

To: Lauri Aunan
Water Quality Division Administrator

Date: July 19, 2005

From: Kevin Masterson
Surface Water Management Section

Subject: Summary of and response to comments received for proposed modifications to four proposed Phase I municipal separate storm sewer system (MS4) individual permits: City of Portland and co-permittees, Clackamas County and co-permittees, City of Gresham and co-permittees, and Clean Water Services. The proposed modifications were developed in response to a Petition for Reconsideration filed in 2004 after the issuance of renewal permits for the aforementioned MS4s.

Overview

Comment period

DEQ conducted one public hearing on the modifications to the four MS4 permits in Portland on April 7, 2005. Fifteen (15) persons attended the hearing; with one person providing oral comment. The public comment period closed on April 12, 2005 at 5 p.m. Twenty-nine (29) sets of written comments were received during this period.

Process of summarizing comments and providing responses

Due to the similar nature of many comments, comments are summarized in categories and responses provided. To focus on the comment rather than who made it, numbers are cited in the summaries that reference the people who provided comment.

List of Commenters

The list of people providing comment and their corresponding reference numbers follow at the end of this memo.



Organization of comments and responses

Comments and responses are organized into categories:

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Permit Compliance Standards

Comment #1

The permits should ensure that in-stream water quality standards are met and lay out a schedule for when standards will be met. [1, 2, 4, 5, 7, 24, 28]

Response

The compliance standard for MS4 permits established in the federal stormwater regulations is to reduce pollutants to the maximum extent practicable. In addition, Oregon law [ORS 468B.020] directs DEQ to require all available and reasonable methods necessary to comply with water quality standards. In the context of the MS4 permits, however, the Department has determined that the federal MEP requirement is at least as stringent as the state requirement.

Comment #2

What if water quality and drinking water standards are not maintained? What is DEQ's response? Also, is the Health Department notified about permit omissions that could result in degradation of watersheds used for drinking water supplies? (28)

Response

As stated above, the compliance standard for the MS4 permits is to reduce pollutants to the maximum extent practicable. Further, as discussed in the response to the antidegradation comment (#21), the Department believes that the MS4 permits are designed to ensure a net reduction in pollutants from MS4 stormwater discharges over the permit term. Therefore, an overall

degradation of watersheds used for drinking water from MS4 discharges is not expected to occur if compliance with the permit is maintained. If the permittee's best management practices (BMPs) are not adequately controlling stormwater pollution to watersheds to the maximum extent practicable, the permit requires an adaptive management process to be followed to ensure appropriate improvements are made.

Comment #3 Why not require moratoriums on new developments if water quality standards are violated. (28)

Response DEQ does not have the authority to issue moratoriums on new development. The current permits do require the MS4s to establish and enforce standards for new and re-development to minimize the stormwater pollution impacts on surface waters. In addition, if the MS4s discharge pollutants that contribute to existing surface water impairments, they are subject to additional requirements described in Schedule D.2.e and D.2.f of the Clackamas, Gresham, and Portland permits, and Schedule D.8.b.4 and D.8.b.5 of the Clean Water Services permit.

Comment #4 Numeric effluent limitations should be included in the permits. [4, 7, 9 13, 14, 17, 22, 23]

Response Due to the inherent complexities of controlling municipal stormwater, including the myriad of potential sources of stormwater pollution in a community and the variability in storm events, EPA's stormwater regulations establish a narrative, rather than a numeric, standard for MS4 permit compliance. The Department has determined that the federal requirement to reduce stormwater pollutants to the maximum extent practicable (MEP) is appropriate for Oregon MS4 permits, and is consistent with the state statute (ORS 468B.020) that directs DEQ to require all available and reasonable methods necessary to comply with water quality standards

Comment #5 The proposed permits are inconsistent with the Oregon Salmon Plan. [7]

Response The Oregon Plan for Salmon and Watersheds is designed to restore the healthy function of Oregon's natural aquatic systems, while the MS4 permits are designed to minimize the discharge of stormwater pollutants to surface waters from municipal systems through the implementation of a comprehensive range of best management practices. Therefore, the Department views the proposed MS4 permits as complimentary to the goals of the Oregon Salmon Plan.

Comment #6 The permits do not comply with state and federal laws. [7]

Response As summarized in responses to other comments, the Department has determined that the proposed MS4 permits comply with both the federal standard of reducing pollutants to the maximum extent practicable and Oregon state law [ORS 468B.020], which directs DEQ to require all available and reasonable methods necessary to comply with water quality standards.

Comment #7 There aren't measurable goals within the permits that are based on hard facts and verifiable data. [9]

Response The proposed permits require stormwater management program monitoring that includes the establishment of performance indicator metrics for various stormwater management plan (SWMP) activities. The annual reporting of SWMP activities using these metrics will allow DEQ to track the relative progress of a permittee's stormwater program elements. Further, if a permittee discharges to receiving waters with established total maximum daily loads (TMDLs) and associated allocations, the permittee must propose numeric goals ("benchmarks") for reductions of the pollutants of concern within the permit term that must be approved by the Department. Progress toward meeting that pollutant reduction goal must then be measured and reported to the Department.

Comment #8 Include in permit the relevant elements of the 3-Basin Rule (for Clackamas Permit), the Clean Water Act, Safe Drinking Water Act, and the recent California Supreme Court decision upholding the San Diego Permit. [16, 28]

Response The proposed MS4 permit for Clackamas County is for existing municipal storm sewer facilities and discharges, and the County and its co-permittees are not seeking an allowance from the Department to increase pollution loads. Such existing discharges are exempt from the 3-Basin Rule requirements as per OAR 340-041-0350(3). If it is determined that the permittee no longer qualifies for an exemption, the Department would require that the provisions of OAR 340-041-0350(7) are satisfied prior to allowing an increased load limitation.

As noted in other responses, the Department has determined that the relevant parts of the Clean Water Act and associated federal regulations are incorporated into these proposed permits. Safe Drinking Water Act (SDWA) regulations are addressed by other Department-issued state discharge permits, such as underground injection control permits. NPDES permits are designed

to implement the Clean Water Act requirements, rather than SWDA requirements.

California permits, such as the San Diego MS4 permits, and California state court rulings are not controlling in Oregon.

Comment #9 The requirement to reduce stormwater pollutants to the maximum extent practicable (MEP) is the appropriate compliance standard for the proposed MS4 permits. [10, 21]

Response So noted.

Comment #10 DEQ should semi-annually review MS4 reports for compliance determinations and enforce violations; the findings should be made public. [17]

Response The Department believes that the reporting requirements in the proposed permits are sufficient for permit compliance determinations. In addition to the annual reporting requirements, the proposed MS4 permits require the submittal of an interim evaluation report that will include a comprehensive assessment of the permittee's SWMP and another rigorous program evaluation at the end of the permit term.

Comment #11 The permit violates ORS 468B.015 which says that no waste discharges are allowed without treatment or corrective action to protect beneficial uses. The permit perpetuates discharges of polluted run-off. [17]

Response ORS 468B.015 is a general policy statement only. Implementation of this statutory provision occurs through other statutes and rules, such as ORS 468B.020 referenced in other responses to comments.

Comment #12 Permittees must comply with toxic pollutant effluent standards in Section 307(d) of the Clean Water Act. What is the time frame for compliance with this CWA provision? [28]

Response Section 307(d) isn't applicable to the MS4 permits because there are no effluent limits or pretreatment standards applicable to these permits. Further, the MEP compliance standard under CWA Section 402(p) is controlling for the MS4 permits.

Comment #13 DEQ should look at monetary investments by MS4s in determining MEP. In Clean Water Services' case, income has far exceeded expenses. What is the plan for expending fees collected? DEQ should require annual reporting of fees collected and spent. [17]

Response The annual reporting requirements of the proposed MS4 permits do require a summary of total stormwater program expenditures and funding sources over the reporting fiscal year, and those anticipated in the next fiscal year. Thus, the Department will be evaluating financial investments in SWMP activities during the permit term as part of its MEP determination review.

Comment #14 Neither the permits nor the evaluation reports address the Endangered Species Act. [17]

Response NPDES permit programs implemented by states, as per delegation agreements with EPA, are not required to consult with the federal fisheries services prior to the issuance of NPDES permits. However, the objective of the MS4 permits is to reduce the discharge of stormwater pollutants to surface waters to the maximum extent practicable, thereby improving conditions for a range of beneficial uses in surface waterbodies including fish habitat.

Comment #15 The damage done by stormwater flow acceleration and volume increases caused by the MS4 should be regulated by the proposed permits. [17]

Response DEQ recognizes the connection between flow and water quality, but water quantity and flow are not directly regulated by DEQ through NPDES permits. The Oregon Water Resources Department is the agency responsible for water quantity and flow management. DEQ does promote the use of storm water best management practices that have both water quality and quantity benefits. For instance, many "post-construction" BMPs are designed to facilitate on-site infiltration of storm water. Such practices result in the treatment of contaminants and contribute to progress toward natural stream flow conditions.

Comment #16 Consider the 4/1/05 Inside EPA article on EPA's forthcoming guidance on limits in general permits and the California State University MS4 cost study as addenda to comments submitted by other environmental programs. [20]

Response The Department reviewed these submittals. The Department's understanding is that forthcoming EPA guidance is primarily focused on options for

addressing TMDL wasteload allocations in general industrial and construction stormwater permits. EPA guidance on addressing TMDL allocations in MS4 permits was provided in a November 2002 memo from the Office of Water. However, DEQ will review and consider the new guidance when it's available.

Regarding the cost study, as mentioned in the response to Comment #13, the annual reporting requirements of the proposed MS4 permits do require information on program expenditures, and this information will be reviewed by the Department in the context of evaluating compliance with the MEP standard.

Comment #17 No consistent monitoring of voluntary compliance in the Tualatin Watershed. [17]

Response Compliance and enforcement activities are not required for voluntary programs outlined in the approved SWMP. However, Clean Water Services' permit does require the implementation of some enforceable regulations for illicit discharges, construction erosion, and post-construction programs. The Department will review the adequacy of such programs on a periodic basis.

Comment #18 The Clean Water Services permit has no enforceable performance standards. [17]

Response Clean Water Services has committed to a set of specified programs and actions in their approved SWMP. Failure to adequately implement these activities is considered a violation of the permit and is subject to potential enforcement action by the Department. In addition, under the TMDL condition of this permit, Clean Water Services must propose performance measures and benchmarks for TMDL pollutants. Although failure to achieve the approved benchmarks is not a violation of the permit, if benchmarks are not achieved, the permittee must follow an adaptive management process to make improvements. Failure to follow the adaptive management process and make appropriate SWMP changes is considered an enforceable permit violation.

Comment #19 The Clean Water Services SWMP does not achieve MEP, as it merely continues existing programs and BMPs with no improvements. Specific shortcomings include inferior stormwater design standards (based on comparative study) and inadequate maintenance of private stormwater facilities. [17]

Response The continuance of programs deemed effective is expected and justified. To

the extent that the effectiveness of programs has plateaued or is decreasing, the Department would expect the permittee to employ adaptive management strategies to make improvements to the maximum extent practicable. In May 2006 Clean Water Services, as well as the other Portland metro-area MS4 permittees, are required to submit an interim evaluation report that includes a comprehensive analysis of their SWMP activities relative to the MEP standard. This report, along with annual report submittals, will provide the Department with an opportunity to thoroughly verify compliance with the MEP standard.

With regard to the adequacy of certain best management practices (BMP), the Department must caution that a direct comparison between Phase I MS4s has limitations. First, an assessment of MEP is conducted for the entire SWMP, rather than for each BMP in isolation from the rest. A permittee may have a sound basis for emphasizing one set of stormwater management or reduction activities over another. Second, in the case of Clean Water Services' design standards for stormwater quality facilities, the limited porosity of soils in Washington County must be considered. Much of the County has very tight clay soils that are not conducive for stormwater infiltration, whereas in other parts of the metro area (east Multnomah County) the soils are quite conducive for infiltration. In such instances, a different set of stormwater management practices are often appropriate.

Antibacksliding and Antidegradation

Comment #20 The permits do not result in backsliding; they actually represent a step forward in reducing stormwater pollution [10]

Response So noted.

Comment #21 Permits fail to prevent further degradation by allowing new urban uses and expansion of MS4 system. DEQ should do a formal anti-degradation analysis. Where is the quantifiable evaluation from DEQ that supports claim that there will be a net reduction in pollutants? One obvious example is the expansion of the urban growth boundary to include Damascus. This expansion should trigger anti-degradation requirements [7, 17, 18, 24]

Response

Four commenters assert that the proposed permits fail to comply with Oregon's antidegradation policy. OAR 340-041-0004. Specifically, the commenters raise concerns that new development within the co-permittees' service areas and expansions of the service areas will result in an increase in pollutant loads. When the Department renewed these permits in 2004, it considered similar comments and concluded that the discharges under the proposed permits would not be expected to exceed the discharges allowed by the permits in 1995. On reconsideration of the 2004 permit, the Department has analyzed this issue in more detail and requested additional information from the co-permittees.

On reconsideration, the Department determines:

1. The antidegradation policy is a part of the state's water quality standards. 40 CFR § 131.12. Under Clean Water Act Section 402(p), MS4 permits (unlike other types of NPDES permits) need not require strict compliance with water quality standards so long as discharges are controlled to the maximum extent practicable and comply with such other provisions as EPA determines to be appropriate. *Defenders of Wildlife v. Browner*, 191 F.3d 1159 (9th Cir., 1999). With some possible exceptions not applicable here, EPA, has determined that strict compliance with water quality standards is not required and the compliance with best management practices established through a stormwater management planning process is appropriate.
2. Oregon also has the authority to impose more rigorous conditions required under state law. *See, e.g., Building Industry Association v. State Water Resources Control Board*, 124 Cal. App. 4th 866, 22 Cal. Rptr. 3d 128 (Cal. App. 2004). As discussed above [reference to analysis under of comments 8, 10, or 16], the applicable provisions under Oregon law are found in ORS 468B.020. This statute directs DEQ to require all available and reasonable methods necessary to comply with water quality standards. In the context of these permits, however, the Department has determined that the federal MEP requirement is at least as stringent as the state requirement.
3. As discussed above, the Department has determined that the BMPs and other control measures imposed by the MS4 permits will control pollutants to the maximum extent practicable at this time. Therefore, no further controls are needed to address antidegradation even if DEQ were to determine that the permits were not consistent with the antidegradation policy.
4. The proposed permits are consistent with state antidegradation policy,

however. The relevant provisions of the antidegradation policy are triggered only when a proposed permit renewal would authorize total waste loads that are greater than those allowed under the existing permit. It is difficult to apply antidegradation policy to MS4 permits because loading is highly variable and outfalls are numerous. It is possible, though, to evaluate the discharge loads associated with the MS4, and such an approach is consistent with the antidegradation policy

5. DEQ has estimated that the more effective controls on new development, redevelopment and existing development, implemented since the issuance of the 1995 permits, have resulted in loading reductions that are more than sufficient to offset any increases associated with the relatively small expansions in service areas. DEQ's determination is supported by the expert opinions of consultants recently retained by the co-permittees to review and evaluate the data on loading. See attached report entitled Qualitative Assessment of the Change in Pollutant Loads Associated with MS4 Discharges in the Portland Metropolitan Area.

With regard to the Department's position on how stormwater from Damascus will be regulated, see the response to Comment #47 in this report.

TMDLs and 303(d) Requirements

Comment #22	The permits fail to comply with TMDLs. The MEP definition should be changed to include assurance that TMDL wasteload allocations are implemented and water quality standards are met. [7, 13, 17, 28]
Response	As discussed in responses to comments above, the compliance standard for the MS4 permits is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP). The Department believes that this compliance standard is supported by both federal and state law. In addition, EPA clarified its position on the relationship between the MS4 MEP standard and the establishment of TMDL wasteload allocations in a November 22, 2002. This memo stated that water quality-based effluent limits for NPDES-regulated storm water discharges may be expressed in the form of best management practices (BMPs).

The position of the Department is that TMDLs wasteload allocations are an important factor in determining MEP for a particular permittee. For this reason, the Department included in the MS4 permits requirements to revise the SWMP in response to TMDLs, and establish total pollutant load reduction benchmarks and associated performance measures for TMDL pollutants. Most TMDL wasteload allocations cannot be achieved within a single 5-year permit term. However, the Department's expectation is that reasonable progress toward the wasteload allocation be made within the context of MEP.

Comment #23 Support the benchmark approach to TMDLs, but DEQ needs to realize it will take time to achieve targets and wasteload allocations for all parameters due to the difficulty in controlling stormwater and quantifying BMP effectiveness and water quality improvements. [10]

Response So noted. Benchmarks, as defined in the MS4 permits, are pollution reduction targets that ensure reasonable progress toward the TMDL wasteload allocation.

Comment #24 Regarding the 303(d) list requirements, the language should read that the permittee must compile all pertinent information that is "reasonably attainable" by the permittee. [12]

Response The Department doesn't believe it's appropriate to give the permittees full discretion to determine what is "reasonably attainable." The current language regarding the compilation of pertinent information is adequately conveys the Department's expectations.

Comment #25 Concerns remain about the TMDL benchmarks and performance measures, as well as the 303(d) evaluation. These requirements go beyond MEP. [15]

Response The Department disagrees. As stated in the response to Comment #22, the Department believes that the TMDL wasteload allocations are an important factor in determining MEP for a particular permittee. Progress toward the wasteload allocation should be made within the context of MEP.

Comment #26 Phosphorous should be included as an NPDES 1200-Z benchmark. [17]

Response Changes to the NPDES 1200-Z general permit is beyond the scope of the

MS4 permits under consideration. Proposed revisions to the 1200-Z permit, and other stormwater general permits, will likely be made in 2005 and 2006. The public will have an opportunity to provide comments on these permits.

SWMP and BMP Requirements

Comment #27 Require permittees to fix and maintain MS4 pipes and conveyance systems. [2, 5]

Response One set of required SWMP activities in the proposed MS4 permits include maintenance activities for the municipal storm sewer systems. Although prescribing a specific set of management and maintenance requirements is not the most appropriate or effective approach to minimizing stormwater discharges from MS4s, any defects in stormwater conveyance systems should be detected as a part of the maintenance activities outlined in the permittee's SWMP. Additionally, the illicit discharge provisions of the permits require controls to limit infiltration of seepage from sanitary sewage systems into the MS4 when necessary, and the elimination of cross-connections of the MS4 and municipal sewer systems when identified.

Comment #28 There should be prescribed actions to stop street-to-stream pollution. [4]

Response The Department does not believe a prescriptive best management practice (BMP) approach is the most effective way to minimize stormwater pollution from MS4s. The best combination of BMPs employed to limit street-to-stream pollution will vary amongst permitted municipalities. For instance, catch basin filtration systems, along with street sweeping and public education may be optimal in certain areas, while education activities in concert with stormwater treatment facilities may work better in other communities. Maintaining flexibility in BMP implementation allows the permitted MS4 to tailor actions to unique local conditions and opportunities.

Comment #29 Require rainwater to be infiltrated into the ground, rather than discharged to streams. [5]

Response Implementing programs and regulations that encourage infiltration of stormwater into the ground is often a preferred stormwater management strategy. Many local post-construction regulations, required by the proposed

MS4 permits, encourage such infiltration by placing limitations on impervious surfaces or requiring a certain percentage of stormwater remain on site. However, as explained in earlier comment responses, some areas have tight clay soils that are not conducive to infiltrations. In addition, MS4s need to be cognizant of groundwater concerns in certain areas when contemplating various infiltration options (e.g., UICs).

Comment #30 Education of the citizenry is important in eliminating illegal dumping and other improper activities [6]

Response So noted. The proposed MS4 permits require that public education activities be planned and implemented.

Comment #31 Including more SWMP commitments in the proposed permits is a positive step. [7, 10]

Response So noted.

Comment #32 More aggressive enforcement of private stormwater facility maintenance (e.g., catch basins in private parking lots) should be required by the Clean Water Services permit. [13, 17]

Response As noted in previous comment responses, the Department believes maintaining flexibility in determining the appropriate mix of BMPs is critical in assuring an effective SWMP is implemented. However, if discharges from private stormwater facilities are identified as a source of MS4 pollutants, the Department would expect the permittee to address these pollutants in some manner. Further, if local regulations for such facilities were a part of an approved SWMP, enforcement of these regulations would be required. The interim evaluation submitted by MS4s in May 2006 will provide an opportunity for both the permittees and the Department to verify that the various sources of pollutants are addressed in the SWMP.

Comment #33 DEQ should incorporate into the Clean Water Services permit the recommendations of Portland Audobon Society's 2004 report on improvements to codes and ordinances to limit stormwater impacts. [13]

Response The recommendations in this Audobon Society's 2004 report could be useful to Clean Water Services in the comprehensive SWMP evaluation they are

required to complete for their May 2006 interim report. The Audobon Society report can also be used by the Department as a reference document in reviewing CWS' interim evaluation report. However, the Department believes the SWMP is the appropriate mechanism for implementing any such recommendations, rather than inserting them into the CWS permit as new prescriptive requirements.

Comment #34 The list of parameters to address for industrial programs (Schedule D.2.iii.2 in the Portland, Clackamas, and Gresham permits, and Schedule D.8.b.3.iii.2 in the Clean Water Services permit) should be deleted because it's not consistent with the parameters in DEQ's industrial general permit that the City of Portland implements for DEQ. [15]

Response The Department will modify the language in the sections of the permits referenced above to replace the list of specific pollutants to monitor from industrial facilities with the following language: ".....; *the pollutant parameters included in the Department's NPDES 1200-Z industrial general stormwater permit;*"

Comment #35 DEQ should prohibit net increases in impervious area unless mitigated elsewhere. [17]

Response The local post-construction regulations required by the MS4 permits are designed to minimize the stormwater pollution impacts from new and re-development. Placing restrictions on the amount of impervious surfaces is one option MS4s may include in their post-construction regulatory and incentive programs. However, the Department does not believe including prescriptive requirements on impervious surface area in the MS4 permits is the most effective approach to minimizing stormwater impacts. The combination of post-construction BMPs implemented by an MS4 should be tailored to each community because other BMPs, such as stormwater treatment facilities, may be more appropriate and workable than impervious surface restrictions in certain areas.

Comment #36 The MS4 permits should regulate in-water artificial structures that cause degradation through solar gain and altered hydrology, and require the structures be removed if necessary. [17]

Response The regulation of in-water structures is outside the scope of the Department's regulatory authority under the NPDES MS4 regulations. Discharges of dredged or filled materials from the construction of such structures could be

regulated under Section 404 of the Clean Water Act. In such instances a permit from the Corps of Engineers could be required, along with a DEQ water quality certification under Section 401 of the Clean Water Act.

Comment #37 Stormwater infiltration should be required as a temperature mitigation measure. [17]

Response If stormwater discharged by an MS4 receives a wasteload allocation by the Department's TMDL Program because of its contribution to a temperature impairment in a waterbody, the MS4 permittee would be required to revise its SWMP to address the temperature problem and propose load reduction benchmarks. However, thus far, the Department's TMDL Program has not designated stormwater as a significant contributor to temperature impairment in any part of the state, including the Tualatin basin.

Comment #38 Flexibility in program implementation is important and this is reflected in the proposed permit. [21]

Response So noted.

Comment #39 What precludes anyone from piping contaminated discharges and run-off drainages to surface water? [28]

Response All permitted MS4s are required to administer and enforce illicit discharge regulations. If polluted non-stormwater discharges are piped to surface waters via the municipal storm sewer system, the MS4 permittee would be required to take actions to eliminate this illicit source of pollution. The MS4s have on-going field screening programs to identify such potential sources. If the pollution is from stormwater run-off, the approved SWMP should address these sources through a variety of regulatory and non-regulatory means.

Comment #40 Is the "adaptive management" section of the permit a commitment to improved water quality or does it just result in an alteration in BMPs with no connection to water quality? [28]

Response The adaptive management condition of the permit specifically states that the permittees "*must use the monitoring data and analyses required under this permit as well as applicable information from other sources*" in the adaptive management process. This monitoring and analysis includes in-stream and outfall monitoring data, as well as BMP effectiveness and program

monitoring data to the extent that is appropriate. Further, the evaluation of progress toward TMDL load reduction benchmarks must also be used as a basis for adaptive management. Thus, there is a direct connection between water quality and the adaptive management requirements of the permits.

MS4 Delineations and Permittee Designations

Comment #41 Portland and Clean Water Services are improperly using some natural streams as links in stormwater conveyance system, and maps are inconsistent between different jurisdictions (e.g., streams marked as ditches). In addition, there are some problems with overlapping jurisdictional responsibilities. [3]

Response As part of the interim evaluation report due in May 2006, the City of Portland and Clean Water Services will be required to submit updated MS4 maps to the Department. The Department should be able to identify any inconsistencies in maps that delineate MS4 boundaries. The Department will evaluate these updated maps as part of its on-going assessment of permit compliance. With regard to streams being designated as MS4 conveyance systems, the Department would not allow surface waterbodies, currently designated as waters of the state, to be re-designated as MS4 conveyance systems. However, many urban streams do convey stormwater because they are the receiving waters for MS4 discharges. Further, it is not within the scope of the MS4 permits to require that historically “undergrounded” segments of streams (e.g., diverted into culverts to flow under roads) be restored to their natural, pre-development state.

Comment #42 The City of Gladstone should be designated as a Phase 2 MS4, rather than a Phase 1 MS4, due to the City’s population and limited resources. [19]

Response The City of Gladstone, as well as other Clackamas County cities, was designated as Phase 1 MS4s in 1993 because of its location within the greater Portland urbanized area. The federal regulations [40 CFR 122.26(b)] state that one criterion for designation as a Phase 1 MS4 is that the incorporated jurisdiction has a population of over 100,000. However, another criterion in these regulations is a determination by the permitting authority that there is an interrelationship between the discharges of the designated storm sewer and

the discharges of the larger surrounding MS4s. This interrelationship was the basis for the original designation, and, given the increasing urbanization of Clackamas County, this finding continues to be accurate today. The Department does encourage smaller co-permittees to work with the larger jurisdictions to identify efficiencies in implementing the SWMPs, including establishing a regional monitoring network.

Comment #43 Cities should be co-permittees because Clean Water Services has no authority over land use and transportation – both critical issues to address in MS4 permit programs. Current situation also does not allow for public involvement on stormwater issues at city level. [8, 13, 17]

Response EPA’s regulations implementing the MS4 program specify that the permit must be issued to the entity that owns or operates the storm sewer system. 40 CFR § 122.26(a). The regulations further provided that the system operator must have adequate legal authority to operate the system. 40 CFR § 122.26(d). The specific requirements for demonstrating adequate legal authority are set out in 40 CFR § 122.26(d)(2)(i) and include six elements, four of which are relevant here:

- (A) Control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity;
- (B) Prohibit through ordinance, order or similar means, illicit discharges to the municipal separate storm sewer.
- (C) Control through ordinance, order or similar means the discharge to a municipal separate storm sewer of spills, dumping or disposal of materials other than storm water.
- (F) Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer.

Clean Water Services (formerly known as the Unified Sewerage Agency of Washington County) is a municipal corporation and county service district organized under state statutes for the purposes of planning and managing sanitary sewage and stormwater within parts of Washington County. CWS provided DEQ with copies of its organizational documents, the ordinances prescribing the rules and regulations for operation of the stormwater system, intergovernmental agreements between CWS and each of the cities served by the district, and the intergovernmental agreement between CWS and Washington County. DEQ, through its legal counsel, has reviewed these

documents and determined that CWS by virtue of its ordinances and agreements with the cities and Washington County satisfies the requirements set out in EPA's regulations.

With regard to public involvement opportunities, the proposed permit requires CWS to ensure adequate public involvement occurs for all SWMP components, even those implemented by cities. The response to Comment #44 (below) elaborates further.

Comment #44 If cities in Washington County are not designated as co-permittees, the intergovernmental agreement (IGA) between cities and CWS should require cities to provide citizen input opportunities on stormwater matters. [8]

Response Given that Clean Water Services is the permitted MS4, the IGA between the cities in Washington County and Clean Water Services is outside the scope of the Department's permitting authority. However, Clean Water Services is responsible for ensuring adequate public involvement, as per the requirements of the proposed Watershed Permit, on the development and implementation of their stormwater management plan (SWMP). In some instances, that could entail coordinating with the cities.

Comment #45 DEQ should further define Metro's role as a designated management agency (DMA) with respect to stormwater. [17]

Response The Portland Area Metropolitan Service District (Metro) does not own or operate the municipal storm sewer systems covered by the proposed permits and thus it does not discharge municipal stormwater. At this time, it does not control the operation of the MS4s in the metro-area by direct regulation or intergovernmental agreements. Consequently Metro is not required nor is it eligible to be the MS4 permittee or a co-permittee. 40 CFR 122.26.

Metro does have a significant role in transportation and land use planning in the metro-area and is viewed by DEQ as important participant in the development of stormwater management plans. The provisions in the permits governing planning and public participation appropriately address this role.

Comment #46 Eliminate Clackamas County co-permittee approach, and issue individual permits to all co-permittees. This approach does not work for certain entities, such as special districts that have no land use authority. [25]

Response One of the primary reasons for establishing a co-permittee approach in

Clackamas was to allow the smaller cities, the County, and special districts to optimize efficiencies by dividing workload and implementing some SWMP elements (e.g., monitoring) on a region-wide basis. The Department believes such potential efficiencies still exist for many of the co-permittees, and proposes to maintain the co-permittee approach. However, if the consensus among the co-permittees is to obtain separate individual permits, the Department will reconsider this approach.

Comment #47 Damascus should be included in the Clackamas permit as a co-permittee. [28]

Response Damascus cannot be included in the Clackamas permit at this time because neither the City nor the other Clackamas co-permittees have requested such an inclusion, and the necessary agreements for the City to be a co-permittee are not yet in place. Damascus will need to decide whether to apply for a separate MS4 permit, or it will need to reach agreements with Clackamas County co-permittees and then request a modification to the Clackamas MS4 permit.

Monitoring Requirements

Comment #48 Ensure that permits require sufficient monitoring. [4]

Response The Department believes sufficient monitoring requirements are included in the proposed permits. The monitoring conditions of these permits require a broad range of objectives be satisfied in updated or revised monitoring plans. Subsequent reports submitted to the Department will include monitoring results and analyses of how the monitoring objectives were met.

Comment #49 Permits lack robust monitoring requirements to provide accurate water quality impact data. [7]

Response The Department disagrees. The permits require both in-stream and outfall monitoring and a demonstration that permittee monitoring programs achieve a comprehensive set of objectives, including the characterization of MS4 runoff discharges and an assessment of the chemical, biological and physical effects of MS4 runoff on receiving waters. These assessments are specifically designed to ascertain water quality impacts of stormwater from MS4s, and robust data sets and information will be necessary to adequately conduct the

required analyses.

Comment #50 Portland monitoring commitments only include the collection of 2 stormwater samples per year at 3 locations. This is insufficient to provide representative data – smaller MS4s are collecting more samples. Why? [7]

Response The current outfall monitoring commitments described in the City of Portland’s proposed permit are not the only monitoring activities performed by the City. Other monitoring activities, such as in-stream and BMP effectiveness monitoring, are conducted in support of the stormwater management program. Moreover, the City, as well as other metro-area MS4s, must update their monitoring plans to comply with the new monitoring conditions in the permits by May 2006. These new conditions include designing a program that supports the monitoring objectives referenced in the response to Comment #49 (e.g., characterize MS4 discharges). Therefore, the monitoring commitments described in Schedule B of the proposed permits may change after DEQ reviews and evaluates the May 2006 submittal.

Comment #51 What is basis for requiring monitoring of only copper, lead, and zinc and not including mercury and other toxics? [7]

Response As mentioned above, the Department will be reviewing updated monitoring plans in May 2006, and will evaluate the adequacy of the proposed parameters, types of monitoring, and frequencies described in the plans. Further, after the TMDL is approved for the Willamette River, the City of Portland will likely need to propose a pollutant load reduction benchmark, and associated performance measures, for mercury. Benchmarks will also need to be established for other toxics for which stormwater wasteload allocations are designated by a TMDL (current or future). To evaluate progress toward these benchmarks, monitoring will obviously be necessary.

Regarding the current inclusion of copper, lead, and zinc in monitoring plans, these three heavy metals are the ones most commonly found in stormwater runoff. Previous stormwater sampling studies, including the Nationwide Urban Runoff Program (EPA, December 1983) and the Analysis of Oregon Urban Runoff Water Quality Monitoring Data Collected from 1990-1996 (Woodward-Clyde, June 1997), validated this finding. These three metals are often considered “indicator” pollutants because if they’re found in stormwater discharges and effectively treated, other toxic metals are also likely to be removed as result of this treatment.

Comment #52 There's no reason to include the "alternative sources of data" allowance in the monitoring section. DEQ doesn't have the resources to adequately evaluate these alternatives, and computer models (often used as an alternative to monitoring) can be easily manipulated. [7]

Response The proposed permits explicitly state that in-stream and outfall monitoring must be conducted. The permittees may propose alternative sources of data for *some* of the monitoring objectives outlined in the permits, but they must provide the rationale for why such alternatives are adequate substitutes for monitoring data. One of the most likely uses of alternative data sources is to evaluate the effectiveness of BMPs (a requirement of the permit). If field studies of the effectiveness of particular BMPs have been conducted in other locations, and the results show consistent and definitive results, the Department would likely allow the use of these studies as a substitute for field testing.

Comment #53 Has 8 years of monitoring by Clean Water Services informed adaptive management? Has DEQ evaluated this data to assess stormwater management performance?

Response Clean Water Services has focused much of their past monitoring efforts on phosphorous. Much of the monitoring data for the tributaries to the Tualatin River have shown a consistent trend of decreasing phosphorous levels since the 1980's. The adaptive management response from Clean Water Services has been to continue and enhance the SWMP activities that have helped to produce these improving water quality conditions in the tributaries. DEQ also evaluated these data during the development of the TMDL for the Tualatin, and this evaluation resulted in wasteload allocations for several stormwater permits. The proposed permit requires Clean Water Services to update its monitoring plans and make a connection between its monitoring activities and several objectives listed in the permit. Thus, CWS and other MS4s will need to conduct a more rigorous analysis of the data and submit these findings to DEQ in subsequent reports.

Comment #54 Monitoring should address mass-loads and stormwater volumes. [17]

Response The NPDES municipal storm sewer system permits are designed to address stormwater quality. The regulation of stormwater quantity (i.e., volumes discharged) is outside the scope of the MS4 permits. Subject to the MEP standard, mass-load monitoring may be necessary for TMDL pollutants if the wasteload allocations are expressed as mass-load reductions. If this were the case, the pollutant load reduction benchmarks required by the proposed

permits should use the same metrics as the wasteload allocation, and the associated monitoring data would be measured and recorded similarly.

Comment #55 Pesticides should be included in the monitoring program. [17]

Response If stormwater receives a TMDL wasteload allocation for certain pesticides, the MS4 discharging to the receiving water would be required to propose load reduction benchmarks and monitor accordingly. Alternatively, if pesticides were on the 303(d) list, the MS4 may, depending on the results of an analysis, need to address the pesticides in their SWMP and monitoring program. Absent data or information on a notable presence of pesticides in MS4 runoff, the Department does not intend to require pesticide monitoring in the permit.

Comment #56 Where the 303(d) list has identified insufficient data or no data for certain pollutants in the Tualatin Watershed, Clean Water Services should be required to monitor these pollutants to resolve data gaps. [17]

Response The condition of the proposed MS4 permits that addresses 303(d) pollutants applies to receiving waters without established TMDL wasteload allocations. It requires that permittees review the 2002 303(d) list and determine whether there is a “reasonable likelihood” for stormwater from the MS4 to cause or contribute to water quality degradation of receiving waters. If there is such a reasonable likelihood, the information generated by this evaluation will be used by the MS4 in adaptively managing their SWMP to address these pollutants.

Comment #57 To collect statistically sufficient data to address DEQ monitoring objectives, a huge number of samples would be required and the resource expenditure would be prohibitive for a small city like Gladstone. [19]

Response The Department understands the limited resources available to many of the Clackamas co-permittees, and has encouraged these co-permittees to work together to establish a regional monitoring program to ensure that no single entity would need to develop a comprehensive monitoring program within its jurisdictional boundaries. The Department will continue to work with co-permittees to develop an efficient and coordinated approach to monitoring.

Comment #58 If regional Clackamas monitoring network were established, the County could take the lead and the cities could contribute. However, who is liable if monitoring doesn't occur? [19]

Response The individual co-permittees are still responsible for fulfilling all permit obligations. However, the Department encourages the co-permittees to develop an intergovernmental agreement (IGA) that clearly describes the roles and responsibilities of the County and the individual cities.

Comment #59 Assumption is that the reference to QA/QC protocols in B.1.c of the Portland permit are intended for QA/QC purposes only, and not an independent requirement for monitoring additional parameters. Is this correct? [21]

Response Yes, that assumption is correct.

Comment #60 Tables B-1 and B-2 of Clackamas permit indicate that CCSD #1 and SWMACC are required to collect data on various field parameters during storm events. However, County consultants recently recommended to discontinue monitoring for such field parameters, so request is made for DEQ to drop from them from tables [26]

Response The Department believes the appropriate time to propose such changes to monitoring program commitments is during the development of the Interim Evaluation Report, which must be submitted to the Department by May 2006. The Interim Evaluation Report condition of the permit also requires that the permittee provide the rationale for such changes.

Land Use Requirements

Comment #61 Permits should include land use practice restrictions. [4]

Response The local construction and post-construction stormwater regulatory programs, required by the proposed permits, contain certain land use practice restrictions for new and re-developments (e.g., stormwater detention facilities, bioswales, etc.). However, the Department does not believe prescribing specific land use restrictions in the MS4 permits is appropriate or the most effective way to minimize stormwater pollution at a local level.

Comment #62 DEQ is evading its responsibilities to comply directly with statewide land use

planning goals. If DEQ can rely on a LUCS for compliance with land use goals, it should have received the LUCS as part of the original 1994-95 MS4 permitting process. Did this occur? The “renewal” permit allowance would only apply if DEQ had demonstrated compliance with goals and compatibility with local comprehensive plans when the original permits were issued. DEQ must comply directly with the statewide planning goals because the NPDES permits that fall under the “Class B” category are those that don’t affect land use. MS4 permits have a major land use component [11, 18]

Response DEQ's obligations with respect to statewide land use planning requirements are established by ORS 197.180 and the state agency coordination (SAC) rules adopted by the Environmental Quality Commission and Land Conservation and Development Commission. Under these rules, NPDES permitting decisions comply with the goals and are compatible with local comprehensive plans and land use regulations if the local government has an acknowledged plan and regulations and it provides DEQ with a land use compatibility statement (LUCS) confirming consistency. Each of the affected local governments have acknowledged plans and regulations and have supplied DEQ with LUCSs. DEQ has relied on these LUCSs, and the existence or content of prior LUCs is no longer relevant.

Comment #63 DEQ says these are “Class B” permits for purposes of addressing state land use requirements, but Class B permits are for industrial permits. MS4 permits are Class A permits that DEQ to conduct goal findings. [11]

Response DEQ disagrees. OAR 660-031-0012(2) designates all NPDES permits as Class B. The designation is not limited to industrial permits.

Comment #64 DEQ has never complied with the new and amended program requirements in OAR 660-30-0075 and 340-018-0070. A records request to the Department of Land Conservation and Development (DLCD) yielded no notice from DEQ regarding the MS4 permit program. Does DEQ have this notice? If so, please provide.[11]

Response The NPDES permit program is not a new program for purposes of OAR 660-030-0075 or OAR 340-018-0070.

Comment #65 The increased amount of stormwater discharges from new development represent an intensification of permitted activity that requires findings of goal compliance and plan compatibility.[18]

Response The Department disagrees that the permits will result in a net increase in stormwater pollution discharges. As discussed in the response to the antidegradation comment (Comment #21), the Department expects the permits to result in a net decrease in pollutants over the permit term because of a combination of new development regulations and BMPs for existing developed areas. Refer to the attached antidegradation analysis for more details on the basis of this assumption.

SWMP Revision and Approval Process

Comment #66 Object to assumption that SWMP changes during permit term won't trigger modifications unless DEQ decides it's necessary. The SWMP is the core of the permit and any substantive changes should trigger a permit modification. [7]

Response The Department will initiate a permit modification if the magnitude of any proposed SWMP revision(s) substantially changes the nature or scope of the SWMP. Proposed revisions that meet this criterion could occur as a result of the evaluations and updates required by the permit for the interim evaluation reports submitted to the Department in May 2006. However, the Department believes that initiating permit modifications for minor, on-going adaptive management changes to the SWMP are not necessary and would produce an administratively cumbersome and inefficient permit implementation process. It should be noted that the permits do require the permittees to ensure public involvement occurs for even these minor SWMP revisions.

Comment #67 Why would DEQ bind itself to 30 and 90 day review times for SWMP revisions? Does DEQ have the resources to adequately review changes in 30 days? If not, is this condition intended to allow the MS4s to do whatever they want? [7, 28]

Response The Department believes that a 30-day review time for proposed SWMP revisions, and a 90-day review time for the interim evaluation report, provides adequate time for staff review of the proposed SWMP changes. The Department has placed such time frames in the permit to ensure that the adaptive management process is not unnecessarily delayed. Assuming many

of the proposed revisions will result in net environmental benefits, delaying their implementation indefinitely is not appropriate.

Comment #68 Who pays for the additional resources to do reviews and compliance oversight? [28]

Response The DEQ Water Quality Permitting Program budget is funded largely through permit fees, with a smaller portion of overall funding provided by state general funds and EPA grant money.

Public Involvement Requirements

Comment #69 The public notification and involvement requirements are inadequate and clumsy. DEQ, rather than permittee, should be responsible for public notice regarding SWMP changes. [7]

Response The Department will modify the public involvement condition of the permits (Schedule D.2.g.iii of the Portland, Clackamas, and Gresham permits, and Schedule D.8.b.7.c in the Clean Water Services permit) to state that the Department will maintain the interested parties list and provide these parties notice of SWMP revisions.

Originally, the requirement for the permittee to maintain an interested parties list, and to provide persons on that list with notice about SWMP, was included to make the process more efficient by facilitating direct contact between the permittees and the interested parties. However, the Department also understands the advantages of having a centralized source for lists and notices.

Comment #70 The new public involvement requirements are a welcome enhancement to the permits. [10, 21]

Response So noted.

Comment #71 The revised public involvement requirements (as proposed) go beyond the

Clean Water Act requirements and are not necessary. The requirements under the current permit are more than adequate [12, 15, 26]

Response The Department disagrees. The proposed revisions to the public involvement requirements in the permits are fully within the scope and spirit of the Clean Water Act. The revisions will further support the objective of ensuring adequate public notice and involvement opportunities regarding changes to stormwater management plans.

Comment #72 Why avoid public review through permit modification if MS4 decides to experiment with BMP substitutions that have potential water quality implications [28]

Response First, the proposed permits require that the permittees provide the rationale for making BMP substitutions to the Department. The primary basis for the Department approving such substitutions will be the water quality improvements that will result from the change. Second, as stated previously, if the magnitude of the proposed substitution(s) changes the nature and scope of the SWMP, the Department will initiate a permit modification. If the change doesn't meet this criterion, the permittee will still be required to conduct its own public involvement activities to ensure a broader review of the proposal occurs.

General Conditions – Schedule F

Comment #73 Suggest changing Schedule F, General Conditions, to be consistent with Clean Water Act Standard Conditions in 40 CFR 122.41. Recommended changes are attached to comments. [27]

Response The Department agrees, and will make changes to the General Conditions that are consistent with EPA's most current Clean Water Act Standard Conditions.

Corrections to Basic Permit Information Errors

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Comment #74 Fanno Creek reference in Portland permit should be changed to show TMDL wasteload allocations have established, and Tryon Creek should be added as a water quality limited stream. [15]

Response So noted. This correction will be made.

Comment #75 Schedule A.1.a clarifications to Gresham permit's SWMP references: add the date the Gresham SWMP was updated (December 2001). This does not apply to Fairview, so separate the two. [21]

Response So noted. This correction will be made.

Comment #76 Table B-1 footnotes in Gresham should be edited to reflect intergovernmental agreements currently in place for monitoring. [21]

Response So noted. This correction will be made.

Comment #77 Table B-2 lists parameters to be monitored for the Columbia Slough. Portland conducts monitoring for Gresham through IGA, and therefore, parameters should be identical in both permits. However, the two permits show different parameters. [21]

Response So noted. This correction will be made.

Comment #78 Clackamas County permit receiving stream information omission on page 1: Please add Carli Creek, Deep Creek, and Richardson Creek to list. [26]

Response So noted. This correction will be made.

Comment #79 For "Kellog Creek at Highway 99" monitoring in Table B-1 of the Clackamas permit, the City of Milwaukie should replace Clackamas County as the responsible monitoring agency [26]

Response So noted. This correction will be made.

Comment #80 Is the receiving stream information in the Clackamas permit complete? [28]

Response This information is not complete. Additions to the receiving stream

information will be made as per the Comment #78.

NOTE: List of commenters is on following page

Summary of Comments/Response to Comments Received for MS4 Permit Modifications

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List of Commenters

Ref #	Last Name	First Name	Organization	Address	City	State/Zip
1	Aney	Warren	Citizen	9403 SW 74 th Avenue	Tigard	OR 97223
2	Begley	Jon	Citizen	12120 SW Imperial Avenue	Portland	OR 97224-2529
3	Callison	Liz	Citizen	2748 SW Old Orchard Road	Portland	OR 97201
4	Carver	Lynn	Citizen & member of Tualatin Riverkeepers	Lynn.m.carver@office.xerox.com		
5	Clark	Ann	Citizen	17082 SW Tookbank Court	Durham	OR 97224
6	Durtschi	Kay	Citizen	kaydurtschi@yahoo.com		
7	Foster	Brent	Attorney representing: Willamette Riverkeeper and Columbia Riverkeeper	2107 Rattler Ridge	Mosier	OR 97040
8	Frewing	John	Citizen	7110 SW Lola Lane	Tigard	OR 97223
9	Fuquay	Bob	Tualatin Riverkeepers	gfuquay@gte.net		
10	Futornick Strecker	Kathy Eric	City of Portland Stormwater Advisory Committee	14800 NE Blue Bird Hill Road 838 SW 5 th Avenue, Suite 50	Dayton Portland	OR 97114 OR 97204
11	Kemper	Barbara	Friends of Clackamas River	17673 SE 130 th Avenue	Clackamas	OR 97015
12	Koshuta	Cheryl	Port of Portland	121 NW Everett St. Box 3529	Portland	OR 97208
13	Labbe	Jim	Audobon Society of Portland	5151 NW Cornell Road	Portland	OR 97210
14	Leistra	Ronald	Citizen	9815 SW Kimberly Drive	Tigard	OR 97224
15	Marriott	Dean	City of Portland	1120 SW Fifth Avenue, Room 1000	Portland	OR 97204-1912
16	Marsh	Earlean	Friends of Barton Park and the Scenic Clackamas River	PO Box 1201	Boring	OR 97009-1201
17	Marshall Wegener	Sue Brian	Tualatin Riverkeepers	16570 SW Roy Rogers Road	Sherwood	OR 97140
18	Nicita	James	Citizen	One Jefferson Parkway, #289	Lake Oswego	OR 97035
19	Partch	Ron	City of Gladstone	525 Portland Avenue	Gladstone	OR 97027
20	Riskedahl	Mark	Northwest Environmental Defense Center	10015 SW Terwilliger Blvd.	Portland	OR 97219
21	Rouse	Dave	City of Gresham	1333 NW Eastman Parkway	Gresham	OR 97030-3813
22	Russell	Julie	Citizen	12662 SW Terraview Drive	Bull Mountain	OR 97224
23	Schifsky	Greg	Citizen	4131 SW Lee Street	Portland	OR 97221
24	Shibley	Gilbert	Clackamas River Basin Council	PO Box 1869	Clackamas	OR 97015

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Ref #	Last Name	First Name	Organization	Address	City	State/Zip
25	Squires	Kent	Clackamas County Water and Environment Services	9101 SE Sunnybrook Blvd., #441	Clackamas	OR 97015
26	Squires	Kent	Oak Lodge Sanitary District	14611 SE River Road	Milwaukie	OR 97267-1198
27	Vakoc	Misha	U.S. Environmental Protection Agency, Region 10	1200 Sixth Avenue	Seattle	WA 98101
28	Witbeck	Carol	Citizen	15031 SE Royer Road	Clackamas	OR 97015
29	Witbeck	Carol	Friends of the Clackamas River	PO Box 1022	Clackamas	OR 97015

**Qualitative Assessment of the Change in Pollutant Loads Associated
with MS4 Discharges in the Portland Metropolitan Area**

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July 2005

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INTRODUCTION

The purpose of this report is to compare the pollutant loads associated with discharges authorized by the 1995 municipal separate storm sewer system (MS4) permits within the Portland Metropolitan Area to the pollutant loads associated with discharges authorized by the 2004 MS4 permits. The discharges authorized in the 1995 MS4 permits were “all existing and new discharges of stormwater from the municipal separate storm sewer” within the permit area (as defined in the 1995 MS4 permits). These permits authorized discharges from full development within the permit area with the controls that existed at that time. The discharges authorized in the 2004 MS4 permits were “all existing and new discharges of stormwater from the municipal separate storm sewer” within the permit area (as defined in the 2004 MS4 permits) assuming full development with the controls that existed in 2004.

The first round of MS4 permits within the Portland Metropolitan Area were issued by the Oregon Department of Environmental Quality (DEQ) on September 7, 1995 and expired on August 31, 2000. These MS4 permits were issued to four sets of co-permittees¹:

- (1) the City of Portland, Multnomah County, and Port of Portland;
- (2) the City of Gresham, City of Fairview, and Multnomah County;
- (3) Clackamas County, storm sewer service districts, and the incorporated cities within the county;
and
- (4) Clean Water Services.

The two-part applications for the 1995 permits were submitted by the MS4 co-permittees in 1991 (Part 1) and in 1993 (Part 2).

The DEQ issued four renewal MS4 permits to the co-permittees in 2004 in response to applications which were received by DEQ in 2000 from each of the permittees. Between 2000 and issuance of the renewal permits in 2004, the co-permittees continued to operate under an administrative extension of the 1995 permit.

On April 29, 2004, a petition for reconsideration of the renewal permits was filed by the Northwest Environmental Defense Center and other organizations and individuals. On May 17, 2004, the Department Director issued an order granting reconsideration of each of these permits. DEQ published proposed modifications to the four renewal MS4 permits based on these reconsiderations for public review and comment on March 7, 2005.

This report is organized into four sections. Section 2 discusses the 1995 permitted sources and permit areas, and the load reductions achieved through stormwater management program implementation pursuant to the 1995 MS4 permits. Section 2 then presents two case studies on improvements to receiving water quality in response to the implementation of stormwater controls. The loads associated with the 2004 authorized discharges are qualitatively compared to the loads associated with the 1995 authorized discharges in Section 3. A summary of findings is presented in Section 4.

¹ The 1995 permits included the Oregon Department of Transportation and other agencies that are not included in the 2004 permits.

***1995 MS4 PERMITS – permitted sources, permit areas, AND MS4 PROGRAM
Implementation***

1995 Permitted Sources and Permit Areas

The 1995 MS4 permits (as well as the renewal permits) identified the sources covered by the permit on the cover page. The permitted sources and 1995 permit areas are summarized below.

- The City of Portland, Multnomah County, and Port of Portland 1995 permitted sources included: “all existing and new discharges of stormwater from the MS4 within the City of Portland Urban Services Boundary.” The permit area was approximately 60,000 acres, of which approximately 12,600 acres were served by sumps, for a total permit area of approximately 47,400 acres.
- The City of Gresham, City of Fairview, and Multnomah County 1995 permitted sources included: “all existing and new discharges of stormwater from the municipal separate storm sewer system within the incorporated areas of the cities of Gresham and Fairview, and the small areas of unincorporated Multnomah County within the urban service boundaries of the two cities.” The total permit area was 38,310 acres, although recent analysis conducted by Gresham indicates that the land area within the permit boundary was significantly overestimated in 1995.
- The Clackamas County 1995 permitted sources included: “all existing and new discharges of stormwater from the municipal separate storm sewer system within Clackamas County urban growth boundary.” The permit area was approximately 74 square miles (47,360 acres).
- The Clean Water Services 1995 permitted sources included: “all existing and new discharges of stormwater from the MS4 within the stormwater service area district boundary of Clean Water Services and within the urban growth boundary of Washington County.” The permit area was approximately 75,000 acres.

Pollutant load estimates and a description of the methodologies used to develop the estimates were provided in each of the four Part 2 applications. These load estimates were based on the existing conditions (current land uses and areas) in 1993. This estimate of pollutant loads was imprecise because of the limitations of available prediction methods and data to support predictions at that time. The relative values, and not the absolute values, of the pollutant loads were intended to be used to assign priorities and to allocate resources for reducing pollutants in stormwater through implementation of Stormwater Management Plans pursuant to the 1995 permits; they were not intended to provide an estimate of loads associated with the discharges authorized under the 1995 permits.

Load Reduction as a Result of 1995 MS4 Permit Implementation

The 1995 MS4 permits required the MS4 co-permittees to implement a stormwater management program to reduce the contribution of pollutants in stormwater to the “maximum extent practicable” (MEP), the technology-based standard established by Congress in CWA section 402(p)(3)(B)(iii). The four MS4 Programs have each implemented a Stormwater Management Plan (SWMP) to meet the MEP requirement. Implementation of the SWMPs has resulted in reduced pollutant loads in stormwater discharges from the 1995 permit areas as compared to the pollutant loads associated with discharges originally authorized in the 1995 permits.

Although each of the four groups of co-permittees was implementing some limited stormwater-related pollutant control activities prior to issuance of the 1995 permit, none of the programs had developed or implemented a comprehensive SWMP prior to issuance of the 1995 MS4 permits.

Program elements that were in place prior to 1995 typically included the following types of practices, although implementation of these and other elements was not uniform among the permittees:

- Operation and maintenance of the storm drain system and roadways, such as catch basin cleaning and street sweeping.
- Illicit connections addressed through sanitary sewer inspection programs.
- Development controls for a few environmentally-sensitive areas that restricted certain developments and activities, and required erosion control and on-site stormwater treatment.
- Drainage master plans addressed mostly flood control, although some watershed plans had been adopted that addressed water quality (e.g., the Tualatin Watershed Plan).
- Some erosion control enforcement provisions existed.
- Some limited encouragement of stormwater BMPs at public development sites. (e.g., Portland Airport and Oregon Museum of Science and Industry parking lot swales).
- Tualatin basin stormwater treatment requirements. The Tualatin TMDL included requirements to treat runoff for phosphorous control.

The program elements included in the 1995 SWMPs reduced permitted loads in two ways: 1) through implementation of new development and redevelopment standards, and 2) through implementation of program elements that reduced loads from existing sources. These program elements included public education and involvement, operations and maintenance of both the storm drain system and roadways, industrial/commercial controls, illicit discharge elimination, construction site erosion control standards, structural retrofit controls, and water quality critical lands preservation and restoration. A summary of new or improved Best Management Practices (BMPs) implemented pursuant to each of the 1995 permits is provided in Attachment A to this report.

Requirements for incorporating structural treatment BMPs in new development and redevelopment projects have been adopted by all of the co-permittees. A wide range of structural BMPs are permitted with the qualification that the selection process for structural BMPs must consider the pollutants of concern for the development project and receiving water. Pollutants of concern are pollutants likely to be generated from a project. Permissible BMPs typically include common structural BMPs such as

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vegetated swales, dry detention ponds, wet detention ponds, and manufactured technologies, as well as less common but very effective BMPs such as treatment wetlands, infiltration or flow through planters (stormwater planter boxes), and green roofs.

While more emphasis appears to have been placed on structural treatment BMP implementation in new development and redevelopment projects in the first years following the 1995 permit issuance, more recently the programs have promoted innovative hydrologic controls through site design practices that reduce runoff volumes. Green roofs, planter boxes, and bioretention areas are examples of effective site design practices used to greatly reduce the amount of runoff generated by new development. Another example of good site design that is promoted by all of the co-permittees is the preservation of critical habitat and riparian areas through acquisition programs or the restoration of these areas through revegetation projects.

Program elements that reduced loads from existing sources have been widely implemented by the MS4 Programs since the 1995 permit issuance. These program elements include:

- street sweeping;
- increased storm sewer system (e.g., catch basins, storm drains, and ditches) and treatment BMP operation and maintenance (O&M);
- erosion control programs for construction sites, including those smaller than covered under a state-issued Construction General Permit;
- public education programs;
- litter control programs;
- industrial/commercial inspection and technical assistance programs;
- spill response programs; and
- restricting the use of certain chemicals, such as de-icing salts, and reclaiming other materials such as gravel used to provide traction.

Education programs can result in reducing the introduction of pollutants into stormwater runoff through practices such as the proper disposal of household chemicals (e.g. stenciling drains to discourage illegal dumping of oil) and the proper disposal of pet wastes. Erosion control and construction site inspection programs have a similar effect on controlling the loss of sediment from construction sites. Proper construction site stormwater management can greatly decrease the amount of sediment and other pollutants in construction site runoff. Illicit discharge programs have removed many illicit sources of pollutants from the MS4s over the past ten years of program implementation.

Street sweeping programs and increased drainage system and treatment BMP O&M activities are responsible for preventing large amounts of trash, sediment, and associated pollutants from being transported in stormwater runoff to receiving waters. O&M activities are particularly effective in reducing pollutant loads associated with sediment in MS4 discharges.

The MS4 Programs have effectively implemented additional source controls since 1995 and have consistently improved the extent, by both area and category, that they are applied; and therefore, have improved the effectiveness of these required controls. Overall, the source controls implemented since

1995 have likely prevented a significant amount of stormwater pollutants from becoming entrained in stormwater runoff or reaching receiving waters.

In addition to structural treatment controls for new development and redevelopment projects, structural treatment retrofit projects that reduce pollutant loads from development that existed in 1995 have significantly reduced the pollutant loads originally allowed under the 1995 MS4 Permits. Selected retrofit controls implemented by the programs are provided in Attachment A.

Receiving Water Trend Analysis

The new and improved stormwater controls that have been implemented, including new development and redevelopment standards and program elements that reduced loads from existing sources, have resulted in reduced pollutant loads to receiving waters. Two watershed studies are summarized below as examples.

Bronson Creek

A recent study investigated if urbanization within the Bronson Creek watershed, located within the Clean Water Services permit area, has impacted water quality over the past decade.² Bronson Creek drains a 3,195 acre watershed within Multnomah and Washington Counties. Bronson Creek originates in the west hills of Portland and is a tributary to the Tualatin River by way of Beaverton and Rock Creeks. Land uses in the headwater area are rural with minor encroachment of suburban residences. The middle sections of the creek are developed with single family residences and the lower sections have mixed use and commercial development.

As part of the Bronson Creek urbanization study, Clean Water Services has been monitoring for 39 water quality parameters at nine stations twice a month since 1994. Parameters associated with urban stormwater selected for trend analysis using data collected from 1994 to 2001 included sediment, nutrients (total and dissolved phosphorous, total nitrogen, and ammonia), and E. Coli. Total impervious area was used as the indicator of urbanization and increased from 15 to 22 percent over the eight year study period. Stormwater program implementation within the Bronson Creek watershed beginning in 1995 included increased levels of source control elements as well as the construction of a number of stormwater ponds adjacent to or upstream of the monitoring locations, many of which were "retrofits" that treated runoff from areas of existing development.

The study investigated if water quality had changed over time as the watershed urbanized and if there was a relationship between water quality and impervious area while accounting for seasonal variation. Trends were analyzed by parameter for each of the monitoring stations. Nutrients showed significant decreasing trends (i.e., a decrease in concentration was considered an improvement in water quality) at several monitoring stations, with only one increasing trend for soluble phosphorous at one station. E. Coli showed a significant decreasing trend at several stations with no significant increases. In general, water quality within Bronson Creek exhibited an improvement (decreases in the pollutant concentrations) over the eight year study period, during which development increased.

² Creech, J. (2003). Urbanization and its Relationship to Water Quality within the Bronson Creek Watershed. Project report submitted for Masters Degree in Environmental Sciences and Resource at Portland State University, provided by Clean Water Services.

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Fanno Creek

Fanno Creek begins in the hills of southwest Portland and enters the Tualatin River near the town of Tualatin. The City of Portland has jurisdiction over approximately 4,200 acres within the Fanno Creek watershed. This portion of the watershed is approximately 85 percent developed, primarily with single family residences and to a lesser degree with multi-family residences and commercial uses.

The Portland Bureau of Environmental Services (BES) has been managing surface water quality in Fanno Creek since the late 1980's, when the Tualatin River was listed as water quality limited. The DEQ established a total phosphorous Total Maximum Daily Load (TMDL) in 1988 for Fanno Creek; in 2001 the total phosphorous TMDL was revised and new TMDLs for temperature, bacteria, and dissolved oxygen were established.

Total phosphorous data was collected from 1990 to 1996 as part of a statewide study under the auspices of the Oregon Association of Clean Water Agencies (ACWA). In comparison, monitoring conducted by BES (1998-2002) has shown that efforts to control total phosphorous have resulted in a reduction in the observed event mean concentration of total phosphorous in runoff from single family residential land use, which comprises the vast majority of the Fanno Creek watershed.

In July of 2000, BES began working on a comprehensive Watershed Plan for Fanno Creek (and Tryon Creek) to improve or restore beneficial uses such as water supply, fish passage and habitat, and recreation uses. Best management practices implemented as part of the plan included stormwater public outreach and education, stormwater treatment facilities, and regularly scheduled maintenance for stormwater treatment facilities and streets. While a comprehensive study assessing water quality trends within Fanno Creek has not been conducted, available data for total phosphorous indicate that management practices have caused some improvement despite continued development within the Fanno Creek watershed.

Summary

In summary, the pollutant loads associated with discharges authorized by the 1995 MS4 permits were those in all existing and new stormwater discharges within the permit area (as defined in the 1995 MS4 permits) assuming full development with the controls that existed at that time. Since that time, new or improved controls have been implemented, including new development and redevelopment standards and program elements that reduced loads from existing sources, resulting in reduced pollutant loads. There is site-specific available data to support this conclusion, as illustrated in the two watershed studies summarized above.

2004 Permitted Sources and Permit Areas

For those permits where the permit area has not increased since 1995, loads associated with discharges authorized by the 2004 permits have certainly decreased as compared to loads associated with discharges authorized by the 1995 permits as described in Section 2 above. In areas where the permit areas have increased due to expansion of the urban growth boundaries or changes to the service boundaries, the potential for increased pollutant loads has likely been offset by the decrease in pollutant loads through stormwater program implementation. The following presents a discussion for each permittee. Note that the Oregon Department of Transportation (ODOT) was a co-permittee with each of the four permittee groups below in the 1995 permits; however, ODOT was issued its own MS4 permit in June 2000.

City of Portland, Multnomah County, Port of Portland

The City of Portland, Multnomah County, and Port of Portland 2004 permitted sources as identified on the cover page of the permit include: “all existing and new discharges of stormwater from the MS4 within the City of Portland Urban Services Boundary.” Thus, the permitted sources are identical to those in the 1995 permit, with the exception of ODOT and ODOT’s facilities which are no longer included under this permit.

The 2004 renewal permit area is approximately 49,300 acres or approximately four percent larger than the 1995 permit area. Although the Portland permit area has increased since 1995, it is very likely that when all of the program implementation actions that have occurred since the issuance of the 1995 permit are considered as a whole (see Attachment A, Table A-1), the loads associated with the 2004 permitted discharges are likely to be less than the loads associated with the discharges permitted in 1995.

City of Gresham, City of Fairview, Multnomah County

The City of Gresham, City of Fairview, Multnomah County 2004 permitted sources as identified on the cover page of the permit are identical to those in the 1995 permit (with the exception of ODOT facilities): “all existing and new discharges of storm water from the municipal separate storm sewer system within the incorporated areas of the cities of Gresham and Fairview, and the small areas of unincorporated Multnomah County within the urban service boundaries of the two cities.”

Gresham's urban service area, essentially the current city limits, did not change from 1995 to 2004.

Program implementation by the Gresham co-permittees over the last 10 years has been extensive (see Attachment A, Table A-2). Due to the load reductions afforded through these program implementation measures in combination with no change in the renewal permit area, the loads associated with the 2004 permitted discharges are less than the loads associated with the discharges permitted in 1995.

Clackamas County, Storm Sewer Service Districts, and Incorporated Cities within the County

The Clackamas co-permittees include: Clackamas County, Clackamas County Service District No. 1, Surface Water Management Agency of Clackamas County, the Oak Lodge Sanitary District, and the cities of Gladstone, Happy Valley, Johnson City, Lake Oswego, Milwaukie, Oregon City, River Grove, West Linn, and Wilsonville.

The Clackamas 2004 permitted sources as identified on the cover page of the permit are identical to those in the 1995 permit (with the exception of ODOT facilities): “All Existing and New Discharges of Storm Water from the Municipal Separate Storm Sewer System within the Clackamas County urban growth boundary.” At the time of the 1995 permit issuance, the urban service areas consisted of approximately 74 square miles (47,360 acres). As of 2004, the service areas have increased as follows for the existing co-permittees:

- Unincorporated Clackamas County - 27 acres

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- West Linn - 371 acres
- Oregon City - 741 acres
- Happy Valley – 3,360 acres
- Wilsonville - 492 acres
- Lake Oswego – 47 acres

Thus, the 2004 renewal permit area is approximately 5,038 acres (7.6 square miles) larger than the 1995 permit area of 74 square miles, or about a ten percent increase. Although the Clackamas permit area has increased since 1995, it is likely that when all of the program implementation actions that have occurred since the issuance of the 1995 permit are considered as a whole (see Attachment A, Table A-3) the loads associated with the 2004 permitted discharges are likely to be equivalent or less than the loads associated with the discharges permitted in 1995.

Clean Water Services

The Clean Water Services 2004 permitted sources as identified on the cover page of the permit are identical to those in the 1995 permit: “all existing and new discharges of storm water from the MS4 within the storm water service area district boundary of Clean Water Services and within the urban growth boundary of Washington County.”

The 2004 permit area is approximately 75,000 acres (117 square miles), thus there is no increase in permit area.

Program implementation by Clean Water Services over the last 10 years has been extensive, as is summarized in Attachment A, Table A-4. Due to the load reductions realized through these program implementation measures in combination with no change in the renewal permit area, the loads associated with the 2004 permitted discharges are less than the loads associated with the discharges permitted in 1995.

Summary and Conclusions

The purpose of this assessment is to compare the pollutant loads associated with discharges authorized by the 1995 MS4 permits to the pollutant loads associated with discharges authorized by the 2004 MS4 permits. The pollutant loads associated with discharges authorized by the 1995 MS4 permits were those in all existing and new stormwater discharges within the permit area (as defined in the 1995 MS4 permits) assuming full development with the controls that existed at that time. The pollutant loads associated with discharges authorized in the 2004 MS4 permits are those in all existing and new stormwater discharges within the permit area (as defined in the 2004 MS4 permits) assuming full development with the controls that existed in 2004.

All of the MS4 co-permittees have implemented substantial stormwater management programs since 1995. The program elements included in the SWMPs have reduced loads originally permitted in 1995 in two ways: 1) through implementation of new development and redevelopment stormwater standards, and 2) through implementation of program elements that reduced loads from existing sources, including public education and involvement, operations and maintenance of both the storm drain system and roadways,

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industrial/commercial controls, illicit discharge elimination, construction site erosion control standards, structural retrofit controls, and water quality critical lands preservation and restoration.

Conclusions specific to each MS4 permit are as follows:

- *City of Portland, Multnomah County, Port of Portland:* Although the Portland permit area has increased by approximately four percent since 1995, it is likely that when all of the program implementation actions that have occurred since the issuance of the 1995 permit are considered as a whole, the pollutant loads associated with discharges permitted in 2004 are likely less than the pollutant loads associated with discharges permitted in 1995.
- *City of Gresham, City of Fairview, Multnomah County:* The 2004 renewal permit area remained the same as the 1995 permitted area. In combination with the load reductions afforded through program implementation measures, the pollutant loads associated with discharges permitted in 2004 are less than the pollutant loads associated with discharges permitted in 1995.
- *Clackamas County, Storm Sewer Service Districts, and Incorporated Cities within the County:* Although the Clackamas permit area has increased by approximately ten percent since 1995, it is likely that when all of the program implementation actions, especially the treatment and detention requirements placed on new development and the extensive list of structural retrofit BMPs that have occurred since the issuance of the 1995 permit, are considered as a whole the pollutant loads associated with discharges permitted in 2004 are likely to be less than the pollutant loads associated with discharges permitted in 1995.
- *Clean Water Services:* *As there has been no increase in permitted area, in combination with the load reductions afforded through program implementation measures within the permit area, the pollutant loads associated with discharges permitted in 2004 are less than the pollutant loads associated with discharges permitted in 1995.*

ATTACHMENT 1
SUMMARY OF STORMWATER BEST MANAGEMENT PRACTICES THAT WERE
IMPLEMENTED PURSUANT TO THE 1995 PERMIT

Table A-1: City of Portland, Multnomah County, Port of Portland Summary of Stormwater Best Management Practices (BMPs) that were implemented pursuant to the 1995 Permit

BMP General Category	New or Improved BMPs Pursuant to the 1995 MS4 Permit³
Public Involvement and Education	Improved and expanded education and outreach programs, including Clean Rivers Education programs (for K-12 and general public); developed educational programs and public tours on stormwater solutions; developed and expanded Community Watershed Stewardship Grant program, offering up to \$5K for community-based enhancement programs (currently ~\$55K available annually). Developed an EcoBiz program to certify and recognize environmentally friendly automotive businesses in coordination with the regional Pollution Prevention Outreach group. Participated in and helped expand participation in the Regional Coalition for Clean Rivers and Streams for regional coordination of stormwater education; formed and coordinated a volunteer public technical advisory committee (the Stormwater Advisory Committee) to guide the city on stormwater policy issues; installed “dump no waste” storm drain decals adjacent to high priority Port of Portland catch basins as part of the Port’s public outreach campaign to prevent stormwater pollution stormwater educational folders and stickers developed by the Port for Columbia Slough Watershed Council’s “Slough School.”
Operation and Maintenance of the Storm System	Conducted an inventory and assessment of stormwater management facilities and operations and maintenance activities; completed a stormwater facilities risk assessment and potential pollution general assessment; began work on a Stormwater Facilities Maintenance Plan that will enhance performance of the MS4. New and expanded work by the Port included development and implementation of specific stormwater maintenance practices relevant to Port and tenant operations and installation of catch basin filters in high priority industrial and commercial storm drains.
Operation and Maintenance of Roadways	Reviewed and evaluated Operations and Maintenance (O&M) activities in public rights-of-way and developed an implementation plan to test improvements to minimize pollutant discharges; adopted Oregon Department of Transportation road maintenance water quality BMP guidance for use in O&M activities.
Industrial/Commercial Controls	In 2000, entered into a Memorandum of Agreement with DEQ to implement an Industrial Stormwater Permit program within city boundaries to administer 1200COLS and 1200Z permits as DEQ’s authorized representative, including direct dischargers to waterways. The program also performs inspections, monitoring and outreach to industrial and commercial properties, providing

³ Co-Permittees coordinate MS4 programs and activities through Intergovernmental Agreements (IGAs) and regular coordination meetings. More information on BMPs can be found in the annual compliance reports, which are available online at <http://www.portlandonline.com/bes/index.cfm?c=37485> and in the DEQ permit file number 108015.

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BMP General Category	New or Improved BMPs Pursuant to the 1995 MS4 Permit³
	pollution prevention education and technical assistance to reduce pollutant discharges. The Port of Portland implemented a pesticide program, including a Technical Guidance Document and an Integrated Pest Management and Work Schedules Program for Port-owned mitigation sites in order to minimize pesticide application and control non-native species.
Illicit Discharges Elimination	Of the 19 non-stormwater discharges identified in the 1995 permit, 16 have been evaluated and policies and processes changed where appropriate; the 2004 permit added an additional 5 discharge types, one of which has already been evaluated. The remaining 7 discharges are currently under evaluation; developed and chaired a Regional Spill Response Committee to address response and coordination at a regional level; implemented a Spill Response Hotline; established an Illicit Discharge Elimination Program, including an outfall prioritization plan, dry weather monitoring and enforcement authority.
Water Quality Standards for New Development and Re-Development	Authorized the Stormwater Management Manual (SWMM) in 1999, which implemented stormwater standards for all new development and redeveloped projects that create over 500 sq. ft. of impervious area. Revisions in 2000, 2002 and 2004 refined and improved the SWMM with emphasis on reducing effective impervious area, using vegetated facilities and providing greater groundwater protection. Since SWMM adoption, over 2,300 stormwater facilities have been constructed on private property. Various Bureaus provide technical assistance, grants and other incentives for retrofits and exceeding SWMM standards (such as the Office of Sustainable Development's Green Building Programs and BES's Sustainable Stormwater Management Program).
Erosion Control Standards for Construction	Established citywide erosion control code (Title 10) and revised the Erosion Control Manual to reflect NPDES MS4 permit conditions, establishing a comprehensive citywide erosion and construction site pollutant control program erosion and sediment control requirements for construction are incorporated into all Port of Portland construction project specifications.
Structural Controls	Completed a Public Facilities Plan, which provides the framework for prioritizing and implementing new and retrofitted MS4 projects; constructed public stormwater pollution reduction facilities (PRFs), including Russell Pond Wetland, Water Pollution Control Laboratory Pond, Willamette inflow control projects, a Johnson Creek PRF (SE 45 th Ave.) and Columbia Slough PRFs (138 th Ave., 148 th Ave., Whitaker Ponds, Buffalo Slough, Wapato Wetland, Ramsey Lake Wetland); developed design standards and implemented pilot projects to manage stormwater from public streets using porous pavement, vegetated planters and other Green Street approaches; received \$1.6 million EPA grant for innovative stormwater projects., including implementation of Green Street projects and school campus downspout retrofits. As Multnomah County bridges undergo retrofits and upgrades, stormwater management controls are incorporated into design;

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BMP General Category	New or Improved BMPs Pursuant to the 1995 MS4 Permit³
	currently stormwater runoff from the Burnside and the Broadway Bridges is managed with water quality devices.
Other	Implemented a Willing Seller program for water quality critical lands acquisition; in conjunction with the Metro open space program, purchased 2,422 acres of land from willing sellers; revised tree and landscaping code for consistency to integrate landscape-based stormwater management approaches for parking lots developed code amendment proposals to improve enforcement of environmental violations and facilitate permit process for resource enhancement projects; implemented the Watershed Revegetation Program for long-term restoration and revegetation of natural areas; planted over 2.5 million trees and shrubs, primarily along waterways and high-resource environmental areas; The Port enhanced 1,500 feet of shoreline along West Hayden Island focusing on non-native vegetation removal and native species revegetation and monitoring. As part of the Toyota redevelopment project at Terminal 4, the Port restored 1,700 feet of riparian area, planted more than 11,000 native trees and shrubs, and designed an integrated stormwater management system. The Port worked with the Multnomah County Drainage District to stabilize and remove invasive plants on over one-half mile of Columbia Slough bank and replant with native vegetation.

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Table A-2: City of Gresham and Co-permittees (City of Fairview and Multnomah County) Summary of Stormwater Best Management Practices (BMPs) that were implemented pursuant to the 1995 Permit

BMP General Category⁴	New or Improved BMPs Since 1995
Public Involvement and Education	<p>There has been a significant increase in public involvement and education regarding stormwater management since 1995. Specific examples include:</p> <p>Slough School Watershed field sites expanded to include five Gresham schools.</p> <p>Four Fish-Friendly Car Wash sites identified throughout Gresham and two high schools certified. Two Car Wash kits available for loan at no charge.</p> <p>Doggie Don't Boxes installed in eight Gresham Park sites.</p> <p>Website Enhancement: Created in 1998. Added content related to individual behavior changes related to home owner practices. Created a native plant information guide for gardening in 2003.</p> <p>County's Adopt-A-Road and Catch basin Marking programs</p> <p>Gresham and County are active participants of the Regional Coalition for Clean Rivers and Streams programs.</p> <p>Fairview provides public education through bi-monthly newsletter, annual report, and active web site. The City also has an active education program with riparian property owners about riparian buffer care, prohibited chemicals, and native plantings.</p>
Operation and Maintenance of the Storm System	<p>Since 1995, there have been steady improvements to the O&M activities, frequencies, and effectiveness.</p> <p>Decant Facility Constructed in 1997 to control releases from City-owned vehicles and equipment.</p> <p>Catch Basin Cleaning: Current City inventory 5,200. Annual cleaning since 1981. Amount of debris collected has increased due to increased inventory and improved cleaning methodology, i.e., shovel vs. Vactor machine. Change in methodology has lead to over 51% increase in debris captured.</p> <p>Sedimentation Manhole Cleaning: Current inventory 133. Began systematic inventory and cleaning in 2004. This activity is new since 1995, as no sedimentation manholes existed prior to 1995.</p> <p>Storm Sewer Line Cleaning: Current inventory 210 miles. Currently in a 10-year cleaning cycle. The miles of sewer line cleaning has increased by 66% since 1995.</p> <p>Storm Detention Pipe Cleaning/Control Release Manhole Cleaning: Current inventory 121 underground detention pipes. This activity represents new BMP, as no detention facilities existed prior to 1995.</p> <p>"Black Box" Maintenance: Annual inspection of all facilities. Cartridges replaced as needed. This activity is new since 1995, as no proprietary facilities existed prior to 1995.</p> <p>County low impact Ditch Cleaning by Vactor.</p> <p>Catch basins on County arterials cleaned twice a year.</p> <p>Fairview changed ditch and channel maintenance method to</p>

⁴ Details to the information included in this table can be found in annual reports submitted to DEQ in compliance with NPDES Stormwater Discharge Permit.

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BMP General Category⁴	New or Improved BMPs Since 1995
	<p>incorporate less intrusive practices like less chemical use; use of low lying grass seed; and cleaning the inverts with an auger and reseeding upon completion.</p> <p>Fairview has a dedicated FTE to maintain City parks, wetland areas, and stormwater features.</p>
Operation and Maintenance of Roadways	<p>Since 1995, there has been over 23% increase in the miles of street swept on an annual basis. Between the County and City, in most areas of the city, all streets are swept at least 9 times per year. In addition, over 60% of all de-icing material are collected and recycled after hazard weather usage. No salt has been used on the roadways within the Permit area since 1999.</p>
Industrial/Commercial Controls	<p>In Gresham, DEQ issues and administers industrial permits. The City's role has been to coordinate and cooperate with these activities. Since 1995, the City has implemented the GREAT Business Program to target businesses with potential environmental impacts and recommend "green" practices. Since the inception, over 200 businesses have been audited and over 70 have been certified as "green."</p> <p>Business License Review: began reviewing all new business permit applications in 2002.</p> <p>Gresham and Fairview implement Wellhead Protection Program aimed at eliminating pollutants discharge to surface & ground water from industrial users.</p>
Illicit Discharges Elimination	<p>Prior to 1995, this activity was essentially compliant-based. Since 1995, Gresham uses TV inspections and other "investigative" methods to identify and eliminate illicit discharges. In addition, legal authority to inspect was improved in 1996 and additional code enforcement staff was hired in 1997. County Right-of-Way inspectors monitor catch basins for illicit connections.</p> <p>Gresham and Fairview have appropriate ordinance that prohibits illicit discharges, requires compliance, and allows the City to carry out monitoring when necessary.</p>
Water Quality Standards for New Development and Re-Development	<p>This is a new BMP since 1995, as no stormwater quality standards existed prior to 1995. New standards were adopted in 1999 to address water quality component with new and development re-development projects. The City also actively began collecting maintenance agreements for privately-owned water quality facilities in 2000. Since 1995, approximately 250 acres of new development projects has constructed on-site water quality BMPs.</p> <p>The County continues to require stormwater to be maintained on site for the unincorporated area of Interlachen.</p> <p>Fairview's Planning and Public Works Departments work closely to ensure proper plan reviews to minimize impacts to the stormwater system.</p>
Erosion Control Standards for Construction	<p>The original EPSC Manual has been modified and enhanced since it was originally adopted in 1991. Standards and inspections protocol has been improved to include new technology and practices.</p> <p>Additional inspection staff were hired in 1996. Stormwater Division coordinates with DEQ to review all 1200-C plans. City's public works inspector visits all development projects at least once/day during public infrastructure construction activities. In addition, Stormwater Division staff are actively involved with enforcement activities.</p>

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BMP General Category⁴	New or Improved BMPs Since 1995
	<p>In 2004, County revised its grading and erosion control standards for the unincorporated area of Interlachen. In addition to coordination with 1200-C permits, Fairview works closely with contractors to ensure BMPs are adequate and effective during rainy season.</p>
Structural Controls	<p>This is a new BMP since 1995. Regional Fairview Creek Constructed Wetland: Completion date – fall of 2005, approximate drainage area is 900 acres. Kelly Creek Regional Detention Pond: completed in 1998, approximate drainage area is 800 acres. Constructed Wetland and Detention facility for Roadway Drainage: Halsey Ave and another at 207th Ave., each treating approx. 11 acres of impervious surface.</p>
Other	<p>These are examples of “other” activities new since 1995: Fujitsu Wetland Mitigation – created approximately 4.5 acres of wetland adjacent of the Fairview Creek Gresham Woods Restoration – multi-year wetlands/wet meadow restoration project in 55 acres of open space adjacent to the Johnson Creek High School Stewardship Program – 3 sites totaling about 8.5 acres to replace with native vegetations Incorporated IPM in 2001 for all City activities. Yamhill Green Street Project in 2004 – converted to pervious pavement, approximately 8,000 sq ft of neighborhood collector street Division and Stark Street Project – used pervious pavers on sidewalk, approximately (1 mile) Master Plans: updated each Gresham Watershed master plan during the years of 2002-2005. New Communities Planning: Stormwater management for Springwater and Pleasant Valley areas will utilize green sustainable development practices.</p>

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Table A-3: Clackamas County and Co-Permittees' Summary of Stormwater Best Management Practices (BMPs) that were implemented pursuant to the 1995 Permit

BMP General Category	New or Improved BMPs Since 1995
Public Involvement and Education	<p>Programs that motivate citizens to prevent or reduce storm sewer system pollutant loading are provided in the following formats:</p> <ul style="list-style-type: none"> • Websites • Brochures • Newsletter Articles • Face-to-face in public meetings, fairs, classrooms, etc.
Operation and Maintenance of the Storm System	<p>Two Primary Elements:</p> <ul style="list-style-type: none"> • Solids are regularly vacuumed from the piped storm sewer system • Vegetation, garbage and sediment is regularly removed from ditches, stormwater ponds and other above-ground storm sewer system segments
Operation and Maintenance of Roadways	<p>Three Primary Elements:</p> <ul style="list-style-type: none"> • Streets are swept • Roadside vegetation is controlled through mowing to minimize herbicide use • Ice is controlled with low impact materials, such as sand and calcium magnesium acetate, to minimize or avoid the use of salt.
Industrial/Commercial Controls	<p>This category pertains to: 1) municipal landfills, 2) hazardous waste treatment, disposal and recovery facilities, 3) industrial facilities that are subject to section 313 of SARA title III, and 4) certain other industrial facilities. The MS4 permit holders take reasonable measures which control, minimize, or prevent stormwater pollution from these sites. For example, if a MS4 permit holder believes that a facility may need a stormwater pollution control permit from DEQ, the facility and DEQ are provided with formal notification. As another example, if a MS4 permit holder determines that a facility contributes a material load of pollutants to the MS4, the implementation of control measures is overseen by the MS4 permit holder. In these instances, if the discharger's initial attempts to improve stormwater quality do not produce the required improvement, the MS4 permit holder continues to provide guidance, technical assistance, and if necessary, enforcement action until the facility's stormwater quality improves to the required level.</p>
Illicit Discharges Elimination	<p>Citizens are encouraged to report these to the MS4 permit holder. Illicit discharges and spills are addressed and, if necessary, controlled by the MS4 permit holder. The local fire dept. plays a lead role in many hazardous materials incidents. Dry-weather storm sewer outfall inspections, which can proactively identify these discharges, are conducted at certain outfalls.</p>
Water Quality Standards for New Development and Re-Development	<p>The MS4 permit holders have adopted and implemented Standards for new development and redevelopment to prevent or reduce storm sewer system pollutant loading. These standards include, but are not limited to, stormwater volume reduction to minimize runoff, stormwater treatment to remove pollutants from stormwater, and site design standards to prevent stormwater from contacting areas where it may become polluted.</p>
Erosion Control Standards for	<p>The MS4 permit holders have adopted and enforce erosion control</p>

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BMP General Category	New or Improved BMPs Since 1995
Construction	requirements. Regular inspections of construction sites are conducted by the MS4 permit holders. In general, stormwater pollution is prevented by requiring that stormwater be directed away from contact with disturbed soil through good site design. Structural controls, including but not limited to silt fencing and biobags, are also required to be deployed to remove sediment from stormwater. The controls are required to be maintained during construction to ensure effectiveness. Sediment on roadways is also required to be removed. Sediment that is captured by the storm sewer system must be removed and properly disposed of.
Structural Controls	Since 1995 there has been a significant increase in a) the number of structural controls (swales, man-made stormwater ponds, etc.) that have been installed and b) in the acreage that is served by these devices within the MS4 permit holders' service areas.
Other	Some riparian areas have been enhanced. Other healthy riparian areas which do not require enhancement have been protected in separate land tracts or in conservation easements. Metro Title III, which requires riparian area protection in the MS4 permit holders' service areas, is implemented for wetlands, natural ponds, creeks, springs, and rivers.

Note #1: The information provided in the table above provides a general summary of information included in the various annual reports submitted to the Department of Environmental Quality by each co-permittee to the Clackamas County MS4 NPDES permit.

Note #2: The information is a general summary of the BMPs implemented within Clackamas County pursuant to the 1995 MS4 NPDES Permit. However, the BMPs implemented and the level of implementation varies from co-permittee to co-permittee. For information specific to a particular co-permittee, please refer to that co-permittee's Storm Water Management Plan and Annual Reports.

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Table A-4: Clean Water Services' Summary of Stormwater Best Management Practices (BMPs) that were implemented pursuant to the 1995 Permit

BMP General Category	New or Improved BMPs Since 1995
Public Involvement and Education	<p>There has been a significant increase in public involvement and education regarding stormwater management since 1995. In 1995 the program primarily focused on the relationship between littering and water quality, i.e., "adopt-a-highway" type programs which promoted urban "good housekeeping".</p> <p>Current public education and involvement programs are significantly more complex and broader in focus. Through the Coalition for Clean Rivers and Streams, the metro area MS4 permittee's collectively leverage public awareness dollars (\$60,000) to inform the public on the use of herbicides, pesticides, and fertilizers through a focused transit and print advertising campaign. Through the use of the District's website, which receives approximately 13,000 hits per month, distributed 7300 <i>Gardening with Native Plants</i> posters. Distributed 354,000 billing inserts during the 2004 which focused on personal behaviors to reduce impacts to stormwater quality and quantity, such as pet waste management, leaf pick-up, car washing and maintenance, etc.</p>
Operation and Maintenance of the Storm System	<p>Since 1995, there was a 125% increase in the number of catch basins cleaned on an annual basis and a 25.8 % increase in miles of storm sewer lines cleaned on an annual basis. In 1995, the O&M of the storm system varied from jurisdiction to jurisdiction. Currently there are performance measures/targets established for each jurisdiction.</p>
Operation and Maintenance of Roadways	<p>Since 1995, there was a 65% increase in the miles of street swept on an annual basis. In 1995, most communities swept arterial streets monthly or every two months (average frequency was 10.3 times per year). Currently the average mile-weighted frequency is 22.4 times per year.</p>
Industrial/Commercial Controls	<p>In 1995, through the District's industrial pretreatment/source control program, staff provided "advice" to commercial and industrial sites regarding stormwater management. Currently, the District oversees the 1200-Z industrial stormwater permit program in our service area which has significantly increased the monitoring, compliance and enforcement activities for this program. We have over 150 industrial stormwater dischargers currently under permits.</p>
Illicit Discharges Elimination	<p>In 1995, there was only a minimal program which was primarily a "react-to-a-complaint". Currently through TV inspections, greater education and outreach, and the 1200-Z program, the District has significantly increased the detection and elimination of illicit discharges.</p>
Water Quality Standards for New Development and Re-Development	<p>In 1991, the District revised its Design and Construction Standards to include requirements for construction of storm water quality and quantity facilities for all new developments. Twenty-five foot vegetated buffers on streams, creeks and wetlands were also implemented. In 2000, the buffer widths were increased to a maximum width of 200 feet. In March, 2004, the District revised its Design and Construction Standards which included: a definition for redevelopment; requirements to pretreat stormwater from redevelopment; increased buffer widths; improved guidance with invasive species control and landscaping; additional clarifications to prohibited activities. The 2004 revisions also doubled buffer restoration and planting densities.</p>

Qualitative Assessment of the Change in Pollutant Loads Associated with MS4 Discharges in the Portland Metropolitan Area

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BMP General Category	New or Improved BMPs Since 1995
Erosion Control Standards for Construction	The District has had an erosion control program in place since 1991, in part due to the implementation of the 1988 Tualatin TMDL. The District administers and enforces the 1200-C general storm water permit program within our jurisdiction which has resulted in increased oversight and enforcement of regulations. In 2002, the 1200-C permit threshold was reduced from 5 acres to 1 acre, effectively doubling the number of sites covered under both a District and 1200-C permit.
Structural Controls	Since 1995 there has been a significant increase in the structural controls (swales, ponds, etc.) installed and acreage served within the District's service area. There are approximately 12 times as many structural BMPs installed currently as compared to 1993. The area served by these structural BMPs was increase about 10 fold.
Other	In 1995, the District had no program relating to enhancement of riparian areas. Currently the District is actively pursuing riparian area protection and enhancement. Between 2001 and 2004, the District enhanced 5.5 miles of streams.