be inspected at DEQ's Portland office.

Attachment D

FISCAL AND ECONOMIC IMPACT STATEMENT FOR PROPOSED FIELD BURNING RULES

PROPOSAL SUMMARY

The proposed rules would:

- Decrease the acreage allowed to be open field burned to 140,000 acres for 1992 through 1993; 120,000 acres in 1994 and 1995; 100,000 acres in 1996 and 1997; and 40,000 acres in 1998 and thereafter.
- Provide for an additional 25,000 acres of steep terrain and species identified by the Director of Agriculture to be open field burned annually.
- Limit the acreage propane flamed to 75,000 acres until 1997. In 1998 and thereafter, 75,000 acres may be propane flamed only if particulate emission and field preparation standards are met.
- Require acreage propane flamed to be registered and payment of a registration and burn permit fee.
- Require acreage to be stack or pile burned to be registered and payment of a burn permit fee.
- Increase registration and burn permit fees for open field burning in the Willamette Valley and establish burn permit fees for counties outside the Willamette Valley.

COST TO THE GRASS SEED INDUSTRY INCLUDING SMALL BUSINESS

For grass seed and cereal grain crops within the Willamette Valley, the proposed rules increase the registration fee for open field burning from $1.00 per acre to $2.00 per acre and the burn permit fee from $2.50 per acre to $8.00 per acre. The rules also establish a $1.00 per acre registration fee and a $2.00 per acre burn permit fee for propane flaming, and a $2.00 per acre stack and pile burn fee for the period January 1, 1992 through December 31, 1997; $4.00 per acre fee in 1998; $6.00 per acre in 1999; $8.00 per acre in 2000; and $10.00 per acre in 2001 and thereafter.

A $4.00 per acre burn permit fee is established for acreage open field burned in counties outside the Willamette Valley.

Using 100,000 acres (based on actual 1991 figures) as the annual acreage open field burned, the proposed fees would cost the grass seed industry an additional $650,000 per year

through 1997. In 1998 and thereafter, the acreage is limited to 40,000 acres resulting in an increased cost of $260,000 annually over current rates.

The new fees would cost the industry an additional $150,000 annually for propane flaming, based on the three year average of 50,000 acres propane flamed . The current average cost of stack burning, including bailing and stacking, is $27.60 per acre plus the burn permit fees described above.[1]

The proposed fees are expected to increase the operating costs of small businesses including small grass seed farms and suppliers.

The increased fees are intended for developing alternatives and methods of field sanitation and alternative methods of utilizing and marketing crop residues. There is also an appropriation from the State of Oregon in the amount of $500,000 for each year from 1992 through 1997 for research. For the Biennium beginning July 1, 1991, there is allocated to the Emergency Board, out of Executive Department Economic Development Fund, $1,000,000 which may be allocated only for the purpose of funding research projects included in the research plan developed by the State Department of Agriculture.

Some registration and burn permit fees will be utilized to cover the increased cost of operating the smoke management program, enforcement, and air quality monitoring programs. However, the intent of the Legislative Assembly is to operate these programs in a manner which maximizes the resources available for research and development programs.

COSTS TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY

Registration of acreage propane flamed and stack and pile burned will significantly increase the workload and increase the cost of administration and enforcement.

Much of the administrative workload will be handled through an interagency agreement with the Department of Agriculture and through contracts with specified local jurisdictions to register acreage, issue permits, and keep records and other matters related to agricultural field burning. The legislation allocates funding for contracting the registration task. The increased enforcement work load will be handled by the Department of Environmental Quality.

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[1] Source: Field Sanitation Cost for Willamette Valley Grass Seed Producers, Vol. 48, T. Cross, et. al., Survey Research Center, Oregon State University, Prepared for the Oregon Department of Environmental Quality, January 1989.

The additional costs will be funded from the increased registration and burn permit fees. The Department does not anticipate the need for additional staff.

The proposed rules are not expected to have a fiscal impact on other state or local agencies.

COST TO THE STATE OF OREGON

The State of Oregon is required to appropriate $500,000 annually through 1997 to fund applied research or development of methods, techniques or equipment related to alternatives to the practices of open field burning, propane flaming, and stack or pile burning.

Attachment E

NOTICE OF PUBLIC HEARING

Hearing Date: December 18, 1991
Comments Due: December 20, 1991

WHO IS AFFECTED:

Individuals, agricultural operations, industries, local governments who open field burn, propane flame, or stack or pile burn grass seed or cereal grain crops, stubble, or associated residue.

WHAT IS PROPOSED:

The Department of Environmental Quality is proposing to amend Oregon Administrative Rules (OAR) 340-26-001 through OAR 340-26-055, the Open Field Burning Rules and OAR 340-23-035 through OAR 340-23-085, the Open Burning Rules, to:

- Decrease the acreage allowed to be open field burned to 140,000 acres for 1992 through 1993; 120,000 acres in 1994 and 1995; 100,000 acres in 1996 and 1997; and 40,000 acres in 1998 and thereafter.

- Limit the acreage propane flamed to 75,000 acres until 1997. In 1998 and thereafter, require acreage to be propane flamed to meet emission and field preparation standards.

- Require acreage propane flamed and to be registered and payment of a $1.00 per acre registration fee and a $2.00 per acre burn permit fee.

- Require acreage to be stack or pile burned to be registered and payment of a $2.00 per acre burn permit fee from January 1, 1992 to December 31, 1997; $4.00 per acre in 1998; $6.00 per acre in 1999; $8.00 per acre in 2000; and $10.00 per acre in 2001 and thereafter.

- Increase registration fees for open field burning to $2.00 per acre and burn permit fees to $8.00 per acre. Establish $4.00 per acre burn permit fees for open field burning in counties outside the Willamette Valley.

WHAT ARE THE HIGHLIGHTS:

Oregon Laws Chapter 920 requires the Environmental Quality Commission to establish, by rule, a smoke management program to regulate open field burning, propane flaming, and stack and pile burning of grass seed and cereal grain crop residue. The law also requires the Commission to reduce the practice of open field burning while developing and

providing alternative methods of field sanitation and alternative methods of utilizing and marketing crop residue.

The Federal Clean Air Act requires states to submit PM10 attainment Control Strategies specifying how federal air quality standards will be attained by the Act's December 31, 1994 deadline. The Control Strategies rely primarily on reducing PM10 emissions from residential woodheating, industry and open burning, including open field burning.

The proposed rules will:

- Reduce the acreage open field burned.
- Limit the acreage propaned flamed.
- Encourage the development of alternatives to open field burning, propane flaming, and stack and pile burning.
- Encourage the development of alternative methods of utilizing and marketing crop residue.

HOW TO COMMENT:

Copies of the complete proposed rule packages may be obtained from the Oregon Department of Environmental Quality, Air Quality Division, 811 S.W. 6 Sixth Avenue, Portland, OR 97204, the nearest regional office, or the Oregon Department of Agriculture, Natural Resources Division, 635 Capitol Street N.E., Salem, OR 97310-0110. For further information, call toll free 1-800-452-4011 (in Oregon), or contact:

Steve Crane at (503) 229-5353
Jim Britton at (503) 378-6792

A public hearing will be held before a hearings officer at:

Wednesday, December 18, 1991
9:00 a.m. to 4:00 p.m.
Land Board Room
Division of State Lands
775 Summer Street
Salem, OR 97310

WHAT IS THE NEXT STEP:

After the public hearing, the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject mater, or decline to act. The Commission's deliberation should come in early 1992 , as part of the agenda of a regularly scheduled Commission meeting.

P. O. BOX 10188 PHONE (503) 485-1234
EUGENE, OREGON 97440

Legal Notice 11915

Legal Notice Advertising

- ☐ Tearsheet Notice
- ☐ Duplicate Affidavit

DEPT. OF ENVIRONMENTAL QUALITY
RECEIVED:
NOV 25 1991
ENVIRONMENTAL CLEANUP DIVISION

- STATE OF OREGON
  DEQ
- STEVE CRANE
  811 SW SIXTH AVE
- PORTLAND OR 97204

AFFIDAVIT OF PUBLICATION

STATE OF OREGON,)
COUNTY OF LANE,) ss.

I, WENDY L. WALSH, being first duly sworn, depose and say that I am the Advertising Manager, or his principal clerk, of the Eugene Register-Guard, a newspaper of general circulation as defined in ORS 193.010 and 193.020; published at Eugene in the aforesaid county and state; that the NOTICE OF PUBLIC HEARING, a printed copy of which is hereto annexed, was published in the entire issue of said newspaper for ONE successive and consecutive DAY in the following issues:

NOVEMBER 17, 1991

NOTICE OF PUBLIC HEARING
on
Proposed Air Quality
Rule Amendments

The Department of Environmental Quality is proposing to amend its Field Burning Rules, OAR Chapter 340, Division 26, by establishing a schedule for reducing the acreage open field burned, limiting the acreage propane flamed, and increasing the registration and burn permit fees for open field burning in the Willamette Valley. Other proposed amendments include establishing registration and burn permit fees for propane flaming, and burn permit fees for open field burning in counties outside the Willamette Valley, stack and pile burning. These amendments are proposed pursuant to Oregon Laws Chapter 820 (House Bill 3343, passed by the 1991 Oregon Legislature).

The Department will hold a public hearing on the above rule changes on December 18, 1991, at 9:00 a.m., Land Board Room, Division of State Lands, 775 Summer Street, Salem, OR 97310. Oral and written comments will be accepted at that time. Copies of the complete proposed rule package may be obtained from the Air Quality Division in Portland, 811 SW 6th Avenue, Portland, OR 97204, the Department of Agriculture, Natural Resources Division, 635 Capitol Street N.E., Salem, OR 97310-0110 or call Steve Crane (503) 229-5353 or Jim Britton (503) 378-7892. Written comments may be submitted anytime to the above address, but must be received no later than 5:00 p.m. December 20, 1991.

No. 11915 — November 17, 1991.

Wendy L. Walsh

Subscribed and sworn to before me this NOV. 19, 1991

Shannon Pool
Notary Public of Oregon

My Commission Expires: 11-13-93

AFFIDAVIT

66th OREGON LEGISLATIVE ASSEMBLY--1991 Regular Session

Enrolled
House Bill 3343

Sponsored by COMMITTEE ON ENVIRONMENT AND ENERGY

CHAPTER .....

AN ACT

Relating to field burning; creating new provisions; amending ORS 468.460, 468.995, 476.380 and 478.960; repealing ORS 468.450, 468.455, 468.458, 468.465, 468.470, 468.472, 468.474, 468.475, 468.480, 468.490 and 468.495; appropriating money; and declaring an emergency.

Be It Enacted by the People of the State of Oregon:

SECTION 1. Sections 2 to 15 of this Act are added to and made a part of ORS 468.455 to 468.480.

SECTION 2. Except for the fee imposed under section 13 (1)(c) of this 1991 Act, the provisions of ORS 468.450 to 468.495 shall apply only to open field burning, propane flaming and stack or pile burning of grass seed or cereal grain crop residues on acreage located in the counties specified in ORS 468.460 (2).

SECTION 3. The Legislative Assembly declares it to be the public policy of this state to reduce the practice of open field burning while developing and providing alternative methods of field sanitization and alternative methods of utilizing and marketing crop residues.

SECTION 4. Before January 1, 1992, the Environmental Quality Commission shall enter into a memorandum of understanding with the State Department of Agriculture that provides for the operation of all or part of the field burning smoke management program by the State Department of Agriculture.

SECTION 5. Notwithstanding any provision of ORS 468.450 to 468.495, any acreage sanitized by the use of an alternative thermal field sanitizer certified by the Environmental Quality Commission and the Director of Agriculture shall be exempt from the provisions of ORS 468.450 to 468.495.

SECTION 6. (1) As used in this section:

(a) "Marginal conditions" means atmospheric conditions such that smoke and particulate matter escape into the upper atmosphere with some difficulty but not such that limited additional smoke and particulate matter would constitute a danger to the public health and safety.

(b) "Marginal day" means a day on which marginal conditions exist.

(2) For purposes of ORS 476.380 and 478.960, the commission shall classify different types or combinations of atmospheric conditions as marginal conditions and shall specify the extent and types of burning that may be allowed under different combinations of atmospheric conditions. A schedule describing the types and extent of burning to be permitted on each type of marginal day shall be prepared and circulated to all public agencies responsible for providing information and issuing permits under ORS 476.380 and 478.960. The schedule shall give first priority to the burning of perennial grass seed crops used for grass seed production, second priority to annual grass seed crops used for grass seed production, third priority to grain crop burning, and fourth priority to all other burning and shall prescribe duration of periods of time during the day when burning is authorized.

(3) In preparing the schedule under subsection (2) of this section, the commission shall provide for the assignment of fourth priority burning by the State Department of Agriculture in accordance with the memorandum of understanding established pursuant to section 4 of this 1991 Act.

(4) In preparing the schedule required under subsection (2) of this section, the commission shall weigh the economic consequences of scheduled burnings and the feasibility of alternative actions, and shall consider weather conditions and other factors necessary to protect the public health and welfare.

(5) None of the functions of the commission under this section or under ORS 476.380 or 478.960, as it relates to agricultural burning, shall be performed by any regional air quality control authority established under ORS 468.505.

SECTION 7. (1) Permits for open burning, propane flaming or stack or pile burning of the residue from perennial grass seed crops, annual grass seed crops and cereal grain crops are required in the counties listed in ORS 468.460 (2) and shall be issued in accordance with rules adopted by the Environmental Quality Commission and subject to the fee prescribed in section 13 of this 1991 Act. The permit described in this section shall be issued in conjunction with permits required under ORS 476.380 or 478.960.

(2) By rule the Environmental Quality Commission may delegate to any county court, board of county commissioners, fire chief of a rural fire protection district or other responsible person the duty to deliver permits to burn acreage if the acreage has been registered under section 13 of this 1991 Act and fees have been paid as required in section 13 of this 1991 Act.

SECTION 8. (1) Permits under section 7 of this 1991 Act for open field burning of cereal grain crops shall be issued in the counties listed in ORS 468.460 (2) only if the person seeking the permit submits to the issuing authority a signed statement under oath or affirmation that the acreage to be burned will be planted to seed crops other than cereal grains which require flame sanitation for proper cultivation.

(2) The department shall inspect cereal grain crop acreage burned under subsection (1) of this section after planting in the following spring to determine compliance with subsection (1) of this section.

(3) Any person planting contrary to the restrictions of subsection (1) of this section shall be assessed by the department a civil penalty of $25 for each acre planted contrary to the restrictions. Any fines collected by the department under this subsection shall be deposited by the State Treasurer in the Department of Agriculture Service Fund to be used in carrying out the smoke management program in cooperation with the Oregon Seed Council and for administration of this section.

(4) Any person planting seed crops after burning cereal grain crops under subsection (1) of this section may apply to the department for permission to plant contrary to the restrictions of subsection (1) of this section if the seed crop fails to grow. The department may allow planting contrary to the restrictions of subsection (1) of this section if the crop failure occurred by reasons other than the negligence or intentional act of the person planting the crop or one under the control of the person planting the crop.

SECTION 9. Pursuant to the memorandum of understanding established under section 4 of this 1991 Act, the State Department of Agriculture:

(1) Shall:

(a) Conduct the smoke management program established by rule by the Environmental Quality Commission as it pertains to open field burning, propane flaming and stack or pile burning.

(b) Aid fire districts and permit agents in carrying out their responsibilities for administering field sanitization programs.

(2) May:

(a) Enter into contracts with public and private agencies to carry out the purposes set forth in subsection (1) of this section;

(b) Obtain patents in the name of the State of Oregon and assign such rights therein as the State Department of Agriculture considers appropriate;

(c) Employ personnel to carry out the duties assigned to it; and

(d) Sell and dispose of all surplus property of the State Department of Agriculture related to smoke management, including but not limited to straw-based products produced or manufactured by the State Department of Agriculture.

SECTION 10. The Environmental Quality Commission shall establish standards of practice and performance for open field burning, propane flaming, stack or pile burning and certified alternative methods to open field burning.

SECTION 11. The Department of Environmental Quality, in coordinating efforts under ORS 468.140, 468.150, 468.290 and 468.455 to 468.480, shall:

(1) Enforce all field burning rules adopted by the Environmental Quality Commission and all related statutes;

(2) Monitor and prevent unlawful field burning; and

(3) Monitor and study the impact of open field burning on air quality in the Willamette Valley.

SECTION 12. (1) Except as provided under section 14 of this 1991 Act, no person shall open burn or cause to be open burned, propane flamed or stack or pile burned in the counties specified in ORS 468.460 (2), perennial or annual grass seed crop or cereal grain crop residue, unless the acreage has been registered under section 13 of this 1991 Act and the permits required by ORS 476.380, 478.960 and section 7 of this 1991 Act have been obtained.

(2) The maximum total registered acreage allowed to be open burned per year pursuant to subsection (1) of this section shall be:

(a) For 1991, 180,000 acres.

(b) For 1992 and 1993, 140,000 acres.

(c) For 1994 and 1995, 120,000 acres.

(d) For 1996 and 1997, 100,000 acres.

(e) For 1998 and thereafter, 40,000 acres.

(3) The maximum total acreage allowed to be propane flamed under subsection (1) of this section shall be:

(a) In 1991 through 1997, 75,000 acres per year; and

(b) In 1998 and thereafter, if the preparations and standards under subsection (4) of this section are met, and a system of monitoring developed by the department indicates that not more than 20 pounds of particulate matter 10 microns in diameter or less is emitted for each acre propane flamed, 75,000 acres per year may be propane flamed.

(4)(a) After January 1, 1998, fields shall be prepared for propane flaming by removing all loose straw or vacuuming or prepared using other techniques approved by rule by the commission.

(b) After January 1, 1998, propane equipment shall satisfy best available technology and result in achieving a standard of:

(A) Not more than 20 pounds of particulate matter 10 microns in diameter or less being emitted for each acre propane flamed; or

(B) Another equivalent standard adopted by rule by the commission.

(5) Notwithstanding the limitations set forth in subsection (2) of this section, in 1991 and thereafter, a maximum of 25,000 acres of steep terrain and species identified by the Director of Agriculture by rule may be open burned and shall not be included in the maximum total permitted acreage.

(6) Acreage registered to be open burned under this section may be propane flamed at the registrant's discretion without reregistering the acreage.

(7) In the event of the registration of more than the maximum allowable acres for open burning in the counties specified in ORS 468.460 (2), after 1996, the commission, after consultation with the department, by rule or order may assign priority of permits based on soil characteristics, the crop type, terrain or drainage.

(8) Permits shall be issued and burning shall be allowed for the maximum acreage specified in subsection (2) of this section unless:

(a) The daily determination of suitability of meteorological conditions, regional or local air quality conditions or other burning conditions requires that a maximum number of acres not be burned on a given day; or

(b) The commission finds after hearing that other reasonable and economically feasible, environmentally acceptable alternatives to the practice of annual open field burning have been developed.

(9) Upon a finding of extreme danger to public health or safety, the commission may order temporary emergency cessation of all open field burning, propane flaming or stack or pile burning in any area of the counties listed in ORS 468.460 (2).

(10) The commission shall act on any application for a permit under section 7 of this 1991 Act within 60 days of registration and receipt of the fee required under section 13 of this 1991 Act. The commission may order emergency cessation of open field burning at any time. Any other decision required under this section must be made by the commission on or before June 1 of each year.

SECTION 13. (1)(a) On or before April 1 of each year, the grower of a grass seed crop shall register with the county court or board of county commissioners, the fire chief of a rural fire protection district, the designated representative of the fire chief or other responsible persons the number of acres to be open burned, propane flamed or stack or pile burned in the remainder of the year. At the time of registration, the Department of Environmental Quality shall collect a nonrefundable fee of $2 per acre registered to be sanitized by open burning or $1 per acre to be sanitized by propane flaming. The department may contract with counties and rural fire protection districts or other responsible persons for the collection of the fees which shall be forwarded to the department. Any person registering after April 1 of each year shall pay an additional fee of $1 per acre registered if the late registration is due to the fault of the late registrant or one under the control of the late registrant. Late registrations must be approved by the department. Copies of the registration form shall be forwarded to the department. The required registration must be made and the fee paid before a permit shall be issued under section 7 of this 1991 Act.

(b) Except as provided in paragraph (d) of this subsection, the department shall collect a fee in accordance with paragraph (c) of this subsection before issuing a permit for open burning, propane flaming or stack or pile burning of perennial or annual grass seed crop or cereal grain crop residue under ORS 468.455 to 468.480. The department may contract with counties and rural fire protection districts or other responsible persons for the collection of the fees which shall be forwarded to the department.

(c) The fee required under paragraph (b) of this section shall be:

(A) $8 per acre of crop sanitized by open burning in the counties specified in ORS 468.460 (2);

(B) $4 per acre of perennial or annual grass seed crop sanitized by open burning in any county not specified in ORS 468.460 (2);

(C) $2 per acre of crop sanitized by propane flaming; and

(D) For acreage from which straw is removed and burned in stacks or piles:

(i) $2 per acre from January 1, 1992, to December 31, 1997;

(ii) $4 per acre in 1998;

(iii) $6 per acre in 1999;

(iv) $8 per acre in 2000; and

(v) $10 per acre in 2001 and thereafter.

(d) The fee required by paragraph (b) of this subsection shall not be charged for any acreage where efficient burning of stubble is accomplished with equipment certified by the department for field sanitizing purposes or with any other certified alternative method to open field burning, propane flaming or stack or pile burning. The fee required by paragraph (b) of this subsection shall not be charged for any acreage not harvested prior to burning or for any acreage not burned.

(2) All fees collected under this section shall be deposited in the State Treasury to the credit of the Department of Agriculture Service Fund. Such moneys are continuously appropriated to the State Department of Agriculture for the purpose of carrying out the duties and responsibilities

carried out by the State Department of Agriculture pursuant to the memorandum of understanding established under section 4 of this 1991 Act.

(3) It is the intention of the Legislative Assembly that the programs for smoke management, air quality monitoring and the enforcement of rules under ORS 468.450 to 468.495 be operated in a manner that maximizes the resources available for the research and development program. Therefore, with regard to the disbursement of funds collected under subsection (1) of this section, the department shall act in accordance with the intent of the Legislative Assembly and shall:

(a) Pay an amount to the county or board of county commissioners or the fire chief of the rural fire protection district, for each fire protection district $1 per acre registered for each of the first 5,000 acres registered in the district, 75 cents per acre registered for each of the second 5,000 acres registered in the district and 35 cents per acre registered for all acreage registered in the district in excess of 10,000 acres, to cover the cost of and to be used solely for the purpose of administering the program of registration of acreage to be burned, issuance of permits, keeping of records and other matters directly related to agricultural field burning.

(b) Designate an amount to be used for the smoke management program. The department by contract with the Oregon Seed Council or otherwise shall organize rural fire protection districts and growers, coordinate and provide communications, hire ground support personnel, provide aircraft surveillance and provide such added support services as are necessary.

(c) Retain funds for the department for the operation and maintenance of the Willamette Valley field burning air quality impact monitoring network and to insure adequate enforcement of rules established by the Environmental Quality Commission governing standards of practice for open field burning, propane flaming and stack or pile burning.

(d) Of the remaining funds, designate an amount to be used for additional funding for research and development proposals described in the plan developed pursuant to section 15 of this 1991 Act.

SECTION 14. (1) Notwithstanding the provisions of section 12 of this 1991 Act, for the purpose of improving by demonstration or investigation the environmental or agronomic effects of alternative methods of field sanitization, the commission shall by rule allow experimental field sanitization under the direction of the department for up to 1,000 acres of perennial grass seed crops, annual grass seed crops and grain crops in such areas and for such periods of time as it considers necessary. Experimental field sanitization includes but is not limited to:

(a) Development, demonstration or training personnel in the use of special or unusual field ignition techniques or methodologies.

(b) Setting aside times, days or areas for special studies.

(c) Operation of experimental mobile field sanitizers and improved propane flaming devices.

(d) Improved methods of stack or pile burning.

(2) The commission may allow open burning under this section of acreage for which permits have not been issued under section 12 of this 1991 Act if the commission finds that the experimental burning:

(a) Can, in theory, reduce the adverse effects on air quality or public health from open field burning; and

(b) Is necessary in order to obtain information on air quality, public health or the agronomic effects of an experimental form of field sanitization.

(3) The commission may, by rule, establish fees, registration requirements and other requirements or limitations necessary to carry out the provisions of this section.

SECTION 15. (1) The State Department of Agriculture annually shall develop a plan to award funding for applied research or development of methods, techniques or equipment related to alternatives to the practices of open field burning, propane flaming and stack or pile burning. The funding plan shall include fees made available for such purposes and appropriations from the State of Oregon in the amount of $500,000 for each year from 1992 through 1997. The plan shall include funding for research proposals, including but not be limited to:

(a) Utilization and marketing of crop residue, such as straw;

(b) Research on development of alternate crops; and

(c) Research on development of alternate weed, pest and disease controls, including but not limited to genetic research.

(2) The State Department of Agriculture shall submit its annual research plan to the Joint Legislative Committee on Ways and Means, or during the interim between legislative sessions, to the Emergency Board.

SECTION 16. Notwithstanding any provision of section 12 or 13 of this Act, in 1991, no registration or fee shall be required for propane flaming or stack or pile burning operations.

SECTION 17. Before January 1, 1992, the Environmental Quality Commission shall review rules adopted before the effective date of this Act and amend such rules as necessary to carry out and enforce the smoke management program set forth in sections 2 to 16 of this Act.

SECTION 18. (1) For the biennium beginning July 1, 1991, there is allocated to the Emergency Board, out of the Executive Department Economic Development Fund, the sum of $1,000,000 which may be allocated by the Emergency Board only for the purpose of funding the costs of research projects included in the research plan developed by the State Department of Agriculture under section 15 of this Act.

(2) If all of the moneys referred to in subsection (1) of this section are not allocated by the Emergency Board prior to June 30, 1993, such moneys on that date become available for any other purpose for which the Emergency Board lawfully may allocate funds.

SECTION 19. ORS 468.460 is amended to read:

468.460. In order to regulate open field burning pursuant to [*ORS 468.475*] **section 12 of this 1991 Act:**

(1) In such areas of the state and for such periods of time as it considers necessary to carry out the policy of ORS 468.280, the commission by rule may prohibit, restrict or limit classes, types and extent and amount of burning for perennial grass seed crops, annual grass seed crops and grain crops.

(2) In addition to but not in lieu of the provisions of [*ORS 468.475*] **section 12 of this 1991 Act** and of any other rule adopted under subsection (1) of this section, the commission shall adopt rules for Multnomah, Washington, Clackamas, Marion, Polk, Yamhill, Linn, Benton and Lane Counties, which provide for a more rapid phased reduction by certain permit areas, depending on particular local air quality conditions and soil characteristics, the extent, type or amount of open field burning of perennial grass seed crops, annual grass seed crops and grain crops and the availability of alternative methods of field sanitation and straw utilization and disposal.

(3) Before promulgating rules pursuant to subsections (1) and (2) of this section, the commission shall consult with Oregon State University and may consult with the Soil Conservation Service, the Agricultural Stabilization Commission, the State Soil and Water Conservation Commission and other interested agencies. The department shall advise the commission in the promulgation of such rules. The commission must review and show on the record the recommendations of the department in promulgating such rules.

(4) No regional air quality control authority shall have authority to regulate burning of perennial grass seed crops, annual grass seed crops and grain crops.

(5) Any amendments to the State Implementation Plan prepared by the state pursuant to the Federal Clean Air Act, as enacted by Congress, December 31, 1970, and as amended by Congress August 7, 1977, **and November 15, 1990,** and Acts amendatory thereto shall be only of such sufficiency as to gain approval of the amendment by the United States Environmental Protection Agency and shall not include rules promulgated by the commission pursuant to subsection (1) of this section not necessary for attainment of national ambient air quality standards.

SECTION 20. ORS 468.995 is amended to read:

468.995. (1) Violation of any rule or standard adopted or any order issued by a regional authority relating to air pollution is a Class A misdemeanor.

(2) Unless otherwise provided, each day of violation of any rule, standard or order relating to air pollution constitutes a separate offense.

(3) Violation of [*ORS 468.475*] **section 12 of this 1991 Act** or of any rule adopted pursuant to ORS 468.460 is a Class A misdemeanor. Each day of violation constitutes a separate offense.

(4) Violation of the provisions of ORS 468.605 is a Class A misdemeanor.

SECTION 21. ORS 476.380 is amended to read:

476.380. (1) No person, outside the boundaries of a rural fire protection district or a forest protection district, shall cause or permit to be initiated or maintained on the property of the person, or cause to be initiated or maintained on the property of another any open burning of commercial waste, demolition material, domestic waste, industrial waste, land clearing debris or field burning without first securing a permit from the county court or board of county commissioners.

(2) The county court or board of county commissioners, or its designated representative, shall prescribe conditions for issuance of any permit and shall refuse, revoke or postpone issuance of permits when necessary to prevent danger to life or property or to protect the air resources of this state. The Environmental Quality Commission shall notify the State Fire Marshal of the type of and time for burning to be allowed on each day under schedules adopted pursuant to [*ORS 468.450 and after ORS 468.460 becomes operative, under rules as provided in*] ORS 468.460 **and section 6 of this 1991 Act.** The State Fire Marshal shall cause all county courts and boards of county commissioners or their designated representatives in the affected areas to be notified of the type of and time for burning to be allowed on each day and of any revisions of such conditions during each day. The county court, board or representative shall issue permits only in accordance with schedules of the Environmental Quality Commission adopted pursuant to this section and ORS 468.455 to 468.480, 476.990, 478.960 and 478.990 but may reduce the hours allowed for burning if necessary to prevent danger to life or property from fire. The State Fire Marshal may refuse or postpone permits when necessary in the judgment of the State Fire Marshal to prevent danger to life or property from fire, notwithstanding any determination by the county court or board of county commissioners or its designated officer.

(3) Nothing in this section:

(a) Requires permission for starting a campfire in a manner otherwise lawful.

(b) Relieves a person starting a fire from responsibility for providing adequate protection to prevent injury or damage to the property of another. If such burning results in the escape of fire and injury or damage to the property of another, such escape and damage or injury constitutes prima facie evidence that the burning was not safe.

(c) Relieves a person who has obtained permission to start a fire, or the agent of the person, from legal liability for property damage resulting from the fire.

(d) Permits an act within a city or regional air quality control authority area that otherwise is unlawful pursuant to an ordinance of the city or rule, regulation or order of the regional authority.

(4) The county court or board of county commissioners shall maintain records of all permits and the conditions thereof, if any, that are issued under this section and shall submit at such times, as the Environmental Quality Commission shall require such records or summaries thereof to the commission. The Environmental Quality Commission shall provide forms for the reports required under this subsection.

SECTION 22. ORS 478.960 is amended to read:

478.960. (1) No one, within the boundaries of a district, shall cause or permit to be initiated or maintained on one's own property, or cause to be initiated or maintained on the property of another, any open burning of commercial waste, demolition material, domestic waste, industrial waste, land clearing debris or field burning without first securing permission from the fire chief of the district and complying with the direction of the fire chief. A deputy of a fire chief has the power to perform any act or duty of the fire chief under this section.

(2) The fire chief shall prescribe conditions upon which permission is granted and which are necessary to be observed in setting the fire and preventing it from spreading and endangering life or property or endangering the air resources of this state. The Environmental Quality Commission shall notify the State Fire Marshal of the type of and time for burning to be allowed on each day under schedules adopted pursuant to [*ORS 468.450 and after ORS 468.460 becomes operative under*

rules as provided in] ORS 468.460 **and section 6 of this 1991 Act.** The State Fire Marshal shall cause all fire chiefs and their deputies in the affected area to be notified of the type and time for burning to be allowed on each day with updating messages each day as required. A fire chief or deputy shall grant permission only in accordance with the schedule of the Environmental Quality Commission but may reduce hours to be allowed for burning if necessary to prevent danger to life or property from fire. The State Fire Marshal may refuse, revoke or postpone permission when necessary in the judgment of the State Fire Marshal to prevent danger to life or property from fire, notwithstanding any determination by the fire chief.

(3) Nothing in this section relieves a person starting a fire from responsibility for providing adequate protection to prevent injury or damage to the person or property of another. If such burning results in the escape of fire and injury or damage to the person or property of another, such escape and damage or injury constitutes prima facie evidence that the burning was not safe.

(4) Within a district, no person shall, during the closed season, operate any equipment in forest harvesting or agricultural operations powered by an internal combustion engine on or within one-eighth of a mile of forest land unless each piece of equipment is provided with a fire extinguisher of sufficient size and capacity and with such other tools and fire-fighting equipment as may be reasonably required by the fire chief of the district.

(5) No person shall dispose of any building or building wreckage within a district by fire without having first secured permission therefor from the fire chief. No person shall refuse to comply with any reasonable requirements of the fire chief as to the safeguarding of such fire from spreading.

(6) This section is not intended to limit the authority of a district to adopt a fire prevention code as provided in ORS 478.910 to 478.940 or to issue permits when the burning is done by mechanical burners fired by liquid petroleum gas.

(7) The fire chief shall maintain records of all permits and the conditions thereof, if any, that are issued for field burning under this section and shall submit at such times, as the Environmental Quality Commission shall require such records or summaries thereof to the commission. The Environmental Quality Commission shall provide forms for the reports required under this subsection.

(8) Notwithstanding any other provision of this section, a permit is required for field burning authorized pursuant to ORS 468.450 to 468.495.

SECTION 23. Section 15 of this Act is repealed January 1, 1998.

SECTION 24. ORS 468.450, 468.455, 468.458, 468.465, 468.470, 468.472, 468.474, 468.475, 468.480, 468.490 and 468.495 are repealed.

SECTION 25. This Act being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this Act takes effect on July 1, 1991.

Passed by House May 8, 1991

Repassed by House June 24, 1991

.....
Chief Clerk of House

.....
Speaker of House

Passed by Senate June 10, 1991

Repassed by Senate June 25, 1991

.....
President of Senate

Received by Governor:

.....M., ... 1991

Approved:

.....M., ... 1991

.....
Governor

Filed by Office of Secretary of State:

.....M., ... 1991

.....
Secretary of State

FIELD BURNING AND PROPANE FLAMING

468A.550 Definitions for ORS 468A.555 to 468A.620. As used in ORS 468A.555 to 468A.620:

(1) "Smoke management" means the daily control of the conducting of open field burning to such times and places and in such amounts so as to provide for the escape of smoke and particulate matter therefrom into the atmosphere with minimal intrusion into cities and minimal impact on public health and in such a manner that under existing meteorological conditions a maximum number of acres registered can be burned in a minimum number of days without substantial impairment of air quality.

(2) "Smoke management program" means a plan or system for smoke management. A smoke management program shall include, but not be limited to, provisions for:

(a) Annual inventorying and registering, prior to the burning season, of agricultural fields for open field burning;

(b) Preparation and issuance of field burning permits by affected governmental agencies;

(c) Gathering and disseminating regional and sectional meteorological conditions on a daily or hourly basis;

(d) Scheduling times, places and amounts of agricultural fields that may be open burned daily or hourly, based on meteorological conditions during the burning season;

(e) Conducting surveillance and gathering and disseminating information on a daily or more frequent basis;

(f) Effective communications between affected personnel during the burning season; and

(g) Employment of personnel to conduct the program. [Formerly 468.453]

468A.555 Policy to reduce open field burning. The Legislative Assembly declares it to be the public policy of this state to reduce the practice of open field burning while developing and providing alternative methods of field sanitization and alternative methods of utilizing and marketing crop residues. [1991 c.920 §3]

468A.560 Applicability of open field burning, propane flaming and stack and pile burning statutes. Except for the fee imposed under ORS 468A.615 (1)(c), the provisions of ORS 468A.550 to 468A.620 shall apply only to open field burning, propane flaming and stack or pile burning of grass seed or cereal grain crop residues on acreage located in the counties specified in ORS 468A.595 (2). [1991 c.920 §2]

468A.565 Use of certified alternative thermal field sanitizer. Notwithstanding any provision of ORS 468A.550 to 468A.620, any acreage sanitized by the use of an alternative thermal field sanitizer certified by the Environmental Quality Commission and the Director of Agriculture shall be exempt from the provisions of ORS 468A.550 to 468A.620. [1991 c.920 §5]

468A.570 Classification of atmospheric conditions; marginal day. (1) As used in this section:

(a) "Marginal conditions" means atmospheric conditions such that smoke and particulate matter escape into the upper atmosphere with some difficulty but not such that limited additional smoke and particulate matter would constitute a danger to the public health and safety.

(b) "Marginal day" means a day on which marginal conditions exist.

(2) For purposes of ORS 476.380 and 478.960, the commission shall classify different types or combinations of atmospheric conditions as marginal conditions and shall specify the extent and types of burning that may be allowed under different combinations of atmospheric conditions. A schedule describing the types and extent of burning to be permitted on each type of marginal day shall be prepared and circulated to all public agencies responsible for providing information and issuing permits under ORS 476.380 and 478.960. The schedule shall give first priority to the burning of perennial grass seed crops used for grass seed production, second priority to annual grass seed crops used for grass seed production, third priority to grain crop burning, and fourth priority to all other burning and shall prescribe duration of periods of time during the day when burning is authorized.

(3) In preparing the schedule under subsection (2) of this section, the commission shall provide for the assignment of fourth priority burning by the State Department of Agriculture in accordance with the memorandum of understanding established pursuant to ORS 468A.585.

(4) In preparing the schedule required under subsection (2) of this section, the commission shall weigh the economic consequences of scheduled burnings and the feasibility of alternative actions, and shall consider weather conditions and other factors necessary to protect the public health and welfare.

(5) None of the functions of the commission under this section or under ORS 476.380 or 478.960, as it relates to agricultural burning, shall be performed by any regional air quality control authority established under ORS 468A.105. [1991 c.920 §6]

468A.575 Permits for open burning, propane flaming or stack or pile burning. (1) Permits for open burning, propane flaming or stack or pile burning of the residue

from perennial grass seed crops, annual grass seed crops and cereal grain crops are required in the counties listed in ORS 468A.595 (2) and shall be issued in accordance with rules adopted by the Environmental Quality Commission and subject to the fee prescribed in ORS 468A.615. The permit described in this section shall be issued in conjunction with permits required under ORS 476.380 or 478.960.

(2) By rule the Environmental Quality Commission may delegate to any county court, board of county commissioners, fire chief of a rural fire protection district or other responsible person the duty to deliver permits to burn acreage if the acreage has been registered under ORS 468A.615 and fees have been paid as required in ORS 468A.615. [1991 c.920 §7]

468A.580 Permits; inspections; planting restrictions. (1) Permits under ORS 468A.575 for open field burning of cereal grain crops shall be issued in the counties listed in ORS 468A.595 (2) only if the person seeking the permit submits to the issuing authority a signed statement under oath or affirmation that the acreage to be burned will be planted to seed crops other than cereal grains which require flame sanitation for proper cultivation.

(2) The department shall inspect cereal grain crop acreage burned under subsection (1) of this section after planting in the following spring to determine compliance with subsection (1) of this section.

(3) Any person planting contrary to the restrictions of subsection (1) of this section shall be assessed by the department a civil penalty of $25 for each acre planted contrary to the restrictions. Any fines collected by the department under this subsection shall be deposited by the State Treasurer in the Department of Agriculture Service Fund to be used in carrying out the smoke management program in cooperation with the Oregon Seed Council and for administration of this section.

(4) Any person planting seed crops after burning cereal grain crops under subsection (1) of this section may apply to the department for permission to plant contrary to the restrictions of subsection (1) of this section if the seed crop fails to grow. The department may allow planting contrary to the restrictions of subsection (1) of this section if the crop failure occurred by reasons other than the negligence or intentional act of the person planting the crop or one under the control of the person planting the crop. [1991 c.920 §8]

468A.585 Memorandum of understanding with Department of Agriculture. Before January 1, 1992, the Environmental Quality Commission shall enter into a memorandum of understanding with the State Department of Agriculture that provides for the operation of all or part of the field burning smoke management program by the State Department of Agriculture. [1991 c.920 §4]

468A.590 Duties of Department of Agriculture. Pursuant to the memorandum of understanding established under ORS 468A.585, the State Department of Agriculture:

(1) Shall:

(a) Conduct the smoke management program established by rule by the Environmental Quality Commission as it pertains to open field burning, propane flaming and stack or pile burning.

(b) Aid fire districts and permit agents in carrying out their responsibilities for administering field sanitization programs.

(2) May:

(a) Enter into contracts with public and private agencies to carry out the purposes set forth in subsection (1) of this section;

(b) Obtain patents in the name of the State of Oregon and assign such rights therein as the State Department of Agriculture considers appropriate;

(c) Employ personnel to carry out the duties assigned to it; and

(d) Sell and dispose of all surplus property of the State Department of Agriculture related to smoke management, including but not limited to straw-based products produced or manufactured by the State Department of Agriculture. [1991 c.920 §9]

468A.595 Commission rules to regulate burning pursuant to ORS 468A.610. In order to regulate open field burning pursuant to ORS 468A.610:

(1) In such areas of the state and for such periods of time as it considers necessary to carry out the policy of ORS 468A.010, the commission by rule may prohibit, restrict or limit classes, types and extent and amount of burning for perennial grass seed crops, annual grass seed crops and grain crops.

(2) In addition to but not in lieu of the provisions of ORS 468A.610 and of any other rule adopted under subsection (1) of this section, the commission shall adopt rules for Multnomah, Washington, Clackamas, Marion, Polk, Yamhill, Linn, Benton and Lane Counties, which provide for a more rapid phased reduction by certain permit areas, depending on particular local air quality conditions and soil characteristics, the extent, type or amount of open field burning of perennial grass seed crops, annual

grass seed crops and grain crops and the availability of alternative methods of field sanitation and straw utilization and disposal.

(3) Before promulgating rules pursuant to subsections (1) and (2) of this section, the commission shall consult with Oregon State University and may consult with the Soil Conservation Service, the Agricultural Stabilization Commission, the State Soil and Water Conservation Commission and other interested agencies. The department shall advise the commission in the promulgation of such rules. The commission must review and show on the record the recommendations of the department in promulgating such rules.

(4) No regional air quality control authority shall have authority to regulate burning of perennial grass seed crops, annual grass seed crops and grain crops.

(5) Any amendments to the State Implementation Plan prepared by the state pursuant to the Federal Clean Air Act, as enacted by Congress, December 31, 1970, and as amended by Congress August 7, 1977, and November 15, 1990, and Acts amendatory thereto shall be only of such sufficiency as to gain approval of the amendment by the United States Environmental Protection Agency and shall not include rules promulgated by the commission pursuant to subsection (1) of this section not necessary for attainment of national ambient air quality standards. [Formerly 468.460]

468A.600 Standards of practice and performance. The Environmental Quality Commission shall establish standards of practice and performance for open field burning, propane flaming, stack or pile burning and certified alternative methods to open field burning. [1991 c.920 §10]

468A.605 Duties of Department of Environmental Quality. The Department of Environmental Quality, in coordinating efforts under ORS 468.140, 468.150, 468A.020 and 468A.555 to 468A.620, shall:

(1) Enforce all field burning rules adopted by the Environmental Quality Commission and all related statutes;

(2) Monitor and prevent unlawful field burning; and

(3) Monitor and study the impact of open field burning on air quality in the Willamette Valley. [1991 c.920 §11]

468A.610 Reduction in acreage to be open burned, propane flamed or stack or pile burned. (1) Except as provided under ORS 468A.620, no person shall open burn or cause to be open burned, propane flamed or stack or pile burned in the counties specified in ORS 468A.595 (2), perennial or annual grass seed crop or cereal grain crop resi unless the acreage has been registered un ORS 468A.615 and the permits required ORS 468A.575, 476.380 and 478.960 have b obtained.

(2) The maximum total registered acre allowed to be open burned per year pursu to subsection (1) of this section shall be:

(a) For 1991, 180,000 acres.

(b) For 1992 and 1993, 140,000 acres.

(c) For 1994 and 1995, 120,000 acres.

(d) For 1996 and 1997, 100,000 acres.

(e) For 1998 and thereafter, 40,000 acre

(3) The maximum total acreage allowe to be propane flamed under subsection (1) this section shall be:

(a) In 1991 through 1997, 75,000 acres pe year; and

(b) In 1998 and thereafter, if the prepara tions and standards under subsection (4) o this section are met, and a system of monitoring developed by the department indicates that not more than 20 pounds of particulate matter 10 microns in diameter or less is emitted for each acre propane flamed, 75,000 acres per year may be propane flamed.

(4)(a) After January 1, 1998, fields shall be prepared for propane flaming by removing all loose straw or vacuuming or prepared using other techniques approved by rule by the commission.

(b) After January 1, 1998, propane equipment shall satisfy best available technology and result in achieving a standard of:

(A) Not more than 20 pounds of particulate matter 10 microns in diameter or less being emitted for each acre propane flamed; or

(B) Another equivalent standard adopted by rule by the commission.

(5) Notwithstanding the limitations set forth in subsection (2) of this section, in 1991 and thereafter, a maximum of 25,000 acres of steep terrain and species identified by the Director of Agriculture by rule may be open burned and shall not be included in the maximum total permitted acreage.

(6) Acreage registered to be open burned under this section may be propane flamed at the registrant's discretion without reregistering the acreage.

(7) In the event of the registration of more than the maximum allowable acres for open burning in the counties specified in ORS 468A.595 (2), after 1996, the commission, after consultation with the department, by rule or order may assign priority of permits based on soil characteristics, the crop type, terrain or drainage.

(8) Permits shall be issued and burning shall be allowed for the maximum acreage specified in subsection (2) of this section unless:

(a) The daily determination of suitability of meteorological conditions, regional or local air quality conditions or other burning conditions requires that a maximum number of acres not be burned on a given day; or

(b) The commission finds after hearing that other reasonable and economically feasible, environmentally acceptable alternatives to the practice of annual open field burning have been developed.

(9) Upon a finding of extreme danger to public health or safety, the commission may order temporary emergency cessation of all open field burning, propane flaming or stack or pile burning in any area of the counties listed in ORS 468A.595 (2).

(10) The commission shall act on any application for a permit under ORS 468A.575 within 60 days of registration and receipt of the fee required under ORS 468A.615. The commission may order emergency cessation of open field burning at any time. Any other decision required under this section must be made by the commission on or before June 1 of each year. [1991 c.920 §12]

468A.615 Registration of acreage to be burned. (1)(a) On or before April 1 of each year, the grower of a grass seed crop shall register with the county court or board of county commissioners, the fire chief of a rural fire protection district, the designated representative of the fire chief or other responsible persons the number of acres to be open burned, propane flamed or stack or pile burned in the remainder of the year. At the time of registration, the Department of Environmental Quality shall collect a nonrefundable fee of $2 per acre registered to be sanitized by open burning or $1 per acre to be sanitized by propane flaming. The department may contract with counties and rural fire protection districts or other responsible persons for the collection of the fees which shall be forwarded to the department. Any person registering after April 1 of each year shall pay an additional fee of $1 per acre registered if the late registration is due to the fault of the late registrant or one under the control of the late registrant. Late registrations must be approved by the department. Copies of the registration form shall be forwarded to the department. The required registration must be made and the fee paid before a permit shall be issued under ORS 468A.575.

(b) Except as provided in paragraph (d) of this subsection, the department shall collect a fee in accordance with paragraph (c) of this subsection before issuing a permit open burning, propane flaming or stack pile burning of perennial or annual gr seed crop or cereal grain crop residue un ORS 468A.555 to 468A.620. The departm may contract with counties and rural protection districts or other responsible sons for the collection of the fees which sh be forwarded to the department.

(c) The fee required under paragraph of this section shall be:

(A) $8 per acre of crop sanitized by op burning in the counties specified in O 468A.595 (2);

(B) $4 per acre of perennial or annu grass seed crop sanitized by open burning any county not specified in ORS 468A.595 (

(C) $2 per acre of crop sanitized propane flaming; and

(D) For acreage from which straw is moved and burned in stacks or piles:

(i) $2 per acre from January 1, 1992, December 31, 1997;

(ii) $4 per acre in 1998;

(iii) $6 per acre in 1999;

(iv) $8 per acre in 2000; and

(v) $10 per acre in 2001 and thereafter.

(d) The fee required by paragraph (b) this subsection shall not be charged for a acreage where efficient burning of stubble accomplished with equipment certified by t department for field sanitizing purposes with any other certified alternative meth to open field burning, propane flaming stack or pile burning. The fee required paragraph (b) of this subsection shall not charged for any acreage not harvested pr to burning or for any acreage not burned.

(2) All fees collected under this secti shall be deposited in the State Treasury the credit of the Department of Agricultu Service Fund. Such moneys are continuou appropriated to the State Department of riculture for the purpose of carrying out duties and responsibilities carried out by State Department of Agriculture pursuant the memorandum of understanding est lished under ORS 468A.585.

(3) It is the intention of the Legislat Assembly that the programs for smoke m agement, air quality monitoring and the forcement of rules under ORS 468A.550 468A.620 be operated in a manner that m mizes the resources available for the search and development program. Theref with regard to the disbursement of fu collected under subsection (1) of this sect the department shall act in accordance w the intent of the Legislative Assembly shall:

(a) Pay an amount to the county or board of county commissioners or the fire chief of the rural fire protection district, for each fire protection district $1 per acre registered for each of the first 5,000 acres registered in the district, 75 cents per acre registered for each of the second 5,000 acres registered in the district and 35 cents per acre registered for all acreage registered in the district in excess of 10,000 acres, to cover the cost of and to be used solely for the purpose of administering the program of registration of acreage to be burned, issuance of permits, keeping of records and other matters directly related to agricultural field burning.

(b) Designate an amount to be used for the smoke management program. The department by contract with the Oregon Seed Council or otherwise shall organize rural fire protection districts and growers, coordinate and provide communications, hire ground support personnel, provide aircraft surveillance and provide such added support services as are necessary.

(c) Retain funds for the department for the operation and maintenance of the Willamette Valley field burning air quality impact monitoring network and to insure adequate enforcement of rules established by the Environmental Quality Commission governing standards of practice for open field burning, propane flaming and stack or pile burning.

(d) Of the remaining funds, designate an amount to be used for additional funding for research and development proposals described in the plan developed pursuant to section 15, chapter 920, Oregon Laws 1991. [1991 c.920 §13]

468A.620 Experimental field sanitization. (1) Notwithstanding the provisions of ORS 468A.610, for the purpose of improving by demonstration or investigation the environmental or agronomic effects of alternative methods of field sanitization, the commission shall by rule allow experimental field sanitization under the direction of the department for up to 1,000 acres of perennial grass seed crops, annual grass seed crops and grain crops in such areas and for such periods of time as it considers necessary. Experimental field sanitization includes but is not limited to:

(a) Development, demonstration or training personnel in the use of special or unusual field ignition techniques or methodologies.

(b) Setting aside times, days or areas for special studies.

(c) Operation of experimental mobile field sanitizers and improved propane flaming devices.

(d) Improved methods of stack or pile burning.

(2) The commission may allow open burning under this section of acreage for which permits have not been issued under ORS 468A.610 if the commission finds that the experimental burning:

(a) Can, in theory, reduce the adverse effects on air quality or public health from open field burning; and

(b) Is necessary in order to obtain information on air quality, public health or the agronomic effects of an experimental form of field sanitization.

(3) The commission may, by rule, establish fees, registration requirements and other requirements or limitations necessary to carry out the provisions of this section. [1991 c.920 §14]

Note: Sections 15 and 23, chapter 920, Oregon Laws 1991, provide:

Sec. 15. Department of Agriculture Plan for Awarding Funding for Research or Development of Alternatives to Field Burning, Propane Flaming and Stack Burning. (1) The State Department of Agriculture annually shall develop a plan to award funding for applied research or development of methods, techniques or equipment related to alternatives to the practices of open field burning, propane flaming and stack or pile burning. The funding plan shall include fees made available for such purposes and appropriations from the State of Oregon in the amount of $500,000 for each year from 1992 through 1997. The plan shall include funding for research proposals, including but not be limited to:

(a) Utilization and marketing of crop residue, such as straw;

(b) Research on development of alternate crops; and

(c) Research on development of alternate weed, pest and disease controls, including but not limited to genetic research.

(2) The State Department of Agriculture shall submit its annual research plan to the Joint Legislative Committee on Ways and Means, or during the interim between legislative sessions, to the Emergency Board. [1991 c.920 §15]

Sec. 23. Section 15 of this Act is repealed January 1, 1998. [1991 c.920 §23]

CHLOROFLUOROCARBONS AND HALON CONTROL

468A.625 Definitions for ORS 468A.630 to 468A.645. As used in ORS 468A.630 to 468A.645:

(1) "Chlorofluorocarbons" includes:

(a) CFC-11 (trichlorofluoromethane);

(b) CFC-12 (dichlorodifluoromethane);

(c) CFC-113 (trichlorotrifluoroethane);

(d) CFC-114 (dichlorotetrafluoroethane); and

(e) CFC-115 ((mono)chloropentafluoroethane).

(2) "Halon" includes:

(a) Halon-1211 (bromochlorodifluoro-ethane)

(b) Halon-1301 (bromotrifluoroethane); and

(c) Halon-2402 (dibromotetrafluoro-ethane). [Formerly 468.612]

468A.630 Legislative findings. (1) The Legislative Assembly finds and declares that chlorofluorocarbons and halons are being unnecessarily released into the atmosphere, destroying the Earth's protective ozone layer and causing damage to all life.

(2) It is therefore declared to be the policy of the State of Oregon to:

(a) Reduce the use of these compounds;

(b) Recycle these compounds in use; and

(c) Encourage the substitution of less dangerous substances. [Formerly 468.614]

468A.635 Restrictions on sale, installation and repairing of items containing chlorofluorocarbons and halon. (1) After July 1, 1990, no person shall sell at wholesale, and after January 1, 1991, no person shall sell any of the following:

(a) Chlorofluorocarbon coolant for motor vehicles in containers with a total weight of less than 15 pounds.

(b) Hand-held halon fire extinguishers for residential use.

(c) Party streamers and noisemakers that contain chlorofluorocarbons.

(d) Electronic equipment cleaners, photographic equipment cleaners and disposable containers of chilling agents that contain chlorofluorocarbons and that are used for noncommercial or nonmedical purposes.

(e) Food containers or other food packaging that is made of polystyrene foam that contains chlorofluorocarbons.

(2)(a) One year after the Environmental Quality Commission determines that equipment for the recovery and recycling of chlorofluorocarbons used in automobile air conditioners is affordable and available, no person shall engage in the business of installing, servicing, repairing, disposing of or otherwise treating automobile air conditioners without recovering and recycling chlorofluorocarbons with approved recovery and recycling equipment.

(b) Until one year after the operative date of paragraph (a) of this subsection, the provisions of paragraph (a) of this subsection shall not apply to:

(A) Any automobile repair shop that has fewer than four employees; or

(B) Any automobile repair shop that has fewer than three covered bays.

sion shall establish by rule standards f proved equipment for use in recoverin recycling chlorofluorocarbons in auto air conditioners. [Formerly 468.616]

468A.640 Department program duce use of and recycle compounds ject to available funding, the Departm Environmental Quality may establish gram to carry out the purposes of 468A.625 to 468A.645, including enforce of the provisions of ORS 468A.635. [Fo 468.618]

468A.645 State Fire Marshal; prog halons; guidelines. The State Fire Ma shall establish a program to minimize unnecessary release of halons into the ronment by providing guidelines for alt tives to full-scale dump testing proce for industrial halon-based fire extingui systems. [Formerly 468.621]

AEROSOL SPRAY CONTROL

468A.650 Findings. The Legislativ sembly finds that:

(1) Scientific studies have revealed certain chlorofluorocarbon compounds in aerosol sprays may be destroying ozone layer in the earth's stratosphere;

(2) The ozone layer is vital to lif earth, preventing approximately 99 pe of the sun's mid-ultraviolet radiation reaching the earth's surface;

(3) Increased intensity of ultraviole diation poses a serious threat to life on e including increased occurrences of skin cer, damage to food crops, damage phytoplankton which is vital to the duction of oxygen and to the food chain, unpredictable and irreversible global clim changes;

(4) It has been estimated that produ of ozone destroying chemicals is increa at a rate of 10 percent per year, at w rate the ozone layer will be reduced 13 cent by the year 2014;

(5) It has been estimated that there already been one-half to one percent pletion of the ozone layer;

(6) It has been estimated that an im diate halt to production of ozone destro chemicals would still result in an appr mate three and one-half percent reductio ozone by 1990; and

(7) There is substantial evidence to lieve that inhalation of aerosol sprays significant hazard to human health. [Form 468.600]

Note: 468A.650 and 468A.655 were enacted into by the Legislative Assembly but were not added made a part of ORS chapters 468, 468A or 468B or

Attachment H

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY **INTEROFFICE MEMORANDUM**

DATE: January 3, 1992

TO: Environmental Quality Commission

FROM: Yone McNally, Hearings Officer

SUBJECT: Field Burning Hearings Report

A public hearing was held to accept testimony on the proposed amendments to Division 26 and Division 23 relating to open field burning, propane flaming, and stack and pile burning of grass seed and cereal crops. The Department accepted written testimony until Friday December 20, 1991. The proposed amendments are necessary to comply with the provisions of Oregon Laws Chapter 920 (HB 3343). This hearing was authorized by the Director.

On December 18, 1991 a public hearing was held in the Land Board Room, Division of State Lands, 775 Summer Street, Salem, Oregon. Eleven people attended, seven provided oral testimony, and one provided written testimony. Written testimony was also received from State Representative Liz VanLeeuwen as part of the hearing record.

Verbal testimony raised the following issues:

A. As written, the rules require growers to register their fields before April 1 of each year, specify the method of sanitation (i.e. open field burning, propane flaming or stack burning), and pay the appropriate registration fee. Witnesses stated growers cannot determine the sanitation method prior to the burn season and need the flexibility to determine the sanitation method during the burning season. Witnesses also stated the rules should allow the grower to register the acreage to be burned but not identify specific fields at the time of registration.

B. The proposed rules allow open field burning on weekends. Growers proposed a ban on weekend open field burning with an emergency clause to allow burning when weather conditions were optimal and late in the season if needed. Growers testified weekend burning caused public animosity and it was costly to keep crews on standby when satisfactory burning conditions on weekends are rare.

C. General comments were also received. One grower stated the rules contained several inconsistencies which allowed the Department some discretion in performing mandatory duties, i.e. the term "may" was used in the place of "shall".

A grower from the Silverton Hills area testified that fluffing was not a good practice for some grass seed species. He stated the Department should allow some specific species be exempted from fluffing requirements to insure adequate sanitization of the crop. The grower acknowledge this issue may beyond the scope of the proposed amendments but should be addressed in future rule changes.

Another grower testified it should be the Department's policy to achieve the maximum amount of burning in order to maximize the revenue available for researching alternatives.

Written testimony was received from Senator Mae Yih, the Klamath County Farm Bureau, Oregon Grains Commission, Kirsch Family Farms, Trails End Ranch, and the Oregon Seed Council.

Written testimony raised the following issues:

D: Two respondents expressed concern that burn permit fees will be charged for burning cereal grain crops in counties outside the Willamette Valley.

E: One respondent recommended a clarification of the procedure for obtaining valid burn permits and the establishment of a review process to insure permit agents are following the Departments procedures, statutes, and rules to prevent misunderstandings and promote consistency. The adoption of a rule specifying how and when State Fire Marshal bans are disseminated was also proposed.

F. Two respondents stated that grass seed growers did not have adequate time to review the rules before the hearing.

G. One person presented written testimony stating Oregon Administrative Rule 340-26-026, which establishes penalties for field burning violations, should be reinstated.. The respondent also stated OAR 340-26-013 (1) should be reinstated with a limitation of 30,000 acres.

H. One respondent urged that OAR 340-26-003 (1) be restore. This rule is the EQC policy statement providing maximum burning levels with minimum smoke impact.

ATTACHMENT H

TESTIMONY REFERENCES

No.	Oral Comment	Written Comment	Name and Affiliation
1.	A,B	A	Charles Craig, Oregon Department of Agriculture
2.	B	No	Howard Pope, Grass Seed Grower
3.	A,C	No	Ralph Fisher, Grass Seed Grower
4.	A,B	No	Robert Doerfler, Grass Seed Grower
5.	A	No	Monte Lewis, Grass Seed Grower
6.	No	A,C	Liz VanLeeuwen, State Representative
7.	A,C	No	Dan Sandau, Grass Seed Grower
8.	A,C	No	Eric Bowers, Grass Seed Grower, Smoke Management Chair, Oregon Seed Councils
9.		D	Lynn Long, Commissioner, Oregon Grains Commission
10.		D	Steve Kandra, Klamath County Farm Bureau
11.		E	Mae Yih, Senator, Linn and Benton Counties, District 18
12.		A,B,F	Paul Kirsch, Kirsch Family Farms
13.		G	Bill Johnson, Trails End Ranch
14.		A,F,H	David Nelson, Executive Secretary Oregon Seed Council

ATTACHMENT I

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY **INTEROFFICE MEMORANDUM**

DATE: December 27, 1991

TO: Environmental Quality Commission

FROM: Stephen Crane, Field Burning Program Manager

SUBJECT: Response to Testimony

COMMENT A: Six oral comments and three written comments were received stating a need for flexibility in the registration process. Growers stated they cannot determine which sanitation method (i.e. open field burning, propane flaming, or stack burning) is needed for each field until the burn season is in progress. The Department of Agriculture agreed with the need for flexibility.

RESPONSE: After reviewing the statutory requirements, proposed rules, and witness statements and discussions with the Oregon Seed Council and Department of Agriculture the Department agrees some flexibility is needed. Although the statutes require growers to specify the method of sanitation at the time of registration the Department feels the legislative intent is to allow growers to change the sanitation method at a later date if acreage allocation is available and without a late fee assessment. The Department has amended the rules accordingly.

COMMENT B: Three comments were received suggesting banning open field burning on weekends. One comment was received recommending continuing weekend burning.

RESPONSE: Oregon Revised Statute 468A.550 states the smoke management program shall include "scheduling times, places and amounts of agricultural fields that may be open burned daily or hourly, based on meteorological conditions during the burning season."

The Department believes the legislative intent is to allow the maximum acreage to be burned with minimal impact on public health and air quality. Therefore, the Department did not amend the Division 26 to ban open field burning on weekends.

COMMENT C: Several general comments were received, including inconsistencies in the proposed language and a

comment on fluffing practices.

RESPONSE: The Department thoroughly reviewed the proposed rules for language inconsistencies and made the appropriate corrections.

The comment regarding fluffing practices is a policy issue and will be communicated to the Department of Agriculture.

COMMENT D: The Klamath County Farm Bureau and the Oregon Grains Commission submitted written testimony expressing concern that burn permit fees will be charged for burning cereal grain crops in counties outside the Willamette Valley.

RESPONSE: Oregon Laws Chapter 920 specifically prohibits accessing a fee for the open burning of cereal grain crops in counties outside the Willamette Valley.

The Department has thoroughly reviewed Divisions 23 and 26 and cannot find any reference or rule which pertains to or requires the payment of a fee for the open burning of cereal grain crops in counties outside the Willamette Valley.

The introduction to Division 26 states that these rules apply to the open burning, propane flaming, and stack and pile burning of grass seed and cereal grain crops for counties within the Willamette Valley. The introduction also states the open burning of all other agricultural waste material, including sanitizing perennial and annual grass seed crops outside the Willamette Valley is governed by Division 23.

Division 23 states that a $4.00 per acre fee be charged only for the open burning of perennial and annual grass seed crops in counties outside the Willamette Valley.

COMMENT E: Senator Mae Yih submitted written testimony recommending a clarification of the procedure for obtaining a valid burn permit to prevent possible violations of the Departments rules. Senator Yih also recommended the establishment of a review process to insure permit agents are following the Departments procedures, statutes, and rules to prevent misunderstandings and promote consistency.

The adoption of a rule specifying how and when State Fire Marshal bans are disseminated was also proposed.

RESPONSE: Regarding rule clarification: The Department has reviewed the proposed rules describing the procedures for obtaining a valid burning permit and has clarified the appropriate rules.

Regarding permitting process: The Department currently has a review process in place to insure that local permit agents are following all applicable procedures, statutes, and rules. The Department also issues a procedures manual to each permit agent which specifies their responsibilities and duties, and defines the registration and permitting procedures.

Beginning with the 1992 season, the Department will review the registration and permitting procedures with permit agents prior to the start of each burn season. The Department will emphasize the importance of following the outlined procedures to prevent misunderstandings and confusion. The Department will also provide registration information to growers prior to each season.

Regarding State Fire Marshal Bans: Under sections 21 and 22 of Enrolled House Bill 3343 the Environmental Quality Commission is directed to notify the State Fire Marshal daily of types and times of field burning scheduled. The State Fire Marshal is assigned the responsibility of notifying all fire chiefs and their deputies and all county courts and county commissioners of the type of and time of burning to be allowed on each day and of any revision of such conditions during each day.

The Department will cooperate with the State Fire Marshal and will disseminate burning ban information over the field burning radio network.

COMMENT F: David Nelson of the Oregon Seed Council and one grass seed grower commented growers did not have adequate time to review and comment on the proposed rules.

RESPONSE: The Department advertised the Notice of Public Hearing in the Statesman Journal, the Eugene Register Guard, and the Oregonian more the 30 days

prior to the hearing. In addition, the Department issued a news release on December 5, 1991 and mailed approximately 1300 copies of the proposed rules to registered grass seed growers, and other known interested parties. The hearing was held on December, 18, 1991 and written comments were accepted until December 20, 1991. Representatives of the Departments of Agriculture and Environmental Quality met with Mr. Nelson on December 31, 1991 to resolve remaining issues.

COMMENT G: One person stated Oregon Administrative Rules 340-26-025 and 340-26-013 should not be abolished.

RESPONSE: Enforcement procedures and civil penalties for open field burning, formerly OAR 340-26-025, is now included in OAR Chapter 340 Division 12.

OAR 340-26-013 (1) which limited the acreage open field burned in the Willamette Valley and placed a cap on the maximum daily acreage burned in the south valley was amended to reflect the provisions mandated by Oregon Laws Chapter 920 (HB 3343).

COMMENT H: The Oregon Seed Council stated that OAR 340-26-003 (1) should not be abolished because the rule is an EQC policy statement providing for a maximum level of burning with a minimal level of smoke impact on the public. This rule also encourages flexibility in operation of the smoke management program and promotes the development of alternatives.

RESPONSE: The Department agrees with the respondent and has restored the rule.

Oregon

ENVIRONMENTAL QUALITY COMMISSION

REQUEST FOR EQC ACTION

Meeting Date: January 23, 1992
Agenda Item: F
Division: Air Quality
Section: Technical Services

SUBJECT:

Rule adoption for amending the State Implementation Plan (SIP) to revise the existing Source Sampling Manual and to add a Continuous Monitoring Manual.

PURPOSE:

The Source Sampling Manual (State Implementation Plan Volume 3, Appendix A4) was last revised in 1981. Since that time, new methods have been developed and existing methods have had minor revisions. The Continuous Monitoring Manual would be a support document for Oregon Administrative Rules and Air Contaminant Discharge Permits. Both documents must be included in the SIP so that they are Federally enforceable.

ACTION REQUESTED:

x Adopt Rules

Proposed Rules	Attachment A
Rulemaking Statements	Attachment B
Fiscal and Economic Impact Statement	Attachment C
Public Notice	Attachment D
Land Use Evaluation Statement	Attachment E

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

DESCRIPTION OF REQUESTED ACTION:

The requested action is to adopt a rule to amend Volume 3 of the SIP to include the proposed Source Sampling and Continuous Monitoring Manuals needed in support of the Interim Emission Fees Rule to be adopted in January, 1992, PM_{10} rules adopted in November 1991, existing Pulp and Paper Industry rules, and other Oregon Administrative Rules. Both manuals are technical documents that establish the DEQ's enforceable criteria for industrial stationary source air pollutant emissions testing and continuous emissions monitoring.

The existing Source Sampling Manual is being replaced with a proposed Source Sampling Manual that both ensures the existing methods will be consistent with EPA reference methods and adds additional methods commonly used in source testing Oregon sources. Those methods that are identical to EPA reference methods are being incorporated by reference. Methods unique to Oregon have been revised to be consistent with EPA reference methods to the extent possible and still retain the unique and necessary features of the methods. The revised methods are Oregon Methods 4 (alternative method for moisture content), 5 (total particulate matter), 7 (condensible particulate matter), and 8 (high volume sampling for particulate matter)

The proposed Continuous Monitoring Manual is a new document that provides criteria for the installation, calibration, maintenance, and operation of Continuous Monitoring Systems (CMS). It further establishes the quality assurance and quality control requirements for CMS. Several of the Federal regulations and Oregon Administrative rules require that sources continuously monitor pollutant emissions. Some of the rules specifically refer to the Department's Continuous Monitoring Manual. Hence, the manual has been prepared and must be included in the SIP.

AUTHORITY/NEED FOR ACTION:

_x_ Statutory Authority: ORS 468.280-468.340
_x_ Pursuant to Federal Law/Rule:
Federal Clean Air Act Amendments of 1990

_x_ Time Constraints:

These documents are referenced in rules pending adoption (interim emissions fees rules). For those rules to be federally enforceable, these manuals must be adopted into the State Implementation Plan. In addition, there are existing rules that reference the Continuous Monitoring Manual and Source Sampling Manual. For those rules to be federally enforceable, the

continuous monitoring manual must be adopted into the SIP as soon as possible.

DEVELOPMENTAL BACKGROUND:

Hearing Officer's Report/Recommendations Attachment F
Response to Testimony/Comments Attachment G
Other Related Reports/Rules/Statutes:

The Source Sampling Manual was last adopted into the SIP in 1981.

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The proposed Source Sampling Manual will affect industrial sources required to demonstrate compliance with permit requirements by conducting source testing. Currently there are about 60 out of 1200 permitted sources tested each year. Since most sources use independent contractors for conducting source tests, the manuals will also affect commercial source testing firms.

The proposed Continuous Monitoring Manual would affect the following sources:

1. There are approximately 12 sources out of approximately 1200 permitted sources that currently operate CMS in accordance with the Continuous Monitoring Manual as a condition of their permit and/or State and Federal regulations.

2. Sources that will be required to operate CMS in accordance with the Continuous Monitoring Manual as a condition of their permit and/or State and Federal regulations.

3. Sources that elect to operate CMS for the purpose of demonstrating actual emissions for determining emissions fees.

The fiscal and economic impact statement published in the Secretary of State Bulletin on 11/1/91 (Attachment C) was slightly different than the fiscal and economic impact statement mailed to the public as part of the chance to comment public hearing notifications (Attachment H). The difference is that an estimated average cost to industry ($13,500) was restated as an estimated cost range ($10,000 to $15,000).

PROGRAM CONSIDERATIONS:

The proposed Continuous Monitoring Manual requires that sources operating CMS as a condition of a permit or for demonstrating actual emissions for determining emissions fees have a quality assurance plan approved by the Department and report emissions on a regular schedule. The review and approval of CMS quality assurance plans and periodic reports could require additional staff which would need to be supported by increased permit fees.

The requirements of the proposed manuals are no more stringent than EPA requirements will be. The proposed Continuous Monitoring Manual would require sources with existing CMS to demonstrate that the CMS will provide reliable and accurate data by performing an initial auditing program. These sources were not previously required to conduct audit programs. The audit program is no more stringent than EPA's audit program.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

The Department could have adopted the EPA's requirements for source testing and continuous monitoring. However, the EPA's requirements are for a limited number of sources. These manuals are more general and can be applied to any source. The Source Sampling Manual also includes test methods specific to Oregon sources, rules, and emission limits.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that both of the proposed manuals be adopted into the SIP. Title V of the Clean Air Act Amendment (CAAA) of 1990 requires states develop federally enforceable permitting programs for major sources. A part of the permitting program is demonstration of compliance with permit limitations. The CAAA also requires that the State permit program for major sources be funded by fees based on the pollutant emissions from the sources. Both of these documents identify methods and procedures for demonstrating compliance with permit limits and determining actual pollutant emissions. Therefore, the manuals must be included in the SIP for EPA approval.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The manuals are believed to be consistent with the strategic plan, agency policy, or legislative policy.

ISSUES FOR COMMISSION TO RESOLVE:

Dennis Norton of Portland General Electric (PGE) submitted a comment stating that "PGE believes that it is premature to include the Continuous Monitoring Manual in a final rule at this time. As an alternative this manual could be written as a guideline document. However, this document should allow for exceptions, as approved by the ODEQ. The language of the OARs should also be revised to allow for existing sources and the "phase-in" of new CEM systems to meet the manual's guidelines."

The issue is: Would adoption of the Continuous Monitoring Manual at this time make the DEQ's rules more stringent than EPA's?

Although the adoption of the Continuous Monitoring Manual as a rule is in advance of similar rules being considered by EPA for promulgation in November of 1992 and could therefore be considered more stringent than current federal regulations, the Department believes that HB 2175 requires there be legally enforceable technical criteria for evaluating actual emissions documentation provided by sources for 1992. This document along with the Source Sampling Manual provides the technical criteria necessary for evaluating actual emissions from sources. In fact, the technical criteria are similar to the Federal criteria written in 40 CFR Part 60 Appendices A, B, and F. The difference is that this manual would affect existing CMS as well as new CMS. However, the requirements in the Continuous Monitoring Manual for existing CMS are less stringent than EPA rules for new CMS used for demonstrating compliance with a standard.

In addition, the manual would only apply to a source if: the source elects to demonstrate actual emissions with a CMS, or a State regulation requires the source to monitor compliance with a CMS in accordance with the Continuous Monitoring Manual, or a permit requires a source to monitor compliance with a CMS in accordance with the Continuous Monitoring Manual. The adoption of the Continuous Monitoring Manual as a rule would not necessarily affect all sources that currently have CMS, nor would it require all sources to install CMS. The Department also has the option to provide exceptions or alternatives to the Continuous Monitoring Manual and "phase-in" provisions through the permit program

A complete response to this comment is provided in attachment G.

INTENDED FOLLOWUP ACTIONS:

1. Propose adoption, with appropriate revisions in response to testimony, at January 23, 1992 EQC meeting.

Approved:

Section: _____

Division: _____

Director: _____

Report Prepared By: Mark Fisher

Phone: 229-5069

Date Prepared: 1/7/92

msf:msf
EQCSR.DA2
1/7/92

"State of Oregon Clean Air Act, Implementation Plan"
340-20-047

This implementation plan, consisting of Volumes 2 **and 3** of the State of Oregon Air Quality Control Program contains control strategies, rules and standards prepared by the Department of Environmental Quality and is adopted as the implementation plan of the State of Oregon pursuant to the Federal Clean Air Act, as amended.

[**Publication:** The Publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 35, f. 2-3-72, ef. 2-15-72; DEQ 54, f. 6-21-73, ef. 7-1-73; DEQ 19-1979, f. & ef. 6-25-79; DEQ 21-1979, f. & ef. 7-2-79; DEQ 22-1980, f. & ef. 9-26-1980; DEQ 11-1981, f. & ef 3-26-81; DEQ 14-1982, f. & ef. 7-21-82; DEQ 21-1982, f. & ef. 10-27-82; DEQ 1-1983, f. & ef. 1-21-83; DEQ 6-1983, f. & ef. 4-18-83; DEQ 18-1984, f. & ef. 10-16-84; DEQ 25-1984, f. & ef. 11-27-84; DEQ 3-1985, f. & ef. 2-1-85; DEQ 12-1985, f. & ef. 9-30-85; DEQ 5-1986, f. & ef. 2-21-86; DEQ 10-1986, f. & ef. 5-9-86; DEQ 20-1986, f. & ef. 11-7-86; DEQ 21-1986, f. & ef. 11-7-86; DEQ 4-1987, f. & ef. 3-2-87; DEQ 5-1987, f. & ef. 3-2-87; DEQ 8-1987, f. & ef. 4-23-87; DEQ 21-1987, f. & ef. 12-16-87; DEQ 31-1988, f. 12-20-88, ef. 12-23-88

RULEMAKING STATEMENT FOR PROPOSED REVISION OF THE STATE IMPLEMENTATION PLAN TO INCLUDE A REVISED SOURCE SAMPLING MANUAL AND ADD A CONTINUOUS MONITORING MANUAL

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(7), this statement provides information on the intended action to amend a rule.

(1) Legal Authority

This proposal amends Oregon Administrative Rules (OAR) 340-20-047. It is proposed under authority of Oregon Revised Statutes (ORS) Chapter 468.

(2) Need for Rule

The Source Sampling Manual was last revised in 1981. Since that time, new methods have been developed and existing methods have undergone minor revisions. The Continuous Monitoring Manual would be a support document for Oregon Administrative Rules and Air Contaminant Discharge Permits. Both documents must be adopted in the SIP so that they are Federally enforceable.

(3) Principal Documents Relied Upon

- Clean Air Act Amendments of 1990
- Oregon Administrative Rules 340-20-040, 340-25, 340-30

All documents referenced may be inspected at the Department of Environmental Quality, Air Quality Division, 811 S.W. Sixth Avenue, Portland, Oregon, during normal business hours.

**FISCAL AND ECONOMIC IMPACT STATEMENT
FOR PROPOSED REVISION TO THE STATE IMPLEMENTATION PLAN
TO INCLUDE A REVISED SOURCE SAMPLING MANUAL AND ADD A
CONTINUOUS MONITORING MANUAL**

PROPOSAL SUMMARY

The proposed rules would:

- Revise the State Implementation Plan to include a revised Source Sampling Manual, and add a Continuous Monitoring Manual. These manuals establish the criteria for source testing and continuous monitoring systems (CMS) for measuring pollutant emissions from industrial sources for the purpose of demonstrating compliance with permit limits and/or determining actual pollutant emissions

COSTS TO OWNERS OF INDUSTRIAL SOURCES

The proposed manuals establish the criteria for conducting source emissions testing and continuous monitoring but they do not identify the sources that must conduct source testing and/or continuous monitoring. The requirement to conduct source testing or continuous monitoring is usually specified in an Air Contaminant Discharge Permit as a result of a specific rule. Therefore, there is no fiscal and economic impact directly related to the manuals, in and of themselves. There may be indirect fiscal and economic impacts, but this analysis will be done when the specific rules requiring the application of these manuals are proposed.

If a source is required by permit to continuously monitor the emissions of a pollutant(s) or if the source elects to use a continuous monitoring system (CMS) for determining actual pollutant emissions for emission fees computations, the Continuous Monitoring Manual would impose specific requirements on the source for the installation, calibration, maintenance, quality assurance, and operation of the CMS. Some of these requirements (i.e. quality assurance) could be considered greater than the CMS manufacturer's recommendations causing an additional cost to the source owner. The additional costs could be as high as $10,000 to $15,000 per year, depending on the strategy that sources develop for meeting the requirements. Some sources may be able to implement the requirements at no additional cost. The estimated cost presented above would cover such activities as preparing and maintaining a quality assurance plan, conducting quality control activities, and performing one relative accuracy test audit per year. The cost assumes that the source would add additional staff to fulfill the quality assurance requirements. The costs would not be additive for multiple CMS or pollutant emissions. The cost of monitoring two pollutants would be about 1.3 times the cost of monitoring one; and, the cost of monitoring three pollutants would be about 1.5

times the cost of monitoring one.

The sources that would be affected are major sources having any regulated pollutant emission greater than 100 tons per year. There are about 150 major sources in Oregon. Industries that currently have CMS include the pulp and paper industry, utility boilers, municipal waste incinerators, sugar producers, and some wood product boilers. These are typically large sources so that the costs discussed above are relatively insignificant. If the costs were passed on to the consumer, the result would be an insignificant increase in the product cost.

State law requires major sources to pay emission fees based on either permitted or actual emission levels. Since a CMS will measure the actual emissions from a source and actual emissions are presumably less than permitted emissions, the costs discussed above could be offset by the emission fees savings. The net result could be a saving to the sources.

Since the affected sources are major sources, it is expected that there would be no negative impact on small businesses. Some small business consulting firms could financially benefit from the potential of an expanded source testing and/or quality assurance guidance market.

COSTS TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY

The Continuous Monitoring Manual requires affected sources to submit quality assurance plans for Department approval. In addition, the manual specifies CMS reporting requirements. Depending on the number of sources, the review of quality assurance plans and CMS reports could require additional staff which would need to be supported by increased emissions fees.

The Source Sampling Manual revisions would not add additional costs to the Department.

ATTACHMENT D

NOTICE OF PUBLIC HEARING

Hearing Dates: December 11 and 12, 1991
Written Comments Due: December 13, 1991

WHO IS AFFECTED:

Stationary industrial sources required to conduct source emissions testing and/or install and operate continuous monitoring systems for the purpose of demonstrating compliance with Permit limits or determining actual pollutant emissions.

WHAT IS PROPOSED:

The Department of Environmental Quality is proposing to amend OAR 340-20-047, the State of Oregon Clean Air Act Implementation Plan to:

- Replace the existing Source Sampling Manual with a revised Source Sampling Manual
- Add a Continuous Monitoring Manual which establishes the requirements for the installation, calibration, maintenance, quality assurance, and operation of continuous monitoring systems.

WHAT ARE THE HIGHLIGHTS:

Title V of the Clean Air Act Amendment of 1990 requires states to develop federally enforceable permitting programs for major sources. A part of this permitting program is demonstration of compliance with permit limitations. The CAAA also requires that the State permit program for major sources be funded by fees based on pollutant emissions from the sources. Both of these documents identify methods and procedures for demonstrating compliance with permit limits and determining actual pollutant emissions.

It has been ten years since the Source Sampling Manual was updated. The proposed revised Source Sampling Manual will replace the existing manual. Methods identical to EPA reference methods have been incorporated by reference. These include methods found in 40 CFR Part 51 Appendix M, Part 60 Appendix A, and Part 61 Appendix B. Methods unique to Oregon (Method 5, Method 7, and Method 8) have been revised to be consistent with EPA reference methods, to the extent possible, and still retain the procedures that are unique to Oregon.

The Continuous Monitoring Manual is a new document that establishes the requirements for installation, calibration, maintenance,

quality assurance, and operation of continuous monitoring systems required by Air Contaminant Discharge Permits. The content of this manual is essentially the same as Federal requirements.

HOW TO OBTAIN ADDITIONAL INFORMATION:

Copies of the proposed manuals may be obtained from the Air Quality Division, 811 S.W. 6th Avenue, Portland, Oregon, or from the regional DEQ office near you. For further information, contact Mark Fisher at (503) 229-5069

WHERE ARE THE HEARINGS AND HOW TO COMMENT:

The first public hearing is scheduled for: December 11, 1991 at 10:00 a.m. in Room 9A, 811 S.W. 6th Avenue, Portland, Oregon.

The second public hearing is scheduled for: December 12, 1991 at 11:00 a.m. in the City Hall Council Chambers, 411 W. 8th, Medford, Oregon.

Oral and written comments will be accepted at the public hearings. Written comments may be sent to the DEQ, but must be received not later than 5:00 p.m., December 13, 1991.

WHAT IS THE NEXT STEP:

After public hearings, the Environmental Quality Commission may adopt rule amendments as proposed, adopt modified rule amendments, or decline to act. If adopted, the rules will be submitted to the EPA as part of the State Clean Air Act Implementation Plan. The Commission's deliberation should come in the later part of January 1992 as part of the agenda of a regularly scheduled Commission meeting. (The date has not been scheduled)

A Statement of Need, Fiscal and Economic Impact, and Land Use Consistency Statement are attached to this notice.

DEQ LAND USE EVALUATION STATEMENT FOR RULEMAKING

PROPOSED REVISION TO THE STATE IMPLEMENTATION PLAN TO INCLUDE A REVISED SOURCE SAMPLING MANUAL AND ADD A CONTINUOUS MONITORING MANUAL

(1) Explain the purpose of the proposed rules.

The proposed rules would:

- Revise the State Implementation Plan to include an updated Source Sampling Manual, and add a Continuous Monitoring Manual. These manuals establish the criteria for source testing and continuous monitoring systems (CMS) for determining pollutant emissions from industrial sources for the purpose of demonstrating compliance with permit limits and/or determining actual pollutant emissions

(2) Do the proposed rules affect existing rules, programs or activities that are considered land use programs in the DEQ State Agency Coordination (SAC) Program? Yes _x_ No ___

(a) If yes, identify existing program/rule/activity:

The rules affect a land use program identified as "Issuance of Air Contaminant Discharge Permits (ACDP)".

(b) If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules? Yes _x_ No ___

If no, explain: Not Applicable

(c) If no, apply criteria 1. and 2. from the instructions for this form and from Section III Subsection 2 of the SAC program document to the proposed rules. In the space below, state if the proposed rules are considered programs affecting land use. State the criteria and reasons for the determination.

(3) If the proposed rules have been determined a land use program under 2. above, but are not subject to existing land use compliance and compatibility procedures, explain the new procedures the Department will use to ensure compliance and compatibility.

Division | Intergovernmental Coor. | Date

Attachment F

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: December 17, 1991

TO: Environmental Quality Commission

FROM: Linda Wishart, Hearings Officer

SUBJECT: Hearings Report for State Implementation Plan Amendment to Replace Existing Source Sampling Manual with a Revised Source Sampling Manual and to add a Continuous Monitoring Manual

Public hearings were held on December 11, 1991 at the Department of Environmental Quality headquarters in Portland and on December 12, 1991 at the Medford City Hall Council Chambers.

Public notices were issued as follows:

The Secretary of State published a Notice of Proposed Rulemaking Hearing, Land Use Evaluation Statement, Statement of Need for Rulemaking, and Fiscal and Economic Impact Statement on November 1, 1991.

News releases announcing the public hearings were published on November 11, 1991 by the following:

- Mail Tribune
- Daily Journal of Commerce
- Register Guard
- The Oregonian

The Portland hearing was attended by five people, no testimony was given. Seven people attended the Medford hearing, two giving oral testimony.

Comments were received during these hearings for both the Source Sampling and Continuous Monitoring Manuals and for the Air Emission Fees. The following is a summary of the comments received, both oral and written, which pertain to the Source Sampling and Continuous Monitoring Manuals. A full summary of comments may be found in the Hearing Officer's Report on the Air Emission Fees. Attached to this report are copies of submitted comments.

Dr. Robert J. Palzer, Adjunct Professor of Chemistry, Southern Oregon State College, and Scientific Director of the Coalition to Improve Air Quality:

The Coalition supports adoption of rules for the Source Sampling Manual update and the new Continuous Monitoring Manuals. One item of concern was expressed, however, in the area of public access to monitoring data.

The proposal requires records to be maintained on-site for a two year period. The Coalition feels the public should have access to these records during this time.

The Coalition published a study the summer of 1991 based on three-year review of DEQ monitoring records that found a number of occurrences which appeared to be violations, but for which no citations were issued during that period. Enforcement of existing rules was given some attention during their review, and some citations were issued. Public access to monitoring data maintained on-site will provide the over-sight capabilities the public ought to have.

Myra Erwin, Chair of the Rogue Group Sierra Club:

The Rogue Group Sierra Club supports adoption of the Source Sampling Manual update and the new Continuous Monitoring Manuals. These rules are viewed as necessary for compliance with the Clean Air Act.

Douglas Morrison
Environmental Council
Northwest Pulp and Paper

NWPPA feels adoption of the manuals is premature and exceeds federal requirements.

Dennis Norton
Manager, Environmental Services
PGE

PGE feels that adoption of the Continuous Monitoring Manual as a rule is premature and more stringent than EPA regulations, and therefore not in keeping with HB 2175 limitation. A suggested alternative is to site this manual as a guideline document. Exceptions should also be allowed sources with existing approved CEM systems identified in permits and sources seeking alternative methods for demonstrating emission compliance. Alternatives

should be made available according to the EPA.

As written, sources would be required to abruptly adhere to the new regulations and PGE believes a 'phase-in' provision should be included.

Kenneth Shaner
Superintendent Environmental and Technical Services
International Paper

A general opinion that the manual is excessive was expressed. Because the Department has the option to approve/disapprove individual plans, the mills should be given more latitude to develop individual programs.

Specific housekeeping changes to the rule language were offered as amendments.

Patricia Kuhn
Resident, Medford

Support the Coalition's position and recommendations regarding the proposed source test and monitoring manuals was expressed along with a concern for the lack of enforcement and the inadequate number of source inspections performed.

Kathleen Muir
Resident, Ashland

As a Rogue Valley resident, she hopes to see continuous monitoring systems implemented at all major industrial sites that are sources of pollution.

Bob Palzer
Air Quality Coordinator
Oregon Chapter, Sierra Club

The group supports adoption of the proposed manuals for source testing and continuous emissions monitoring.

Frank Hirst
Conservation Chair
Rogue Valley Audubon Society

The group feels public access and oversight to all monitoring data, as soon as possible upon recording, will be beneficial as

an enforcement tool. The testing and monitoring manuals are seen as essential to implementing the system and the Department is encouraged to expedite the production of these manuals.

Wallace Skyrman
Patient Representative
Southern Oregon Region, American Lung Association

Mr. Skyrman believes that enforcement should be weighted to Continuous Emission Monitoring on a 24 hours per day, 365 days a year basis. Source testing should not be performed at the convenience of the mill operator and monitoring results should be made public record as soon as the data is gathered. These measures will divert suspicion and distrust on the part of the public.

George Abel
Chief, Air and Radiation Branch
Region 10, EPA

Several comments were offered as recommendations for both the Source Sampling Manual and the Continuous Monitoring Manual.

Rogue Group - Sierra Club

DECEMBER 12, 1991

TESTIMONY TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY
ON AIR QUALITY ISSUES

MEDFORD

My name is Myra Erwin. I am the Chair of the Rogue Group Sierra Club. We have over 1200 members in Jackson, Josephine and Curry counties. We appreciate the opportunity to comment in person here in Medford on these important issues.

Major Industrial Source Interim Emission Fee Rules

The Rogue Group supports the position of the Coalition to Improve Air Quality that fees should be raised. The Sierra Club's 1991 Study revealed the need for a significant increase in the number of inspections for major sources in Medford. We urge that fees be adequate to provide enough inspectors to ensure that inspections be frequent enough to produce good compliance with permit conditions.

On site inspection records should be open to the public to gain public confidence and to help assure that regulations will be complied with.

Amendments to the State Implementation Plan (SIP) to update the existing Source Sampling Manual and to add a Continuous Monitoring manual

Again, the Rogue Group supports the position of the Coalition to Improve Air Quality that new test and monitoring manuals be adopted. These are clearly necessary if compliance with the Clean Air Act is to be expected.

A significant pollution fee assessed to emissions that are over permitted levels should be imposed to help encourage sources to keep their emissions within those levels.

Considerable progress has been made in improving our Air Quality, but more needs to be done before we have truly healthful air in the Medford area. The above recommendations will speed us on our way.

Myra Erwin
300 Grandview Dr.
Ashland, Oregon 97520

NORTHWEST
PULP&PAPER

December 13, 1991

Sara Laumann
Department of Environmental Quality
811 S.W. 6th Avenue
Portland, OR 97204

RE: COMMENTS ON PROPOSED INTERIM AIR EMISSION FEES, AND PROPOSED SOURCE SAMPLING AND CONTINUOUS MONITORING MANUALS

Dear Sara:

Thank you for the opportunity to provide comments on the proposed interim air fee rules, OAR 340-20-505 to 590, and the proposed source sampling and continuous monitoring manuals. We appreciate the time and effort DEQ has made to understand how these rules will impact sources. NWPPA has already provided extensive comments by letter dated October 30, 1991 and would like to add to our previous comments as follows. We also request that the department allow adequate time for review of changes to the rule before submission of rule language to the EQC.

COMMENTS ON PROPOSED INTERIM AIR EMISSION FEES

Policy

NWPPA would prefer a policy that estimations of actual emissions under DEQ's compliance or monitoring regulations or the terms of a permit are adequate for purposes of calculating actual emissions and paying fees for both 1991 and 1992.

Definitions 340-20-520

The definitions of "continuous monitoring systems" and "source test" pose the issue of retroactive application of these manuals to data gathered before they were drafted. For example, the reference to "source test" as used in 340-25-545 is to data collected since 1985. While this data may have been collected in accordance with standard procedures at the time, the procedures may be different than what is prescribed in the manual today.

We suggest using the following phrase in the definitions instead of reference to the manuals: ". . . in accordance with appropriate procedures or department guidance at the time the data was collected."

Emission Reporting 340-20-535

The requirement in 535(3)(d) to include "all documentation" is unnecessary and may result in too much paper work being transmitted when DEQ has no real use for it. Instead, insert the wording "when requested by the Department." This is consistent with the DEQ authority in 537(3) to request additional information. The word "all" should be deleted in the event our suggesting is not adopted.

Delete 535(4) because this is a rule for identifying emissions for purposes of fees and is not for purposes of an emissions inventory.

Emission Reporting and Interim Fee Procedures 340-20-537

In 537(4), the 30 days may not in some cases be sufficient if a facility must retain and schedule a contractor to provide additional information (e.g., more source tests). The rule should allow for extensions of time to be granted by the department. Otherwise, the source may be forced to file for a contested case to protect its legal rights pending the gathering of additional information. DEQ should strive to avoid the protective filings due to time constraints.

Calculated Emissions for 1991 340-20-545

It is our understanding that because of the retroactive application of 340-20-545, no source testing will be required to calculate actual emissions during 1991. The reference to 580 makes it unclear whether source testing would be necessary to allow the use of PSEL calculations or existing data under 545(1). Please consider the comments on 580 below.

Section 545 should be rewritten to clearly announce that calculations of emissions required under the terms of a permit or DEQ's air quality regulations shall suffice for purposes of showing actual emissions without any additional source testing or any other adjustments. To simplify the rules greatly and to follow NWPPA's suggested policy, this section should apply to calculations of actual emissions for both 1991 and 1992. We suggest the following wording for 340-20-545:

> 340-20-545 To calculate actual emissions for 1991 and 1992, the permittee shall use one of the following:
>
> (1) Methods used to establish a Plant Site Emission Limit for the source;
>
> (2) Methods used to demonstrate compliance with an emissions limitation in the source's air contaminant discharge permit;
>
> (3) Methods used to comply with a monitoring requirement of a permit or air quality regulation applicable to the source;
>
> (4) Material Balance;

(5) Emission data from continuous monitoring systems [continue as in 545(3]:

(6) Emission Factors developed from at least one source test conducted since 1985.

If the department insists upon more rigorous standards for data on 1992 actual emissions, the above language should apply for 1991 and the following comments taken into account for 1992 emissions.

Actual Emissions for 1992

As discussed at the last Advisory Committee meeting, NWPPA believes that sources should have the opportunity to develop industry specific—compared to source specific—emission factors. The language of 340-20-550 should be amended to clearly allow sources to work with DEQ to develop ways to characterize emissions with a reasonable degree of accuracy.

We suggest the following for 550(4):

(4) Alternative emission factors developed for a category of sources based on a plan submitted to and approved by the department.

Verified Emission Factors Using Source Testing for 1992 340-20-575

The introductory paragraph to 340-20-575 should be amended to allow the use of existing source test data collected since 1985 within certain parameters, but not those parameters in 575(1)-(4).

We suggest a minimum of two source tests (including at least 6 data points) and that the tests when conducted need not have been "approved" by the department. Such a condition would preclude the use of most available data because the department did not routinely "approve" procedures or data, nor was there any official source test manual. We have included the additional condition "performed in accordance with appropriate procedures or department guidance at the time the data was collected" to remedy this problem.

NWPPA suggests the following to replace the entire introduction:

340-20-575 To verify emission factors used to calculate assessable emissions for 1992, the permittee shall use at a minimum two source tests or equivalent testing conducted after 1985 in accordance with appropriate procedures or department guidance at the time the data was collected, or the permittee shall perform additional source tests as follows:

. . .

Calculating Emissions during Startup and Shutdown, and for Emissions Greater than Normal 340-20-575

This section of the rule should exclude those sources that are known or can be expected to not produce a greater amount of emissions during these periods compared to "normal" operations. This would include TRS and NOx emissions from pulp and paper mills.

It should also be clarified that the requirements for source testing in 580(2), (3) and (4) would apply only if the procedures under (1) are not applied. Also, there is a circular reference in (4)(b).

We would also urge the department to include language at the end of 580(1) that expands upon the "Unless otherwise approved by the Department" language to allow a source or category of sources to propose alternative efficiencies for approval. Thus, based on reports, studies or other data, a source or industry group could develop a different pollution control device collection efficiency.

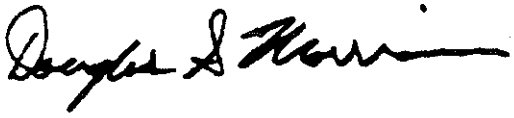
Please add to the end of 580(1):

> Any source or group of sources may propose and the department may approve alternative efficiencies to be used in place of those listed above.

PROPOSED SOURCE SAMPLING AND CONTINUOUS MONITORING MANUALS

NWPPA agrees with the comments of the NCASI on these manuals. Namely, that adoption of the manuals is premature at this time. Mills need practical operating experience under the new manuals, particularly in the preparation of quality assurance plans. Moreover, the federal regulations on enhanced monitoring should be taken into consideration before adoption of the manuals as a rule. At this time, adoption of the manuals by rule into the SIP is not required to implement the federal operating permit program.

Sincerely,



Douglas S. Morrison
Environmental Counsel

Portland General Electric Company

December 13, 1991
ES-385-91L
Boardman GOV REL 9A

Mark Fisher
Oregon Department of Environmental Quality
Air Quality Division
811 SW Sixth Avenue
Portland OR 97204

Dear Mr. Fisher

The following are comments regarding the ODEQ's proposed amendment to OAR 340-20-047 to revise the existing Source Sampling Manual and add a Continuous Monitoring Manual. At the present time PGE has no comments on the Source Sampling Manual revision since these changes are consistent with the EPA reference methods on source testing.

The proposed Continuous Monitoring Manual is written as a rule, establishing requirements for the installation, calibration, maintenance, quality assurance and operation of continuous emission monitoring (CEM) systems. This rule will affect existing sources and their CEM systems as well as new sources. This rule is essentially the same as being proposed by EPA. However, the promulgation of the proposed EPA rule is scheduled for the latter part of 1992.

Oregon House Bill Number 2175, Section 4 (2), which was approved on 09/29/91, states that ODEQ will not impose rules which exceed the EPA rules. Since the EPA has not promulgated these CEM rules it is premature for the ODEQ to have the Continuous Monitoring Manual incorporated as a rule at this time.

As an alternative, the manual could instead be cited as a guideline document in OAR 340-20-047. In addition, this document and the OAR language should grant exceptions to these CEM guidelines based on approval by the ODEQ.

PGE agrees with basic principles identified in this manual, however, there should be provisions for exceptions. Exceptions should be for the existing sources who already

121 [illegible] Portland, Oregon 97204

have approved CEM systems identified in ODEQ permits, or other sources who want to use alternative methods for showing emission compliance.

During August 1991 EPA held informational sessions with the public on their proposed CEM rules. At these sessions a number of industry representatives expressed concern about the resultant economic burden of being forced to install and operate CEM systems to show compliance. The EPA answered that alternatives to CEMs should be made available, and that the states should work with the industries to form mutually acceptable approaches in showing compliance.

The proposed Continuous Monitoring Manual does not offer any mutually acceptable means for existing sources to "phase in" new CEM equipment which will comply with the manual's requirements. The ODEQ plans to have this manual approved in January 1992 then immediately issue amendments to the permits of all affected sources. This will require the sources to immediately comply with the manual. For some sources this is not physically possible, based on time and economic constraints.

PGE believes that it is premature to include the Continuous Monitor Manual in a final rule at this time. As an alternative this manual could be written as a guideline document. However, this document should allow for exceptions, as approved by the ODEQ. The language of the OARs should also be revised to allow for existing sources and the "phase-in" of new CEM systems to meet the manual's guidelines.

Again PGE thanks the ODEQ for this opportunity to comment on this proposed rule change. If there are any questions related to this matter please call Terry Worrell at 464-8519.

Sincerely,
Dennis Norton, Manager
Environmental Services

bdcem.let

c: Tom Kingston
Loren Mayer
Wayne Townsend

INTERNATIONAL PAPER

DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Control
Date Received: DEC 13 1991
Acknowledged By:

GARDINER PAPER MILL

(503) 271-2184

December 13, 1991

Ms Linda Wishar
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, OR 97204

Re: Comments on Continuous Monitoring Manual

Dear Ms Wishar:

The following comments include items which we discussed after Wednesday's formal hearing on the subject manual. With this document we wish to enter these as formal comments.

- In 3.0, the second sentence states that DEQ will both write the SOP and QAP plans and approve them. I don't think this was the Department intent. We think the source operator should do the writing as stated in the first sentence.

- In 3.0 third sentence it states "All Activities". This is too broad. We suggest the sentence stop after the word procedures.

- In 4.3.2, c, this should be clarified since many monitors have interferences which can not be overcome; however, these can be managed. For example in your example, TRS monitors are actually SO_2 monitors but the stack SO_2 is scrubbed prior to analysis.

- In 4.3.1 A, "commercially available CEMS" are specified. We would like to process our data on our mill wide computer system. We suggest custom software be included.

- In 4.4.4 A, it identifies CPMS related to the source. We assume these are related because some permit limits are production based. We have problems accepting this rigor of QA on some of our production measuring devices. For example measurement of pulp production on a continuous digester is a problem technology has not solved. Black liquor solids burned is another problematic measurement. The DEQ may have a flood of requests for exemptions on process related variables.

- In 5.1 could this read "maintain records of all CMS maintenance activities"?
- In 5.2-C.1 reporting of all 6 minute and one hour averages would be excessive. We should report according to permit regulations.
- 5.2 C 1c Does not make sense.
- 5.2 G This is the third requirement for documenting an excess emission: immediate notification, upset log, now this. We would like the paperwork minimized.
- 5.2 J The form is in appendix C not B as stated.
- In Appendix B, B.3.3-A.2 inclusion and specification of the higher concentration calibration gas could result in a mill being required to stock a gas with hazardous characteristics. This is against DEQ intent to reduce the amount of hazardous materials on mill sites. Specification of the "higher concentration" of calibration gas could be left to DEQ approval in the written method or eliminated if it is not needed.
- In Appendix B, B.3.3-C.4.a.ii the use of nine "reference method tests" to determine the "Relative Accuracy" of an instrument is unnecessarily extensive in some instances. For example, this may be interpreted as requiring 27 passes to evaluate a particulate monitor.

Our general opinion of the manual is that it is excessive. Mills should have more latitude to propose individualized programs which they can justify since DEQ holds the option to approve/disapprove these individual plans.

Sincerely,

Kenneth H. Shaner
Supt. Environmental and
Technical Services

cnb

c: E.E. Locke
J.R. Schaaf
Steve Carter

Patricia P. Kuhn
2419 Hillcrest Road
Medford, OR 97504

10 December 1991

Department of Environmental Quality
Re Air Quality Hearings
Subject -- Major Industrial Source Interim Emission Fee Rule
Subject -- Amendments to SIP to update the existing Source Sampling Manual and to add a Continuous Monitorin Manual.

Gentlemen and women--

Thank you for holding two hearings in Medford in regards to the above matters. I do appreciate it and have always been present if possible. However, family matters take me to Washington during the hearing dates so please accept my letter in lieu of my usual verbal testimony. Thank you.

As a long time member of the public fighting for improved air quality in the Rogue Valley and as a member of the Coalition to Improve Air Quality I would like to underscore the Coalition*s position and recommendations on each of the subjects noted above.

I would like to stress that the fees are too low to fund the new federal Industrial Source Permit Program. Medford has no adequate staffing to even implement rules already on the books and the shameful 1.4 times a year average inspection during the period 1988-90 certainly points to the reasons asthma and respiratory diseases are rising in this area. Industry was obviously catered to when violations were caught as no fines were levied or paid durng 1988-90. Please remedy this situation by ruling for the people and their health. It is only fair that industrial profits be truly earned and not occur because industry does not expend dollars to clean up what they cause to become polluted. It is only fair to incude this as the cost of doing business.

I would like to support the adoption of the newtest and monitoring manuals. So for the incentive for industry not - I repeat not - exceed emission limits, please impose fees high enough to truly motivate industry to stay within permitted levels. Data constantly comes out linking particulates -fine- and summer ozone levels to the onset of asthma in both childre and adults with no prior family history. Several physicians say they feel they can definitely see high pollution levels affecting the health of their patients in adverse ways. Please, since your mandate pertains to protecting the health of citizens of Oregon, exercise your power and responsibility and make the fees higher than presently proposed so that the desired affect, cleaner air and less industrial polluting, is achieved. Thank you for this opportunity.

Patricia K.

569 Scenic Drive
Ashland, OR 97520

December 10, 1991

Air Quality Division
DEQ
Room 9A, 811 SW 6th Avenue
Portland, OR 97404

As a Rogue Valley resident living in an area with severe air quality problems, I am writing to express my views on the two issues on which you are holding hearings in Medford this week.

On the issue of Interim Emission Fees, I am concerned that the proposed fees are too low. The Medford area needs more inspections, which means an increase in staff; however, it does not appear that any additional staff is planned in Medford. Inspections are currently too infrequent.

In regard to updating the existing Source Sampling Manual and adding a Continuous Monitoring Manual, I would like to see continuous monitoring systems implemented at all major industrial sites that are causing pollution problems.

I recently saw the TV special called Red/Day Green/Day on PBS. I hope that all DEQ staff watched this. The air quality problems here are complex, but until asthma patients don't have to spend countless hours indoors during bad periods and until joggers don't have to live with a chronic cough, there needs to be a concerted effort to keep working to clean our air.

Sincerely,

Kathleen A. Muir

Kathleen A. Muir

SIERRA CLUB

Oregon Chapter

DEQ
Air Quality Division
811 SW 6th
Portland, OR 97201
Attn : Linda Wishart
FAX 229-5897

12/13/91

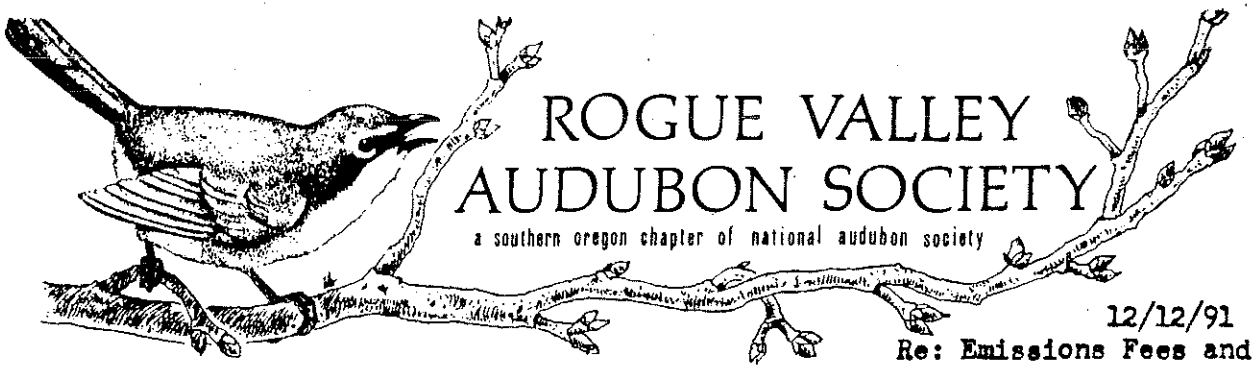
Re : Public Hearing Comments

The Oregon Chapter of the Sierra Club supports the adoption of the DEQ proposed interim emission fees for major sources and the new manuals for source testing and continuous emissions monitoring.

We are concerned that the DEQ obtain adequate funding to develop and maintain an effective monitoring and enforcement program. The interim fee applying only to major sources is a bare bones budget. For the longer term, the Sierra Club would like to see the emissions fees raised to a level that is adequate to operate and maintain an effective air quality program. We feel that not only should the emission fees increase as the program goes on line, but that permits for all sources be raised to derive sufficient funds for DEQ to do a first rate job of monitoring and enforcement. We look forward to working with DEQ on attempting to remove some of the legislative constraints imposed upon the department in HB2175.

Sincerely,

Bob Palzer,
Air Quality Coordinator



ROGUE VALLEY AUDUBON SOCIETY

a southern oregon chapter of national audubon society

12/12/91

Re: Emissions Fees and SIP Manuals

Oregon Dept. of Environmental Quality

Rogue Valley Audubon Society very much appreciates your coming to our air polluted valley to hear our compaaints about conditions here. We wish our local people would go to the trouble of doing some of their complaining here as well as when looking out their windows or talking to neighbors - or, even worse, thinking they can ignore the whole situation which is negatively impacting their own and, particularly, their children's wellbeing.

Rogue Valley Audubon has about 600 members here in the Valley. We strongly support the position of the Coalition to Improve Air Quality, of which we are members.

The emission fees must be high enough to serve not only as a deterant but to provide for proper enforcement here in the Valley through sufficient inspections.

All data on emissions monitoring must be made available to the public as soon as the mechanics of collection and recording allow. Public access and oversight has proved most beneficial in pollution control enforcement throughout the country, not just here. After all, who is more interested in enforcement than thdss impacted?

We believe you should make all haste to produce your new manuals on sampling and continuous monitoring. Since fees are to be based on emissions, we must know what those emissions are. Also, these manuals are essential to getting a system implemented that will keep DEQ informed so proper fines can be levied for exceedences. All of us are greatly stimulated to improve by the threat of financial loss if we don't.

The work of Dr. Palxer and the Sierra Cluv has dom a great deal to clarify the pollution control enforcement situation here in the Valley. If the information they revealed is properly used, it will do a great deal to get us back to healthy air and to improve the public's acceptance and compliance with control of domestice wood smoke.

Thank you for coming here. Please make all haste to get on with the job.

Sincerely,

Frank H. Hirst

Frank H. Hirst
conservation chair

655 Reiten Dr.
Ashland, Or. 97520

Testimony for DEQ Hearings Medford December 12, 1992

Good Morning

My name is Wallace Skyrman of Central Point, and I am the patient represenative for the Southern Oregon Region of American Lung Association of Oregon and on the Steering Committee of the Coalition to Improve Air Quality.

Clean Air in our valley is in short supply and to minimize the effects of air pollution we need fair and across the board enforcement of existing rules and regulations. Enforcement can best occur when all parties know what is expected of them. Some times we get wraped up in the small details and forget our end goal. All sources should have "Tail Pipe" emmision baseline established thru actual tests and not on calculated assumptions. In line with that train of thought enforcement should be weighted to Continuous Emmisions Monitoring that will be on line 24 hours a day, 365 days a year.

Lowest credence should be placed on testing done that is prearranged and done at the convience of the mill operator. Can you imagine testing for blood alcohol content on a drunk driver at a time that is convient to the test taker. Of those companies that are not required to have CEM, DEQ should do everything practical to analytically evalutate the pollution output of these sources. In doing so DEQ would be fair to business and to the public that has to put up with the pollution that is dumped into the common air we must all breathe. Test results should become public record as soon as practical. Practical in this case should be the time it takes a photocopier make copies. Keeping results secret only leads to suspicion and distrust. If you want the population to be concerned on air quality be sure that they see that the big boys are being held accountable.

While I realize that the $13/ton fee was a political compromise I am very disappointed that we are not getting any more manpower to help in enforcement. When you consider the man hours spent in chaising woodstove smoke by local cities and Jackson county having a .9 position at the local DEQ office to cover all of Southwestern Oregon seems negeligent.

Wallace Skyrman
4588 Pacific Hwy North
Central Point, OR 97502-1695

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

EPA

DEC 12 1991

Reply To
Attn Of: AT-082

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
DEC 16 1991
AIR QUALITY DIVISION

Steve Greenwood, Administrator
Air Quality Division
Oregon Department of Environmental Quality
811 S.W. Sixth
Portland, Oregon 97204

Dear Mr. Greenwood:

Thank you for the opportunity to provide comments on revisions to Oregon's Source Sampling Manual and a new Continuous Monitoring Manual.

The Air Compliance & Permits Section along with input from our Environmental Service Division has finished its review of the above material. In general, both manuals represent a clear, concise and well thought out approach to serve their respective purposes.

We do have, however, several comments to offer in the form of a recommendation(s). These comments are strictly recommendations and do not affect the approvability of the manuals. Our comments are enclosed for your review.

Questions concerning our Source Sampling Manual comments should be directed to Sharon Wilson at (206) 553-0205. Questions regarding our continuous Monitoring Manual comments should be directed to Chris James at (206) 553-1194.

Sincerely,

George Abel

George Abel, Chief
Air & Radiation Branch

Enclosure

cc: Ken Brooks, OOO
John Kowalczyk, ODEQ w/enclosure
Wendy Sims, ODEQ
Mark Fisher, ODEQ w/enclosure

Enclosure

Source Sampling Manual

Volume 1, Page 38, 3.9 Visible Emissions

1) EPA Methods 9 and 22 are incorporated by reference. However, the data reduction method of six minute averaging in Method 9 is inconsistent with many opacity standards in place in the state of Oregon. We recommend that some provision be made for data reduction methods consistent with the respective standards.

2) We recommend that a specific reference be made to LIDAR as an approved method of determining opacity. Since LIDAR is Alternate Method 1 for Method 9 and Method 9 is incorporated by reference, LIDAR may be included in the reference. However, a specific reference to this method is preferable.

Continuous Monitoring Manual

Pages 6-7, Section 4.1.1

1) This section discusses the process which sources need to follow in order to correlate particulate mass with opacity. In item 1, the source is told to follow the procedures specified by either EPA or DEQ Method 5. Since opacity consists of all visible particulate and an increasing emphasis has been placed upon measuring PM-10, we would suggest modifying this item such that EPA Reference Methods 201 or 201A, or the DEQ equivalents, are specified.

Appendix D

2) The copy of the 40 CFR Part 60 requirements contained in Appendix D appears to be from The Environmental Reporter. We suggest that the copy of the 40 CFR Part 60 requirements be from the July 1, 1991 edition of the CFR.

Response to Written and Oral Testimony

Attachment F is the Hearing Officer's report for oral testimony provided during the hearings. Attachment H also contains the written testimony received by 5:00 p.m. 12/13/91. Provided below is the response to each of the testimonies.

Dr. Palzer, Kathleen A. Muir, Frank H. Hirst, Patricia P. Kuhn, and Myra Erwin's comments were in support of adopting the rules. Dr. Palzer and Mr. Hirst further commented that the public should have quicker access to the data generated from monitoring activities. They were assured that the information is available to the public once it is received by the DEQ. This has been the policy and will not change. However, these manuals will not provide the public with direct access to information retained on file at the specific sources.

EPA submitted written comments. In general, they were in support of the manuals and provided "recommendations". All of these recommendations have been incorporated into the manuals.

Kenneth Shaner of International Paper submitted written comments. Most of the comments have been incorporated into the Continuous Monitoring Manual. Comments 3, 6, 9, and 11 were not incorporated because they would have changed the intent of the manual. The general comment at the end is discussed below.

Dennis Norton of PGE and Doug Morrison of NWPPA both submitted written comments. A common response is provided because their comments were similar. Their comments and that of Mr. Shaner' general comment can be summarized as follows: They state that adoption of the Continuous Monitoring Manual as a rule is premature and more stringent than Federal regulations (HB 2175 limitation) and would require the sources to abruptly adhere to a new regulation that should be phased in.

The Continuous Monitoring Manual includes EPA regulations currently in 40 CFR Part 60 sections 60.7, 60.11, 60.13, Appendix B, and Appendix F. This manual is not more stringent than the Federal requirements. The manual is more comprehensive than the federal requirements because it covers a greater variety of new and existing sources regulated in the State of Oregon. It contains more information about Quality Assurance programs and plans as an assistance to both the regulator and the regulated so there will be a minimum of confusion. The manual contains requirements for existing Continuous Monitoring Systems (CMS) not covered by the Federal requirements. These requirements have been incorporated to assess the quality of existing CMS that were not subject to Federal performance specifications and in all cases the requirements are no more stringent than the Federal requirements for new CMS.

As stated in the introduction to the Continuous Monitoring Manual, the requirements set forth only apply to a source when a specific regulation or permit stipulates the use of the Manual. The manual, in and of itself, does not require sources to perform continuous monitoring. However, if a State regulation (Federal regulation indirectly) or permit requires a source to conduct continuous monitoring in accordance with the Department's Continuous Monitoring Manual, this manual would apply and the requirements are no more stringent than the Federal requirements. The Federal program is administered in the same way. The specific CMS requirements are written in the sections of 40 CFR cited above, but do not apply to all sources. They only apply to those sources that have regulations requiring CMS and reference the CMS requirements.

In addition, the Continuous Monitoring Manual has been written in part to satisfy the requirements of HB 2175 section 5.3 (a), (d), and (e). Interim Emission Fees rules are being proposed for adoption and these rules include reference to the Continuous Monitoring Manual for the purposes of demonstrating "actual" emissions. Without this document, there would be no criteria for evaluation and acceptance of actual emissions as measured by continuous monitoring systems. Furthermore, the existence of this manual by no means precludes sources from demonstrating compliance and/or actual emissions by procedures other than CMS, provided the regulations and permits allow other procedures.

The requirements of the Continuous Monitoring Manual only apply when and if a regulation or permit requires a source to have a CMS in accordance with the manual. It is not the intention of the Department to immediately make modifications to existing permits to require CMS at all sources. If it is warranted that a permit be modified to require a CMS on an existing source, there is usually a schedule to be met which would allow a source to phase-in the Continuous Monitoring Manual requirements for existing CMS. Some existing CMS that would be immediately affected by this manual are TRS CMS at Pulp and Paper Mills (OAR 340-25-180), SO_2 and NO_x CMS at Ogden Martin (OAR 340-25-875), and CMS being installed in the Medford area (installation due to be complete by June 1, 1991). The Pulp and Paper industry was provided an interim Continuous Emissions Monitoring Manual in February of 1991. This proposed manual incorporates all of the interim manual, so the Pulp and Paper industry has had time to phase-in the requirements. Ogden Martin was provided a draft copy of the proposed manual in June and has been conducting testing to come into line with the requirements of the manuals. The Medford sources were always required to operate CMS in accordance with 40 CFR Part 60 Appendices B and F requirements. Therefore, adoption of the Continuous Monitoring Manual into the State Implementation Plan would not be a sudden or unanticipated action for most sources.

PGE also operates CMS on several sources. The PGE CMS have been subject to some, but not all of the Federal CEM requirements since

the plants were built. Unless the PGE permit is modified or they elect to demonstrate actual emissions with their CMS, the Continuous Monitoring Manual would not apply to them and PGE would continue to monitor emissions using the same criteria as in the past.

Finally, in order to obtain final EPA approval of Oregon's Title V permit program as required by the CAAA of 1990, the Continuous Monitoring Manual will be required to be adopted into the SIP.

Oregon

ENVIRONMENTAL QUALITY COMMISSION

REQUEST FOR EQC ACTION

Meeting Date: 12/13/91
Agenda Item: E & F
Division: HSW
Section: SW Permit/Compl.

SUBJECT:

Solid Waste Disposal Fee: Proposed Adoption of Rule Amendments to Implement $.35/$.31 Per Ton Fee Increase

PURPOSE:

To implement a per-ton disposal fee increase required by 1991 Senate Bill 66 (SB66). The per-ton disposal fee increase is $.35 between January 1, 1992 and December 31, 1993. This will be added to the existing $.50 per ton disposal fee so that, as of January 1, 1992, the total solid waste disposal fee will be $.85 per ton on both domestic and out-of-state solid waste disposed of in Oregon. SB66 drops the fee to $.81 per ton on January 1, 1994.

The rule incorporates language from SB66 making solid waste generated out-of-state and disposed of in Oregon subject to the same per-ton disposal fee as domestic solid waste. This was to ensure that such waste would pay at least the same disposal fee as domestic solid waste, pending resolution of a legal challenge to the $2.25 per ton surcharge on out-of-state solid waste established by the EQC on December 14, 1990. If the $2.25 surcharge on out-of-state waste is eventually held to be valid, persons responsible for paying the surcharge may deduct from the amount due the sum of the per-ton disposal fee already paid to the Department.

ACTION REQUESTED:

___ Work Session Discussion
- ___ General Program Background
- ___ Potential Strategy, Policy, or Rules
- ___ Agenda Item ___ for Current Meeting
- ___ Other: (specify)

___ Authorize Rulemaking Hearing

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

_X_ Adopt Rules
- Proposed Rules — Attachment A
- Rulemaking Statements — Attachment B
- Fiscal and Economic Impact Statement — Attachment C
- Public Notice — Attachment D

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order
- Proposed Order — Attachment ___

___ Approve Department Recommendation
- ___ Variance Request — Attachment ___
- ___ Exception to Rule — Attachment ___
- ___ Informational Report — Attachment ___
- ___ Other: (specify) — Attachment ___

DESCRIPTION OF REQUESTED ACTION:

The Environmental Quality Commission (EQC, Commission) is requested to adopt proposed rule revisions to implement the statutory fee increase, and specify collection procedures.

The Department of Environmental Quality's (DEQ, Department) rule revisions as originally proposed in Agenda Item D, 9/18/91 EQC Meeting, included an additional $.15 per ton fee to provide revenue for environmental cleanup under the Orphan Site Account. The Legislative Emergency Board on September 6, 1991 requested that DEQ provide additional information before imposing the additional amount for the Orphan Site Account. The Department decided to defer the Orphan Site fee for later consideration, while proceeding now with rule revisions to incorporate the statutory $.35/$.31 per ton fee increase; at its September 18, 1991 meeting the EQC concurred with that approach.

AUTHORITY/NEED FOR ACTION:

___ Required by Statute: SB 66 — Attachment E
- Enactment Date: 1991

___ Statutory Authority: _____ — Attachment ___
___ Pursuant to Rule: _____ — Attachment ___
___ Pursuant to Federal Law/Rule: _____ — Attachment ___

___ Other: — Attachment ___

_X_ Time Constraints:

Effective January 1, 1992, SB66 increases the solid waste disposal fee from $.50 to $.85 per ton. While the increase is authorized by statute, current rules and collection procedures should be revised to correspond with the statute.

DEVELOPMENTAL BACKGROUND:

___ Advisory Committee Report/Recommendation — Attachment ___
_X_ Hearing Officer's Report/Recommendations — Attachment F
_X_ Response to Testimony/Comments — Attachment G
_X_ Prior EQC Agenda Items: — Attachment ___
- Agenda Item Q, 12/1/89 EQC Meeting - 50 Cent per Ton Disposal Fee on Solid Waste
- Agenda Item H, 4/6/90 EQC Meeting - Rule Adoption for 50 Cent per Ton Fee on Domestic Solid Waste
- Agenda Item D, 9/18/91 EQC Meeting - Hearing Authorization for Present Rulemaking

___ Other Related Reports/Rules/Statutes: — Attachment ___

_X_ Supplemental Background Information
- Land Use Evaluation Statement — Attachment H
- 9/24/91 Cover Memo from Deanna Mueller-Crispin to Persons Requesting Rulemaking Package — Attachment I

Note: This staff report does not repeat discussions of the issue presented in Agenda Item D, 9/18/91 EQC Meeting, Request for Hearing Authorization.

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The Department held a public hearing in Portland on October 23, 1991, at which no comments were presented. Two letters from local governments were received, commenting on the rule.

1. Inability of permittees to pay fee increase. A comment was received from a county government that the per-ton fee increase will occur in the middle of the county's budget cycle, and it will therefore be unable to meet the scheduled fee increase. The first quarterly payment incorporating the January 1, 1992 fee increase would normally be due to the Department on April 15, 1992. However existing rule allows

the Director to alter the due date for the annual compliance fee if a permittee has a justifiable request. The Department is willing to consider such requests from a permittee for whom the date of the fee increase may cause fiscal dislocations because of the local budget cycle.

2. Alternative methods, such as photogrammetric measurement, of determining amount of waste received. Another county commented that the Department should allow alternative methods of determining weight of solid waste received. Current rule allows permittees to charge per ton or by volume (cubic yards), and establishes conversion factors. The conversion factors were criticized by the county as inaccurate and inequitable. The county specifically recommended allowing the use of photogrammetric measurement as an alternative.

The Department recognizes that there is substantial variation in compaction rates, and thus the conversion factors will not always be entirely accurate. This issue was examined during rulemaking establishing the $.50 per ton disposal fee (Agenda Item H, 4/6/90 EQC Meeting). The Solid Waste Advisory Committee felt that the rates proposed by the Department and now in rule were reasonable.

Photogrammetric measurement uses photographs taken over time to determine the volume of waste received. However, numerous variables such as landfill subsidence, waste settlement, compactive effort and daily cover volumes influence the volume and weight estimates. Consequently the Department does not believe this method is likely to report weight more accurately than the volume (cubic yard) conversions in current rule. The Department also believes that it is in the interest of all larger landfills to weigh solid waste received, and would like to encourage that activity. Therefore, the Department does not propose to allow additional alternative methods of determining amount of solid waste received.

PROGRAM CONSIDERATIONS:

Current rules require most solid waste permittees to submit quarterly solid waste disposal reports together with a $.50 per ton disposal fee for solid waste accepted in the preceding quarter. Sites receiving less than 1,000 tons of solid waste per year may submit reports and fees annually.

The Department proposes to keep the same collection schedule for the disposal fee increase, and will revise its reporting form to incorporate the increase. Permittees will have to submit the increased fee with the April 15, 1992 solid waste disposal reports.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Request adoption of the draft rules as proposed in Attachment A.

2. Rely on statutory direction for the fee increase, and not incorporate the $.35/$.31 per ton disposal fee into rule.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that the Commission adopt Alternative 1.

The $.35/$.31 per ton disposal fee increase is required by statute. However, clarification by rule of how collection is to proceed, and which fees apply to in-state and to out-of-state solid waste will ensure that all parties understand how the Department interprets the statute. This knowledge will assist permittees in administering collection of the fee.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

1991 Senate Bill 66 requires the $.35/$.31 per ton fee increase to fund solid waste management and reduction activities required by that bill. It is consistent with the strategic plan and agency policy.

ISSUES FOR COMMISSION TO RESOLVE:

None, other than those described in the alternative actions previously discussed.

INTENDED FOLLOWUP ACTIONS:

File adopted rules with the Secretary of State's Office.

Notify solid waste disposal site permittees of the rule adoption.

Revise quarterly reporting forms and distribute them to solid waste disposal site permittees to report waste received after January 1, 1992.

Modify program procedures and fact sheets to correspond to the rule changes.

Approved:

Section: _____

Division: Stephanie Hallock

Director: _____

Report Prepared By: Deanna Mueller-Crispin

Phone: 229-5808

Date Prepared: November 25, 1991

dmc
35fee.eqc
11/25/91

ATTACHMENT A

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
ADMINISTRATIVE RULES
DIVISION 61 - SOLID WASTE MANAGEMENT
(11/25/91)

Proposed additions to rule are underlined.
Proposed deletions are in brackets [].

PERMIT FEES

340-61-115

(1) [Beginning July 1, 1984, e] Each person required to have a Solid Waste Disposal Permit shall be subject to a three-part fee consisting of a filing fee, an application processing fee and an annual compliance determination fee as listed in OAR 340-61-120. In addition, each disposal site receiving domestic solid waste shall be subject to an annual recycling program implementation fee as listed in OAR 340-61-120 [Table 1], and a per-ton fee on domestic solid waste as specified in Section 5 of [this rule] OAR 340-61-120. In addition, each disposal site or regional disposal site receiving solid waste generated out-of-state shall pay a surcharge as specified in Section 6 of [this rule] OAR 340-61-120. The amount equal to the filing fee, application processing fee, the first year's annual compliance determination fee and, if applicable, the first year's recycling program implementation fee shall be submitted as a required part of any application for a new permit. The amount equal to the filing fee and application processing fee shall be submitted as a required part of any application for renewal or modification of an existing permit.

(2) As used in this rule unless otherwise specified, the term "domestic solid waste" includes, but is not limited to, residential, commercial and institutional wastes; but the term does not include:

(a) Sewage sludge or septic tank and cesspool pumpings;

(b) Building demolition or construction wastes and land clearing debris, if delivered to disposal sites that are not open to the general public;

(c) Yard debris, if delivered to disposal sites that receive no other residential wastes.

(3) The annual compliance determination fee and, if applicable, the annual recycling program implementation fee must be paid for each year a disposal site is in operation. The fee period shall be the state's fiscal year (July 1 through June 30) and shall be paid annually by July 1. Any annual compliance determination fee and, if applicable, any recycling program implementation fee submitted as part of an application for a new permit shall apply to the fiscal year the permitted disposal site is put into operation. For the first year's

operation, the full fee(s) shall apply if the disposal site is placed into operation on or before April 1. Any new disposal site placed into operation after April 1 shall not owe a compliance determination fee and, if applicable, a recycling program implementation fee until July 1. The Director may alter the due date for the annual compliance determination fee and, if applicable, the recycling program implementation fee upon receipt of a justifiable request from a permittee.

(4) For the purpose of determining appropriate fees, each disposal site shall be assigned to a category in OAR 340-61-120 [Table 1] based upon the amount of solid waste received and upon the complexity of each disposal site. Each disposal site which falls into more than one category shall pay whichever fee is the basis of estimated annual tonnage or gallonage of solid waste received unless the actual amount received is known. Estimated annual tonnage for domestic waste disposal sites will be based upon 300 pounds per cubic yard of uncompacted waste received, 700 pounds per cubic yard of compacted waste received, or, if yardage is not known, one ton per resident in the service area of the disposal site, unless the permittee demonstrates a more accurate estimate. Loads of solid waste consisting exclusively of soil, rock, concrete, rubble or asphalt shall not be included when calculating the annual amount of solid waste received.

(5) Modifications of existing, unexpired permits which are instituted by the Department due to changing conditions or standards, receipt of additional information or any other reason pursuant to applicable statutes and do not require refiling or review of an application or plans and specifications shall not require submission of the filing fee or the application processing fee.

(6) Upon the Department accepting an application for filing, the filing fee shall be non-refundable.

(7) The application processing fee may be refunded in whole or in part when submitted with an application if either of the following conditions exist:

(a) The Department determines that no permit will be required;

(b) The applicant withdraws the application before the Department has granted or denied preliminary approval or, if no preliminary approval has been granted or denied, the Department has approved or denied the application.

(8) All fees shall be made payable to the Department of Environmental Quality.

PERMIT FEE SCHEDULE

340-61-120

(1) Filing Fee. A filing fee of $50 shall accompany each application for issuance, renewal, modification, or transfer of a Solid Waste Disposal Permit. This fee is non-refundable and is in addition to any application processing fee or annual compliance determination fee which might be imposed.

(2) Application Processing Fee. An application processing fee varying between $50 and $2,000 shall be submitted with each application. The amount of the fee shall depend on the type of facility and the required action as follows:

(a) A new facility (including substantial expansion of an existing facility):

(A)	Major facility[1]	$ 2,000
(B)	Intermediate facility[2]	$ 1,000
(C)	Minor facility[3]	$ 300

---

[1]**Major Facility Qualifying Factors:**

-a- Received more than 25,000 tons of solid waste per year; or
-b- Has a collection/treatment system which,, if not properly constructed, operated and maintained, could have a significant adverse impact on the environment as determined by the Department.

[2]**Intermediate Facility Qualifying Factors:**

-a- Received at least 5,000 but not more than 25,000 tons of solid waste per year; or
-b- Received less than 5,000 tons of solid waste and more than 25,000 gallons of sludge per month.

[3]**Minor Facility Qualifying Factors:**

-a- Received less than 5,000 tons of solid waste per year; and
-b- Received less than 25,000 gallons of sludge per month.

All tonnages based on amount received in the immediately preceding fiscal year, or in a new facility the amount to be received the first fiscal year of operation.

(b) Preliminary feasibility only (Note: the amount of this fee may be deducted from the complete application fee listed above):

(A) Major facility ..... $ 1,200
(B) Intermediate facility ..... $ 600
(C) Minor facility ..... $ 200

(c) Permit renewal (including new operational plan, closure plan or improvements):

(A) Major facility ..... $ 500
(B) Intermediate facility ..... $ 250
(C) Minor facility ..... $ 125

(d) Permit renewal (without significant change):

(A) Major facility ..... $ 250
(B) Intermediate facility ..... $ 150
(C) Minor facility ..... $ 100

(e) Permit modification (including new operational plan, closure plan or improvements):

(A) Major facility ..... $ 500
(B) Intermediate facility ..... $ 250
(C) Minor facility ..... $ 100

(f) Permit modification (without significant change in facility design or operation):
All categories ..... $ 50

(g) Permit modification (Department initiated):
All categories..... No fee

(h) Letter authorizations, new or renewal: ..... $ 100

(i) Hazardous substance authorization (Any permit or plan review application which seeks new, renewed, or significant modification in authorization to landfill cleanup materials contaminated by hazardous substances):

(A) Authorization to receive 100,000 tons or more of designated cleanup waste per year..... $50,000

(B) Authorization to receive at least 50,000 but less than 100,000 tons of designated cleanup material per year.$25,000

(C) Authorization to receive at least 25,000 but less than 50,000 tons of designated cleanup material per year.....$12,500

(D) Authorization to receive at least 10,000 but less than 25,000 tons of designated cleanup material per year.....$ 5,000

(E) Authorization to receive at least 5,000 but less than 10,000 tons of designated cleanup material per year.....$ 1,000

(F) Authorization to receive at least 1,000 but less than 5,000 tons of designated cleanup material per year.....$ 250

(3) Annual Compliance Determination Fee (In any case where a facility fits into more than one category, the permittee shall pay only the highest fee):

(a) Domestic Waste Facility:

(A) A landfill which received 500,000 tons or more of solid waste per year: $60,000
(B) A landfill which received at least 400,000 but less than 500,000 tons of solid waste per year: $48,000
(C) A landfill which received at least 300,000 but less than 400,000 tons of solid waste per year: $36,000
(D) A landfill which received at least 200,000 but less than 300,000 tons of solid waste per year: $24,000
(E) A landfill which received at least 100,000 but less than 200,000 tons of solid waste per year: $12,000
(F) A landfill which received at least 50,000 but less than 100,000 tons of solid waste per year: ..... $ 6,000
(G) A landfill which received at least 25,000 but less than 50,000 tons of solid waste per year: ..... $ 3,000
(H) A landfill which received at least 10,000 but less than 25,000 tons of solid waste per year: ..... $ 1,500
(I) A landfill which received at least 5,000 but not more than 10,000 tons of solid waste per year: ..... $ 750
(J) A landfill which received at least 1,000 but not more than 5,000 tons of solid waste per year: ..... $ 200
(K) A landfill which received less than 1,000 tons of solid waste per year: ..... $ 100
(L) A transfer station which received more than 10,000 tons of solid waste per year: ..... $ 500
(M) A transfer station which received less than 10,000 tons of solid waste per year: ..... $ 50
(N) An incinerator, resource recovery facility, composting facility and each other facility not specifically classified above which receives more than 100,000 tons of solid waste per year: ..... $ 8,000

(O) An incinerator, resource recovery facility, composting facility and each other facility not specifically classified above which receives at least 50,000 tons but less than 100,000 tons of solid waste per year: ..... $ 4,000

(P) An incinerator, resource recovery facility, composting facility and each other facility not specifically classified above which receives less than 50,000 tons of solid waste per year: ..... $ 2,000

(Q) A landfill which has permit provisions to store over 100 waste tires -- the above fee or $250 whichever is highest.

(b) Industrial Waste Facility:

(A) A facility which received 10,000 tons or more of solid waste per year: ..... $ 1,500

(B) A facility which received at least 5,000 tons but less than 10,000 tons of solid waste per year: ..... $ 750

(C) A facility which received less than 5,000 tons of solid waste per year: ..... $ 150

(c) Sludge Disposal Facility:

(A) A facility which received 25,000 gallons or more of sludge per month: ..... $ 150

(B) A facility which received less than 25,000 gallons of sludge per month: ..... $ 100

(d) Closed Disposal Site: Each landfill which closes after July 1, 1984: ..... 10% of fee which would be required, in accordance with subsections (3)(a), (3)(b), and (3)(c) above, if the facility was still in operation or $50 whichever is greater.

(e) Facility with Monitoring Wells: In addition to the fees described above, each facility with one or more wells for monitoring groundwater or methane, surface water sampling points, or any other structures or locations requiring the collection and analysis of samples by the Department, shall be assessed a fee. The amount of the fee shall depend on the number of wells (each well in a multiple completion well is considered to be a separate well) or sampling points as follows: ..... $ 250 for each well or sampling point.

(4) Annual Recycling Program Implementation Fee. An annual recycling program implementation fee shall be submitted by each domestic waste disposal site, except transfer stations and closed landfills. This fee is in addition to any other permit fee which may be assessed by the Department. The amount of the fee shall depend on the amount of solid waste received as follows:

(a) A disposal site which received 500,000 tons or more of solid waste per year $20,000

(b) A disposal site which received at least 400,000 but less than 500,000 tons of solid waste per year: $18,000

(c) A disposal site which received at least 300,000 but less than 400,000 tons of solid waste per year: $14,000

(d) A disposal site which received at least 200,000 but less than 300,000 tons of solid waste per year: ..... $ 9,000

(e) A disposal site which received at least 100,000 but less than 200,000 tons of solid waste per year: ..... $ 4,600

(f) A disposal site which received at least 50,000 but less than 100,000 tons of solid waste per year: ..... $ 2,300

(g) A disposal site which received at least 25,000 but less than 50,000 tons of solid waste per year: ..... $ 1,200

(h) A disposal site which received at least 10,000 but less than 25,000 tons of solid waste per year: ..... $ 450

(i) A disposal site which received at least 5,000 but less than 10,000 tons of solid waste per year: ..... $ 225

(j) A disposal site which received at least 1,000 but less than 5,000 tons of solid waste per year: ..... $ 75

(k) A disposal site which received less than 1,000 tons of solid waste per year: ..... $ 50

(5) Per-ton fees on domestic solid waste. Each solid waste disposal site that receives domestic solid waste, except transfer stations, shall submit to the Department of Environmental Quality [a] the following fees [of 50 cents per] for each ton of domestic solid waste received at the disposal site[.]:

(a) [This per-ton fee shall apply to all domestic solid waste received after June 30, 1990] A per-ton fee of 50 cents.

(b) From January 1, 1992, to December 31, 1993, an additional per-ton fee of 35 cents.

(c) Beginning January 1, 1994 the additional per-ton fee established in subsection (5)(b) of this rule shall be reduced to 31 cents.

(d) [(b)] Submittal schedule:

(A) [This] These per-ton fees shall be submitted to the Department quarterly, or on the same schedule as the waste volume reports required in the disposal permit, [or quarterly,] whichever is

[more] less frequent. Quarterly remittals shall be due on the 15th day of the month following the end of the calendar quarter.

(B) Disposal sites receiving less than 1,000 tons of solid waste per year shall submit the fees annually on July 1, beginning in 1991. If the disposal site is not required by the Department to monitor and report volumes of solid waste collected, the fees shall be accompanied by an estimate of the population served by the disposal site.

(e) [(c)] As used in this section, the term "domestic solid waste" does not include:

(A) Sewage sludge or septic tank and cesspool pumpings;

(B) Building demolition or construction wastes and land clearing debris, if delivered to a disposal site that is limited to those purposes;

(C) Source separated recyclable material, or material recovered at the disposal site;

(D) Waste going to an industrial waste facility;

(E) Waste received at an ash monofill from a resource recovery facility; or

(F) Domestic solid waste which is not generated within this state.

(f) [(d)] For solid waste delivered to disposal facilities owned or operated by [generated within the boundaries of] a metropolitan service district, the [50 cent per ton disposal] fees established in this section shall be levied on the district, not on the disposal site.

(6) Per-ton fee on solid waste generated out-of-state. Each solid waste disposal site or regional disposal site that receives solid waste generated out-of-state shall submit to the Department a per-ton fee. The per-ton fee shall be the sum of the per-ton fees established for domestic solid waste in subsections (5)(a), (5)(b) and (5)(c) of this rule.

(a) The per-ton fee shall become effective on the dates specified in section (5) of this rule and shall apply to all solid waste received after July 1, 1991.

(b) This per-ton fee shall apply to each ton of out-of-state solid waste received at the disposal site, but shall not include source separated recyclable materials, or material recovered at the disposal site.

(c) Submittal schedule: This per-ton fee shall be submitted to the Department quarterly, or on the same schedule as the waste volume

reports required in the disposal permit, whichever is less frequent. Quarterly remittals shall be due on the 15th day of the month following the end of the calendar quarter.

(d) If, after final appeal, the surcharge established in section (7) of this rule is held to be valid and the state is able to collect the surcharge, the per-ton fee established in this section shall no longer apply, and the person responsible for payment of the surcharge may deduct from the amount due any fees paid to the Department on solid waste generated out-of-state under section 6 of this rule.

(7) [(6)] Surcharge on disposal of solid waste generated out-of-state. Each solid waste disposal site or regional solid waste disposal site that receives solid waste generated out-of-state shall submit to the Department of Environmental Quality a per-ton surcharge of $2.25. This surcharge shall apply to each ton of out-of-state solid waste received at the disposal site.

(a) This per-ton surcharge shall apply to all solid waste received after January 1, 1991.

(b) Submittal schedule: This per-ton surcharge shall be submitted to the Department quarterly, or on the same schedule as the waste volume reports required in the disposal permit, [or quarterly,] whichever is [more] less frequent. Quarterly remittals shall be due on the 15th day of the month following the end of the calendar quarter.

(c) This surcharge shall be in addition to any other fee charged for disposal of solid waste at the site.

(d) This surcharge on out-of-state solid waste shall be collected at the first disposal facility in Oregon receiving the waste, including but not limited to a solid waste land disposal site, transfer station or incinerator, and remitted directly to the Department on the schedule specified in this rule.

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REVISED

ATTACHMENT B

RULEMAKING STATEMENTS
for
Proposed Revisions to Existing Rules
Pertaining to Fees on Domestic and Out-of-State Solid Waste

OAR Chapter 340, Division 61

Pursuant to ORS 183.335, these statements provide information on the intended action to adopt a rule for implementation of the solid waste tipping fee increase required by Senate Bill 66.

STATEMENT OF NEED:

Legal Authority

The 1991 Oregon Legislature passed Senate Bill 66 which imposes an additional per-ton fee on domestic solid waste effective January 1, 1992, and requires out-of-state solid waste to pay the same fee as domestic solid waste (effective July 1, 1991).

Need for the Rule

The Legislature established the per-ton fee increase on solid waste. It specified that the per-ton fee on out-of-state solid waste would be collected in the same manner as the per-ton fee on domestic solid waste. However, the two universes of solid waste are not identical; some kinds of domestic solid waste are exempted by statute from the fee. These exemptions do not apply to out-of-state solid waste. Eligibilities and collection procedures should be clarified by rule. The proposed rule will implement Senate Bill 66, and make existing rule conform to legislative requirements.

Principal Documents Relied Upon

a. 1991 Senate Bill 66.
b. Oregon Administrative Rules, Chapter 340, Division 61.

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REVISED

ATTACHMENT C

FISCAL AND ECONOMIC IMPACT STATEMENT

I. Introduction

Proposed Actions:

1991 Senate Bill 66 (SB 66) raises the existing $.50 per-ton disposal fee on domestic solid waste by $.35 per ton on waste disposed of between January 1, 1992 and December 31, 1993, for a total of $.85 per ton. After January 1, 1994 the per-ton fee increase will be reduced from $.35 to $.31 (or a total of $.81 per ton). SB 66 also makes solid waste generated out-of-state and disposed of in Oregon subject to the same fee schedule, beginning on July 1, 1991.

The proposed rule specifies procedures for collecting the per-ton disposal fees, and describes which wastes are subject to the fees. Certain wastes are exempt by statute from the per-ton fee on domestic solid waste; however, no such statutory exemptions exist for solid waste generated out-of-state.

Overall Economic Impacts:

DEQ estimates that the $.35 per-ton fee increase on domestic solid waste will generate about $1 million in the 1991-93 biennium. The revenue will be used for enhanced recycling activities including household hazardous waste collection. In addition, the disposal fee on out-of-state waste is expected to generate about $785,000 in the biennium, with revenue to be used to continue existing solid waste programs.

The statute allows landfill operators and garbage haulers to pass the cost of the solid waste disposal fee through to their customers. As such, the major impact of the fee will fall on solid waste generators and ratepayers (see "General Public").

The collection and payment procedures are identical to existing requirements, so they are not expected to require additional resources from the landfill operator to implement. Some administrative expense would be incurred in gaining approval to raise rates, and implementing any resulting new fee structure. Both landfill operators and garbage haulers may have to raise rates to cover the fee increases. Expenses incurred by a landfill operator might range from a few hundred dollars if filing is relatively simple, to as much as $5,000, including legal costs if the fee increase requires adopting an ordinance.

II. General Public

Current fees for garbage service vary widely by vendor and geographic area. Per-ton monthly rates for one-can service range from about $5.50 to $17.

The general public will be affected by increased rates for disposal of solid waste because landfill operators and garbage haulers are allowed to pass through the effect of the fee increase to their ratepayers. The per-ton fee increases will go into effect on January 1, 1992. The Department estimates that the effect of the per-ton disposal fee increase will cost a typical household with one-can per week garbage service an additional 33 cents per year.

It is also possible the fee increase will serve as some disincentive for generation of garbage requiring disposal in landfills. In particular, given use of revenue derived from the fee for solid waste recycling activities, the fee increase may have positive economic benefits in terms of promoting reductions in the generation of nonrecyclable solid waste.

III. Out-of-State Impact

The general public outside of Oregon who send their solid waste to Oregon for disposal may also be affected. Such waste became subject to a surcharge of $2.25 per ton on January 1, 1991. However, this surcharge is being challenged in court, and DEQ is under injunction not to collect the $2.25 surcharge. This resulted in domestic (in-state) solid waste being subject to a per-ton disposal fee not paid by out-of-state solid waste. To remedy that situation, the 1991 Legislature in SB 66 determined that out-of-state waste should pay the same disposal fees as domestic solid waste, effective July 1, 1991, until the legal issues are resolved. Out-of-state waste will pay $.50 per ton between July 1, 1991 and December 31, 1991, and $1 per ton thereafter. Thus out-of-state solid waste generators have to pay more than they would if the $2.25 per ton surcharge is held to be unconstitutional, but less than they would pay under the surcharge.

IV. Small Business

Small businesses would be affected in the same way as the general public. However, the impact on businesses will be proportionately greater than for residential garbage customers because as a general rule commercial (and other large volume generators of solid waste) pay less per unit measure for garbage services. A typical range for commercial garbage rates is between $30 and $70 a month for weekly collection of a one-yard container. DEQ estimates that the rate increase to businesses will still be relatively insignificant (less than 2% additional costs for garbage service).

V. Large Business

Large businesses would also be affected in the same way as the general public and small businesses, except that waste going to an industrial waste facility is exempt from the disposal fee on domestic solid waste.

VI. Local Governments

Local governments would be affected in the same way as the general public and as small or large businesses which own or operate landfills or garbage hauling companies. Much of the disposal fee for domestic solid waste will be used for household hazardous waste collection which will benefit citizens of local governments; DEQ's budget includes about $450,000 for this purpose.

VII. Other State Agencies

DEQ has received authority for 10 new positions to carry out activities funded by the domestic and out-of-state solid waste disposal fees. The Forestry Department will receive $37,000 from the domestic solid waste fee for programs to encourage use of recycled materials and for composting activities. As generators of solid waste, other state agencies would be affected by modestly increased collection service rates in the same way as the general public.

pertonfi.two

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

Hearing Date: 10/23/91
Comments Due: 10/31/91

WHO IS AFFECTED: General public disposing of solid waste, other generators of solid waste (including generators in states other than Oregon who send solid waste to Oregon for disposal), owners and operators of solid waste landfills, garbage haulers, local governments.

WHAT IS PROPOSED: The Department proposes to modify its rules to implement a per-ton disposal fee increase required by 1991 Senate Bill 66.

WHAT ARE THE HIGHLIGHTS: The proposed amendments would increase the per-ton disposal fee on domestic and out-of-state solid waste by $.35 for solid waste and recycling activities as specified in SB 66, effective January 1, 1992; and require that the fee be submitted quarterly, on the same schedule that per-ton fees are currently submitted to the Department of Environmental Quality.

HOW TO COMMENT: A public hearing will be held before a hearings officer at:

10 am to noon
Wednesday, October 23, 1991
Department of Environmental Quality
Hearing Room 3A
811 S.W. 6th Avenue
Portland, Oregon

Written or oral comments on the proposed rule changes may be presented at the hearing. Written comments may also be sent to the Department of Environmental Quality, Solid Waste Permits and Compliance Section, 811 S.W. 6th Avenue, Portland, OR 97204, and must be received no later than 5:00 p.m., Thursday, October 31, 1991.

Copies of the complete proposed rule package including rulemaking statements may be obtained from the DEQ Hazardous and Solid Waste Division at 229-6922. For further information, contact Deanna Mueller-Crispin, Hazardous and Solid Waste Division at 229-5808. Or call toll-free at 1-800-452-4011.

WHAT IS THE NEXT STEP: The Environmental Quality Commission may adopt rule revisions identical to the ones proposed, adopt modified rules as a result of testimony received, or may decline to adopt rules. The Commission will consider the proposed rule revisions at its November 1991 meeting.

811 S.W. 6th Avenue
Portland, OR 97204

11/1/86

FOR FURTHER INFORMATION: SW\RPT\SK3717

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

66th OREGON LEGISLATIVE ASSEMBLY--1991 Regular Session

D-Engrossed
Senate Bill 66

Ordered by the House June 17
Including Senate Amendments dated March 4 and April 25 and House Amendments dated June 7 and June 17

Printed pursuant to Senate Interim Rule 213.28 by order of the President of the Senate in conformance with pre-session filing rules, indicating neither advocacy nor opposition on the part of the President (at the request of Joint Interim Committee on Environment, Energy and Hazardous Materials)

SUMMARY

The following summary is not prepared by the sponsors of the measure and is not a part of the body thereof subject to consideration by the Legislative Assembly. It is an editor's brief statement of the essential features of the measure.

Establishes statewide integrated solid waste management program. Establishes solid waste reduction goals and rates. Specifies duties of local governments on solid waste reduction. Establishes procurement requirements for state and public agencies for reused or recycled products. Modifies waste disposal rates and schedules. Establishes education requirements. Creates Recycling Markets Development Council and Oregon Newsprint Recycling Task Force. Establishes minimum content requirements for newsprint and labeling requirements for plastic containers. Appropriates money. **Limits expenditures.**

Declares emergency, effective July 1, 1991.

A BILL FOR AN ACT

Relating to solid waste; creating new provisions; amending ORS 182.375, 279.731, 279.733, 279.739, 459.005, 459.015, 459.165, 459.175, 459.180, 459.185, 459.190, 459.235, 459.294 and 459.995; appropriating money; limiting expenditures; and declaring an emergency.

Be It Enacted by the People of the State of Oregon:

SECTION 1. ORS 459.292, 459.293, 459.294 and 459.295 and sections 2, 4, 5 and 13a of this Act are added to and made a part of ORS 459.165 to 459.200.

SECTION 2. (1) It is the goal of the State of Oregon that by January 1, 2000, the amount of recovery from the general solid waste stream shall be at least 50 percent.

(2) In addition to the requirements of ORS 459.165, the "opportunity to recycle" shall include the requirements of subsection (3) of this section, which shall be implemented on or before July 1, 1992, by using the following program elements:

(a) Provision of at least one durable recycling container to each residential service customer by not later than January 1, 1993.

(b) On-route collection at least once each week of source separated recyclable material to residential customers, provided on the same day that solid waste is collected from each customer.

(c) An expanded education and promotion program conducted to inform citizens of the manner and benefits of reducing, reusing and recycling material. The program shall include:

(A) Provision of recycling notification and education packets to all new residential, commercial and institutional collection service customers that includes at a minimum the materials collected, the schedule for collection, the way to prepare materials for collection and reasons that persons should separate their material for recycling;

(B) Provision of quarterly recycling information to residential, commercial and institutional collection service customers that includes at a minimum the materials collected, the schedule for

NOTE: Matter in **bold face** in an amended section is new; matter *[italic and bracketed]* is existing law to be omitted.

1991 Act.

(b) The commission may grant all or part of a variance under this section.

(c) Upon granting a variance, the commission may attach any condition the commission considers necessary to carry out the provisions of ORS 459.015, 459.165 to 459.200 and 459.250.

(d) In granting a variance, the commission must find that:

(A) Conditions exist that are beyond the control of the applicant;

(B) Special conditions exist that render compliance unreasonable or impractical; or

(C) Compliance may result in a reduction in recycling.

[*(9)*] **(2) An affected person may apply to the commission to extend the time permitted under** ORS 459.005, 459.015, 459.035, 459.165 to 459.200, 459.250, 459.992 and 459.995 for providing for all or a part of the opportunity to recycle or submitting a recycling report to the department. The comunission may:

(a) Grant an extension upon a showing of good cause;

(b) Impose any necessary conditions on the extension; or

(c) Deny the application in whole or in part.

SECTION 12a. ORS 459.235 is amended to read:

459.235. (1) Applications for permits shall be on forms prescribed by the department. An application shall contain a description of the existing and proposed operation and the existing and proposed facilities at the site, with detailed plans and specifications for any facilities to be constructed. The application shall include a recommendation by the local government unit or units having jurisdiction and such other information the department deems necessary in order to determine whether the site and solid waste disposal facilities located thereon and the operation will comply with applicable requirements.

(2) [*Subject to the review of the Executive Department and the prior approval of the appropriate legislative review agency,*] The commission [*may*] **shall** establish a schedule of fees for disposal site permits. The permit fees contained in the schedule shall be based on the anticipated cost of filing and investigating the application, of issuing or denying the requested permit and of an inspection program to determine compliance or noncompliance with the permit. The permit fee shall accompany the application for the permit.

(3) In addition to the fees imposed under subsection (2) of this section, the commission shall establish a schedule of annual permit fees for the purpose of implementing this 1991 Act. The fees shall be assessed annually and shall be based on the amount of solid waste received at the disposal site in the previous calendar year.

[*(3)*] **(4)** If the application is for a regional disposal facility, the applicant shall file with the department a surety bond in the form and amount established by rule by the commission. The bond or financial assurance shall be executed in favor of the State of Oregon and shall be in an amount as determined by the department to be reasonably necessary to protect the environment, and the health, safety and welfare of the people of the state. The commission may allow the applicant to substitute other financial assurance for the bond, in the form and amount the commission considers satisfactory.

SECTION 13. ORS 459.294 is amended to read:

459.294. (1) In addition to the permit fees provided in ORS 459.235, the commission shall establish a schedule of fees [*to begin July 1, 1990,*] for all disposal sites that receive domestic solid waste except transfer stations. The schedule shall be based on the estimated tonnage or the actual

tonnage, if known, received at the site and any other similar or related factors the commission finds appropriate. The fees collected pursuant to the schedule shall be sufficient to assist in the funding of programs to reduce the amount of domestic solid waste generated in Oregon and to reduce environmental risks at domestic waste disposal sites.

(2) For solid waste [*generated within the boundaries of*] **delivered to disposal facilities owned or operated by** a metropolitan service district, the schedule of fees, but not the permit fees provided in ORS 459.235, established by the commission in subsection (1) of this section shall be levied on the district, not the disposal site.

(3) The commission also may require submittal of information related to volumes and sources of waste or recycled material if necessary to carry out the activities in ORS 459.295.

(4)(a) A local government that franchises or licenses a domestic solid waste site shall allow the disposal site to pass through the amount of the fees established by the commission in subsection (1) of this section to the users of the site.

(b) If a disposal site that receives domestic solid waste passes through all or a portion of the fees established by the commission in subsection (1) of this section to a solid waste collector who uses the site, a local government that franchises or licenses the collection of solid waste shall allow the franchisee or licensee to include the amount of the fee in the solid waste collection service rate.

(5) The fees generated under subsection (1) of this section shall be sufficient to accomplish the purposes set forth in ORS 459.295 but shall be no more than 50 cents per ton.

(6) There shall be a fee on solid waste generated out of state. This fee shall be an amount equal to the sum of the fees established under subsection (1) of this section and section 13a of this 1991 Act and shall be collected in the same manner as fees established under subsection (1) of this section and section 13a of this 1991 Act.

SECTION 13a. (1) From January 1, 1992, to December 31, 1993, the schedule of fees as established by the Environmental Quality Commission under ORS 459.294 (1) is increased by 35 cents per ton and shall be deposited into the General Fund and credited to an account of the Department of Environmental Quality. Such moneys are continuously appropriated to the department to implement the provisions of this 1991 Act.

(2) Beginning January 1, 1994, the schedule of fees as established by the commission under ORS 459.294 is increased by 31 cents per ton and shall be deposited into the General Fund and credited to an account of the department. Such moneys are continuously appropriated to the department to implement the provisions, excluding section 51, of this 1991 Act.

SECTION 13b. The Department of Environmental Quality shall study funding alternatives for the management of household hazardous waste including the provisions of section 51 of this Act, and make recommendations for long-term funding to the Sixty-seventh Legislative Assembly.

SECTION 14. ORS 459.995 is amended to read:

459.995. (1) In addition to any other penalty provided by law:

(a) Any person who violates ORS **459.165 to 459.200,** 459.205, 459.270 or the provisions of ORS 459.180, 459.188, 459.190, 459.195, 459.710 or 459.715 or the provisions of ORS 459.386 to 459.400 **or section 29, 34 or 34a to 34c of this 1991 Act** or any rule or order of the Environmental Quality Commission pertaining to the disposal, collection, storage or reuse or recycling of solid wastes, as defined by ORS 459.005, shall incur a civil penalty not to exceed $500 a day for each day of the violation.

(b) Any person who violates the provisions of ORS 459.420 to 459.426 shall incur a civil penalty

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY **INTEROFFICE MEMORANDUM**

DATE: November 12, 1991

TO: Environmental Quality Commission

FROM: Brooks Koenig, Hearings Officer

SUBJECT: Public Hearing; Proposed Rule Amendment to Implement a Per-ton Disposal Fee Increase Required by 1991 Senate Bill 66; Portland, Oregon, 10:00 a.m., October 23, 1991

On October 23, 1991, a public hearing regarding proposed rule changes to implement a per-ton disposal fee increase required by 1991 Senate Bill 66 was held in the Department of Environmental Quality headquarters, Conference Room 3A, 811 SW 6th Avenue, Portland, Oregon.

Three individuals attended the meeting, but no one provided testimony. The meeting was opened at 10:15 a.m., recessed at 11:00 a.m., and re-opened and closed at 12:00 noon.

The hearings officer received no written testimony.

ATTACHMENT G

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: November 7, 1991

TO: Environmental Quality Commission

FROM: Deanna Mueller-Crispin

SUBJECT: Written Testimony, and Response to Public Comments

Written testimony was received by the Department in response to a request for public comment on proposed revisions to existing rules to implement a per-ton disposal fee increase required by 1991 Senate Bill 66 (SB66). The written testimony consisted of a letter from the Wallowa County Court, and a letter from Dave Leonard, Douglas County Director of Public Works, copies of which are attached.

No oral testimony was received at the hearing held by the Department on the proposed rules. The following Department "responses" relate to comments received in the two letters.

Comment: The per-ton fee increase will occur in the middle of Wallowa County's budget year, without advance warning so that the County was not able to address the issue in its solid waste budget. Wallowa County will be unable to meet the scheduled per ton disposal fees and increased permit fees.

Response: The per-ton disposal fee increase to be implemented by the proposed rule was passed by the 1991 Legislature in SB66, and goes into effect, by law, on January 1, 1992. Unfortunately, this date may fall in the middle of the annual budget cycle for some solid waste permittees such as local governments. The Department notified all solid waste permittees of this coming fee increase on July 9, 1991, shortly after SB66 was passed, to give them as much advance notice as possible. The Department is willing to work with permittees for whom the date of the fee increases may cause fiscal dislocations.

Comment: Douglas County recommended that funding from the $.35 per ton disposal fee increase be allocated to

increasing Department staffing to provide effective implementation of SB66.

Response: The Department's budget does allocate the funds raised by the $.35 solid waste disposal fee increase to staffing for implementation of SB66.

Comment: Department rules should allow solid waste permit operators to select the most accurate methodology (depending on local operations) to determine the amount of the disposal fee. Douglas County suggests that the per-cubic-yard conversion factors now allowed in Department rule as an alternative to tonnage are not accurate, and disfavor the County. Too many variables enter into determining the weight of "compacted" and "uncompacted" solid waste for the Department's conversion factors to be accurate throughout the state. The County recommends that the Department allow landfill owners to use more germane standards under a "variance" procedure.

Response: As the comments suggest, the Department allows solid waste permittees who charge their customers by volume (cubic yard) to use that measure to calculate the per-ton fee. Conversion factors have been established by rule (300 pounds per cubic yard of uncompacted waste, or 700 pounds per cubic yard of compacted waste). If yardage is not known, a third option is to assume one ton of solid waste per year for each resident in the service area of the disposal site "unless the permittee demonstrates a more accurate estimate."

During rulemaking which established the original $.50/ton disposal fee, the Department received testimony from some landfill operators that the Department's proposed conversion rate of 700 pounds per compacted cubic yard of solid waste should be lower. In discussions with the Solid Waste Advisory Committee at that time, the Department found that there is substantial variation in the compaction rate (and therefore in weight per cubic yard) based primarily on the quality of the compacting equipment. Newer equipment will often exceed 700 pounds per cubic yard, and older equipment will often fall short. Nevertheless, the Advisory Committee felt that 700 pounds is a reasonable figure.

The Department believes that it is in the interest of all larger landfills to weigh solid waste received. That is the most accurate method of determining the amount of waste accepted. Allowing a "variance" procedure for alternate methods of determining amount of waste accepted would not encourage a landfill to begin weighing garbage.

Comment: Douglas County recommended use of photogrammetric measurement to quantify volumes disposed of. Valid conversion factors could then be used to determine weights.

Response: Photogrammetric measurement consists of comparing photographs taken over time of a site which collects materials such as solid waste. The difference in volume of the materials as shown in the photographs is calculated, and may be converted into weight. However, numerous variables such as landfill subsidence, waste settlement, compactive effort and daily cover volumes will influence the volume and weight estimates for accumulated fill.

The Department believes that because of the number of assumptions and variables involved in calculating waste volumes by photogrammetric methods, this method is not likely to report weight more accurately than the volume (cubic yard) conversions in existing rule. Therefore the Department does not recommend including photogrammetric methods in rule as an approved method of determining weight.

Attachments

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WALLOWA COUNTY COURT

Office of the Judge
Phone: 503-426-3586
State of Oregon 101 South River Street, Room 202 Enterprise, Oregon 97828

October 11, 1991

Oregon Dept. of Environmental Quality
Solid Waste Permits and Compliance Section
811 S.W. 6th Avenue
Portland, Oregon 97204

SUBJECT: Comments on Proposed Rules Changes

Dear Commission Members:

These written comments are being submitted to you by the Wallowa County Court in response to the proposed rule changes which will govern per-ton disposal fees on domestic solid waste, to wit:

Wallowa County is a large county comprised of farm, grazing, and timber lands and divided by deep canyons and mountains. It has a total population of 6800 of which 5000 could be classified urban.

In 1978, Wallowa County enacted a solid waste ordinance and obtained a loan from DEQ to develop and implement a solid waste plan. At that time we tried to set fees that would permit us to pay for the leased property as well as pay salaries and retirement of the DEQ loan. It has been a continuing struggle to keep the solid waste program afloat.

As of January 1, 1991, we were saddled with a $.50 per ton "tipping" fee for every man, woman and child in the county which amounts to $850 each quarter. We increased our fees to try to cope with this increase. The adoption of this fee was only about six months old when we were informed that this fee would be increase by 70% to $.85 per ton. Then in the same breath, we were informed that the increase would be 100% or $1.00 per ton. All of these increases occurred in the middle of our budget year without advance warning so that we did not have an opportunity to address this issue in the solid waste budget. The budget isn't really relevant since we could not find the resources anyway to cover over $8,000 in outstanding obligations plus the anticipated $6,800 in "tipping fees".

We would also like to comment on the letter that we received from C.W. Donaldson on August 23, 1991, wherein we were informed of these increases. In his letter, he stated that the money generated from these increased fees would be used to hire additional staff to administer an expanded program. We certainly don't need any more programs to try to cope with and are opposed to any further expansion of DEQ staff for this purpose.

We would, at this time, like to place the Commission on notice that we will be unable to meet the scheduled per ton disposal fees and increased permit fees.

It seems to us that it is about time that DEQ along with other state agencies come to realize that the sparsely populated counties east of the Cascades cannot tango to the same tune as the west side. Apparently, no consideration is given to our concerns or our inability to pay and pay and pay and - - - - - -

Sincerely,

WALLOWA COUNTY COURT

Patricia R. Combes, Judge

Les Carlsen, Commissioner

Pat Wortman

VHR:dms

DOUGLAS COUNTY

PUBLIC WORKS DEPARTMENT

Administration
Room 219 / Courthouse
Roseburg, Oregon 97470
(503) 440-4208

Engineering and Construction
Room 304 / Courthouse
Roseburg, Oregon 97470
(503) 440-4481

Operations and Maintenance
2586 N.E. Diamond Lake Blvd.
Roseburg, Oregon 97470
(503) 440-4268

Water Resources Survey
Room 103 / Justice Building
Roseburg, Oregon 97470
(503) 440-4255

October 30, 1991

Oregon Department of Environmental Quality
Solid Waste Permits and Compliance Section
811 SW Sixth Avenue
Portland, OR 97204-1390

RE: Comments to October 23, 1991 Hearing

Gentlemen:

The Douglas County Public Works Department hereby registers the following comments pursuant to the October 23, 1991 hearing which are due October 31, 1991.

<u>$0.35 Per Ton Increase</u>
The County takes no issue with the $0.35 per ton fee increase appropriated to the Department of Environmental Quality for implementing provisions of SB66.

It is strongly suggested that the Environmental Quality Commission allocate these funding sources predominately for increasing department staffing to a level which will provide for effective follow through of SB66 implementation. Shortcomings in staffing, particularly in the hazardous and solid waste division, have been commonly known. With the advent of funding, it is timely that DEQ match its staffing resources to current and projected work load generated by the volumes of environmental legislation.

<u>Method of Fee Determination</u>
The County proposes that the Department, in amending its administrative rules, consider provisions for alternative methods of fee determination. Latitude should be accorded owners of solid waste landfills in selection of a methodology that most closely matches the accuracy in local solid waste disposal operations. Alternative methods would have to be justified to the satisfaction of the Department, of course.

Specifically, the County proposes to use annual photogrammetric measurement to quantify volumes disposed. Weights will then be determined using valid conversion factors. This practice is commonplace on other types of projects and has demonstrated a high degree of accuracy.

Additional opportunity to utilize volume to weight conversion standards that more accurately reflects local conditions is desirable. It is strongly suspected that the 300/700 pound/cy conversion factors economically favor DEQ and unfairly disfavor Douglas County. The department should provide the opportunity for the landfill owner to request a variance to these standards based upon documentation acceptable to DEQ.

Uncompacted weight of solid waste varies characteristically and seasonally in a given locale. Compacted weights can vary significantly in accordance with age, capability, and operating procedure of the equipment utilized by the County franchise waste collection service providers.

Where conditions can vary on a landfill to landfill basis, one set of standards should not be applied throughout the state without opportunity for landfill owners to request variance and illustrate that other standards are more germane.

It is believed that this is the intent of the language inherent in Section 13.(1), Senate Bill 66, D Engrossed, when it states that "The schedule shall be based on the estimated tonnage or the actual tonnage, if known, received at the site and any other similar or related factors the Commission finds appropriate."

Please give careful consideration to the foregoing comments. Thank you for this opportunity to submit them.

Sincerely,

Dave Leonard

Dave Leonard, P. E.
Director of Public Works

cc: Ron Baker - Roseburg DEQ

DML:JWH:cm

jh/deqfee.inc

DEQ LAND USE EVALUATION STATEMENT

1. **Explain the purpose of the proposed program/rules.**
To implement changes in the per-ton solid waste disposal fee made by the 1991 Oregon Legislature (by SB66) and to partially finance the orphan site account established by the 1989 Legislature.

2. **Does the proposed program/rules affect existing rules/programs/activities that have been determined land use programs in the DEQ State Agency Coordination(SAC) Program?**

yes____ no XX

If yes, identify existing program/rule/activity_____

If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed program/rule? yes____ no_____ if no, explain_____

If no, apply criteria 1. and 2., from the other side of this form and from Section III Subsection 2 of the SAC program document, to the proposed program/rules. In the space below, state if the proposed rules/programs are considered programs affecting land use. Be specific in citing the criteria and reasons for the determination. The regulations increase fees for solid waste. They do not directly impact land use or land use programs. The regulations do not impact section III, subsection 2 of the SAC, including actions 7-10 which pertain to the Environmental Cleanup Division and the Hazardous and Solid Waste Division.

3. **If the proposed program/rules have been determined a land use program, under 2. above, and are not subject to existing land use compliance and compatibility procedures, explain the new procedures that will be used to ensure compliance and compatibility.**

Jeffrey A Christian — Policy & Program, ECD — 6/12/91
DEQ staff signature — Section, Division — Date

ATTACHMENT I

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY **INTEROFFICE MEMORANDUM**

DATE: September 24, 1991

TO: Interested Persons

FROM: Deanna Mueller-Crispin, Solid Waste Permits and Compliance Section for Deanna Mueller-Crispin

SUBJECT: Proposed Solid Waste Rules (OAR 340-61): Per-ton Disposal Fee

The Department of Environmental Quality (DEQ) is proposing to amend its rules to incorporate a $.35 per ton increase in the solid waste disposal fee required by 1991 Senate Bill 66. This fee increase is effective on January 1, 1992.

DEQ originally intended to adopt an additional $.15 per ton fee on solid waste to provide revenue for environmental cleanup of "orphan" solid waste sites. The Legislative Emergency Board at its meeting on September 6 requested that DEQ provide additional information to the E-Board's November meeting before imposing the additional per-ton "orphan site" fee. Consequently, DEQ will delay public hearing and consideration of the additional $.15 per ton fee. This supercedes the fee discussion in the attached staff report to the Environmental Quality Commission on the proposed per-ton solid waste fee increase, which includes both the $.35 and the additional $.15 per ton increases.

DEQ is proceeding to accept public comment on the attached draft rule, implementing the $.35 per ton fee increase. The attached rulemaking packet includes the staff report, the draft rule, rulemaking statements and a fiscal impact statement on the rule as proposed. Documents mentioned in the staff report referring to the Orphan Site fee are not included.

Oregon

ENVIRONMENTAL QUALITY COMMISSION

REQUEST FOR EQC ACTION

Meeting Date: January 23, 1992
Agenda Item: G
Division: Air Quality
Section: Program Operations

SUBJECT:

Proposed adoption of new Interim Emission Fee Rules.

PURPOSE:

Rules are proposed to provide the Department and affected permittees (major sources with Air Contaminant Discharge Permits) with criteria and procedures to calculate air emissions and interim fees based on actual or permitted air emissions for calendar years 1991 and 1992.

ACTION REQUESTED:

___ Work Session Discussion
___ General Program Background
___ Potential Strategy, Policy, or Rules
___ Agenda Item ___ for Current Meeting
___ Other: (specify)

___ Authorize Rulemaking Hearing
_X_ Adopt Rules

Proposed Rules	Attachment A
Rulemaking Statements	Attachment B
Fiscal and Economic Impact Statement	Attachment C
Public Notice	Attachment D
Land Use Statement	Attachment E
List of Members on the Industrial Source Advisory Committee	Attachment F

___ Issue a Contested Case Order
___ Approve a Stipulated Order

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

___ Enter an Order
- ___ Proposed Order — Attachment ___
- ___ Approve Department Recommendation
- ___ Variance Request — Attachment ___
- ___ Exception to Rule — Attachment ___
- ___ Informational Report — Attachment ___
- ___ Other: (specify) — Attachment ___

DESCRIPTION OF REQUESTED ACTION:

The Clean Air Act Amendments of 1990 require the Department to submit a Title V industrial source permit program to the Environmental Protection Agency by November 1993. In response to the Clean Air Act Amendments, the 1991 Oregon legislature passed House Bill 2175, amending ORS 468A, which authorizes the Department to collect interim emission fees to fund development of the Title V program.

The interim emission fee rules will apply to some of the permittees subject to Title V (EPA Part 70) of the Clean Air Act. Pollutants regulated solely as hazardous air pollutants will be subject to the Title V program, however, they are not subject to the interim emission fees. The Department estimates that 150 sources will be affected by the interim emission fees.

ORS 468A establishes interim emission fees at $13 per ton. The interim fees apply to PM_{10} (respirable particulate), Oxides of Nitrogen, Sulfur Dioxide, Volatile Organic Compounds and pollutants regulated under Section 111 (New Source Performance Standards) of the Clean Air Act such as Total Reduced Sulfur and Fluoride. They do not apply to Carbon Monoxide or toxic air pollutants regulated under Section 112 of the Clean Air Act. Permittees will not be charged for emissions greater than 4,000 tons for any one pollutant.

ORS 468A gives permittees the option of paying fees based on either actual emissions or permitted emissions. Fees are due on July 1, 1992 and July 1, 1993 for the 1991 and 1992 calendar year emissions, respectively. The interim fees apply in addition to other current permit fees, including existing compliance determination and application processing fees. The rules allow sources the flexibility to opt for a permitted or actual fee basis on an emission point/pollutant basis, rather than one plant-wide basis.

Fees are required on 1991 emissions, even though OAR 468A was amended during 1991. Since these rules impose fees retroactively on past emissions and methods were not in place for determining actual emissions for fee purposes, special criteria are necessary to quantify emissions for 1991. These criteria allow more flexibility for estimation of actual emissions. For 1992, the proposed rules require actual emissions to be calculated under any of the following options: continuous emission monitoring, source testing, and material balance. Additionally, sources may use emission factors developed for either a particular source or a source category and approved by the Department.

Criteria for continuous emission monitoring and source testing are found in the Department's Continuous Emission Monitoring Manual and Source Test Manual, referred to in the proposed rules. The Department will propose adoption of these manuals for inclusion in the State Implementation Plan in January, 1992.

The Department proposes to include all emissions in the calculation of actual emissions. These include normal process emissions: fugitive emissions, upset emissions, routine maintenance emissions, and equipment malfunction emissions.

In accordance with ORS 468A the proposed rules provide additional fees for late payment and underpayment.

The proposed rules also include amendments to the Department's enforcement rules. One amendment would make submitting falsified actual emission fee data a Class One violation. The three proposed additions to Class Two violations include: failure to pay an interim emission fee, substantial underpayment of an interim emission fee, and submitting inaccurate actual interim emission fee data.

AUTHORITY/NEED FOR ACTION:

X	Required by Statute: ORS 468A (HB2175)	Attachment ___
	Enactment Date: _____	
___	Statutory Authority: _____	Attachment ___
___	Pursuant to Rule: _____	Attachment ___
X	Pursuant to Federal Law/Rule: Federal Clean Air Act Amendments of 1990	Attachment ___
___	Other:	Attachment ___

___ Time Constraints:

Rules are needed now to enable sources to pay 1991 emission fees on time and to provide the opportunity for sources to collect 1992 data as specified in the rules.

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
_X_	Hearing Officer's Report/Recommendations	Attachment _G_
_X_	Response to Testimony/Comments	Attachment _H_
___	Prior EQC Agenda Items: (list)	Attachment ___
___	Other Related Reports/Rules/Statutes:	Attachment ___
___	Supplemental Background Information	Attachment ___

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

In September 1991 the Director appointed the Industrial Source Advisory Committee to assist the Department in the development of this major new program. At meetings in October and November committee members reviewed and commented on the draft rules, resulting in numerous revisions. Members expressed general support for the proposed rules. Some committee members remain concerned about the source testing criteria. The Department convened the Advisory Committee in December for a special technical work session and invited other interested persons to attend. The focus of this meeting was on the source testing criteria. The Department and those in attendance developed concepts to address the concerns and the final rules include language drafted to implement the concepts.

The Advisory Committee met on January 6, 1992 and members reviewed and discussed revisions made in response to public comments. Members recommended minor amendments to the rules which Department staff has incorporated. The members voted unanimously to recommend that the EQC adopt the interim fee rules.

The proposed rules result in higher fees for major sources.

The rule criteria for monitoring 1991 actual emissions allow sources to use methods currently in use. Some of these methods are based on estimates rather than measurement of actual emissions. Therefore, the 1992 actual emission rule criteria require permittees electing to pay fees based on

actual emissions to do more comprehensive monitoring and reporting of emissions.

The extra criteria will involve additional expense for sources that elect to pay on actuals but are not already performing these activities. The Department believes these extra criteria are important for a number of reasons. First, since not all sources currently collect actual emission data, the 1992 actual emission criteria, which requires this data, will create a more equitable system. Second, the rule criteria are representative of the increased responsibility sources will have under the new Clean Air Act. Third, the increase in data on actual emissions under varying operating conditions will assist the Department's emission inventory and airshed planning efforts.

Air Contaminant Discharge Permits include Plant Site Emission Limits (PSEL). The PSEL specifies the amount of an air pollutant a source may emit in one year. Some sources wanted the option of paying emission fees based on a pro-rated PSEL, such as one-half the PSEL if the source operated for six months of the year. HB2175 requires sources to pay interim emission fees based on either actual emissions or the plant site emission limit. In light of this the Department does not believe statutory authority exists to allow sources to prorate the PSEL. Prorating the PSEL would allow sources to pay for part of the year based on actual emissions and part of the year based on permitted emissions. It would be inaccurate for the large number of sources that have the capacity to operate above their average annual permitted rates.

Permittees may find that there are numerous benefits to enhanced emission monitoring which include: an increase in operational efficiency; a reduction in the likelihood of violating permit standards; a shortened response time for non-complying situations; and a reduction in emission fees.

PROGRAM CONSIDERATIONS:

The purpose of the interim emission fees is to pay for development of the Title V program. Resources are needed to fund 9.36 new staff during the 1991-1993 biennium to develop and submit the new federal operating permit program to EPA by November 1993. This includes staff positions needed to calculate, review, assess, and process the air emission fees and emission documentation.

The Department's workload will increase with the number of permittees requesting to pay interim emission fees based on actual emissions. If the additional resources are inadequate, the Department's review of emission data may be delayed or existing program staff assistance may be required.

Actual emission data documented by permittees will provide the Department with better data for modeling and planning.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Adopt the rules as proposed.

2. The Department considered using the same criteria for calculating actual emissions for calendar 1991 and 1992 emissions. However, the Department believes more specific methods for 1992 data collection are needed and are consistent with the new requirements under the Clean Air Act.

3. The Department considered not adopting the interim emission fee rules, however, without the fee revenue the Department would be unable to meet the statutory requirements and deadlines in the Clean Air Act and HB2175.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends the Commission adopt alternative 1. Criteria for 1991 calendar year emissions would be those the sources have been using to collect emission data. However, in keeping with the data collection requirements of the new Clean Air Act Amendments, and the Department's interest in emission data that is a reliable representation of "actual" emissions, the Department believes more rigorous criteria for calendar year 1992 emissions should be adopted in rule.

This relatively pro forma action proceeds the Department's discussion of long term fees and funding levels with the Advisory Committee, interested persons, the legislature and EPA.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

The Department believes the final rules are consistent with the Department's Strategic Plan, agency policy and the legislative policy and intent in adopting House Bill 2175.

ISSUES FOR COMMISSION TO RESOLVE:

Does the Commission believe the data required by the rules is acceptable and verifiable to document actual emissions, and therefore consistent with the statute, and appropriate as the first stage of emission fee implementation?

INTENDED FOLLOWUP ACTIONS:

The Department will be informing major sources subject to these rules of the new requirements through mailings and workshops. Additionally, the implementation plan includes actions to be taken by Department staff, both existing and new, to implement the rules.

Approved:

Section: Wendy L Sims

Division: [signature] Greenwood

Director: Fred Hansen

Report Prepared By: Sara Laumann

Phone: 229-5517

Date Prepared: January 10, 1992

SLL:a
RPT\AH40402
January 10, 1992

ATTACHMENT A

DRAFT

Major Source Interim Emission Fee Rules

OAR 340-20-505	Purpose, Scope and Applicability
OAR 340-20-510	Policy
OAR 340-20-512	Definitions
OAR 340-20-515	Pollutants Subject to Interim Emission Fees
OAR 340-20-517	Exclusions
OAR 340-20-525	References
OAR 340-20-530	Single Election for each Assessable Emission for 1991 and 1992
OAR 340-20-535	Emission Reporting
OAR 340-20-537	Emission Reporting and Interim Emission Fee Payment Procedures
OAR 340-20-545	Calculated Emissions for 1991
OAR 340-20-550	Actual Emissions for 1992
OAR 340-20-555	Calculating Emissions from Continuous Monitoring Systems for 1992
OAR 340-20-560	Calculating Emissions using Material Balance for 1992
OAR 340-20-565	Calculating Volatile Organic Compounds Emissions Using Material Balance for 1992
OAR 340-20-570	Calculating Sulfur Dioxide Emissions Using Material Balance for 1992
OAR 340-20-575	Verified Emission Factors Using Source Testing
OAR 340-20-590	Late and Underpayment Fees
OAR 340-12-050	Air Quality Classification of Violations (Amendments)

PURPOSE, SCOPE AND APPLICABILITY

340-20-505 (1) The purpose of these rules is to provide permittees, major sources, and the Department of Environmental Quality with the criteria and procedures to calculate interim emissions and fees based on calculated, actual and permitted air emissions only for calendar years 1991 and 1992.

NOTE: These interim fees will be used to provide resources to cover the costs of the Department of Environmental Quality to develop an approvable federal operating permit program in accordance with the Federal Clean Air Act and ORS 468A.

(2) The rules apply to major sources as defined in OAR 340-20-512(14). The permittee may elect to pay interim emission fees on either calculated emissions, actual emissions or permitted emissions for each assessable emission.

(3) The interim emission fees are in addition to fees required by OAR 340-20-155 and 340-20-165.

NOTE: Assessment of fees for calendar years 1993 and beyond is subject to Environmental Protection Agency approval of the Title V program developed by the Department pursuant to Oregon Laws 1991 Chapter 752, ORS 468A, enacted by the 1991 Oregon Legislature in response to the federal Clean Air Act Amendments of 1990.

POLICY

340-20-510 Considering that these rules are retroactive and that methods were not in place for determining actual emissions for fee purposes, the Environmental Quality Commission recognizes that special criteria are necessary to quantify emissions for 1991. More specific methods for data collection are consistent with the new requirements under the Clean Air Act Amendments of 1990 and appropriate for calendar year 1992 emissions.

DEFINITIONS

340-20-512 As used in OAR 340-20-505 through 340-20-590, unless otherwise required by context:

(1) "Actual Emission" means all emissions including but not limited to routine process emissions, fugitive emissions, excess emissions from maintenance, startups and shutdowns, equipment malfunctions, and other activities.

(2) "Assessable Emission" means a unit of emissions for which the major source will be assessed a fee. It includes an emission of a pollutant as defined in OAR 340-20-515 from one emission point and from an area within a major source. For routine process emissions, emissions of each pollutant in OAR 340-20-515 from each emission point included in an air contaminant discharge permit shall be an assessable emission.

(3) "Constant Process Rate" means the average variation in

process rate for the calendar year is not greater than plus or minus ten percent of the average process rate.

(4) "Continuous Monitoring Systems" means sampling and analysis, in a timed sequence, using techniques which will adequately reflect calculated emissions and actual emissions or concentrations on a continuing basis in accordance with the Department's Continuous Monitoring Manual, and includes continuous emission monitoring systems and continuous parameter monitoring systems.

(5) "Calculated Emissions" means procedures used to estimate emissions for the 1991 calendar year.

(6) "Department" means Department of Environmental Quality.

(7) "Emission" means a release into the atmosphere of any regulated pollutant.

(8) "Emission Estimate Adjustment Factor (EEAF)" means an adjustment applied to an emission factor to account for the relative inaccuracy of the emission factor.

(9) "Emission Factor" means an average value which relates the quantity of a pollutant released to the atmosphere with the activity associated with the release of that pollutant.

(10) "Emission Reporting Form" means a paper or electronic form developed by the Department that shall be completed by the permittee to report calculated emissions, actual emissions or permitted emissions for interim emission fee assessment purposes.

(11) "Fugitive Emissions" means emissions of any air contaminant which escape to the atmosphere from any point or area that is not identifiable as a stack, vent, duct, or equivalent opening.

(12) "Interim Emission Fee" means $13 per ton for each assessable emission subject to emission fees under OAR 340-20-515 for calculated, actual or permitted emissions released during calendar years 1991 and 1992.

(13) "Late Payment" means an interim emission fee which is postmarked after the due date.

(14) "Major Source" or "Source" means a permitted stationary source or group of stationary sources located within a contiguous area and under common control or any stationary facility or source of air pollutants which directly emits, or is permitted to emit:

(a) One hundred tons per year or more of any regulated pollutant, or

(b) Fifty tons per year or more of a volatile organic compound and is located in a serious ozone nonattainment area.

(15) "Material Balance" means a procedure for calculating emissions based on the difference in the amount of material added to a process and the amount consumed and/or recovered from a process.

(16) "Particulate Matter" means all solid or liquid material, other than uncombined water, emitted to the ambient air as measured by a Department approved method in accordance with the Department's Source Sampling Manual.

(17) "Permit" or "Air Contaminant Discharge Permit" means a written permit issued by the Department, pursuant to OAR 340-20-140 through 340-20-175 and includes the application review report.

(18) "Permitted Emissions" means each assessable emission portion of the Plant Site Emission Limit.

(19) "Person" means the United States Government and agencies thereof, any state, individual, public or private corporation, political subdivision, governmental agency, municipality, industry, co-partnership, association, firm, trust, estate, or any other legal entity.

(20) "Plant Site Emission Limit (PSEL)" means the total mass emissions per unit time of an individual air pollutant specified in a permit for a major source. The PSEL may consist of more than one assessable emission.

(21) "PM_{10} Emissions" means emissions of finely divided solid or liquid material, other than uncombined water, with an aerodynamic diameter less than or equal to a nominal 10 micrometers, emitted to the ambient air as measured by applicable reference methods in accordance with the Department's Source Sampling Manual.

(22) "Regulated Pollutant" means PM_{10}, Sulfur Dioxide (SO_2), Oxides of Nitrogen (NO_X), Lead (Pb), Volatile Organic Compounds (VOC), and Carbon Monoxide (CO); and any other pollutant subject to a New Source Performance Standard (NSPS) such as Total Reduced Sulfur (TRS) from kraft pulp mills and Fluoride (F) from aluminum mills.

(23) "Source Category" means a group of major sources determined by the Department to be using similar raw materials and having equivalent process controls and pollution control equipment.

(24) "Source Test" means the average of at least three test runs during operating conditions representative of the period for which emissions are to be calculated, conducted in accordance with the Department's Source Sampling Manual or other Department approved methods.

(25) "Substantial Underpayment" means the lesser of ten percent (10%) of the total interim emission fee for the major source or five hundred dollars.

(26) "Total Reduced Sulfur (TRS)" means the sum of the sulfur compounds hydrogen sulfide, methyl mercaptan, dimethyl sulfide, and dimethyl disulfide, and any other organic sulfides present expressed as hydrogen sulfide (H_2S).

(27) "Verified Emission Factor" means an emission factor approved by the Department and developed for a specific major source or source category and approved for application to that major source by the Department.

(28) "Volatile Organic Compound or "VOC" means any organic compound which participates in atmospheric photochemical reactions to form ozone; that is, any precursor organic compound which would be emitted during use, application, curing or drying of a surface coating, solvent, or other material. Excluded from this category are those compounds which the U.S. Environmental Protection Agency classifies as being of negligible photochemical reactivity which includes methane, ethane, methylene chloride, 1,1,1-trichloroethane (methyl chloroform), trichlorofluoromethane (CFC-11), dichlorofluoromethane (CFC-12), chlorodifluoromethane

(CFC-22), trifluoromethane (FC-23), trichlorotetrafluoroethane (CFC-114), and chloropentafluoroethane (CFC-115).

POLLUTANTS SUBJECT TO INTERIM EMISSION FEES

340-20-515 (1) The Department shall assess interim emission fees on assessable emissions up to and including 4,000 tons per year of each of the following pollutants from each major source:

(a) PM_{10} or TSP as specified in section (2) of this rule,
(b) SO_2,
(c) NO_x,
(d) VOC,
(e) Lead,
(f) Fluoride,
(g) TRS, and
(h) Any other pollutant subject to New Source Performance Standards.

(2) If the interim emission fee on PM_{10} emissions is based on the Plant Site Emission Limit for a source that does not have a Plant Site Emission Limit for PM_{10}, the Department shall assess the interim emission fee on the Plant Site Emission Limit for total suspended particulates.

(3) The permittee shall calculate each actual assessable emission separately.

(4) The permittee shall pay interim emission fees on all assessable emissions from each emission source included in the permit or application review report.

EXCLUSIONS

340-20-517 (1) The Department shall not assess interim emission fees on:

(a) Pollutants regulated solely as hazardous air pollutants as defined in Section 112 of the federal Clean Air Act, and

(b) Newly permitted major sources that have not begun initial operation.

(c) A former permittee who has permanently ceased operation, as indicated by cancellation of the air contaminant discharge permit prior to the time of interim emission fee assessment by the Department.

(2) The Department shall not assess interim emission fees on carbon monoxide. However, sources that emit or are permitted to emit 100 tons or more per year of carbon monoxide are subject to the interim emission fees on all other regulated pollutants regardless of the amount of emissions of those regulated pollutants.

(3) The Department shall not assess interim emission fees if there are no emissions from an assessable emission for the entire calendar year.

REFERENCES

340-20-525 Reference documents used in OAR 340-20-505 through 340-20-590 include the Department of Environmental Quality Source Sampling Manual and the Department of Environmental Quality Continuous Monitoring Manual.

ELECTION FOR EACH ASSESSABLE EMISSION FOR 1991 AND 1992

340-20-530 (1) The permittee shall make an election to pay interim emission fees on either permitted or actual emissions for each year for each assessable emission and notify the Department in accordance with OAR 340-20-537.

(2) For calendar year 1991 the permittee shall elect to pay interim emission fees on either:

(a) Calculated emissions, OAR 340-20-545,

(b) Permitted emissions, OAR 340-20-535 and 340-20-537, or

(c) Actual emissions, OAR 340-20-535, 340-20-537 and 340-20-550.

(3) For calendar year 1992 the permittee shall elect to pay interim emission fees on either:

(a) Actual emissions, OAR 340-20-535, 340-20-537, and 340-20-550, or

(b) Permitted emissions, OAR 340-20-535 and 340-20-537.

(4) If a permittee fails to notify the Department of the election for an assessable emission, the Department shall assess interim emission fees for the assessable emission based on permitted emissions.

EMISSION REPORTING

340-20-535 (1) For the purpose of assessing interim emission fees the permittee shall submit the following information on an Emission Reporting Form(s) developed by the Department for each assessable emission in tons per year, reported as follows:

(a) PM_{10} as PM_{10},

(b) Sulfur Dioxide as SO_2,

(c) Oxides of Nitrogen (NO_X) as Nitrogen Dioxide (NO_2),

(d) Total Reduced Sulfur (TRS) as H_2S in accordance with OAR 340-25-150(15),

(e) Volatile Organic Compounds (VOC) as:

(A) VOC for material balance emission reporting, or

(B) Propane (C_3H_8), unless otherwise specified by permit, or Oregon Administrative Rules, or a method approved by the Department, for emissions verified by source testing.

(f) Fluoride as F.

(g) Lead as Pb.

(2) The permittee electing to pay interim emission fees on actual and calculated emissions shall report emissions as follows:

(a) Round up to the nearest whole ton for emission values 0.5 and greater, and

(b) Round down to the nearest whole ton for emission values less than 0.5.

(3) The permittee electing to pay interim emission fees on either actual or calculated emissions shall:

(a) Submit complete information on the Emission Reporting Forms including all assessable emissions, emission points and sources, and

(b) Submit documentation necessary to support emission calculations.

(4) The permittee electing to pay on calculated and actual emissions for an assessable emission shall report total emissions including those emissions in excess of 4,000 tons for each assessable emission.

(5) The permittee electing to pay on permitted emissions for an assessable emission shall submit a statement to the Department that they shall pay on the Plant Site Emission Limit in effect for the calendar year in which they are paying, in accordance with OAR 340-20-535 and 340-20-537.

(6) If more than one permit is in effect for a calendar year for a major source, the permittee electing to pay on permitted emissions shall pay on the Plant Site Emission Limit(s) in effect for each day of that calendar year.

EMISSION REPORTING AND INTERIM FEE PROCEDURES

340-20-537 (1) The permittee shall submit the original Emission Reporting Form(s), including the permittees election for each assessable emission, to the Department by the later of either February 28 or the due date for the annual permit report for the previous calendar year.

(2) The permittee may request that information, other than emission information, submitted pursuant to OAR 340-20-505 through 340-20-590 be treated as confidential by the Department in accordance with Oregon Revised Statutes 192.410 through 192.505.

(3) The permittee shall allow the Department representatives access to the plant site and pertinent records at all reasonable times for the purposes of making inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emission discharge records and otherwise conducting all necessary functions related to the interim emission fees. The permittee shall maintain all records on site for two years from the date specified in Section (6) of this rule.

(4) The Department may accept information submitted or request additional information from the permittee. The permittee shall submit additional calculated or actual emission information requested by the Department within thirty (30) days of receiving a request from the Department. The Department may approve a request from a permittee for an extension of time of up to thirty days to submit additional information under extenuating circumstances.

(5) If the Department determines the actual or calculated emission information submitted for any assessable emission does not meet the criteria in OAR 340-20-505 through 340-20-590, the Department shall assess the interim emission fee on the permitted emission for that assessable emission.

(6) The permittee shall submit interim emission fees payable to the Department by the later of:

(a) July 1 for interim emission fees from the previous calendar year, or

(b) Thirty (30) days after the Department mails the interim emission fee invoice.

(7) Department acceptance of interim emission fees shall not indicate approval of data collection methods, calculation methods, or information reported on Emission Reporting Forms. If the

Department determines initial interim emission fee assessments were inaccurate or inconsistent with OAR 340-20-505 through 340-20-590, the Department may assess or refund interim emission fees up to two years after interim emission fees are received by the Department.

(8) The Department shall not revise a Plant Site Emission Limit solely due to an interim emission fee payment.

(9) Permittees operating major sources pursuant to OAR 340-22-100 through OAR 340-22-220 may submit the emission reporting information in the annual permit report format provided that:

(a) The permittee receives Department approval prior to the annual permit report due date and prior to February 28 of the year the fee is due,

(b) The report is received by the Department by the due date specified in the permit, and

(c) All information required by OAR 340-20-505 through 340-20-590 is provided, including an indication of whether the permittee is electing to pay on permitted, calculated, or actual emissions for each assessable emission.

CALCULATED EMISSIONS FOR 1991

340-20-545 To calculate actual emissions for 1991, the permittee shall use one of the following methods:

(1) OAR 340-20-575(10), and:

(a) The emission factor(s) and other criteria used by the Department and documented in the permit or application review report to establish Plant Site Emission Limits to calculate assessable emission(s), or

(b) Emission Factors developed from at least one Department approved source test conducted since 1985.

(2) Material balance data.

(3) Emission data from a continuous monitoring system if:

(a) The system was installed and maintained and is capable of continuously monitoring pollutant emissions,

(b) Emissions data were recorded at a minimum of once per hour, and

(c) Data completeness was at least ninety percent (90%) of the scheduled operating time based on hourly data, otherwise OAR 340-20-555(2) shall be used to determine emissions.

(4) Alternative emission factors approved by the Department as more representative of actual source configuration and operation in 1991, provided that the alternative factors are at least as accurate as methods used for compliance demonstration.

ACTUAL EMISSIONS FOR 1992

340-20-550 A permittee electing to pay on actual emissions for calendar year 1992 emissions shall obtain emission data and calculate emissions using one of the following methods:

(1) Continuous monitoring systems used in accordance with OAR 340-20-555,

(2) Verified emission factors developed for that particular source in accordance with OAR 340-20-575 for:,

(a) Each assessable emission, or

(b) A combination of assessable emissions if there are multiple sources venting to the atmosphere through one common emission point (eg. stack). The permittee shall have a verified emission factor plan approved by the Department prior to conducting the source testing in accordance with OAR 340-20-575,

(3) Material balances calculated in accordance with OAR 340-20-560, OAR 340-20-565, or OAR 340-20-570, or

(4) Verified emission factors for source categories developed in accordance with OAR 340-20-575(11).

CALCULATING EMISSIONS FROM CONTINUOUS MONITORING SYSTEMS FOR 1992

340-20-555 (1) If the permittee elects to report emission data using monitoring systems, the permittee shall use a monitor installed and operated in accordance with the Department's Continuous Monitoring Manual for data collected from April 1, 1992 through December 31, 1992. For data collected from January 1, 1992 through March 31, 1992, the permittee shall use data collected in accordance with permit conditions, applicable Department rules, or the Department's Continuous Monitoring Manual.

(2) If the permittee has continuous monitoring data that comprises less than ninety percent (90%) of the plant operating time, the actual emissions during the period when the continuous monitoring system was not operating shall be determined from 90 percentile continuous monitoring data.

CALCULATING EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-560 The permittee may elect to use material balance to calculate actual emissions:

(1) If the amount of material added to a process less the amount consumed and/or recovered from a process can be documented in accordance with Department approved permit procedures and in accordance with OAR 340-20-505 through 340-20-590.

(2) The permittee shall only apply material balance calculations to VOC or sulfur dioxide emissions in accordance with OAR 340-20-565 and OAR 340-20-570 respectively.

CALCULATING VOLATILE ORGANIC COMPOUND EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-565 The permittee may determine the amount of VOC emissions for an assessable emission by using material balance.

(1) The permittee using material balance to calculate VOC emissions shall determine the amount of VOC added to the process, the amount of VOC consumed in the process and/or the amount of VOC recovered in the process by testing in accordance with 40 Code of Federal Regulations (CFR) Part 60 EPA Method 18, 24, 25, a material balance method, or an equivalent plant specific method specified in the Air Contaminant Discharge Permit using the following equation:

$$VOC_{tot} = VOC_{add} - VOC_{cons}$$

Where:

VOC_{tot}	=	Total VOC emissions, tons
VOC_{add}	=	VOC added to the process, tons
VOC_{cons}	=	VOC consumed and/or recovered from the process, tons

CALCULATING SULFUR DIOXIDE EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-570 (1) Sulfur dioxide emissions for major sources may be determined by measuring the sulfur content of fuels and assuming that all of the sulfur in the fuel is oxidized to sulfur dioxide.

(2) The permittee shall use ASTM methods to measure the sulfur content in fuel for each quantity of fuel burned.

(3) The permittee shall determine sulfur dioxide emissions for each quantity of fuel burned, determining quantity by a method that is reliable for that source, by performing the following calculation:

$$SO_2 = \%S/100 \times F \times 2$$

Where:

SO_2	=	Sulfur dioxide emissions for each quantity of fuel, tons
%S	=	Percent sulfur in the fuel being burned, % (w/w).
F	=	Amount of fuel burned, based on a quantity measurement, tons
2	=	Pounds of sulfur dioxide per pound of sulfur

(4) For coal-fired steam generating units the following equation shall be used by permittees to account for sulfur retention:

$$SO_{2adj} = SO_2 \times 0.97$$

Where:

SO_{2adj}	=	Sulfur dioxide adjusted for sulfur retention (40 CFR Part 60, Appendix A, Method 19, Section 5.2)
SO_2	=	Sulfur dioxide emissions from each quantity burned (OAR 340-20-570(3))

(5) Total sulfur dioxide emissions for the year shall be the sum total of each quantity burned calculated in accordance with 340-20-570(3) divided by 2000 pounds per ton.

(6) The permittee shall keep records of the fuel received and consumed and the quantity and sulfur content for two years from the date specified in OAR 340-20-537(6).

VERIFIED EMISSION FACTORS USING SOURCE TESTING

340-20-575 (1) To verify emission factors used to calculate assessable emissions the permittee shall:

(a) Utilize source testing data collected in accordance with appropriate procedures or Department guidance in effect at the time the data was collected, for source test data collected from 1985 through 1991, or

(b) Perform source testing in accordance with the Department's Source Sampling Manual or other methods approved by the Department for source tests conducted in 1992. Source tests shall be conducted in accordance with testing procedures on file at the Department and the pretest plan submitted at least fifteen (15) days in advance and approved by the Department. All test data and results shall be submitted for review to the Department within thirty (30) days after testing.

> NOTE: It is recommended that the permittee notify the Department and obtain pre-approval of the Emission Factor source testing program prior to or as part of the submittal of the first source test notification.

(2) The permittee shall conduct or have conducted at least three compliance source tests each consisting of at least three individual test runs for a total of at least nine test runs.

(3) The permittee shall monitor and record or have monitored and recorded applicable process and control device operating data.

(4) The permittee shall perform or have performed a source test either:

(a) In each of three quarters of the year with no two successive source tests performed any closer than thirty (30) days apart, or

(b) At equal intervals over the operating period if the permittee demonstrates and the Department approves that:

(A) The process operates or has operated for part of the year, or

(B) The process is or was not subject to seasonal variations.

(5) The permittee shall conduct or have conducted the source tests to test the entire range of operating levels. At least one test shall be conducted at minimum operating conditions, one test at normal or average operating levels, and one test at anticipated maximum operating levels. If the process rate is constant, all tests shall be conducted at that rate. The permittee shall submit documentation to the Department demonstrating a constant process rate.

(6) The permittee shall calculate or have calculated an emission factor for each source test by dividing each test run emissions, in pounds per hour, by the applicable process rate during the source test run. At least nine emission factors shall be plotted against the respective process rates and a regression analysis performed to determine the best fit equation and the correlation coefficient (R^2). If the correlation coefficient is less than 0.50, which would indicate that there is a relatively weak relationship between emissions and process rates, the arithmetic average and standard deviation of at least nine emission factors shall be determined..

(7) The permittee shall determine the Emissions Estimate Adjustment Factor (EEAF) as follows:

(a) If the correlation coefficient (R^2) of the regression analysis is greater than 0.50, the EEAF shall be $1+(1-R^2)$.

(b) If the correlation coefficient (R^2) is less than 0.50, the EEAF shall be:

$$EEAF = 1 + SD/EF_{avg}$$

Where:

SD = Standard Deviation

EF_{avg} = Average of the Emission Factors

(8) The permittee shall determine actual emissions for interim emission fee purposes using one of the following methods:

(a) If the regression analysis correlation coefficient is less than 0.50, the actual emissions shall be the average emission factor determined from at least nine test runs multiplied by the EEAF multiplied by the total production for the entire year, or

$$AE = EF_{avg} \times EEAF \times P$$

Where:

AE = Actual Emissions

EF_{avg} = Average of the Emission Factors

EEAF = Estimated Emissions Adjustment Factor

P = Total production for the year

(b) If the regression analysis correlation coefficient is greater than 0.50 the following calculations shall be performed:

(A) Determine the average emission factor (EF) for each production rate category (maximum = EF_{max}, normal = EF_{norm}, and minimum = EF_{min}).

(B) Determine the total annual production and operating hours, production time (PT_{tot}), for the calendar year.

(C) Determine the total hours operating within the maximum production rate category (PT_{max}). The maximum production rate category is any operation rate greater than the average of at least three maximum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(D) Determine the total hours while operating within the normal production rate category (PT_{norm}). The normal production rate category is defined as any operating rate less than the average of at least three maximum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2) and any operating rate greater than the average of at least three minimum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(E) Determine the total hours while operating within the minimum production rate category (PT_{min}). The minimum production rate category is defined as any operating rate less than the average of at least three minimum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(F) Actual emissions equals EEAF x $[(PT_{max}/PT_{tot}) \times EF_{max} + (PT_{norm}/PT_{tot}) \times EF_{norm} + (PT_{min}/PT_{tot}) \times EF_{min}]$.

(9) The permittee shall calculate emissions during startup and shutdown, and for emissions greater than normal, during conditions that are not accounted for in the procedure(s) otherwise used to document actual emissions.

(a) All emissions during startup and shutdown, and emissions greater than normal shall be assumed equivalent to operation without an air pollution control device, unless accurately demonstrated by the permittee and approved by the Department in accordance with OAR 340-20-575(9)(b), (9)(c), (9)(d), and (9)(e). The emission factor plus the EEAF shall be adjusted by the air pollution control device collection efficiency as follows:

$$\text{Actual emission factor} = (EF \times EEAF)/(1 - PCDE)$$

Where:

EF	=	Emission Factor
EEAF	=	Emission Estimate Adjustment Factor
PCDE	=	Pollution Control Device Collection Efficiency

Unless otherwise approved by the Department, the pollution control device collection efficiencies used in this calculation shall be:

Particulate Matter:

ESP or baghouse	0.90
High energy wet scrubber	0.80
Low energy wet scrubber	0.70
Cyclonic separator	0.50

Acid gases:

Wet or dry scrubber	0.90

Volatile Organic Compounds:

Incinerator	0.98
Carbon absorber	0.95

(b) During process startups a Department approved source test shall be performed to determine an average startup factor. The average of at least three tests runs plus the standard deviation shall be used to calculate actual emissions during startups.

(c) During process shutdowns a Department approved source test shall be performed to determine an emission factor for shutdowns. The average of at least three test runs plus the standard deviation shall be used to calculate actual emissions during shutdowns.

(d) During routine maintenance activity the permittee shall:

(A) Perform routine maintenance activity during source testing for verified emission factors, or

(B) Calculate emissions in accordance with Section (10) of this rule.

(e) The emission factor need not be adjusted if the permittee demonstrates to the Department that the pollutant emissions do not increase during startup and shutdown, and for conditions that are not accounted for the in procedure(s) otherwise used to document actual emissions (eg. NO_x emissions during an ESP failure).

(10) A verified emission factor developed pursuant to OAR 340-20-505 through 340-20-590 and approved by the Department can not be used if a process change occurs that would affect the accuracy of the verified emission factor.

(11) The permittee may elect to use verified emission factors for source categories if the Department determines the following criteria are met:

(a) The verified emission factor for a source category shall be based on verified emission factors from at least three individual sources within the source category,

(b) Verified emission factors from sources within a source category shall be developed in accordance with OAR 340-20-575,

(c) The verified emission factors from the sources shall not differ from the mean by more than twenty percent, and

(d) The source category verified emission factor shall be the mean of the source verified emission factors plus the average of the source emission estimate adjustment factors.

LATE AND UNDERPAYMENT INTERIM EMISSION FEES
340-20-590 (1) Notwithstanding any enforcement action, the permittee shall be subject to a late payment fee of:

(a) Two hundred dollars ($200) for payments postmarked more than seven (7) or less than thirty (30) days late, and

(b) Four hundred dollars ($400) for payments postmarked on or over thirty (30) days late.

(2) Notwithstanding any enforcement action, the Department may assess an additional fee of the greater of four hundred ($400) or twenty percent (20%) of the amount underpaid for substantial underpayment.

AIR QUALITY CLASSIFICATION OF VIOLATIONS
340-12-050 Violations pertaining to air quality shall be classified as follows:

(1) Class one:

(u) Submitting falsified actual or calculated interim emission fee data.

(2) Class two:

(p) Failure to pay an interim emission fee.

(q) Substantial underpayment of an interim emission fee.

(r) Submitting inaccurate actual or calculated interim emission fee data.

draft6.fin/sll
January 10, 1992 (3:06pm)

ATTACHMENT B

RULEMAKING STATEMENTS FOR PROPOSED MAJOR SOURCE INTERIM EMISSION FEE RULES

STATEMENT OF NEED FOR RULEMAKING

Pursuant to OAR 183.335(7), this statement provides information on the intended action to propose adoption of new rules.

(1) Legal Authority

This proposal is to adopt new Oregon Administrative Rules. It is proposed under the authority of ORS 468.020 and HB 2175, enacted by the 1991 Legislature.

(2) Need for these Rules

HB 2175 specifically directs the adoption of rules by the Environmental Quality Commission.

(3) Principal Documents Relied Upon

The document referenced may be inspected a the Department of Environmental Quality, Air Quality Division, 811 S.W. 6th Avenue, Portland, Oregon, during normal business hours.

sll/statement

ATTACHMENT C

FISCAL AND ECONOMIC IMPACT STATEMENT FOR PROPOSED NEW INTERIM AIR EMISSION FEE RULES

PROPOSAL SUMMARY

The new rules are proposed pursuant to House Bill 2175 which was enacted by the 1991 Oregon Legislature. The proposed rules provide those in the regulated community with Air Contaminant Discharge Permits and the Department of Environmental Quality with the criteria, methods and procedures to calculate air emissions and fees based on either actual or permitted air emissions for the 1991 and 1992 calendar years.

COSTS TO THE REGULATED COMMUNITY

The proposed rules would establish air emission fees for those in the regulated community with Air Contaminant Discharge Permits that emit or are permitted to emit 100 tons or more per year of a regulated pollutant. House Bill 2175 specifies that permittees pay air emission fees based on thirteen dollars ($13) per ton.

Permittees Impacted

The primary companies affected in the private sector include but are not limited to: electronics, electric utility generators, metals, paper and pulp, and solid wood. The Department estimates that a total of approximately 150 permittees would be impacted by these rules.

In the public sector, only those local and state government agencies that have permits and emit or are permitted to emit over 100 tons per year of a regulated pollutant would pay the air emission fees. Agencies that operate permitted fuel burning equipment, for example Oregon Health Sciences University and Oregon State University, would be impacted. The Port of Portland, permitted to paint ships, would also be impacted.

There is no known impact to small businesses, however, if they are impacted they would be subject to the air emission fee analysis that follows.

Consultants, including small businesses, that provide equipment and services will benefit from the expanded market for determining actual air emissions.

Air Emission Fees

The cost will vary and will depend on whether a permittee pays on permitted or actual air emissions. House Bill 2175 allows permittees to pay air emission fees on either permitted or actual air emissions. Permitted air emissions are the air emission limits specified in the permit. Actual

air emissions are the air emissions the permittee emits. Fees based on actual emissions should be lower than fees assessed on permitted emissions, since actual air emissions for a regulated pollutant should be less than, or at most equal to, the permitted air emissions. For example, a permittee may be permitted to emit 150 tons per year of a regulated pollutant but actually emits 110 tons. The permittee could pay $1950 based on permitted air emissions or $1430 based on actual air emissions.

- House Bill 2175 also specifies that fees will not be paid for air emissions over 4,000 tons per year. Therefore, the most a permittee would pay for a single regulated pollutant would be $52,000. The Department estimates this 4,000 ton cap may apply to two permittees, Portland General Electric/Boardman and Reynolds Metals Co.

Air Emission Fees Based on Permitted Air Emissions

If a permittee decides to pay air emission fees for a regulated pollutant based on the permitted level there would be no additional costs. However, if a permittee decides to pay air emission fees for a regulated pollutant based on actual air emissions there may be additional costs.

Air Emission Fees Based on Actual Air Emissions

There are a variety of techniques permittees may use to determine actual air emissions including continuous emission monitoring, source testing, and material balance. Some of these techniques may already be required in the Air Contaminant Discharge Permit, which would mean there would be no additional costs. However, if a permittee elects to pay air emission fees based on actual air emissions and the permittee does not have a technique in place to calculate the actual air emissions, there would be additional costs. The additional costs will depend on the technique selected by the permittee to calculate actual air emissions.

The estimates for continuous emission monitoring for one pollutant include: $75,000 to $125,000 in capital expenditures, $20,000 to $50,000 per year for operation and maintenance, and annualized costs of $11,000 to $26,000 at ten percent (10%) over twenty (20) years. The estimated costs of additional pollutants would be approximately one-third more for one additional pollutant, approximately one-half more for two additional pollutants, and approximately three-fourths more for three additional pollutants. A permittee may elect to invest in actual air emission measurement techniques if the annualized costs can be recovered. Opportunities to recover annualized costs include a savings in paying air emission fees based on actual air emissions or operational advantage(s).

The estimates for performing a source test include: $4,000 to $7,000 for running a series of three tests.

The estimates for using material balance to calculate Volatile Organic Compound air emissions is less than $1,000 in analysis costs and approximately $10,000 in employee costs. This cost may be slightly more if a source test is needed. The estimates for using material balance to calculate sulfur dioxide air emissions would be less than $1,000 in analysis costs and approximately $2,000 for accounting expenses.

There would be no direct economic impact to the general public. The only known costs to the general public would be possible pass-through of costs to customers, but the impact would be negligible.

ECONOMIC IMPACT TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY

The economic impact to the Department of Environmental Quality will be an increase in revenues and staffing. New revenues from the interim air emission fees are projected to be $910,000 for the 1991-1993 biennium. This revenue is dedicated funding which will be used to begin implementation of Title V of the Federal Clean Air Act Amendments of 1990. The Department of Environmental Quality is required to submit the Title V program by November 1993 or risk the application of sanctions.

Additional Department resources will be required to calculate, review, assess, and process air emission fees. The resource needs will increase with the number of permittees who elect to be assessed on actual air emissions. For the 1991-1993 biennium, approximately 4 FTE and $580,000, will be required to develop and implement the air emission fee rules.

sll/fiscal/

Attachment D

NOTICE OF PUBLIC HEARING

Hearing Dates: December 11, 12, 1991
Comments Due: December 13, 1991

WHO IS AFFECTED: Industries in the State of Oregon that emit or are permitted to emit more than 100 tons per year of a regulated air pollutant.

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to adopt new administrative rules, "Major Source Interim Emission Fee Rules".

WHAT ARE THE HIGHLIGHTS: The new rules provide industries with air quality permits and the Department of Environmental Quality with the criteria, methods and procedures to calculate air emissions and fees based on actual and permitted emissions for the 1991 and 1992 calendar years.

HOW TO OBTAIN ADDITIONAL INFORMATION: Copies of the proposed rule package may be obtained from the Air Quality Division, 811 SW 6th Avenue, Portland, Oregon, or from the regional office nearest you. For further information, call toll free 1-800-452-4011 (in Oregon), or contact Sara Laumann at (503) 229-5517.

WHERE ARE THE HEARINGS AND HOW TO COMMENT: The first public hearing is scheduled for: December 11, 1991, at 2:00 p.m. in Room 10A, 811 SW Sixth Avenue, Portland, Oregon.

The second public hearing is scheduled for: December 12, 1991, at 2:00 p.m. in the City Hall Council Chambers, 3rd floor, 411 West 8th (Corner of 8th and Oakdale), Medford, Oregon.

Oral and written comments will be accepted at the public hearings. Written comments may be sent to the DEQ, but must be received by no later than 5:00 p.m., December 13, 1991.

WHAT IS THE NEXT STEP:

After public hearings, the Environmental Quality Commission may adopt the new rules as proposed, adopt modified rules on the same subject matter, or decline to act. The Commission's deliberation should come in January, 1992, as part of the agenda of a regularly scheduled Commission meeting.

A Statement of Need, Fiscal and Economic Impact, and Land Use Consistency Statement are attached to this notice.

SLL:a
LEGAL\AH19075

Attachment E

DEQ LAND USE EVALUATION STATEMENT FOR RULEMAKING

INTERIM AIR QUALITY EMISSION FEE RULE

(1) Explain the purpose of the proposed rules.

The proposed rules implement HB 2175 and provide the criteria and procedures for permitted air quality sources emitting over 100 tons per year of any regulated pollutant to pay an interim emission fee of $13 per ton of each regulated pollutant emitted during the 1991 and 1992 calendar years.

(2) Do the proposed rules affect existing rules, programs or activities that are considered land use programs in the DEQ State Agency Coordination (SAC) Program? Yes X No ___

(a) If yes, identify existing program/rule/activity:

Air Contaminant Discharge Permit Program

(b) If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules? Yes X No ___

If no, explain: Not applicable

(c) If no, apply criteria 1. and 2. from the instructions for this form and from Section III Subsection 2 of the SAC program document to the proposed rules. In the space below, state if the proposed rules are considered programs affecting land use. State the criteria and reasons for the determination.

Not applicable

(3) If the proposed rules have been determined a land use program under 2. above, but are not subject to existing land use compliance and compatibility procedures, explain the new procedures the Department will use to ensure compliance and compatibility.

Not applicable

Division Intergovernmental Coor. 10-1-91 Date

Sara Laumann (229-5517)
sll\landform
September 20, 1991

ATTACHMENT F

Members
Air Quality Industrial Source Advisory Committee

Chair

Pam Wiley
6016 S.E. 21
Portland, OR 97202
236-6622
FAX 228-3153

Electronics* (* Statutorily required)
Theresa Parrone, Air Quality Program Manager
Tektronix, Inc. Mail Station 40-000
P.O. Box 500
Beaverton, OR 97077
627-2656
FAX 627-6319

Electric Utility Generators*
Rick Hess, Environmental Specialist
Portland General Electric
121 S.W. Salmon Street
Portland, OR 97204
464-8521
FAX 464-2233

Metals*
Jerry Richartz, Environment and Energy
Oregon Steel Mills
P.O. Box 2760
Portland, OR 97208
286-9651 ext.338
FAX 240-5237

Paper and pulp*
Craig Hanneman
Willamette Industries
3800 First Interstate Tower
Portland, OR 97201
227-5581
FAX 273-5609

Solid wood*
J. Garret Andrew, Manager
Environmental and Energy Services
Timber and Wood Products Group
Boise Cascade
P.O. Box 8328
Boise, ID 83707
(208) 384-6459
FAX (208) 384-4885

Air toxics* (small business, not now regulated, however, will be under new air toxic regulations)

Justine Harris
Nifty Cleaners
14443 S.E. Division Street
Portland, OR 97236
760-4878
FAX (none)

EPA* (non-voting)

Paul Koprowski
Air Coordinator
EPA OOO
811 S.W. Sixth Avenue, 3rd Floor
Portland, OR 97204
326-6363
FAX 326-3399

Industry

Jim Whitty, Legislative Counsel
Associated Oregon Industries
One World Trade Center
121 S.W. Salmon, Suite 340
Portland, OR 97204
227-3730
FAX 227-0462

Public

David Paul
7605 S.W. Corbett
Portland, OR 97219
245-7222
FAX (none)

Environmental

Jean Cameron
Policy Director
Oregon Environmental Council
027 S.W. Arthur
Portland, OR 97201
222-1963
FAX 241-4260 (9am-5pm)

Environmental

Vera Morrell
3196 Dark Hollow Road
Medford, OR 97501
773-6644 (h)
779-5581 (w)
FAX (none)

Environmental

Quincy Sugarman
Environmental Advocate
OSPIRG
1536 S.E. 11th Avenue
Portland, OR 97214
231-4181
FAX 231-4007

Public

Alice Weatherford-Harper
P.O. Box 8
Ione, OR 97843
454-2871
FAX (none

Public

Shannon Bauhofer
516 N.W. Drake
Bend, OR 97701
389-1444
FAX 389-0256

Public Health

Dr. Sonja Buist
Oregon Health Sciences University
Room 2052
Baird Hall
3181 Sam Jackson Parkway Road
Portland, OR 97201
494-8267
FAX 494-5407

Ex-Officio

Gabriella Lang
Senior Business Development Officer
Business Development Division
Oregon Economic Development Department
775 Summer Street N.E.
Salem, OR 97310
373-1225
FAX 581-5115

sll/adcomm.mem
October 14, 1991

Attachment G

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY **INTEROFFICE MEMORANDUM**

DATE: December 17, 1991

TO: Environmental Quality Commission

FROM: Linda Wishart, Hearings Officer

SUBJECT: Hearings Report for Major Source Interim Emission Fee Rules

Public hearings were held on December 11, 1991 at the Department of Environmental Quality headquarters in Portland and on December 12, 1991 at the Medford City Hall Council Chambers.

Public notices were issued as follows:

The Secretary of State published a Notice of Proposed Rulemaking Hearing, Statement of Need for Rulemaking, Fiscal and Economic Impact Statement, and Land Use Evaluation Statement on November 1, 1991.

News releases announcing the public hearings were published on November 11, 1991 by the following:

- Mail Tribune
- Daily Journal of Commerce
- Register Guard
- The Oregonian

The Portland hearing was attended by eleven people, and two of those gave oral testimonies. Five people attended the Medford hearing, with three giving oral comments.

Comments were received during these hearings for both the Interim Emission Fees and the Source Sampling and Continuous Monitoring Manuals. Written comments were received by the December 13th deadline. The following is a summary of comments received, both written and oral, regarding the Interim Emission Fees. Attached to this report are copies of submitted written comments.

Michael Woods, Superintendent of Process Services, James River, Wauna Mill; (oral and written comments):

James River supports the proposed emission fees, but has objections to emission monitoring and source testing proposals as described below:

°The proposed rule provides sources the option of paying fees on either actual or permitted emissions. There is economic incentive to select the actual emissions, which are lower than permitted emissions. However, while permitted limits are determined by summing monitored and calculated emissions for all point sources at the mill, the source testing of each point source required for equating actual emission fees is far too burdensome and costly and thereby eliminates this option.

°Adoption of these rules in January 1992 does not allow adequate time for installation and implementation in order to record emissions for 1992.

James River offers two alternatives:

1. Use DEQ's method for calculating actual emission for 1991 to calculate actual emission for both 1991 and 1992.

2. Use DEQ's historical emission factors for calculating actual emission for 1992 for sources having calculated emissions of less than 100 tons per year. The proposed method would apply to emission sources over 100 tons per year.

These approaches focus monitoring on significant sources where additional data may be of value.

Jean Cameron
Policy Director
Oregon Environmental Council; (oral and written comments):

As a member of the advisory committee responsible for drafting these rules, OEC stated that the committee's intent was to require data on actuals that was valid, credible data and would encourage emission reductions. OEC's aim has been to work with industry to develop practical methods of acquiring this data. The 1991-1993 implementation period is intended to fine tune the program.

She suggested that the Department sponsor technical assistance workshops to assist the regulated community upon adoption of the

rules and prior to the deadline for selecting reporting options.

Bob Palzer, Oregon Chapter, Sierra Club; Adjunct Professor of Chemistry, Southern Oregon State College; Scientific Director of Coalition to Improve Air Quality; (oral and written comments)

While supporting adoption of the proposed Interim Emission Fees and the Source Testing and Continuous Monitoring Manuals, the Oregon Chapter of the Sierra Club believes the emission fees are inadequate to maintain an effective monitoring and enforcement program. They look forward to working with the Department to remove legislative constraints imposed by HB 2175.

The Coalition supports adoption of rules for the Interim Air Emission Fees.

The Coalition believes that good source testing, monitoring and fees are vital to public health. The following points address these concerns.

- **Fees Are Too Low**

While aware of constraints placed on the department by HB 2175, the Coalition believes the $25 fee is inadequate to provide the additional regional staff needed to address the added responsibilities required by the new Clean Air Act Amendments of 1990.

Informal discussions with department staff revealed similar concerns. Additionally, a Sierra Club study of the Medford-Grants Pass area, showed an average of 1.4 inspections per major facility per year. The Sierra Club believes this level of monitoring is inadequate.

The Coalition feels the funding is inadequate over the long run and hopes the department will work with the Coalition to get the legislature to remove the $25 cap in the next biennium.

- **Public Access to Monitoring Data**

The proposal requires records to be maintained on-site for a two year period. The Coalition feels the public should have access to these records during this time.

The Coalition published a study the summer of 1991 based on three-year review of DEQ monitoring records that found a number of occurrences which appeared to be violations, but for which no citations were issued during that period. Enforcement of existing rules was given some attention during the Coalition's review, and

some citations were issued. Public access to monitoring data maintained on-site will provide the oversight capabilities the public ought to have.

°Public Health Concern

On December 1, 1991, The San Francisco Chronicle published a study conducted in 1984-1985 showing the U.S. Cancer Mortality Rate by State. The state of Oregon was one of two having the 2nd highest cancer mortality rate. Dr. Palzer consulted with the Oregon State Department of Health to update those figures and found that for the period of 1987-1990 Oregon's rate increased each year, ranking it at the highest level nationally. While it is not known that this is caused by air pollution, it is known that many air pollutants are carcinogens.

Chronic Obstructive Pulmonary Disease, a disease clearly related to smoke exposure, is also increasing in this state according to Oregon Vital Statistics 1989 Report. This study, covering the years 1970 to present, shows that while the national rate is increasing, Oregon's rate is significantly higher than the national rate. (Dr. Palzer referenced Fig. 4a, Sec. 45 of that report.) Though the Oregon Vital Statistics 1990 report is not due until February 1992, data collected for the report shows Oregon's rate to be higher still for 1990.

Myra Erwin
Chairperson
Rogue Group Sierra Club; (oral and written comments)

The Rogue Group supports the Interim Emission Fee Rule, but believes higher fees are needed to acquire additional staff to perform the inspections and provide enforcement as required.

Additionally, on-site inspection records should be available for public review, and emissions exceeding permitted levels should be assessed significant fees to encourage attainment.

Patricia Kuhn
Resident, Medford; (written comments)

Ms. Kuhn supported the Coalition's position and recommendations regarding the proposed rules.

Additionally, she expressed concern for the lack of enforcement and the inadequate number of source inspections performed. She also encouraged the Department to set emission fees high enough to direct industry to reduce pollution. To this end, the Department will be exercise its responsibility to provide Oregonians with a more healthful environment.

Douglas Morrison
Environmental Council
Northwest Pulp and Paper; (written comments)

NWPPA offered the following written comments on the proposed Interim Emission Fees:

1. Policy
   The group prefers a policy that allows estimations of actual emissions, under DEQ's compliance or monitoring regulations or the terms of a permit, for determining fee assessment for 1991 and 1992.

2. Definitions 340-20-520
   In place of reference to the manuals, the following phrase is suggested: "...in accordance with appropriate procedures or department guidance at the time the data was collected."

3. Emission Reporting 340-20-535
   Reference in 535(3)(d) to "all documentation" is unnecessary and should be replaced with "when requested by the Department".

   Delete 535(4), as this pertains to fees and not to emissions inventory.

4. Emissions Reporting and Interim Fee Procedures 340-20-537

   The thirty days to respond to Department requests for additional information may be insufficient. The rule should allow time extensions to be granted by the Department to avoid for protective filings and contested cases by sources.

5. Calculated Emissions for 1991 340-20-545

   This section should be rewritten, as suggested, to clarify that emission calculations required by permit or regulations will suffice for determining actual emissions without additional source testing for both 1991 and 1992.

6. Actual Emissions for 1992

   NWPPA believes the option to develop industry specific emission factors should be provided through the suggested amendments to 550.

7. Verified Emission Factors Using Source Testing for 1992 340-20-575

NWPPA suggests the following amendments:

° A minimum of two source tests with at least six data points.

° Delete reference to tests being conducted as 'approved' by the Department and replace with 'performed in accordance with appropriate procedures or Department guidance at the time the data was collected.

8. Calculating Emissions During Startup and Shutdown and for Emissions Greater than Normal 340-20-575

Sources, such as TRS and NOx, known or expected not to exceed limits during these periods, should be excluded.

It should also be clarified that requirements for source testing in 580 (2),(3) and (4) apply **only** if procedures under (1) are not applied. Also, there is a circular reference in (4)(b).

Language should be included at the end of 580(1) to allow a source or category of sources to propose alternative efficiencies for approval.

Kathleen Muir
Resident, Ashland; (written comments)

Ms. Muir believes inspections are currently too infrequent, and that more regional staff will be required to perform additional inspections. Her concern is that proposed fees are not sufficient to attain the staff needed.

Wallace Skyrman
Patient Representative
Southern Oregon Region, American Lung Association
(oral and written comments)

Mr. Skyrman believes that fair and direct enforcement of existing rules and regulations is necessary to minimize effects of air pollution. He believes the regional staff needed for adequate enforcement will not be provided by the proposed fees.

Frank Hirst
Conservation Chair
Rogue Valley Audubon Society; (oral and written comments)

The Rogue Valley Audubon Society strongly supports the position of the Coalition in regard to the proposed rules.

Emission fees must be sufficient to deter violations and to provide staff for enforcement through inspections.

Edward Butchino
Consultant
BWR Associates; (oral comments)

Mr. Butchino expressed concern that the proposed fee places the burden on four or five major sources. He believes sources emitting less than 100 tons will be paying required permit fees, while a neighboring major source will be paying per ton. Mr. Butchino believes the Clean Air Act specifies that the financial means to manage the program should be equitable.

rep.ho

JAMES RIVER, WAUNA MILL

COMMENTS ON PROPOSED INTERIM AIR EMISSION FEES

DEQ's proposed rulemaking on Interim Air Emission Fees appears to have two objectives. The first is to establish a fee system whereby major sources within the regulated community would bear most of the cost of developing Oregon's Title V industrial source permit program. The second objective is to encourage permittees to add emission monitors or source testing activities to their current self-monitoring programs. We at James River support the first objective, but we have some concerns about DEQ's approach to their second objective.

DEQ's proposal gives dischargers the option of paying fees based on Permitted or Actual Emissions. Since Actual Emissions will certainly be lower than Permitted Emissions, there is an economic incentive to select the Actual Emissions option. DEQ's proposal would require Wauna to gather a great deal more monitoring data than required by our Air Discharge Permit in order to qualify for the Actual Emissions option in 1992. Apparently, DEQ's intention is to encourage industry to undertake additional emission monitoring in order to qualify for lower fees in 1992. We believe that DEQ's approach should be modified somewhat for reasons related to both policy and practicality.

As a matter of policy, if additional monitoring is needed to meet Oregon's air quality objectives, then that monitoring should be required directly through inclusion in Air Discharge Permits. If additional source tests are needed to verify the accuracy of specific emission factors, then DEQ should request those specific source tests. The indirect approach taken by DEQ in this proposal does not focus monitoring and source testing resources on areas where improvement is needed or on issues of concern from an ambient air quality perspective. We believe that future source testing efforts should be focused on areas of concern where more information is needed as a guide to action.

As a practical matter, DEQ's proposals for determining actual emissions for 1992 are unworkable for a complex operation such as Wauna. This is due to two factors:

First, a major industrial facility like Wauna typically has several large sources of air contaminants plus a multiplicity of small sources. DEQ has developed "Plant Site Emission Limits" for Wauna by summing monitored and calculated emissions from all the point sources within the mill. These Plant Site Emission Limits are Wauna's permitted discharge limits.

It is impractical to undertake the elaborate source testing proposed by DEQ to determine Actual Emissions for 1992 because of the large number of emission sources involved. For

instance, Wauna's Plant Site Emission Limit (PSEL) for particulate matter contains contributions from 17 different sources, and the PSEL for NOx includes 9 sources. A few of these are major sources, but most are minor. DEQ's proposal would require three source tests run in triplicate on each of these sources, regardless of size, in order to document Actual Emissions for 1992. This means 51 source tests run in triplicate for particulate and 27 source tests run in triplicate for NOx. This level of effort is unreasonable, and it effectively eliminates Wauna's option of calculating fees for 1992 based on Actual Emissions.

Second, it is impossible at this late date to install continuous emission monitors to record emissions for 1992. At a minimum, several months are required to purchase, install, and calibrate new monitors. Even under the best of circumstances, only a portion of 1992's emissions could be recorded by new monitors. The problem is compounded by the large number of sources which would potentially have to be monitored. Installation of continuous emission monitors is not a practical way to determine Actual Emissions for 1992.

DEQ's requirements for documentaing Actual Emissions in 1992 are impractical for a complex facility such as Wauna. If DEQ's proposal is adopted as written, Wauna will have to pay fees based on Permitted Emissions rather than Actual Emissions. This would be unfortunate, because the mill would not be rewarded for emission

reductions. If the current rule eventually forms the backbone of a longterm system for permit fee collection, then the results would be even more negative from Wauna's perspective.

We would like DEQ to consider two alternative approaches to calculating emissions for purposes of fee assessment in 1992:

1. Use DEQ's method for calculating Actual Emissions for 1991 to calculate Actual Emissions for both 1991 and 1992. This means that emissions calcluations would be based on a mixture of monitoring results where they are available plus the emission factors which DEQ has historically used to develop the mill's Plant Site Emission Limits. If DEQ has concerns about the accuracy of some of their emission factors, we would be willing to undertake a limited source testing program aimed at improving the accuracy of those factors. It should be pointed out that most of the emission factors used to calculate limits in Wauna's permit are lifted from EPA's "Compilation of Air Pollutant Emission Factors, AP-42".

2. Use DEQ's historical emission factors for calculating Actual Emissions in 1992 for those sources where the emission of a particular pollutant is calculated to be less than 100 tons per year. If the discharge of a particular pollutant from a particular source is calculated to be over 100 tons per year, then DEQ's proposed method for documenting Actual Emissions in 1992 would apply. At Wauna, this approach would require source

testing on only six of the mill's 17 particulate sources, because the other sources each discharge less than 100 tons of particulate annually. Similarly, only three of the 9 NOx sources would require source testing.

Both of these approaches have the merit of focusing monitoring efforts on significant sources where additional information may be of some value.

Thank you for the opportunity to comment on these proposed rules.

Michael G. Woods
Supt. Process Services
James River, Wauna Mill
December 11, 1991

OREGON ENVIRONMENTAL COUNCIL
[illegible] Portland, Oregon 97201

COMMENTS ON PROPOSED RULES
Major Source Interim Emission Fee Rules
OAR 340-20-505 to 050

As a representative for the Oregon Environmental Council, I have had an opportunity to serve on the advisory committee which drafted these rules. I am satisfied with the specifics, and shall limit my comments to policy issues inherent in this process.

There has been much discussion at the committee level as well as comments received at the hearings to the effect that the 1992 procedures required for verifying actuals are too burdensome. It has even been suggested that these standards actually indicate a desire on the part of the Department to add emission monitoring which would be more appropriately handled as permit requirements. This was not the Committee's intent.

These rules are intended to require procedures for reporting actuals which are most likely to produce valid, credible data. I agree that the use of actuals should be encouraged as an incentive for emissions reductions, and all members of the advisory committee have repeated their willingness to work with the regulated industries to identify reporting methods that are both practicable and produce valid data. We recognize that implementation of the 1991-1993 biennium program will help "fine tune" the program which must be approved by EPA in 1993, so we know there rules aren't perfect - yet.

I would also like to comment that I have witnessed enough confusion on the part of the regulated community as they try to understand these complicated rules that I think it's crucial that the Department sponsor technical assistance workshops for the regulated community as soon as the rules are adopted and before the date for selection of reporting options. This will eliminate more work later as the actual reporting occurs, if that reporting is based on erroneous applications of the rules.

My gratitude to the staff who have worked hard on these rules. Thanking you for this opportunity to comment, I remain,

Sincerely yours,

Jean R. Cameron
Policy Director
December 11, 1991

SIERRA CLUB

Oregon Chapter

DEQ
Air Quality Division
811 SW 6th
Portland, OR 97201
Attn : Linda Wishart
FAX 229-5897

12/13/91

Re : Public Hearing Comments

The Oregon Chapter of the Sierra Club supports the adoption of the DEQ proposed interim emission fees for major sources and the new manuals for source testing and continuous emissions monitoring.

We are concerned that the DEQ obtain adequate funding to develop and maintain an effective monitoring and enforcement program. The interim fee applying only to major sources is a bare bones budget. For the longer term, the Sierra Club would like to see the emissions fees raised to a level that is adequate to operate and maintain an effective air quality program. We feel that not only should the emission fees increase as the program goes on line, but that permits for all sources be raised to derive sufficient funds for DEQ to do a first rate job of monitoring and enforcement. We look forward to working with DEQ on attempting to remove some of the legislative constraints imposed upon the department in HB2175.

Sincerely,

Bob Palzer,
Air Quality Coordinator

Rogue Group - Sierra Club

DECEMBER 12, 1991

TESTIMONY TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY
ON AIR QUALITY ISSUES

MEDFORD

My name is Myra Erwin. I am the Chair of the Rogue Group Sierra Club. We have over 1200 members in Jackson, Josephine and Curry counties. We appreciate the opportunity to comment in person here in Medford on these important issues.

Major Industrial Source Interim Emission Fee Rules

The Rogue Group supports the position of the Coalition to Improve Air Quality that fees should be raised. The Sierra Club's 1991 Study revealed the need for a significant increase in the number of inspections for major sources in Medford. We urge that fees be adequate to provide enough inspectors to ensure that inspections be frequent enough to produce good compliance with permit conditions.

On site inspection records should be open to the public to gain public confidence and to help assure that regulations will be complied with.

Amendments to the State Implementation Plan (SIP) to update the existing Source Sampling Manual and to add a Continuous Monitoring manual

Again, the Rogue Group supports the position of the Coalition to Improve Air Quality that new test and monitoring manuals be adopted. These are clearly necessary if compliance with the Clean Air Act is to be expected.

A significant pollution fee assessed to emissions that are over permitted levels should be imposed to help encourage sources to keep their emissions within those levels.

Considerable progress has been made in improving our Air Quality, but more needs to be done before we have truly healthful air in the Medford area. The above recommendations will speed us on our way.

Myra Erwin
300 Grandview Dr.
Ashland, Oregon 97520

Patricia P. Kuhn
2419 Hillcrest Road
Medford, OR 97504

10 December 1991

Department of Environmental Quality
Re Air Quality Hearings
Subject -- Major Industrial Source Interim Emission Fee Rule
Subject -- Amendments to SIP to update the existing Source Sampling Manual and to add a Continuous Monitorir Manual.

Gentlemen and women--

Thank you for holding two hearings in Medford in regards to the above matters. I do appreciate it and have always been present if possible. However, family matters take me to Washington during the hearing dates so please accept my letter in lieu of my usual verbal testimony. Thank you.

As a long time member of the public fighting for improved air quality in the Rogue Valley and as a member of the Coalition to Improve Air Quality I would like to underscore the Coalition*s position and recommendations on each of the subjects noted above.

I would like to stress that the fees are too low to fund the new federal Industrial Source Permit Program. Medford has no adequate staffing to even implement rules already on the books and the shameful 1.4 times a year average inspectic during the period 1988-90 certainly points to the reasons asthma and respiratory diseases are rising in this area. Industry was obviously catered to when violations were caught as no fines were levied or paid durmg 1988-90. Please remedy this situation by ruling for the people and their health. It is only fair that industrial profits be truly earned and not occur because industry does not expend dollars to clean up what they cause to become polluted. It is only fair to incude this as the cost of doing business.

I would like to support the adoption of the newtest and monitoring manuals. So for the incentive for industry not - I repeat not - exceed emission limits, please impose fees high enough to truly motivate industry to stay within permitted levels. Data constantly comes out linking particulates -fine and summer ozone levels to the onset of asthma in both childr and adults with no prior family history. Several physicians say they feel they can definitely see high pollution levels affecting the health of their patients in adverse ways. Please, since your mandate pertains to protecting the health of citizens of Oregon, exercise your power and responsibility and make the fees higher than presently proposed so that the desired effect, cleaner air and less industrial polluting, is achieved. Thank you for this opportunity.

Patricia K

DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Control
Date Received: 12-13-91
Acknowledged By:

NORTHWEST
PULP&PAPER

December 13, 1991

Sara Laumann
Department of Environmental Quality
811 S.W. 6th Avenue
Portland, OR 97204

RE: COMMENTS ON PROPOSED INTERIM AIR EMISSION FEES, AND PROPOSED SOURCE SAMPLING AND CONTINUOUS MONITORING MANUALS

Dear Sara:

Thank you for the opportunity to provide comments on the proposed interim air fee rules, OAR 340-20-505 to 590, and the proposed source sampling and continuous monitoring manuals. We appreciate the time and effort DEQ has made to understand how these rules will impact sources. NWPPA has already provided extensive comments by letter dated October 30, 1991 and would like to add to our previous comments as follows. We also request that the department allow adequate time for review of changes to the rule before submission of rule language to the EQC.

COMMENTS ON PROPOSED INTERIM AIR EMISSION FEES

Policy

NWPPA would prefer a policy that estimations of actual emissions under DEQ's compliance or monitoring regulations or the terms of a permit are adequate for purposes of calculating actual emissions and paying fees for both 1991 and 1992.

Definitions 340-20-520

The definitions of "continuous monitoring systems" and "source test" pose the issue of retroactive application of these manuals to data gathered before they were drafted. For example, the reference to "source test" as used in 340-25-545 is to data collected since 1985. While this data may have been collected in accordance with standard procedures at the time, the procedures may be different than what is prescribed in the manual today.

We suggest using the following phrase in the definitions instead of reference to the manuals: ". . . in accordance with appropriate procedures or department guidance at the time the data was collected."

Emission Reporting 340-20-535

The requirement in 535(3)(d) to include "all documentation" is unnecessary and may result in too much paper work being transmitted when DEQ has no real use for it. Instead, insert the wording "when requested by the Department." This is consistent with the DEQ authority in 537(3) to request additional information. The word "all" should be deleted in the event our suggesting is not adopted.

Delete 535(4) because this is a rule for identifying emissions for purposes of fees and is not for purposes of an emissions inventory.

Emission Reporting and Interim Fee Procedures 340-20-537

In 537(4), the 30 days may not in some cases be sufficient if a facility must retain and schedule a contractor to provide additional information (e.g., more source tests). The rule should allow for extensions of time to be granted by the department. Otherwise, the source may be forced to file for a contested case to protect its legal rights pending the gathering of additional information. DEQ should strive to avoid the protective filings due to time constraints.

Calculated Emissions for 1991 340-20-545

It is our understanding that because of the retroactive application of 340-20-545, no source testing will be required to calculate actual emissions during 1991. The reference to 580 makes it unclear whether source testing would be necessary to allow the use of PSEL calculations or existing data under 545(1). Please consider the comments on 580 below.

Section 545 should be rewritten to clearly announce that calculations of emissions required under the terms of a permit or DEQ's air quality regulations shall suffice for purposes of showing actual emissions without any additional source testing or any other adjustments. To simplify the rules greatly and to follow NWPPA's suggested policy, this section should apply to calculations of actual emissions for both 1991 and 1992. We suggest the following wording for 340-20-545:

> 340-20-545 To calculate actual emissions for 1991 and 1992, the permittee shall use one of the following:
>
> (1) Methods used to establish a Plant Site Emission Limit for the source;
>
> (2) Methods used to demonstrate compliance with an emissions limitation in the source's air contaminant discharge permit;
>
> (3) Methods used to comply with a monitoring requirement of a permit or air quality regulation applicable to the source;
>
> (4) Material Balance;

(5) Emission data from continuous monitoring systems [continue as in 545(3];

(6) Emission Factors developed from at least one source test conducted since 1985.

If the department insists upon more rigorous standards for data on 1992 actual emissions, the above language should apply for 1991 and the following comments taken into account for 1992 emissions.

Actual Emissions for 1992

As discussed at the last Advisory Committee meeting, NWPPA believes that sources should have the opportunity to develop industry specific—compared to source specific—emission factors. The language of 340-20-550 should be amended to clearly allow sources to work with DEQ to develop ways to characterize emissions with a reasonable degree of accuracy.

We suggest the following for 550(4):

(4) Alternative emission factors developed for a category of sources based on a plan submitted to and approved by the department.

Verified Emission Factors Using Source Testing for 1992 340-20-575

The introductory paragraph to 340-20-575 should be amended to allow the use of existing source test data collected since 1985 within certain parameters, but not those parameters in 575(1)-(4).

We suggest a minimum of two source tests (including at least 6 data points) and that the tests when conducted need not have been "approved" by the department. Such a condition would preclude the use of most available data because the department did not routinely "approve" procedures or data, nor was there any official source test manual. We have included the additional condition "performed in accordance with appropriate procedures or department guidance at the time the data was collected" to remedy this problem.

NWPPA suggests the following to replace the entire introduction:

340-20-575 To verify emission factors used to calculate assessable emissions for 1992, the permittee shall use at a minimum two source tests or equivalent testing conducted after 1985 in accordance with appropriate procedures or department guidance at the time the data was collected, or the permittee shall perform additional source tests as follows:

. . .

Calculating Emissions during Startup and Shutdown, and for Emissions Greater than Normal 340-20-575

This section of the rule should exclude those sources that are known or can be expected to not produce a greater amount of emissions during these periods compared to "normal" operations. This would include TRS and NOx emissions from pulp and paper mills.

It should also be clarified that the requirements for source testing in 580(2), (3) and (4) would apply only if the procedures under (1) are not applied. Also, there is a circular reference in (4)(b).

We would also urge the department to include language at the end of 580(1) that expands upon the "Unless otherwise approved by the Department" language to allow a source or category of sources to propose alternative efficiencies for approval. Thus, based on reports, studies or other data, a source or industry group could develop a different pollution control device collection efficiency.

Please add to the end of 580(1):

> Any source or group of sources may propose and the department may approve alternative efficiencies to be used in place of those listed above.

PROPOSED SOURCE SAMPLING AND CONTINUOUS MONITORING MANUALS

NWPPA agrees with the comments of the NCASI on these manuals. Namely, that adoption of the manuals is premature at this time. Mills need practical operating experience under the new manuals, particularly in the preparation of quality assurance plans. Moreover, the federal regulations on enhanced monitoring should be taken into consideration before adoption of the manuals as a rule. At this time, adoption of the manuals by rule into the SIP is not required to implement the federal operating permit program.

Sincerely,

Douglas S. Morrison
Environmental Counsel

569 Scenic Drive
Ashland, OR 97520

December 10, 1991

Air Quality Division
DEQ
Room 9A, 811 SW 6th Avenue
Portland, OR 97404

As a Rogue Valley resident living in an area with severe air quality problems, I am writing to express my views on the two issues on which you are holding hearings in Medford this week.

On the issue of Interim Emission Fees, I am concerned that the proposed fees are too low. The Medford area needs more inspections, which means an increase in staff; however, it does not appear that any additional staff is planned in Medford. Inspections are currently too infrequent.

In regard to updating the existing Source Sampling Manual and adding a Continuous Monitoring Manual, I would like to see continuous monitoring systems implemented at all major industrial sites that are causing pollution problems.

I recently saw the TV special called Red/Day Green/Day on PBS. I hope that all DEQ staff watched this. The air quality problems here are complex, but until asthma patients don't have to spend countless hours indoors during bad periods and until joggers don't have to live with a chronic cough, there needs to be a concerted effort to keep working to clean our air.

Sincerely,

Kathleen A. Muir

Testimony for DEQ Hearings Medford December 12, 1992

Good Morning

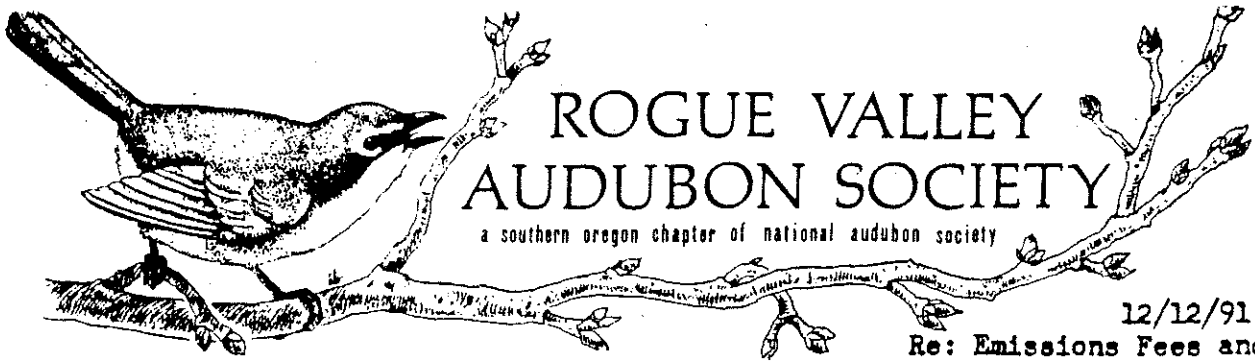
My name is Wallace Skyrman of Central Point, and I am the patient represenative for the Southern Oregon Region of American Lung Association of Oregon and on the Steering Committee of the Coalition to Improve Air Quality.

Clean Air in our valley is in short supply and to minimize the effects of air pollution we need fair and across the board enforcement of existing rules and regulations. Enforcement can best occur when all parties know what is expected of them. Some times we get wraped up in the small details and forget our end goal. All sources should have "Tail Pipe" emmision baseline established thru actual tests and not on calculated assumptions. In line with that train of thought enforcement should be weighted to Continuous Emmisions Monitoring that will be on line 24 hours a day, 365 days a year.

Lowest credence should be placed on testing done that is prearranged and done at the convience of the mill operator. Can you imagine testing for blood alcohol content on a drunk driver at a time that is convient to the test taker. Of those companies that are not required to have CEM, DEQ should do everything practical to analytically evalutate the pollution output of these sources. In doing so DEQ would be fair to business and to the public that has to put up with the pollution that is dumped into the common air we must all breathe. Test results should become public record as soon as practical. Practical in this case should be the time it takes a photocopier make copies. Keeping results secret only leads to suspicion and distrust. If you want the population to be concerned on air quality be sure that they see that the big boys are being held accountable.

While I realize that the $13/ton fee was a political compromise I am very disappointed that we are not getting any more manpower to help in enforcement. When you consider the man hours spent in chaising woodstove smoke by local cities and Jackson county having a .9 position at the local DEQ office to cover all of Southwestern Oregon seems negeligent.

Wallace Skyrman
4588 Pacific Hwy North
Central Point, OR 97502-1695



ROGUE VALLEY AUDUBON SOCIETY

a southern oregon chapter of national audubon society

12/12/91

Re: Emissions Fees and SIP Manuals

Oregon Dept. of Environmental Quality

Rogue Valley Audubon Society very much appreciates your coming to our air polluted valley to hear our compåaints about conditions here. We wish our local people would go to the trouble of doing some of their complaining here as well as when looking out their windows or talking to neighbors - or, even worse, thinking they can ignore the whole situation which is negatively impacting their own and, particularly, their children's wellbeing.

Rogue Valley Audubon has about 600 members here in the Valley. We strongly support the position of the Coalition to Improve Air Quality, of which we are members.

The emission fees must be high enough to serve not only as a deterant but to provide for proper enforcement here in the Valley through sufficient inspections.

All data on emissions monitoring must be made available to the public as soon as the mechanics of collection and recording allow. Public access and oversight has proved most beneficial in pollution control enforcement throughout the country, not just here. After all, who is more interested in enforcement than thdss impacted?

We believe you should make all haste to produce your new manuals on sampling and continuous monitoring. Since fees are to be based on emissions, we must know what those emissions are. Also, these manuals are essential to getting a system implemented that will keep DEQ informed so proper fines can be levied for exceedences. All of us are greatly stimulated to improve by the threat of financial loss if we don't.

The work of Dr. Palxer and the Sierra Cluv has dom a great deal to clarify the pollution control enforcement situation here in the Valley. If the information they revealed is properly used, it will do a great deal to get us back to healthy air and to improve the public's acceptance and compliance with control of domestice wood smoke.

Thank you for coming here. Please make all haste to get on with the job.

Sincerely,

655 Reiten Dr.
Ashland, Or. 97520

Frank H. Hirst
conservation chair

Attachment H

RESPONSE TO PUBLIC COMMENTS

The Department received comments from:

A. Michael Woods, Superintendent of Process Services, James River, Wauna Mill; (oral and written comments)

B. Jean Cameron
Policy Director
Oregon Environmental Council; (oral and written comments)

C. Dr. Robert J. Palzer, Oregon Chapter, Sierra Club; Adjunct Professor of Chemistry, Southern Oregon State College; Scientific Director of Coalition to Improve Air Quality; (oral and written comments)

D. Myra Erwin, Chairperson, Rogue Group Sierra Club; (oral and written comments)

E. Patricia Kuhn, Resident, Medford; (written comments)

F. Douglas Morrison, Environmental Counsel, Northwest Pulp and Paper; (written comments)

G. Kathleen Muir, Resident, Ashland; (written comments)

H. Wallace Skyrman, Patient Representative, Southern Oregon Region, American Lung Association; (oral and written comments)

I. Frank Hirst, Conservation Chair, Rogue Valley Audubon Society; (oral and written comments)

J. Edward Butchino, Consultant, BWR Associates; (oral comments)

****

Summary and response to comments:

1. CONCERN: Permit limits are determined by summing emissions for numerous point sources at the mill. The larger emission points are monitored or routinely tested. Some of the emission points have very low emissions and are not routinely tested. The source testing of each emission point required for calculating actual emission fees is far too burdensome and costly and thereby eliminates this option. (A)

DEPARTMENT'S RESPONSE: Department staff discussed this concern after the public hearing in Portland. James River was under the impression that a source could only make their election based on the groupings of emission points used for the Plant Site Emission Limits. That would mean that a source that wanted to pay on permitted emissions would have to pay on permitted emissions for all emission points in the same grouping. While the permit limits are often aggregates for numerous emission points, the review report detail sheets provided with each permit identify the contribution from each emission point. As drafted, the rules allow sources complete flexibility to divide the permitted emissions between emission points in accordance with the detail sheets. Sources may elect permitted for certain assessable emissions and actuals for others at the same facility.

2. CONCERN: Adoption of these rules in January 1992 does not allow adequate time for installation and implementation in order to record emissions for 1992. (A)

DEPARTMENT'S RESPONSE: The Department realizes sources may have difficulties collecting actual emission data for 1992 emissions since the rules will not be proposed for adoption by the EQC until January 23, 1992. In developing rules the Department had the following goals: develop rule criteria that would require reasonably accurate actual emission data and also would be viable for sources to use. The difficulties will likely arise in implementing the Continuous Monitoring Manual, which is proposed for adoption at the same EQC meeting. The Department amended the proposed rules to allow for continuous monitoring data to be collected by the permittees subject to 1991 criteria until March 31, 1992. This will provide a phase-in period during the first quarter of 1992 for permittees to implement criteria in the Department's Continuous Monitoring Manual. The Department believes that while all the options for collecting data for 1992 emissions may not be viable for all sources to use, there are viable options for a majority of sources to cover emissions where it is cost efficient to calculate emissions.

3. CONCERN: The Department should sponsor technical assistance workshops to assist the regulated community upon adoption of the rules and prior to the deadline for selecting reporting options. (B)

DEPARTMENT'S RESPONSE: The Department's implementation plan includes providing technical assistance to trade associations and the regulated community.

4. CONCERN: Inspections are currently too infrequent, and more regional staff will be required to perform additional inspections. Proposed fees are not sufficient to attain the staff needed. (G)

DEPARTMENT'S RESPONSE: The interim emission fees are for the purpose of developing an industrial Title V program for Oregon and submitting this major new program to the Environmental Protection Agency by November, 1993. Long term staffing needs will be addressed during development of the program.

5. CONCERN: The emission fees are inadequate to maintain an effective monitoring and enforcement program. (C, E, G, H, I)

DEPARTMENT'S RESPONSE: The interim fees fund most of the development of the Title V program. The interim fees are not to be used for the Department's existing compliance assurance program. The 1991 Legislature approved HB2175 with the expectation that $910,000 would be generated over two years. The actual amount that will be collected can't be accurately predicted because of uncertainty about what actual emissions (and production levels) will occur and the extent to which sources will elect permitted rather than actual emissions. Considering the current state of the economy and wood products industry, actual emissions from regulated industry will probably be lower than this historic levels used in developing HB2175.

The Department is also concerned that final fees provided for by the statute may be inadequate to support the Title V program. The final federal rules, which were due on November 15, 1991 but have not yet been issued, and data being collected on existing program costs will be used to make a determination of adequacy of the funding. Additional legislative action will be needed at the next session if fees are determined to be inadequate to run the federally required program.

6. COMMENT: They look forward to working with the Department to remove legislative constraints imposed by HB 2175. (C)

DEPARTMENT'S RESPONSE: The offer is appreciated. The Department hopes that all parties will work cooperatively to ensure that the program meets air quality goals and federal requirements.

7. CONCERN: A study published in The San Francisco Chronicle showed the state of Oregon had the second highest cancer mortality rate. While it is not known that this is caused by air pollution, it is known that many air pollutants are carcinogens.

DEPARTMENT'S RESPONSE: The Department is concerned about environmental health risks and welcomes additional information

even though it is not an issue for these rules. The Department is also aware that considerable caution should be used to interpret cancer mortality rate data.

8. CONCERN: On-site inspection records should be available for public review, and emissions exceeding permitted levels should be assessed significant fees to encourage attainment. (C, D)

DEPARTMENTS RESPONSE: Inspection records are on file in the Department's offices and are available for public review. Information necessary to support actual emission calculations will be submitted by permittes to the Department. This information will also be available to the public. Emission exceeding permitted levels are subject to the Department's current enforcement provisions, including civil penalties as appropriate.

9. CONCERN: One group prefers a policy that allows estimations of actual emissions, under DEQ's compliance or monitoring regulations or the terms of a permit, for determining fee assessment for 1991 and 1992. (F)

DEPARTMENT'S RESPONSE: The Department agrees with this recommendation for calendar year 1991 emissions. For 1991 the rules impose fees retroactively on past emissions and methods were not in place for determining actual emissions for fee purposes, so special criteria are necessary to quantify emissions for 1991. These criteria allow more flexibility for estimation of actual emissions.

These estimation techniques are not considered appropriate for 1992 since the statute specifies fees on actual emissions. For 1992, the proposed rules require actual emissions to be calculated under any of the following options: continuous emission monitoring, source testing, and material balance. Additionally, sources may use emission factors developed for either a particular source or a source category and approved by the Department. The Department believes source testing is necessary to derive actual emissions from emission factors. Current testing data bases are only representative of emissions at rated operating levels and cannot accurately predict emission rates at lower levels of operation.

A permittee electing one of the 1992 actual emission criteria may receive a number of benefits including: an increase in operational efficiency; a reduction in the likelihood of violating permit conditions; a shortened response time for non-complying situations; and a reduction in emission fees. Benefits to the Department include better emission data for monitoring, planning, and future permits.

10. CONCERN: In place of reference to the manuals, the following phrase is suggested: "...in accordance with appropriate procedures or department guidance at the time the data was

collected." (F)

DEPARTMENT'S RESPONSE: The Department agrees with this comment for source testing conducted after 1985 and before 1992. However, the Department believes the new manuals proposed to be adopted by the Commission at their January meeting should apply to the interim emission methods once permittees have an opportunity to implement the new criteria. The rules allow permittees until April 1, 1992 to implement the new manual criteria.

11. CONCERN: Reference in 535 (3)(d) to "all documentation" is unnecessary and should be replaced with "when requested by the Department". (F)

DEPARTMENT'S RESPONSE: The Department will need documentation to review and determine if actual emissions have been correctly calculated. While it would be inefficient for the Department to request documents for all sources electing to pay on actual emissions, the Department agrees in part with this concern. The word "all" has been deleted and the modified language requires the permittee to submit "documentation necessary to support emission calculations".

12. CONCERN: Delete 535(4), as this pertains to fees and not to emissions inventory. (F)

DEPARTMENT'S RESPONSE: The Department has authority to request emission information and if a source elects to pay fees based on actual emissions, the Department recommends all the emissions be reported, even if they are above the 4,000 ton per year cap.

13. CONCERN: The thirty days to respond to Department requests for additional information may be insufficient. The rule should allow time extensions to be granted by the Department to avoid protective filings and contested cases by sources. (F)

DEPARTMENT'S RESPONSE: The Department believes that thirty days is adequate for a source to produce the information that was used to develop the previous submittal. Sources are not expected to have to create new information, which would be time consuming. In case there are extenuating circumstances, the Department has amended the rules to allow for such an extension. Such an extension would affect the information submitted only and not the fee due date.

14. CONCERN: The option to develop industry specific emission factors should be provided through the suggested amendments to 550. (F)

DEPARTMENTS'S RESPONSE: The proposed rules were amended to clarify that emission factors could be developed by industry

and submitted for approval by the Department. Factors to be approved will need to be accurate for all affected sources.

15. CONCERN: Require minimum of two source tests with at least six data points for source testing. (F)

DEPARTMENT'S RESPONSE: The Department believes three source tests with at least nine data points are necessary for a reliable estimate. If there are seasonal variations in emissions the rules require the three source tests to be conducted in each of the first three quarters of the year. Additionally, the three source tests will test the range of operating levels, unless a permittee demonstrates a constant process rate. The three operating levels to be tested include at least one test at each of the following levels: minimum level, average or normal level, and one at anticipated maximum operating level. Additionally, the requirement to collect nine data points is consistent with the number of tests required by EPA for ensuring the accuracy of continuous monitoring systems.

16. CONCERN: Pollutants, such as TRS and NO_x, known or expected not to exceed limits during periods covered by 340-20-580, should be excluded. It should also be clarified that requirements for source testing in -580 (2),(3) and (4) apply **only** if procedures under (1) are not applied. Also, there is a circular reference in (4)(b).

Language should be included at the end of 580(1) to allow a source or category of sources to propose alternative efficiencies for approval. (F)

DEPARTMENT'S RESPONSE: All these concerns have been addressed in the rules.

17. CONCERN: The proposed fee places the burden on four or five major sources. Sources emitting less than 100 tons will be paying the required permit fee, while a neighboring major source will be paying per ton. The Clean Air Act specifies that the financial means to manage the program should be equitable. (J)

DEPARTMENT'S RESPONSE: As required by statute, the interim emission fees will apply to major sources permitted in Oregon. The Department estimates 177 sources will be subject to these fees. Since the fees are proportionate to emissions, not the Department's workload, the largest sources of emissions will have to pay the highest fees.

ATTACHMENT A
REVISED: January 22, 1992

DRAFT

Major Source Interim Emission Fee Rules

OAR 340-20-505	Purpose, Scope and Applicability
OAR 340-20-510	Policy
OAR 340-20-512	Definitions
OAR 340-20-515	Pollutants Subject to Interim Emission Fees
OAR 340-20-517	Exclusions
OAR 340-20-525	References
OAR 340-20-530	Single Election for each Assessable Emission for 1991 and 1992
OAR 340-20-535	Emission Reporting
OAR 340-20-537	Emission Reporting and Interim Emission Fee Payment Procedures
OAR 340-20-545	Calculated Emissions for 1991
OAR 340-20-550	Actual Emissions for 1992
OAR 340-20-555	~~[Calculating]~~ Determining Emissions from Continuous Monitoring Systems for 1992
OAR 340-20-560	~~[Calculating]~~ Determining Emissions using Material Balance for 1992
OAR 340-20-565	~~[Calculating]~~ Determining Volatile Organic Compounds Emissions Using Material Balance for 1992
OAR 340-20-570	~~[Calculating]~~ Determining Sulfur Dioxide Emissions Using Material Balance for 1992
OAR 340-20-575	Verified Emission Factors Using Source Testing
OAR 340-20-590	Late and Underpayment Fees
OAR 340-12-050	Air Quality Classification of Violations (Amendments)

PURPOSE, SCOPE AND APPLICABILITY

340-20-505 (1) The purpose of these rules is to provide permittees, major sources, and the Department of Environmental Quality with the criteria and procedures to ~~[calculate]~~ **determine** interim emissions and fees based on calculated **(1991 only)**, actual and permitted air emissions only for calendar years 1991 and 1992.

NOTE: These interim fees will be used to provide resources to cover the costs of the Department of Environmental Quality to develop an approvable federal operating permit program in accordance with the Federal Clean Air Act and ORS 468A.

(2) The rules apply to major sources as defined in OAR 340-20-512(14). The permittee may elect to pay interim emission fees on either calculated emissions **(1991 only)**, actual emissions or permitted emissions for each assessable emission.

(3) The interim emission fees are in addition to fees required by OAR 340-20-155 and 340-20-165.

NOTE: Assessment of fees for calendar years 1993 and beyond is subject to Environmental Protection Agency approval of the Title V program developed by the Department pursuant to Oregon Laws 1991 Chapter 752, ORS 468A, enacted by the 1991 Oregon Legislature in response to the federal Clean Air Act Amendments of 1990.

POLICY

340-20-510 Considering that these rules are retroactive and that methods were not in place for determining actual emissions for fee purposes, the Environmental Quality Commission recognizes that special criteria are necessary to quantify emissions for 1991. More specific methods for data collection are consistent with the new requirements under the Clean Air Act Amendments of 1990 and appropriate for calendar year 1992 emissions.

DEFINITIONS

340-20-512 As used in OAR 340-20-505 through 340-20-590, unless otherwise required by context:

(1) "Actual Emission" means all emissions including but not limited to routine process emissions, fugitive emissions, excess emissions from maintenance, startups and shutdowns, equipment malfunctions, and other activities.

(2) "Assessable Emission" means a unit of emissions for which the major source will be assessed a fee. It includes an emission of a pollutant as defined in OAR 340-20-515 from one emission point and from an area within a major source. For routine process emissions, emissions of each pollutant in OAR 340-20-515 from each emission point included in an air contaminant discharge permit shall be an assessable emission.

(3) "Constant Process Rate" means the average variation in

process rate for the calendar year is not greater than plus or minus ten percent of the average process rate.

(4) "Continuous Monitoring Systems" means sampling and analysis, in a timed sequence, using techniques which will adequately reflect calculated emissions and actual emissions or concentrations on a continuing basis in accordance with the Department's Continuous Monitoring Manual, and includes continuous emission monitoring systems and continuous parameter monitoring systems.

(5) "Calculated Emissions" means procedures used to estimate emissions for the 1991 calendar year.

(6) "Department" means Department of Environmental Quality.

(7) "Emission" means a release into the atmosphere of any regulated pollutant.

(8) "Emission Estimate Adjustment Factor (EEAF)" means an adjustment applied to an emission factor to account for the relative inaccuracy of the emission factor.

(9) "Emission Factor" means an average value which relates the quantity of a pollutant released to the atmosphere with the activity associated with the release of that pollutant.

(10) "Emission Reporting Form" means a paper or electronic form developed by the Department that shall be completed by the permittee to report calculated emissions, actual emissions or permitted emissions for interim emission fee assessment purposes.

(11) "Fugitive Emissions" means emissions of any air contaminant which escape to the atmosphere from any point or area that is not identifiable as a stack, vent, duct, or equivalent opening.

(12) "Interim Emission Fee" means $13 per ton for each assessable emission subject to emission fees under OAR 340-20-515 for calculated, actual or permitted emissions released during calendar years 1991 and 1992.

(13) "Late Payment" means an interim emission fee which is postmarked after the due date.

(14) "Major Source" or "Source" means a permitted stationary source or group of stationary sources located within a contiguous area and under common control or any stationary facility or source of air pollutants which directly emits, or is permitted to emit:

(a) One hundred tons per year or more of any regulated pollutant, or

(b) Fifty tons per year or more of a volatile organic compound and is located in a serious ozone nonattainment area.

(15) "Material Balance" means a procedure for ~~[calculating]~~ **determining** emissions based on the difference in the amount of material added to a process and the amount consumed and/or recovered from a process.

(16) "Particulate Matter" means all solid or liquid material, other than uncombined water, emitted to the ambient air as measured by a Department approved method in accordance with the Department's Source Sampling Manual.

(17) "Permit" or "Air Contaminant Discharge Permit" means a written permit issued by the Department, pursuant to OAR 340-20-140 through 340-20-175 and includes the application review report.

(18) "Permitted Emissions" means each assessable emission portion of the Plant Site Emission Limit.

(19) "Person" means the United States Government and agencies thereof, any state, individual, public or private corporation, political subdivision, governmental agency, municipality, industry, co-partnership, association, firm, trust, estate, or any other legal entity.

(20) "Plant Site Emission Limit (PSEL)" means the total mass emissions per unit time of an individual air pollutant specified in a permit for a major source. The PSEL may consist of more than one assessable emission.

(21) "PM_{10} Emissions" means emissions of finely divided solid or liquid material, other than uncombined water, with an aerodynamic diameter less than or equal to a nominal 10 micrometers, emitted to the ambient air as measured by applicable reference methods in accordance with the Department's Source Sampling Manual.

(22) "Regulated Pollutant" means PM_{10}, Sulfur Dioxide (SO_2), Oxides of Nitrogen (NO_X), Lead (Pb), Volatile Organic Compounds (VOC), and Carbon Monoxide (CO); and any other pollutant subject to a New Source Performance Standard (NSPS) such as Total Reduced Sulfur (TRS) from kraft pulp mills and Fluoride (F) from aluminum mills.

(23) "Source Category" means a group of major sources determined by the Department to be using similar raw materials and having equivalent process controls and pollution control equipment.

(24) "Source Test" means the average of at least three test runs during operating conditions representative of the period for which emissions are to be ~~[calculated]~~ determined, conducted in accordance with the Department's Source Sampling Manual or other Department approved methods.

(25) "Substantial Underpayment" means the lesser of ten percent (10%) of the total interim emission fee for the major source or five hundred dollars.

(26) "Total Reduced Sulfur (TRS)" means the sum of the sulfur compounds hydrogen sulfide, methyl mercaptan, dimethyl sulfide, and dimethyl disulfide, and any other organic sulfides present expressed as hydrogen sulfide (H_2S).

(27) "Verified Emission Factor" means an emission factor approved by the Department and developed for a specific major source or source category and approved for application to that major source by the Department.

(28) "Volatile Organic Compound or "VOC" means any organic compound which participates in atmospheric photochemical reactions to form ozone; that is, any precursor organic compound which would be emitted during use, application, curing or drying of a surface coating, solvent, or other material. Excluded from this category are those compounds which the U.S. Environmental Protection Agency classifies as being of negligible photochemical reactivity which includes methane, ethane, methylene chloride, 1,1,1-trichloroethane (methyl chloroform), trichlorofluoromethane (CFC-11), dichlorofluoromethane (CFC-12), chlorodifluoromethane

(CFC-22), trifluoromethane (FC-23), trichlorotetrafluoroethane (CFC-114), and chloropentafluoroethane (CFC-115).

POLLUTANTS SUBJECT TO INTERIM EMISSION FEES

340-20-515 (1) The Department shall assess interim emission fees on assessable emissions up to and including 4,000 tons per year of each of the following pollutants from each major source:

(a) PM_{10} or TSP as specified in section (2) of this rule,
(b) SO_2,
(c) NO_x,
(d) VOC,
(e) Lead,
(f) Fluoride,
(g) TRS, and
(h) Any other pollutant subject to New Source Performance Standards.

(2) If the interim emission fee on PM_{10} emissions is based on the Plant Site Emission Limit for a source that does not have a Plant Site Emission Limit for PM_{10}, the Department shall assess the interim emission fee on the Plant Site Emission Limit for total suspended particulates.

(3) The permittee shall ~~[calculate]~~ <u>determine</u> each actual assessable emission separately.

(4) The permittee shall pay interim emission fees on all assessable emissions from each emission source included in the permit or application review report.

EXCLUSIONS

340-20-517 (1) The Department shall not assess interim emission fees on:

(a) Pollutants regulated solely as hazardous air pollutants as defined in Section 112 of the federal Clean Air Act, and

(b) Newly permitted major sources that have not begun initial operation.

(c) A former permittee who has permanently ceased operation, as indicated by cancellation of the air contaminant discharge permit prior to the time of interim emission fee assessment by the Department.

(2) The Department shall not assess interim emission fees on carbon monoxide. However, sources that emit or are permitted to emit 100 tons or more per year of carbon monoxide are subject to the interim emission fees on all other regulated pollutants regardless of the amount of emissions of those regulated pollutants.

(3) The Department shall not assess interim emission fees if there are no emissions from an assessable emission for the entire calendar year.

REFERENCES

340-20-525 Reference documents used in OAR 340-20-505 through 340-20-590 include the Department of Environmental Quality Source Sampling Manual and the Department of Environmental Quality Continuous Monitoring Manual.

ELECTION FOR EACH ASSESSABLE EMISSION FOR 1991 AND 1992

340-20-530 (1) The permittee shall make an election to pay interim emission fees on either calculated emissions (1991 only), actual emissions or permitted emissions ~~[permitted or actual emissions]~~ for each year for each assessable emission and notify the Department in accordance with OAR 340-20-537.

(2) For calendar year 1991 the permittee shall elect to pay interim emission fees on either:

(a) Calculated emissions, OAR 340-20-545,

(b) Permitted emissions, OAR 340-20-535 and 340-20-537, or

(c) Actual emissions, OAR 340-20-535, 340-20-537 and 340-20-550.

(3) For calendar year 1992 the permittee shall elect to pay interim emission fees on either:

(a) Actual emissions, OAR 340-20-535, 340-20-537, and 340-20-550, or

(b) Permitted emissions, OAR 340-20-535 and 340-20-537.

(4) If a permittee fails to notify the Department of the election for an assessable emission, the Department shall assess interim emission fees for the assessable emission based on permitted emissions.

EMISSION REPORTING

340-20-535 (1) For the purpose of assessing interim emission fees the permittee shall submit the following information on an Emission Reporting Form(s) developed by the Department for each assessable emission in tons per year, reported as follows:

(a) PM_{10} as PM_{10},

(b) Sulfur Dioxide as SO_2,

(c) Oxides of Nitrogen (NO_X) as Nitrogen Dioxide (NO_2),

(d) Total Reduced Sulfur (TRS) as H_2S in accordance with OAR 340-25-150(15),

(e) Volatile Organic Compounds (VOC) as:

(A) VOC for material balance emission reporting, or

(B) Propane (C_3H_8), unless otherwise specified by permit, or Oregon Administrative Rules, or a method approved by the Department, for emissions verified by source testing.

(f) Fluoride as F.

(g) Lead as Pb.

(2) The permittee electing to pay interim emission fees on actual and calculated emissions shall report emissions as follows:

(a) Round up to the nearest whole ton for emission values 0.5 and greater, and

(b) Round down to the nearest whole ton for emission values less than 0.5.

(3) The permittee electing to pay interim emission fees on either actual or calculated emissions shall:

(a) Submit complete information on the Emission Reporting Forms including all assessable emissions, emission points and sources, and

(b) Submit documentation necessary to support emission calculations.

(4) The permittee electing to pay on calculated **(1991 only)** ~~[and]~~ **or** actual emissions for an assessable emission shall report total emissions including those emissions in excess of 4,000 tons for each assessable emission.

(5) The permittee electing to pay on permitted emissions for an assessable emission shall submit a statement to the Department that they shall pay on the Plant Site Emission Limit in effect for the calendar year in which they are paying, in accordance with OAR 340-20-535 and 340-20-537.

(6) If more than one permit is in effect for a calendar year for a major source, the permittee electing to pay on permitted emissions shall pay on the Plant Site Emission Limit(s) in effect for each day of that calendar year.

EMISSION REPORTING AND INTERIM FEE PROCEDURES

340-20-537 (1) The permittee shall submit the original Emission Reporting Form(s), including the permittees election for each assessable emission, to the Department by the later of either February 28 or the due date for the annual permit report for the previous calendar year.

(2) The permittee may request that information, other than emission information, submitted pursuant to OAR 340-20-505 through 340-20-590 be treated as confidential by the Department in accordance with Oregon Revised Statutes 192.410 through 192.505.

(3) The permittee shall allow the Department representatives access to the plant site and pertinent records at all reasonable times for the purposes of making inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emission discharge records and otherwise conducting all necessary functions related to the interim emission fees. The permittee shall maintain all records on site for two years from the date specified in Section (6) of this rule.

(4) The Department may accept information submitted or request additional information from the permittee. The permittee shall submit additional calculated or actual emission information requested by the Department within thirty (30) days of receiving a request from the Department. The Department may approve a request from a permittee for an extension of time of up to thirty days to submit additional information under extenuating circumstances.

(5) If the Department determines the actual or calculated emission information submitted for any assessable emission does not meet the criteria in OAR 340-20-505 through 340-20-590, the Department shall assess the interim emission fee on the permitted emission for that assessable emission.

(6) The permittee shall submit interim emission fees payable to the Department by the later of:

(a) July 1 for interim emission fees from the previous calendar year, or

(b) Thirty (30) days after the Department mails the interim emission fee invoice.

(7) Department acceptance of interim emission fees shall not indicate approval of data collection methods, calculation methods, or information reported on Emission Reporting Forms. If the

Department determines initial interim emission fee assessments were inaccurate or inconsistent with OAR 340-20-505 through 340-20-590, the Department may assess or refund interim emission fees up to two years after interim emission fees are received by the Department.

(8) The Department shall not revise a Plant Site Emission Limit solely due to an interim emission fee payment.

(9) Permittees operating major sources pursuant to OAR 340-22-100 through OAR 340-22-220 may submit the emission reporting information in the annual permit report format provided that:

(a) The permittee receives Department approval prior to the annual permit report due date and prior to February 28 of the year the fee is due,

(b) The report is received by the Department by the due date specified in the permit, and

(c) All information required by OAR 340-20-505 through 340-20-590 is provided, including an indication of whether the permittee is electing to pay on permitted, calculated, or actual emissions for each assessable emission.

CALCULATED EMISSIONS FOR 1991

340-20-545 To calculate actual emissions for 1991, the permittee shall use one of the following methods:

(1) OAR 340-20-575(~~[10]~~9), and:

(a) The emission factor(s) and other criteria used by the Department and documented in the permit or application review report to establish Plant Site Emission Limits to calculate assessable emission(s), or

(b) Emission Factors developed from at least one Department approved source test conducted since 1985.

(2) Material balance data.

(3) Emission data from a continuous monitoring system if:

(a) The system was installed and maintained and is capable of continuously monitoring pollutant emissions,

(b) Emissions data were recorded at a minimum of once per hour, and

(c) Data completeness was at least ninety percent (90%) of the scheduled operating time based on hourly data, otherwise OAR 340-20-555(2) shall be used to determine emissions.

(4) Alternative emission factors approved by the Department as more representative of actual source configuration and operation in 1991, provided that the alternative factors are at least as accurate as methods used for compliance demonstration.

ACTUAL EMISSIONS FOR 1992

340-20-550 A permittee electing to pay on actual emissions for calendar year 1992 emissions shall obtain emission data and ~~[calculate]~~ <u>determine</u> emissions using one of the following methods:

(1) Continuous monitoring systems used in accordance with OAR 340-20-555,

(2) Verified emission factors developed for that particular source in accordance with OAR 340-20-575 for:,

(a) Each assessable emission, or

(b) A combination of assessable emissions if there are multiple sources venting to the atmosphere through one common emission point (eg. stack). The permittee shall have a verified emission factor plan approved by the Department prior to conducting the source testing in accordance with OAR 340-20-575,

(3) Material balances ~~[calculated]~~ determined in accordance with OAR 340-20-560, OAR 340-20-565, or OAR 340-20-570, or

(4) Verified emission factors for source categories developed in accordance with OAR 340-20-575(11).

~~[CALCULATING]~~ DETERMINING EMISSIONS FROM CONTINUOUS MONITORING SYSTEMS FOR 1992

340-20-555 (1) If the permittee elects to report emission data using monitoring systems, the permittee shall use a monitor installed and operated in accordance with the Department's Continuous Monitoring Manual for data collected from April 1, 1992 through December 31, 1992. For data collected from January 1, 1992 through March 31, 1992, the permittee shall use data collected in accordance with permit conditions, applicable Department rules, or the Department's Continuous Monitoring Manual.

(2) If the permittee has continuous monitoring data that comprises less than ninety percent (90%) of the plant operating time, the actual emissions during the period when the continuous monitoring system was not operating shall be determined from 90 percentile continuous monitoring data.

~~[CALCULATING]~~ DETERMINING EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-560 The permittee may elect to use material balance to ~~[calculate]~~ determine actual emissions:

(1) If the amount of material added to a process less the amount consumed and/or recovered from a process can be documented in accordance with Department approved permit procedures and in accordance with OAR 340-20-505 through 340-20-590.

(2) The permittee shall only apply material balance calculations to VOC or sulfur dioxide emissions in accordance with OAR 340-20-565 and OAR 340-20-570 respectively.

~~[CALCULATING]~~ DETERMINING VOLATILE ORGANIC COMPOUND EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-565 The permittee may determine the amount of VOC emissions for an assessable emission by using material balance.

(1) The permittee using material balance to calculate VOC emissions shall determine the amount of VOC added to the process, the amount of VOC consumed in the process and/or the amount of VOC recovered in the process by testing in accordance with 40 Code of Federal Regulations (CFR) Part 60 EPA Method 18, 24, 25, a material balance method, or an equivalent plant specific method specified in the Air Contaminant Discharge Permit using the following equation:

$$VOC_{tot} = VOC_{add} - VOC_{cons}$$

Where:

VOC_{tot}	=	Total VOC emissions, tons
VOC_{add}	=	VOC added to the process, tons
VOC_{cons}	=	VOC consumed and/or recovered from the process, tons

~~[CALCULATING]~~ DETERMINING SULFUR DIOXIDE EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-570 (1) Sulfur dioxide emissions for major sources may be determined by measuring the sulfur content of fuels and assuming that all of the sulfur in the fuel is oxidized to sulfur dioxide.

(2) The permittee shall use ASTM methods to measure the sulfur content in fuel for each quantity of fuel burned.

(3) The permittee shall determine sulfur dioxide emissions for each quantity of fuel burned, determining quantity by a method that is reliable for that source, by performing the following calculation:

$$SO_2 = \%S/100 \times F \times 2$$

Where:

SO_2	=	Sulfur dioxide emissions for each quantity of fuel, tons
%S	=	Percent sulfur in the fuel being burned, % (w/w).
F	=	Amount of fuel burned, based on a quantity measurement, tons
2	=	Pounds of sulfur dioxide per pound of sulfur

(4) For coal-fired steam generating units the following equation shall be used by permittees to account for sulfur retention:

$$SO_{2adj} = SO_2 \times 0.97$$

Where:

SO_{2adj}	=	Sulfur dioxide adjusted for sulfur retention (40 CFR Part 60, Appendix A, Method 19, Section 5.2)
SO_2	=	Sulfur dioxide emissions from each quantity burned (OAR 340-20-570(3))

(5) Total sulfur dioxide emissions for the year shall be the sum total of each quantity burned calculated in accordance with 340-20-570(3) divided by 2000 pounds per ton.

(6) The permittee shall keep records of the fuel received and consumed and the quantity and sulfur content for two years from the date specified in OAR 340-20-537(6).

VERIFIED EMISSION FACTORS USING SOURCE TESTING

340-20-575 (1) To verify emission factors used to ~~[calculate]~~ **determine** assessable emissions the permittee shall:

(a) Utilize source testing data collected in accordance with appropriate procedures or Department guidance in effect at the time the data was collected, for source test data collected from 1985 through 1991, or

(b) Perform source testing in accordance with the Department's Source Sampling Manual or other methods approved by the Department for source tests conducted in 1992. Source tests shall be conducted in accordance with testing procedures on file at the Department and the pretest plan submitted at least fifteen (15) days in advance and approved by the Department. All test data and results shall be submitted for review to the Department within thirty (30) days after testing.

> NOTE: It is recommended that the permittee notify the Department and obtain pre-approval of the Emission Factor source testing program prior to or as part of the submittal of the first source test notification.

(2) The permittee shall conduct or have conducted at least three compliance source tests each consisting of at least three individual test runs for a total of at least nine test runs.

(3) The permittee shall monitor and record or have monitored and recorded applicable process and control device operating data.

(4) The permittee shall perform or have performed a source test either:

(a) In each of three quarters of the year with no two successive source tests performed any closer than thirty (30) days apart, or

(b) At equal intervals over the operating period if the permittee demonstrates and the Department approves that:

(A) The process operates or has operated for part of the year, or

(B) The process is or was not subject to seasonal variations.

(5) The permittee shall conduct or have conducted the source tests to test the entire range of operating levels. At least one test shall be conducted at minimum operating conditions, one test at normal or average operating levels, and one test at anticipated maximum operating levels. If the process rate is constant, all tests shall be conducted at that rate. The permittee shall submit documentation to the Department demonstrating a constant process rate.

(6) The permittee shall ~~[calculate]~~ **determine** or have ~~[calculated]~~ **determined** an emission factor for each source test by dividing each test run emissions, in pounds per hour, by the applicable process rate during the source test run. At least nine emission factors shall be plotted against the respective process rates and a regression analysis performed to determine the best fit equation and the correlation coefficient (R^2). If the correlation coefficient is less than 0.50, which would indicate that there is a relatively weak relationship between emissions and process rates, the arithmetic average and standard deviation of at least nine emission factors shall be determined.

(7) The permittee shall determine the Emissions Estimate Adjustment Factor (EEAF) as follows:

(a) If the correlation coefficient (R^2) of the regression analysis is greater than 0.50, the EEAF shall be $1+(1-R^2)$.

(b) If the correlation coefficient (R^2) is less than 0.50, the EEAF shall be:

$$EEAF = 1 + SD/EF_{avg}$$

Where:

SD	=	Standard Deviation
EF_{avg}	=	Average of the Emission Factors

(8) The permittee shall determine actual emissions for interim emission fee purposes using one of the following methods:

(a) If the regression analysis correlation coefficient is less than 0.50, the actual emissions shall be the average emission factor determined from at least nine test runs multiplied by the EEAF multiplied by the total production for the entire year, or

$$AE = EF_{avg} \times EEAF \times P$$

Where:

AE	=	Actual Emissions
EF_{avg}	=	Average of the Emission Factors
EEAF	=	Estimated Emissions Adjustment Factor
P	=	Total production for the year

(b) If the regression analysis correlation coefficient is greater than 0.50 the following calculations shall be performed:

(A) Determine the average emission factor (EF) for each production rate category (maximum = EF_{max}, normal = EF_{norm}, and minimum = EF_{min}).

(B) Determine the total annual production and operating hours, production time (PT_{tot}), for the calendar year.

(C) Determine the total hours operating within the maximum production rate category (PT_{max}). The maximum production rate category is any operation rate greater than the average of at least three maximum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(D) Determine the total hours while operating within the normal production rate category (PT_{norm}). The normal production rate category is defined as any operating rate less than the average of at least three maximum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2) and any operating rate greater than the average of at least three minimum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(E) Determine the total hours while operating within the minimum production rate category (PT_{min}). The minimum production rate category is defined as any operating rate less than the average of at least three minimum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(F) Actual emissions equals EEAF x $[PT_{max}/PT_{tot})xEF_{max}$ + $(PT_{norm}/PT_{tot})xEF_{norm}$ + $(PT_{min}/PT_{tot})xEF_{min}]$.

(9) The permittee shall ~~[calculate]~~ determine emissions during startup and shutdown, and for emissions greater than normal, during conditions that are not accounted for in the procedure(s) otherwise used to document actual emissions.

(a) All emissions during startup and shutdown, and emissions greater than normal shall be assumed equivalent to operation without an air pollution control device, unless accurately demonstrated by the permittee and approved by the Department in accordance with OAR 340-20-575(9)(b), (9)(c), (9)(d), and (9)(e). The emission factor plus the EEAF shall be adjusted by the air pollution control device collection efficiency as follows:

Actual emission factor = (EF x EEAF)/(1 - PCDE)

Where:

EF	=	Emission Factor
EEAF	=	Emission Estimate Adjustment Factor
PCDE	=	Pollution Control Device Collection Efficiency

Unless otherwise approved by the Department, the pollution control device collection efficiencies used in this calculation shall be:

Particulate Matter:

ESP or baghouse	0.90
High energy wet scrubber	0.80
Low energy wet scrubber	0.70
Cyclonic separator	0.50

Acid gases:

Wet or dry scrubber	0.90

Volatile Organic Compounds:

Incinerator	0.98
Carbon absorber	0.95

(b) During process startups a Department approved source test shall be performed to determine an average startup factor. The average of at least three tests runs plus the standard deviation shall be used to ~~[calculate]~~ determine actual emissions during startups.

(c) During process shutdowns a Department approved source test shall be performed to determine an emission factor for shutdowns. The average of at least three test runs plus the standard deviation shall be used to ~~[calculate]~~ determine actual emissions during shutdowns.

(d) During routine maintenance activity the permittee shall:

(A) Perform routine maintenance activity during source testing for verified emission factors, or

(B) ~~[Calculate]~~ Determine emissions in accordance with Section (10) of this rule.

(e) The emission factor need not be adjusted if the permittee demonstrates to the Department that the pollutant emissions do not increase during startup and shutdown, and for conditions that are not accounted for the in procedure(s) otherwise used to document actual emissions (eg. NO_X emissions during an ESP failure).

(10) A verified emission factor developed pursuant to OAR 340-20-505 through 340-20-590 and approved by the Department can not be used if a process change occurs that would affect the accuracy of the verified emission factor.

(11) The permittee may elect to use verified emission factors for source categories if the Department determines the following criteria are met:

(a) The verified emission factor for a source category shall be based on verified emission factors from at least three individual sources within the source category,

(b) Verified emission factors from sources within a source category shall be developed in accordance with OAR 340-20-575,

(c) The verified emission factors from the sources shall not differ from the mean by more than twenty percent, and

(d) The source category verified emission factor shall be the mean of the source verified emission factors plus the average of the source emission estimate adjustment factors.

LATE AND UNDERPAYMENT INTERIM EMISSION FEES
340-20-590 (1) Notwithstanding any enforcement action, the permittee shall be subject to a late payment fee of:

(a) Two hundred dollars ($200) for payments postmarked more than seven (7) or less than thirty (30) days late, and

(b) Four hundred dollars ($400) for payments postmarked on or over thirty (30) days late.

(2) Notwithstanding any enforcement action, the Department may assess an additional fee of the greater of four hundred ($400) or twenty percent (20%) of the amount underpaid for substantial underpayment.

AIR QUALITY CLASSIFICATION OF VIOLATIONS
340-12-050 Violations pertaining to air quality shall be classified as follows:

(1) Class one:

(u) Submitting falsified actual or calculated interim emission fee data.

(2) Class two:

(p) Failure to pay an interim emission fee.

(q) Substantial underpayment of an interim emission fee.

(r) Submitting inaccurate actual or calculated interim emission fee data.

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January 22, 1992 (8:44am)

ATTACHMENT A
REVISED: January 22, 1992

DRAFT

Major Source Interim Emission Fee Rules

OAR 340-20-505	Purpose, Scope and Applicability
OAR 340-20-510	Policy
OAR 340-20-512	Definitions
OAR 340-20-515	Pollutants Subject to Interim Emission Fees
OAR 340-20-517	Exclusions
OAR 340-20-525	References
OAR 340-20-530	Single Election for each Assessable Emission for 1991 and 1992
OAR 340-20-535	Emission Reporting
OAR 340-20-537	Emission Reporting and Interim Emission Fee Payment Procedures
OAR 340-20-545	Calculated Emissions for 1991
OAR 340-20-550	Actual Emissions for 1992
OAR 340-20-555	Determining Emissions from Continuous Monitoring Systems for 1992
OAR 340-20-560	Determining Emissions using Material Balance for 1992
OAR 340-20-565	Determining Volatile Organic Compounds Emissions Using Material Balance for 1992
OAR 340-20-570	Determining Sulfur Dioxide Emissions Using Material Balance for 1992
OAR 340-20-575	Verified Emission Factors Using Source Testing
OAR 340-20-590	Late and Underpayment Fees
OAR 340-12-050	Air Quality Classification of Violations (Amendments)

PURPOSE, SCOPE AND APPLICABILITY

340-20-505 (1) The purpose of these rules is to provide permittees, major sources, and the Department of Environmental Quality with the criteria and procedures to determine interim emissions and fees based on calculated (1991 only), actual and permitted air emissions only for calendar years 1991 and 1992.

NOTE: These interim fees will be used to provide resources to cover the costs of the Department of Environmental Quality to develop an approvable federal operating permit program in accordance with the Federal Clean Air Act and ORS 468A.

(2) The rules apply to major sources as defined in OAR 340-20-512(14). The permittee may elect to pay interim emission fees on either calculated emissions (1991 only), actual emissions or permitted emissions for each assessable emission.

(3) The interim emission fees are in addition to fees required by OAR 340-20-155 and 340-20-165.

NOTE: Assessment of fees for calendar years 1993 and beyond is subject to Environmental Protection Agency approval of the Title V program developed by the Department pursuant to Oregon Laws 1991 Chapter 752, ORS 468A, enacted by the 1991 Oregon Legislature in response to the federal Clean Air Act Amendments of 1990.

POLICY

340-20-510 Considering that these rules are retroactive and that methods were not in place for determining actual emissions for fee purposes, the Environmental Quality Commission recognizes that special criteria are necessary to quantify emissions for 1991. More specific methods for data collection are consistent with the new requirements under the Clean Air Act Amendments of 1990 and appropriate for calendar year 1992 emissions.

DEFINITIONS

340-20-512 As used in OAR 340-20-505 through 340-20-590, unless otherwise required by context:

(1) "Actual Emission" means all emissions including but not limited to routine process emissions, fugitive emissions, excess emissions from maintenance, startups and shutdowns, equipment malfunctions, and other activities.

(2) "Assessable Emission" means a unit of emissions for which the major source will be assessed a fee. It includes an emission of a pollutant as defined in OAR 340-20-515 from one emission point and from an area within a major source. For routine process emissions, emissions of each pollutant in OAR 340-20-515 from each emission point included in an air contaminant discharge permit shall be an assessable emission.

(3) "Constant Process Rate" means the average variation in

process rate for the calendar year is not greater than plus or minus ten percent of the average process rate.

(4) "Continuous Monitoring Systems" means sampling and analysis, in a timed sequence, using techniques which will adequately reflect calculated emissions and actual emissions or concentrations on a continuing basis in accordance with the Department's Continuous Monitoring Manual, and includes continuous emission monitoring systems and continuous parameter monitoring systems.

(5) "Calculated Emissions" means procedures used to estimate emissions for the 1991 calendar year.

(6) "Department" means Department of Environmental Quality.

(7) "Emission" means a release into the atmosphere of any regulated pollutant.

(8) "Emission Estimate Adjustment Factor (EEAF)" means an adjustment applied to an emission factor to account for the relative inaccuracy of the emission factor.

(9) "Emission Factor" means an average value which relates the quantity of a pollutant released to the atmosphere with the activity associated with the release of that pollutant.

(10) "Emission Reporting Form" means a paper or electronic form developed by the Department that shall be completed by the permittee to report calculated emissions, actual emissions or permitted emissions for interim emission fee assessment purposes.

(11) "Fugitive Emissions" means emissions of any air contaminant which escape to the atmosphere from any point or area that is not identifiable as a stack, vent, duct, or equivalent opening.

(12) "Interim Emission Fee" means $13 per ton for each assessable emission subject to emission fees under OAR 340-20-515 for calculated, actual or permitted emissions released during calendar years 1991 and 1992.

(13) "Late Payment" means an interim emission fee which is postmarked after the due date.

(14) "Major Source" or "Source" means a permitted stationary source or group of stationary sources located within a contiguous area and under common control or any stationary facility or source of air pollutants which directly emits, or is permitted to emit:

(a) One hundred tons per year or more of any regulated pollutant, or

(b) Fifty tons per year or more of a volatile organic compound and is located in a serious ozone nonattainment area.

(15) "Material Balance" means a procedure for determining emissions based on the difference in the amount of material added to a process and the amount consumed and/or recovered from a process.

(16) "Particulate Matter" means all solid or liquid material, other than uncombined water, emitted to the ambient air as measured by a Department approved method in accordance with the Department's Source Sampling Manual.

(17) "Permit" or "Air Contaminant Discharge Permit" means a written permit issued by the Department, pursuant to OAR 340-20-140 through 340-20-175 and includes the application review report.

(18) "Permitted Emissions" means each assessable emission portion of the Plant Site Emission Limit.

(19) "Person" means the United States Government and agencies thereof, any state, individual, public or private corporation, political subdivision, governmental agency, municipality, industry, co-partnership, association, firm, trust, estate, or any other legal entity.

(20) "Plant Site Emission Limit (PSEL)" means the total mass emissions per unit time of an individual air pollutant specified in a permit for a major source. The PSEL may consist of more than one assessable emission.

(21) "PM_{10} Emissions" means emissions of finely divided solid or liquid material, other than uncombined water, with an aerodynamic diameter less than or equal to a nominal 10 micrometers, emitted to the ambient air as measured by applicable reference methods in accordance with the Department's Source Sampling Manual.

(22) "Regulated Pollutant" means PM_{10}, Sulfur Dioxide (SO_2), Oxides of Nitrogen (NO_X), Lead (Pb), Volatile Organic Compounds (VOC), and Carbon Monoxide (CO); and any other pollutant subject to a New Source Performance Standard (NSPS) such as Total Reduced Sulfur (TRS) from kraft pulp mills and Fluoride (F) from aluminum mills.

(23) "Source Category" means a group of major sources determined by the Department to be using similar raw materials and having equivalent process controls and pollution control equipment.

(24) "Source Test" means the average of at least three test runs during operating conditions representative of the period for which emissions are to be determined, conducted in accordance with the Department's Source Sampling Manual or other Department approved methods.

(25) "Substantial Underpayment" means the lesser of ten percent (10%) of the total interim emission fee for the major source or five hundred dollars.

(26) "Total Reduced Sulfur (TRS)" means the sum of the sulfur compounds hydrogen sulfide, methyl mercaptan, dimethyl sulfide, and dimethyl disulfide, and any other organic sulfides present expressed as hydrogen sulfide (H_2S).

(27) "Verified Emission Factor" means an emission factor approved by the Department and developed for a specific major source or source category and approved for application to that major source by the Department.

(28) "Volatile Organic Compound or "VOC" means any organic compound which participates in atmospheric photochemical reactions to form ozone; that is, any precursor organic compound which would be emitted during use, application, curing or drying of a surface coating, solvent, or other material. Excluded from this category are those compounds which the U.S. Environmental Protection Agency classifies as being of negligible photochemical reactivity which includes methane, ethane, methylene chloride, 1,1,1-trichloroethane (methyl chloroform), trichlorofluoromethane (CFC-11), dichlorofluoromethane (CFC-12), chlorodifluoromethane

(CFC-22), trifluoromethane (FC-23), trichlorotetrafluoroethane (CFC-114), and chloropentafluoroethane (CFC-115).

POLLUTANTS SUBJECT TO INTERIM EMISSION FEES

340-20-515 (1) The Department shall assess interim emission fees on assessable emissions up to and including 4,000 tons per year of each of the following pollutants from each major source:

(a) PM_{10} or TSP as specified in section (2) of this rule,
(b) SO_2,
(c) NO_x,
(d) VOC,
(e) Lead,
(f) Fluoride,
(g) TRS, and
(h) Any other pollutant subject to New Source Performance Standards.

(2) If the interim emission fee on PM_{10} emissions is based on the Plant Site Emission Limit for a source that does not have a Plant Site Emission Limit for PM_{10}, the Department shall assess the interim emission fee on the Plant Site Emission Limit for total suspended particulates.

(3) The permittee shall determine each actual assessable emission separately.

(4) The permittee shall pay interim emission fees on all assessable emissions from each emission source included in the permit or application review report.

EXCLUSIONS

340-20-517 (1) The Department shall not assess interim emission fees on:

(a) Pollutants regulated solely as hazardous air pollutants as defined in Section 112 of the federal Clean Air Act, and

(b) Newly permitted major sources that have not begun initial operation.

(c) A former permittee who has permanently ceased operation, as indicated by cancellation of the air contaminant discharge permit prior to the time of interim emission fee assessment by the Department.

(2) The Department shall not assess interim emission fees on carbon monoxide. However, sources that emit or are permitted to emit 100 tons or more per year of carbon monoxide are subject to the interim emission fees on all other regulated pollutants regardless of the amount of emissions of those regulated pollutants.

(3) The Department shall not assess interim emission fees if there are no emissions from an assessable emission for the entire calendar year.

REFERENCES

340-20-525 Reference documents used in OAR 340-20-505 through 340-20-590 include the Department of Environmental Quality Source Sampling Manual and the Department of Environmental Quality Continuous Monitoring Manual.

ELECTION FOR EACH ASSESSABLE EMISSION FOR 1991 AND 1992

340-20-530 (1) The permittee shall make an election to pay interim emission fees on either calculated emissions (1991 only), actual emissions or permitted emissions for each year for each assessable emission and notify the Department in accordance with OAR 340-20-537.

(2) For calendar year 1991 the permittee shall elect to pay interim emission fees on either:

(a) Calculated emissions, OAR 340-20-545,

(b) Permitted emissions, OAR 340-20-535 and 340-20-537, or

(c) Actual emissions, OAR 340-20-535, 340-20-537 and 340-20-550.

(3) For calendar year 1992 the permittee shall elect to pay interim emission fees on either:

(a) Actual emissions, OAR 340-20-535, 340-20-537, and 340-20-550, or

(b) Permitted emissions, OAR 340-20-535 and 340-20-537.

(4) If a permittee fails to notify the Department of the election for an assessable emission, the Department shall assess interim emission fees for the assessable emission based on permitted emissions.

EMISSION REPORTING

340-20-535 (1) For the purpose of assessing interim emission fees the permittee shall submit the following information on an Emission Reporting Form(s) developed by the Department for each assessable emission in tons per year, reported as follows:

(a) PM_{10} as PM_{10},

(b) Sulfur Dioxide as SO_2,

(c) Oxides of Nitrogen (NO_X) as Nitrogen Dioxide (NO_2),

(d) Total Reduced Sulfur (TRS) as H_2S in accordance with OAR 340-25-150(15),

(e) Volatile Organic Compounds (VOC) as:

(A) VOC for material balance emission reporting, or

(B) Propane (C_3H_8), unless otherwise specified by permit, or Oregon Administrative Rules, or a method approved by the Department, for emissions verified by source testing.

(f) Fluoride as F.

(g) Lead as Pb.

(2) The permittee electing to pay interim emission fees on actual and calculated emissions shall report emissions as follows:

(a) Round up to the nearest whole ton for emission values 0.5 and greater, and

(b) Round down to the nearest whole ton for emission values less than 0.5.

(3) The permittee electing to pay interim emission fees on either actual or calculated emissions shall:

(a) Submit complete information on the Emission Reporting Forms including all assessable emissions, emission points and sources, and

(b) Submit documentation necessary to support emission calculations.

(4) The permittee electing to pay on calculated (1991 only) or actual emissions for an assessable emission shall report total emissions including those emissions in excess of 4,000 tons for each assessable emission.

(5) The permittee electing to pay on permitted emissions for an assessable emission shall submit a statement to the Department that they shall pay on the Plant Site Emission Limit in effect for the calendar year in which they are paying, in accordance with OAR 340-20-535 and 340-20-537.

(6) If more than one permit is in effect for a calendar year for a major source, the permittee electing to pay on permitted emissions shall pay on the Plant Site Emission Limit(s) in effect for each day of that calendar year.

EMISSION REPORTING AND INTERIM FEE PROCEDURES

340-20-537 (1) The permittee shall submit the original Emission Reporting Form(s), including the permittees election for each assessable emission, to the Department by the later of either February 28 or the due date for the annual permit report for the previous calendar year.

(2) The permittee may request that information, other than emission information, submitted pursuant to OAR 340-20-505 through 340-20-590 be treated as confidential by the Department in accordance with Oregon Revised Statutes 192.410 through 192.505.

(3) The permittee shall allow the Department representatives access to the plant site and pertinent records at all reasonable times for the purposes of making inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emission discharge records and otherwise conducting all necessary functions related to the interim emission fees. The permittee shall maintain all records on site for two years from the date specified in Section (6) of this rule.

(4) The Department may accept information submitted or request additional information from the permittee. The permittee shall submit additional calculated or actual emission information requested by the Department within thirty (30) days of receiving a request from the Department. The Department may approve a request from a permittee for an extension of time of up to thirty days to submit additional information under extenuating circumstances.

(5) If the Department determines the actual or calculated emission information submitted for any assessable emission does not meet the criteria in OAR 340-20-505 through 340-20-590, the Department shall assess the interim emission fee on the permitted emission for that assessable emission.

(6) The permittee shall submit interim emission fees payable to the Department by the later of:

(a) July 1 for interim emission fees from the previous calendar year, or

(b) Thirty (30) days after the Department mails the interim emission fee invoice.

(7) Department acceptance of interim emission fees shall not indicate approval of data collection methods, calculation methods, or information reported on Emission Reporting Forms. If the

Department determines initial interim emission fee assessments were inaccurate or inconsistent with OAR 340-20-505 through 340-20-590, the Department may assess or refund interim emission fees up to two years after interim emission fees are received by the Department.

(8) The Department shall not revise a Plant Site Emission Limit solely due to an interim emission fee payment.

(9) Permittees operating major sources pursuant to OAR 340-22-100 through OAR 340-22-220 may submit the emission reporting information in the annual permit report format provided that:

(a) The permittee receives Department approval prior to the annual permit report due date and prior to February 28 of the year the fee is due,

(b) The report is received by the Department by the due date specified in the permit, and

(c) All information required by OAR 340-20-505 through 340-20-590 is provided, including an indication of whether the permittee is electing to pay on permitted, calculated, or actual emissions for each assessable emission.

CALCULATED EMISSIONS FOR 1991

340-20-545 To calculate actual emissions for 1991, the permittee shall use one of the following methods:

(1) OAR 340-20-575(9), and:

(a) The emission factor(s) and other criteria used by the Department and documented in the permit or application review report to establish Plant Site Emission Limits to calculate assessable emission(s), or

(b) Emission Factors developed from at least one Department approved source test conducted since 1985.

(2) Material balance data.

(3) Emission data from a continuous monitoring system if:

(a) The system was installed and maintained and is capable of continuously monitoring pollutant emissions,

(b) Emissions data were recorded at a minimum of once per hour, and

(c) Data completeness was at least ninety percent (90%) of the scheduled operating time based on hourly data, otherwise OAR 340-20-555(2) shall be used to determine emissions.

(4) Alternative emission factors approved by the Department as more representative of actual source configuration and operation in 1991, provided that the alternative factors are at least as accurate as methods used for compliance demonstration.

ACTUAL EMISSIONS FOR 1992

340-20-550 A permittee electing to pay on actual emissions for calendar year 1992 emissions shall obtain emission data and determine emissions using one of the following methods:

(1) Continuous monitoring systems used in accordance with OAR 340-20-555,

(2) Verified emission factors developed for that particular source in accordance with OAR 340-20-575 for:,

(a) Each assessable emission, or

(b) A combination of assessable emissions if there are multiple sources venting to the atmosphere through one common emission point (eg. stack). The permittee shall have a verified emission factor plan approved by the Department prior to conducting the source testing in accordance with OAR 340-20-575,

(3) Material balances determined in accordance with OAR 340-20-560, OAR 340-20-565, or OAR 340-20-570, or

(4) Verified emission factors for source categories developed in accordance with OAR 340-20-575(11).

DETERMINING EMISSIONS FROM CONTINUOUS MONITORING SYSTEMS FOR 1992

340-20-555 (1) If the permittee elects to report emission data using monitoring systems, the permittee shall use a monitor installed and operated in accordance with the Department's Continuous Monitoring Manual for data collected from April 1, 1992 through December 31, 1992. For data collected from January 1, 1992 through March 31, 1992, the permittee shall use data collected in accordance with permit conditions, applicable Department rules, or the Department's Continuous Monitoring Manual.

(2) If the permittee has continuous monitoring data that comprises less than ninety percent (90%) of the plant operating time, the actual emissions during the period when the continuous monitoring system was not operating shall be determined from 90 percentile continuous monitoring data.

DETERMINING EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-560 The permittee may elect to use material balance to determine actual emissions:

(1) If the amount of material added to a process less the amount consumed and/or recovered from a process can be documented in accordance with Department approved permit procedures and in accordance with OAR 340-20-505 through 340-20-590.

(2) The permittee shall only apply material balance calculations to VOC or sulfur dioxide emissions in accordance with OAR 340-20-565 and OAR 340-20-570 respectively.

DETERMINING VOLATILE ORGANIC COMPOUND EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-565 The permittee may determine the amount of VOC emissions for an assessable emission by using material balance.

(1) The permittee using material balance to calculate VOC emissions shall determine the amount of VOC added to the process, the amount of VOC consumed in the process and/or the amount of VOC recovered in the process by testing in accordance with 40 Code of Federal Regulations (CFR) Part 60 EPA Method 18, 24, 25, a material balance method, or an equivalent plant specific method specified in the Air Contaminant Discharge Permit using the following equation:

$$VOC_{tot} = VOC_{add} - VOC_{cons}$$

Where:

VOC_{tot} = Total VOC emissions, tons

VOC_{add} = VOC added to the process, tons

VOC_{cons} = VOC consumed and/or recovered from the process, tons

DETERMINING SULFUR DIOXIDE EMISSIONS USING MATERIAL BALANCE FOR 1992

340-20-570 (1) Sulfur dioxide emissions for major sources may be determined by measuring the sulfur content of fuels and assuming that all of the sulfur in the fuel is oxidized to sulfur dioxide.

(2) The permittee shall use ASTM methods to measure the sulfur content in fuel for each quantity of fuel burned.

(3) The permittee shall determine sulfur dioxide emissions for each quantity of fuel burned, determining quantity by a method that is reliable for that source, by performing the following calculation:

$$SO_2 = \%S/100 \times F \times 2$$

Where:

SO_2 = Sulfur dioxide emissions for each quantity of fuel, tons

%S = Percent sulfur in the fuel being burned, % (w/w).

F = Amount of fuel burned, based on a quantity measurement, tons

2 = Pounds of sulfur dioxide per pound of sulfur

(4) For coal-fired steam generating units the following equation shall be used by permittees to account for sulfur retention:

$$SO_{2adj} = SO_2 \times 0.97$$

Where:

SO_{2adj} = Sulfur dioxide adjusted for sulfur retention (40 CFR Part 60, Appendix A, Method 19, Section 5.2)

SO_2 = Sulfur dioxide emissions from each quantity burned (OAR 340-20-570(3))

(5) Total sulfur dioxide emissions for the year shall be the sum total of each quantity burned calculated in accordance with 340-20-570(3) divided by 2000 pounds per ton.

(6) The permittee shall keep records of the fuel received and consumed and the quantity and sulfur content for two years from the date specified in OAR 340-20-537(6).

VERIFIED EMISSION FACTORS USING SOURCE TESTING

340-20-575 (1) To verify emission factors used to determine assessable emissions the permittee shall:

(a) Utilize source testing data collected in accordance with appropriate procedures or Department guidance in effect at the time the data was collected, for source test data collected from 1985 through 1991, or

(b) Perform source testing in accordance with the Department's Source Sampling Manual or other methods approved by the Department for source tests conducted in 1992. Source tests shall be conducted in accordance with testing procedures on file at the Department and the pretest plan submitted at least fifteen (15) days in advance and approved by the Department. All test data and results shall be submitted for review to the Department within thirty (30) days after testing.

> NOTE: It is recommended that the permittee notify the Department and obtain pre-approval of the Emission Factor source testing program prior to or as part of the submittal of the first source test notification.

(2) The permittee shall conduct or have conducted at least three compliance source tests each consisting of at least three individual test runs for a total of at least nine test runs.

(3) The permittee shall monitor and record or have monitored and recorded applicable process and control device operating data.

(4) The permittee shall perform or have performed a source test either:

(a) In each of three quarters of the year with no two successive source tests performed any closer than thirty (30) days apart, or

(b) At equal intervals over the operating period if the permittee demonstrates and the Department approves that:

(A) The process operates or has operated for part of the year, or

(B) The process is or was not subject to seasonal variations.

(5) The permittee shall conduct or have conducted the source tests to test the entire range of operating levels. At least one test shall be conducted at minimum operating conditions, one test at normal or average operating levels, and one test at anticipated maximum operating levels. If the process rate is constant, all tests shall be conducted at that rate. The permittee shall submit documentation to the Department demonstrating a constant process rate.

(6) The permittee shall determine or have determined an emission factor for each source test by dividing each test run emissions, in pounds per hour, by the applicable process rate during the source test run. At least nine emission factors shall be plotted against the respective process rates and a regression analysis performed to determine the best fit equation and the correlation coefficient (R^2). If the correlation coefficient is less than 0.50, which would indicate that there is a relatively weak relationship between emissions and process rates, the arithmetic average and standard deviation of at least nine emission factors shall be determined.

(7) The permittee shall determine the Emissions Estimate Adjustment Factor (EEAF) as follows:

(a) If the correlation coefficient (R^2) of the regression analysis is greater than 0.50, the EEAF shall be $1+(1-R^2)$.

(b) If the correlation coefficient (R^2) is less than 0.50, the EEAF shall be:

$$EEAF = 1 + SD/EF_{avg}$$

Where:

SD = Standard Deviation

EF_{avg} = Average of the Emission Factors

(8) The permittee shall determine actual emissions for interim emission fee purposes using one of the following methods:

(a) If the regression analysis correlation coefficient is less than 0.50, the actual emissions shall be the average emission factor determined from at least nine test runs multiplied by the EEAF multiplied by the total production for the entire year, or

$$AE = EF_{avg} \times EEAF \times P$$

Where:

AE = Actual Emissions

EF_{avg} = Average of the Emission Factors

EEAF = Estimated Emissions Adjustment Factor

P = Total production for the year

(b) If the regression analysis correlation coefficient is greater than 0.50 the following calculations shall be performed:

(A) Determine the average emission factor (EF) for each production rate category (maximum = EF_{max}, normal = EF_{norm}, and minimum = EF_{min}).

(B) Determine the total annual production and operating hours, production time (PT_{tot}), for the calendar year.

(C) Determine the total hours operating within the maximum production rate category (PT_{max}). The maximum production rate category is any operation rate greater than the average of at least three maximum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(D) Determine the total hours while operating within the normal production rate category (PT_{norm}). The normal production rate category is defined as any operating rate less than the average of at least three maximum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2) and any operating rate greater than the average of at least three minimum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(E) Determine the total hours while operating within the minimum production rate category (PT_{min}). The minimum production rate category is defined as any operating rate less than the average of at least three minimum operating rates during the source testing plus the average of at least three normal operating rates during the source testing divided by two (2).

(F) Actual emissions equals EEAF x $[(PT_{max}/PT_{tot}) \times EF_{max} + (PT_{norm}/PT_{tot}) \times EF_{norm} + (PT_{min}/PT_{tot}) \times EF_{min}]$.

(9) The permittee shall determine emissions during startup and shutdown, and for emissions greater than normal, during conditions that are not accounted for in the procedure(s) otherwise used to document actual emissions.

(a) All emissions during startup and shutdown, and emissions greater than normal shall be assumed equivalent to operation without an air pollution control device, unless accurately demonstrated by the permittee and approved by the Department in accordance with OAR 340-20-575(9)(b), (9)(c), (9)(d), and (9)(e). The emission factor plus the EEAF shall be adjusted by the air pollution control device collection efficiency as follows:

$$\text{Actual emission factor} = (EF \times EEAF)/(1 - PCDE)$$

Where:

EF	=	Emission Factor
EEAF	=	Emission Estimate Adjustment Factor
PCDE	=	Pollution Control Device Collection Efficiency

Unless otherwise approved by the Department, the pollution control device collection efficiencies used in this calculation shall be:

Particulate Matter:

ESP or baghouse	0.90
High energy wet scrubber	0.80
Low energy wet scrubber	0.70
Cyclonic separator	0.50

Acid gases;

Wet or dry scrubber	0.90

Volatile Organic Compounds:

Incinerator	0.98
Carbon absorber	0.95

(b) During process startups a Department approved source test shall be performed to determine an average startup factor. The average of at least three tests runs plus the standard deviation shall be used to determine actual emissions during startups.

(c) During process shutdowns a Department approved source test shall be performed to determine an emission factor for shutdowns. The average of at least three test runs plus the standard deviation shall be used to determine actual emissions during shutdowns.

(d) During routine maintenance activity the permittee shall:

(A) Perform routine maintenance activity during source testing for verified emission factors, or

(B) Determine emissions in accordance with Section (10) of this rule.

(e) The emission factor need not be adjusted if the permittee demonstrates to the Department that the pollutant emissions do not increase during startup and shutdown, and for conditions that are not accounted for the in procedure(s) otherwise used to document actual emissions (eg. NO_X emissions during an ESP failure).

(10) A verified emission factor developed pursuant to OAR 340-20-505 through 340-20-590 and approved by the Department can not be used if a process change occurs that would affect the accuracy of the verified emission factor.

(11) The permittee may elect to use verified emission factors for source categories if the Department determines the following criteria are met:

(a) The verified emission factor for a source category shall be based on verified emission factors from at least three individual sources within the source category,

(b) Verified emission factors from sources within a source category shall be developed in accordance with OAR 340-20-575,

(c) The verified emission factors from the sources shall not differ from the mean by more than twenty percent, and

(d) The source category verified emission factor shall be the mean of the source verified emission factors plus the average of the source emission estimate adjustment factors.

LATE AND UNDERPAYMENT INTERIM EMISSION FEES
340-20-590 (1) Notwithstanding any enforcement action, the permittee shall be subject to a late payment fee of:

(a) Two hundred dollars ($200) for payments postmarked more than seven (7) or less than thirty (30) days late, and

(b) Four hundred dollars ($400) for payments postmarked on or over thirty (30) days late.

(2) Notwithstanding any enforcement action, the Department may assess an additional fee of the greater of four hundred ($400) or twenty percent (20%) of the amount underpaid for substantial underpayment.

AIR QUALITY CLASSIFICATION OF VIOLATIONS
340-12-050 Violations pertaining to air quality shall be classified as follows:

(1) Class one:

(u) Submitting falsified actual or calculated interim emission fee data.

(2) Class two:

(p) Failure to pay an interim emission fee.

(q) Substantial underpayment of an interim emission fee.

(r) Submitting inaccurate actual or calculated interim emission fee data.

draft7.wo/sll
January 22, 1992 (8:56am)

Attachment H

Original Fiscal and Economic Impact Statement

FISCAL AND ECONOMIC IMPACT STATEMENT
FOR PROPOSED REVISION TO THE STATE IMPLEMENTATION PLAN
TO INCLUDE A REVISED SOURCE SAMPLING MANUAL AND ADD A
CONTINUOUS MONITORING MANUAL

PROPOSAL SUMMARY

The proposed rules would:

- Revise the State Implementation Plan to include a revised Source Sampling Manual and add a Continuous Monitoring Manual. These manuals establish the criteria for source testing and continuous monitoring systems (CMS) for determining pollutant emissions from industrial sources for the purpose of demonstrating compliance with permit limits and/or determining actual pollutant emissions

COSTS TO OWNERS OF INDUSTRIAL SOURCES

The proposed manuals establish the criteria for conducting source emissions testing and continuous monitoring but they do not specify the sources that must conduct source testing and/or continuous monitoring. The requirement to conduct source testing or continuous monitoring is usually specified in an Air Contaminant Discharge Permit as a result of a specific rule. Therefore, there is no fiscal and economic impact directly related to the manuals, in and of themselves. There may be indirect fiscal and economic impacts, but this analysis would be done when the specific rules requiring the application of these manuals are proposed.

If a source is required by permit to continuously monitor the emissions of a pollutant(s) or if the source elects to use a continuous monitoring system (CMS) for determining actual pollutant emissions, the Continuous Monitoring Manual would impose specific requirements on the source for the installation, calibration, maintenance, quality assurance, and operation of the CMS. Some of these requirements (i.e. quality assurance) could be considered greater than the CMS manufacturer's recommendations causing an additional cost to the source owner. The additional costs would be about $13,500 per year. This covers the cost of preparing and maintaining a quality assurance plan, conducting quality control activities, and performing one relative accuracy test audit per year. The cost assumes that the source would add additional staff to fulfill the quality assurance requirements. The costs would not be additive for multiple CMS or pollutant emissions. The cost of monitoring two pollutants would be about 1.3 times the cost of monitoring one; and, the cost of monitoring ~~two~~ three pollutants would be about 1.5 times the cost of monitoring one.

The sources that would be affected are major sources with any regulated pollutant emission greater than 100 tons per year. There are about 150 sources in Oregon. Of these sources, the pulp and

paper industry, utility boilers, municipal waste incinerators, sugar producers, and some wood product boilers currently have CMS in operation. These are typically large sources so that the costs discussed above are relatively insignificant. If the costs were passed on to the consumer, the result would be an insignificant increase in the product cost.

State law requires major sources to pay emission fees based on either permitted or actual emission levels. Since a CMS will measure the actual emissions from a source and actual emissions are presumably less than permitted emissions, the costs discussed above would be offset by the emission fees savings. The net result could be a savings to the sources.

Since the affected sources are major sources, it is expected that there would be no negative impact on small businesses. Some small business consulting firms could financially benefit from the potential of an expanded source testing and/or quality assurance guidance market.

COSTS TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY

The Continuous Monitoring Manual requires affected sources to submit quality assurance plans for Department approval. In addition, the manual specifies CMS reporting requirements. Depending on the number of sources, the review of quality assurance plans and CMS reports could require additional staff which would need to be supported by increased emissions fees.

The Source Sampling Manual revisions would not add additional costs to the Department.

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January 21, 1992

Ms. Lydia R. Taylor, Administrator
Water Quality Control Division
Department of Enviromental Quality
811 S. W. Sixth Ave.
Portland, Oregon 97204

Re: James River's recycle facility at Halsey, Oregon.

Dear Lydia:

We have been following the development of this facility closely because of our concern for the reduction in solid waste. This will occur when this plant is operational and recycles substantial amounts of now unuseable waste paper. We also have a long standing interest in the water quality in the Willamette River.

During the consideration of an NPDES permit for this recycle plant, the issue of the assimilative capacity of the Willamette River has been raised by some who appear to have interests in either delaying the operation of the plant or preventing its operation.

We believe that it must be remembered that there have been substantial reductions in the loading of the Willamette River from industrial sources which have provided for increases in assimilative capacity of the river. Among the most notable reductions that have occurred are:

Closure of the Crown Zellerbach paper mill at Lebanon which elimminated some 3,000 lbs. per day of BOD;

Closure of the Boise Cascade paper mill at Salem which eliminated some 8,000 lbs. per day of BOD;

Closure of the Agripac food processing plant in Corvallis; and

Land application of a substantial amount of food processing plant waste water, diverting this river loading from municipal and industrial waste water treatment facilities.

We are also sure that there have been additional industrial reductions, but the above mentioned reductions have been substantial and have resulted in improvement of the assimilative capacity of the river. While we are aware of increases in loadings by some industrial NPDES permit holders, we do not know of any individual or cumulative increases in industrial loadings that would compare with the decreases noted above.

Under the circumstances we suggest that the issue of assimilative capacity would be better addressed as part of the ongoing Willamette River study. We would appreciate your making our views known to the Director and the Environmental Quality Commission.

Sincerely,

Bruce C. Omara

REQUEST FOR EQC ACTION

Meeting Date: January 23, 1992
Agenda Item: J
Division: Water Quality
Section: Municipal Wastewater

SUBJECT:

Request for a Mass Load Increase for the City of Brookings. An exception to OAR 430-41-026 (2) (an EQC Policy Requiring Growth and Development be Accommodated within Existing Permitted Loads unless otherwise approved by the Commission).

PURPOSE:

An exception to the above-referenced EQC Policy would enable the City of Brookings' recently upgraded treatment facility, to accommodate the current population during extreme wet weather by incorporating increased mass load limits in its National Pollutant Discharge Elimination System (NPDES) Permit during the wet weather period. An exception is also sought to the above-referenced EQC Policy for increased mass load limits in its NPDES Permit for the first stage of a two stage 20-year proposed expansion of the wastewater treatment facility. A mass load limit increase would allow the City of Brookings to expand the wastewater treatment plant in 1993 or 1994 without added tertiary treatment, and without significant expenditures on sewer system rehabilitation. The City discharges to the Pacific Ocean, and the increased mass loads are projected to have an insignificant impact on water quality.

ACTION REQUESTED:

___ Work Session Discussion
___ General Program Background
___ Potential Strategy, Policy, or Rules
___ Agenda Item ___ for Current Meeting
___ Other: (specify)

___ Authorize Rule making Hearing
___ Adopt Rules
Proposed Rules Attachment ___
Rulemaking Statements Attachment ___
Fiscal and Economic Impact Statement Attachment ___
Public Notice Attachment ___

___ Issue a Contested Case Order
___ Approve a Stipulated Order
___ Enter an Order
Proposed Order Attachment ___

_X_ Approve Department Recommendation
___ Variance Request Attachment ___
_X_ Exception to Rule Attachment _A_
___ Informational Report Attachment ___
___ Other: (specify) Attachment ___

DESCRIPTION OF REQUESTED ACTION:

The City of Brookings owns and operates a secondary wastewater treatment facility that serves the City of Brookings and the Harbor Sanitary District. The facility discharges treated disinfected effluent to the Pacific Ocean through a newly constructed offshore outfall and diffuser.

The Department is proposing to renew the NPDES permit for the City of Brookings' wastewater treatment plant. The proposed permit includes minor increased mass load limits for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) for the existing treatment plant and larger mass load limits during the winter months for the proposed expanded plant, projected to be completed in 1994. Five sets of effluent limits are discussed in the following text. The sets of limits are presented twice, once immediately below this paragraph for ease in comparison, and once as each table is discussed in the staff report.

Table 1: Existing Effluent Limits

Parameter	Monthly Average		Weekly Average		Daily Maximum	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	30	250	45	375	-	500
TSS	30	250	45	375	-	500

Table 2: Department Proposed Revised Stage 1 Effluent Limits

Parameter	Monthly Average*		Weekly Average*		Daily Maximum*	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	30	250	45	375	-	500
TSS	30	250	45	375	-	500

* From November 1 through April 30, when the monthly average flow exceeds 3.0 MGD, the monthly average and weekly average mass load limits for BOD and TSS shall be increased to 751 and 1126 pounds, respectively. When on any day the total daily flow exceeds 7.5 MGD, the daily maximum limit shall be 1877 pounds for that day.

Table 3: Proposed Effluent Limits for Stage 2A

Parameter	Monthly Average*		Weekly Average*		Daily Maximum*	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	217	30	325	-	434
TSS	20	217	30	325	-	434

*From November 1 through April 30 of each year, when the monthly average flow exceeds 1.8 MGD, the monthly average mass limits shall not exceed 334 pounds/day; and when the weekly average or

daily flow exceeds 2.3 MGD, the weekly and daily average mass load limits shall not exceed 600 pounds/day and 1358 pounds/day, respectively.

Table 4: City's Initially Requested Effluent Limits for Stage 2

(Completion of construction - Year 2002)

Parameter	Monthly Average		Weekly Average		Daily Maximum	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	751	20	1018	30	2577
TSS	20	751	20	1018	30	2577

Table 5: City's Initially Requested Effluent Limits for Stage 2A

Parameter	Monthly Average		Weekly Average		Daily Maximum	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	576	20	788	30	NA
TSS	20	576	20	788	30	NA

Existing Plant (Stage 1) Limitations

The City of Brookings constructed a secondary treatment plant in 1973. This treatment plant was supposed to be designed to meet permit limits up to a design average dry weather flow of 1.0 million gallons per day, which is the equivalent of wastewater from a population of 10,000.

Although flows to the treatment plant were still much less than the maximum design flows, many effluent violations were documented in the 1980's. The Department and the City signed a Stipulation and Final Order in 1988, which required the City to eliminate the effluent violations by constructing necessary improvements.

Most municipalities, when faced with a plant that needs upgrading, also expand the treatment capacity to treat additional wastes from expected growth. The typical municipal treatment plant expansion

will accommodate about 20 years expected growth. Due to lack of funds, Brookings chose not to do this in 1988, and instead committed to upgrading but not expanding the treatment plant.

The City and the Department agreed in 1988 that the upgraded plant would be required to meet the existing effluent limits. These limits are as follows:

Table 1: Existing Effluent Limits

Parameter	Monthly Average		Weekly Average		Daily Maximum	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	30	250	45	375	-	500
TSS	30	250	45	375	-	500

The construction to upgrade the treatment plant was completed in June, 1991. Due to a building boom in the Brookings area, the treatment plant is fast approaching capacity. The City now believes that they may not be able to achieve the above limitations, at least during high flow conditions. High flows occur generally during the winter, when stormwater and groundwater enter the sewer system through gaps in sewer joints, cracks in sewer lines or other imperfections. Peak flows in the Brookings sewer system are estimated at 7.1 million gallons per day, for example.

The recommended mass load limit for the existing plant will only affect the discharge limits during very high flows. The mass limits currently in effect will remain the same as currently allowed during normal expected flows, but higher limits will be allowed if extreme flow conditions should occur. The existing permitted mass limits do not allow for higher limits during high flow conditions. The following limits are proposed:

Table 2: Department Proposed Revised Stage 1 Effluent Limits

Parameter	Monthly Average*		Weekly Average*		Daily Maximum*	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	30	250	45	375	-	500
TSS	30	250	45	375	-	500

* From November 1 through April 30, when the monthly average flow exceeds 3.0 MGD, the monthly average and weekly average mass load limits for BOD and TSS shall be increased to 751 and 1126 pounds, respectively. When on any day the total daily flow exceeds 7.5 MGD, the daily maximum limit shall be 1877 pounds for that day.

In addition to the slightly higher than anticipated flows to the treatment plant, the sludge treatment portion of the plant needs to be immediately upgraded. The City has expressed concern that they may not be able to comply with the above proposed limits without immediately imposing a moratorium on additional connections. The Department is proposing to issue the permit with the above effluent limits, but also issue a Stipulation and Final Order to allow higher limits until expanded facilities can be constructed. The Order will allow additional connections, but will also assure that the City moves forward as soon as possible with the needed improvement and expansion. These additional connections may cause some permit violations, but will not have a significant water quality impact. The proposed Order is included as Attachment H.

Proposed Expanded Plant (Stage 2A) Limitations

The City is proposing to expand the wastewater treatment plant in 1993 and 1994. A facilities plan describing the Stage 2A plant has been submitted to the Department and reviewed. The Stage 2A treatment plant capacity will be increased from the current 1.0 million gallons per day (MGD), to 1.3 MGD. The expanded plant is expected to serve the Brookings area for approximately ten years before a further expansion will be required (Stage 2B).

The Department is proposing to decrease the mass limits during relatively dry weather, but to increase the mass limits during high flow conditions. These recommended limits are based on the Department's engineering evaluation of what the proposed expanded treatment plant is capable of achieving.

The City originally requested much larger mass limits. The Department and the City have had numerous meetings and have reached agreement on mass limits that are reasonably achievable. The proposed limits for the Stage 2A expanded plant are as follows:

Table 3: Proposed Effluent Limits for Stage 2A

Parameter	Monthly Average*		Weekly Average*		Daily Maximum*	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	217	30	325	-	434
TSS	20	217	30	325	-	434

*From November 1 through April 30 of each year, when the monthly average flow exceeds 1.8 MGD, the monthly average mass limits shall not exceed 334 pounds/day; and when the weekly average or daily flow exceeds 2.3 MGD, the weekly and daily average mass load limits shall not exceed 600 pounds/day and 1358 pounds/day, respectively.

Evaluation of Mass Load Increase Request

The above limits are less than those originally requested by the City, as shown below:

Table 4: City's Initially Requested Effluent Limits for Stage 2

(Completion of construction - Year 2002)

Parameter	Monthly Average		Weekly Average		Daily Maximum	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	751	20	1018	30	2577
TSS	20	751	20	1018	30	2577

However, the City is not constructing both the Stage 2A and 2B treatment facilities at this time. The Department is proposing permit limits only for the Stage 2A facility expansion since the 2B expansion will not occur during this permit cycle and is speculative at this time.

The City then proposed effluent limits just for the Stage 2A expansion. These requested limits are:

Table 5: City's Initially Requested Effluent Limits for Stage 2A

Parameter	Monthly Average		Weekly Average		Daily Maximum	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	576	20	788	30	NA
TSS	20	576	20	788	30	NA

In considering both of the City's requests, the Department evaluated the following three major areas: (1) the environmental impact of the proposed increased mass loads; (2) what limits were reasonably achievable with the existing and proposed treatment facility; and (3) what it would take to achieve the existing mass load limits. These factors are consistent with those required to be considered by the Commission under OAR 340-41-026(3).

Environmental Impact - The existing and proposed expanded plants both will discharge to the Pacific Ocean, via a 500 foot outfall pipe and diffuser. There is limited field data available regarding the water quality and biological community surrounding the outfall. However, the impact of the requested increased mass loads can be estimated using computer simulation models. Based on the depth of the outfall (ten feet at low tide), the mixing and wave action, the amount of dilution available in the Pacific Ocean, and the design of the diffuser (which also increases mixing), the Department agrees with the City that the requested increases would have very minimal impacts on water quality. The discharged effluent can be expected to quickly mix and become diluted down to water quality standards within the existing allowed mixing zone. No violations of water quality standards would be expected to occur outside of the mixing zone as a result of the requested increased mass loads.

Reasonably Achievable Limits - The existing wastewater treatment plant has an excellent design capable of producing a high quality effluent under almost all flow conditions. As with any other treatment plant, however, the quality of the effluent will not be as good when flows to the treatment plant are extremely high. The existing plant was designed to meet the current mass load limits under certain peak flows that were projected to occur during the life of the plant.

The expanded treatment plant will be basically the same design, and is also expected to produce a high quality effluent under almost all flow conditions. The mass limits were calculated using the Department's standard formulas based on the design average dry weather flows, and these limits were then compared to the actual projected performance and flows. Higher limits for high flow conditions are proposed where our calculations indicated that the routinely calculated mass limits would be exceeded. A further discussion of how the limits were derived is included in the permit evaluation report, which is included in Attachment D.

It should be noted that the Department set the mass limits such that some few violations may occur during the five-year life of the permit. Both DEQ and EPA set effluent limits based on achieving compliance 95 to 99% of the time, depending on the effluent limit. The infrequent permit exceedances that result from this approach are addressed with informal enforcement actions (Notices of Noncompliance). Neither DEQ nor EPA consider a single, minor effluent limit exceedance over a two year period to be significant. If the Department was to set limits so high that no violations would ever occur, the limits would no longer really be limits, and permittees would not be encouraged to properly operate the treatment facilities to minimize pollutant discharges.

Alternatives That Would Achieve Existing Mass Limits (No Increase) - The existing mass limits can be met during most flow conditions, but not during extremely high flows (typically during heavy winter storms when the groundwater levels are high). The existing mass limits could be achieved under all flow conditions, by two different approaches. These are (1) the addition of a polishing filter; and (2) a massive rehabilitation of the Brookings sewer system to reduce the winter peak flows to the treatment plant.

The addition of a polishing filter would cost between $3 million and $4 million for Stage 2A. With approximately 5000 people served in the system, this would calculate to a maximum of $800 per person or $3200 per four person household. The Department does not believe that this

additional expense is justified for an ocean discharge, where the assimilative capacity is so large and the impact of the increased load so minor.

The condition of the Brookings sewer system was evaluated in 1988. The sewer system has many leaks and imperfections, and combined with the 80 inches of rainfall per year, Brookings has a serious high flow problem in the sewer system. There are no bypasses or overflows of raw sewage from the sewer system, however the flows reaching the treatment plant can be very high. The cost of replacing or rehabilitating major portions of the sewer system, so as to reduce peak flows, is not known precisely. It is estimated to far exceed the cost of filters, however, and so was also rejected by the Department as not reasonable.

AUTHORITY/NEED FOR ACTION:

___	Required by Statute: _____ Enactment Date: _____	Attachment ___
___	Statutory Authority: _____	Attachment ___
X	Pursuant to Rule: OAR 340-41-026 (2) & (3)	Attachment A
___	Pursuant to Federal Law/Rule: _____	Attachment ___
___	Other:	Attachment ___
X	Time Constraints:	

The City of Brookings' 1988 Stipulation and Final Order expired December 31, 1991. With expiration of the Order, the City's treatment facility will be required to meet the current permit biochemical oxygen demand (BOD) and total suspended solids (TSS) mass load limits. During this and future winter wet weather periods, the facility may violate these limits.

DEVELOPMENTAL BACKGROUND:

___	Advisory Committee Report/Recommendation	Attachment ___
X	Hearing Officer's Report/Recommendations	Attachment B
___	Response to Testimony/Comments	Attachment ___
___	Prior EQC Agenda Items: (list)	Attachment ___
___	Other Related Reports/Rules/Statutes:	Attachment ___
X	Supplemental Background Information	
	Draft NPDES Permit	Attachment C
	Permit Evaluation Report	Attachment D
	Public Notice	Attachment E

Revised Draft NPDES Permit	Attachment F
Permit Evaluation Report Amendment	Attachment G
Draft Stipulation and Final Order	Attachment H

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The draft permit was made available for public comment in accordance with public notification requirements for NPDES permits. An informational meeting and a public hearing on the proposed permit and the wasteload increase was held on September 20, 1991 in Brookings. All testimony received was supportive of the expansion of the wastewater treatment facility. However, testimony received voiced concern that the mass load limitations proposed by the Department in the draft permit were less than those proposed in the City's 20-year plan for the facility expansion. (Refer to Attachment B for the Hearings Officer's Report).

The Harbor Sanitary District has expressed some concern regarding the proposed expansion and upgrade of the Brookings treatment facility. The Harbor Sanitary District is a customer of the City of Brookings regional treatment facility. The District has contacted the Department with a request to explore the possibility of a separately owned and operated wastewater treatment plant. The Department continues to support the concept of regional treatment plants for a variety of reasons, including the ability of regional facilities to provide the least cost, environmentally sound treatment. The Harbor Sanitary District is located within the Brookings urban growth boundary, and as such the City continues to be the logical provider of urban services such as wastewater treatment. In addition, the Department is required to comply with local comprehensive land use plans, which show the City as the provider of such services. Prior to issuing a permit to the Harbor Sanitary District for a separate facility, the District would be required to obtain a signed Land Use Compatibility Statement signed by both the City and Curry County.

PROGRAM CONSIDERATIONS:

Several important issues were raised during this permit drafting and public hearing process. The significant issues raised during the hearings process, and by other municipalities, are briefly described below:

Highest and best practicable treatment should be required, versus limits should be based solely on assimilative capacity of the receiving waterbody - Several municipalities in addition to the City of Brookings have recently expressed the

opinion that mass limits should be based solely on the capacity of the receiving stream. The Department does not agree, and believes that limits should reflect the "highest and best" practicable level of treatment. For sewage treatment plants, this means a properly designed, built, operated and maintained treatment plant and sewer system, and effluent limits consistent with this concept. Pollution and discharges are to be minimized to the maximum extent reasonably attainable, and not simply allowed to occur until such time as streams become so polluted that a clean up is required. This policy directive is clearly stated in the federal Clean Water Act, and in Oregon's rules including OAR 340-41-026 (no mass load increases generally allowed), and OAR 340-41-325 for the South Coast Basin:

> Notwithstanding the water quality standards contained below, the highest and best practicable treatment and/or control of wastes, activities, and flows shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels...

<u>Mass limits should be achievable but should encourage/require good operation, versus mass limits should be based on the most extreme flow conditions, and assuming the worst possible combination of circumstances, so that a violation would never occur short of gross negligence or major mechanical failure</u> - This issue was discussed earlier in the document. Sewage treatment plants are biological systems that are affected by variations in flows, waste streams entering the plant, temperature, and other factors. The wastes entering most treatment plants may vary significantly from day to day, and some variation in effluent quality inevitably occurs. Sewage treatment plants are not steady state operations, but rather require careful design and skillful operators in order to keep up with the variations typically encountered.

The Department believes that limits should be set that encourage and require good operation. Again, this is consistent with the concept of requiring the "highest and best practicable treatment". Both the Department and EPA attempt to strike a balance in setting effluent limits, between those limits that require diligent and careful operation, and those limits that are so stringent that even

with good operation frequent permit exceedances occur. For example, EPA defines "effluent concentrations consistently achievable through proper operation and maintenance" as follows:

> For a given pollutant parameter, the 95th percentile value for the 30-day average effluent quality achieved by a treatment works in a period of at least two years, excluding values attributable to upsets, bypasses, operation errors or other unusual conditions, and (2) a 7-day average value equal to 1.5 times the value derived...

Departure from normal Department practice in determining mass load limits - It has been the Department's practice to first determine what the mass load limits will be (based on the proposed design average dry weather flow), prior to the beginning of the design phase of a new or expanded treatment plant. The Department then requires that the City and its design engineer to design, build, and operate the new facility to comply with the assigned limits. This practice has served the state well by minimizing the discharge of pollutants.

The Department did not follow this procedure for Brookings. Rather, the City has proposed a treatment plant first, and then requested mass limits to fit the treatment capabilities of the proposed new plant. The Department agreed to this approach only because the discharge is to the Pacific Ocean, which has an extremely large assimilative capacity.

Based on the request by a number of other municipalities, the Department will be reviewing in the next year our procedures in determining mass limits for new (not existing) sewage treatment plants. We will also be considering related questions of excessive groundwater and stormwater flows in deteriorated sewer systems, sewer system overflows, and public notification procedures for sewer system overflows.

Lack of equity between different municipalities - One large municipality located on a water quality limited stream complained to staff that Brookings was not being held to the same standard regarding maintenance of the sewer system. The Department believes that all municipalities have an obligation to minimize the discharge of pollutants, and that includes proper maintenance and repair of sewer systems. However, we also attempt to be flexible and look at each discharger separately. Given the very great handicap of 80 inches/year of rain in Brookings, the relatively large

expense of rehabilitating the sewer system, and the very large dilution available in the Pacific Ocean, the Department believes that the load increase is reasonable.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Existing Plant (Stage 1) Mass Load Increase

   a. No action on mass load increase request. Require the City of Brooking's Stage 1 treatment facility to meet current NPDES permitted mass load limits regardless of flows.

      After expiration of the Stipulation and Final Order, the City would be at risk of violating its current NPDES permit limits during extremely high flow conditions within the next few years, until completion of the Stage 2A expansion. This would subject the City to further Departmental enforcement action and could ultimately result in civil penalties being assessed for permit violations. No action or denial of a mass load increase would require the City to severely limit further growth in the area, or provide advanced treatment during wet weather, or expend substantial funds on sewer rehabilitation.

   b. Approve the Department proposed wet weather mass load increase.

      Approval of the proposed wet weather mass load increase would accurately reflect the achievable performance of the upgraded wastewater treatment facility until approximately 1993. The limits would provide the City with relief until completion of the Stage 2A facility expansion and allow for some growth in the area. The requested mass load increase would only be for very high flows during the permit cycle prior to expansion of the facilities in 1993.

   c. City's requested reduction in the trigger points for switching to wet weather mass load limits.

      The City requested the wet weather monthly average and weekly average mass load limit monthly average flow trigger point for Stage 1 be reduced from 3.0 mgd to 2.0 mgd. It was also requested that the daily maximum flow trigger point be reduced from 7.5 mgd to 7.0 mgd. These lower trigger points would allow the facility to have higher mass load limits at lower flows. The Department does not consider this reduction to be warranted based

on the achievable performance of the facility and rejected the City's request.

2. Proposed Stage 2A Facility Mass Load Increase

   a. Deny the proposed mass load increase and require the City of Brookings' Stage 2A treatment facility to meet current NPDES permitted mass load limits year-round.

      Denial of the proposed mass load increase would require adding advanced treatment (tertiary filtration) at substantial cost to the City, with little added environmental benefit.

   b. Approve the Department's proposed mass load increase for the 2A facility.

      The mass load limits proposed are based on the achievable performance of the proposed treatment facility, up to a two year storm event, without advanced treatment added.

   c. Approve the City's initially requested mass load increase.

      Approval of the requested mass load increase would effectively remove the mass limits as limits, except under very extreme flow conditions.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that the Commission grant the wasteload increases (Alternatives 1.b and 2.b) for the City of Brookings, based on the following findings:

1. The existing (Stage 1) facility is nearing capacity, and may have effluent violations within the next two years at very high flow conditions.

2. The Stage 2A expansion of the facility will be needed to accommodate projected growth and development in the Brookings area from now through the year 2002.

3. The water quality analysis indicates the treatment facility's discharge at the current Stage 1 and proposed Stage 2A design flows would not violate water quality standards nor impair beneficial uses outside the designated mixing zone at the projected effluent flows.

4. Although modeling based on peak effluent flows (for the Stage 2A and 2B expansions) predicts there would not be any adverse impacts on the receiving waters outside of the mixing zone, basing proposed permit monthly average, weekly average, and daily maximum mass load limits on one in five year peak storm events is not appropriate. Mass load limitations based on one in 5-year storm event flows to the treatment facility results in limitations that do not require communities to operate their treatment facilities at their highest and best efficiency. The mass load limitations would only effectively limit the facility at extremely high flows that rarely occur. These limitations would not in effect be limitations under average conditions.

5. The cost of treating the effluent to existing mass load limits would be between $3 and $4 million, which is excessive based on the minimal environmental impact of the additional mass load.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

This recommendation is consistent with agency policy which allows the Commission to grant an exception to OAR 340-41-026(2), which requires that growth and development be accommodated within existing permitted loads. Water quality standards would not be violated and beneficial uses would be protected with the recommended alternative. Also, to deny a mass load increase for the City's wastewater treatment facility would be economically burdensome.

ISSUES FOR COMMISSION TO RESOLVE:

The Commission should consider the appropriateness of granting the wasteload increase request by the City of Brookings. State regulations require dischargers to improve the level of treatment as growth and development occurs so that total wasteloads to state waters do not increase. This anti-degradation policy allows exceptions to be made by the Commission.

<u>INTENDED FOLLOWUP ACTIONS:</u>

The draft NPDES Permit will be prepared for final issuance following the Commission's decision. The permit will reflect the Commission's decision on the waste load increase request.

Approved:

Section: Barbara A. Burton

Division: Lydia Taylor

Director: Fred Hansen

Report Prepared By: Barbara Burton

Phone: 229-6099

Date Prepared: January 3, 1992

General Water Quality Standards

340-41-025 [SA 26, f. 6-1-67;
DEQ 39, f. 4-5-72, ef. 4-15-72;
DEQ 55, f. 7-2-73, ef.7-15-73;
Repealed by DEQ 129,
f. & ef. 1-21-77]

Policies and Guidelines Generally Applicable to All Basins

340-41-026 (1)(a) Existing high quality waters which exceed those levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water shall be maintained and protected unless the Environmental Quality Commission chooses, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning process, to lower water quality for necessary and justifiable economic or social development. The Director or his designee may allow lower water quality on a short-term basis in order to respond to emergencies or to otherwise protect public health and welfare. In no event, however, may degradation of water quality interfere with or become injurious to the beneficial uses of water within surface waters of the following areas:

(A) National Parks;
(B) National Wild and Scenic Rivers;
(C) National Wildlife Refuges;
(D) State Parks.

(b) Point source discharges shall follow policies and guidelines (2), (4), and (5), and nonpoint source activities shall follow guidelines (6), (7), (8), (9) and (10).

(2) In order to maintain the quality of waters in the State of Oregon, it is the general policy of the EQC to require that growth and development be accommodated by increased efficiency and effectiveness of waste treatment and control such that measurable future discharged waste loads from existing sources do not exceed presently allowed discharged loads except as provided in section (3) of this rule.

(3) The Commission or Director may grant exceptions to sections (2) and (5) and approvals to section (4) for major dischargers and other dischargers, respectively. Major dischargers include those industrial and domestic sources that are classified as major sources for permit fee purposes in OAR 340-45-075(2).

(a) In allowing new or increased discharged loads, the Commission or Director shall make the following findings:

(A) The new or increased discharged load would not cause water quality standards to be violated;

(B) The new or increased discharge load would not threaten or impair any recognized beneficial uses;

(C) The new or increased discharged load shall not be granted if the receiving stream is classified as being water quality limited unless the pollutant parameters associated with the proposed discharge are unrelated either directly or indirectly to the parameter(s) causing the receiving stream to be water quality limited; and

(D) The activity, expansion, or growth necessitating a new or increased discharge load is consistent with the acknowledged local land use plans as evidenced by a statement of land use compatibility from the appropriate local planning agency.

(b) Oregon's water quality management policies and programs recognize that Oregon's water bodies have a finite capacity to assimilate waste. The strategy that has been followed in stream management has hastened the development and application of treatment technology that would not have otherwise occurred. As a result, some waters in Oregon have assimilative capacity above that which would exist if only the minimum level of waste treatment was achieved. This unused assimilative capacity is an exceedingly valuable resource that enhances in-stream values specifically, and environmental quality generally. Allocation of any unused assimilative capacity should be based on explicit criteria. In addition to the conditions in subsection (a) of this section, the Commission or Director shall consider the following:

(A) Environmental Effects Criteria.

(i) Adverse Out-of-Stream Effects. There may be instances where the non-discharge or limited discharge alternatives may cause greater adverse environmental effects than the increased discharge alternative. An example may be the potential degradation of groundwater from land application of wastes.

(ii) Instream Effects. Total stream loading may be reduced through elimination or reduction of other source discharges or through a reduction in seasonal discharge. A source that replaces other sources, accepts additional waste from less efficient treatment units or systems, or reduces discharge loadings during periods of low stream flow may be permitted an increased discharge load year-round or during seasons of high flow, as appropriate.

(iii) Beneficial effects. Land application, upland wetlands application, or other non-discharge alternatives for appropriately treated wastewater may replenish groundwater levels and increase streamflow and assimilative capacity during otherwise low streamflow periods.

(B) Economic Effects Criteria. When assimilative capacity exists in a stream, and when it is judged that increased loading will not have significantly greater adverse environmental effects than other alternatives to increased discharge, the economic effect of increased loading will be considered. Economic effects will be of two general types:

(i) Value of Assimilative Capacity. The assimilative capacity of Oregon's streams are finite, but the potential uses of this capacity are virtually unlimited. Thus it is important that priority be given to those beneficial uses that promise the greatest return (beneficial use) relative to the unused assimilative capacity that might be utilized. In-stream uses that will benefit from reserve assimilative capacity, as well as potential future beneficial use, will be weighed against the economic benefit associated with increase loading.

(ii) Cost of Treatment Technology. The cost of improved treatment technology, non-discharge and limited discharge alternatives shall be evaluated.

ATTACHMENT A-1

(4) For any new waste sources, alternatives which utilize reuse or disposal with no discharge to public waters shall be given highest priority for use wherever practicable. New source discharges may be approved subject to the criteria in section (3) of this rule.

(5) No discharges of wastes to lakes or reservoirs shall be allowed except as provided in section (3) of this rule.

(6) Log handling in public waters shall conform to current EQC policies and guidelines.

(7) Sand and gravel removal operations shall be conducted pursuant to a permit from the Division of State Lands and separated from the active flowing stream by a water-tight berm wherever physically practicable. Recirculation and reuse of process water shall be required wherever practicable. Discharges, when allowed, or seepage or leakage losses to public waters shall not cause a violation of water quality standards or adversely affect legitimate beneficial uses.

(8) Logging and forest management activities shall be conducted in accordance with the Oregon Forest Practices Act so as to minimize adverse effects on water quality.

(9) Road building and maintenance activities shall be conducted in a manner so as to keep waste materials out of public waters and minimize erosion of cut banks, fills, and road surfaces.

(10) In order to improve controls over nonpoint sources of pollution, federal, state, and local resource management agencies will be encouraged and assisted to coordinate planning and implementation of programs to regulate or control runoff, erosion, turbidity, stream temperature, stream flow, and the withdrawal and use of irrigation water on a basin-wide approach so as to protect the quality and beneficial uses of water and related resources. Such programs may include, but not be limited to, the following:

(a) Development of projects for storage and release of suitable quality waters to augment low stream flow;

(b) Urban runoff control to reduce erosion;

(c) Possible modification of irrigation practices to reduce or minimize adverse impacts from irrigation return flows;

(d) Stream bank erosion reduction projects.

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 123, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 13-1989, f. & cert. ef. 6-14-89

340-41-029 [Renumbered to 340-40-001 thru 340-40-080]

Beneficial Uses of Waters to be Protected by Special Water Quality Standards

340-41-030 [SA 25, f. 6-1-67; Repealed by DEQ 123, f. & ef. 1-21-77]

Policy on Sewerage Works Planning and Construction

340-41-034 (1) Oregon's publicly owned sewerage utilities have since 1956 developed an increasing reliance on federal sewerage works construction grant funds to meet a major portion of the cost of their sewerage works construction needs. This reliance did not appear unreasonable based on federal legislation passed up through 1978. Indeed, the Environmental Quality Commission (EQC) has routinely approved compliance schedules with deadlines contingent on federal funding. This reliance no longer appears reasonable based on recent and proposed legislative actions and appropriations and the general state of the nation's economy.

(2) The federal funds expected for future years will address a small percentage of Oregon's sewerage works construction needs. Thus, continued reliance by DEQ and public agencies on federal funding for sewerage works construction will not assure that sewage from a growing Oregon population will be adequately treated and disposed of so that health hazards and nuisance conditions are prevented and beneficial uses of public waters are not threatened or impaired by quality degradation.

(3) Therefore, the following statements of policy are established to guide future sewerage works planning and construction:

(a) The EQC remains strongly committed to its historic program of preventing water quality problems by requiring control facilities to be provided prior to the connection of new or increased waste loads.

(b) The EQC urges each sewerage utility in Oregon to develop, as soon as practicable, a financing plan which will assure that future sewerage works construction, operation, maintenance and replacement needs can be met in a timely manner. Such financing plans will be a prerequisite to Department issuance of permits for new or significantly modified sewerage facilities, for approval of plans for new or significantly modified sewerage facilities, or for access to funding assistance from the state pollution control bond fund. The Department may accept assurance of development of such financing plan if necessary to prevent delay in projects already planned and in the process of implementation. The Department will work with the League of Oregon Cities and others as necessary to aid in the development of financing plans.

(c) No sewerage utility should assume that it will receive grant assistance to aid in addressing its planning and construction needs.

(d) Existing sewerage facility plans which are awaiting design and construction should be updated where necessary to include:

(A) Evaluation of additional alternatives where appropriate, and re-evaluation of costs of existing alternatives;

(B) Identification and delineation of phased construction alternatives; and

(C) A financing plan which will assure ability to construct facilities over an appropriate time span with locally derived funds.

(e) New sewerage works facility planning initiated after October 1, 1981 should not be approved without adequate consideration of alternatives and phased construction options, and without a financing plan which assures adequate

A-2

ATTACHMENT B

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY MEMORANDUM

DATE: September 30, 1991

TO: Lydia Taylor

FROM: Ralph E. Funk, Hearing Officer REF

SUBJECT: Public Hearing to Receive Testimony on the Proposed NPDES permit for the City of Brookings.

An informational meeting/public hearing was held at the City of Brookings City Hall counsel chambers starting at 10 AM, September 20, 1991. Twenty four (24) people attended the hearing; eight of whom provided testimony:

	Representing
S. John Zia	The Curry County Homebuilders Association and the Curry County Housing Advisory Board.
John A. Krawczyk, T.J. Bossard & Associates	Harbor Sanitary District
Nancy Brendlinger, City Council Member	City of Brookings
Jerrold A Boscoe, President, Western Pacific Development, Inc.	Western Pacific Development, Inc.
Fred Hummel, Mayor	City of Brookings
Dennis Cluff, City Manager,	City of Brookings
Mr. Eldon M. Gossets	
Tom Davis City Council Member	City of Brookings

Written testimony was received during the public hearing from Mr. John Krawczyk and Mr. Jerrold Boscoe and is being made a part of the hearing record. The Department also received written comments during the public comment period from the City's engineering consultant, Brown and Caldwell.

The following is a summary of the comments received at the hearing and during the comment period, and the Department's response.

Summary of, and Department Response to, Oral Testimony

A reoccurring theme in the oral testimony received expressed concern that the Department's proposed biochemical oxygen demand (BOD) and total suspended solids (TSS) mass discharge limitations in the draft waste discharge permit would restrict the community's growth and development. According to the testimony, Brookings/Harbor has a fragile economy with a limited economic base - fishing (sport and commercial), the timber industry, and tourism. As a result of recent cuts in the timber industry and a declining fishing industry, the area is suffering from a poor economic climate leaving tourism as the predominate economic base in the area and tourism provides only seasonal income to the community.

An additional economic factor in area in the last few years has been the growth in the housing industry. The Curry County Homebuilders Association conducted a preliminary in house study pertaining to local income derived from the housing industry. The study indicates 425 families receive at least 50 percent of their income directly from the construction industry in Curry County. A moratorium, if once again needed to limit sewer connections, would have a direct affect on many of these families.

Also, the Brookings/Harbor Port Commission recently was in negotiations to bring a business into the community that would have provided addition jobs. It was stated that the negotiations fell apart when the City was unable to assure the company of adequate sewer service.

Several individuals testified that a failure by the Department to recognize the higher effluent mass load limitations proposed by Brown and Caldwell would result in further damage to an already faltering economy and possibly a sewer connection moratorium.

Department Response: We acknowledge the concerns of the citizens of Brookings that the treatment facility must have adequate treatment capacity to provide for growth of the community at minimal cost for completing the expansion. We are sympathetic to the plight of small communities so affected. As part of any mass load increase request, the economic factors will be evaluated and taken into consideration. This evaluation is required by Oregon Administrative Rule 340-41-026 (3).

John A. Krawczyk, T.J. Bossard & Associates representing Harbor Sanitary District

Mr. Krawczyk, on behalf of Harbor Sanitary District supports the City's efforts to relax the waste discharge limitations and provide the maximum capacity possible at the existing treatment plant. The District is also concerned the proceedings might affect their ability to pursue their own treatment options. (The Department received written testimony from the District as part of the public hearing record (See attachment A).)

Department Response: The Department does not consider the proposed permit limitations or upgrade of the wastewater treatment facility to prevent the District from pursuing separation from the City of Brookings. However, the District if intending to apply for a waste discharge permit to construct, operate and maintain its own wastewater treatment and disposal facilities, must among other requirements: (1) complete a thorough evaluation of the environmental and economic impacts of the treated effluent disposal/discharge alternatives, and (2) assure compliance with all applicable environmental regulations. Furthermore, since the District is within the City's urban growth boundary, any treatment alternative must be approved by the Land Conservation Development Commission and would require a signoff from the City of Brookings.

Thus, we strongly encourage the District to weigh the benefits versus the liabilities of separating from the City of Brookings in this era of tightening federal regulations, escalating operating costs, and increasing environmental litigations. Also, the Department recognizes regionalization of treatment facilities as the most efficient and effective way to collect, treat, and dispose of municipal wastewaters. It is the policy of the Department to encourage and support regionalization of wastewater treatment facilities whenever possible.

Nancy Brendlinger, Brookings City Council Member

Due to the location of the City, the possibility of any major industries coming to Brookings is very limited and impossible without additional treatment capacity. The Department must look at the economical as well as environmental needs of the community. The $6 million dollar expansion of the treatment facility (solids handing and primary treatment) is extremely expensive and will be a hardship on the community. A lower cost alternative for providing the needed service to the community would be much more desirable.

Department Response: The existing wastewater treatment is currently over loaded with solids. The majority of the proposed $6 million expansion of the wastewater treatment facility is intended to provide this badly need solids handling and treatment capability. The expansion should also provide additional liquid waste stream treatment capacity if implemented as outlined in Brown and Caldwell's June 1991 facility plan. Failure of the City to address solids handling will only further reduce the ability of the treatment facility to adequately treat and dispose of future waste loads.

Jerrold A Boscoe, President, Western Pacific Development, Inc.

Western Pacific Development retained the services of Fetrow Engineering to assist the City and Western Pacific Development, Inc. in evaluating the alternatives and current problems facing the treatment facility. Fetrow Engineering evaluated the Brown and Caldwell proposal and supports their findings. Mr. Boscoe read the evaluation into the record and submitted the Fetrow Engineering's letter in support of Brown & Caldwell's facility plan (see Attachment B).

It is Mr. Boscoe's opinion that if the Department is forcing the City to meet higher standards than that recommended by Brown and Caldwell, then the Department is making a subjective determination. The Department is urged to consider Brown and Caldwell's recommendation as a viable alternative with no negotiation over the proposed effluent mass load limits. The Department is also urged to consider the economic impacts. It was stated that if the Department puts in place limitations that are unreasonable, the voters will not accept it.

Department Response: The Department does not agree with Mr. Boscoe's statement that there is no room for negotiation of the permit effluent limitations and that the limitations as proposed by Brown and Caldwell should be incorporated into the draft permit. The effluent mass load limitations for the Stage 2 expansion proposed by Brown and Caldwell are for the planned 20 year life of the wastewater treatment facility. Discussions with the City, and Brown and Caldwell make it clear that the City will not be completing the full 20 year expansion of the treatment facility, but rather a shorter range expansion, possibly 10 years. Since the scope of the proposed expansion is being reduced, and the exact time of the full expansion unknown; the final permit mass load limitations must reflect the treatment capability of the facility expansion to be constructed during the 5-year term of the permit.

Fred Hummel, Mayor, City of Brookings

The City is committed to protecting the environment and that they will do what they can to meet the requirements placed on them by the Department; provided they can get the necessary funding. The City is encouraged that there is a middle ground that the consultant and DEQ are working toward to avoid having to require tertiary treatment. However, if the City has to go to tertiary treatment, the economic and social impacts are going to be severe, especially on the working people where there is a shortage of affordable housing now. Assuming the community would not be able to expend the extra money to construct a tertiary treatment system, the City would be in a moratorium situation again.

Department Response: The Department does not foresee that construction of tertiary treatment facilities will be required. We will be working with the City's consulting engineer to resolve the differences between the City and the Department with regard to the proposed effluent limitations. These discussions will be on going until we reach a resolution and present our staff report to the Environmental Quality Commission.

Dennis Cluff, City Manager, City of Brookings

Mr. Cluff concurred with the testimony of other individuals supporting the mass discharge limitations identified in the June 1991 Brown and Caldwell facility plan. In his opinion, the proposed limitations do not result in an environmental impact and should be incorporated into the draft permit. This would allow the City to discharge as economically as possible so that the fiscal impact to the citizens of the community would be minimal. He considers the higher effluent limitations to be essential for passage of the bond issue for new capacity and development of the treatment facility. Mr. Cluff also pointed out that the impact of a discharge to the ocean is different from that to a stream and this difference should be taken into consideration by the Department.

Department Response: The Department agrees in general with Mr. Cluff's statement that there will be little impact on the marine environment based on our own evaluation of the June 1991 facility plan. However, the Department expects wastewater treatment facilities to be operated as efficiently and effectively as possible to limit discharges of pollutants to waters of the state whether that discharge is to a freshwater stream or the ocean.

The mass discharge limits proposed by the June 1991 facility plan are based on a one in 5-year storm event. These limitations are not indicative of the treatment capability of the proposed facility under average dry or wet weather conditions. The Department is discussing with Brown and Caldwell and the City proposed alternate permit limitations that would allow the facility to comply with the average conditions and yet allow for storm events. This approach would ensure the treatment facility would be operated as effectively and efficiently as possible.

Summary of, and Department Response to, Written Testimony

Harbor Sanitary District letter of September 20, 1991 (Attachment A)

The Harbor Sanitary District has a substantial interest in the City's efforts to improve its wastewater treatment facilities. The District supports the City's efforts to relax the permit mass load limitations being proposed by the Department. However, at the same time the District feels they have not been adequately represented nor considered in the development of the facility plan and thus, the District is evaluating the feasibility of constructing its own wastewater treatment facilities and separating from the City of Brookings.

Department Response: The Department acknowledges the District's concerns and support of Brooking's efforts to relax the mass discharge limitations. However, please see our previous response to Mr. Krawczyk's comments.

Fetrow Engineering Letter of September 20, 1991 (Attachment B)

Fetrow Engineering supports the findings of Brown and Caldwell regarding the impact of the June 1991 mass discharge limitations on the marine environment based on the Stage 2 expansion and makes the following assertions:

(1) The Department is reluctant to approve the mass load proposed by Brown and Caldwell not on an environmental basis, but from the standpoint of a reduced treatment level.

Department Response: The Department does not see an obvious environmental threat due to with the proposed mass load increase based on the findings of Brown and Caldwell. We do consider the limitations for the proposed Stage 2 expansion, which are based on 5-year storm events to in essence not require the City to operate the treatment facilities as efficiency and effectively as possible.

(2) The Department is concerned that the Environmental Protection Agency (EPA) may "reverse" any decision to grant the limitations proposed based on its rules.

Department Response: This statement is unclear. We do not understand what permit conditions would be reversed by EPA. A copy of the draft permit is being reviewed by EPA and we have been in contact with them regarding the draft. We have received no indication that they have any significant concerns with the permit as proposed.

(3) In their opinion, there is no regulatory requirement allowing the Department to impose more stringent limitations on a permitted source when there is shown to be no adverse impact on the receiving water and the water body is not "water quality limited."

Department Response: The mass discharge limitations in conjunction with concentration limitations are intended to limit the discharge of pollutants to waters of the state. Mass discharge limitations are based on the design flow of the wastewater treatment facility (In Oregon this is the average dry weather design flow).

Due to the high levels of inflow and infiltration into the collection system that has been shown to be non-excessive and the lack of environmental impact on the ocean the Department is considering higher mass discharge limits only during wet weather conditions. However, each basin standard states:

> "Notwithstanding the water quality standards contained below, the highest and best practicable treatment and/or control of wastes, activities and flows shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels...."

Thus, the Department believes it has the authority and the responsibility to ensure wastewater treatment facilities are held to an attainable effluent discharge standard that is neither too restrictive - exceeding the facility's treatment capacity - nor so liberal as to allow less than optimal operation of the facility.

(4) The Department proposes increasing the mass load limits only when the monthly average flows exceed 3.0 million gallons per day (mgd). These flows are never exceeded on a monthly average basis and the triggering of the proposed

and (2) that the request for a mass load increase would not be required for the Stage 1 facility. This is documented in a Meeting Report dated February 17, 1988, prepared by Brown and Caldwell and submitted as part of Appendix K of the 1988 facility plan. This also clearly shows that the effluent limitations for the Stage 1 facility were known to Brown and Caldwell and to the City during the facility planning process.

(2) On October 19, 1990 and February 14, 1991, Brown and Caldwell met with the Department to confirm the procedures for requesting a mass load increase. Brown and Caldwell was advised on both occasions that the mass load increase request would need to go to the Environmental Quality Commission. On June 18, 1991, Brown and Caldwell submitted a draft facilities plan addressing the issues required by the Department for a mass load increase.

Department Response: These meetings and the Department's direction to Brown and Caldwell were intended to outline the information needed for a mass load increase for the Stage 2 facility expansion, not the Stage 1 upgrade (see previous response). The Department has not changed its position on the City being able to request the mass load increase. However, the mass load increase request should only have been needed for the Stage 2 facility expansion. The June 1991 facility plan specifically proposes mass load limitations that are associated with the completion of the Stage 2 treatment facility expansion, not Stage 1.

(3) A letter from the Department to Brown and Caldwell requested information regarding the ability of the Stage 1 treatment facility to meet current permit limitations. The Department also asked Brown and Caldwell what conditions have changed that would warrant a change in permit limits for the Stage 1 facility. In response Brown and Caldwell states that when the 1988 facility was developed: (1) accurate winter flow information was not available, (2) the recorded influent BOD concentrations were lower than assumed due to inaccurate records, and (3) the population growth rate has been higher than expected.

As a result, Brown and Caldwell states that the recently corrected data and information will only have a minor effect on the life of the Stage 1 facility upgrade - the projected life was until 1993. The facility will be incompliance with the proposed limitations during peak week and peak month until 1993 and 1994, respectively. However, the facility will not be able to meet the maximum daily limitation in the event of a 5-year or greater storm event.

Department response: The Department will take the new information into consideration and will be discussing possible modifications of the proposed permit with the City and Brown and Caldwell.

(4) Brown and Caldwell discusses the impact of the proposed permit limitations for Stage 1 and Stage 2 at length. The specific concerns are: (1) 85 percent removal efficiency for BOD and TSS, (2) the proposed "trigger" points for the Stage 1 expansion (monthly average and peak day) to allow higher mass load limits and what this means in terms of facility performance (what effluent concentrations must be met), and (3) recommendations for higher "trigger" points.

There is also concern expressed that the proposed limitations for the Stage 2 facility: (1) ignore the results of the receiving water investigation that shows there would not be a perceivable impact on water quality, (2) would require tertiary treatment to meet weekly average limitations, and (3) does not recognize the difficulty with taking biological processes on/off line quickly to meet the Department proposed limitations.

Department response: The Department will be working with the City and its engineering consultant to reach an accord on the proposed permit limitations that will result in a permit that the treatment facility can meet. However, the Department is concerned that the treatment facility be operated in the most efficient manner possible. We are not receptive to effluent limitations that allow the treatment facility to be operated in a less than efficient manner.

It should also be noted that the proposed mass load limitations for the Stage 2 expansion are based on the assumption that the City would be completing the Stage 2 expansion during the term of the proposed permit. From information the Department has received through the public hearing process, discussions with the City and the City's engineering consultant, it is clear that the City will only possibly be completing Stage 2a (solids handling and treatment, and primary treatment expansion) during the term of the permit. The proposed permit will be modified accordingly to reflect the reduced scope of the Stage 2a expansion.

In setting limitations for Stage 2a, the Department will be considering three factors:

1. The environmental impact of the increased discharges; and

2. The economic cost of complying with the existing load limits; and

3. Limitations that are consistently achievable, but require good operation and maintenance.

Also, we concur that there is significant dilution in the winter from "non-excessive" infiltration and inflow, and that a limit of less than 85% removal efficiency may be appropriate for Stage 2a.

Harbor Sanitary District
P.O. Box 2457, Harbor, Oregon 97415 Phone: (503) 469-5225

September 20, 1991

Mr. Ralph Funk
Department of Environmental Quality
Water Quality Division
811 SW Sixth Avenue
Portland OR 97204

RE: City of Brookings Proposed Discharge Limitations

Dear Mr. Funk:

The Harbor Sanitary District supports the City's effort to obtain your agency's approval of the more relaxed discharge limitations proposed by their consultants.

As you know, the District contributes a substantial portion of the City of Brookings wastewater treatment plant. As a result, we have considerable interest in issues which affect the operation of the plant and its ability to efficiently provide for our future needs. It is our understanding that the new discharge limitations proposed by your agency could force the City to provide costly tertiary treatment and limit the ultimate capacity of facilities at the existing limited site. Your proposed restrictions on the outfall, coupled with future expansions of the urban growth boundary up and down the Coast, raise significant questions regarding the ability of a single treatment facility at the current site to meet the future needs of both Brookings and Harbor.

As stated in our June 17, 1991 letter to the City of Brookings (a copy of which was sent to DEQ and is attached for your reference), the District is concerned by the apparent lack of communications and consideration of the specific needs and desires expressed by the District relative to the preparation of the City of Brookings facilities plan. We believe that alternatives to the continued expansion and upgrading of the existing facilities should be more thoroughly considered.

The Harbor Sanitary District has studied the feasibility of developing its own treatment facilities and we are currently pursuing the legal potential of a seperation and eventual independence from the Brookings facility. We believe that such a plan could be mutually beneficial to the City and the District by implementation of alternatives which could reduce the discharge of effluent to the ocean while providing valuable irrigation water to agricultural lands in Harbor. These alternatives are conceptually described in a report by our consultants which was sent to the City in July.

The District is currently investigating its own treatment facility which will in turn free up additional capacity for the City of Brookings. However, we wish to go on record again with our request that the District be more directly included in the ongoing facilities planning and review process.

In summary, we support the City of Brookings current efforts to maximize the potential of their existing facilities.

Sincerely,

Vern Hanscam

Vern Hanscam, Acting Chairman
Board of Directors

VH:kl

Enc. (3)

cc: City of Brookings-Dennis Cluff
U.S. Environmental Protection Agency
Reuben Kretzschmar, DEQ-Coos Bay
Joseph Edney, DEQ-Municipal Finance
Barbara Burton, DEQ-Municipal Water Quality
Manville Heisel

Harbor Sanitary District
P.O. Box 2457, Harbor, Oregon 97415 Phone: (503) 469-5225

June 17, 1991

Mr. Dennis Cluff
City of Brookings
898 Elk Drive
Brookings OR 97415

Dear Mr. Cluff:

Over the past several weeks and months, the staff and Board Members of the Harbor Sanitary District (HSD) have become increasingly concerned with the lack of communication and input into the several items making up the subject of sewage collection, treatment and disposal for the area. As a major contributor to the Brookings sewerage system we believe we should be more actively involved in any decision making process regarding treatment plant expansion, systems development charges and allocation of additional capacity.

We understand that the HSD is not directly responsible for the Brookings Regional Treatment Plant; however, because this facility has been designated a regional plant by DEQ (and accepted as such by EPA), decisions made by the City will have a profound financial impact on the HSD and affect the development and growth potential within the HSD boundaries. To date, the HSD has had very little input into the planning and decision making process. We believe that there are several key items or areas of concern that have yet to be addressed, or at least the HSD is not aware that they are addressed. These items or questions are key to the present and future needs of the HSD and failure to adequately address them could severely limit the options of the HSD.

Therefore, we respectfully request the City of Brookings to review the following items and seriously consider incorporation of them in any current and future planning:

1. It appears that the City is operating on the premise that HSD will continue to participate in the expansion of the Brookings Waste Water Treatment Plant (W.W.T.P.) while having no significant input into or participation in the development and approval of future planning, schedules and costs imposed on the HSD. As a major user and financial participant we believe the HSD should be afforded significant input into these items.

2. Of immediate concern is the updated Facilities Plan which we understand is due to be published in first draft form this month. To date the HSD has had no contact with Brown and Caldwell or been asked to be a part of the planning process. Based on this lack of input and the inadequate discussion included in the 1988 plan, we are concerned that the future needs and goals of the HSD will not be appropriately addressed in the updated Facilities Plan.

3. Much of the stated concern over the need for the Phase II expansion of the Brookings Treatment Plant has come from the BOD and TSS "spikes" that occur in the summer and fall. We believe there are several questions regarding this manner that must be addressed:

   a. Has any work been done to identify the source(s) of these spikes?

   b. Has pretreatment of these periodic organic loads been considered as a way to reduce the load on the existing treatment facility?

   c. Is it possible that, by pretreating these seasonal heavy loads, expansion of the Brookings treatment plant could be avoided?

4. As you know, the HSD would like to explore the possibility of our own sewage treatment and disposal system. We realize that the designation of the Brookings W.W.T.P. as the Regional sewerage facility places significant road-blocks to a separate system; however, authorization is possible. Has this been considered in the Facilities Planning process and if so, has any consideration been given to sharing the new Brookings outfall?

   Of course this would require maximum cooperation between the City and the HSD, but if it came down to this option would the City consider it?

5. Given the premise that some kind of separate treatment system serving the HSD is possible, the following items should also be studied:

   a. Installation of a second ocean outfall to serve a HSD discharge.

   b. A discharge to an adequate surface stream somewhere within the HSD boundaries.

(Cont'd)
Cluff

c. Alternative effluent disposal options including land application or utilizing wetlands for tertiary polishing prior to discharge.

Any one or a combination of the above alternatives could provide relief of the growth pressure on the Brookings W.W.T.P. and possibly eliminate or defer the need for an expensive plant upgrade (Phase II). In particular, identification and elimination of the source(s) of the peak BOD/TSS loads entering the treatment plant could result in a significant savings if the Phase II expansion could be scaled back.

In summary, the HSD feels strongly the need to be involved in any planning process that could affect the HSD. For this reason we have brought these items to your attention. We sincerely hope they will be accepted in a spirit of cooperation and mutual benefit so that the HSD will be able to support adoption of the updated Facilities Plan. We look forward to working closely with the City on this and other sewage related matters.

Sincerely,

Walter Thompson, President
HARBOR SANITARY DISTRICT

WT:kl

cc: Reuben Kretzschmar, DEQ-Coos Bay
Joseph Edney, DEQ-Municipal Finance
Barbara Burton, DEQ-Municipal Water Quality
U.S. Environmental Protection Agency

September 20, 1991

Mr. Jed Boscoe, President
Western Pacific Development, Inc.
P.O. Box 6039
Brookings, OR 97415

RE: CITY OF BROOKINGS
WASTEWATER TREATMENT FACILITIES
NPDES PERMIT MASS LOAD INCREASE
PUBLIC HEARING COMMENTS

Dear Mr. Boscoe:

As requested, we have reviewed the "Effluent Discharge Analyses for the City of Brookings Discharge Permit Amendment" commissioned by Brown and Caldwell for the City of Brookings. It is our understanding that this analysis was undertaken to provide support for an increase in mass load allocation for the City's wastewater treatment plant to reflect the recently completed upgrade and planned Phase II expansion. We also understand that, although the Department of Environmental Quality (DEQ) is recommending increases to the permit mass load allocation, the final numbers are far less than requested by the City.

After review of the above report, we find no areas of disagreement. The analyses appears to have covered all significant areas of concern and certainly shows, as well as any modeling can, that no adverse impact should be expected as a result of an increase in mass loading to the receiving waters.

We have discussed this matter with DEQ staff in Portland. It appears that DEQ is reluctant to approve the full increase requested by the City of Brookings, not from a environmental standpoint, but from a concern that granting the full request will somehow be seen as "regressing" or losing ground from an existing treatment level. They are also concerned that the federal Environmental Protection Agency (EPA) may step in and reverse the decision based on its rules.

However, in our opinion, there does not appear to be any regulatory requirement for such a stance except for the ability of the receiving waters to assimilate the waste load without adverse impacts (which has already been addressed by the B & C study). Federal treatment standards for ocean outfalls do not require effluent concentrations more stringent than 30 mg/l, and other regulations appear to apply to "water quality limited receiving waters", which the Pacific Ocean in this area is not listed.

One other point should be noted. DEQ proposes to allow the increase it has agreed to only when monthly average flows exceed 3,000,000 gallons per day. Our review of treatment plant records over the last several years shows that this flow rate is never exceeded on a monthly "average" basis. Therefore, the proposed DEQ increase will, in effect, be no increase at all in the near term.

In summary, we support the findings of the Brown and Caldwell report and feel the City's original request can be accommodated based on the data available. We also feel that the 3.0 MGD "average" trigger should be reconsidered based on actual plant flows during storm events.

If you have any questions, or need further clarification of this information, please feel free to contact me at 363-8760.

Sincerely,

FETROW ENGINEERING, INC.

Russell H Fetrow, President

Russell H. Fetrow, P.E., P.L.S.
President

Dale S. Wulffenstein
Salem Division Manager

DSW/cs
WPDI1/loadincr.ltr

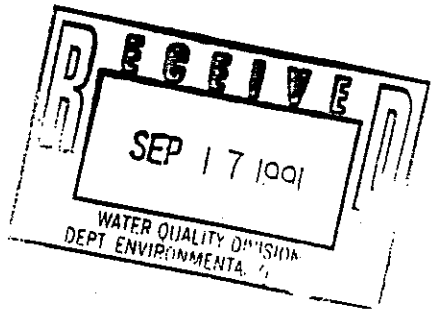
cc: File
City of Brookings

Attachment C

Phone (541) 469-2163
898 Elk Drive
Brookings, Oregon 97415

CITY OF BROOKINGS

The Home of Winter Flowers



FACSIMILE COVER LETTER

TO: NAME: Barbara Burton TITLE: _____

COMPANY: D.E.Q.

FAX NUMBER: 229-6124 TELEPHONE NO. _____

FROM: NAME: Leo Lightle TITLE: Comm. Dev. Dir

FAX NUMBER: _____ TELEPHONE NO. _____

MESSAGE: Dennis Cluff and I have reviewed and have ~~shape~~ preliminarily discussed the draft comments with our engineers, we substantially agree with their comments and requests.

Please distribute to Ralph Funk and/or anyone you feel appropriate

See you Thursday & Thanks

Leo B. Lightle

There are 15 page(s), including this cover letter

____ If there is trouble in reception of this document, please advise sender

____ Please call to confirm receipt of all pages.

Signed Leo Lightle Date: 9-17-91

faxform.dm

B-18

Brown and Caldwell
Consultants

2300 Oakmont Way
Suite 100
Eugene
Oregon 97401-5556
(503) 686-9915
FAX (503) 686-1417

September 16, 1991

Mr. Leo Lightle
Community Development Director
City of Brookings
898 Elk Drive
Brookings, Oregon 97415

13-5875-54

Subject: Draft Wastewater Permit Review Comments

Dear Mr. Lightle:

In the course of our City of Brookings Wastewater Facilities Plan Update, we have engaged in extensive discussions with the Department of Environmental Quality (DEQ) concerning your wastewater discharge permit modification. The DEQ has recently provided the city and Brown and Caldwell a draft permit for review. In this letter, we will briefly discuss the background surrounding the permit modification, respond to questions posed by the DEQ in their letter of August 29, 1991, comment upon the content of the draft permit, and discuss some of the options for a response by the city.

Background

In 1988, Brown and Caldwell prepared a wastewater facilities plan for Brookings which charted the course for the city's wastewater treatment through the year 2008. Effluent permit limits were not available from the DEQ prior to completion of the 1988 document. We therefore considered three likely permit possibilities in the Plan. To facilitate the completion of the Plan and avoid losing one of the last Federal construction grants, we proceeded with assumed permit limits. The final Facilities Plan, which was approved by the DEQ, assumed a mass discharge increase and the plant was designed accordingly. The Plan called for the first expansion of the wastewater treatment plant—Stage 1, to be sized only to accommodate flows and loads expected until the year 1993. The Stage 1 expansion was completed this summer ahead of schedule and is operating well.

The decision to assume an increase in mass loading was based upon our firmly held belief that addition of tertiary treatment for Brooking's discharge to the Pacific Ocean would not provide any additional environmental protection. Tertiary treatment for Brookings would include the addition of filtration at the end of the already highly efficient secondary process.

On November 19, 1990, we met with key DEQ managers to discuss how a mass loading increase could be pursued. We were told that the DEQ could propose an increase in mass loads to the Environmental Quality Commission (EQC) if we were to:

1. Show need for a permit amendment and discuss other alternatives.

2. Estimate the economic impact to the city if the mass limits were not changed.

3. Quantify the environmental impacts to the ocean of an increase in mass loads.

When we were notified that the DEQ project officer for our facilities plan had been reassigned, we met again with the DEQ on February 14, 1991 to confirm that the procedure for requesting a mass load increase remained unchanged. We received assurance at this meeting that the procedure outlined above was still acceptable.

Our June 18, 1991 Draft Facilities Plan Update addressed the three issues required by the DEQ for a mass load increase as follows:

1. We showed that without a mass load increase, the treatment plant would need to produce a peak day effluent BOD of less than 10 milligrams per liter (mg/l). To consistently meet this limit would require the addition of tertiary filtration.

2. The incremental cost of an expanded treatment plant with tertiary filtration was shown to be approximately $4.7 million. Supplemental information was provided to DEQ by the City which discussed numerous secondary economic impacts.

3. An evaluation of the new ocean outfall was performed for the flows and loads requested in the permit amendment. No measurable environmental effect could be found nor would any of the state water quality standards be violated.

Response to DEQ Letter Dated August 29, 1991

In this letter, the DEQ requested information regarding the ability of the current plant to meet current permit limits. In addition, the DEQ asked what conditions might have changed which could result in violation of the current permit limits.

Our calculations indicate that the Stage 1 expansion will meet the proposed Section 1 permit requirements during the first year certification period with the possible exception of the peak day requirement. Since the peak day flow projection is based upon a once in five-year event, it is unlikely that this parameter will be a problem during the certification period. Further, chemical addition to the primary and secondary clarifiers can assist in BOD and suspended solids removal if peak loads do occur in the near term. The city has already made provisions for chemical addition to the primary clarifier.

At the time the 1988 Facilities was prepared, accurate flow monitoring was not available during the winter months. Three years of winter flow data are now available for flow projections. This information indicates that current peak wet weather flows are in excess of those originally presented in the 1988 Plan. The 1988 Plan projected peak weather flows of 9.2 mgd for the year 1993. The Facilities Plan Update estimates that 1991 peak weather flows are already 9.2 mgd. It should also be noted that the influent BOD records available during the 1988 Plan preparation were also inaccurate. With the city's help, we have determined that winter influent BOD concentrations are lower than those assumed in the 1988 Plan. This decrease impacts ability to meet 85% removal. Finally, the growth rate has been much higher than the 3% growth assumed in the 1988 Facilities Plan. The average growth rate for the years 1888 and 1989 was 12%.

These influences have had only a minor effect upon the projected life of the Stage 1 plant. Our 1988 Facilities Plan estimated that Stage 1 would accommodate growth until the year 1993. Our calculations now show that, with the exception of the peak day requirement, the Stage 1 plant will be in compliance until approximately 1993 based upon the peak week limit and 1994 based upon the peak month limit. Figures 1 and 2 show this information in graphical form for various weekly and monthly limits.

It is important to note that for the new plant to operate consistently at these high treatment levels, provisions must be available to remove sludge from the treatment system. Sludge is now partially recycled through the plant because of inadequate sludge digestion capacity and limited land application sites. The city is aggressively pursuing additional application sites at this time and hopefully will be able to regularly haul sludge from the plant soon.

Proposed DEQ Permit

Attachment A includes a copy of the draft wastewater discharge permit which would be in effect for a five year duration. The permit is divided into two

sections. Section 1 defines the ocean discharge limits "not to be exceeded after permit issuance until completion of Stage 2 expansion and attainment of operational level". This means that although the city may proceed with the required solids handling improvements discussed as Stage 2a in the Facilities Plan Update, they will remain under the Section 1 limits until Stage 2 expansion is complete.

Section 2 details the limits not to be exceeded "after the completion of the Stage 2 expansion and attainment of operational level." Key elements of both sections of the permit are discussed below.

Section 1 Permit Limits. Section 1 limits, which would be in force immediately, include no increase in mass loads. A requirement for 85% removal of BOD is also included. Table 1 shows the current plant flows and loads as well as the proposed mass limits and the resultant allowable discharge concentrations. Section 1 of the permit includes a provision for relaxation of permit requirements when monthly flows exceed 3.0 mgd (million gallons per day) and peak day flows exceed 7.5 mgd. Unfortunately, the current peak monthly and peak day flows are less than these "trigger points" hence they provide the city no relief. It should be noted that the required treatment for peak day is 8 milligrams per liter (mg/l) which in essence would require tertiary treatment.

For this interim period, we would suggest that DEQ change the monthly and daily flow trigger points for increasing allowable effluent concentrations to 2.0 mgd and 7.0 mgd respectively. This would ensure that effluent concentrations rather than mass loads govern the permitted discharge.

An exemption from the federal 85% removal law should also be requested. Although the infiltration and inflow in the city sewer system has been shown to be non-excessive, continuous rainfall has caused average monthly influent BOD concentrations less than 60 mg/l. Tertiary treatment would be required to produce the required 8 mg/l effluent at this influent concentration.

Part No. 133.103(a)(3), 133.103(a)(4)(ii) and 133.103(b)(3) of the federal regulations establish that the 30-day average percent removal shall not be less than 85% for BOD and SS unless ....."3. The influent wastewater is less concentrated (not the result of excessive I/I as defined by CFR 35.2005 (b)(16) and the treatment works can consistently meet the concentration limits but the percent removal requirements will impose a more stringent limitation than the concentration limits." The preceding statement is applicable to the Brookings WWTP hence an exemption from the 85% removal rule is appropriate.

Section 2 Permit Limits. The Section 2 limits are based upon a requirement for treatment to 20 mg/l on a monthly average. Monthly mass limits were calculated based upon 20 mg/l and average dry weather flow of 1.9 mgd. Weekly mass loads are 1.5 times the monthly mass loads. Peak day mass loads are 2 times the monthly mass loads.

Monthly flows exceeding 3.0 mgd triggers the application of alternate monthly and weekly permit limits. These alternate limits are based upon a requirement for 85% removal of the average daily BOD loading. Daily flows in excess of 7.5 mgd are exempt from a mass load limit. Table 1 shows the projected year 2013 flows, loads, and allowable discharge concentrations.

We have two major concerns with these proposed limits. First, these limits ignore, in part, the results of our marine investigation conducted in support of a mass load increase. Our study showed that no measurable change in water quality parameters could be predicted for peak week and peak day mass load discharges of 1018 pounds per day (ppd) and 2577 ppd respectively. The proposed permit would limit peak week discharge to only 788 ppd. To attain this level of treatment, tertiary filtration must be provided. It is not possible to take secondary biological treatment units on and off line quickly enough to match the predicted flow fluctuations.

Our second concern relates to the challenge the plant operator would face in trying to determine if the plant was in compliance on a monthly or weekly basis. Figures 3 and 4 shows the variation in average monthly and daily effluent requirement based upon flow. The irregular shape of the monthly required effluent curve would make it difficult for an operator to take process units on and off line in response to flow. Since the weekly limit is triggered by a monthly average flow, the operator would have to wait until the end of each month when the average flow was known to determine compliance with the weekly limit.

We recommend the draft permit be modified to permit a 20 mg/l discharge (1018 ppd) during peak week as discussed in the Facilities Plan Update. As stated previously, no environmental impacts could be determined from such a mass discharge during peak week flows. A 20 mg/l discharge should also be permitted during peak month. This represents a realistic level of secondary treatment and would cause no environmental problems given the highly efficient outfall diffuser. In addition, we recommend that the 85% removal requirement be reduced to 75% when monthly average flows reach 4.0 mgd. A discharge concentration of 14 mg/l requires 85% removal during the peak month and potentially the need for tertiary filtration of a portion of the flow.

Recommended Action

We suggest the City pursue the following steps in attempting to finalize your permit:

1. Continue to work with the DEQ to modify sections 1 and 2 of your draft permit

2. If proposed draft permit remains unchanged, purchase chemical equipment for secondary clarifier.

3. Proceed with plans for solids treatment and disposal improvements and defer liquid stream improvements until permit renewal period after 1996.

4. Make a presentation to the EQC if DEQ's staff does not modify proposed permit.

The DEQ will be looking for your response to the draft permit before September 20. Please call if we may provide further information prior to that date. We look forward to attending your public hearing on September 20, 1991.

Very truly yours,

BROWN AND CALDWELL

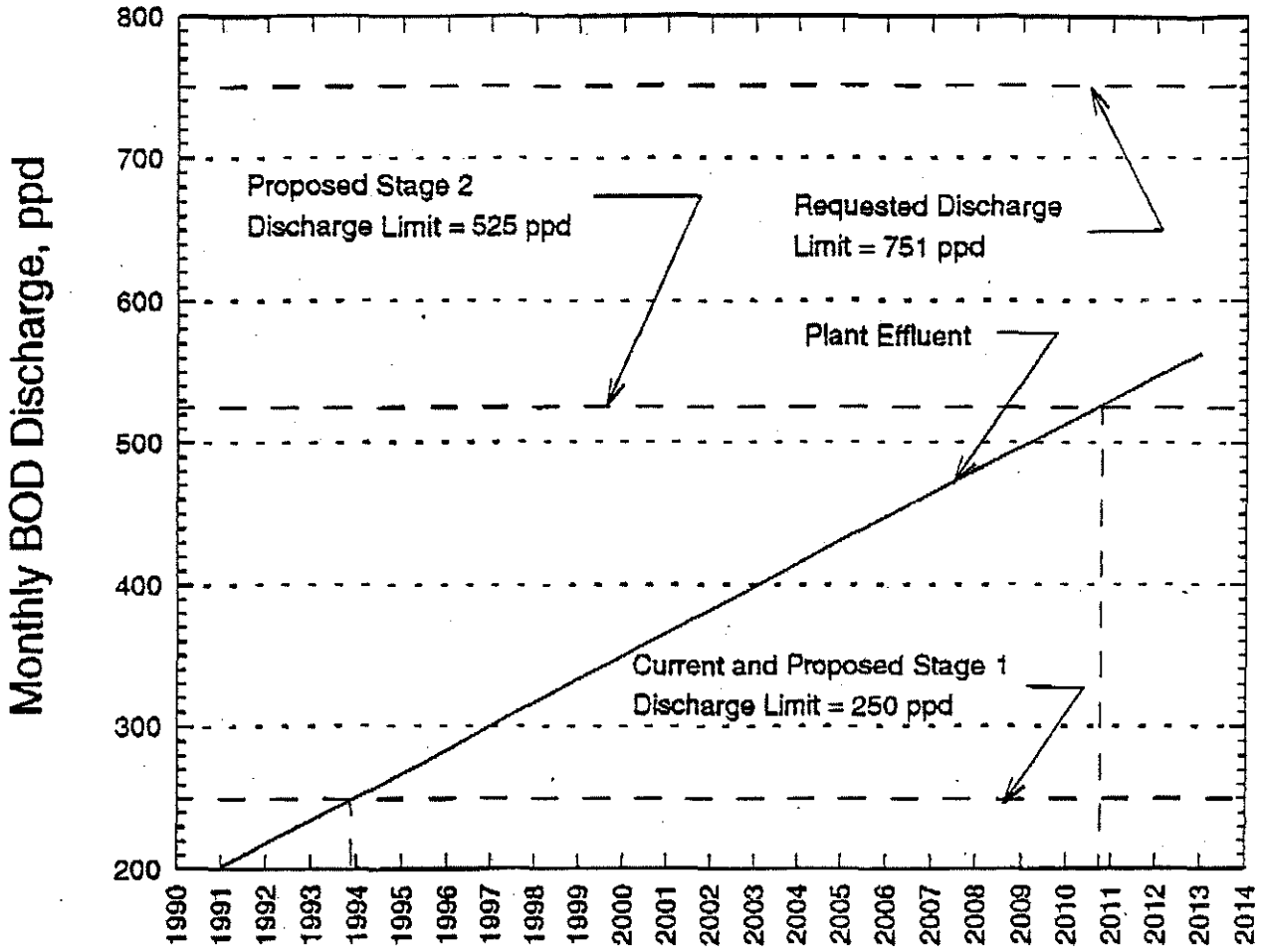
John Holroyd

JEH:ps

Table 1. Permit Requirements/Predicted Plant Performance

				Proposed DEQ Permit		
Condition	Flow, mgd	BOD Load, ppd	Influent BOD, mg/l	BOD Mass Limit, ppd	Effluent BOD Conc mg/l	Req'd Effluent BOD at 85% Removal, mg/l (1
Current						
ADWF	0.74	1360	220		30	
Peak Month	2.2	1770	96	250	14	11
Peak Week	3.2	2040	76	375	14	
Peak Day	7.1	2720	46	500	8	
1996						
ADWF	1	1900	228		30	
Peak Month	2.8	2500	107	250	11	12
Peak Week	4	2900	87	375	11	
Peak Day	8	3800	57	NA	30	
	3	2500	100	250/751	10/30	
	7.5	3800	61	500/NA	8/30	
2013						
ADWF	1.9	3500	221	317	20	
Peak Month	4.5	4550	121	525	14	14
Peak Week	6.1	5250	103	788	15	
Peak Day	10.3	7000	81	NA	30	
	3	3950	158	317/525	13/20	24
	7.5	5830	93	634/NA	10/30	

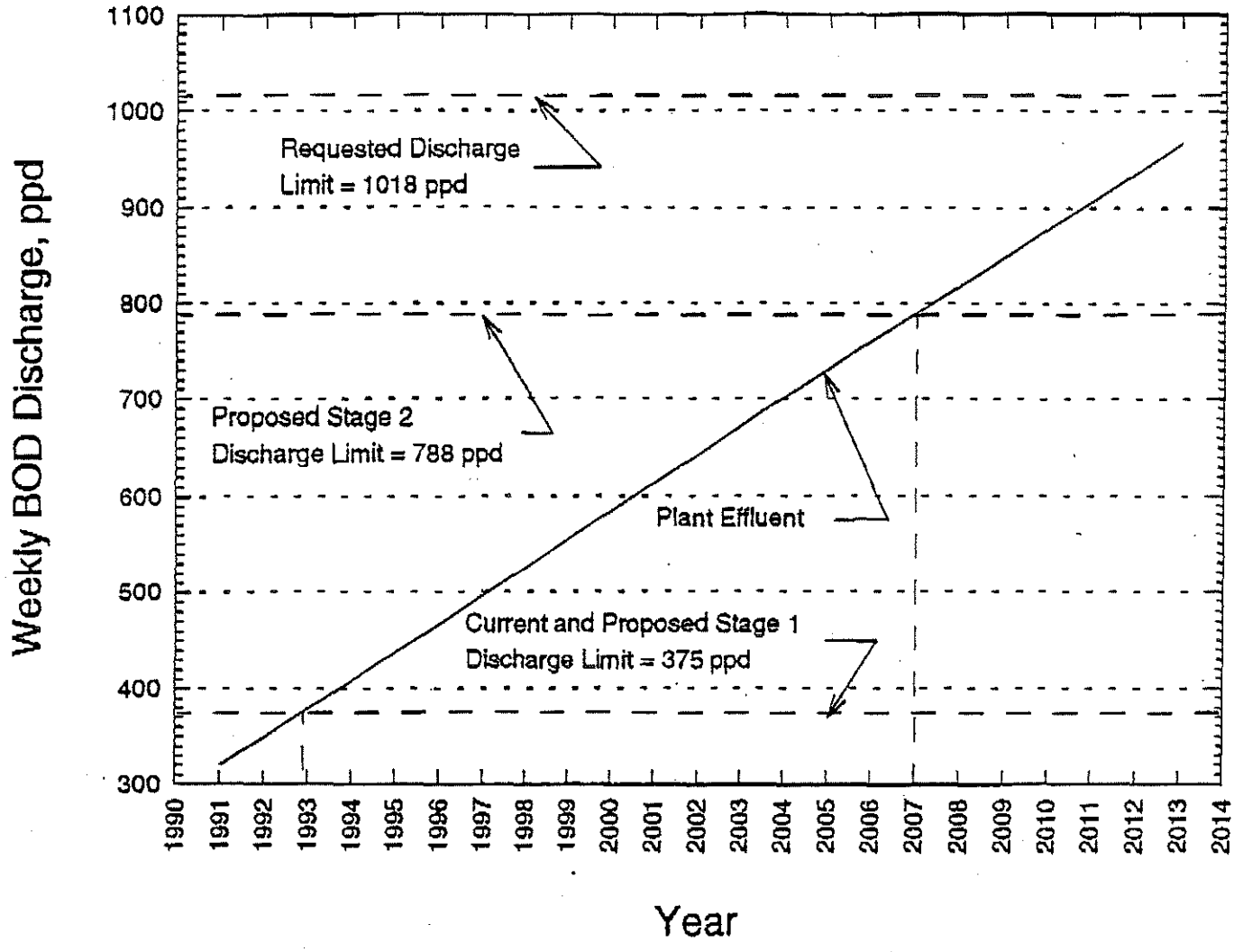
(1 Peak month flow and average month loading



Projected Compliance with Monthly Permit Limits

Figure 1

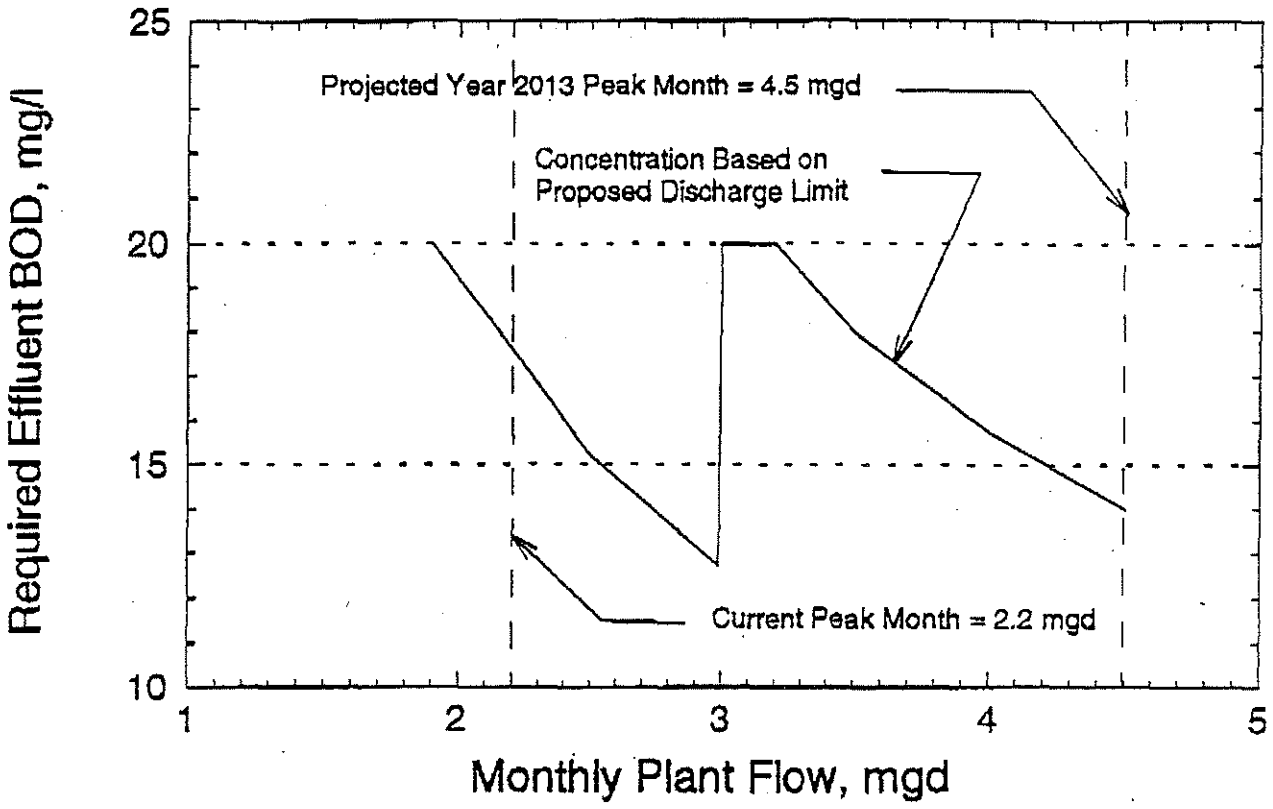
Note: Plant effluent concentrations shown are a straight line projection between existing plant and Stage 2 expansion performance. The effects of interim plant modifications are not shown.



Projected Compliance with Weekly Permit Limits

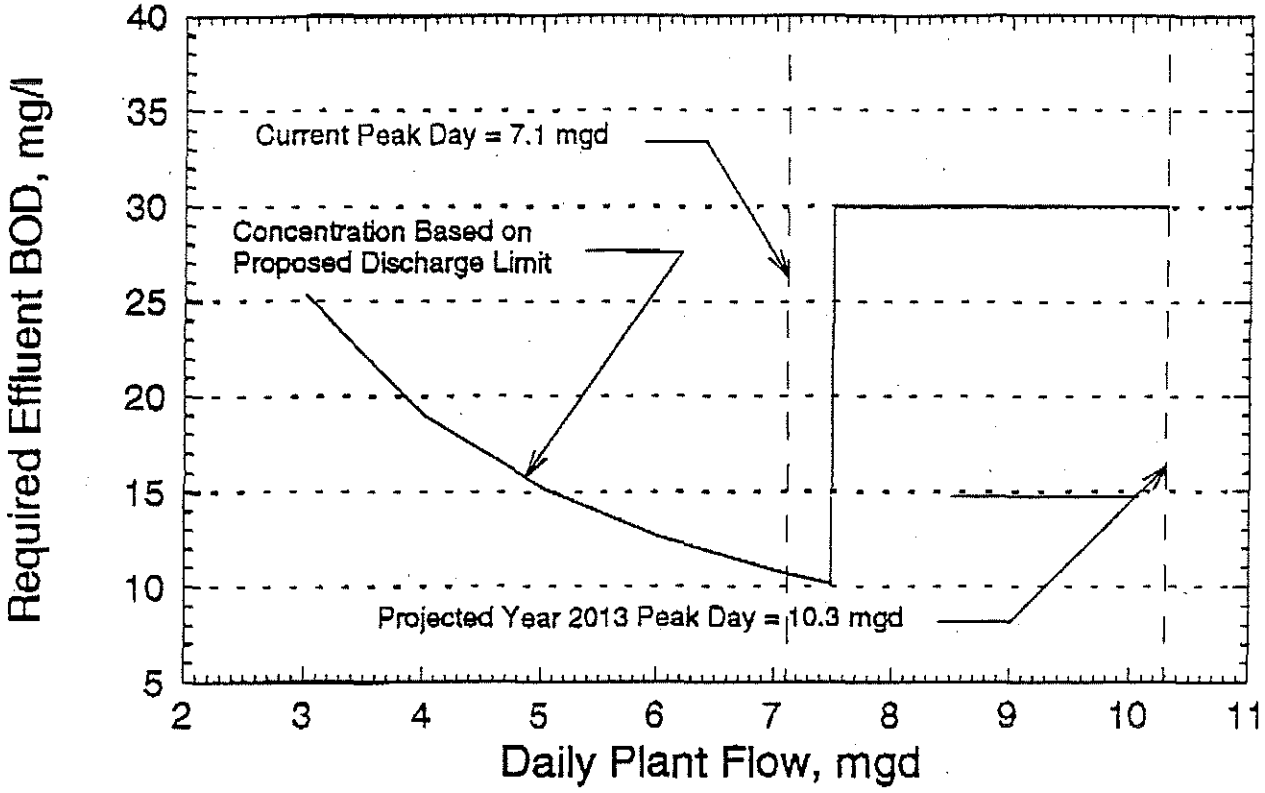
Figure 2

Note: Plant effluent concentrations shown are a straight line projection between existing plant and Stage 2 expansion performance. The The effects of interim plant modifications are not shown.



Required Monthly Plant Performance for Stage 2

Figure 3



Required Daily Plant Performance for Stage 2

Figure 4

ATTACHMENT A

SCHEDULE A

1. Waste Discharge Limitations

a. Outfall Number 001 (discharge from sewage treatment plant to ocean outfall)

(1) Waste discharge limitations not to be exceeded after permit issuance until completion of Stage 2 expansion and attainment of operational level.

(a) year-round except as noted in (1)(b):

	Average Effluent Concentrations		Mass Load Limits 1/ Monthly Average	Weekly Average	Daily Maximum
Parameter	Monthly	Weekly	lb/day	lb/day	lbs
BOD_5	30 mg/l	45 mg/l	250	375	500
TSS	30 mg/l	45 mg/l	250	375	500
FC per 100 ml	200	400			

1/ Based on average dry weather design flow to the facility equaling 1.0 MGD.

(b) November 1 through April 30: When the monthly average flow exceeds 3.0 mgd, the permittee shall meet the following monthly and weekly average limits. When on any day the total daily flow exceeds 7.5 mgd, the daily maximum limit is suspended for that day; otherwise the daily maximum in (1)(a) applies.

	Average Effluent Concentrations		Mass Load Limits 2/ Monthly Average	Weekly Average	Daily Maximum
Parameter	Monthly	Weekly	lb/day	lb/day	lbs
BOD_5	30 mg/l	45 mg/l	751	1126	NA
TSS	30 mg/l	45 mg/l	751	1126	NA
FC per 100 ml	200	400			

2/ Monthly average mass load limits based 3.0 mgd wet weather flow to the facility. Weekly average mass load limits based on 1.5 time the monthly average mass load limits.

(c) Other Parameters (year-round)	Limitations
Total Chlorine Residual	Shall not exceed a daily average of 0.40 mg/l.

(3) Other Parameters (Year-round)	Limitations
pH	Shall be within the range 6.0-9.0
BOD_5 & TSS Removal Efficiency	The monthly average percent removal shall not be less than 85%

(4) Not withstanding the effluent limitations established by this permit, no wastes shall be discharged and no activities shall be conducted which violate Water Quality Standards as adopted in OAR 340-41-325 except in the defined mixing zone:

The allowable mixing zone shall exceed that portion of the Pacific Ocean within a 300 foot radius of the point of discharge.

(2) Waste discharge limitations not to be exceeded after completion of Stage 2 expansion and attainment of operational level.

(a) year-round except as noted in (2)(b):

Parameter	Average Effluent Concentrations Monthly	Weekly	Mass Load Limits 3/ Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lbs
BOD_5	20 mg/l	30 mg/l	317	476	634
TSS	20 mg/l	30 mg/l	317	476	634
FC per 100 ml	200	400			

3/ Based on average dry weather design flow to the facility equaling 1.9 MGD.

(b) November 1 through April 30: When the monthly average flow exceeds 3.0 mgd, the permittee shall meet the following monthly and weekly average limits. When on any day the total daily flow exceed 7.5 mgd, the daily maximum limit is suspended for that day; otherwise the daily maximum in (2)(a) applies.

Parameter	Average Effluent Concentrations Monthly	Weekly	Mass Load Limits 4/ Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lbs
BOD_5	20 mg/l	~~40~~ 30 ~~45~~ 40 mg/l	525	788	NA
TSS	20 mg/l	~~40~~ 40 mg/l	525	788	NA
FC per 100 ml	200	400			

4/ Monthly average mass load limits based on the influent daily average BOD design loading of 3500 pounds x 0.15 (85 percent removal efficiency). Weekly average mass load limits based on 1.5 time the monthly average mass load limit.

(c) Other Parameters (year-round)	Limitations
Total Chlorine Residual	Shall not exceed a daily average of 0.20 mg/l.

ATTACHMENT C

DRAFT

Expiration Date: 10/31/96
Permit Number:
File Number: 11297

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

Department of Environmental Quality
811 Southwest Sixth Avenue, Portland, OR 97204
Telephone: (503) 229-5696

Issued pursuant to ORS 468.740 and The Federal Clean Water Act

ISSUED TO:	SOURCES COVERED BY THIS PERMIT:		
City of Brookings	Type of Waste	Outfall	Location
898 Elk Drive	Treated Muni. Waste	001	Pacific Ocean
Brookings, Oregon 97415			

PLANT TYPE AND LOCATION:
Trickling Filter/Solids Contact Treatment Plant
South of Wharf Street on Chetco Point.

RECEIVING SYSTEM INFORMATION:
Basin: South Coast
Subbasin: Chetco
Stream: Pacific Ocean
Hydro Code: 10-*PACI 0.0 D
County: Yamhill

Treatment System Classification: III
Collection System Classification: III

EPA REFERENCE NO: OR-002035-4

Issued in response to Application No. 998297 received October 15, 1990.

This permit is issued based on the land use findings in the permit record.

Lydia R. Taylor, Administrator _____ Date _____

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify, or operate a waste water collection, treatment, control and disposal system and discharge to public waters adequately treated waste waters only from the authorized discharge point or points established in Schedule A and only in conformance with all the requirements, limitations, and conditions set forth in the attached schedules as follows:

Each other direct and indirect discharge to public waters is prohibited. This permit does not relieve the permittee from responsibility for compliance with any other applicable federal, state, or local law, rule, standard, ordinance, order, judgment, or decree.

SCHEDULE A

1. Waste Discharge Limitations

a. Outfall Number 001 (discharge from sewage treatment plant to ocean outfall)

(1) Waste discharge limitations not to be exceeded after permit issuance until completion of Stage 2 expansion and attainment of operational level.

(a) year-round except as noted in (1)(b):

	Average Effluent Concentrations		Mass Load Limits 1/ Monthly Average	Weekly Average	Daily Maximum
Parameter	Monthly	Weekly	lb/day	lb/day	lbs
BOD_5	30 mg/l	45 mg/l	250	375	500
TSS	30 mg/l	45 mg/l	250	375	500
FC per 100 ml	200	400			

1/ Based on average dry weather design flow to the facility equaling 1.0 MGD.

(b) November 1 through April 30: When the monthly average flow exceeds 3.0 mgd, the permittee shall meet the following monthly and weekly average limits. When on any day the total daily flow exceeds 7.5 mgd, the daily maximum limit is suspended for that day; otherwise the daily maximum in (1)(a) applies.

	Average Effluent Concentrations		Mass Load Limits 2/ Monthly Average	Weekly Average	Daily Maximum
Parameter	Monthly	Weekly	lb/day	lb/day	lbs
BOD_5	30 mg/l	45 mg/l	751	1126	NA
TSS	30 mg/l	45 mg/l	751	1126	NA
FC per 100 ml	200	400			

2/ Monthly average mass load limits based 3.0 mgd wet weather flow to the facility. Weekly average mass load limits based on 1.5 time the monthly average mass load limits.

(c) Other Parameters (year-round)	Limitations
Total Chlorine Residual	Shall not exceed a daily average of 0.40 mg/l.

(2) Waste discharge limitations not to be exceeded after completion of Stage 2 expansion and attainment of operational level.

(a) year-round except as noted in (2)(b):

	Average Effluent Concentrations		Mass Load Limits 3/ Monthly Average	Weekly Average	Daily Maximum
Parameter	Monthly	Weekly	lb/day	lb/day	lbs
BOD_5	20 mg/l	30 mg/l	317	476	634
TSS	20 mg/l	30 mg/l	317	476	634
FC per 100 ml	200	400			

3/ Based on average dry weather design flow to the facility equaling 1.9 MGD.

(b) November 1 through April 30: When the monthly average flow exceeds 3.0 mgd, the permittee shall meet the following monthly and weekly average limits. When on any day the total daily flow exceed 7.5 mgd, the daily maximum limit is suspended for that day; otherwise the daily maximum in (2)(a) applies.

	Average Effluent Concentrations		Mass Load Limits 4/ Monthly Average	Weekly Average	Daily Maximum
Parameter	Monthly	Weekly	lb/day	lb/day	lbs
BOD_5	20 mg/l	30 mg/l	525	788	NA
TSS	20 mg/l	30 mg/l	525	788	NA
FC per 100 ml	200	400			

4/ Monthly average mass load limits based on the influent daily average BOD design loading of 3500 pounds x 0.15 (85 percent removal efficiency). Weekly average mass load limits based on 1.5 time the monthly average mass load limit.

(c) Other Parameters (year-round)

	Limitations
Total Chlorine Residual	Shall not exceed a daily average of 0.20 mg/l.

(3) Other Parameters (year-round)	Limitations
pH	Shall be within the range 6.0-9.0
BOD_5 & TSS Removal Efficiency	The monthly average percent removal shall not be less than 85%

(4) Not withstanding the effluent limitations established by this permit, no wastes shall be discharged and no activities shall be conducted which violate Water Quality Standards as adopted in OAR 340-41-325 except in the defined mixing zone:

The allowable mixing zone shall not exceed that portion of the Pacific Ocean within a 300 foot radius of the point of discharge.

SCHEDULE B

MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. Minimum Monitoring Requirements
(unless otherwise approved in writing by the Department)

a. Influent

Item or Parameter	Minimum Frequency	Type of Sample
BOD	2/Week	Composite
TSS	2/Week	Composite
pH	3/week	Grab

b. Outfall Number 001 (Discharge from sewage treatment plant to ocean outfall)

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Flow meter
Flow Meter Calibration	2/Year	Verification
BOD	2/Week	Composite
TSS	2/Week	Composite
pH	3/week	Grab
Fecal Coliform	2/Week	Grab
Chlorine Residual	Daily	Grab
Average Percent Removed (BOD and TSS)	Monthly	Calculation
Biomonitoring	Bioassay of effluent from Outfall 001 in accordance with Schedule C, Condition 2.	Acute and chronic bioassay.

c. Sludge Management

Item or Parameter	Minimum Frequency	Type of Sample
Sludge analysis including: Total solids (% dry wt.) Volatile solids (% dry wt.) Sludge nitrogen NH_3-N; NO_3-N; & TKN (% dry wt.) Sludge metals content for: Pb, Zn, Cu, Ni, and Cd (in mg/kg dry weight)	Semi-annually	Composite 1/ & 3/ Sample

c. Sludge Management (continued)

Item or Parameter	Minimum Frequency	Type of Sample
Sludge analysis including: Phosphorus (% dry wt.) Potassium (% dry wt.) pH (standard units)	Semi-annually	Composite 1/ & 3/ Sample
Record of % volatile solids reduction accomplished through digestion	Monthly	Calculation (See Note 2/)
Record of locations where sludge is applied on land (Site location map to be maintained at treatment facility for review upon request by DEQ)	Each Occurrence	Date, volume & locations where sludges were applied recorded on site location map.

Notes:

1/ Composite samples from the digester shall consist of at least 4 aliquots of equal volume collected over an 8 hour period and combined.

2/ Calculation of the % volatile solids reduction is to be based on comparison of a representative grab sample of total and volatile solids entering the primary digester and a representative composite sample of sludge solids exiting the secondary digester withdrawal line (as defined in note 1/ above).

3/ Composite samples for the sludge analysis shall be representative of the product being land applied.

Monitoring reports (DMRs) shall include a record of the location, quantity and method of use of all sludge removed from the treatment facility and a record of all applicable equipment breakdowns and bypassing.

2. Reporting Procedures

Monitoring results shall be reported on approved forms. The reporting period is the calendar month. Reports must be submitted to the Department by the 15th day of the following month.

SCHEDULE C

COMPLIANCE CONDITIONS AND SCHEDULES

1. The permittee shall have in place a program to identify and reduce inflow and infiltration into the sewage collection system. By no later than September 1 each year the permittee shall submit an annual report to the Department which details sewer collection maintenance activities that have been done in the previous year and outlines those activities planned for the following year.

2. Bioassay.

   a. By no later than ninety (90) days after issuance of this permit, the permittee shall submit proposed acute and chronic bioassay test procedures for the Department's review and approval.

   b. Following written approval by the Department of the appropriate test procedures, the permittee shall initiate bioassay testing on chlorinated final effluent from the chlorine contact chamber using the approved test procedures in accordance with 2(c). Any change in bioassay test procedures must be approved by the Department.

   c. The bioassay tests shall be conducted once in August 1992 and once in August 1994 using the approved bioassay tests on the selected species.

3. The Permittee shall submit to the Department an annual report on the progress of the facility upgrades and improvements. The report shall be submitted by January 1 of each year. This report shall be filed with the Department until completion and attainment of operational level of the proposed Stage 2 facilities.

4. By no later than ninety (90) days prior to the scheduled completion date of the solids handling facility improvements, the permittee shall submit a revised sludge management plan in accordance with Oregon Administrative Rule 340, Division 50, "Disposal of Sewage Treatment Plant Sludge and Sludge Derived Products Including Septage". Upon approval of the revised plan by the Department, and completion of he solids handling facility improvements, the plan shall be implemented by the permittee.

5. The permittee is expected to meet the compliance dates which have been established in this schedule. Either prior to or no later than 14 days following any lapsed compliance date, the permittee shall submit to the Department a notice of compliance or noncompliance with the established schedule. The Director may revise a schedule of compliance if he determines good and valid cause resulting from events over which the permittee has little or no control.

SCHEDULE D

SPECIAL CONDITIONS

1. All sludge shall be managed in accordance with a sludge management plan approved by the Department of Environmental Quality. No substantial changes shall be made in sludge management activities which significantly differ from operations specified under the approved plan without the prior written approval of the Department.

2. The permittee shall implement the bioassay toxicity testing program specified in Schedules B and C of this permit.

   a. If any acute bioassay test indicates that the effluent sample is toxic, another toxicity test using the same species and the same methodology shall be conducted within two weeks. If the second test also indicates toxicity, the permittee shall follow the procedure described in section (c) of this permit condition.

   b. If any chronic bioassay test indicates that the effluent sample is toxic at the dilutions determined to occur at the edge of the mixing zone, or if there is no dilution data for the edge of the mixing zone and any chronic bioassay test indicates that the effluent is toxic, another toxicity test using the same species and the same methodology shall be conducted within two weeks. If the second test also indicates toxicity, the permittee shall follow the procedure described in section (c) of this permit condition.

   c. If, after following the procedure as described in sections (a) or (b) of this permit condition, two consecutive bioassay test results indicate acute and/or chronic toxicity, the permittee shall evaluate the source of the toxicity and submit a plan and time schedule for achieving compliance with the water quality standards for toxicity. Upon approval by the Department, the permittee will implement the plan until compliance has been achieved. Evaluations shall be completed and plans submitted within 6 months unless otherwise approved in writing by the Department.

3. The permittee shall comply with Oregon Administrative Rules (OAR) Chapter 340, Division 49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel", and the following:

   a. The permittee shall have its wastewater collection system supervised by one or more operators certified at a grade level equal to or higher than the system classification shown on page 1 of this permit. The designated supervisor(s) shall be available to the system owner and any other operator of the facility.

b. The permittee shall have its wastewater treatment system supervised by one or more operators certified at a grade level equal to or higher than the system classification shown on page 1 of this permit. The supervisor(s) shall be available to the system owner and any other operator of the facility.

c. When the designated supervisor(s) are not available, the permittee shall have an operator available who is certified no less than one grade level below the system classification. This condition applies to system owners who designate supervisors to be fully responsible for system operation in lieu of the designated supervisor (if any are designated by the permittee) and any temporary supervisor so designated by the permittee. A system shall not be without an individual certified at the classification of the system for more than 30 days.

d. The permittee shall notify the Department in writing within 30 days of replacement or redesignation of operators identified as responsible for supervising the operation of the wastewater systems.

P11297W (8-21-91)

NPDES WASTE DISCHARGE PERMIT EVALUATION

August 6, 1991

Department of Environmental Quality
811 Southwest Sixth Avenue, Portland, OR 97204
Telephone: (503) 229-5696

FACILITY:
City of Brookings
898 Elk Drive
Brookings, Oregon 97415

SOURCES COVERED:

Type of Waste	Outfall	Location
Treated Muni. Waste	001	Pacific Ocean

PLANT TYPE AND LOCATION:
Trickling Filter/Solids Contact. South of Wharf Street on Chetco Point.
Brookings, Oregon 97415

RECEIVING SYSTEM INFORMATION:
Basin: South Coast
Subbasin: Chetco
Stream: Pacific Ocean
Hydro Code: 10=*PACI 0.0 D
County: Curry

EPA REFERENCE NO: OR-002035-4

Contents

5.5 Special Conditions
- 5.5.1 Sludge Management
- 5.5.2 Bioassay
- 5.5.3 Operator Certification

Attachments
- A. Operation and Maintenance Manual, Fig. I-1
- B. Stipulation and Final Order
- C. Effluent Discharge Analysis
- D. Chlorine Toxicity Analysis

1.0 SUMMARY

The City of Brooking owns and operates a secondary wastewater treatment facility which serves the City of Brookings and the Harbor Sanitary District. The existing treatment facility is a trickling filter/solids contact treatment process. Since April 19, 1988, the facility has been operating under a Department issued Stipulation and Final Order that includes interim limits and a compliance schedule for upgrading the existing facilities. The Order terminates December 31, 1991. The upgrade of the facility was completed in June 1991. This upgrade is referred to as the Stage 1 expansion and was intended to allow the plant to meet the existing permit limitations. The plant's current approved dry weather design flow is 1.0 mgd with a maximum hydraulic capacity of 9.2 mgd. The wastewater treatment facility discharges treated effluent to the Pacific Ocean through a newly constructed 24 inch outfall and diffuser 500 feet off shore under 10 feet of water (at low tide). The new outfall was constructed during the Stage 1 expansion.

Due to rapid growth in the Brookings area the treatment facility is already nearing capacity. An expansion of the facility is being planned. The expansion tentatively planned to be completed in 1993, would increase the dry weather design flow of the facility from 1.0 to 1.9 MGD and serve the community through the year 2013.

The Brookings plant receives domestic wastewater from residential and commercial sources. There are no know industrial discharges to the collection system.

Sludge at the wastewater treatment facility is stabilized using two anaerobic digesters. Primary and secondary sludges are co-thickened in the primary treatment system sedimentation tank. From the primary sedimentation tank, the thickened sludge is pumped to a heated anaerobic first-stage digester for processing. The second-stage digester is used solely for settling and storage of sludge. Sludge pumped from the digester is hauled to agricultural sites for beneficial use.

On October 10, 1990, the Department received an application from Brookings for a National Pollutant Discharge Elimination System (NPDES) permit to continue discharging to state waters pursuant to provisions of Oregon Revised Statutes (ORS) 468.740 and the Federal Clean Water Act. This permit evaluation report describes concerns and proposes effluent limitations, compliance schedules, and special conditions necessary to carry out state and federal law.

Effluent limits which have been added include a requirement for removal efficiency of both 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS) and chlorine residual limits. The draft permit also includes proposed effluent limits to be met upon completion of the Stage 2 expansion. Because of an increased state and federal emphasis on the control of toxic pollutants, monitoring requirements in the proposed permit have been expanded to include development of an effluent bioassay monitoring program.

2.0 BACKGROUND

2.1 Facility Description

The City's facility was originally built in the late 1950's consisting of a comminutor, primary clarifier, control building, fixed cover digester, and sludge drying beds. In 1973, the facility was expanded to provide secondary treatment as a regional wastewater treatment facility to serve the City of Brookings and the Harbor Sanitary District. The additions included a grit chamber, trickling filter, secondary clarifier, another fixed-cover digester, and a building over the existing sludge drying beds.

An upgrade of the treatment facility was completed in June 1991. The upgrade consisted of: (1) adding a new headworks, (2) adding a rectangular primary sedimentation tank, (2) adding a plastic media trickling filter, (3) addition of solids contact/re-aeration channels with fine bubble diffusers, (4) adding a secondary clarifier, (5) converting the existing secondary clarifier into chlorine contact basin and (6) adding an effluent control box for measuring plant flow and sampling effluent.

The completed treatment facility now consists of the following treatment processes: A headworks (mechanical bar screen, hand raked screen, grit removal tank and grit pumps), a primary clarifier, a primary sedimentation tank, two trickling filters - one with plastic media, one with rock media, two aeration basins, a secondary clarifier, and a chlorine contact chamber with disinfection through chlorination.

The proposed Stage 2 expansion of the treatment facility would include addition of a grit removal unit, a primary clarifier, and a new chlorine contact chamber. This expansion of the treatment facility would result in split stream treatment of the wastewater received at the treatment facility when flows exceeded 9.2 MGD. Flows in excess of 9.2 mgd would receive only primary treatment and disinfection.

Sludge at the wastewater treatment facility is stabilized an anaerobic digester. Primary and secondary sludges are co-thickened in the primary treatment system sedimentation tank. From the primary sedimentation tank the thickened sludge is pumped to a heated anaerobic first-stage digester for processing. The second-stage digester is used solely for settling and storage of sludge. The sludge is pumped from the digester and hauled to agricultural sites for beneficial uses. The covered sludge drying beds have not been used for drying sludge since 1978.

As part of the Stage 2 expansion, the City plans to rehabilitate the two existing sludge digesters and digester control building. When sludge production reaches 2,660 pounds per day, the sludge being feed to the digester must be thickened beyond that possible by the primary clarifier (3.5 percent). Thus, the City is also considering several different options for thicken the sludge to about 6.1 percent solids. The options

under consideration are: dissolved air flotation, belt thickening or centrifuges. The City is also considering the construction of a facultative sludge storage lagoon approximately 2.1 acres in size.

2.2 Pretreatment

The City of Brookings does not currently have a formal pretreatment program. The available information indicates there is no a need for such a program at this time.

2.3 Sludge Management and Disposal

The land application and disposal of sludge generated by the Brookings treatment facility is regulated by Oregon Administrative Rules, Chapter 340, Division 50. In accordance with this rule, each permitted source must submit a sludge management plan. In October 1986, the City submitted a draft sludge management plan to the Department for review and approval. The sludge management plan discussed the existing wastewater treatment units, sludge storage structures, sludge transportation equipment, and the land application program. The Department approved Brooking's sludge management plan on June 14, 1987. No septage is allowed to be accepted by the treatment facility.

The facility's recent Annual Solids Production report (August 15, 1990) shows the wastewater treatment facility produced approximately 180,900 gallons of sludge during 1989-90 with an average concentration of 3.88 percent solids. Thus, approximately 29.27 dry tons of solids were reported applied to the land application sites during this period.

The sludges are surface applied to an 18 acre pasture (one of two 18 acres sites approved by DEQ) via a tank truck. The pasture is allowed to be grazed by cattle following a 30-day minimum fallow period and hay is harvested from the site. Application of sludge is not allowed if rain has occurred four days prior to sludge hauling.

The existing permit requires an annual chemical testing of sludge which includes five metals. The reported monitoring data is summarized as follows:

Table 2.3 Brookings Sludge Metals Testing Summary

Date Reported	Cadmium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)
1/89	5.78	540	113	33.0	1360
5/89	3.20	300	98	24.0	673
8/90	3.00	350	74	29.0	940

2.4 Inflow/Infiltration and Facility Performance

An Inflow and Infiltration I/I analysis in the 1988 Facilities Plan concluded that no I/I work would be cost effective and no work was recommended. However, an analysis based on new data completed in May 1989, identified three reaches of sewer where rehabilitation would be cost effective. Rehabilitation of these reaches would have resulted in a peak removal of about 0.3 MGD. It was concluded that the flow reduction resulting from this I/I removal would not have a significant effect on the reserve cost ratio for funding the Stage 1 treatment facility expansion. Consequently, the I/I work recommended in the May 1989 I/I report was not pursued during the Stage 1 construction.

Since May 1989, the city has continued to perform flow monitoring. The City identified several additional short reaches that contributed more I/I per foot than those identified in the 1989 study. The total contributed by these reaches was 7.6 percent of the treatment plant flow. The City has received a grant for rehabilitating three of the reaches identified. If the rehabilitation of these lines results in a 50 percent reduction in the I/I measured, the project could result in a 0.3 MGD reduction in the projected wet weather flow at the treatment plant.

During the 1990 dry weather period (May 1 through October 31), the facility operated at roughly 90 percent of the ADWF hydraulic capacity (0.90 MGD). During the 1989/90 wet weather period (November 1 though April 30), the highest monthly average wet weather flow to the facility was 2.215 mgd during February. The monthly average flow exceeded the ADWF by roughly twice (The peak daily flow was 3.076 mgd). Organic loading for BOD varied from 64 to 227 percent of capacity; for TSS 60 to 204 percent. Table 2.4 summarizes both the hydraulic and organic loading to the facility for the period from January 1989 through May 1991.

Table 2.4 Percent Organic and Hydraulic Influent Loading Capacity

month	monthly average flow (mgd)	BOD (pounds)		TSS (pounds)	
		monthly average	% of cap.a	monthly average	%of cap.b
Jan 89	1.732	997	71	881	63
Feb	1.324	1126	80	1126	75
Mar	2.198	1026	73	1118	75
Apr	1.244	986	70	1027	68
May	0.778	954	68	907	60
Jun	0.648	1054	75	1065	71
Jul	0.675	1211	87	997	66
Aug	0.634	1232	88	920	61
Sept	0.569	1073	77	959	64
Oct	0.705	1305	93	1017	68
Nov	0.925	1143	99	1089	89
Dec	1.176	1353	118	1363	111
Jan 90	1.878	1425	124	1551	126
Feb	2.215	1533	133	1533	125
Mar	1.295	1015	88	1328	108
Apr	0.750	881	77	1226	100
May	0.816	898	64	1218	81
Jun	1.063	1082	77	1135	76
Jul	0.736	1590	114	1290	86
Aug	0.711	1572	112	1157	77
Sept	0.661	2079	149	1362	91
Oct	0.936	1350	96	1381	92
Nov	1.548	1369	119	1356	110
Dec	1.348	1562	136	1618	132
Jan 91	1.664	2609	227	2512	204
Feb	1.083	1120	97	1852	151
Mar	1.539	1296	113	1425	116
Apr	0.917	994	86	948	77
May	0.816	1878	134	1782	119

Note: a Percent of BOD organic capacity based on 1,400 pounds per day dry weather maximum month May through October and 1,150 pounds per day wet weather average November through April.

b Percent of TSS organic capacity based on 1,500 pounds per day dry weather maximum month May through October and 1,230 pounds per day wet weather average November through April. (Source Fig. I-1 of O & M manual, See Attachment A).

3.0 Compliance History

3.1 NPDES Permit History

The existing permit expired on March 31, 1991. The Department received an application from the City on October 15, 1991 for a permit renewal. NPDES permit actions which have occurred to date are summarized as follows:

Effective Date	Action
October 31, 1973	Initial permit issuance. Monthly average effluent discharged shall not exceed 1.0 mgd. Year-round monthly average effluent concentration limits set at 30/30 for BOD_5/TSS. Monthly average limits set at 250 pounds per day. Monthly average fecal established at 200/100ml. Expiration date: November 30, 1978.
January 15, 1980	Permit re-issued. No changes in permit limits. Expiration date: November 30, 1984.
June 20, 1986	Permit re-issued. No changes in permit limits. Expiration date: March 31, 1991.
April 20, 1988	Stipulation and Final Order signed by the director establishing interim limits for BOD and TSS. Monthly average concentration limits 45 mg/l for BOD and TSS, respectively. Monthly average BOD and TSS Effluent loading limits of 375 pounds per day up to 1.5 MGD. Mass load limits suspended when flows exceed 1.5 MGD.

3.2 Effluent Limitations, Schedule A

The existing monthly average effluent concentration limits for BOD_5 and TSS at the Brooking's facility are 30/30 with a monthly average load limit of 250 pounds per day, respectively for BOD and TSS, year-round. The basis of these limits originated in Oregon's water quality management plan which was approved by EPA.

During the term of the current permit, the facility was unable to comply with the permitted concentration and mass load limits. On April 20, 1988, the Department entered into a Stipulation and Final Order (See Attachment B) with the City. The Order put in place interim concentration and mass load limits and included a compliance schedule requiring the City to upgrade the treatment facility to meet permit limits.

It was discovered that the treatment facility effluent flow meter was inaccurate. A temporary flow meter was installed by the City to accurately measure effluent flows. An apparent comparison of the flow meters indicates that flows recorded by the facility's flow meter were

from 30 to 40 percent higher (the June 18, 1991, Facility Plan report, Section 5, page 3) than those recorder by the temporary meter. The DMRs submitted to the Department indicate the difference in the percentage of the readings. However, data reported on the DMRs is not calculated based on the flows taken from the temporary meter. Thus, the DMR data is of little value in determining compliance with the Order.

Based on the corrected flow measurements from January 1989 through December 1990, Table 3.2 has been prepared. The corrected measurements have been used to revise the effluent monthly average effluent BOD and TSS pounds reported by the City on the DMR. Although this is not the correct method of deriving the monthly average pounds discharged, it is more representative of the facility's performance. Data reported prior to January 1989, is of questionable value and has not been used in determining compliance with the Order. Violations of the Order are indicated with an (*). A review of the revised data indicates the City has been able to substantially comply with the Order's interim limits.

Table 3.2 Effluent Data April 1989 - May 1991

Month	Eff. Flow (mgd)	Effluent BOD			Effluent TSS			Cl_2 Resid (mg/L)	FC #/ 100ml
		mg/L	#/day	% Rem.	mg/L	#/day	% Rem.		
1988	Note: Data from 1988 may be invalid due to inaccurate flow meter.								
Apr	1.397	22	233	84	37	*403	77	0.31	13
May	1.686	28	442	76	35	485	66	0.30	35
June	1.505	35	445	77	32	386	80	0.30	44
Jul	1.032	39	342	81	38	327	82	0.30	115
Aug	0.946	32	264	83	38	316	78	0.31	77
Sept	0.923	32	250	84	38	299	82	0.30	31
Oct	0.875	31	229	81	32	238	85	0.30	50
Nov	2.650	25	553	68	32	707	66	0.20	42
Dec	2.156	250	406	73	31	500	62	0.30	26
1989									
Jan	1.732	24	347	65	28	404	54	0.28	49
Feb	1.324	32	353	69	10	342	70	0.30	18
Mar	2.198	29	532	48	29	532	52	0.30	110
Apr	1.244	32	332	66	29	301	71	0.30	42
May	0.778	42	273	71	29	188	79	0.33	24
June	0.648	22	119	89	34	184	96	0.30	115
Jul	0.675	36	202	83	23	129	87	0.35	163
Aug	0.634	*47	248	80	30	159	83	0.25	64
Sept	0.569	42	199	81	34	161	83	0.20	11
Oct	0.705	22	129	90	31	182	82	0.11	18
Nov	0.925	26	201	84	32	247	77	0.10	8
Dec	1.176	27	265	80	29	284	79	0.10	14
1990									
Jan	1.878	32	501	68	32	501	68	0.10	50
Feb	2.215	34	628	59	26	480	69	0.10	14
Mar	1.295	35	*378	63	34	367	72	0.10	19
Apr	0.750								
May	0.816	28	190	79	31	210	83	0.11	21
Jun	1.063	27	239	78	35	310	73	0.12	72
Jul	0.736	43	264	83	40	246	81	0.16	50
Aug	0.711	43	255	84	38	225	81	0.18	25
Sept	0.661	51	281	86	39	215	84	0.20	6
Oct	0.936	33	258	81	30	234	81	0.13	29
Nov	1.548	26	335	75	33	426	69	0.10	53
Dec	1.348	32	360	76	37	*416	74	0.10	23
1991									
Jan	1.664	44	610	77	41	569	77	0.12	27
Feb	1.083	43	*388	65	*49	*443	70	0.10	38
Mar	1.539	36	462	65	*47	603	58	0.12	39
Apr	0.917	31	229	76	30	223	75	0.20	122
May	0.822	19	127	93	11	68	96	0.9	40

3.3 Monitoring and Reporting, Schedule B

Discharge Monitoring Reports (DMRs) are submitted to the Department on time. The DMRs submitted to the Department include reporting of sludge hauled to the land application site. The DMRs have included all information required by the NPDES permit.

4.0 WATER QUALITY

4.1. Applicable Standards

The Brookings wastewater treatment facility discharges to the Pacific Ocean. OAR 340-41-322, Table 4 lists the beneficial uses for which estuary and adjacent marine water quality will be protected. Included are: industrial water supply, anadromous fish passage, water contact recreation, salmonid fish rearing and spawning, resident fish & aquatic life, fishing, boating and aesthetic quality. Applicable water quality standards for the Pacific Ocean which protect these uses are found in OAR 340-41-325.

4.2. Water Quality Analysis

The City's engineering consultant evaluated the potential impact of the increased discharge from the facility on the receiving water in accordance with OAR 340, Division 41 (See Attachment C). Critical parameters reviewed included: dissolved oxygen, temperature, turbidity, pH, coliform organisms, and toxicity from chlorine residual and ammonia. The analysis indicates there would be little if any impact on the waters with regard to the aforementioned parameters with the exception of chlorine. The Department's analysis of potential effluent chlorine toxicity indicates a lower limit than that used by the City's consultant in the analysis (0.9 mg/l) is appropriate. Section 5.2.6 of the evaluation addresses the effluent chlorine toxicity issue.

5.0 Draft Permit Discussions

5.1 Face Page

In accordance with OAR 340, Division 49 all permitted wastewater collection and treatment facilities are to receive a classification based on the complexity of the systems. The Department, at the time of permit renewal, has been incorporating the classification of the collection and treatment systems into the waste discharge permits. Thus, the face page of the NPDES permit includes the collection system and treatment system classifications.

5.2 Schedule A, Waste Discharge limitations

State regulations governing the implementation of minimum design criteria for waste treatment and control facilities are found in OAR 340-41-120.

Minimum treatment design criteria for the South Coast Basin are described in OAR 340-41-335. Based on OAR 340-41-335, the minimum treatment resulting in a monthly average effluent concentration of 30 mg/l for BOD and TSS, respectively is required year-round for ocean discharges.

5.2.1 Stage 1 Existing Facility BOD and TSS Concentration and Mass Discharge Limitations.

The O & M manual prepared by the City's engineering consultant states that the upgraded wastewater treatment facility is capable of producing a 30 mg/l BOD and 30 mg/l TSS effluent up to the wet weather maximum monthly flow (3.0 mgd). The treatment facility should therefore easily be able to produce 30 mg/l effluent on a monthly average basis during the dry weather period (approximately May through October). Thus, the proposed mass load limits for the Stage 1 upgraded are based on 30 mg/l.

Derivation of the monthly average BOD and TSS mass load limits is based on the product of the permitted average dry weather design flow to the facility (1.0 mgd), a conversion factor of 8.34 and the 30 mg/l monthly average BOD or TSS concentration limits, respectively. The proposed weekly average mass load limits would be 1.5 times the monthly average and daily maximum mass load limits 2.0 times the monthly average. The resulting mass load limits are indicated in Table 5-1. The proposed dry weather limits do not exceed the mass load limits of the current permit.

Table 5-1 Stage 1 Proposed Dry Weather Effluent Limits

Parameter	Monthly Average (Flow = 1.0 mgd)		Weekly Average (1.5 x Mnthly avg)		Daily Maximum (2.0 x Mnthly avg)	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	30	250	45	375	-	500
TSS	30	250	45	375	-	500

Calculations:

(1) BOD & TSS

(a) 1.0 MGD x 8.34 x 30 mg/l monthly avg. = 250.2 lb/day monthly avg.

(b) 250 lb/day monthly avg. x 1.5 = 375.3 lb/day weekly avg.

(c) 250 lb/day monthly avg. x 2.0 = 500.4 lb/day daily max.

During the wet weather period, the City of Brooking's collection system experiences significant infiltration. Through a cost effective analysis it has been determined that the cost to repair the collection system to reduce I/I is excessive compared to the cost of treating the infiltration induce flows. In addition, the cost of adding a tertiary filtration to stay within the existing mass load limits was assessed and estimated to cost roughly an additional 4.7 million dollars above the proposed expansion cost of 8.6 million dollars. Therefore, it is appropriate for the City to have increased BOD and TSS mass discharge limits for the during period of high flow resulting from wet weather conditions.

According to Figure I-1 of the Brooking's Operation and Maintenance manual (Attachment A), the Stage 1 treatment facility is capable of meeting the proposed dry weather permit limits until the wet weather maximum monthly flow exceeds 3.0 mgd. Thus, the permit includes the alternate monthly and weekly average wet weather mass load limits as identified in Table 5-2 when the monthly average flow exceeds 3.0 mgd.

Table 5-2 Stage 1 Proposed Wet Weather Effluent Limits

Parameter	Monthly Average		Weekly Average (1.5 x Mnthly avg)		Daily Maximum (2.0 x Mnthly avg)	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	30	751	45	1126	NA	NA
TSS	30	751	45	1126	NA	NA

Calculations:

(1) BOD & TSS

(a) 3.0 MGD x 8.34 x 30 mg/l monthly avg. = 750.6 lb/day monthly avg.

(b) 750 lb/day monthly avg. x 1.5 = 1125.9 lb/day weekly avg.

Historical effluent flow data for the existing facility is of little value in evaluating peak daily flows. Accurate peak daily flows have not been recorded due to the effluent flow meter's inaccuracy and pegging out during peak flow events. Thus, the City's engineering consultant included predict peak daily flows in the facility plan. These peak flows are several times higher than the ADWF. Until more reliable flow data is available, the Department is deferring inclusion of daily maximum BOD and TSS mass load limits in the proposed permit for wet weather conditions resulting in total daily flows in excess of 7.5 mgd. At a total daily

flow less than 7.5 mgd, the treatment facility would be required to meet the dry weather maximum daily mass load limits for BOD and TSS.

5.2.2. Proposed Stage 2 Expansion BOD and TSS Concentration and Mass Discharge Limitations.

The proposed expansion of the wastewater treatment facility would increase the ADWF of the facility to 1.9 mgd. With this expansion, the City is requesting a BOD and TSS mass load increase. Section .6, page 2, Table 6-1 of the June 18, 1991, facility plan identifies the proposed limits. The limits proposed are identified below:

Table 5-3 Permittee Proposed Mass Load Limits

Parameter	Peak monthly avg. (Flow = 4.5 mgd)		Peak weekly avg. (Flow = 6.1 mgd)		Peak daily avg. (Flow = 10.3 mgd)	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	751	30	1018	30	2577
TSS	20	751	30	1018	30	2577

As can be seen from Table 5-3 the City's engineering consultant is requesting mass load limits based on peak wet weather flows for the month, week and day. As with the proposed mass load increase for the existing facility, this is a departure from the Department's standard practice of basing BOD and TSS mass load limits on the ADWF. These limits are being proposed due to the high amount of inflow and infiltration entering the collection system (see discussion on I/I in Section 4.2). The proposed BOD and TSS mass load limits indicated above are not appropriate on a year-round basis.

According to the limited data available, peak flows are generally only associated with wet weather storm events (April 1988 draft Facility Plan Report, Table 5-1, page 5-8). Thus, the Department is proposing the facility meet more stringent BOD and TSS mass load limits during dry weather conditions. The appropriate basis for the mass load limits during these dry weather periods would be the ADWF of 1.9 mgd and the proposed concentration limits (see previous discussion on the development of mass load limits). Based on these figures, the proposed dry weather BOD and TSS mass load limits are indicated in Table 5-4.

Table 5-4 Department Proposed Stage 2 Dry Weather Mass Load Limits

Parameter	Monthly Average		Weekly Average (1.5 x Mnthly avg)		Daily Maximum (2.0 x mnthly avg)	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	317	30	476	-	634
TSS	20	317	30	476	-	634

Calculations:

(1) BOD & TSS

(a) 1.9 MGD x 8.34 x 20 mg/l monthly avg. = 316.9 lb/day monthly avg.

(b) 317 lb/day monthly avg. x 1.5 = 475.5 lb/day weekly avg.

(c) 476 lb/day monthly avg. x 2.0 = 633.8 lb/day daily max.

During wet weather conditions, the proposed Stage 2 facility would be allowed to meet less stringent mass load limits when the monthly average flow exceeds 3.0 mgd. Also, according to Table 5-5 of the June 18, 1991 facility plan report, the projected daily average BOD and TSS waste load in the year 2013 is 3,500 pounds per day. Since the facility would be expected to meet 85 percent BOD and TSS removal efficiency on a monthly average basis year-round, the Department has developed effluent BOD and TSS mass load limits during wet weather conditions based on 85 percent removal efficiency and the influent flow exceeding 3.0 mgd. The proposed limits are identified in Table 5-5.

Table 5-5 Department Proposed Stage 2 Wet Weather Mass Load Limits

Parameter	Monthly Average		Weekly Average (1.5 x Mnthly avg)		Daily Maximum (2.0 x mnthly avg)	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	525	30	788	NA	NA*
TSS	20	525	30	788	NA	NA*

* As with the current stage 1 wet weather permit limits, the Department is proposing to suspend the daily maximum limit when flows exceed 7.5 mgd.

Calculations:

3500 lb/day x 0.15 = 525 lb/day monthly average

525 lb/day x 1.5 = 787.5 lb/day

5.2.3. BOD and TSS Percent Removal Efficiency

Minimum levels of percent removal for BOD and TSS for municipal dischargers is required by federal secondary treatment regulations (40 CFR, Part 133). The intent of the percent removal requirement is to achieve two basic objectives. These are: (1) to encourage municipalities to correct excessive inflow and infiltration problems in their sanitary sewers and (2) help prevent intentional dilution of influent wastewater as a means of meeting permit limitations.

To satisfy federal regulations, a percent removal limit is being added to the proposed permit. The data in Table 3.2 appears to indicate the treatment facility would be unable to meet this requirement. However, according to the project design data for the Stage 1 facility, it was designed to meet 85 percent removal efficiency for BOD and TSS. The Stage 1 expansion of the facility was completed in June 1991. The Stage 2 facility is also being designed to meet the federal percent removal efficiency requirements for BOD and TSS.

5.2.4. pH

Proposed permit limitations for pH remain unchanged. The limit is established in accordance with federal secondary treatment standards 40 CFR 133.102 (c). Basin water quality standards for pH are established in OAR 340-41-325 (2)(d)(A).

5.2.5. Fecal coliform

Fecal Coliform bacteria limits are set to meet Oregon Water Quality Standards per OAR 340-41-325 (2)(e)(B). These limits are applicable to waters other than shell fish growing water. The effluent limits are achievable through proper operation and maintenance. The current permit limits are considered protective of the standards and no changes are proposed.

5.2.6. Chlorine Residual

Disinfection of the effluent with chlorine is the process the City uses to achieve the waste discharge limitations for Fecal coliform bacteria. Chlorine is a know toxic substance and as such is subject to limitation under Oregon Administrative Rules.

(OAR) 340-41-325(2)(p) states that:

a. Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may bioaccumulate to levels that adversely affect public health, safety, or welfare; aquatic life; or other designated beneficial uses.

b. Levels of toxic substances shall not exceed the most recent criteria values for organic and inorganic pollutants established by USEPA and published in Quality Criteria for Water (1986). A list of the criteria is presented in Table 20 of OAR Chapter 340, Division 41.

However, OAR 340-41-325(4) states that the Department may allow a designated portion of a receiving water to serve as a zone of initial dilution for waste waters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone. The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions, in part, are met:

a. The water within the mixing zone shall be free of materials in concentrations that will cause acute (96HLC50) toxicity to aquatic life. Acute toxicity is measured as the lethal concentration that causes 50 percent mortality of organisms within a 96 hour test period; and

b. The water outside the boundary of the mixing zone shall be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that cause long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on the test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits.

Furthermore, under federal regulations 40 CFR, part 122.44(d) states that, in addition to the conditions established under part 122.43(a), each NPDES permit shall include any requirements in addition to or more stringent that promulgated effluent limitations guidelines or standards under sections 301, 304, 306, 307, 318 and 405 of the federal Clean Water Act (CWA) necessary to achieve water quality standards established under section 303 of the CWA, including state narrative criteria for water quality. Section (d) of part 122.44 also states that limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality. Section (d) also states that when the permitting authority determines that

a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a state numeric criteria within a state water quality standard for an individual pollutant, the permit must contain effluent limits for that pollutant.

According to EPA's 1986 Quality Criteria for Water (commonly known as the Gold Book), chlorine concentrations of 7.5 ug/l and 13 ug/l can result in chronic and acute chlorine toxicity, respectively, in marine waters. The City's consultant submitted to the Department a draft of the effluent discharge analysis (See Attachment C) evaluating the effect of the increased discharge from the treatment facility on the receiving water. Using the predicted dilutions in Table 1 of this report, the Department evaluated the potential for chlorine toxicity (See Attachment D) for the proposed stage 2 expansion. The Department's analysis indicates there is a potential for chronic chlorine toxicity to occur at the ADWF of 1.9 mgd and effluent chlorine concentrations in excess of 0.20 mg/l. At peak wet weather flows of 6.0 mgd and 10.5 mgd, chronic chlorine toxicity could also result when effluent chlorine concentrations exceed 0.32 mg/l. Since only occasional peak flow conditions should occur, the Department is proposing a daily average chlorine residual limit of 0.20 mg/l in the draft permit for the proposed Stage 2 expansion.

Based on the same information provided in Table 1 referenced above, the Department is also proposing a daily average chlorine residual limit of 0.40 mg/l for the Stage 1 upgraded facility. This is based on the 10 foot discharge depth, a current speed of 0.06 meter per second and an effluent flow rate of 1.0 mgd.

5.2.7. Mixing zone

OAR 340-41-325 (4)(a) allows the Department to designate a portion of the receiving stream water to serve as a zone of initial dilution (ZID) for wastewaters and receiving waters to mix. OAR 340-41-325 (4)(b) allows the Department to suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone provided a number of conditions are met. The current permit for the treatment facility allows for a mixing zone for Outfall 001. The proposed mixing zone is adequate for the existing Stage 1 facility and the proposed Stage 2 expansion. No change in the mixing zone size for the facility is being proposed.

5.3 Monitoring and Reporting Requirement, Schedule B

5.3.1 BOD, TSS, and pH

No change in the monitoring frequency is being proposed for BOD, TSS or pH. The monitoring and reporting frequency corresponds to that of facilities of similar size and complexity.

5.3.2 Total Flow: no change in monitoring requirements

5.3.3 Average Percent Removal Efficiency (BOD and TSS).

Based on minimum federal secondary treatment standards municipal sources are required to meet a minimum of 85 percent BOD and TSS removal efficiency on a monthly average. Calculation of the monthly average removal efficiency for these parameters is being included in the proposed permit.

5.3.4 Biomonitoring.

In 1989, the Department with assistance from EPA developed a strategy for implementing whole effluent toxicity (WET) testing. This strategy is identified in the Department's draft document Criteria and Guidelines for Evaluating Toxics Concerns, July 20, 1991. Although revision of this document is needed, the basic document still provides the Department with a framework by which to equitably determine the appropriate frequency of WET testing for permitted sources.

The basic strategy for implementing WET testing considers three factors: (1) the dry wether design flow of the facility, (2) the quantity of sludge produced annually, and (3) whether or not the facility has a formal pretreatment program. Based on these parameters four categories "A" through "D" have been developed. "A" requires the most frequent testing, "D" the least. Facilities in category "D" are those that have an average dry weather design flow of less than 2 mgd, produce less than 200 dry tons of sludge per annually, and do not have a formal pretreatment program. Bioassay testing is required twice during the permit cycle for these facilities. The City of Brookings meets category D criteria. Thus, the proposed permit for the City would require WET testing once during the second and fourth year of the proposed permit.

Schedule C of proposed permit requires the City to submit the proposed bioassay procedures to the Department for approval and identifies some of the basic elements of the submittal.

5.3.5 Sludge Analysis and Reporting

OAR 340, Division 50, "Land Application and Disposal of Sewage Treatment Plant Sludge and Sludge Derived Products Including Septage " requires monitoring and reporting of specific sludge parameters under Section 35. These parameters are identified in Schedule B under "Sludge Management" and include: Total solids, Volatile solids, Nitrogen, five metals (Cd, Cu, Pb, Ni, and Zn), Phosphorus, Potassium and pH. The frequency of analysis being proposed for these parameters is in accordance with the requirements of OAR 340-50-035(b).

In addition, the proposed permit requires monitoring of percent volatile

solids reduction through the digestion process; and record the locations where sludge is land applied.

When the solids handling portion of the facility is upgraded, the City will be required to submit to the Department a revised sludge management plan.

5.4 Compliance Schedules and Conditions, Schedule C

5.4.1 Inflow and Infiltration (Condition 1)

The City of Brookings has a significant infiltration problem that has been evaluated as not being cost effective to remove or reduce. However, the Department expects the City to have in place an aggressive I/I program that would endeavor to reduce and/or eliminate any excessive I/I that is found. Thus, the proposed permit requires the City to submit to the Department an annual report describing sewer collection maintenance activities performed during the previous year and outlines activities planned for the following year.

5.4.2 Bioassay (Condition 2)

This condition requires the submittal of bioassay test procedures by no later than ninety days after issuance of the permit and identifies the type of sample and when the testing is to be done.

5.4.3 Facility Upgrade Annual Report (Condition 3)

The City of Brookings intends to complete an expansion of the existing facility some time in 1993. The Department is to be advised of the progress being made by the City to upgrade the wastewater treatment facility. Condition 3 of the proposed permit requires the City to submit to the Department and annual report on the progress being made to upgrade the facility.

5.4.4 Sludge Management (Condition 4)

The City currently has an approved sludge management plan. However, with the proposed expansion of the facilities, the City will be upgrading their solids handling capabilities. Thus, the City will be required to submit a revised sludge management plan by no later than ninety days prior to completion of the solids handling facility improvements.

5.5 Special Conditions, Schedule D

5.5.1 Sludge Management, Condition 1

This condition requires the permittee to manage sludge in accordance with an approved sludge management plan.

5.5.2 Bioassay, Condition 2

This condition requires the permittee to implement a bioassay testing program as specified in Schedules B and C, and states that if the tests indicate toxicity in the effluent, then the permittee must develop and implement a plan to reduce the toxicity.

5.5.3 Operator Certification, Condition 3

This condition requires the permittee to meet the requirements of OAR Chapter 340, Division 49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel".

PROJECT DESIGN DATA

DESCRIPTION	CURRENT	STAGE 1 1993	STAGE 2 2008
DESIGN FLOW, MGD			
AVERAGE DRY WEATHER (ADWF)	0.9	1.0	1.8
WET WEATHER MAXIMUM MONTH	2.8	3.0	3.9
PEAK WET WEATHER (PWWF)			
ONE HOUR 5-YEAR RECURRENCE	8.5	9.2	11.6
DESIGN BOD LOAD			
WET WEATHER AVERAGE, PPD	1,150	1,510	2,690
DRY WEATHER MAXIMUM MONTH, PPD	1,400	1,850	3,290
DESIGN SS LOAD			
WET WEATHER AVERAGE, PPD	1,230	1,620	2,890
DRY WEATHER MAXIMUM MONTH, PPD	1,500	1,980	3,530
HEADWORKS			
AUTOMATIC BAR SCREEN, NEW			
NUMBER		1	1
CAPACITY, MGD		11.6	11.6
MANUAL SCREEN, NEW			
NUMBER		1	1
CAPACITY, MGD		11.6	11.6
GRIT REMOVAL, NEW			
NUMBER		1	2
CAPACITY FOR OPTIMUM EFFICIENCY AT PWWF, MGD			
EACH		7	7
TOTAL		7	14
GRIT PUMPS			
NUMBER		1	2
CAPACITY EACH, GPM		270	270
PRIMARY CLARIFIER, EXISTING			
NUMBER		1	--
OVERFLOW RATE, GAL/SQ FT/DAY		2,300	--
SURFACE AREA, SQ FT		960	--
CAPACITY, MGD		2.2	--
PRIMARY SEDIMENTATION TANKS, NEW			
NUMBER		1	2
WIDTH, FT		21.5	21.5
LENGTH, FT		82	82
SURFACE AREA, SQ FT			
EACH		1,763	1,763
TOTAL		1,763	3,526
OVERFLOW RATE FOR OPTIMUM EFFICIENCY AT PWWF, GPD/SQ FT/DAY	3,300	3,300	3,300
ESTIMATED PERCENT BOD REMOVAL IN PRIMARY TREATMENT	30	30	30

DESCRIPTION	CURRENT	STAGE 1 1993	STAGE 2 2008
PWWF FLOW EACH, MGD	6.3	7.0	5.8
OVERFLOW RATE AT PWWF, GPD/SQ FT/DAY	3,600	4,000	3,300
SLUDGE PUMPS			
NUMBER		2	4
CAPACITY EACH, GPM		50	50
SCUM PUMPS			
NUMBER		1	2
CAPACITY EACH, GPM		50	50
TRICKLING FILTER, NEW			
NUMBER		1	1
DIAMETER, FT		70	70
PLASTIC MEDIA DEPTH, FT		16	16
PLASTIC MEDIA VOLUME, CU FT		61,575	61,575
BOD LOAD, LB/1,000 CU FT/DAY			
AVERAGE		17	20
PEAK MONTH		21	25
TRICKLING FILTER, EXISTING			
NUMBER		1	1
DIAMETER, FT		70	70
ROCK DEPTH, FT		8.5	--
ROCK VOLUME, CU FT		33,000	--
PLASTIC MEDIA DEPTH, FT		--	8
PLASTIC MEDIA VOLUME, CU FT		--	31,000
BOD LOAD, LB/1,000 CU FT/DAY			
AVERAGE		--	20
PEAK MONTH		--	25
TRICKLING FILTER PUMPING STATION, NEW			
NUMBER		3	4
CAPACITY EACH, MGD		4.8	4.8
SOLIDS CONTACT/REAERATION BASINS			
VOLUME, CU FT		13,200	26,400
AERATION BLOWERS			
NUMBER		2	3
CAPACITY EACH, SCFM		850	850
SECONDARY CLARIFIER, NEW			
NUMBER		1	2
DIAMETER, FT		80	80
SURFACE AREA, SQ FT		5,030	5,030
OVERFLOW RATE FOR OPTIMUM EFFICIENCY			
AT PWWF, GPD/SQ FT	1,700	1,700	1,700
PWWF FLOW EACH, MGD	8.5	9.2	5.8
OVERFLOW RATE AT STAGE PWWF, GPD/SQ FT	1,690	1,830	1,150

DESCRIPTION	CURRENT	STAGE 1 1993	STAGE 2 2008
RETURN SECONDARY SLUDGE PUMPS			
NUMBER		2	4
CAPACITY EACH, MGD		1.0	1.0
TANK DRAIN PUMPS			
NUMBER		2	2
CAPACITY EACH, MGD		0.6	0.6
CHLORINATORS			
NUMBER	2	2	2
CAPACITY EACH, PPD	100,300	500	500
CHLORINE CONTACT VOLUME, STAGE 1			
EXISTING SECONDARY CLARIFIER CONVERSION, CU FT		14,300	
ON-SITE PIPING, CU FT		3,000	
TOTAL VOLUME, CU FT		17,300	
DETENTION TIME, MINUTES AT			
ADWF	145	186	--
MAXIMUM DAILY FLOW OF 6.0 MGD	27	31	--
PWWF	22	20	--
PLANT EFFLUENT QUALITY			
BOD AND SS AT ADWF			
MG/L		30	30
PPD		250	400
BOD AND SS AT WET WEATHER MAXIMUM MONTHLY FLOW			
MG/L		9	12
PPD		250	400
BOD AND SS MONTHLY AVERAGE REMOVAL, MINIMUM PERCENT		85	85
FECAL COLIFORM PER 100 ML		200	200
MILL BEACH PUMPING STATION			
SUBMERSIBLE PUMPS			
NUMBER	1	1	1
CAPACITY, GPM	200	200	200
NUMBER	1	1	1
CAPACITY, GPM	500	500	500
VERTICAL COLUMN SEWAGE PUMP			
NUMBER	2	2	2
CAPACITY EACH, GPM	2,275	2,275	2,275
PUMPING STATION CAPACITY, GPM	2,775	2,775	2,775

Figure I-1

DESIGN DATA

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

OF THE STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY, OF THE STATE OF OREGON, Department, v. CITY OF BROOKINGS, Respondent.	STIPULATION AND FINAL ORDER No. WQ-SWR-88-35 Curry County

WHEREAS:

1. On June 20, 1986, the Department of Environmental Quality ("Department") issued National Pollutant Discharge Elimination System ("NPDES") Waste Discharge Permit Number 100197 ("Permit") to City of Brookings, ("Respondent") pursuant to Oregon Revised Statutes ("ORS") 468.740 and the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500. The Permit authorizes the Respondent to construct, install, modify or operate waste water treatment control and disposal facilities ("facilities") and discharge adequately treated waste waters into the Pacific Ocean, waters of the State, in conformance with the requirements, limitations and conditions set forth in the Permit. The Permit expires on March 31, 1991.

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2. Condition 1 of Schedule A of the Permit does not allow Respondent to exceed the following waste discharge limitations after the Permit issuance date:

Outfall Number 001

	Average Effluent Concentrations		Effluent Loadings		
	Monthly	Weekly	Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lbs
Parameter					
BOD	30 mg/l	45 mg/l	250	375	500
TSS	30 mg/l	45 mg/l	250	375	500
FC per 100 ml	200	400			

Other Parameters (year-around)	Limitations
pH	Shall be within the range 6.0 - 9.0
Average dry weather flow to the treatment facility.	1.0 MGD

3. During the time period the Permit has been in effect, Respondent has not been able to consistently meet the above effluent limitations due to design and operational limitations of the sewage treatment plant and due to the high flows into the sewage collection system following storm events.

4. Department and Respondent recognize that until new or modified facilities are constructed and put into full operation, Respondent will continue to violate the permit effluent limitations at times. In addition, Respondent will not be able to meet portions of the compliance conditions contained in Conditions 3 and 4 of Schedule C of the Permit which requires extension or relocation of the ocean outfall and new or upgraded disinfection facilities by July 1, 1988.

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5. Respondent presently is capable of treating its effluent so as to meet the following effluent limitations, measured as specified in the Permit:

	Average Effluent Concentrations		Effluent Loadings* Monthly Average	Weekly Average	Daily Maximum
	Monthly	Weekly	lb/day	lb/day	lbs
Parameter					
BOD	45 mg/l	60 mg/l	375	500	600
TSS	45 mg/l	60 mg/l	375	500	600
FC per 100 ml	200	400			

Other Parameters (year-around)	Limitations
pH	Shall be within the range 6.0 - 9.0.
Average dry weather flow to the treatment facility	1.0 MGD

*Effluent loading limits do not apply when flow to the treatment facility exceeds 1.5 MGD.

6. The Department and Respondent recognize that the Environmental Quality Commission has the power to impose a civil penalty and to issue an abatement order for violations of conditions of the Permit. Therefore, pursuant to ORS 183.415(5), the Department and Respondent wish to settle those past violations referred to in Paragraph 3 and to limit and resolve the future violations referred to in Paragraph 4 in advance by this stipulated final order.

7. This stipulated final order is not intended to settle any violation of any interim effluent limitations set forth in Paragraph 5 above. Furthermore, this stipulated final order is not intended to limit, in any way, the Department's right to proceed against Respondent in any

forum for any past or future violation not expressly settled herein.

NOW THEREFORE, it is stipulated and agreed that:

A. The Environmental Quality Commission shall issue a final order:

(1) Requiring Respondent to comply with the following schedule:

(a) By October 1, 1988, arrange for financing of new or upgraded sewage treatment and disposal facilities and notify the Department in writing when such has been accomplished.

(b) Relocate or extend the existing ocean outfall, as follows:

(i) By October 1, 1988, submit draft engineering plans and specifications to the Department.

(ii) By January 1, 1989, submit final engineering plans and specifications to the Department.

(iii) By May 1, 1989, begin construction.

(iv) By September 1, 1989, complete construction and begin operation.

(c) Construct and operate new or upgraded sewage treatment facilities, as follows:

(i) By February 1, 1989, submit draft engineering plans and specifications.

(ii) By June 1, 1989, submit final engineering plans and specifications.

(iii) By March 1, 1990, begin construction.

(iv) By September 1, 1991, complete construction.

(v) By December 1, 1991, attain operational level and meet all waste discharge limitations of the NPDES waste discharge permit in effect at that time.

(2) Requiring Respondent to meet the interim effluent limitations set forth in Paragraph 5 above until December 1, 1991.

(3) Requiring Respondent to comply with all the terms, schedules and conditions of the Permit, except those modified by Paragraph A(2) above and except for Conditions 3 and 4 of Schedule C of the Permit, or of any other NPDES waste discharge permit issued to Respondent while this stipulated final order is in effect.

(4) Requiring Respondent, should Respondent fail to comply with the above schedule, to cease allowing new connections to Respondent's sewage collection system upon written requirement of the Department.

B. Regarding the violations set forth in Paragraph 3 and 4 above, which are expressly settled herein without penalty, Respondent and Department hereby waive any and all of their rights to any and all notices, hearings, judicial review, and to service of a copy of the final order herein. Department reserves the right to enforce this order through appropriate administrative and judicial proceedings.

C. Regarding the schedule set forth in Paragraph A(1) above, Respondent acknowledges that Respondent is responsible for complying with that schedule regardless of the availability of any federal or state grant monies.

D. Respondent acknowledges that it has actual notice of the contents and requirements of this stipulated and final order and that failure to fulfill any of the requirements hereof would constitute a violation of this stipulated final order. Therefore, should Respondent commit any violation of this stipulated order, Respondent hereby waives any rights it might have

to an ORS 468.125(1) advance notice prior to the assessment of civil penalties. However, Respondent does not waive its rights to an ORS 468.135(1) notice of assessment of civil penalty.

RESPONDENT

April 20, 1988
Date

(Name Roy G. Rainey)
(Title City Manager)

DEPARTMENT OF ENVIRONMENTAL QUALITY

Date

Fred Hansen
Director

FINAL ORDER

IT IS SO ORDERED:

ENVIRONMENTAL QUALITY COMMISSION

April 29 1988
Date

James E. Petersen, Chairman

4/29/88
Date

Mary V. Bishop, Member

Date

Wallace B. Brill, Member

Date

Arno H. Denecke, Member

4-29-88
Date

William P. Hutchison, Jr. Member

APPENDIX D

EFFLUENT DISCHARGE ANALYSIS

MEMORANDUM 5875-61/1

May 21, 1991

TO: J. HOLROYD, EUGENE

FROM: W. FAISST, PLEASANT HILL

SUBJECT: EFFLUENT DISCHARGE ANALYSES FOR THE CITY OF BROOKINGS DISCHARGE PERMIT AMENDMENT

This memorandum responds to your recent request for additional analyses on the Brookings effluent discharge, particularly the expected impacts when a combination of secondary and primary effluents may be discharged during peak wet weather flows. The focus of this memorandum is the Brookings Outfall performance in relation to Oregon Administrative Rules, Chapter 340, Division 41, Department of Environmental Quality, as the rules apply to water quality in the South Coast Basin. Critical parameters include dissolved oxygen, temperature, turbidity, pH, coliform organisms, and toxicity from chlorine residual and ammonia.

Background Assumptions

The characteristics for the Brookings discharge system and effluent are as defined on the Brown and Caldwell design drawings for the outfall and diffuser and information presented in your correspondence. For the outfall system, I have assumed that there are 10 open ports with an effective orifice size of 4.7 inches. All ports discharge horizontally and are located 8 feet on center with a centerline depth of 10 feet below mean lower low water (13.5 feet below mean sea level). Effluent characteristics are summarized as follows:

Effluent Characteristics

BOD_5 at 6 mgd	20 milligrams per liter (mg/l)
BOD_5 at 10.5 mgd	30 mg/l
Temperature	16 degrees C
Turbidity	7.5 nephelometric turbidity units (Ntu)
Ammonia*	22 mg/l

Dissolved oxygen	5.0 mg/l
pH	7.0
Fecal coliform	< 14 most probable number per 100 milliliters (MPN/100 ml)
Chlorine residual	0.9 mg/l

Notes:

a. Effluent ammonia concentration is based upon samples taken in early May 1991. All other effluent constituents were based on samples taken on March 13, 1991. Effluent ammonia concentrations during major storms may be lower owing to dilution from infiltration/inflow.

Additionally, during peak storm flows, we have assumed that the effluent will have no immediate oxygen demand. That is to say, there is no major concentration of sulfide or other chemical substance that would exert an immediate biochemical oxygen demand (BOD) in the effluent. This assumption is supported by the dissolved oxygen levels (about 4 mg/l) reported in the primary effluent data for March 13, 1991. This high dissolved oxygen in the primary effluent also indicates that there is substantial infiltration/inflow into the collection system during peak storm flows. BOD_5 is multiplied by 1.46 to convert to BOD ultimate. Since this discharge is in the open ocean, we have assumed that the only BOD which will influence receiving water dissolved oxygen is exerted by carbonaceous oxidation. It is highly unlikely that there are nitrifying bacteria in the receiving water.

Receiving water characteristics are based on data collected on March 20, 1991, and reasonable assumptions where data are unavailable (ammonia and fecal coliform). These data are summarized as follows:

Receiving Water Characteristics

BOD_5	3.6 mg/l
Temperature	11 degrees C
Turbidity	1.03 Ntu
Ammonia	Not detectable
Dissolved oxygen	8.7 mg/l
pH	7.96
Fecal coliform	Not detectable

Note that the receiving water BOD_5 appears to be elevated for ocean waters. This may reflect the influence of some other discharge (such as river or stream inputs) or may be an artifact from laboratory analyses. In any event, this value appears to be conservatively high.

We have also assumed that during the heavy Pacific storms which would cause rainfall and the associated high flow rates through the wastewater treatment plant, there would be a net advection, that is, transport, of the effluent field away from the diffuser. Similarly, the intense nearshore conditions during storms produce receiving waters that are unstratified (no vertical density gradient).

Initial Dilution

Using the USEPA computer program UMERGE, we have rerun the initial dilution predictions for the Brookings discharge based upon updated flow rates. Table 1 summarizes predicted initial dilutions for three current conditions, five effluent flow rates, and two water depths. The current speeds of 0.0 meters per second (m/sec), 0.06 m/sec, and 0.10 m/sec (0.0, 12, and 20 feet per minute) were selected as typical values for near coastal waters based upon field experience at other sites. The 0.0 m/sec value will be rare for active shallow coastal waters. It may occur as the tide turns on rare calm days. We would expect that the 0.06 m/sec and 0.10 m/sec values are reasonable estimates for storm conditions. We used two water depths to contrast the predicted performance during a low tide condition and during a higher tide condition. We believe that the low tide condition is conservative because we would expect a significant storm surge from a storm that would produce such high flows (6 mgd and 10.5 mgd) from the Brookings wastewater treatment plant.

Subsequent Dilution

We estimated the subsequent dilution, that is, the dilution due to turbulent mixing in the ocean after the completion of initial dilution, using the method of Brooks. We calculated the subsequent dilution using three different assumptions regarding eddy diffusivity. Actual diffusivity will depend upon receiving waters characteristics for which data are unavailable. Using constant diffusivity is the most conservative approach. This situation is generally representative of estuary conditions and possibly near-shore areas without intense mixing. We also checked with diffusivity expanding linearly (in proportion to width of the sewage field) and for diffusivity based on the 4/3 law. These latter conditions are more representative of open ocean conditions or conditions where mixing is more intense. At Brookings, we would expect that the actual results are somewhere in between. The near-shore condition would tend to limit the rate of lateral spread of the effluent field. This limitation will be countered, however, by the intense mixing that occurs when waves break in shallow water. For an effluent discharge into relatively quiescent conditions in an unstratified receiving water, the effluent field is typically at the surface, extending only to about one-third of the water depth. In the case of Brookings where the water depth varies from 10 to 15 feet depending upon the tidal condition and storm surge, wave action should tend to mix the effluent field over the entire water depth.

Effluent Plume Characteristics

For the proposed permit amendment, the Brookings discharge must be shown to conform to Chapter 340 requirements. This section presents projected performance and brief evaluation of impacts for key effluent parameters.

Dissolved Oxygen. Dissolved oxygen is one receiving water property which effluent constituents can impact long after discharge. Oxidation of organic carbon, nitrogen compounds, and possibly sulfide and other reduced chemical can depress receiving water dissolved oxygen concentrations. To estimate dissolved oxygen, we used the method outline in Revised Section 301(h) Technical Support Document, U.S. Environmental Protection Agency, November 1982 (430/9-82-011). In that document, the following equation is recommended for submerged effluent fields from submarine discharges:

$$DO(t) = DO_a + \frac{DO_f - DO_a}{D_s} - \frac{L_{tc}}{D_s}[1-\exp(-k_c t)] - \frac{L_{tn}}{D_s}[1-\exp(k_n t)]$$

where:

$DO(t)$ = dissolved oxygen concentration in a submerged wastefield as a function of travel time, t, mg/l

DO_a = ambient dissolved oxygen concentration, mg/l

DO_f = dissolved oxygen concentration at the completion of initial dilution, mg/l

k_c = CBOD decay rate constant = 0.152/day (temperature corrected) for Brookings

k_n = NBOD decay rate constant

L_{tc} = ultimate CBOD concentration above ambient at completion of initial dilution, mg/l

L_{tn} = NBOD concentration above ambient at completion of initial dilution, mg/l = 0.0 for Brookings

D_s = dilution attained subsequent to initial dilution as a function of travel time

For the Brookings discharge, the effluent field will always surface and surface reaeration will replace oxygen used by oxidation of organic carbon. Since the equation above neglects surface reaeration, any estimates made for dissolved oxygen with it will be conservatively low. We developed a spreadsheet to carry out the iterative calculations for dissolved oxygen, considering three different diffusivity assumptions in the subsequent dilution equation. Spreadsheet outputs for eight combinations of water depth and current speed together with discharge rates of 6 and 10.5 mgd accompany this memorandum. Based upon the USEPA equation, the discharge should not cause a dissolved oxygen reduction of more than 0.01 mg/l. Thus, the impact is inconsequential.

Turbidity. Initial dilution will rapidly reduce effluent turbidity to values approaching receiving water turbidity. Effluent plume turbidities after initial dilution will range from 1.24 Ntu with a 6.0 mgd discharge at 10-foot depth, and a 0.06 m/sec current to 1.13 Ntu with a 6.0 mgd discharge at a 15-foot depth and 0.10 m/sec current velocity, if the receiving water turbidity is 1.03 Ntu. Subsequent dilution will reduce the plume turbidity as the effluent field moves away from the discharge. Note that the receiving water turbidity was measured on a day when it was calm enough to reach the discharge vicinity by small boat. At peak effluent discharge rates, the receiving water turbidity may actually be significantly higher owing to the dissipation of energy on the coast and turbidity input from local surface runoff. In any case, the turbidity increase from the discharge will be minimal and should cause no adverse impact.

pH. Since ocean waters are well buffered, the receiving water is at pH almost equal to 8 and the initial dilution is at least 30:1, we expect that the effluent field pH will always be in the range of 7.0 to 8.5.

Fecal Coliform. The effluent will always meet the coliform standard prior to discharge. Therefore, there should be no problem with elevated fecal coliform concentrations after discharge.

Temperature. Initial dilution of effluent will rapidly bring the effluent field close to the ambient receiving water temperature. Subsequent dilution and minor radiation losses will then make the effluent field indistinguishable from receiving waters. We estimate the receiving water temperature at the end of initial dilution as follows:

Discharge rate, mgd	Discharge depth, feet	Current speed, m/s	Initial dilution	Effluent plume temperature after initial dilution, degrees C
6.0	10	0.06	30:1	11.16
6.0	10	0.10	43:1	11.11
10.5	10	0.06	33:1	11.15
10.5	10	0.10	40:1	11.12
6.0	15	0.06	44:1	11.11
6.0	15	0.10	64:1	11.08
10.5	15	0.06	41:1	11.12
10.5	15	0.10	52:1	11.09

The predicted temperature changes are so small that we expect no adverse effects on fish or aquatic life.

Bottom Deposits. The bottom in the inshore areas around the discharge is actively worked by the intense energy dissipated from ocean waves. Furthermore, the suspended solids levels in the effluent field will be low after initial dilution. Therefore, there should be no buildup of bottom deposits caused by this discharge.

Total Dissolved Solids. With the lowest predicted initial dilution (30:1), the receiving water TDS will be reduced by about 3 percent, with a return to ambient levels during subsequent dilution. This small change should cause no problem in the receiving waters.

Toxicity. Possible toxicity for the Brookings effluent cold result from undissociated ammonia, total chlorine residual chlorine, or a combination of these and other effluent constituents. Based on the effluent data and lowest initial dilutions summarized above, we estimate that the highest concentrations for ammonia and chlorine are about 0.71 mg/l and 0.029 mg/l, respectively, at the end of initial dilution, for a 6-mgd effluent discharge rate. We do not foresee significant impacts from such concentrations. These values will be limited to storm periods. Average values will be much lower.

Mixing Zone

For the Brookings discharge, the State of Oregon has defined a mixing zone which extends 300 feet (91.4 meters) from the diffuser. Concentrations of effluent constituents will differ little between the end of initial dilution and the edge of the mixing zone. Initial dilution is typically complete within 10 to 30 feet of the discharge of the diffuser. Depending on the choice of eddy diffusivity coefficient, subsequent dilution will vary from 1.01:1 to 1.09:1 between the end of initial dilution and the mixing zone edge. As described above, receiving water limitations will be satisfied at the end of initial dilution. Therefore, we believe there will be no problem inside the mixing zone or beyond the mixing zone.

Summary

Based upon the projected effluent plume characteristics developed above, we do not foresee even minor detrimental impacts from the discharge from Brookings, allowed during storm-induced high flows. The duration of such events is short and the effluent quality will remain relatively high. Furthermore, there will be good initial dilution for a discharge into a well-mixed, high-energy coastal environment.

The concept of discharging a combination of primary and secondary effluents from storm-induced high flow rates is well established. For example, the Seattle Metro wastewater treatment plants at West Point and Renton are allowed to provide such split flow treatment. This approach is also allowed in California provided that permit limitations for effluent constituents are satisfied and no adverse conditions occur in the receiving waters.

WKF:kc

Table 1. Predicted Initial Dilution--
Brookings Discharge

Effluent flow rate, million gallons per day	Discharge depth, feet	Current speed, meters per second		
		0.00	0.06	0.10
0.5	10	35:1	121:1	387:1
1.0	10	26:1	56:1	171:1
2.0	10	22:1	35:1	80:1
6.0	10	23:1	30:1	43:1
10.5	10	28:1	33:1	40:1
0.5	15	64:1	283:1	702:1
1.0	15	45:1	124:1	319:1
2.0	15	35:1	67:1	149:1
6.0	15	32:1	44:1	64:1
10.5	15	34:1	41:1	52:1

Note: Dilutions predicted with the USEPA program UMERGE, with an unstratified water column.

ENCLOSURE 1

SPREADSHEET ESTIMATES FOR
DISSOLVED OXYGEN CONCENTRATION
AFTER INITIAL DILUTION

Case	Effluent discharge rate, mgd	Water depth, ft.	Current speed, m/sec
1	6	10	0.06
2	6	10	0.10
3	10	10	0.06
4	10	10	0.10
5	6	15	0.06
6	6	15	0.10
7	10	15	0.06
8	10	15	0.10

Note: For each case, results are presented for three assumptions regarding eddy diffusivity:

Constant
Linear
4/3-Law

FILE: 5875EFF.WK1 13-May-91

ESTIMATE OF BROOKINGS OUTFALL RECEIVING WATER DISSOLVED OXYGEN

CASE 1

FLUENT FLOW RATE, mgd =	6
FLUENT BOD, mg/l =	20
CEIVING WATER BOD, mg/l =	3.6
FLUENT DISSOLVED OXYGEN, mg/l =	5
CEIVING WATER DISSOLVED OXYGEN, mg/l =	8.7
RRENT SPEED, m/sec =	0.06
ITIAL DILUTION, PARTS RECEIVING WATER PER PART EFFLUENT =	30
LUENT TEMPERATURE, degrees C =	16
EIVING WATER TEMPERATURE, degrees C =	11
LUENT TOTAL CHLORINE RESIDUAL, mg/l =	0.9
ITIAL TEMPERTURE =	11.16
ITIAL DISSOLVED OXYGEN =	8.58
ITIAL BOD5 =	4.13
ITIAL BOD ULTIMATE =	6.03
) RATE CONSTANT, per day =	0.152
ERATION RATE CONSTANT, per day =	0.304

SUBSEQUENT DILUTION
DIFFUSER LENGTH, CENTIMETERS = 2,195
EDDY DIFFUSIVITY, CONSTANT Eo, SQUARE cm/s = 100
EDDY DIFFUSIVITY, LINEAR, FIELD WIDTH/DIFFUSER LENGTH
EDDY DIFFUSIVITY, 4/3 LAW
BETA (12Eo/4b) = 0.0911

DISTANCE	TIME	CONSTANT DIFFUSION COEFFICIENT			LINEAR DIFFUSION COEFFICIENT			4/3 LAW DIFFUSION COEFFICIENT		
cm	sec	SQR ROOT OF 3/(4BX/b)	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+B(X/b))^2 -1	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+2/3BX/B)^3 -1	erf	SUBSEQUENT DILUTION
1,000	166.67	4.25	1.0000	1.0000	4.2072	1.0000	1.0000	4.181728	1.0000	1.0000
5,000	833.33	1.90	0.9928	1.0073	1.8094	0.9895	1.0106	1.771672	0.9877	1.0125
9,140	1,523.33	1.41	0.9539	1.0483	1.2890	0.9217	1.0850	1.241688	0.9208	1.0861
10,000	1,666.67	1.34	0.9419	1.0617	1.2232	0.9163	1.0913	1.174205	0.9031	1.1072
50,000	8,333.33	0.60	0.6039	1.6559	0.4211	0.4484	2.2302	0.344182	0.3734	2.6782
100,000	16,666.67	0.43	0.4569	2.1887	0.2424	0.2678	3.7341	0.168132	0.1878	5.3248
500,000	83,333.33	0.19	0.2118	4.7214	0.0564	0.0631	15.8428	0.021285	0.0237	42.2119
1,000,000	166,666.67	0.13	0.1459	6.8540	0.0288	0.0327	30.5717	0.007919	0.0079	126.5823

STANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION CONSTANT E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	30.0000	8.6960
50	164.04	833.33	0.0096	1.0073	30.2176	8.6960
91.4	299.87	1,523.33	0.0176	1.0483	31.4498	8.6961
100	328.08	1,666.67	0.0193	1.0617	31.8505	8.6962
500	1,640.42	8,333.33	0.0965	1.6559	49.6771	8.6974
1,000	3,280.84	16,666.67	0.1929	2.1887	65.6599	8.6978
5,000	16,404.20	83,333.33	0.9645	4.7214	141.6431	8.6984
10,000	32,808.40	166,666.67	1.9290	6.8540	205.6203	8.6985

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION LINEAR E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	30.00	8.6960
50	164.04	833.33	0.0096	1.0106	30.32	8.6960
91.4	299.87	1,523.33	0.0176	1.0850	32.55	8.6963
100	328.08	1,666.67	0.0193	1.0913	32.74	8.6963
500	1,640.42	8,333.33	0.0965	2.2302	66.90	8.6980
1,000	3,280.84	16,666.67	0.1929	3.7341	112.02	8.6987
5,000	16,404.20	83,333.33	0.9645	15.8428	475.29	8.6995
10,000	32,808.40	166,666.67	1.9290	30.5717	917.15	8.6997

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION 4/3 LAW E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	30.00	8.6960
50	164.04	833.33	0.0096	1.0125	30.37	8.6960
91.4	299.87	1,523.33	0.0176	1.0861	32.58	8.6963
100	328.08	1,666.67	0.0193	1.1072	33.22	8.6963
500	1,640.42	8,333.33	0.0965	2.6782	80.35	8.6984
1,000	3,280.84	16,666.67	0.1929	5.3248	159.74	8.6991
5,000	16,404.20	83,333.33	0.9645	42.2119	1,266.36	8.6998
10,000	32,808.40	166,666.67	1.9290	126.5823	3,797.47	8.6999

FILE: 5875EFF2.WK1 13-May-91

ESTIMATE OF BROOKINGS OUTFALL RECEIVING WATER DISSOLVED OXYGEN
CASE 2

FLUENT FLOW RATE, mgd =	6
FLUENT BOD, mg/l =	20
CEIVING WATER BOD, mg/l =	3.6
FLUENT DISSOLVED OXYGEN, mg/l =	5
CEIVING WATER DISSOLVED OXYGEN, mg/l =	8.7
RRENT SPEED, m/sec =	0.1
ITIAL DILUTION, PARTS RECEIVING WATER PER PART EFFLUENT =	43
FLUENT TEMPERATURE, degrees C =	16
CEIVING WATER TEMPERATURE, degrees C =	11
FLUENT TOTAL CHLORINE RESIDUAL, mg/l =	0.9
ITIAL TEMPERTURE =	11.11
ITIAL DISSOLVED OXYGEN =	8.62
ITIAL BOD5 =	3.97
ITIAL BOD ULTIMATE =	5.80
) RATE CONSTANT, per day =	0.152
AERATION RATE CONSTANT, per day =	0.304

SUBSEQUENT DILUTION
DIFFUSER LENGTH, CENTIMETERS = 2.195
EDDY DIFFUSIVITY, CONSTANT Eo, SQUARE cm/s = 100
EDDY DIFFUSIVITY, LINEAR, FIELD WIDTH/DIFFUSER LENGTH
EDDY DIFFUSIVITY, 4/3 LAW
BETA (12Eo/4b) = 0.0547

DISTANCE	TIME	CONSTANT DIFFUSION COEFFICIENT			LINEAR DIFFUSION COEFFICIENT			4/3 LAW DIFFUSION COEFFICIENT		
cm	sec	SQR ROOT OF 3/(4BX/b)	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+B(X/b))^2 -1	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+2/3BX/B)^3 -1	erf	SUBSEQUENT DILUTION
1,000	100.00	5.4875	1.0000	1.0000	5.4536	1.0000	1.0000	5.428477	1.0000	1.0000
5,000	500.00	2.4541	0.9995	1.0005	2.3811	0.9992	1.0008	2.349309	0.9877	1.0125
9,140	914.00	1.8151	0.9899	1.0102	1.7199	0.9850	1.0152	1.680884	0.9208	1.0861
10,000	1,000.00	1.7353	0.9861	1.0039	1.6364	0.9796	1.0208	1.596096	0.9031	1.1072
50,000	5,000.00	0.7760	0.7276	1.3745	0.6092	0.6109	1.6369	0.538514	0.3734	2.6782
100,000	10,000.00	0.5488	0.5625	1.7778	0.3662	0.3753	2.6648	0.288618	0.1878	5.3248
500,000	50,000.00	0.2454	0.2710	3.6898	0.0913	0.1024	9.7656	0.042908	0.0237	42.2119
1,000,000	100,000.00	0.1735	0.1944	5.1448	0.0473	0.0530	18.8715	0.016466	0.0079	126.5823

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION CONSTANT E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	43.0000	8.6980
50	164.04	500.00	0.0058	1.0005	43.0228	8.6980
91.4	299.87	914.00	0.0106	1.0102	43.4370	8.6980
100	328.08	1,000.00	0.0116	1.0039	43.1671	8.6980
500	1,640.42	5,000.00	0.0579	1.3745	59.1025	8.6985
1,000	3,280.84	10,000.00	0.1157	1.7778	76.4458	8.6988
5,000	16,404.20	50,000.00	0.5787	3.6898	158.6599	8.6992
10,000	32,808.40	100,000.00	1.1574	5.1448	221.2276	8.6992

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION LINEAR E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	43.00	8.6980
50	164.04	500.00	0.0058	1.0008	43.03	8.6980
91.4	299.87	914.00	0.0106	1.0152	43.65	8.6981
100	328.08	1,000.00	0.0116	1.0208	43.89	8.6981
500	1,640.42	5,000.00	0.0579	1.6369	70.39	8.6987
1,000	3,280.84	10,000.00	0.1157	2.6648	114.59	8.6992
5,000	16,404.20	50,000.00	0.5787	9.7656	419.92	8.6997
10,000	32,808.40	100,000.00	1.1574	18.8715	811.47	8.6998

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION 4/3 LAW E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	43.00	8.6980
50	164.04	500.00	0.0058	1.0125	43.54	8.6981
91.4	299.87	914.00	0.0106	1.0861	46.70	8.6982
100	328.08	1,000.00	0.0116	1.1072	47.61	8.6982
500	1,640.42	5,000.00	0.0579	2.6782	115.16	8.6992
1,000	3,280.84	10,000.00	0.1157	5.3248	228.97	8.6996
5,000	16,404.20	50,000.00	0.5787	42.2119	1,815.11	8.6999
10,000	32,808.40	100,000.00	1.1574	126.5823	5,443.04	8.7000

FILE: 5875EFF3.WK1 13-May-91

ESTIMATE OF BROOKINGS OUTFALL RECEIVING WATER DISSOLVED OXYGEN

CASE 3

FFLUENT FLOW RATE, mgd = 10

FFLUENT BOD, mg/l = 30

CEIVING WATER BOD, mg/l = 3.6

FFLUENT DISSOLVED OXYGEN, mg/l = 5

CEIVING WATER DISSOLVED OXYGEN, mg/l = 8.7

RRENT SPEED, m/sec = 0.06

ITIAL DILUTION, PARTS RECEIVING WATER PER PART EFFLUENT = 33

FLUENT TEMPERATURE, degrees C = 16

CEIVING WATER TEMPERATURE, degrees C = 11

FLUENT TOTAL CHLORINE RESIDUAL, mg/l = 0.9

ITIAL TEMPERTURE = 11.15

ITIAL DISSOLVED OXYGEN = 8.59

ITIAL BOD5 = 4.38

ITIAL BOD ULTIMATE = 6.39

D RATE CONSTANT, per day = 0.152

AERATION RATE CONSTANT, per day = 0.304

SUBSEQUENT DILUTION
DIFFUSER LENGTH, CENTIMETERS = 2,195
EDDY DIFFUSIVITY, CONSTANT Eo, SQUARE cm/s = 100
EDDY DIFFUSIVITY, LINEAR, FIELD WIDTH/DIFFUSER LENGTH
EDDY DIFFUSIVITY, 4/3 LAW
BETA (12Eo/4b) = 0.0911

DISTANCE	TIME	CONSTANT DIFFUSION COEFFICIENT			LINEAR DIFFUSION COEFFICIENT			4/3 LAW DIFFUSION COEFFICIENT		
cm	sec	SQR ROOT OF 3/(4BX/b)	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+B(X/b))^2 -1	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+2/3BX/B)^3 -1	erf	SUBSEQUENT DILUTION
1,000	166.67	4.2506	1.0000	1.0000	4.2072	1.0000	1.0000	4.181728	1.0000	1.0000
5,000	833.33	1.9009	0.9928	1.0073	1.8094	0.9895	1.0106	1.771672	0.9877	1.0125
9,140	1,523.33	1.4060	0.9532	1.0491	1.2890	0.9317	1.0733	1.241688	0.9208	1.0861
10,000	1,666.67	1.3442	0.9427	1.0608	1.2232	0.9163	1.0913	1.174205	0.9031	1.1072
50,000	8,333.33	0.6011	0.6046	1.6539	0.4211	0.4484	2.2301	0.344182	0.3734	2.6782
100,000	16,666.67	0.4251	0.4503	2.2207	0.2424	0.2678	3.7337	0.168132	0.1878	5.3248
500,000	83,333.33	0.1901	0.2118	4.7205	0.0564	0.0631	15.8428	0.021285	0.0237	42.2119
1,000,000	166,666.67	0.1344	0.1503	6.6534	0.0288	0.0327	30.5717	0.007919	0.0079	126.5823

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION CONSTANT E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	33.0000	8.6967
50	164.04	833.33	0.0096	1.0073	33.2397	8.6967
91.4	299.87	1,523.33	0.0176	1.0491	34.6191	8.6968
100	328.08	1,666.67	0.0193	1.0608	35.0073	8.6968
500	1,640.42	8,333.33	0.0965	1.6539	54.5779	8.6977
1,000	3,280.84	16,666.67	0.1929	2.2207	73.2845	8.6981
5,000	16,404.20	83,333.33	0.9645	4.7205	155.7779	8.6983
10,000	32,808.40	166,666.67	1.9290	6.6534	219.5609	8.6982

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION LINEAR E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	33.00	8.6967
50	164.04	833.33	0.0096	1.0106	33.35	8.6967
91.4	299.87	1,523.33	0.0176	1.0733	35.42	8.6968
100	328.08	1,666.67	0.0193	1.0913	36.01	8.6969
500	1,640.42	8,333.33	0.0965	2.2301	73.59	8.6983
1,000	3,280.84	16,666.67	0.1929	3.7337	123.21	8.6989
5,000	16,404.20	83,333.33	0.9645	15.8428	522.81	8.6995
10,000	32,808.40	166,666.67	1.9290	30.5717	1,008.87	8.6996

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION 4/3 LAW E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	33.00	8.6967
50	164.04	833.33	0.0096	1.0125	33.41	8.6967
91.4	299.87	1,523.33	0.0176	1.0861	35.84	8.6969
100	328.08	1,666.67	0.0193	1.1072	36.54	8.6969
500	1,640.42	8,333.33	0.0965	2.6782	88.38	8.6986
1,000	3,280.84	16,666.67	0.1929	5.3248	175.72	8.6992
5,000	16,404.20	83,333.33	0.9645	42.2119	1,392.99	8.6998
10,000	32,808.40	166,666.67	1.9290	126.5823	4,177.22	8.6999

FILE: 5875EFF4.WK1 13-May-91

ESTIMATE OF BROOKINGS OUTFALL RECEIVING WATER DISSOLVED OXYGEN
CASE 4

FFLUENT FLOW RATE, mgd =	10
FFLUENT BOD, mg/l =	30
ECEIVING WATER BOD, mg/l =	3.6
FFLUENT DISSOLVED OXYGEN, mg/l =	5
ECEIVING WATER DISSOLVED OXYGEN, mg/l =	8.7
URRENT SPEED, m/sec =	0.1
NITIAL DILUTION, PARTS RECEIVING WATER PER PART EFFLUENT =	40
FFLUENT TEMPERATURE, degrees C =	16
ECEIVING WATER TEMPERATURE, degrees C =	11
FFLUENT TOTAL CHLORINE RESIDUAL, mg/l =	0.9
NITIAL TEMPERTURE =	11.12
NITIAL DISSOLVED OXYGEN =	8.61
NITIAL BOD5 =	4.24
NITIAL BOD ULTIMATE =	6.20
OD RATE CONSTANT, per day =	0.152
AERATION RATE CONSTANT, per day =	0.304

SUBSEQUENT DILUTION
DIFFUSER LENGTH, CENTIMETERS = 2,195
EDDY DIFFUSIVITY, CONSTANT Eo, SQUARE cm/s = 100
EDDY DIFFUSIVITY, LINEAR, FIELD WIDTH/DIFFUSER LENGTH
EDDY DIFFUSIVITY, 4/3 LAW
BETA (12Eo/4b) = 0.0547

DISTANCE	TIME	CONSTANT DIFFUSION COEFFICIENT			LINEAR DIFFUSION COEFFICIENT			4/3 LAW DIFFUSION COEFFICIENT		
cm	sec	SQR ROOT OF 3/(4BX/b)	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+B(X/b))^2 -1	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+2/3BX/B)^3 -1	erf	SUBSEQUENT DILUTION
1,000	100.00	5.4875	1.0000	1.0000	5.4536	1.0000	1.0000	5.428477	1.0000	1.0000
5,000	500.00	2.4541	0.9995	1.0005	2.3811	0.9992	1.0008	2.349309	0.9877	1.0125
9,140	914.00	1.8151	0.9899	1.0102	1.7199	0.9850	1.0152	1.680884	0.9208	1.0861
10,000	1,000.00	1.7353	0.9861	1.0141	1.6364	0.9796	1.0208	1.596096	0.9031	1.1072
50,000	5,000.00	0.7760	0.7276	1.3745	0.6092	0.6109	1.6369	0.538514	0.3734	2.6782
100,000	10,000.00	0.5488	0.5625	1.7778	0.3662	0.3953	2.5300	0.288618	0.1878	5.3248
500,000	50,000.00	0.2454	0.2710	3.6898	0.0913	0.1024	9.7656	0.042908	0.0237	42.2119
1,000,000	100,000.00	0.1735	0.1944	5.1448	0.0473	0.0530	18.8715	0.016466	0.0079	126.5823

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION CONSTANT E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	40.0000	8.6977
50	164.04	500.00	0.0058	1.0005	40.0212	8.6977
91.4	299.87	914.00	0.0106	1.0102	40.4065	8.6977
100	328.08	1,000.00	0.0116	1.0141	40.5626	8.6977
500	1,640.42	5,000.00	0.0579	1.3745	54.9790	8.6982
1,000	3,280.84	10,000.00	0.1157	1.7778	71.1124	8.6985
5,000	16,404.20	50,000.00	0.5787	3.6898	147.5906	8.6989
10,000	32,808.40	100,000.00	1.1574	5.1448	205.7931	8.6988

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION LINEAR E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	40.00	8.6977
50	164.04	500.00	0.0058	1.0008	40.03	8.6977
91.4	299.87	914.00	0.0106	1.0152	40.61	8.6977
100	328.08	1,000.00	0.0116	1.0208	40.83	8.6977
500	1,640.42	5,000.00	0.0579	1.6369	65.48	8.6985
1,000	3,280.84	10,000.00	0.1157	2.5300	101.20	8.6989
5,000	16,404.20	50,000.00	0.5787	9.7656	390.63	8.6996
10,000	32,808.40	100,000.00	1.1574	18.8715	754.86	8.6997

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION 4/3 LAW E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	40.00	8.6977
50	164.04	500.00	0.0058	1.0125	40.50	8.6978
91.4	299.87	914.00	0.0106	1.0861	43.44	8.6979
100	328.08	1,000.00	0.0116	1.1072	44.29	8.6979
500	1,640.42	5,000.00	0.0579	2.6782	107.13	8.6991
1,000	3,280.84	10,000.00	0.1157	5.3248	212.99	8.6995
5,000	16,404.20	50,000.00	0.5787	42.2119	1,688.48	8.6999
10,000	32,808.40	100,000.00	1.1574	126.5823	5,063.29	8.7000

FILE: 5875EFF5.WK1 13-May-91

ESTIMATE OF BROOKINGS OUTFALL RECEIVING WATER DISSOLVED OXYGEN
CASE 5

FLUENT FLOW RATE, mgd =	6	
FLUENT BOD, mg/l =	20	
CEIVING WATER BOD, mg/l =	3.6	
FLUENT DISSOLVED OXYGEN, mg/l =	5	
CEIVING WATER DISSOLVED OXYGEN, mg/l =	8.7	
RRENT SPEED, m/sec =	0.06	
ITIAL DILUTION, PARTS RECEIVING WATER PER PART EFFLUENT =		44
FLUENT TEMPERATURE, degrees C =	16	
CEIVING WATER TEMPERATURE, degrees C =	11	
FLUENT TOTAL CHLORINE RESIDUAL, mg/l =	0.9	
ITIAL TEMPERTURE =	11.11	
ITIAL DISSOLVED OXYGEN =	8.62	
ITIAL BOD5 =	3.96	
ITIAL BOD ULTIMATE =	5.79	
D RATE CONSTANT, per day =	0.152	
AERATION RATE CONSTANT, per day =	0.304	

)-52

SUBSEQUENT DILUTION
DIFFUSER LENGTH, CENTIMETERS = 2,195
EDDY DIFFUSIVITY, CONSTANT Eo, SQUARE cm/s = 100
EDDY DIFFUSIVITY, LINEAR, FIELD WIDTH/DIFFUSER LENGTH
EDDY DIFFUSIVITY, 4/3 LAW
BETA (12Eo/4b) = 0.0911

DISTANCE	TIME	CONSTANT DIFFUSION COEFFICIENT			LINEAR DIFFUSION COEFFICIENT			4/3 LAW DIFFUSION COEFFICIENT		
cm	sec	SQR ROOT OF 3/(4BX/b)	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+B(X/b))^2 -1	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+2/3BX/B)^3 -1	erf	SUBSEQUENT DILUTION
1,000	166.67	4.2506	1.0000	1.0000	4.2072	1.0000	1.0000	4.181728	1.0000	1.0000
5,000	833.33	1.9009	0.9928	1.0073	1.8094	0.9895	1.0106	1.771672	0.9877	1.0125
9,140	1,523.33	1.4060	0.9532	1.0491	1.2890	0.9317	1.0733	1.241688	0.9208	1.0861
10,000	1,666.67	1.3442	0.9427	1.0608	1.2232	0.9163	1.0913	1.174205	0.9031	1.1072
50,000	8,333.33	0.6011	0.6046	1.6539	0.4211	0.4484	2.2301	0.344182	0.3734	2.6782
100,000	16,666.67	0.4251	0.4422	2.2615	0.2424	0.2678	3.7337	0.168132	0.1878	5.3248
500,000	83,333.33	0.1901	0.2118	4.7205	0.0564	0.0531	18.8253	0.021285	0.0237	42.2119
1,000,000	166,666.67	0.1344	0.1403	7.1276	0.0288	0.0327	30.5717	0.007919	0.0079	126.5823

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION CONSTANT E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	44.0000	8.6981
50	164.04	833.33	0.0096	1.0073	44.3195	8.6981
91.4	299.87	1,523.33	0.0176	1.0491	46.1588	8.6982
100	328.08	1,666.67	0.0193	1.0608	46.6764	8.6982
500	1,640.42	8,333.33	0.0965	1.6539	72.7706	8.6988
1,000	3,280.84	16,666.67	0.1929	2.2615	99.5047	8.6990
5,000	16,404.20	83,333.33	0.9645	4.7205	207.7039	8.6993
10,000	32,808.40	166,666.67	1.9290	7.1276	313.6137	8.6993

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION LINEAR E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	44.00	8.6981
50	164.04	833.33	0.0096	1.0106	44.47	8.6981
91.4	299.87	1,523.33	0.0176	1.0733	47.23	8.6982
100	328.08	1,666.67	0.0193	1.0913	48.02	8.6983
500	1,640.42	8,333.33	0.0965	2.2301	98.12	8.6991
1,000	3,280.84	16,666.67	0.1929	3.7337	164.28	8.6994
5,000	16,404.20	83,333.33	0.9645	18.8253	828.31	8.6998
10,000	32,808.40	166,666.67	1.9290	30.5717	1,345.15	8.6998

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION 4/3 LAW E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	44.00	8.6981
50	164.04	833.33	0.0096	1.0125	44.55	8.6981
91.4	299.87	1,523.33	0.0176	1.0861	47.79	8.6982
100	328.08	1,666.67	0.0193	1.1072	48.72	8.6983
500	1,640.42	8,333.33	0.0965	2.6782	117.84	8.6992
1,000	3,280.84	16,666.67	0.1929	5.3248	234.29	8.6996
5,000	16,404.20	83,333.33	0.9645	42.2119	1,857.32	8.6999
10,000	32,808.40	166,666.67	1.9290	126.5823	5,569.62	8.7000

FILE: 5875EFF6.WK1 13-May-91

ESTIMATE OF BROOKINGS OUTFALL RECEIVING WATER DISSOLVED OXYGEN
CASE 6

FFLUENT FLOW RATE, mgd =	6
FFLUENT BOD, mg/l =	20
ECEIVING WATER BOD, mg/l =	3.6
FFLUENT DISSOLVED OXYGEN, mg/l =	5
ECEIVING WATER DISSOLVED OXYGEN, mg/l =	8.7
URRENT SPEED, m/sec =	0.1
NITIAL DILUTION, PARTS RECEIVING WATER PER PART EFFLUENT =	64
FFLUENT TEMPERATURE, degrees C =	16
ECEIVING WATER TEMPERATURE, degrees C =	11
FFLUENT TOTAL CHLORINE RESIDUAL, mg/l =	0.9
NITIAL TEMPERTURE =	11.08
NITIAL DISSOLVED OXYGEN =	8.64
NITIAL BOD5 =	3.85
NITIAL BOD ULTIMATE =	5.62
OD RATE CONSTANT, per day =	0.152
EAERATION RATE CONSTANT, per day =	0.304

D-55

SUBSEQUENT DILUTION
DIFFUSER LENGTH, CENTIMETERS = 2,195
EDDY DIFFUSIVITY, CONSTANT Eo, SQUARE cm/s = 100
EDDY DIFFUSIVITY, LINEAR, FIELD WIDTH/DIFFUSER LENGTH
EDDY DIFFUSIVITY, 4/3 LAW
BETA (12Eo/4b) = 0.0547

DISTANCE	TIME	CONSTANT DIFFUSION COEFFICIENT			LINEAR DIFFUSION COEFFICIENT			4/3 LAW DIFFUSION COEFFICIENT		
cm	sec	SQR ROOT OF 3/(4BX/b)	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+B(X/b))^2 -1	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+2/3BX/B)^3 -1	erf	SUBSEQUENT DILUTION
1,000	100.00	5.4875	1.0000	1.0000	5.4536	1.0000	1.0000	5.428477	1.0000	1.0000
5,000	500.00	2.4541	0.9995	1.0005	2.3811	0.9992	1.0008	2.349309	0.9877	1.0125
9,140	914.00	1.8151	0.9899	1.0102	1.7199	0.9850	1.0152	1.680884	0.9208	1.0861
10,000	1,000.00	1.7353	0.9861	1.0141	1.6364	0.9796	1.0208	1.596096	0.9031	1.1072
50,000	5,000.00	0.7760	0.7276	1.3745	0.6092	0.6109	1.6369	0.538514	0.3734	2.6782
100,000	10,000.00	0.5488	0.5625	1.7778	0.3662	0.3953	2.5300	0.288618	0.1878	5.3248
500,000	50,000.00	0.2454	0.2710	3.6898	0.0913	0.1240	8.0645	0.042908	0.0237	42.2119
1,000,000	100,000.00	0.1735	0.1944	5.1448	0.0473	0.0530	18.8715	0.016466	0.0079	126.5823

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION CONSTANT E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	64.0000	8.6991
50	164.04	500.00	0.0058	1.0005	64.0339	8.6991
91.4	299.87	914.00	0.0106	1.0102	64.6504	8.6991
100	328.08	1,000.00	0.0116	1.0141	64.9002	8.6991
500	1,640.42	5,000.00	0.0579	1.3745	87.9665	8.6993
1,000	3,280.84	10,000.00	0.1157	1.7778	113.7798	8.6994
5,000	16,404.20	50,000.00	0.5787	3.6898	236.1449	8.6996
10,000	32,808.40	100,000.00	1.1574	5.1448	329.2689	8.6996

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION LINEAR E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	64.00	8.6991
50	164.04	500.00	0.0058	1.0008	64.05	8.6991
91.4	299.87	914.00	0.0106	1.0152	64.97	8.6991
100	328.08	1,000.00	0.0116	1.0208	65.33	8.6991
500	1,640.42	5,000.00	0.0579	1.6369	104.76	8.6994
1,000	3,280.84	10,000.00	0.1157	2.5300	161.92	8.6996
5,000	16,404.20	50,000.00	0.5787	8.0645	516.13	8.6998
10,000	32,808.40	100,000.00	1.1574	18.8715	1,207.78	8.6999

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION 4/3 LAW E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	64.00	8.6991
50	164.04	500.00	0.0058	1.0125	64.80	8.6991
91.4	299.87	914.00	0.0106	1.0861	69.51	8.6992
100	328.08	1,000.00	0.0116	1.1072	70.86	8.6992
500	1,640.42	5,000.00	0.0579	2.6782	171.41	8.6996
1,000	3,280.84	10,000.00	0.1157	5.3248	340.79	8.6998
5,000	16,404.20	50,000.00	0.5787	42.2119	2,701.56	8.7000
10,000	32,808.40	100,000.00	1.1574	126.5823	8,101.27	8.7000

FILE: 5875EFF7.WK1 13-May-91

ESTIMATE OF BROOKINGS OUTFALL RECEIVING WATER DISSOLVED OXYGEN
CASE 7

FFLUENT FLOW RATE, mgd =	10	
FFLUENT BOD, mg/l =	30	
ECEIVING WATER BOD, mg/l =	3.6	
FFLUENT DISSOLVED OXYGEN, mg/l =	5	
ECEIVING WATER DISSOLVED OXYGEN, mg/l =	8.7	
URRENT SPEED, m/sec =	0.06	
NITIAL DILUTION, PARTS RECEIVING WATER PER PART EFFLUENT =		41
FFLUENT TEMPERATURE, degrees C =	16	
ECEIVING WATER TEMPERATURE, degrees C =	11	
FFLUENT TOTAL CHLORINE RESIDUAL, mg/l =	0.9	
NITIAL TEMPERTURE =	11.12	
NITIAL DISSOLVED OXYGEN =	8.61	
ITIAL BOD5 = 4.23		
ITIAL BOD ULTIMATE =	6.17	
D RATE CONSTANT, per day =	0.152	
AERATION RATE CONSTANT, per day =	0.304	

85-0

SUBSEQUENT DILUTION
DIFFUSER LENGTH, CENTIMETERS = 2,195
EDDY DIFFUSIVITY, CONSTANT Eo, SQUARE cm/s = 100
EDDY DIFFUSIVITY, LINEAR, FIELD WIDTH/DIFFUSER LENGTH
EDDY DIFFUSIVITY, 4/3 LAW
BETA (12Eo/4b) = 0.0911

DISTANCE	TIME	CONSTANT DIFFUSION COEFFICIENT			LINEAR DIFFUSION COEFFICIENT			4/3 LAW DIFFUSION COEFFICIENT		
cm	sec	SQR ROOT OF 3/(4BX/b)	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+B(X/b))^2 -1	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+2/3BX/B)^3 -1	erf	SUBSEQUENT DILUTION
1.000	166.67	4.2506	1.0000	1.0000	4.2072	1.0000	1.0000	4.181728	1.0000	1.0000
5.000	833.33	1.9009	0.9928	1.0073	1.8094	0.9895	1.0106	1.771672	0.9877	1.0125
9.140	1,523.33	1.4060	0.9532	1.0491	1.2890	0.9317	1.0733	1.241688	0.9208	1.0861
10.000	1,666.67	1.3442	0.9427	1.0608	1.2232	0.9163	1.0913	1.174205	0.9031	1.1072
50.000	8,333.33	0.6011	0.6046	1.6539	0.4211	0.4484	2.2301	0.344182	0.3734	2.6782
100.000	16,666.67	0.4251	0.4522	2.2115	0.2424	0.2678	3.7337	0.168132	0.1878	5.3248
500.000	83,333.33	0.1901	0.2118	4.7205	0.0564	0.0631	15.8428	0.021285	0.0237	42.2119
1,000.000	166,666.67	0.1344	0.1503	6.6534	0.0288	0.0327	30.5717	0.007919	0.0079	126.5823

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION CONSTANT E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	41.0000	8.6978
50	164.04	833.33	0.0096	1.0073	41.2978	8.6978
91.4	299.87	1,523.33	0.0176	1.0491	43.0117	8.6979
100	328.08	1,666.67	0.0193	1.0608	43.4939	8.6979
500	1,640.42	8,333.33	0.0965	1.6539	67.8089	8.6985
1,000	3,280.84	16,666.67	0.1929	2.2115	90.6699	8.6987
5,000	16,404.20	83,333.33	0.9645	4.7205	193.5423	8.6989
10,000	32,808.40	166,666.67	1.9290	6.6634	272.7878	8.6988

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION LINEAR E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	41.00	8.6978
50	164.04	833.33	0.0096	1.0106	41.43	8.6978
91.4	299.87	1,523.33	0.0176	1.0733	44.01	8.6979
100	328.08	1,666.67	0.0193	1.0913	44.75	8.6980
500	1,640.42	8,333.33	0.0965	2.2301	91.43	8.6989
1,000	3,280.84	16,666.67	0.1929	3.7337	153.08	8.6993
5,000	16,404.20	83,333.33	0.9645	15.8428	649.56	8.6997
10,000	32,808.40	166,666.67	1.9290	30.5717	1,253.44	8.6997

DISTANCE FROM DISCHARGE, m	feet	TRAVEL TIME, sec	days	SUBSEQUENT DILUTION 4/3 LAW E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	166.67	0.0019	1.0000	41.00	8.6978
50	164.04	833.33	0.0096	1.0125	41.51	8.6978
91.4	299.87	1,523.33	0.0176	1.0861	44.53	8.6980
100	328.08	1,666.67	0.0193	1.1072	45.40	8.6980
500	1,640.42	8,333.33	0.0965	2.6782	109.81	8.6991
1,000	3,280.84	16,666.67	0.1929	5.3248	218.32	8.6995
5,000	16,404.20	83,333.33	0.9645	42.2119	1,730.69	8.6999
10,000	32,808.40	166,666.67	1.9290	126.5823	5,189.87	8.6999

FILE: 5875EFF8.WK1 13-May-91

ESTIMATE OF BROOKINGS OUTFALL RECEIVING WATER DISSOLVED OXYGEN
CASE 8

FFLUENT FLOW RATE, mgd =	10
FFLUENT BOD, mg/l =	30
ECEIVING WATER BOD, mg/l =	3.6
FFLUENT DISSOLVED OXYGEN, mg/l =	5
CEIVING WATER DISSOLVED OXYGEN, mg/l =	8.7
JRRENT SPEED, m/sec =	0.1
ITIAL DILUTION, PARTS RECEIVING WATER PER PART EFFLUENT =	52
FLUENT TEMPERATURE, degrees C =	16
CEIVING WATER TEMPERATURE, degrees C =	11
FLUENT TOTAL CHLORINE RESIDUAL, mg/l =	0.9
ITIAL TEMPERTURE =	11.09
ITIAL DISSOLVED OXYGEN =	8.63
ITIAL BOD5 =	4.10
ITIAL BOD ULTIMATE =	5.98
D RATE CONSTANT, per day =	0.152
AERATION RATE CONSTANT, per day =	0.304

19-C

SUBSEQUENT DILUTION
DIFFUSER LENGTH, CENTIMETERS = 2,195
EDDY DIFFUSIVITY, CONSTANT Eo, SQUARE cm/s = 100
EDDY DIFFUSIVITY, LINEAR, FIELD WIDTH/DIFFUSER LENGTH
EDDY DIFFUSIVITY, 4/3 LAW
BETA (12Eo/4b) = 0.0547

DISTANCE	TIME	CONSTANT DIFFUSION COEFFICIENT			LINEAR DIFFUSION COEFFICIENT			4/3 LAW DIFFUSION COEFFICIENT		
cm	sec	SQR ROOT OF 3/(4BX/b)	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+B(X/b))^2 -1	erf	SUBSEQUENT DILUTION	SQR ROOT OF (3/2)/ (1+2/3BX/B)^3 -1	erf	SUBSEQUENT DILUTION
1,000	100.00	5.4875	1.0000	1.0000	5.4536	1.0000	1.0000	5.428477	1.0000	1.0000
5,000	500.00	2.4541	0.9995	1.0005	2.3811	0.9992	1.0008	2.349309	0.9877	1.0125
9,140	914.00	1.8151	0.9899	1.0102	1.7199	0.9850	1.0152	1.680884	0.9208	1.0861
10,000	1,000.00	1.7353	0.9861	1.0141	1.6364	0.9796	1.0208	1.596096	0.9031	1.1072
50,000	5,000.00	0.7760	0.7276	1.3745	0.6092	0.6109	1.6369	0.538514	0.3734	2.6782
100,000	10,000.00	0.5488	0.5625	1.7778	0.3662	0.3953	2.5300	0.288618	0.1878	5.3248
500,000	50,000.00	0.2454	0.2710	3.6898	0.0913	0.1024	9.7656	0.042908	0.0237	42.2119
1,000,000	100,000.00	0.1735	0.1944	5.1448	0.0473	0.0530	18.8715	0.016466	0.0079	126.5823

DISTANCE FROM DISCHARGE, m	TRAVEL TIME, feet	sec	days	SUBSEQUENT DILUTION CONSTANT E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	52.0000	8.6987
50	164.04	500.00	0.0058	1.0005	52.0276	8.6986
91.4	299.87	914.00	0.0106	1.0102	52.5284	8.6986
100	328.08	1,000.00	0.0116	1.0141	52.7314	8.6987
500	1,640.42	5,000.00	0.0579	1.3745	71.4728	8.6989
1,000	3,280.84	10,000.00	0.1157	1.7778	92.4461	8.6991
5,000	16,404.20	50,000.00	0.5787	3.6898	191.8678	8.6993
10,000	32,808.40	100,000.00	1.1574	5.1448	267.5310	8.6993

DISTANCE FROM DISCHARGE, m	TRAVEL TIME, feet	sec	days	SUBSEQUENT DILUTION LINEAR E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	52.00	8.6987
50	164.04	500.00	0.0058	1.0008	52.04	8.6986
91.4	299.87	914.00	0.0106	1.0152	52.79	8.6987
100	328.08	1,000.00	0.0116	1.0208	53.08	8.6987
500	1,640.42	5,000.00	0.0579	1.6369	85.12	8.6991
1,000	3,280.84	10,000.00	0.1157	2.5300	131.56	8.6994
5,000	16,404.20	50,000.00	0.5787	9.7656	507.81	8.6997
10,000	32,808.40	100,000.00	1.1574	18.8715	981.32	8.6998

DISTANCE FROM DISCHARGE, m	TRAVEL TIME, feet	sec	days	SUBSEQUENT DILUTION 4/3 LAW E	TOTAL DILUTION	RECEIVING WATER DO, mg/l
10	32.81	100.00	0.0012	1.0000	52.00	8.6987
50	164.04	500.00	0.0058	1.0125	52.65	8.6987
91.4	299.87	914.00	0.0106	1.0861	56.48	8.6987
100	328.08	1,000.00	0.0116	1.1072	57.58	8.6988
500	1,640.42	5,000.00	0.0579	2.6782	139.27	8.6995
1,000	3,280.84	10,000.00	0.1157	5.3248	276.89	8.6997
5,000	16,404.20	50,000.00	0.5787	42.2119	2,195.02	8.6999
10,000	32,808.40	100,000.00	1.1574	126.5823	6,582.28	8.7000

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: July 22, 1991

TO: Ralph Funk, Permits Coordinator
Municipal Waste Section

FROM: Rajeev Kapur RK
Municipal Waste Section

SUBJECT: City of Brookings - Mixing Zone Study

The City of Brookings discharges sanitary wastewaters to the Pacific Ocean. A mixing zone analysis of the discharge was conducted by Brown & Caldwell. The analysis focused on the impact of the effluent during peak wet weather flows of 6.0 MGD (peak weekly flow) and 10.5 MGD (peak daily flow). At these flows, effluent characteristics are anticipated to be as follows:

Ammonia:	22 mg/l	Dissolved Oxygen:	5.0 mg/l
Residual Chlorine:	0.9 mg/l	Fecal Coliform:	<14/100 ml

Chlorine toxicity in marine waters is specified as follows: 0.0075 mg/l - to prevent chronic toxicity and 0.013 mg/l - to prevent acute toxicity. In fresh waters, the accepted terminology for combined available chlorine and free available chlorine is total residual chlorine. However, because marine waters also contain bromide and iodide, which have the same valence as the chlorine ion, addition of chlorine produces several active oxidants including but not limited to hypobromous acid (HOBr) and hypobromous ion (OBr-). If ammonia is present, chloramines and bromamines may also form. The term used to describe these oxidative products in marine waters is chlorine-produced oxidants (CPO). Thus, chlorine toxicity in in marine waters is expressed in terms of chlorine-produced oxidants.

Using the above-referenced criteria and effluent concentrations for chlorine, a dilution factor of 70 is needed to prevent acute toxicity in the zone of initial dilution and a dilution factor of 120 is needed to prevent chronic toxicity in the mixing zone. The mixing zone for this facility is specified as that portion of the Pacific Ocean within a 300 foot radius of the discharge.

The dilution available in the mixing zone consists of initial dilution and subsequent dilution (ie. dilution due to turbulent mixing in the ocean after completion of initial dilution). The mixing zone evaluation uses the EPA computer program UMERGE to predict initial dilutions for three different current conditions, five effluent flow rates and two water depths. The

attached table summarizes the predicted initial dilution of the discharge from the Brookings treatment plant. The numbers highlighted in the attached table are available initial dilution which do not meet acute toxicity requirements. Thus, based on an effluent chlorine concentration of 0.9 mg/l, more than 50% of the proposed scenarios in the report do not meet marine acute toxicity requirements.

The report also predicts that the concentration of effluent constituents will not differ very much between the end of initial dilution and the edge of the mixing zone. Subsequent dilution beyond the zone of initial dilution and the edge of the mixing zone is expected to vary from 1.01 to 1.09:1 ratio of the available dilution in the zone of initial dilution depending on the choice of eddy diffusivity coefficient. Thus, based on the subsequent dilution ratios specified above, the proposed discharge will not meet marine chronic toxicity standards.

For the discharge to comply with toxicity requirements at peak wet weather flows of 6.0 and 10.5 mgd, with minimum current speed of 0.06 m/s and a discharge depth of 15 feet (reasonable assumptions during storm conditions according to the report), an effluent residual chlorine concentration of no more than 0.32 mg/l is required. Note that because of lower current speed and a discharge depth of 10 feet, the available dilution for the average dry weather design flow (ADWDF) of 1.9 mgd is about 25-30:1, which is lower than the available dilution at the wet weather flows. Thus, to prevent chlorine toxicity during dry weather conditions at the ADWDF, total residual chlorine concentrations in the effluent of 0.2 mg/l is required.

The report states that the discharge should not cause a dissolved oxygen reduction of more than 0.01 mg/l in the mixing zone, which is inconsequential and there appears to be adequate dilution to prevent ammonia toxicity in the mixing zone.

Table 1. Predicted Initial Dilution–
Brookings Discharge

Effluent flow rate, million gallons per day	Discharge depth, feet	Current speed, meters per second		
		0.00	0.06	0.10
0.5	10	35:1	121:1	387:1
1.0	10	26:1	56:1	171:1
2.0	10	22:1	35:1	80:1
6.0	10	23:1	30:1	43:1
10.5	10	28:1	33:1	40:1
0.5	15	64:1	283:1	702:1
1.0	15	45:1	124:1	319:1
2.0	15	35:1	67:1	149:1
6.0	15	32:1	44:1	64:1
10.5	15	34:1	41:1	52:1

Note: Dilutions predicted with the USEPA program UMERGE, with an unstratified water column.

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

WATER QUALITY WASTE DISCHARGE PERMIT

Notice Issued: August 21, 1991
Comments Due: September 20, 1991

WHO IS THE APPLICANT:

City of Brookings
898 Elk Drive
Brookings, Oregon 97415

WHAT IS PROPOSED:

The City of Brookings has filed with the Department an application for renewal of their National Pollutant Discharge Elimination System (NPDES) waste discharge permit for their sewage treatment facility. The application was made in accordance with the provisions of Oregon Administrative Rule (OAR) 340-45-030 and the Federal Water Pollution Control Act as amended, P.L. 95-217.

The City presently owns, operates, and maintains a wastewater treatment and disposal system permitted under NPDES permit number 100197 issued June 20, 1986. The facility serves the City of Brookings and the Harbor Sanitary District. The existing facility consists of a solids contact/trickling filter treatment process with discharge of treated, disinfected effluent from the treatment facility to the Pacific Ocean.

The treatment facility, although recently upgraded, is nearing capacity due to rapid growth in the Brookings area. An expansion of the facility is being planned. The expansion would increase the dry weather design flow of the facility from 1.0 to 1.9 MGD and serve the community through the year 2013.

The proposed NPDES permit would authorize the City to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system and discharge adequately treated domestic wastewaters to the Pacific Ocean from the sewage treatment facility. The term of the proposed permit would be for a period not to exceed 5 years.

OVER

811 S.W. 6th Avenue
Portland, OR 97204

11/1/86

FOR FURTHER INFORMATION:

Contact the person or division identified in the public notice by calling 229-5696 in the Portland area. To avoid long distance charges from other parts of the state, call 1-800-452-4011.

E-1

On the basis of preliminary staff review, the Department proposes to issue a permit to the City of Brookings to allow an increased discharge of treated effluent to the Pacific Ocean subject to the limitations and special conditions of the proposed permit. These proposed determinations are tentative. A final determination will not be made until all comments received pursuant to this notice are received.

WHAT ARE THE HIGHLIGHTS:

The Department does not propose to change the current permit limits for the Fecal coliform bacteria and pH for Outfall 001. Also, dry weather concentration and mass load limits for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) for the existing facility are not being modified. These limits are based on the Basin Treatment Standards set in OAR 340-41-335. However, increases in wet weather BOD and TSS mass load limits are being proposed by the Department for the existing facility. These limits would be in effect when the average monthly flow to the facility exceeds 3.0 mgd. The mass load limits would increase from 250 lb/day to 751 lb/day monthly average BOD and TSS, respectively during high flow conditions. The Department considers the proposed alternate wet weather mass load limits to be interim until the City completes the Stage 2 facility expansion.

The draft permit also includes proposed mass load limits for the Stage 2 expansion. With the proposed expansion of the facility, the City of Brookings is requesting a BOD and TSS mass load limit increase. The Department is proposing mass load limits during the dry weather period of 317 lb/day monthly average BOD and TSS, respectively. During wet weather, the mass load limits would increase to 525 lb/day monthly average BOD and TSS, respectively.

Also proposed are new limits for minimum removal efficiency for BOD and TSS, for both the existing facility and the proposed stage 2 expansion. The percent removal efficiency compares the amount of BOD and TSS being discharged from the treatment facility to the amount coming into the plant for treatment, and is intended to ensure that treatment efficiency remains as high as possible. The Federal minimum secondary treatment requirements require 85 percent removal efficiency for BOD and TSS (40CFR 133.102). Thus, the proposed permit includes 85 percent removal efficiency limits for BOD and TSS for the Stage 1 and Stage 2 facilities.

The Department's analysis of potential effluent chlorine toxicity indicates both the existing and Stage 2 facility discharges could result in chronic effluent chlorine toxicity. Therefore, the Department is proposing a daily average residual chlorine limit for the existing facility and the proposed Stage 2 expansion.

Over the past few years, the NPDES permit program has focused increased attention towards ensuring that toxic pollutants are adequately controlled to protect water quality. The Department is proposing Brookings conduct bioassays twice during the term of the proposed permit, once in 1992 and once in 1994. The Department will evaluate the results of the testing. If the results indicate acute and/or chronic toxicity outside of the zone of immediate dilution or the mixing zone boundary, respectively, the City will be required to implement measures to reduce/eliminate the toxicity.

WATER QUALITY:

A water quality analysis conducted by the City's engineering consultant constitutes the only available information as to the water quality of the Pacific Ocean in the vicinity of the treatment facility's discharge. The analysis indicates water quality in Chetco Cove meets basin standards for pH, Fecal coliform, and dissolved oxygen. However, according to the report, BOD_5 of the receiving water was somewhat elevated. The elevated BOD_5 was attributed to the influence of a fresh water discharge such as a river or stream and is not thought to be associated with the discharge from the City's treatment facility.

An evaluation of the potential impact of the increased discharge from the proposed Stage 2 facility on the receiving water was conducted in accordance with OAR 340, Division 41. Critical parameters reviewed included: dissolved oxygen, temperature, turbidity, pH, coliform organisms, and toxicity from chlorine residual and ammonia. The evaluation indicates there would be little if any impact on the marine waters from the proposed increased discharge with regard to the aforementioned parameters.

COMPLIANCE HISTORY:

The City's wastewater treatment facility was unable to comply with the limitations of the current permit. On April 20, 1988, the Department entered into a Stipulation and Final Order with the City. The Order included interim limits and a compliance schedule for upgrading the existing treatment facility. The upgraded facility has been able to substantially comply with the effluent limitations established by the Order. The upgrade of the facility was completed in June 1991. Thus, the Department has limited data on the upgraded facilities performance. However, the facility performance has improved. The Order terminates December 31, 1991.

HOW IS THE PUBLIC AFFECTED?

The Department believes that the proposed permit will maintain wastewater discharges from the Brookings treatment facility to the Pacific Ocean at levels that will maintain water quality standards and protect the river's beneficial uses.

OVER

The permit imposes requirements that will increase costs to operate the wastewater treatment facility. The increased costs affect residents and businesses of the City of Brookings and the Harbor Sanitary District who are or will be served by the City's sewage treatment facility.

NEED FOR PERMIT:

This permit is required by the Federal Clean Water Act and OAR 340-45-015.

HOW TO GET ADDITIONAL INFORMATION:

The application, proposed permit and related documents are available for review and copying between the hours of 8:00 AM and 5:00 PM, weekdays in the Department's Water Quality Division, on the 5th floor of the Department's headquarters at 811 S.W. 6th Ave., Portland. The permit and related documents are also available in the Department's Coos Bay Branch Office, 340 North Front Street, Coos Bay. For additional information, you may also contact Ralph Funk, Municipal Permits Coordinator at 229-5065.

HOW TO COMMENT:

Written comments must be received by DEQ September 20, 1991, before 5 PM, at the following address:

Department of Environmental Quality
Water Quality Division
811 S.W. Sixth Avenue
Portland, OR 97204

DEQ will also hold a public hearing:

September 20, 1991
10:00 AM
Brookings City Hall
City Hall Counsel Chambers
898 Elk Drive
Brookings, Oregon

WHAT IS THE NEXT STEP:

The Department is interested in receiving information related to the City's request for a mass load increase as well as any other comments on the draft discharge permit. Comments received orally at the public hearing or submitted in writing will be summarized and addressed in a hearings officer report. Comments on the proposed mass load increase will be presented to the Environmental Quality Commission (EQC). The permit will not be issued until the EQC acts on the request for the mass load increase. The proposed permit may be issued as proposed, issued as modified pursuant to public comment, or denied, depending on whether any substantive issues are raised during the public participation process.

MW\WC8\WC8855

ATTACHMENT F

Expiration Date: 12/31/96
Permit Number:
File Number: 11297

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

Department of Environmental Quality
811 Southwest Sixth Avenue, Portland, OR 97204
Telephone: (503) 229-5696

Issued pursuant to ORS 468.740 and The Federal Clean Water Act

ISSUED TO:
City of Brookings
898 Elk Drive
Brookings, Oregon 97415

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall	Location
Treated Muni. Waste	001	Pacific Ocean

PLANT TYPE AND LOCATION:
Trickling Filter/Solids Contact Treatment Plant
South of Wharf Street on Chetco Point.

RECEIVING SYSTEM INFORMATION:
Basin: South Coast
Subbasin: Chetco
Stream: Pacific Ocean
Hydro Code: 10=*PACI 0.0 D
County: Yamhill

Treatment System Classification: III
Collection System Classification: III

EPA REFERENCE NO: OR-002035-4

Issued in response to Application No. 998297 received October 15, 1990.

This permit is issued based on the land use findings in the permit record.

Lydia R. Taylor, Administrator _____ Date _____

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify, or operate a waste water collection, treatment, control and disposal system and discharge to public waters adequately treated waste waters only from the authorized discharge point or points established in Schedule A and only in conformance with all the requirements, limitations, and conditions set forth in the attached schedules as follows:

Each other direct and indirect discharge to public waters is prohibited. This permit does not relieve the permittee from responsibility for compliance with any other applicable federal, state, or local law, rule, standard, ordinance, order, judgment, or decree.

SCHEDULE A

1. Waste Discharge Limitations

a. Outfall Number 001 (discharge from sewage treatment plant to ocean outfall)

(1) Waste discharge limitations not to be exceeded after permit issuance until completion of Stage 2 expansion and attainment of operational level.

(a) year-round except as noted in (1)(b):

	Average Effluent Concentrations		Mass Load Limits 1/ Monthly Average	Weekly Average	Daily Maximum
Parameter	Monthly	Weekly	lb/day	lb/day	lbs
BOD_5	30 mg/l	45 mg/l	250	375	500
TSS	30 mg/l	45 mg/l	250	375	500
FC per 100 ml	200	400			

1/ Based on average dry weather design flow to the facility equaling 1.0 MGD.

(b) From November 1 through April 30, when the monthly average flow exceeds 3.0 mgd, the monthly average and weekly average mass load limits for BOD and TSS shall be increased to 751 and 1126 pounds, respectively. When on any day the total daily flow exceeds 7.5 mgd, the daily maximum limit shall be 1877 pounds for that day.

(c) Other Parameters	Limitations
Total Chlorine Residual (year-round)	Shall not exceed a daily average of 0.40 mg/l.

(2) Waste discharge limitations not to be exceeded after completion of Stage 2A expansion (as identified in the June 18, 1991 Facility Plan) and attainment of operational level.

(a) year-round except as noted in (2)(b):

	Average Effluent Concentrations		Mass Load Limits 3/		
Parameter	Monthly	Weekly	Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lbs
BOD_5	20 mg/l	30 mg/l	217	325	434
TSS	20 mg/l	30 mg/l	217	325	434
FC per 100 ml	200	400			

3/ Based on average dry weather design flow to the facility equaling 1.3 MGD.

(b) From November 1 through April 30 of each year, when the monthly average flow exceeds 1.8 mgd, the monthly average BOD and TSS mass load shall not exceed 334 pounds/day; and when the weekly average or daily flow exceeds 2.3 MGD, the weekly and daily mass limits shall not exceed 600 pounds/day and 1358 pounds/day, respectively.

(c) Other Parameters (year-round)	Limitations
Total Chlorine Residual	Shall not exceed a daily average of 0.20 mg/l.

(3) Other Parameters	Limitations
pH	Shall be within the range 6.0-9.0
BOD_5 & TSS Removal Efficiency	The monthly average percent removal shall not be less than 85% year-round except when influent BOD and/or TSS concentrations are less than 100 mg/l for that parameter during Nov. 1 through April 30. During this period the percent removal efficiency shall not be less than 75 percent.

(4) Not withstanding the effluent limitations established by this permit, no wastes shall be discharged and no activities shall be conducted which violate Water Quality Standards as adopted in OAR 340-41-325 except in the defined mixing zone:

The allowable mixing zone shall not exceed that portion of the Pacific Ocean within a 300 foot radius of the point of discharge.

SCHEDULE B

MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. **Minimum Monitoring Requirements**
(unless otherwise approved in writing by the Department)

a. Influent

Item or Parameter	Minimum Frequency	Type of Sample
BOD	2/Week	Composite
TSS	2/Week	Composite
pH	3/week	Grab

b. Outfall Number 001 (Discharge from sewage treatment plant to ocean outfall)

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Flow meter
Flow Meter Calibration	2/Year	Verification
BOD	2/Week	Composite
TSS	2/Week	Composite
pH	3/week	Grab
Fecal Coliform	2/Week	Grab
Chlorine Residual	Daily	Grab
Average Percent Removed (BOD and TSS)	Monthly	Calculation
Biomonitoring	Bioassay of effluent from Outfall 001 in accordance with Schedule C, Condition 2.	Acute and chronic bioassay.

c. Sludge Management

Item or Parameter	Minimum Frequency	Type of Sample
Sludge analysis including: Total solids (% dry wt.) Volatile solids (% dry wt.) Sludge nitrogen NH_3-N; NO_3-N; & TKN (% dry wt.) Sludge metals content for: Pb, Zn, Cu, Ni, and Cd (in mg/kg dry weight)	Semi-annually	Composite 1/ & 3/ Sample

c. Sludge Management (continued)

Item or Parameter	Minimum Frequency	Type of Sample
Sludge analysis including: Phosphorus (% dry wt.) Potassium (% dry wt.) pH (standard units)	Semi-annually	Composite 1/ & 3/ Sample
Record of % volatile solids reduction accomplished through digestion	Monthly	Calculation (See Note 2/)
Record of locations where sludge is applied on land (Site location map to be maintained at treatment facility for review upon request by DEQ)	Each Occurrence	Date, volume & locations where sludges were applied recorded on site location map.

Notes:

1/ Composite samples from the digester shall consist of at least 4 aliquots of equal volume collected over an 8 hour period and combined.

2/ Calculation of the % volatile solids reduction is to be based on comparison of a representative grab sample of total and volatile solids entering the primary digester and a representative composite sample of sludge solids exiting the secondary digester withdrawal line (as defined in note 1/ above).

3/ Composite samples for the sludge analysis shall be representative of the product being land applied.

Monitoring reports (DMRs) shall include a record of the location, quantity and method of use of all sludge removed from the treatment facility and a record of all applicable equipment breakdowns and bypassing.

2. Reporting Procedures

Monitoring results shall be reported on approved forms. The reporting period is the calendar month. Reports must be submitted to the Department by the 15th day of the following month.

SCHEDULE C

COMPLIANCE CONDITIONS AND SCHEDULES

1. The permittee shall have in place a program to identify and reduce inflow and infiltration into the sewage collection system. By no later than September 1 each year the permittee shall submit an annual report to the Department which details sewer collection maintenance activities that have been done in the previous year and outlines those activities planned for the following year.

2. Bioassay.

   a. By no later than ninety (90) days after issuance of this permit, the permittee shall submit proposed acute and chronic bioassay test procedures for the Department's review and approval.

   b. Following written approval by the Department of the appropriate test procedures, the permittee shall initiate bioassay testing on chlorinated final effluent from the chlorine contact chamber using the approved test procedures in accordance with 2(c). Any change in bioassay test procedures must be approved by the Department.

   c. The bioassay tests shall be conducted once in August 1992 and once in August 1994 using the approved bioassay tests on the selected species.

3. The Permittee shall submit to the Department an annual report on the progress of the facility upgrades and improvements. The report shall be submitted by January 1 of each year. This report shall be filed with the Department until completion and attainment of operational level of the proposed Stage 2 facilities.

4. By no later than ninety (90) days prior to the scheduled completion date of the solids handling facility improvements, the permittee shall submit a revised sludge management plan in accordance with Oregon Administrative Rule 340, Division 50, "Disposal of Sewage Treatment Plant Sludge and Sludge Derived Products Including Septage". Upon approval of the revised plan by the Department, and completion of he solids handling facility improvements, the plan shall be implemented by the permittee.

5. The permittee is expected to meet the compliance dates which have been established in this schedule. Either prior to or no later than 14 days following any lapsed compliance date, the permittee shall submit to the Department a notice of compliance or noncompliance with the established schedule. The Director may revise a schedule of compliance if he determines good and valid cause resulting from events over which the permittee has little or no control.

SCHEDULE D

SPECIAL CONDITIONS

1. All sludge shall be managed in accordance with a sludge management plan approved by the Department of Environmental Quality. No substantial changes shall be made in sludge management activities which significantly differ from operations specified under the approved plan without the prior written approval of the Department.

2. The permittee shall implement the bioassay toxicity testing program specified in Schedules B and C of this permit.

   a. If any acute bioassay test indicates that the effluent sample is toxic, another toxicity test using the same species and the same methodology shall be conducted within two weeks. If the second test also indicates toxicity, the permittee shall follow the procedure described in section (c) of this permit condition.

   b. If any chronic bioassay test indicates that the effluent sample is toxic at the dilutions determined to occur at the edge of the mixing zone, or if there is no dilution data for the edge of the mixing zone and any chronic bioassay test indicates that the effluent is toxic, another toxicity test using the same species and the same methodology shall be conducted within two weeks. If the second test also indicates toxicity, the permittee shall follow the procedure described in section (c) of this permit condition.

   c. If, after following the procedure as described in sections (a) or (b) of this permit condition, two consecutive bioassay test results indicate acute and/or chronic toxicity, the permittee shall evaluate the source of the toxicity and submit a plan and time schedule for achieving compliance with the water quality standards for toxicity. Upon approval by the Department, the permittee will implement the plan until compliance has been achieved. Evaluations shall be completed and plans submitted within 6 months unless otherwise approved in writing by the Department.

3. The permittee shall comply with Oregon Administrative Rules (OAR) Chapter 340, Division 49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel", and the following:

   a. The permittee shall have its wastewater collection system supervised by one or more operators certified at a grade level equal to or higher than the system classification shown on page 1 of this permit. The designated supervisor(s) shall be available to the system owner and any other operator of the facility.

b. The permittee shall have its wastewater treatment system supervised by one or more operators certified at a grade level equal to or higher than the system classification shown on page 1 of this permit. The supervisor(s) shall be available to the system owner and any other operator of the facility.

c. When the designated supervisor(s) are not available, the permittee shall have an operator available who is certified no less than one grade level below the system classification. This condition applies to system owners who designate supervisors to be fully responsible for system operation in lieu of the designated supervisor (if any are designated by the permittee) and any temporary supervisor so designated by the permittee. A system shall not be without an individual certified at the classification of the system for more than 30 days.

d. The permittee shall notify the Department in writing within 30 days of replacement or redesignation of operators identified as responsible for supervising the operation of the wastewater systems.

ATTACHMENT G

AMENDMENT

NPDES WASTE DISCHARGE PERMIT EVALUATION
January 3, 1992

Department of Environmental Quality
811 Southwest Sixth Avenue, Portland, OR 97204
Telephone: (503) 229-5696

FACILITY:
City of Brookings
898 Elk Drive
Brookings, Oregon 97415

SOURCES COVERED:

Type of Waste	Outfall	Location
Treated Muni. Waste	001	Pacific Ocean

PLANT TYPE AND LOCATION:
Trickling Filter/Solids Contact. South of Wharf Street on Chetco Point.
Brookings, Oregon 97415

RECEIVING SYSTEM INFORMATION:
Basin: South Coast
Subbasin: Chetco
Stream: Pacific Ocean
Hydro Code: 10=*PACI 0.0 D
County: Curry

EPA REFERENCE NO: OR-002035-4

INTRODUCTION

The following sections of the permit evaluation report have been amended based on the testimony received from the public hearing, and discussion with the City of Brookings. It is clear that the City of Brookings will not be constructing the entire Stage 2 treatment facilities (Stages 2A & 2B) in this permit cycle as outlined in their 1991 facilities plan, just Stage 2A. The construction of Stage 2B may not occur in the foreseeable future. Therefore, certain sections of the August 6, 1991, Permit Evaluation Report have been revised in this amendment.

1.0 SUMMARY

The City of Brooking owns and operates a secondary wastewater treatment facility which serves the City of Brookings and the Harbor Sanitary District. The existing treatment facility is a trickling filter/solids contact treatment process. Since April 19, 1988, the facility has been operating under a Department issued Stipulation and Final Order that includes interim limits and a compliance schedule for upgrading the existing facilities. The Order terminated December 31, 1991.

The upgrade of the facility was completed in June 1991. This upgrade is referred to as the Stage 1 upgrade and was intended to allow the plant to meet the existing permit limitations without expanding the treatment capacity. The plant's current approved dry weather design

flow is 1.0 mgd with a maximum hydraulic capacity of 9.2 mgd. The wastewater treatment facility discharges treated effluent to the Pacific Ocean through a newly constructed 24 inch outfall and diffuser 500 feet off shore under 10 feet of water (at low tide). The new outfall was constructed during the Stage 1 upgrade.

Due to rapid growth in the Brookings area the treatment facility is already nearing capacity. An expansion of the facility is being planned. The expansion consist of two parts. Stage 2A will expand the solids handling capabilities of the facility and add some additional treatment capacity. The 2A expansion is scheduled to be completed in 1993 and 1994, and would increase the dry weather design flow of the facility from 1.0 to 1.3 MGD and serve the community through the year 2002. The 2B expansion would add to the existing unit processes and increase the secondary treatment capacity to 1.9 mgd average dry weather design capacity. Due to funding limitations, the construction of the 2B facilities may be delayed indefinitely.

The Brookings plant receives domestic wastewater from residential and commercial sources. There are no known industrial discharges to the collection system.

Sludge at the wastewater treatment facility is stabilized using two anaerobic digesters. Primary and secondary sludges are co-thickened in the primary treatment system sedimentation tank. From the primary sedimentation tank, the thickened sludge is pumped to a heated anaerobic first-stage digester for processing. The second-stage digester is used solely for settling and storage of sludge. Sludge pumped from the digester is hauled to agricultural sites for beneficial use.

On October 10, 1990, the Department received an application from Brookings for a National Pollutant Discharge Elimination System (NPDES) permit to continue discharging to state waters pursuant to provisions of Oregon Revised Statutes (ORS) 468.740 and the Federal Clean Water Act. This permit evaluation report describes concerns and proposes effluent limitations, compliance schedules, and special conditions necessary to carry out state and federal law.

Effluent limits which have been added include a requirement for removal efficiency of both 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS) and chlorine residual limits. The draft permit also includes proposed effluent limits to be met upon completion of the Stage 2A expansion. Because of an increased state and federal emphasis on the control of toxic pollutants, monitoring requirements in the proposed permit have been expanded to include development of an effluent bioassay monitoring program.

2.0 BACKGROUND

2.1 Facility Description

The City's facility was originally built in the late 1950's consisting of a comminutor, primary clarifier, control building, fixed cover digester, and sludge drying beds. In 1973, the facility was expanded to provide secondary treatment as a regional wastewater treatment facility to serve the City of Brookings and the Harbor Sanitary District. The additions included a grit chamber, trickling filter, secondary clarifier, another fixed-cover digester, and a building over the existing sludge drying beds.

An upgrade of the treatment facility was completed in June 1991. The upgrade consisted of: (1) adding a new headworks, (2) adding a rectangular primary sedimentation tank, (2) adding a plastic media trickling filter, (3) addition of solids contact/re-aeration channels with fine bubble diffusers, (4) adding a secondary clarifier, (5) converting the existing secondary clarifier into chlorine contact basin and (6) adding an effluent control box for measuring plant flow and sampling effluent.

The completed treatment facility now consists of the following treatment processes: A headworks (mechanical bar screen, hand raked screen, grit removal tank and grit pumps), a primary clarifier, a primary sedimentation tank, two trickling filters - one with plastic media, one with rock media, two aeration basins, a secondary clarifier, and a chlorine contact chamber with disinfection through chlorination.

The additional or modified treatment works proposed for the Stage 2A expansion of the treatment facility were modified from those originally proposed in the Facilities Plan dated June 18, 1991. The City proposed in a letter dated January 2, 1992 the following improvements for Stage 2A: a facultative sludge lagoon; upgrade and addition of anaerobic digester mixing and heating equipment; addition of an operations building; addition of chemical feed to the primary clarifiers; and addition of expanded disinfection facilities and dechlorination. This expansion of the treatment facility would result in split stream treatment of the wastewater received at the treatment facility when flows exceeded 9.2 MGD. Flows in excess of 9.2 mgd would receive only primary treatment and disinfection.

Sludge at the wastewater treatment facility is stabilized in an anaerobic digester. Primary and secondary sludges are co-thickened in the primary treatment system sedimentation tank. From the primary sedimentation tank the thickened sludge is pumped to a heated anaerobic first-stage digester for processing. The

second-stage digester is used solely for settling and storage of sludge. The sludge is pumped from the digester and hauled to agricultural sites for beneficial uses. The covered sludge drying beds have not been used for drying sludge since 1978.

5.0 Draft Permit Discussions

5.1 Face Page - Same

5.2 Schedule A, Waste Discharge limitations

State regulations governing the implementation of minimum design criteria for waste treatment and control facilities are found in OAR 340-41-120. Minimum treatment design criteria for the South Coast Basin are described in OAR 340-41-335. Based on OAR 340-41-335, the minimum treatment resulting in a monthly average effluent concentration of 30 mg/l for BOD and TSS, respectively is required year-round for ocean discharges.

5.2.1 Stage 1 Existing Facility BOD and TSS Concentration and Mass Discharge Limitations.

By prior agreement between the Department and the City, the recently upgraded treatment facility was to meet the existing effluent limits in the current permit. The Operation and Maintenance manual for the new treatment plant, prepared by the City's engineering consultant, states that the upgraded wastewater treatment facility is capable of producing a 30 mg/l BOD and 30 mg/l TSS effluent up to the wet weather maximum monthly flow (3.0 mgd). At the time of plant design, 3.0 MGD was the projected high flow during the short expected lifetime of the facility. More recent information indicates that flows may exceed the 3.0 MGD during this permit cycle. Thus, the draft permit includes alternate monthly and weekly average wet weather mass load limits as identified in the footnote to Table 5-1, that apply only when the monthly average flow exceeds 3.0 mgd.

Table 5-1 Department Proposed Stage 1 Effluent Limits

Parameter	Monthly Average*		Weekly Average*		Daily Maximum*	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	30	250	45	375	-	500
TSS	30	250	45	375	-	500

* During the period of November 1 through April 30, when the average monthly flow exceeds 3.0 MGD, the following mass limits for BOD and TSS apply: the monthly average mass limit shall not exceed 751 pounds/day; the weekly average shall not exceed 1126 pounds/day; and the daily maximum shall not exceed 1877 pounds/day.

Calculations:

(1) BOD & TSS

(a) 1.0 MGD x 8.34 x 30 mg/l monthly avg. = 250 lb/day monthly avg.

(b) 250 lb/day monthly avg. x 1.5 = 375 lb/day weekly avg.

(c) 250 lb/day monthly avg. x 2.0 = 500 lb/day daily max.

During the wet weather period, the City of Brooking's collection system experiences significant infiltration and inflow (I/I). Through a cost effective analysis, it has been determined that the cost to repair the collection system to reduce I/I is excessive compared to the cost of treating the flows. In addition, the cost of adding tertiary filtration to stay within the existing mass load limits was assessed and estimated to cost roughly an additional 4.7 million dollars above the proposed expansion cost of 8.6 million dollars (at full Stage 2B expansion, expected to occur in approximately ten years). Based on these factors and the minimal environmental impact of the increased discharges, the Department is recommending a mass load increase during very high flow conditions.

Calculations for limits when flows exceed 3.0 MGD monthly average:

(1) BOD & TSS

(a) 3.0 MGD x 8.34 x 30 mg/l monthly avg. = 751 lb/day monthly avg.

(b) 751 lb/day monthly avg. x 1.5 = 1126 lb/day weekly avg.

(c) 7.5 MGD x 8.34 x 30 mg/l = 1877 lbs/day daily maximum

Recent growth in the Brookings area has been greater than anticipated. In addition, the lack of sludge storage is causing higher than expected effluent loadings. The Department and the City recognize that the above limits may not be achievable until the treatment facility can be expanded and the sludge storage and treatment expanded. The Department is proposing to enter into a Stipulation and Final Order with the City, that will allow higher interim limits until the Stage 2A expansion is completed. The Stage 2A expansion is required to be completed by December 31, 1994, under the terms of the proposed Order.

5.2.2. Proposed Stage 2 Expansion BOD and TSS Concentration and Mass Discharge Limitations.

The ultimate proposed expansion of the wastewater treatment facility would increase the ADWF of the facility to 1.9 mgd. With this expansion, the City requested a BOD and TSS mass load increase. Section 6, page 2, Table 6-1 of the June 18, 1991, facility plan identifies the requested limits. The limits proposed are identified below:

Table 5-2 Permittee Requested Stage 2 Mass Load Limits
(Expected Construction - Year 2002)

Parameter	Peak monthly avg.		Peak weekly avg.		Peak daily avg.	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	751	20	1018	30	2577
TSS	20	751	20	1018	30	2577

On September 29, 1991, the City's engineering consultant, at the request of DEQ, revised the requested mass load increase to correspond to the Stage 2A expansion, expected to occur in 1993. The revised mass load increase request is identified in Table 5-3.

Table 5-3 Permittee Revised Request for Stage 2A Mass Load Limits

Parameter	Monthly avg.		Weekly avg.		Daily maximum	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	576	20	788	30	NA
TSS	20	576	20	788	30	NA

The City's requests for mass load limits are based on peak wet weather flows for the month, week, and day, expected to reflect the maximum flows in a five year storm, at the end of the design life of the two facilities (2A and 2B). As with the proposed mass load increase for the existing facility, this is a departure from the Department's

standard practice of basing BOD and TSS mass load limits on the ADWF. These limits are being proposed due to the high amount of inflow and infiltration entering the collection system (see discussion on I/I in Section 4.2). The proposed BOD and TSS mass load limits indicated above are also not appropriate on a year-round basis. A further discussion of the Department's rationale is included in the text of the EQC Report, attached and made part of this evaluation.

According to the limited data available, peak flows are generally only associated with wet weather storm events (April 1988 draft Facility Plan Report, Table 5-1, page 5-8). Thus, the Department is proposing the facility meet more stringent BOD and TSS mass load limits during dry weather conditions. The appropriate basis for the mass load limits during these dry weather periods would be the ADWF of 1.3 mgd and the proposed concentration limits (see previous discussion on the development of mass load limits). Based on these figures, the Department's proposed BOD and TSS mass load limits are indicated in Table 5-4.

Table 5-4 Department Proposed Stage 2A Effluent Limits

Parameter	Monthly Average*		Weekly Average*		Daily Maximum*	
	mg/l	lb/day	mg/l	lb/day	mg/l	lb/day
BOD	20	217	30	325	-	434
TSS	20	217	30	325	-	434

* From November 1 through April 30 of each year, when the monthly average flow exceeds 1.8 MGD, the monthly average mass limit shall not exceed 334 pounds/day; and when the weekly average or daily flow exceeds 2.3 MGD, the weekly and daily mass limits shall not exceed 600 pounds/day and 1358 pounds/day respectively.

NOTE: The reduction in the dry weather mass load limits is the result of the improved treatment efficiency of the Stage 2A facilities

Calculations:

(1) BOD & TSS

(a) 1.3 MGD x 8.34 x 20 mg/l monthly avg. = 217 lb/day monthly avg.

(b) 217 lb/day monthly avg. x 1.5 = 325 lb/day weekly avg.

(c) 217 lb/day monthly avg. x 2.0 = 434 lb/day daily max.

The proposed Stage 2A facility also would be allowed to meet less stringent BOD and TSS mass load limits during peak wet weather events. Based on information provided by the City's engineering consultant for 2-year storm events (FAX of October 24, 1991), the expected peak month, peak week, and peak day flows in the year 2002 for a 2-year storm event would be 2.5, 3.6, and 7.4 mgd, respectively.

Under either dry weather or wet weather conditions, the Department expects the actual performance of the wastewater treatment facility to be: 14 mg/l monthly average, 17 mg/l weekly average and 22 mg/l daily maximum. Using these values the Department back-calculated the flows beyond which the dry weather mass load limits would be not be met. The calculations are as follows:

(a) 217 lbs/day monthly avg. / (14 mg/l x 8.34) = 1.85 mgd monthly avg.

(b) 325 lbs/day weekly avg. / (17 mg/l x 8.34) = 2.29 mgd weekly avg.

(c) 434 lbs/day daily max. / (22mg/l x 8.34) = 2.36 mgd daily max.

The flows indicated in (a) through (c) above represent the trigger points above which wet weather mass load limitations would be in effect. The monthly average flow trigger would be rounded off to 1.8 mgd. Since the weekly average and the daily maximum flows are roughly the same, 2.3 mgd would be used for the weekly and daily maximum trigger points.

Using the projected 2-year storm event flows of 2.5 mgd peak month, 3.6 mgd peak week, and 7.4 mgd peak day, the Department calculated the wet weather mass load limits using the expected performance of the treatment facility. These are identified in the footnote to Table 5-4. The monthly average limit would be in effect when the monthly average flows exceeds 1.8 mgd. The weekly average and daily maximum mass load limits would be in effect when the weekly average flow or the daily maximum flow exceeded 2.3 mgd, respectively.

Calculations:

(1) BOD & TSS

(a) 2.5 MGD x 8.34 x 16 mg/l monthly avg. = 334 lb/day monthly avg.

(b) 3.6 MGD x 8.34 x 20 mg/l = 600 lb/day weekly avg.

(c) 7.4 MGD x 8.34 x 22 mg/l = 1358 lb/day daily max.

5.2.3. BOD and TSS Percent Removal Efficiency

Minimum levels of percent removal for BOD and TSS for municipal dischargers is required by federal secondary

treatment regulations (40 CFR, Part 133). The intent of the percent removal requirement is to achieve two basic objectives. These are: (1) to encourage municipalities to correct excessive inflow and infiltration problems in their sanitary sewers and (2) help prevent intentional dilution of influent wastewater as a means of meeting permit limitations.

To satisfy federal regulations, a BOD and TSS percent removal limit is being added to the proposed permit for the Stage 1 upgrade. The data in Table 3.2 appears to indicate the treatment facility would be unable to meet this requirement. However, according to the project design data for the Stage 1 facility, it was designed to meet 85 percent removal efficiency for BOD and TSS up to a monthly average flow of 3.0 mgd. During wet weather the treatment facility experiences infiltration of groundwater and stormwater into the collection system. A cost effective analysis performed by the City's engineering consultant in 1988 concluded that this infiltration was non-excessive. According to the 40 CFR 133.105 "Special Considerations", the City is eligible for a reduced percent removal limitations under these conditions during wet weather. Thus, when flows entering the treatment facility is 100 mg/l or less on a monthly average, the percent removal shall not be less than 75.

The Stage 2A facility is also being designed to meet the federal percent removal efficiency requirements for BOD and TSS. However, it too will experience the non-excessive inflow and infiltration. Thus, it also will be allow the same exception to the percent removal limitation.

ATTACHMENT H

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

OF THE STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY, OF THE STATE OF OREGON, Department, v. CITY OF BROOKINGS, Respondent.	STIPULATION AND FINAL ORDER No. WQ- CURRY COUNTY DRAFT

WHEREAS:

1. On _____, the Department of Environmental Quality (Department or DEQ) issued National Pollution Discharge Elimination System (NPDES) Waste Discharge Permit Number _____ (permit) to the City of Brookings (Respondent), pursuant to Oregon Revised Statutes (ORS) 468.740 and the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500. The permit authorizes the Respondent to construct, install, modify or operate wastewater treatment control and disposal facilities (facilities) and discharge adequately treated wastewaters into the Pacific Ocean, waters of the state, in conformance with the requirements, limitations and conditions set forth in the Permit.

2. The Permit includes effluent limitations for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS). These effluent limits are expressed in concentration limits (milligrams

per liter), in mass load limits (pounds per day), and in percent removal of BOD and TSS accomplished in the treatment plant.

3. The Brookings wastewater treatment plant has limited remaining treatment capacity. In addition, the sludge treatment portion of the wastewater treatment plant may not be adequate to insure that the permit limits for BOD and TSS are met at all times. The Department and Respondent acknowledge that, until such time as the treatment plant capacity is expanded and the sludge treatment portion of the process is upgraded, the permit limits for BOD and TSS may be violated.

4. The Department and Respondent recognize that the Environmental Quality Commission has the power to impose a civil penalty and to issue an abatement order for violations of conditions of the Permit. Therefore, pursuant to ORS 183.415(5), the Department and Respondent wish to limit and resolve the future violations specified in Paragraph 3 in advance by this Stipulation and Final Order.

5. This Stipulation and Final Order is not intended to limit, in any way, the Department's right to proceed against Respondent in any forum for any past or future violations not expressly settled herein.

NOW THEREFORE, it is stipulated and agreed that:

6. The Environmental Quality Commission shall issue a final order:

A. Requiring Respondent to comply with the following schedule:

(1) By no later than November 30, 1992, Respondent shall arrange for financing of Stage 2A Improvements identified in Respondent's letter dated January 2, 1992;

(2) By no later than February 1, 1993, Respondent shall submit approvable engineering plans and specifications for the facultative sludge lagoon(s) and associated equipment or structures;

(3) By no later than November 1, 1993, Respondent shall complete construction on the facultative sludge lagoon(s) and associated structures;

(4) By no later than February 1, 1994, Respondent shall submit approvable engineering plans and specifications for the remaining Stage 2A Improvements;

(5) By no later than December 1, 1994, Respondent shall complete all construction of Stage 2A Improvements;

(6) By no later than March 1, 1995, Respondent shall attain operational levels and meet discharge limitations specified in the permit for Stage 2A.

B. Requiring Respondent to comply with an interim sludge management plan approved in writing by the Department, and to meet the following interim waste discharge limitations for BOD and TSS and flows until March 1, 1995, unless otherwise extended by the Environmental Quality Commission:

	Average Effluent Concentrations		Effluent Loadings* Monthly Average	Weekly Average	Daily Maximum
	Monthly	Weekly	lb/day	lb/day	lb/day
Parameter					
BOD	30 mg/l	45 mg/l	375	500	600
TSS	30 mg/l	45 mg/l	375	500	600

Average dry weather flow to the treatment facility shall not exceed 1.0 million gallons per day

*Effluent loading limits do not apply when flow to the treatment facility exceeds 2.0 million gallons per day.

C. Requiring Respondent to comply with all the terms, schedules and conditions of the Permit except as specified by paragraph 6 B above, or of any other NPDES waste discharge Permit issued to Respondent while this Stipulation and Final Order is in effect.

D. Requiring Respondent, upon receipt of a written notice from the Department for any violations of this Stipulation and Final Order, to pay civil penalties of one hundred dollars ($100) for each day of each violation of paragraph 6 B and civil penalties of two hundred fifty dollars ($250) for each day of each violation of any requirement of this Stipulation and Final Order, except for a

violation of paragraph 6 A (1). No penalties will be assessed under this Order for failure to obtain financing for the Stage 2A improvements.

E. In the event that financing for the Stage 2A improvements is not obtained by the date set in this Order, this Order shall be immediately terminated and the effluent limits in the Permit shall apply.

7. If any event occurs that is beyond Respondent's reasonable control and that causes or may cause a delay or deviation in performance of the requirements of this Stipulation and Final Order, Respondent shall immediately notify the Department verbally of the cause of delay or deviation and its anticipated duration, the measures that have been or will be taken to prevent or minimize the delay or deviation, and the timetable by which Respondent proposes to carry out such measures. Respondent shall confirm in writing this information within five (5) working days of the onset of the event. It is Respondent's responsibility in the written notification to demonstrate to the Department's satisfaction that the delay or deviation has been or will be caused by circumstances beyond the control and despite due diligence of Respondent. If Respondent so demonstrates, the Department shall extend times of performance of related activities under the Stipulation and Final Order as appropriate. Circumstances or events beyond Respondent's control include, but are not limited to, acts of nature, unforeseen strikes, work stoppages, fires, explosion, riot, sabotage, or war. Increased cost of performance or consultant's failure to provide

timely reports shall not be considered circumstances beyond Respondent's control.

8. Respondent and the Department hereby waive any and all of their rights to any and all notices, hearing, judicial review, and to service of a copy of the final order herein. The Department reserves the right to enforce this order through appropriate administrative and judicial proceedings.

9. Regarding the schedule set forth in Paragraph 6A above, Respondent acknowledges that Respondent is responsible for complying with that schedule regardless of the availability of any federal or state grant monies.

10. The terms of this Stipulation and Final Order may be amended by the mutual agreement of the Department and Respondent.

11. Respondent acknowledges that it has actual notice of the contents and requirements of the Stipulation and Final Order and that failure to fulfill any of the requirements hereof would constitute a violation of this Stipulation and Final Order and subject Respondent to payment of civil penalties pursuant to Paragraph 6D above.

12. This Stipulation and Final Order will terminate 60 days after Respondent demonstrates full compliance with the requirements of the schedule in Paragraph 6A above.

RESPONDENT

Date

(Name)_____
(Title)_____

DEPARTMENT OF ENVIRONMENTAL QUALITY

Date

Fred Hansen, Director

FINAL ORDER

IT IS SO ORDERED:

ENVIRONMENTAL QUALITY COMMISSION

Date

Fred Hansen, Director
Department of Environmental Quality
Pursuant to OAR 340-11-136(1)