

RULE 3044

Date: March ____, 2005

Approved By: _____

DEPARTMENT OF PLANNING & DEVELOPMENT SERVICES

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| Rule: 3044 | Standards for Construction Stormwater Pollution Prevention Plans |
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LEGISLATIVE HISTORY: Cancels POL 3044 (interim rule), merges and updates policies 3044 adopted November 1, 2001 and 3490 adopted March 27, 1998, repromulgated pursuant to SCC 30.82 Rulemaking on March ____, 2005

SEE ALSO: NA

SCC APPLICABILITY: Chapter 30.63A.150 and 30.63A.155 SCC

PURPOSE: This rule applies to selecting the Best Management Practices (BMPs) and stormwater pollution prevention measures for construction activities that require a permit or approval from Snohomish County. The County code on Water Pollution Control, 7.53 SCC requires that no contaminated stormwater be discharged from a site. This rule outlines a process to establish the level of planning to obtain construction approval, and approval of development permits from Snohomish County. It establishes the requirements for a complete submittal of erosion control plans and risk assessments as provided by subsection 30.63A.150 and 30.63A.155 SCC.

The regulations from the Washington State Department of Ecology (DOE), the County's National Pollutant Discharge Elimination System (NPDES) permit, and Critical Area Regulations (CAR) 30.62. SCC all require a plan for pollution prevention. This rule establishes guidelines for plan submittal. The Washington State Department of Ecology (current regulations) for NPDES permits and regulations for Construction Stormwater Pollution Prevention require that a Stormwater Pollution Prevention Plan (SWPPP) be prepared for land disturbing activities. In the past, this plan for land disturbing activity was called an erosion control plan (or TESC plan). This rule outlines the erosion control plan requirements for preparation of drainage plans and reports in Snohomish County. This rule also outlines the process for selecting the appropriate level of plan. Definitions to some of the terms used are in section 7 of this rule.

RULE SUMMARY:

1. The Construction Stormwater Pollution Prevention Plan (SWPPP) for Land Development Projects.
 - a) The (erosion control plan) is to be prepared in accordance with this rule.
 - b) The documentation of that plan consists of the construction plans, and specifications; and information in the drainage report.
2. Subdivisions Vest to the Appropriate Standards.
 - a) Subdivisions vest to the standards in effect when the preliminary application was declared complete, however, no old or new standards allow sediment or pollution to leave the site.
 - (i) If the subdivision application was declared complete before September 19, 1998, the subdivision is vested to standards of "old" Title 24 and Title 17.
 - (ii) If the subdivision application was declared complete on or after September 19, 1998, the current codes and standards shall be used.
 - b) Plat construction requirements do not vest to requirements that State or Federal agencies require under ESA and water quality.

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- c) The requirements in this rule and standards shall be used by the design engineer as a guide when preparing the construction SWPPP for projects vested to old standards.
3. Standard Selection Process shall be Used for Construction SWPPP
- a) This rule provides for a predictable selection process to be used in conjunction with the risk assessment. The elements of the proposed construction which govern selection are:
- (i) Area of exposed site for each phase;
 - (ii) Relationship to receiving water or critical area, and ESA areas;
 - (iii) Season the grading is proposed; and
 - (iv) Characteristics of the site (slope, soil, quantity of material, ability to contain the runoff, percent of vegetation to remain on site, etc.).
- b) The level of planning required for the SWPPP is based on the above and other criteria outlined in this rule. Guidelines are established in this rule for approving grading in the wet season (October 1st to March 31st). Wet season grading is referred to as "winter grading" in this rule.
- c) The information in the full drainage report (in some cases the targeted drainage report) will be used to select the level of construction SWPPP, and to determine whether winter grading is feasible. The process of selecting the level of SWPPP is based upon first determining the risk category, then applying the appropriate level of planning and proposed implementation.
- d) The risk category is divided in four groups, primarily based upon the environmental risk in the event erosion control effort fails to prevent construction pollution.
4. The Site shall be Assessed for Risk Factors and Assigned a Risk Category
- When assessing the site for risk factors that will determine the risk category, the definitions in Section 7 of this rule shall be considered. To assign the risk category, apply the risk factors to the site. An evaluation made during the summer may not identify problems that become obvious when the rain is falling on disturbed soil. The risk is categorized in four levels based upon the likelihood, or probability, of harm to the resource to be protected. The most restrictive site characteristic shall be used to assign the category. (Note - the disturbed acreage threshold can be minimized by phasing the construction and minimizing the exposed soil)
- a) Low Risk
- (i) Winter grading is not proposed;
 - (ii) Less than one (1) acre will be disturbed;
 - (iii) Average slope is less than 8%, (up to 15% for areas with less than 5000 square feet total);
 - (iv) Soil with low erosion hazard when worked and exposed to rain;
 - (v) Permeable soils;
 - (vi) No critical areas or buffers located down slope or within ¼ mile down stream of discharge point of stormwater.
- b) Medium Risk
- (i) Less than 5 acres (but more than 1 acre) will be disturbed;
 - (ii) Average slope is more than 8%, but all areas are less than 15%;
 - (iii) Soil with low erosion hazard when worked and exposed to rain;
 - (iv) No critical areas or buffers located down slope or within ¼ mile down stream of discharge point of stormwater;
 - (v) If needed, additional BMPs can be implemented as corrective measures.
- c) High Risk
- (i) More than 5 acres (but less than 20 acres) will be disturbed;
 - (ii) Average slope is more than 8% but less than 15%; all slopes are less than 33% or, if created by grading, will have protection subsequent to grading activity;
 - (iii) Soil with medium erosion hazard when worked and exposed to rain;

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- (iv) There are critical areas or buffers located down slope or within ¼ mile down stream of discharge point of stormwater;
 - (v) The site is upstream of a stormwater path that does not flow directly to an ESA stream;
 - (vi) If needed, additional BMPs can be implemented as corrective measures.
- d) Very High Risk
- (i) The site has more than 20 acres being disturbed;
 - (ii) Slope is more than 15%;
 - (iii) Soil with more than medium erosion hazard when worked at any time during the grading process;
 - (iv) There are critical areas or buffers located down slope or within ¼ mile down stream of discharge point of stormwater;
 - (v) The site is upstream of any stormwater path that flows directly to an ESA stream;
 - (vi) Experimental BMPs are proposed.
5. Planning for the Construction SWPPP shall be Based Upon the Risk Category
- The construction SWPPP is characterized by three levels of complexity based on the risk category for the site. See the decision matrix in Section 8 of this rule for information on levels and reasons for assigning the appropriate level. The amount of planning (including contingency planning) shall provide the distinction between the three levels of SWPPP plans. The level 3 SWPPP requires consensus of the development review teams, contractor and contingency planning. Residential small parcel (single family residential), and other small parcel development activities that do not require a full drainage plan normally do not require a SWPPP. Those projects can use simple erosion control BMPs. PDS single family residential staff may assist in providing standard BMPs appropriate to the site as an attachment to the plans during the site review process.
- a) Level 1 SWPPP
- The plan and report prepared by the project engineer may use standard BMPs that are appropriate to the site and anticipated erosion control issues. In the case of single family residential permits, the applicant or builder may prepare the plans by using standard BMPs.
- b) Level 2 SWPPP
- The plan and documentation covers a careful assessment of the risk to resources.
- (i) The risk assessment will integrate the site-related elements such as slope, soil, location of critical areas, geotechnical stability, groundwater, and offsite sources of water flowing into the construction area.
 - (ii) The plan and documentation will cover all 12 elements listed in Appendix B of this rule in detail for the Construction SWPPP.
 - (iii) The plan shall contain a contingency section to cover anticipated problems if weather interrupts the construction at various critical phases.
 - (iv) The level of technical difficulty providing a level 2 SWPPP usually requires that plans are prepared by a professional.
- c) Level 3 SWPPP
- The plan and documentation incorporates all of the elements of a Level 2 plan. A consensus that the plan is feasible is required by a review team composed of the following people:
- (i) Project Engineer who prepared the plans;
 - (ii) Applicant's or Developer's Project Manager;
 - (iii) General Contractor and, if applicable, Grading Contractor;
 - (iv) County Inspector;
 - (v) County Plan Reviewer or Chief Engineering Officer, and;
 - (vi) When an ESA stream or critical area impact is involved the review team will also include the PDS Biologist and Applicant's Biologist;
 - (vii) If a consensus cannot be reached, a committee of three shall be appointed by the PDS Director or County Engineer to resolve the issues.

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6. **Plan Revision is Required when Winter Grading is not Shown on Approved Plans**
The grading plans shall clearly state that they have been prepared anticipating that grading will continue (or start) during the winter grading period. When approved construction plans for project do not state that the plans have been prepared to allow grading after October 1st and the work is not completed, grading shall not occur until revised construction plans have been approved. The only work allowed is site stabilization and erosion control activities until revised plans and SWPPP is approved.
7. **Terms Used to Select the Appropriate Level of SWPPP**
 - a) **Dirty water** is defined as stormwater runoff which does not meet the standards in 7.53 SCC or WAC 210A. In most cases this means a turbidity level of 5 ntu over the background water quality level. The terms “dirty water”, “turbid water”, and “silty water” mean the same for this rule and procedure.
 - b) **Downstream** location for critical areas to be identified and addressed in the risk assessment is 1/4 mile for non-ESA streams or bodies of water, wetlands and other critical areas. For projects that are tributary to ESA streams, the risk assessment downstream shall not be limited to a ¼ mile, but shall extend as far as needed so that risk of turbid water from the site is negligible, de minimis or meets water quality standards.
 - c) **Erosion hazard** of the soils and parent material is shown in tables in the Appendix A. Erosion hazard is based on soil type, permeability, underlying geology and slope. The soils are as classified by the Soil Conservation Service Soil Survey of Snohomish County Area. The actual soil on site shall be used in determining the erosion hazard. When there is more than one type of soil on the site, the soil that has the greater erosion hazard shall be used for the site.
 - d) **Critical areas** and **buffers** are defined in the Critical Areas Regulations (CAR) 32.10 SCC. Risk factors are based on the proximity to the site and risk of temporary or permanent damage. The worst case shall be assumed when assigning risk.
 - e) **Site area** is the area of disturbed soil (i.e. graded soil) by each drainage basin on the site. Undisturbed site is not counted as site area. To determine risk factor when developing by phases, previously exposed soil on the site is required to have effective cover or established vegetation to be counted as undisturbed again. Bare soil outside of the limits of the project (on adjacent properties) is not counted. For road and utility construction, the site area is the disturbed area.
 - f) **Slope** is based on the existing or finished grade slope. **Average slope** is determined for the site by using the time of concentration line as the horizontal length and the vertical difference along said line. Slope is the vertical difference divided by the horizontal length expressed as a %. The overall site risk is based on the highest risk slope being disturbed with an area of 5,000 square ft. or more.
 - g) **Standard Best Management Practices (BMPs)** are those that are in the DOE or currently adopted Snohomish County Stormwater Manual. They do not include chemical treatment or other measures which may require a separate permit from DOE.
 - h) **Stormwater Pollution Prevention Plan (SWPPP)** is the term used by the Washington State Dept. of Ecology (DOE) for the documented plan to identify, and implement measures to prevent and control contamination of point source discharges of stormwater. In the past, for construction projects, a similar, but limited, plan was called an Erosion and Sediment Control Plan and Temporary Erosion and Sediment Control Plan (TESC). For construction plans, one element in the plans and drainage report will be the construction SWPPP.

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- i) **Vegetation or effective cover** is when the ground has natural permanent growth sufficient to resist erosion during normal winter rainstorm events.
 - j) **Winter grading** refers to grading between October 1 and March 31. This term is the same as "Wet season grading."
8. The Decision Matrix Shall Be Used to Determine the Level of SWPPP
 The risk category and whether winter grading is proposed on a site are key elements in the decision matrix. The predicted level of SWPPP that will be required for normal projects is shown.

| Risk Category | Winter Grading Not Requested | | Construction SWPPP Level |
|----------------------|-------------------------------------|------------------------------------|---------------------------------|
| Low | X | | 1 |
| Medium | X | | 1 |
| High | X | | 2 |
| Very High | X | | 3 |
| | | Winter Grading Is Requested | |
| Low | | Yes | 2 |
| Medium | | Yes | 2 - 3 |
| High | | Yes | 3, or Not Permitted |
| Very High | | Not Permitted | Not Permitted |

If a project was planned and approved for grading between April 1st and September 30th, and the developer requests that grading be allowed to continue, revised plans must be approved.

**Appendix A
Erosion Sensitivity of Soils**

Using the SCS Survey for Snohomish County Table 14 Physical and Chemical Properties of Soils, the K factors are an index of erosion potential. The K factor fits into the Universal Soil Loss Equation (1) as a value for the erodibility rate. The higher the number the more easily eroded the soil is. Only the more common soil types found in the urban growth area is listed in the table. Use the SCS values for the B-horizon (second soil layer) to estimate the erosion hazard rating for unlisted soils.

| Soil Type | K Factor | Erosion Hazard |
|------------------|-----------------|-----------------------|
| Alderwood | 0.20 | Medium |
| Custer | 0.24 | Medium |
| Elwell | 0.43 | High |
| Everett | 0.10 | Low |
| Norma | 0.24 | Medium |
| Olomount | 0.28 | Medium |
| Pastik | 0.49 | High |
| Pilchuck | 0.10 | Low |
| Puget | 0.32 | High |
| Ragnar | 0.24 | Medium |
| Skykomish | 0.24 | Medium |
| Sultan | 0.32 | High |
| Tokul | 0.32 | High |
| Winston | 0.24 | Medium |

Parent materials that lie below the soil level need to be assessed for erosion hazard based on the geologic formations that are affected by the grading. When the grading of the project is deeper than the soil the characteristics of the parent material are used to determine the erosion hazard value.

| Formation | Erosion Hazard (0 – 15% slope) | Erosion Hazard (15 – 25% slope) | Erosion Hazard (>25% slope) |
|---------------------------------|---|--|---|
| Recessional Outwash (Qvr.) | Low | Medium | High |
| Vashon Till (Qvt) | Low - Medium | Medium | High |
| Advance Outwash (Qva) | Low | Medium | High |
| Transitional Silts (Qth) | Medium | High | High |
| Alluvium (Qal) | Low - Medium | Medium - High | High |
| Undifferentiated Sediments (Qu) | Medium | Medium - High | High |
| Bedrock (Th) | Low | Low | Low - Medium |

Footnote 1: Universal Soil Loss Equation: $A = R \times K \times LS \times C \times P$

Where:

- A = The computed soil loss in tons (dry weight) per acre from a given storm period
- R = The rainfall erosion index for the given storm period in units of ft-ton per acre-hr.
- K = The erodibility value, defined as the erosion rate in tons per acre per unit of R for a specific soil in continuous fallow condition on a 9% slope having a length of 72.6 ft.
- L = The slope length factor, defined as the ratio of soil loss from a specific field to that from a unit field having the same soil type and slope but with a length of 72.6 ft.
- S = The slope factor, defined as the ratio of soil loss from a specific field to that from a similar field having the same soil type and a slope gradient of 9%.
- C = The cropping management or cover factor defined as the ratio of soil loss from an area with specified cropping and management or vegetative cover to that from the same area but under fallow condition.
- P = The erosion control practice factor defined as the ratio of soil loss with a given practice to that with a straight row, up-and-down slope farming.

Appendix B Construction SWPPP

A Construction Stormwater Pollution Prevention Plan (SWPPP) needs to have construction plans and drainage report as part of the full or targeted drainage plan. The drainage report will have a section that discusses the 12 elements as they apply to the project.

The 12 elements that are part of a Construction SWPPP are as follows:

1. **Mark Clearing Limits:** Prior to clearing or disturbing the limits must be marked. This element is part of most normal construction plans as one of the first steps.
2. **Establish Construction Access:** All erosion control plans shall install a stabilized construction entrance (or other method of preventing sediment transport onto the roads). If a standard gravel construction entrance is proposed, use geo-textile fabric under the rock. Note: a wheel wash is required for plans that propose winter grading.
3. **Detain Flows:** Based on a downstream analysis it may be necessary to detain runoff from a site under construction. It may be necessary to construct and use a detention pond to control flows during construction.
4. **Install Sediment Controls:** If there is runoff from the construction site, sediment shall be removed from the water. Note that the water quality standards must be met.
5. **Stabilize Soils:** All exposed and non-worked soil shall be stabilized by use of BMP's. Note there are time periods of allowed exposure that depend on the season. Groundcover both temporary and permanent need to be part of the construction plans.
6. **Protect Slopes:** Cut and fill slopes need to be protected from erosive flows and concentrated flows until permanent cover and drainage conveyance systems are in place.
7. **Protect Drain Inlets:** All storm drain inlets require protection from sediment and silt laden water.
8. **Stabilize Channels and Outlets:** Temporary and permanent conveyance systems shall be stabilized to prevent erosion during and after construction. Culvert outlets require protection.
9. **Control Pollutants:** The plan shall show how all pollutants, including waste materials and demolition debris, will be handled. This includes maintenance of construction equipment, fertilizers, application of chemicals, and water treatment systems.
10. **Control De-Watering:** The water from de-watering systems for trenches, vaults and foundations shall be discharged into a controlled system.
11. **Maintain BMPs:** The plan shall provide for inspection and maintenance of the planned and installed construction BMPs as well as their removal at the end of the project.
12. **Manage the Project:** The plan shall outline how the site shall be managed for erosion control and identify the management team. It needs to cover phasing, training, pre-construction conference, coordination with utilities and contractors, monitoring and reporting. It shall provide for notice of problems, revisions during construction and contingency planning. One of the most important elements in the management of the project is planning for contingencies based on the risk of exposure during phases of the development. It is essential that planning is ongoing throughout the life of the project.

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When consideration for winter grading is requested, the construction SWPPP shall contain a plan for stormwater sampling locations, background measurements and a periodic reporting schedule. The reporting schedule shall at a minimum require samples during every storm event that generates runoff and site inspection condition reports on the installed BMPs. The monitoring and sampling are to be done in a professional manner consistent with current sampling protocols and reporting requirements. The sampling points are to be shown on a map and marked on the ground.

The checklist below identifies items that need to be added to the drainage plans and report when the Construction SWPPP is incorporated in the full drainage plan.

Level 1 SWPPP

- Identification of potential pollutants and the plan to control them.
- Identification of items which are applicable to the site and required when winter grading is requested as a special section in the report.
- Section on inspection, maintenance, and management of the project.

Level 2 SWPPP

- All of the items shown for Level 1 SWPPP
- Detailed analysis of the elements required by the code and Construction SWPPP and discussion on how the proposed BMPs and construction management team will be formed to manage the project. Note: this level of detail is not appropriate at the preliminary development or project review stage. When the developer has selected the project team and contractor to construct the project they need to outline how the project will be managed for this section. In the case of County construction projects this step would occur after bid award and before notice to proceed.
- Section on monitoring and sampling proposed and other items related to maintenance, inspection and management of the project.

Level 3 SWPPP

- All of the elements shown for Level 1 & 2 SWPPPs
- Detailed description of how the construction management team will address all of the elements of the SWPPP.
- Identification of special design considerations and items which are applicable to the site and required when winter grading is requested. This will be a special section in the report.
- A project design meeting will be scheduled to review the plan. A consensus is required in order to receive approval of the plan. The items for this meeting shall include documentation of the proposal (plus any other required permits from outside agencies) and other items to implement the plan.
- If needed, when no consensus is reached, the County will convene a review panel of technical experts who are not connected with the development or review process to arbitrate the issues for which consensus is not reached.

Appendix C
Chemical Treatment & Experimental Processes

This section discusses criteria to be used for approval of chemical assisted clarification of stormwater. At this time, the approval of stormwater treatment with polymers and cat-ion agents is done on a case by case basis. **A separate permit from DOE is needed for most chemical treatments at this time.** The County will work with the technical proposals and DOE to review and approve the use of chemical water treatment. See the DOE web site (www.ecy.wa.gov/programs/wq/stormwater/newtech/) for information on currently proposed stormwater treatment new technology and the process for review and approval of emerging stormwater treatment technologies. Future related changes in state law shall be required by this rule.

Use of chemicals to start the formation of flocculation and precipitation of the fine clays and other particles in stormwater requires an individual permit from the DOE. Note that the potential use of a chemical process must be disclosed and included in the SEPA review done for the project by the County.

Chemical systems used to date fall into three general categories:

1. Ground application of Poly-acrilamides (PAM)
2. Cat-ion exchange batch processes with settling in clarifying ponds
3. Chemical treatment with filtering

If the treatment is to be followed by release into a stormwater system, stream or other surface water body, negotiations with DOE needs to start early in the process. Consult with Ecology on what will need to be included in the SEPA information to have it as one of the options addressed by SEPA. The information contained in the supporting documentation at the preliminary stage needs to be thorough, complete and specific. It needs to outline the process, testing and other parameters proposed for quality assurance, contingency plans, and experience of the proposed operators of the process.

These are the Minimum elements in the SWPPP for chemical treatment (however, DOE should be consulted for any items that they need for the permit):

1. Proposed polymer or chemicals to treat the stormwater.
2. Bench test plan to identify the dosage rates and range of variables anticipated for the site.
3. Bioassay proposal by independent lab.
4. Solids or sludge handling and disposal plan.
5. Engineering design aspects of the process with a description of:
 - Chemical feed system, mixing, sampling, testing and lab equipment
 - Stormwater conveyance and process system, pipes, pumps and ponds, power supply, backup systems
6. Logs, records and sampling program with predetermined sample points.
7. Emergency and contingency plans which identify probable failures.
8. Quality assurance program and audits by independent testing lab.
9. Normal operations reporting program and emergency plans.
10. Cleanup plans for potential chemical spills or equipment failures.
11. Identification of the key personnel responsible to ensure that the treatment program is implemented correctly and adjustments made when needed to respond to changes.

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12. Treatment operators shall demonstrate professional experience or certification.

When the process is approved, if the general contractor and owner have not been involved in the detailed information in the SWPPP, an education program for all parties involved with the construction will be one element of the SWPPP. The education program will be ongoing and periodic during construction so that as key personnel and subcontractors change that they will be kept informed about the system and their role in keeping the plan operational. The County design review engineer and inspector shall also be part of this educational process.