

Erosion & Sediment Control Manual



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Acronyms

BFM	BONDED FIBER MATRIX
CFR	CODE OF FEDERAL REGULATIONS
DEQ	OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
DSL	DEPARTMENT OF STATE LANDS
ESA	ENDANGERED SPECIES ACT
ESC	EROSION AND SEDIMENT CONTROLS
NMC	NEWBERG MUNICIPAL CODE
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NRC	NATIONAL RESPONSE CENTER
NRCS	NATURAL RESOURCE CONSERVATION SERVICE
OERS	OREGON EMERGENCY RESPONSE SYSTEM
ORS	OREGON REVISED STATUTES
TMDL	TOTAL MAXIMUM DAILY LOAD
USACE	US ARMY CORPS OF ENGINEERS

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DEFINITIONS

“Applicant” means the owner or authorized agent acting on behalf of the owner.

“City” means the City of Newberg, Oregon.

“City Engineer” means the individual designated by the City Manager to have the authority for review and approval on all projects subject to these design standards. The Assistant City Manager or Public Works Director may act in this role when the City Engineer position is vacant.

“Clay” means a soil with particle sizes that are less than 2µm.

“Curb” means the line that indicates the edge of a vehicular roadway within the overall right-of-way.

“Definition of Words” means that, whenever, in these Standards, the words "directed", "required", "permitted", "ordered", "designated", or words of like importance are used, they shall be understood to mean the direction, requirement, permission, or order of designation of the City Engineer. Similarly, the words "approved," "acceptable," or "satisfactory," shall mean approved by, acceptable to, or satisfactory to the City Engineer.

“Design storm” means a hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency and total depth of rainfall.

“Development” means residential, commercial, industrial, or institutional construction, alteration, or other improvement which alters the hydrologic characteristics of a property or properties.

“Director” means the City of Newberg’s director of public works or their authorized representative.

“Driveway” means a vehicular connection between on-site parking and the public right-of way.

“Easement” means areas located outside of dedicated right-of-way and which are granted to the City for special uses. Easements may also be granted to non-city entities such as franchise utility companies for their uses.

“Engineer” means the engineer, including the City's engineer, licensed by the State of Oregon as a Professional Engineer under whose direction plans, profiles, and details for the work are prepared and submitted to the City for review and approval, or who is in charge of and responsible for construction of the improvement.

“Erosion” means the weathering of a surface as a result of the movement of wind, water, ice, snow, or land disturbance activities.

“Erosion and sediment control” means a structural or non-structural device that is implemented to prevent erosion and sedimentation.

“Erosion and sediment control (ESC) plan” means a plan submitted to the city with scaled drawings, and the methods and types of devices to be implemented during the project to prevent erosion and sedimentation.

“Excavation” means an act by which soil or rock is cut, dug, quarried, uncovered, removed, displaced, or relocated.

“Fill” means a deposit of soil or other earth material placed by artificial means.

“Grade” means the degree of inclination of a street or slope.

“Grading” means any act by which soil is cleared, stripped, stockpiled, excavated, scarified, filled, or any combination thereof.

“Ground-disturbing project” means a project that includes activities that have the potential to create soil erosion from wind, precipitation, or ice creating sediment deposits in watercourses or land within the city including, but not limited to, demolition, clearing and grubbing, grading, excavating, transporting, and filling of land.

“Hazardous materials” means any material or combination of materials which due to its quantity, concentration, or physical, chemical, or infectious characteristics may cause or contribute to a substantial hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

“Impervious” means the hard surface area that either prevents or greatly retards infiltration and causes water to run off the surface in greater quantities or at an increased rate of flow from that present in undeveloped conditions. Surfaces which would ordinarily be considered pervious are considered impervious if they do not allow natural infiltration of stormwater.

“Infiltration” means the passage or movement of water into the soil subsurface.

“National pollutant discharge elimination system (NPDES)” means the general, group, and individual storm water discharge permits which regulate facilities defined in federal NPDES regulations and regulated through the Oregon Department of Environmental Quality.

“Natural Contour” means the grade of the land in an undisturbed state.

“Owner” means the owner of record of real property as shown on the deed records of Yamhill County or the person(s) who purchase(s) a property and furnishes evidence of that purchase under a written recorded land sale contract.

“Plans” means construction plans, including any applicable system plans, sewer plans, profiles, cross sections, elevations, project specific detailed drawings, standard details, etc., or reproductions thereof, signed by the Engineer of Record, approved or to be approved by the City Engineer, which show the location, character, dimensions, and details of the work to be performed, and which constitute part of the construction contract documents for privately financed development projects or publicly financed infrastructure improvement projects.

“Pollution” means a contamination or other degradation of the physical, chemical, or biological properties of a watercourse; or a discharge into a watercourse that could create a public nuisance or contaminate a watercourse such that its beneficial use, aquatic habitat, public health or public safety is at risk.

“Project” means an activity that creates impervious areas.

“Project start” means the first ground-disturbing activity associated with a project including, but not limited to, preparatory activities such as clearing, grubbing, grading, excavating, and filling.

“Responsible party” means a person or entity holding fee title to a property, tenant, lessee, or a person or entity who is acting as an owner’s representative including any person, company, nonprofit organization or other entity performing services that are contracted, subcontracted, or obligated by other agreement to meet the requirements of this code.

“Right-of-Way” means all land or interest therein which (by deed, conveyance, agreement, easement, dedication, usage, or process of law) is reserved for or dedicated to the use of the public for sidewalk, utility, and/or roadway purposes.

“Sand” means soil with particle sizes between 63µm and 2 mm.

“Sediment” means soil or other surface material held in suspension in surface water or stormwater.

“Sedimentation” means the process or action of sediment being deposited as a result of decreased surface water or stormwater velocity.

“Sensitive resources” means any area that, due to the natural resources or lack of filtering capacity present, is significantly more susceptible to the negative impacts of sedimentation, erosion and stormwater. Examples include direct hydrologic connections to lakes, streams, wetlands, springs, seeps, or other water resources; conservation areas; highly erodible soils and steep slopes; riparian buffers; high water tables; minimal depth to bedrock; infiltration areas, significant natural areas and environmental corridors; areas of historical importance; or areas inhabited by endangered species.

“Silt” means fine clay and silt textured soil particles, including clay that is easily erodible and remains in suspension even at low stream velocities.

“Site” means any property or combination of properties where a project is being proposed or completed.

“Slope” means the change in elevation of a ground surface expressed as a ratio of horizontal distance to vertical distance, eg. 3H:1V.

“Soil” means natural deposits overlying bedrock.

“Stabilize” means when vegetation or surfacing material is in place and well-established providing an area with maximum erosion protection.

“Stabilization” means the use of vegetative or structural techniques to prevent soil movement.

“Standard Drawings” means the detailed drawings of structures and/ or details or devices commonly used on public improvements and referred to on construction plans.

“Stockpile” means storage of any soil, sand, gravel, clay, mud, debris, refuse, or any other material, organic or inorganic, in a concentrated area.

“Stormdrain” means inlets, outlets, manholes, catch basins, pipes, and other structures used to convey stormwater to its ultimate discharge point.

“Stormwater” means water that originates as precipitation on a particular site, basin, or watershed and flows over land or impervious surfaces without percolating into the ground.

“Stormwater facility” means a location to filter, retain, or detain stormwater for the purposes of water quality or quantity management. The facility may be structural or non-structural, has been designed and constructed according to city design standards, and has been required by the city to control post-construction stormwater.

“Stormwater system” means the combination of both artificial and natural systems of drains, ditches, canals, culverts, detention ponds, retention ponds, dams, and other water control facilities used for collecting and transporting stormwater.

“Street Wash Water” means water used to wash streets after emergency personnel actions or when the organization or person receives prior city approval to discharge as long as the area previously cleaned using dry methods such as a sweeper or a broom and the discharge to the stormwater does not exceed federal or state water quality standards.

“Streets or Roadways” means designated land that will be used, or is being used, for transportation.

“Structure” means anything constructed or built, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

“Visible and measurable erosion” means any deposition of any organic or inorganic material exceeding 0.5 cubic feet which enters any adjacent property or component of the city’s stormwater system; a flow of turbid or sediment-laden water beyond the property of origin or into the city’s stormwater system; or earth slides, mud flows, land slumping, slope failure, or other earth movement that leaves, or is likely to leave, the property of origin.

“Watercourse” means any natural or artificial stream, river, creek, ditch, channel, canal, conduit, culvert, drain, gully, ravine, swale, or wetlands, in which water flows either continuously or intermittently. The width of the watercourse includes any adjacent area that is subject to inundation from overflow or floodwaters from the design storm.

“Wetlands” means transitional lands where the water table is usually at or near the land surface or the land is covered by shallow water. Wetlands:

1. Support, at least periodically, plants that thrive in saturated conditions;
2. Contain predominately undrained hydric soil; or
3. Are saturated or covered with shallow water at some time during the growing season of each year.

CHAPTER 1 PURPOSE AND SCOPE

Erosion from construction sites or any disturbed ground poses a number of problems. Sediment leaving the site may damage neighboring properties, block drainage systems, and enter roadways. Erosion from an unstable landscape can dramatically and negatively impact the habitat and survival of all aquatic species from mayflies to fish.

It is simpler and more effective to prevent erosion than to control sediment. Once soil particles become dislodged, it increases the cost and requires a greater effort to contain the resulting sediment in the runoff. Contractors are required to remove any sediment that leaves their site and settles in offsite watercourses, sensitive areas, roadways, and the stormwater system. Depending on the severity and timing of the release, contractors could face penalties and mitigation requirements if they are found to be negligent in providing inadequate or no erosion and sediment control measures.

The purpose of this manual is to provide the information needed to meet the City of Newberg's (hereafter known as the City) requirements for contractors, residents, and others engaged in construction projects within the city limits including required tools and steps necessary to prevent adverse effects of erosion from construction sites.

This manual gives a brief description of state and federal regulations that pertain to erosion and sediment control but is primarily intended to convey the City's requirements. Regulations of state and federal agencies such as the Department of Environmental Quality, the Department of State Lands, and the Army Corps of Engineers are not covered in detail. Compliance with the City's requirements does not absolve the owner or developer of the responsibility to comply with state and federal regulations.

CHAPTER 2 REGULATIONS

2.1 INTRODUCTION

Local, state, and federal agencies regulate the release of soil or sediment from a construction site. The following partial list provides information on the major requirements for erosion and sediment control. Because each construction site is unique, however, **each applicant is required to procure all permits and follow all regulations pertaining to their construction site.**

2.2 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT REQUIREMENTS 1200-C

Any construction project that disturbs an acre or more must obtain a 1200-C permit from the Department of Environmental Quality (DEQ). Detailed requirements and instructions for obtaining a 1200-C permit are available on the [DEQ web site](#).

Once a permit is obtained, a copy of the permit and its supporting documentation such as the ESC plan and details must be submitted to the City.

2.3 CITY OF NEWBERG REQUIREMENTS

The regulatory authority for the City's erosion control requirements is the [Willamette River TMDL Implementation Plan](#) and [NMC 13.25](#). In general, all projects that disturb 500 sq ft or more of land are required to install basic erosion and sediment control (ESC) measures that minimize sediment transport from the site, protect the downstream stormwater system, minimize dust, stabilize soil, and protect stockpiles. All projects, regardless of size, that are located in floodplains, stream corridors, or that have the potential to discharge stormwater offsite that will exceed state and federal water quality limits are required to install ESC measures. In addition, construction materials must be properly stored and handled during the project and the project must follow proper disposal procedures of all construction waste.

The City reserves the right to require additional site-specific ESC measures if the project is active between October 1st and May 31st of the following year; has a slope greater than 10%; is on property within 100 feet of watercourses or stream corridors; disturbs sensitive resources or is on property within 100 feet of the sensitive resources; disturbs 10,000 sq ft or more of land at any one time; is on property that has current or potential severe erosion; or could negatively impact adjacent properties or watercourses.

The City requires that an ESC Plan be submitted and approved prior to the start of construction for projects within the scope of [NMC 13.25](#). Specific ESC Plan requirements are discussed in section 4.4.

2.4 ENDANGERED SPECIES ACT (ESA)

Any act that modifies or degrades aquatic habitat, in a manner that significantly impairs essential behavioral patterns (such as breeding, spawning, rearing, migrating, feeding, or sheltering) or results in death or injury to members of a threatened or endangered species, is prohibited by the ESA and subject to mitigation and penalties.

2.5 NEWBERG STREAM CORRIDOR

The Newberg Stream Corridor was created to meet the requirements of the state planning goals (OAR 660-015-0000(5)). [Goal 5](#) required the conservation of open spaces and protection of natural and scenic resources. The regulatory requirements for the Newberg Stream Corridor Overlay Sub-District are listed in [NMC 15.300](#). A map showing the stream corridor can be found at the [Public Works Stormwater Code](#) webpage and is shown in Appendix A.

2.6 DEPARTMENT OF STATE LANDS (DSL) AND US CORPS OF ENGINEERS (USACE)

The DSL was first established in 1878 as the Office of the Clerk of the Land Board and is one of Oregon's oldest state agencies. DSL manages Oregon's submerged and submersible lands under navigable rivers, lakes, estuaries, and the territorial sea to maintain fisheries, commerce, recreation, and navigation.

A permit is required from DSL to remove, fill, or alter more than 50 cubic yards of material within the bed or banks of waters of the state including wetlands. However, if a project is located in State Scenic Waterways and areas designated essential salmon habitat, a permit is required for all in-stream activity regardless of size.

The DSL and USACE have developed a joint permit application process. Joint permit applications are forwarded from DSL and USACE to the DEQ for review. Frequently, applicants are required to incorporate protective measures such as bank stabilization, fish and wildlife protection, stormwater treatment, and spill protection into their construction documents.

CHAPTER 3 EROSION

The amount of erosion is influenced by the soil type and the amount of vegetation present on a site. While erosion is a natural process, disturbed soil can have erosion occurring at 1,000 times the natural rate due to vegetation removal and re-grading of slopes. By reducing the amount of disturbed soil through detailed planning and construction phasing and by implementing effective ESC measures, a contractor can greatly reduce the effect of construction on stormwater and erosion.

3.1 EROSION TYPES

Erosion occurs in several ways depending on the amount of runoff and the intensity of a storm. These include:

Splash – Splash erosion results when the intensity of a storm causes raindrops to fall hard enough to detach soil particles from bare or sparsely vegetated soil. It is then suspended and transported by runoff. This pounding action can destroy soil structure and create a hard crust when the soil dries. In subsequent storms, the crust reduces infiltration creating additional runoff, erosion, and sedimentation.

Sheetflow – Shallow runoff flowing over a level surface transports soil particles that have been detached by splash erosion. The shallow surface flow rarely moves as a uniform sheet for more than a few feet before concentrating and creating a rill, gully, or channel through erosion.

Rill – Rills are formed by concentrated sheetflow. It forms small but well-defined channels that are a few inches deep.

Gully – Rills form gullies which can enlarge in both uphill and downhill directions. Once a gully is created, it is very difficult to control and costly to repair.

Channel – When a watershed is altered by removing vegetation or increasing the amount of impervious areas, the increased runoff volume and velocity can cause channel erosion in a stream.

Wind also has an erosive effect on soil as evidenced by the dust storms of the 1930s. Wind removes soil from one place and deposits it on property that may be adjacent or miles away. It also removes moisture from soil, negatively affects soil structure, removes soil nutrients, and causes air pollution.

While a contractor cannot control a storm's intensity or the wind, they can reduce the amount of runoff through good planning, construction phasing, and implementing ESC measures. Reducing runoff results in a greatly decreased amount of erosion and sedimentation which translates into a cost savings for the contractor.

3.2 SOIL CHARACTERISTICS AND EROSION POTENTIAL

Soil is a product of its environment. A soil's tendency to erode is a result of a number of soil characteristics such as the soil type, void ratio, and porosity. Soils in Newberg are predominantly clay or silty clay.

Soil type is a measure of the particle size. Clay soils have a smaller particle size than sand. Clay particles are initially resistant to erosion because they are small enough to stick together through cohesion. Once that cohesion is broken and the particles become suspended in runoff or streams, they will travel great distances before settling out; in general, it takes 3 to 7 days for clay to settle out of suspension. This characteristic of clay soil underscores the importance of erosion prevention as opposed to trying to remove suspended clay from runoff. ***Preventing erosion using construction phasing and vegetative buffers will reduce the size of runoff control measures.***

The void ratio describes the size of the air pockets between soil particles. Clay soils have small voids which are easily closed by compaction. If the voids are closed, infiltration is reduced, more runoff is generated, and runoff control costs are increased for your project. ***Minimize compacted areas and amend disturbed soils with compost to preserve or increase void ratios and reduce the cost of your runoff control measures.***

Porosity relates the size and number of the voids to the total amount of soil. A soil with high porosity, such as sand, means that water can infiltrate quickly. Low porosity soils, such as clay, result in slower infiltration rates. Compaction reduces the number of voids further slowing infiltration rates. ***Construction phasing leaves soil undisturbed as long as possible in a project thereby preserving native porosity and reducing runoff volume. Using buffer areas can also result in lower volumes of runoff leaving a site.***

CHAPTER 4 ESC PLANNING

ESC planning includes determining the potential for erosion to occur on a site given its topography, soil structure, and the probable precipitation during the construction. A contractor should then determine which best management practices are appropriate for the site given the potential for erosion and the probability for pollution from the construction materials that will be used onsite. An ESC plan is created from these decisions.

4.1 EROSION POTENTIAL

The potential for erosion to occur depends on the soil type, slope, probable precipitation amounts and frequency, and the stormwater volume.

4.1.1 Soil Type

The [Natural Resource Conservation Service](http://websoilsurvey.nrcs.usda.gov) (NRCS) has surveyed Yamhill County and, for the purposes of ESC planning, these large-scale soil surveys may be used to determine the erosion and sediment control measures for a project. Actual soil types may be different on the actual site and a soil survey of the project area is recommended. See <http://websoilsurvey.nrcs.usda.gov>.

4.1.2 Slopes

Steep slopes and long, continuous slopes increase runoff velocity, can concentrate runoff in narrow channels and produce rills and gullies. If slope steepness is doubled while other factors are held constant, soil loss potential is increased 2-1/2 times. If both slope steepness and length are doubled, soil loss potential is nearly 4 times greater. Constructing long or steep slopes should be avoided; similarly disturbing long or steep slopes should also be avoided to minimize erosion.

4.1.3 Weather and Precipitation

The occurrence and amount of rainfall is important when deciding the type and size of erosion control measures to use on a site. The [Western Regional Climate Center](#) provides information on temperatures, wind direction, relative humidity, and precipitation. The [NOAA website](#) can provide weather predictions as well as current and historical weather and precipitation data. Design storms for the City are listed in **Table 1**.

4.1.4 Rainfall from Adjacent Properties

Runoff from adjacent properties flowing onto a project site can greatly increase the amount of runoff that a contractor is responsible for treating. While a contractor cannot create a reverse flow back onto the adjacent property, they can route runoff around a project site

using diversion swales or they can reduce the volume by using onsite buffer strips or vegetation to infiltrate the runoff. To decrease potential erosion, diverted runoff should flow short distances or over moderate to flat slopes.

Table 1. 24-Hour Design Storms

Storm Event	Rainfall (inches)
2-year	2.50
5-year	3.00
10-year	3.50
25-year	4.00
50-year	4.20
100-year	4.50

4.2 POLLUTION POTENTIAL

The ESC Plan must include procedures in the event of a spill that could create a water-quality problem. Inventory the construction materials that will be used onsite and determine the potential for pollution should a spill occur. Areas to be identified include maintenance areas, refueling areas, vehicle washing areas, material storage areas, and waste disposal areas including sanitary waste areas. Inspection of material and waste storage areas should be indicated on the ESC Inspection logs and reports.

4.3 BEST MANAGEMENT PRACTICES

Fit site construction to the terrain. When construction is tailored to the natural contours of the land, grading requirements are reduced and erosion potential is reduced.

Schedule grading and construction to minimize the duration of soil exposure. Minimize area and duration of exposure. In scheduling, take into account the season and the weather forecast. Grade during the dry season and stabilize disturbed areas as quickly as possible.

Schedule project components to minimize erosion. Install permanent or temporary curbing to reduce stormwater running onto your site. If an area can be left vegetated until the end of the project, use the vegetation as a natural filtration area. Schedule work near sensitive areas so that it is completed in a minimum timeframe, e.g. in one day.

Retain existing vegetation whenever feasible. Strip only the area where construction is active. Integrate existing trees and other natural vegetation into the site improvement plan.

Vegetate and mulch disturbed areas as soon as grading is completed.

Divert runoff away from site. Minimize the probability of precipitation flowing onto the site from offsite areas. Divert runoff to natural discharge points lower in elevation on the

site or offsite. Diversion to offsite locations must occur at natural discharge points and before the runoff encounters disturbed soil.

Minimize slope length and steepness. Interrupt slopes at regular intervals using barriers, traps, or reverse benches.

Keep flow velocities low. Line drainages with vegetation, matting, or rock; design broad, shallow flow areas; use check dams; and incorporate ESC measures at frequent intervals on slopes.

Prepare drainages and outlets to handle increased runoff. Design projects so that runoff is infiltrated onsite. Prepare drainages for peak velocities; use energy dissipaters at outlets.

Trap sediment on site. Detain runoff onsite so soil can settle out. Prevent tracking of sediment onto roadways.

Inspect and maintain control measures. Inspect control measures frequently particularly before, during, and after storm events to ensure that they are working properly. Correct problems as soon as they develop.

4.4 ESC PLANS

4.4.1 ESC Plan Requirements

An ESC Plan must be submitted to the City with other permit documents for approval unless a 1200-C permit is required for the project. If a 1200-C permit is required, then the applicant must provide a copy of the 1200-C permit and the supporting documents to the City before beginning construction.

A good ESC Plan has both a drawing and a narrative. The narrative explains and justifies the choices for how to keep soil onsite. It contains information about the existing site conditions, construction schedule, type of erosion controls, materials that may be onsite, and procedures to be followed in an emergency. The drawing should show existing conditions, clearing limits, access points, locations of the control measures, and locations of storage areas among other requirements. ESC Plans, drawings, revisions, and inspection logs should reference the control measures by number and title, e.g. 605 Inlet Protection.

The requirements listed in this section are minimum requirements and are subject to change based on local site conditions. Approval of an erosion and sediment control plan by the City does not relieve the contractor's responsibility to ensure that erosion control measures are constructed and maintained to prevent sediment from leaving construction site.

ESC Plans must include the Standard Notes listed in Appendix B of this manual.

4.4.2 ESC Plan Approval

The ESC Plan submitted must be approved by the City before a building permit can be issued.

A copy of the approved ESC Plan must be kept onsite at all times during construction.

4.4.3 Basic ESC Plan for a Small Site

Projects completed on a single lot, disturbing more than 500 square feet, and located on duplex or single family residential lots shall provide a Basic ECS Plan to the City for approval before permits are issued and construction begins. A template and example plan is available in Appendix C of this manual.

The Basic ESC Plan shall include:

- A. A cover sheet with the proposed name of the project; location of the project; name, address, and phone number of the owner, developer, and engineer; the land use authority case file number; and the name and 24-hour emergency contact information for the person responsible for maintaining and inspecting erosion and sediment control measures;
- B. The total acreage of the property and the total acreage of the proposed disturbed area;
- C. Dust control methods;
- D. Scaled drawing of site with the following:
 - 1. North arrow, legend, project boundaries, and adjacent streets;
 - 2. Current and proposed structures;
 - 3. Existing site topography and proposed contours at 1-ft intervals unless the slope of the site is greater than 2% in which case the contours can be at 2-ft intervals;
 - 4. Watercourses or other sensitive resources within 100 feet of the site;
 - 5. Location and types of proposed erosion control measures;
 - 6. Location of construction entrances, and exits and concrete washouts, and stockpiles;
 - 7. Location of all trees with an 8-inch or larger trunk diameter, measured 4ft from the ground, that are within the site boundaries or adjacent to it;
 - 8. Direction of surface flow indicated by arrows;
 - 9. Newberg stream corridor and the 100-yr floodplain if they are within 100 feet of the project site; and
 - 10. Storage locations for construction debris and toxic or hazardous materials used during the project.
- E. Inspection Schedule;
- F. Procedures to be followed in the event of a spill of toxic or hazardous material;
- G. Methods for re-vegetating the site after construction; and
- H. Disposal methods for construction debris and toxic or hazardous material.

4.4.4 Regular ESC Plan for a Small Site

Projects less than 1 acre but exceeding the Basic ESC Plan thresholds must submit a plan that conforms with the Basic ESC Plan and also includes the following additional information:

- A. Condition of existing stormwater facilities, including roadside or other drainage ditches, which transport surface water onto, across, or from the project site;
- B. Site maps that include the following additional information:
 - 1. Existing site topography and proposed contours at 2-ft intervals. Where slopes exceed 15%, contours may be shown at 5-ft intervals;
 - 2. Adjacent off-site drainage patterns indicated by arrows;
 - 3. Clearing and grubbing limits;
 - 4. Existing right-of-way, easements and jurisdictional boundaries;
 - 5. Adjacent rights-of-way boundaries;
 - 6. Existing sensitive areas and vegetated corridors; and
 - 7. Location of at least 1 spill kit.
- C. Detailed drawings of proposed erosion and sediment control measures; and
- D. Contents of spill kits.

A template and example plan is available in Appendix D of this manual..

4.5 DESIGNATED ESC INSPECTORS

The designated ESC Inspector must follow the approved ESC Plan or obtain approval to a revised plan that prevents pollution from leaving a site. They must inspect all control measures to ensure they are properly functioning. They must document all inspections, repairs, replacements, and revisions to the control measures. The documentation must be available onsite for inspection by the City or the DEQ.

The name and emergency contact information of the project's ESC inspector must be included on all ESC plans submitted to the City. In the event that a different ESC inspector is appointed, the applicant must notify the City's ESC Inspector within 48 hours and provide emergency contact information for the new project inspector.

CHAPTER 5 ESC MEASURES

5.1 GENERAL

Erosion and sediment control measures must be installed in accordance with the approved ESC Plan or 1200-C permit prior to ground disturbance. They must be removed after construction is finished, permanent stabilization measures are completed, and all project permits are finalized by the City.

The following basic measures shall be implemented on all sites:

- A. Clearing Limits;
- B. Dust control;
- C. Ground Cover;
- D. Construction Entrances and Exits; and
- E. Inlet Protection
- F. Sediment Fencing

5.2 CLEARING LIMITS (REQUIRED)

Areas of the project site that will be off-limits to construction equipment - such as stream buffers, stormwater infiltration areas, or critical root zones of preserved trees - shall have high-visibility fence that delineates the clearing limits. Sediment fence can be used as a sediment control and to indicate a clearing limit. However, if used for this purpose, it shall be maintained in order to provide its primary function of sediment control.

5.3 EROSION PREVENTION

Erosion prevention is the most effective and inexpensive method for reducing overall environmental impacts associated with construction activities. In clayey soils such as those found in the city, it can take 3 to 7 days or longer for clay to settle out once it is suspended in runoff. Therefore erosion prevention is the primary focus for ESC measures in the city. Many of the following techniques can reduce the erosion potential of exposed or disturbed soil by 80 to 95 percent.

5.3.1 Native Vegetation and Buffer Zones

Maintaining native vegetation is the most effective and inexpensive form of erosion prevention control. Buffer zones are planted strips of vegetation adjacent to disturbed areas which reduce erosion and runoff. These methods are particularly effective in sensitive areas such as wetlands, stream corridors, and near steep slopes. ***To the maximum extent practicable, existing vegetation shall be protected from compaction and left in place.***

Ground cover shall be planted and established by October 1st and continue to function through May 31st of the following year. If ground cover is not established by October 1st, the open areas shall be protected through May 31st of the following year with straw mulch, erosion blankets, matting, or other methods approved by the City.

A. Design Criteria

1. Preserve natural clumps of trees or shrubs.
2. Protect vegetation from compaction by construction equipment.
3. Clearly establish clearing limits outside the drip line of preserved trees using high visibility fence and flagging.
4. Fencing cannot be attached to trees or shrubs.
5. Fencing must be at least 3 feet high and be highly visible.
6. Slopes cannot exceed 2H:1V.

B. Maintenance

1. Repair fencing and/or flagging.
2. Reseed bare areas.
3. The appearance of concentrated flows indicates that other methods must be incorporated into the area.

5.3.2 Dust Control (Required)

Dust control is a required ESC measure for all projects in the city. Techniques include posting and enforcing speed limits onsite, vegetating disturbed areas, laying matting, or using water to moisten the top layer of soil.

A. Design Criteria

1. Schedule construction operations so that the least amount of project area is disturbed at one time.
2. Install temporary or permanent surface stabilization measures immediately after completing grading.

B. Maintenance

1. Maintain dust control measures through dry weather periods until all disturbed areas have been stabilized.
2. Immediately re-stabilize disturbed areas.

5.3.3 Ground Cover (Required)

Ground cover is a required ESC measure for all projects in the city. It is a protective layer of straw or other suitable material applied to the soil surface. Straw mulch and/or hydromulch are used in conjunction with seeding of critical areas for the establishment of temporary or permanent vegetation.

A. Design Criteria

1. Use on slopes during the wet season.
2. Divert concentrated runoff from above mulched areas.
3. Refer to **Table 2** for approved mulches, application rates, and depths.

B. Maintenance

1. Maintain cover thickness.

2. Use an erosion control blanket or re-mulch any areas experiencing erosion.
3. Monitor hydraulically-treated areas.
4. If sheet or rill erosion is evident then promptly re-apply or provide other ESC methods.
5. Re-mulch areas that fail to establish adequate cover.

Table 2. Ground Cover Application

MULCH MATERIAL	QUALITY STANDARDS	APPLICATION RATE PER ACRE	DEPTH OF MATERIAL	CONSIDERATIONS
Straw	Air dried, free from invasive seeds & coarse material	2 to 2 ½ tons or 90 to 120 bales	Min 2 inches uniformly spread	Native seed mixes required.
Yard Debris or Compost	Well-composted organic matter free of metals, plastics and other foreign matter	3-6 tons	2 inches for 3H:1V slopes 3 inches for 2H:1V slopes	Use to amend soil. Compost size: ¾ x 0 → 3:1 slopes or flatter. ½ x 0 → 2:1 slopes.
Wood or Cellulose Fiber	Dyed green; cannot contain growth-inhibitors	2000 lbs	1 to 3 inches depending on slope	Use hydromulcher. Soil and slope affect application rate. Use tackifier when recommended by the manufacturer.
Wood Chips or Stump Grindings	Green or air-dried and free of large coarse material	5-6 tons	1 to 3 inches depending on slope	For level areas only. Apply with mulch blower, excavation equipment, or by hand. Don't use on areas that require close mowing.
Gravel or Crushed Rock	Washed ¾ to 1.5 inch	9 yds per 1,000 sq ft	3 inches	Use for short slopes and foot traffic areas. Use larger pit-run for seepage-prone areas.

5.3.4 Seeding and Mulching

Seeding prevents erosion by establishing vegetation on disturbed areas and critical slopes. Seeding can be completed by hand, via a broadcast spreader, or through hydroseeding.

A. Design Criteria

1. Divert upslope concentrated runoff from treated areas.
2. Seed, low-phosphorus fertilizer, mulch, tackifier, soil amendments, Bonded Fiber Matrix (BFM), and chemical stabilization can be applied in one step.
3. Apply wood fiber or wood/paper mulch at rates of 2,000 to 2,500 lbs per acre.
4. Apply BFM at rates between 3,000 and 4,000 lbs per acre depending upon soil type and irregularities. BFM cannot be applied on saturated soils, in temperatures below freezing, or if the 24-hour forecast calls for precipitation.
5. Seed mixtures cannot contain seeds from species that are considered invasive or emerging invasive. A list of emerging invasive species can be found at the [Oregon invasives webpage](#) or call 1-866-INVADER.
6. After seeding, use irrigation to maintain a sufficient moisture level and maximize survival rates.
7. Anchor straw mulch with a liquid tacking agent when using it on a site.
8. Hydraulic mulch or tackifiers used for erosion or dust control must remain functional until 80% vegetation cover is established on the site.
9. Refer to Appendix G of this manual for application rates.

B. Maintenance

1. Re-apply in areas that fail to establish 80% vegetation cover.
2. Re-mulch and/or protect any areas experiencing erosion with matting or an erosion control blanket.

5.3.5 Matting (Details 609&610)

While vegetation is the most effective means of stabilizing soils and controlling erosion, a second choice is use of matting. Matting includes numerous erosion control products such as matting, blankets, fabric, and nets. Materials are placed on the ground and attached with stakes, metal staples, or geotextile pins.

Use organic matting materials (excelsior, jute, and coir) for areas requiring stabilization for up to three months. Use organic blankets for slope protection and short-term waterway protection and to improve the speed and success of re-vegetation. Use synthetic blankets only for long-term stabilization of waterways.

A. Design Criteria

1. Surface must be graded smooth and free from debris, rocks, clods, sticks, or grass.
2. Apply seed and low-phosphorus fertilizer, if needed, prior to matting. Seed mixes cannot contain invasive or emerging invasive seeds. A list of emerging invasive species can be found at the [Oregon invasives webpage](#) or call 1-866-INVADER.
3. Install so that matting is in complete contact with soil surface.
4. See **Table 3** for matting specifications and refer to manufacturer's specifications for staple pattern.
5. Slope Installation:
 - a. At top of slope, place matting in a trench and staple at intervals as shown in Standard Detail 609.

- b. Unroll matting downhill and overlap crosswise and lengthwise as shown in Standard Details 609&610.
- c. At bottom of slope, extend mat 2 feet beyond the toe of the slope, turn material under 4 inches and staple at 12 inch intervals.
6. On 4H:1V slopes, rolls can be placed in horizontal strips.
7. When used in a swale or channel application, install mat in the direction of flow and do not join in the center of the swale or channel.
8. An erosion control blanket, installed correctly and combined with seeding, constitutes 100% sediment and erosion control for the covered area.

B. Maintenance

1. Repair any damaged areas of the net or blanket and staple into the ground any areas not in close contact with the ground surface.
2. Repair and protect eroded areas.

Table 3. Matting Specifications

MATTING TYPE	MAX SLOPE OR CHANNEL TYPE	NETTING TYPE
Straw	3H:1V	Type 1: Photodegradable polypropylene top and bottom Type 2: 100% biodegradable (use for sensitive habitat areas)
Straw and Coconut	2H:1V	Type 1: Photodegradable polypropylene top and bottom Type 2: 100% biodegradable (use for sensitive habitat areas)
Coconut	2H:1V or low-flow channel	Type 1: Photodegradable polypropylene top and bottom Type 2: 100% biodegradable (use for sensitive habitat areas)
Jute	3H:1V or short 2H:1V slope	100% biodegradable
Excelsior	2H:1V or low-flow channel	Photodegradable extruded-plastic mesh top and bottom
Coir fabric	1H:1V or channel with maximum velocities of 8 to 10 feet per second	Type 1: 1-inch grid 100% biodegradable Type 2: ½-inch grid biodegradable Type 3: ¼-inch grid biodegradable

5.4 RUNOFF CONTROL

Erosion and sediment control measures that control the amount of runoff discharged from a site translate to lower volumes and velocities of runoff. Sediment and other pollutants discharging from the site are reduced as runoff volume and velocity is decreased.

5.4.1 Swales

Swales convey smaller flows in low-gradient drainages to larger conveyances such as ditches or stabilized outlets. Swales may be used singly or in combination with each other.

A. **Design Criteria**

1. Design swales according to **Table 4**.
2. Swales must carry the peak runoff from a 2-year 24-hour storm event without eroding. See **Table 1** for the 2-yr 24-hour design storm. Increase capacity when flood hazards exist.
3. The channel shape may be parabolic or trapezoidal (flat-bottomed). V-shaped swales are not allowed.
4. Small check dams or flow spreaders may be necessary to minimize channelization.
5. Install the diversion horizontally at intervals across a disturbed slope.
6. Construct benches or shorten distance between swales for slopes of erodible soils.
7. If the swale intercepts runoff from disturbed areas, route runoff to a water quality facility for settling.
8. If the swale intercepts runoff from undisturbed areas, route runoff downslope of any disturbed areas and discharge it at a stabilized outlet.
9. Provide matting, if necessary, to protect swale from erosion.

Table 4 Design criteria

BOTTOM WIDTH	2-ft minimum and level across the swale	
DEPTH	1 foot	
SIDE SLOPES	2H:1V or flatter	
GRADE	Maximum 5% with positive drainage to a suitable outlet.	
SLOPE OF DISTURBED AREA VS. HORIZONTAL SPACING	<5%	300 ft
	5-10%	200 ft
	10-25%	100 ft
	25-50%	50 ft
SLOPE STABILIZATION	Temporarily seed or line with rock to a depth of 6 inches and press into the bank approximately 3 to 4 inches for a depth of 2 to 3 inches	
OUTLET	Level spreader or riprap to stabilized outlet/sedimentation pond.	

B. **Maintenance**

1. Re-vegetate or provide additional measure if swale has established vegetation covering less than 80% of the area.
2. Remove sediment accumulations at inlet, outlet, and within the swale to maintain designed carrying capacity.
3. Immediately repair damage resulting from debris, scour, erosion, or compaction.
4. Inspect and repair as necessary after every major storm.
5. Minimize construction traffic over temporary dikes and swales.

6. Check the channel outlet and all road intersections for bank stability and evidence of piping or scour holes and make repairs immediately.

5.4.2 Outlet Protection (Detail 606)

Used in conjunction with other erosion and sediment control measures, outlet protection dissipates energy to decrease discharge velocities and erosion potential.

Design Criteria

- Use the standard detail for outlet protection as a minimum. Consider site conditions to determine if a more complex energy dissipater may be required.
- Use at the outlets of swales, ditches, or other conveyances especially where runoff is discharged to a natural or man-made drainage feature such as a stream or wetland.

Maintenance

- If there is scour at the outlet, protect the eroded area by increasing the size of the energy dissipater facility, decreasing the slope, or discharging to a larger vegetated area.
- Remove accumulated sediment frequently.

5.4.3 Surface Roughening (Detail 608)

Roughening is accomplished by creating horizontal grooves on slopes with tracked equipment. It retains water by creating barriers to vertical water flow. Excessive roughness is undesirable where mowing is planned.

A. Design Criteria

1. Tracking should be accomplished by driving equipment **up and down** the slope to create horizontal depressions or grooves.
2. Height of track grousers should be 1.5 inches or greater.
3. Immediately seed and mulch roughened areas.

B. Maintenance

1. Fill rills, gullies, or slumps slightly above the original grade, then re-seed, mulch, or mat as soon as possible. Use matting if these measures do not prevent erosion.

5.5 SEDIMENT CONTROL PRACTICES

Sediment control measures are usually placed around the perimeter of a disturbed area where water can leave the site. Sediment control measures must be in place before land clearing and grading begins. They are the last line of defense for the preservation of water quality and cannot be used as a primary ESC method.

When erosion occurs and sediment is deposited in locations where it can enter the stormwater system, sensitive areas, or watercourses, mechanical means of removing the sediment should be used first and sediment filtration methods such as inlet protection

should be used second. Washing the sediment into the stormwater system, watercourses, or sensitive areas is strictly prohibited and subject to penalties.

If contaminated soil is encountered during construction, the contractor shall stop work immediately and implement the spill control procedures. The contractor shall immediately notify the City's Erosion Control Inspector and, depending on the severity, an emergency response team and the DEQ.

5.5.1 Construction Entrance and Exits (Required - Detail 601)

Construction entrances and exits are required ESC measures for all projects in the city. They are generally stabilized rock pads placed at construction site access points which eliminate sediment from being transported onto roadways. Small site projects may use an existing paved driveway as long as it achieves the same protection as a rock pad.

The best placement of a construction entrance/exit is not always the main entrance to a project because utility installation can disrupt the entrance/exit during a project.

A. Design Criteria

1. Install construction entrance/exit at all access points and prior to any site work.
2. Construct pad on a firm, compacted subgrade.
3. Minimum dimensions:
 - a. Single Family Residential → 20 ft length x 20 ft width
 - b. All other sites → 50 ft length x 20 ft width
4. Minimum depth is 8 inches.
5. Do not install rock on paved surfaces.
6. Include a tire wash facility if the entrance does not prove effective in retaining sediment onsite. The tire wash facility cannot drain to the stormwater system, watercourses, sensitive areas, or roadways.

B. Maintenance

1. Add or replace rock as needed to maintain the specified dimensions.
2. Immediately remove any debris, soil, or sediment tracked into roadway.
3. Using water to wash sediment into the public right-of-way, stormwater system, watercourses, or sensitive areas is strictly prohibited.

5.5.2 Tire Wash Facility (Required, sites over 1 acre)

Tire wash facilities ensure that soil and debris are not tracked offsite. Washwater from the facility is filtered and conveyed to an area for settling or infiltration. A tire wash facility is required if the construction entrance/exit will not be adequate to prevent sediment from leaving the site.

A. Design Criteria

1. Minimum length: 40 ft.
2. Minimum width: 10 ft.

3. Minimum rock depth: 8 in.
4. Average tire wash sump: 18 in.
5. Install subgrade geotextile fabric as a liner
6. Use 4-6 in. rock over geotextile fabric
 - **Alternate:** 3 in. asphalt lift over a stable base course
7. Drain to suitable collection and treatment facility.
8. Install fencing as necessary to restrict exiting construction vehicle traffic to the tire wash.

B. Maintenance

1. Inspect weekly minimum, or more depending upon use.
2. Clean or replace rock clogged with sediment.
3. Maintain tire wash sump depth
4. Maintain a clean run-out pad
5. Immediately remove any soil, sediment, or debris that gets carried from the pad to the roadway.
6. Ensure that the washwater drainage, collection, and treatment system is functioning.

5.5.3 Dewatering

Dewatering separates water from sediment through the use of weir tanks, gravity boxes, non-contained sediment bags, sand media filtration, and bag/cartridge chambers. Two types of filtration systems are gravity and pressure.

A. Design Criteria

1. Determine soil type and select an appropriate location that will not discharge to the stormwater system, watercourses, or sensitive areas.
2. Weir tanks and filter boxes are effective for removal of sand.
3. Sand media filters are effective for removal of sand and silt.
4. Cartridge filter units can remove silt and clay.
5. Rock berms, bio-filter bags, or sediment fences shaped in a half circle and stages in a series of three can be installed as an alternate method.

B. Maintenance

1. Remove sediment when it reaches 1/3 capacity.
2. Material must be placed in an approved location on site or exported from site.

5.5.4 Inlet Protection (Required - Detail 605)

Inlet protection is a required ESC measure for all projects in the city. It filters runoff and removes sediment before runoff reaches a stormdrain or other component of the stormwater system. It is a last line of defense so it **MUST** be correctly installed.

Design Criteria

- Place inlet protection in areas where water can pond and where ponding will not have adverse impacts.
- Inlet protection must allow for bypass in a severe storm event.
- Required for all storm drains downslope of the disturbed area or construction area.
- Biobags can be used on paved or unpaved areas.
- Sediment fences and straw bales can only be used in unpaved areas with slopes less than 5 percent.
- Sediment fences and straw bales cannot be used for concentrated flow or installed on paved areas such as streets.
- **Biobags**
 - o Install with a 6" overlap around storm drain.
 - o Biobags must be flush against the curb or disturbed area must be smooth.
 - o Stake bags or bales with 2 1"x2" wooden stakes where applicable. Stakes must be driven into the ground 12 inches with 2 to 3 inches protruding from the top if used on soil.
- **Straw Bales**
 - o Tightly abut straw bales in a 4" trench with a 12" overlap.
 - o Stake with 2"x2" wooden stakes.
- **Catch Basin Insert or silt sack**
 - o Use expansion restraint to prevent catastrophic failure of insert.
 - o Can only be used as an additional inlet protection; cannot be used as the primary inlet protection.

Maintenance

- Inspect and remove sediment when it reaches 1/3 of the bag or bale height.
- Inspect and remove sediment if the catch basin insert or silt sack is 1/3 full.
- For biobags and bales, use a mechanical means to remove sediment deposits (shovel or broom). **Using water to remove sediment is strictly prohibited.**
- Check for undercutting and flow diverting around the inlet protection.
- Repair or replace inlet protection when split, torn, raveling, or otherwise impaired.

5.5.5 Sediment Fence (Detail 602)

A sediment fence is an entrenched geotextile stretched across and attached to supporting posts. Sediment fences are adequate to treat flow depths consistent with overland or sheet flow.

A. Design Criteria

1. Shall be installed on-contour at all downgradient site perimeters.
2. Sediment fence shall only be used for sheetflow. Sediment fence shall not be used to deflect concentrated flows.
3. Standard or heavy-duty sediment fence shall have manufactured stitched loops with 2x2-inch 4-ft posts. ***Stitched loops shall be installed on the uphill side of the sloped area.***
4. Sediment fences should be installed a minimum of 3 feet from toe of slope in order to maximize runoff detention capability.

5. Installation:
 - a. A trench shall be excavated 6 to 8 inches deep.
 - b. Place the sediment fence such that the stitched loops are installed on the uphill slope with stakes driven at least 6 additional inches into the ground.
 - c. Backfill trench on both sides of fence.
6. Posts shall be spaced a maximum of 6 feet apart without wire support and a maximum of 10 feet apart with wire support.
7. When sediment fence approaches its termination point, turn fence uphill and extend one full panel (6 feet).
8. When joining two or more sediment fences together, join the two end stakes by wrapping the two ends at least one and one half turns and driving the joined stakes into the ground together.
9. Height of a sediment fence shall not exceed 3 feet. Sediment accumulation shall not exceed 1/3 of the fence height.

B. Maintenance

1. Immediately repair any damage.
2. Remove accumulated sediment once it has reached 1/3 the height of the sediment fence or 1 ft maximum.
3. Inspect for channel formation parallel to the fence which indicates the geotextile is clogged and/or acting as a flow barrier. Replace sediment fence or create partitions to reduce the potential for channel formation.
4. Replace deteriorated or clogged geotextile.
5. Check for undercutting or piping under fence.

5.5.6 Wattle (Detail 611)

Approved wattles are rice straw, coconut fiber, or Excelsior wattles. They have an approximately 8 to 9 inches diameter and are 7 to 25 feet in length. Wattles are placed in shallow trenches and staked along the contour of newly-constructed or disturbed slopes.

A. Design Criteria

1. Rills and shallow gullies should be smoothed as work progresses.
2. Install wattles starting at the base of the slope. Install working uphill and parallel to the contour.
3. Wattle must be tight against the soil in trench. Make sure no gaps exist between the soil and the wattle.
4. Adjacent wattles must be tightly butted and staked. Stagger wattle joints.
5. Use 1x2-inch wood stakes.
6. Stakes must be driven a minimum of 12 in. into undisturbed material with 2 to 3 inches protruding above the wattle.
7. Install stakes at each end and every 4 ft. Additional stakes may be driven on the downhill side of the trenches.
8. Install perpendicular to flow direction and on the contour.
9. Trenching may be necessary to maintain ground contact with the wattle.

B. Maintenance

1. Make sure the wattles are in contact with the soil and are butted end to end. Retrench, replace, or relocate wattles so rills do not start.
2. Re-seed vegetation or install matting if necessary to stabilize slope.
3. Remove sediment when accumulation is 1/3 of the visible wattle height.
4. Repair or replace split, torn, unraveling, or slumping wattle.

5.5.7 Straw Bale (Detail 603)

Straw bales can be used for sediment control when placed together with no space between them and staked. Bales need to be trenched into the soil 4 inches and backfilled.

Design Criteria

1. Adjacent straw bales must be tightly butted and staked.
2. Use 1x2-inch wood stakes with 2 stakes driven into each bale.
3. Stakes must be driven a minimum of 12 in. into undisturbed material with 2 to 3 inches protruding above the bale.
4. Install stakes near each end of the bale. Additional stakes may be driven on the downhill side of the trench.
5. Install perpendicular to flow direction and on the contour.

Maintenance

1. Make sure the bales are in contact with the soil and are butted end to end. Retrench, replace, or relocate bales so rills do not start.
2. Re-seed vegetation or install matting if necessary to stabilize slope.
3. Remove sediment when accumulation reached a six-inch (6") height.
4. Repair or replace bale when split, baling string is torn or unraveling, or baling wire is broken.

5.5.8 Vegetated Strips

Stormwater can be diverted to existing vegetated areas by phasing construction. It is important to provide high-visibility fence around a vegetated area to retain its infiltration capacity.

Design Criteria

- Minimum width of vegetated strips is 25 feet.
- Slopes must be flatter than 4H:1V with a minimum length of 150 feet.
- For a 6H:1V slope, the minimum length is 200 feet.
- For a 10H:1V slope, the minimum length is 250 feet.

Maintenance

- Fill rills and gullies and re-seed.
- If rills and gullies occur, use a level spreader or other energy dissipater to create better sheetflow conditions.

CHAPTER 6 SOURCE CONTROL

6.1 MATERIALS

The ESC Plan must specify the storage and disposal methods for all hazardous or toxic materials. The following materials are used on most construction sites:

- Oil or water-based paint
- Equipment fuel
- Form oil and used oils
- Sealers
- Degreasers
- Petroleum products
- Batteries
- Vehicle batteries
- Pesticides and herbicides
- Adhesives
- Fluorescent and high-density lamps
- PCBs (generally only found in older electrical equipment)
- Asbestos (insulation, tiles, joint cements and caulks, stucco, and other materials)
- Lead (paint, roofs, tank linings, plumbing soft solder)
- Contaminated Soils

Contractors are encouraged to call the DEQ hazardous material program (1.800.452.4011) for more information regarding the materials used on their project and potential pollution sources.

6.2 SPILL PREVENTION AND RESPONSE

It is important to be able to easily locate the ESC Plan in the event of an emergency; it can save an employee's life, keep a spill contained, or lower the costs of a cleanup. In order to efficiently respond to an emergency:

- A. Notify emergency personnel of the hazardous or toxic materials that are onsite.
- B. Require that contractors and sub-contractors read your ESC Plan so they know the function of the control measures and what to do in the event of an emergency.

Post spill hotline numbers in high-visibility areas, have spill kits on hand, and train employees on spill response. Specify designated areas for liquid storage and for all vehicle and equipment maintenance, fuel, and washing operations. Sites should be well-marked and must be located away from watercourses, storm drains, and sensitive areas.

Minor spills are those spills that are easily cleaned up with materials on hand. The most common type of minor spill occurs during re-fueling of equipment. In the event of a minor spill, clean up the spill and dispose of waste products properly.

A major spill has occurred when you cannot contain the spill with onsite resources and a safety risk is evident for personnel. Also, any discharge to waters of the state is considered a major spill. For major spills, call 911 and the City Engineering Department. Use spill kits

to contain and/or clean up the spill. Used materials must be disposed of as hazardous waste.

Major spills must be reported (see Appendix H).

6.3 SECONDARY CONTAINMENT

Secondary containment and cover must be provided for all liquid storage areas, vehicle and equipment fueling areas, and maintenance areas. Toxic and hazardous materials must be covered and be in a designated area with secondary containment. Bagged and boxed materials must be on pallets and not allowed to sit on the ground.

Containment can include any or all of the following:

- A. Covers or canopies;
- B. Reverse grading;
- C. Berms around downgradient sides of area;
- D. Drainpans or drop cloths to catch spills or leaks when removing or changing fluids; or
- E. Holding tanks or structures.

Secondary containment shall provide for spill containment of the largest container within its boundary or 10% of the aggregate volume of all the containers within its boundary whichever is larger. The secondary containment receptacle shall be impervious to the materials stored within its boundary for a minimum contact time of 72 hours.

Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access. Materials shall be stored in their original containers with the original product labels. Incompatible materials such as chlorine and ammonia shall not be stored in the same secondary containment receptacle.

6.4 VEHICLE AND EQUIPMENT FUELING AND MAINTENANCE

Onsite fueling shall only be used where it is impractical to send vehicles and equipment offsite. If offsite fueling is prohibitively expensive, the following steps shall be taken for fueling onsite:

- A. Locate the facilities on impervious areas where spills cannot enter watercourses, sensitive areas, or the stormwater system.
- B. Provide secondary containment as well as a dedicated spill kit and waste receptacle.
- C. Provide signage for the area.

Equipment shall only be fueled offsite or at a dedicated fueling area. Dispensing machines shall have an appropriate shutoff valve. **Topping off and unattended fueling is prohibited.**

Maintenance areas shall be near onsite fueling areas if they are present on the jobsite. Maintenance areas must have secondary containment and a dedicated spill kit easily available in the area.

Segregate, reuse, or recycle grease, oil, oil filters, antifreeze, cleaning solutions, automotive batteries, and hydraulic and transmission fluids. Vehicle washwater must be contained onsite and not allowed to enter the stormwater system.

6.5 CONCRETE WASTE MANAGEMENT (DETAIL 607)

It is expressly prohibited to wash out concrete trucks where it can enter the stormwater system, sensitive areas, or watercourses. Unused concrete shall be sent back to the ready-mix facility. Washwater from concrete trucks and equipment must be discharged into a concrete washout and allowed to evaporate and dry. Cover must be provided between October 1st and May 31st of the following year.

6.6 STRUCTURE PREPARATION AND PAINTING

Store paints, preparation and cleaning materials, and equipment in a covered designated area. Cover can include temporary scaffolding with secured drop cloths for small areas. Liquids must have secondary containment in addition to cover. Building washing is allowed only when the discharge is contained onsite and away from watercourses, sensitive areas, and the stormwater system. The use of acids, bases, metal brighteners, steam, or heated water is prohibited.

Avoid or limit activities during rainy or windy days to avoid contaminating stormwater and airborne drift.

6.7 WASTE DISPOSAL

Determine which construction wastes can be reused or recycled and provide areas for them that are separate from landfill waste. Use water-tight dumpsters with lids onsite. Separate hazardous waste from all other waste for proper disposal. **DO NOT mix waste types.**

Collect trash from site daily especially during windy or rainy conditions. Trash collection and recycling facilities shall be one of the last measures removed from the site.

Promptly transfer used fluids to the proper waste or recycling drums. Do not leave full drip pans or open containers lying around the site. Use appropriate materials such as absorbent pads on small spills and dispose of the materials appropriately.

Stockpiles of contaminated soil must be covered with plastic sheeting and/or have secondary containment.

Sanitary waste facilities shall not be located near the stormwater system, watercourses, or sensitive areas. Facilities shall be maintained by a licensed reputable service and be properly functioning. Waste shall be hauled to the wastewater treatment plant for disposal.

CHAPTER 7 INSPECTIONS AND DOCUMENTATION

7.1 GENERAL

The City reserves the right to inspect construction sites during normal business hours, heavy rainfall (greater than 0.3 inches of rainfall per hour), or in an emergency situation. During an inspection, the City ESC Inspector may request and receive a copy of any construction documents including, but not limited to, permits, ESC inspection logs and reports, or the latest version of the approved ESC Plan. The following list should be available at all times for review:

- A. Construction permits;
- B. ESC Plan and revisions; and
- C. Inspection logs and reports documenting maintenance, repairs, or replacements.

7.2 INSPECTIONS

All erosion and sediment control measures must be inspected by the City ESC Inspector prior to the start of construction. The applicant must inspect and keep onsite documentation regarding inspection dates and times, repairs, and replacements to the ESC measures. The documentation must be available to the City during normal business hours or in the event of an emergency.

Example inspection logs and reports are available in Appendix E of this manual. The inspection log should be used during the site inspection with the report created after the inspection and updated as action items are completed. A control measure in good condition should need only scheduled maintenance. A control measure in fair condition will need repair and/or maintenance. A control measure in poor condition is not functioning properly and needs to be replaced.

The inspection frequency for ESC measures is:

Active Period

- Daily when precipitation in the previous 24 hours is 0.5" or greater.
- Weekly during dry periods.

Prior to the site becoming inactive or in anticipation of site inaccessibility.

- Once to ensure that erosion and sediment control measures are in working order. Any necessary maintenance and repair must be made prior to leaving the site.

Inactive periods greater than fourteen (14) consecutive calendar days.

- Once every two (2) weeks.

Periods during which the site is inaccessible due to inclement weather.

- If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location.

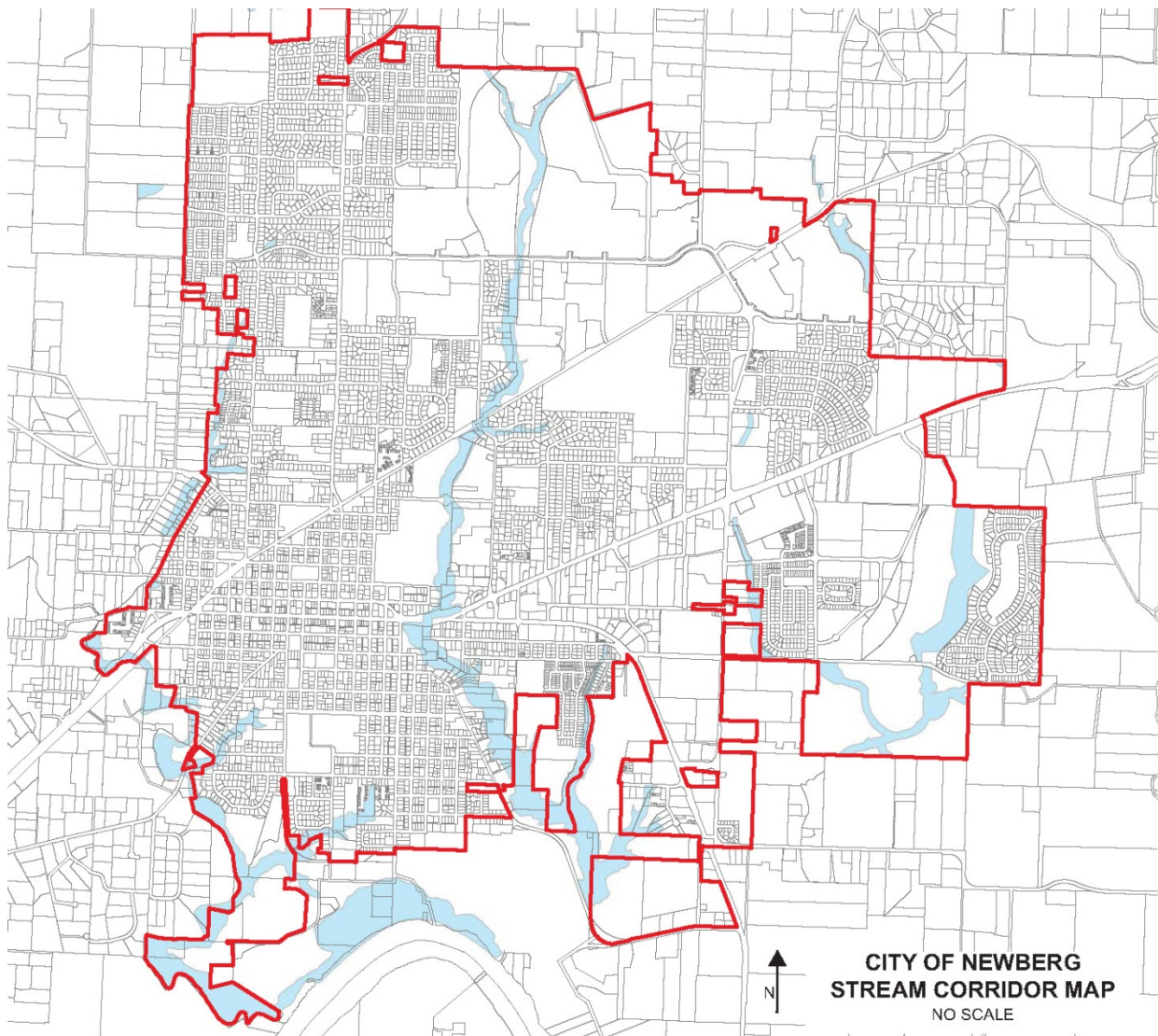
The inspector must document the amount of precipitation in the previous 24 hours (can use internet sources or site rainfall gauge), condition of the ESC measures, any repairs or replacements required, and the date that the repairs or replacements were completed.

7.3 DOCUMENTATION

Every construction site must have the approved ESC Plan and a site log book that includes the inspection logs and reports, spill reports, the original ESC Plan, and any modifications made to the ESC Plan. These items must be provided to the City upon request.

APPENDIX A: NEWBERG STREAM CORRIDOR OVERLAY MAP

Refer to the City of Newberg Development Code Chapter 15.342, Stream Corridor Overlay Subdistrict, for determining the location and development standards within the subdistrict.



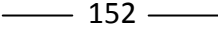
APPENDIX B: REQUIRED STANDARD NOTES FOR ESC PLANS

1. The implementation of this ESC plan and the construction, maintenance, replacement, and upgrading of the ESC facilities is the responsibility of the applicant/contractor until all construction is completed, approved and vegetation/landscaping is established.
2. The ESC Plan, any revisions, and inspection logs shall be kept onsite at all times.
3. The ESC measures shown on the plan are the minimum requirements for the project site and shall be upgraded as needed to maintain compliance with all regulations.
4. All ESC measures shall be approved, in place, and functional prior to any ground disturbance of the site. Contractor shall maintain all ESC measures throughout construction.
5. Clearing limits, critical riparian areas, buffer zones, and preserved vegetation (including important trees and associated critical root zones) shall have high visibility fence installed before grading or construction to identify, mark, and protect the areas.
6. Construction activities will avoid or minimize any excavation or other soil destabilization from October 1st to May 31st of the following year.
7. Temporary site stabilization measures will be installed at the end of the shift before a holiday or weekend or at the end of each workday if rain is forecast in the next 24 hours.
8. Sediment controls must be installed and maintained along the site perimeter on all down-gradient sides of the construction site and at all active and operational internal stormdrains at all times during construction.
9. Dry methods must be used to remove sediment and concrete sweepings from areas where discharge is likely to the storm drains, streets, watercourses, or sensitive areas.
10. All dirt and debris tracked onto streets must be removed immediately if it can be spread by traffic or otherwise reach storm drains, watercourses, or sensitive areas.
11. Sediment discharged offsite must be placed back onsite within 24 hours and stabilized. In-stream work shall be performed in accordance with the procedures and timeframes of the Oregon Department of State Lands.
12. No sediment-laden water may be pumped, diverted, or otherwise discharged offsite unless approved by the ESC Plan.
13. Sediment must be removed when it has reached the level specified in the standard detail.
14. Sediment must be removed from sumped structures when the sediment retention capacity has been reduced by 1/3rd and within 30 days of project completion.
15. When removing saturated soils from the site, either watertight trucks must be used or loads must be drained onsite until dripping has been reduced to minimize spillage.
16. Erosion control measures will be inspected on active sites at least weekly or after precipitation in excess of 0.5 inches in 24 hours. If a site will be inactive more than

fourteen (14) days, erosion control measures will be inspected prior to the inactive period and every two (2) weeks during the inactive period.

17. All construction sites must follow proper storage, application, and disposal procedures of construction materials. No dumping or disposal of construction debris, waste, or spoil material will occur in any stream, stormwater system, wetlands, surface waters, or other watercourses or sensitive areas.
18. Written spill prevention and response procedures are required for all sites.
19. Toxic and hazardous materials must have cover and secondary containment.
20. Concrete trucks shall not discharge washwater where it is likely to flow into storm drains, streets, watercourses, or sensitive areas.
21. Paving activities shall be minimized between October 1st and May 31st of the following year to avoid potential discharge of paving chemicals into the storm drains, streets, watercourses, or sensitive areas.
22. All ESC measures shall be removed from the site 30 days after construction is completed and approved by the City.

APPENDIX C: SYMBOLS FOR EROSION AND SEDIMENT CONTROL MEASURES

	Silt Fence
	Biobags
	Gravel Construction Entrance
	Straw Bale
	Sediment Sack
	Concrete Washout
	Wattle
	Tree
	Ex. Ground Spot Elevation
	Ex. Ground Contour
	Finish Grade Contour
	Ex. Surface Flow Direction
	Proposed Surface Flow Direction

APPENDIX D: BASIC SMALL SITE ESC PLANS

INSTRUCTIONS

The City has developed this template to assist you with completion of your ESC Plan, however **you are required to follow all applicable local, state, and federal regulations for your project.**

The information in the narrative portion of the ESC Plan can be included on the required ESC Plan drawings if submitted on paper that is a minimum of 11"x17". An example of a narrative included on an ESC Plan drawing is at:

<http://www.deq.state.or.us/wq/wqpermit/docs/general/npdes1200c/dwgs/1200CPlanSet.pdf>.

The required standard notes for ESC Plans (Appendix B of this manual) must be included on the ESC Plan drawings.

The Oregon Department of Environmental Quality (DEQ) requires an application and approval of a 1200-C permit for all projects that disturb one or more acres. ***If your project will disturb 1 or more acres, obtain the DEQ 1200-C permit and submit a copy of the permit with its supporting documentation to the City.***

BASIC SMALL SITE ESC PLAN

SITE INFORMATION

Instructions:

- In this section, provide basic site information. This information will be useful for record keeping, maintaining your schedule, and applying the conditions you have designed for your project.
- Detailed information on determining your site's latitude and longitude can be found at www.epa.gov/npdes/stormwater/latlong or by using Google Earth and holding the curser over the project site.

Project/Site Name: _____

Project Address: _____

City: Newberg

State: OR

ZIP Code: 97132

County: Yamhill

Latitude at center of project site: _____

Longitude at center of project: _____

Method for determining latitude/longitude:

☐ USGS topographic map (specify scale: _____)

☐ EPA Web site ☐ GPS

☐ Other (please specify): _____

CONTACT INFORMATION

Instructions:

- List contact information for applicant and all contractors or subcontractors expected to work on-site. Notify contractors and subcontractors of ESC requirements applicable to their work.

Emergency Contact Information:

Name: (Required) _____

Emergency Telephone Number: (Required) _____

Email: (Required) _____

Applicant:

Company or Organization Name: _____

Name: _____

Address: _____

City, State, Zip Code: _____

Telephone Number: _____

Email: _____

Project Manager or Site Supervisor (if different from Applicant):

Company or Organization Name: _____

Name: _____

Address: _____

City, State, Zip Code: _____

Telephone Number: _____

Email: _____

24-hour emergency contact information: _____

Subcontractor:

Company or Organization Name: _____

Name: _____

Address: _____

City, State, Zip Code: _____

Telephone Number: _____

Email: _____

24-hour emergency contact information: _____

(Repeat as necessary)

This ESC Plan was Prepared By:

Company or Organization Name: _____

Name: _____

Address: _____ City, State, Zip Code: _____

Telephone Number: _____

Email: _____

I agree to comply with the requirements of the City of Newberg's Erosion and Sediment Control Manual and will construct, inspect, and maintain ESC measures to the standards contained within.

Signature: _____**Date:** _____

PROJECT SIZE AND DISCHARGE LOCATIONS:

Instructions:

- List the size of the propert(ies) where the project will take place
- List the area (in square feet or acreage) that will be disturbed by the project
- Check the type of stormwater facility that will be receiving discharge from your site. Include which stream will ultimately be receiving the discharge from your site.
- Indicate the location of all waters, including wetlands, **on the site map**. Wetland information can be obtained from the Department of State Lands. Use the following links to access resource information for removal or fill activities in wetlands or waterways.
- <http://www.oregon.gov/DSL/PERMITS/index.shtml>
- <http://www.nwp.usace.army.mil/op/G/home.asp>
- Wetlands fact sheet: <http://www.oregon.gov/DSL/WETLAND/wetlandfacts.shtml>
- Chehalem Creek, Hess Creek, and Springbrook Creek are subject to Total Maximum Daily Loads (TMDLs) for bacteria, mercury, and temperature. Your ESC Plan should specifically include measures to prevent the discharge of these pollutants and sediment because of the direct correlation with these pollutants.

Site Description:

Total Site (sq ft/acres): _____

Disturbed Site (sq ft/acres): _____

Watershed: ☐ Chehalem Creek ☐ Hess Creek ☐ Springbrook Creek

Stormwater runoff during construction will flow to:

- ☐ Infiltration Device
- ☐ Creek/Stream (direct discharge)
- ☐ Ditch
- ☐ Wetland
- ☐ Public Stormwater System
- ☐ Other — Specify: _____

NATURE AND SEQUENCE OF CONSTRUCTION ACTIVITY:

Instructions:

- Briefly describe the nature of the construction activity and approximate time frame from start of construction to completion.
- Describe methods for stabilizing the site after construction.

Construction Type:

☐ Residential ☐ Commercial ☐ Industrial ☐ Road Construction ☐ Utility

☐ Other (please specify):

Estimated Project Start Date: ____ / ____ / ____

Estimated Project Completion Date: ____ / ____ / ____

Describe the general scope of the work for the project and any construction phasing:

Describe methods for stabilizing the site:

SITE FEATURES AND SENSITIVE AREAS TO BE PROTECTED

Instructions:

- Describe unique site features including streams, stream buffers, intermittent drainages, wetlands, trees, natural vegetation, steep slopes, or highly erodible soils (See http://www.or.nrcs.usda.gov/pnw_soil/or_data.html) to be undisturbed.
- Describe the location and measures to protect these features.
Include these features and areas on your site maps.

Remember that your ESC goal is to retain vegetation when possible and avoid soil compaction.

Unique Features (stream, wetland, buffer, erosive soil, etc):

Description: _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

Measures to Protect Feature: _____

(Repeat as necessary)

ESC MEASURES IMPLEMENTED ON SITE

Instructions:

- Describe the erosion and sediment control measures to be implemented on site.
- Indicate the location within the project site.
- ESC measures for erosion prevention, runoff control, and sediment control are described in **Chapter 5**. A list of required ESC measures is provided in **Section 5.1**

ESC Measures to Prevent Erosion

ESC Measure: _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

(Repeat as necessary)

ESC Measures to Control Runoff

ESC Measure: _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

(Repeat as necessary)

ESC Measures to Control Sediment

ESC Measure: _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

(Repeat as necessary)

POLLUTION PREVENTION MEASURES

Instructions:

- Indicate methods of spill prevention, materials handling, material storage, and methods of disposal for construction debris and waste including sanitary waste.

Measure: _____

(Repeat as necessary)

INSPECTIONS

Instructions:

- Provide inspection schedule for the ESC measures.
- Include procedures for determining when maintenance, repair, or replacement is needed.

Inspection Schedule: _____

Steps for determining when maintenance, repair, or replacement is needed:

MAPS

Instructions:

- Attach site map should include the information required in **Section 4.4.3**

CERTIFICATION AND NOTIFICATION

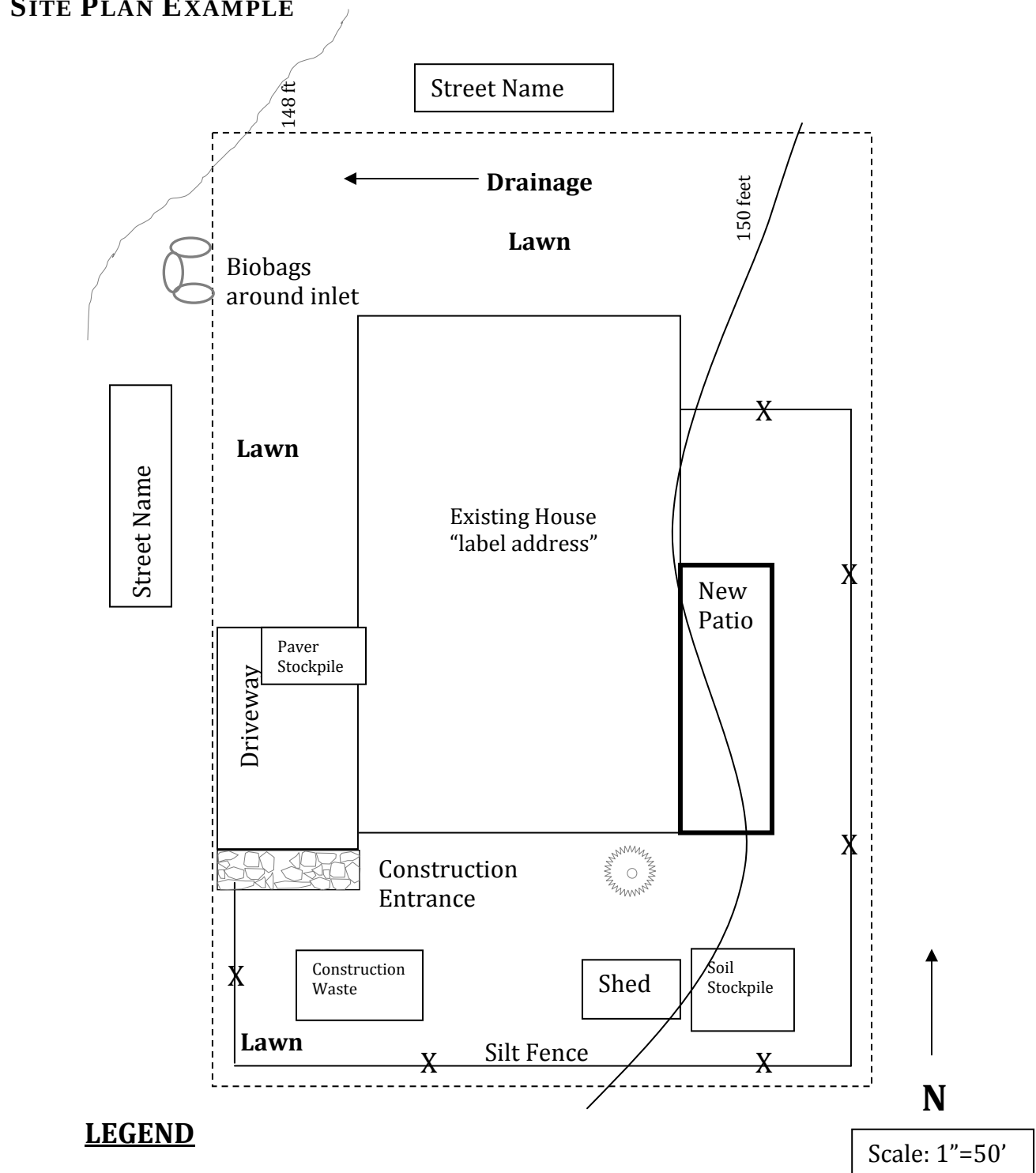
I hereby certify that the information contained in this application is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A legally authorized representative *must* sign the application.

Name: _____ Title: _____

Signature: _____ Date: _____

SITE PLAN EXAMPLE



LEGEND

- X — X — Silt Fence
-  Biobags
-  Gravel Construction Entrance
-  Tree

APPENDIX E: REGULAR SMALL SITE ESC PLANS

INSTRUCTIONS

The City has developed this template to assist you with completion of your ESC Plan, however **you are required to follow all applicable local, state, and federal regulations for your project.**

The information in the narrative portion of the ESC Plan can be included on the required ESC Plan drawings if submitted on paper that is a minimum of 11"x17". An example of a narrative included on an ESC Plan drawing is at:

<http://www.deq.state.or.us/wq/wqpermit/docs/general/npdes1200c/dwgs/1200CPlanSet.pdf>.

The required standard notes for ESC Plans (Appendix B of this manual) must be included on the ESC Plan drawings.

The Oregon Department of Environmental Quality (DEQ) requires an application and approval of a 1200-C permit for all projects that disturb one or more acres. ***If your project will disturb 1 or more acres, obtain the DEQ 1200-C permit and submit a copy of the permit with its supporting documentation to the City.***

EROSION AND SEDIMENT CONTROL PLAN

SITE INFORMATION

Instructions:

- In this section, provide basic site information. This information will be useful for record keeping, maintaining your schedule, and applying the conditions you have designed for your project.
- Detailed information on determining your site's latitude and longitude can be found at www.epa.gov/npdes/stormwater/latlong or by using Google Earth and holding the curser over the project site.

Project/Site Name: _____

Project Address: _____

City: Newberg

State: OR

ZIP Code: 97132

County: Yamhill

Latitude at center of project site: _____

Longitude at center of project site: _____

Method for determining latitude/longitude:

☐ USGS topographic map (specify scale: _____)

☐ EPA Web site ☐ GPS

☐ Other (please specify): _____

CONTACT INFORMATION

Instructions:

- List contact information for applicant and all contractors or subcontractors expected to work on-site. Notify contractors and subcontractors of ESC requirements applicable to their work.

Emergency Contact Information:

Applicant Telephone Number: (Required) _____

Email Address: (Required) _____

ESC Inspector Name: (Required) _____

Telephone Number: (Required) _____

Email Address: (Required) _____

Applicant:

Company or Organization Name: _____:
Name: _____
Address: _____ City, State, Zip Code: _____
Telephone Number: _____
Email Address: _____

Project Manager or Site Supervisor:

Company or Organization Name: _____:
Name: _____
Address: _____ City, State, Zip Code: _____
Telephone Number: _____
Email Address: _____
Area of Control (if more than 1 operator at site): _____
24-hour emergency contact information: _____
(Repeat as necessary)

Subcontractor:

Company or Organization Name: _____:
Name: _____
Address: _____ City, State, Zip Code: _____
Telephone Number: _____
Email Address: _____
Area of Control (if more than 1 operator at site): _____
24-hour emergency contact information: _____
(Repeat as necessary)

This ESC Plan was Prepared By:

Company or Organization Name: _____:
Name: _____
Address: _____ City, State, Zip Code: _____
Telephone Number: _____
Email Address: _____

I agree to comply with the requirements of the City of Newberg's Erosion and Sediment Control Manual and will construct, inspect, and maintain ESC measures to the standards contained within.

Signature: _____

Date: _____

PROJECT SIZE AND DISCHARGE LOCATIONS:

Instructions:

- List the size of the property(ies) where the project will take place
- List the area (in square feet or acreage) that will be disturbed by the project
- Check the type of stormwater facility that will be receiving discharge from your site. Include which stream will ultimately be receiving the discharge from your site.
- Indicate the location of all waters, including wetlands, **on the site map**. Wetland information can be obtained from the Department of State Lands. Use the following links to access resource information for removal or fill activities in wetlands or waterways.

<http://www.oregon.gov/DSL/PERMITS/index.shtml>

<http://www.nwp.usace.army.mil/op/G/home.asp>

Wetlands fact sheet: <http://www.oregon.gov/DSL/WETLAND/wetlandfacts.shtml>

- Chehalem Creek, Hess Creek, and Springbrook Creek are subject to Total Maximum Daily Loads (TMDLs) for bacteria, mercury, and temperature. Your ESC Plan should specifically include measures to prevent the discharge of these pollutants and sediment because of the direct correlation with these pollutants.

Site Description:

Total Site (sq ft/acres): _____ Disturbed Site (sq ft/acres): _____

Soil Type: _____

Watershed: ☐ Chehalem Creek ☐ Hess Creek ☐ Springbrook Creek

Stormwater runoff during construction will flow to:

- ☐ Infiltration Device
- ☐ Creek/Stream (direct discharge)
- ☐ Ditch
- ☐ Wetland
- ☐ Public Stormwater System
- ☐ Other — Specify: _____

NATURE AND SEQUENCE OF CONSTRUCTION ACTIVITY:

Instructions:

- Briefly describe the nature of the construction activity and approximate time frame from start of construction to completion.
- Describe methods for stabilizing the site after construction.

Construction Type:

☐ Residential ☐ Commercial ☐ Industrial ☐ Road Construction ☐ Utility
☐ Other (please specify): _____

Estimated Project Start Date: ____ / ____ / ____

Estimated Project Completion Date: ____ / ____ / ____

Describe the general scope of the work for the project and any construction phasing:

Describe methods for stabilizing the site:

SITE FEATURES AND SENSITIVE AREAS TO BE PROTECTED**Instructions:**

- Describe unique site features including streams, stream buffers, intermittent drainages, wetlands, trees, natural vegetation, steep slopes, or highly erodible soils that are to be undisturbed.
- Describe the feature's location on the project site
- Describe soil type (See http://www.or.nrcs.usda.gov/pnw/soil/or_data.html)
- Describe measures to protect these features.
- Include these features and areas on your site maps.

Your ESC goal is to retain vegetation when possible and avoid soil compaction.

Unique Features:

Description: _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

Soil Type: _____

Measures to Protect Feature: _____

(Repeat as necessary)

ESC MEASURES IMPLEMENTED ON SITE

Instructions:

- Describe at least one ESC measure each for erosion prevention, runoff control, and sediment control that will be implemented on site.
- Indicate the location(s) of the ESC measure
- Include a description of what the measure will prevent, i.e. sediment, reduce stormwater volume, reduce runoff velocity, spill control, etc.

ESC Measures to Prevent Erosion

ESC Measure: _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

Rationale: _____

(Repeat as necessary)

ESC Measures to Control Runoff

ESC Measure: _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

Rationale: _____

(Repeat as necessary)

ESC Measures to Control Sediment

ESC Measure: _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

Rationale: _____

(Repeat as necessary)

POLLUTION PREVENTION MEASURE

Instructions:

- Indicate methods of spill prevention, materials handling, material storage, and methods of disposal for construction debris and waste including sanitary waste.
- Indicate location of the measure on the project site.
- Indicate how the measure will prevent discharge offsite.

Measure (from Section 6): _____

Location: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

Rationale: _____

(Repeat as necessary)

INSPECTIONS

Instructions:

- Provide inspection schedule for the ESC measures.
- Include procedures for determining when maintenance, repair, or replacement is needed.

Inspection Schedule: _____

Steps for determining when maintenance, repair, or replacement is needed:

MAPS

Instructions:

- Attach site maps. The first map should show the current property boundaries, natural features, project boundaries, and ESC measures. A second map should show the site after project completion.
- These maps should include the information required in **Sections 4.4.3 and 4.4.4**

DETAIL DRAWINGS

Instructions:

- Attach detail drawings of all erosion control measures to be used on the site.
- Detail drawings may be found at <https://www.newbergoregon.gov/engineering/600-series-erosion-control-standard-detail>

CERTIFICATION AND NOTIFICATION

I hereby certify that the information contained in this application is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A legally authorized representative *must* sign the application.

Name: _____ Title: _____

Signature: _____ Date: _____

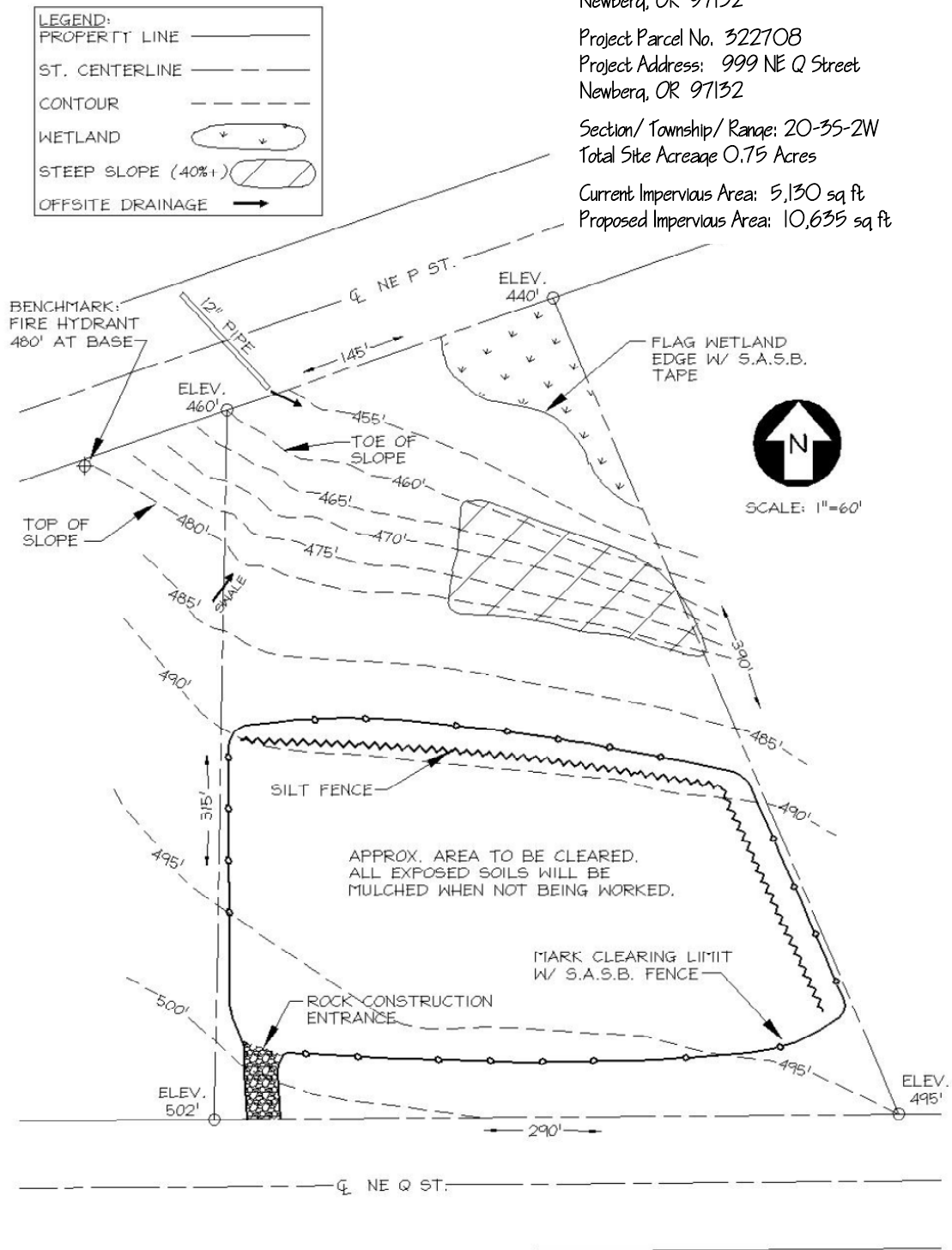
SITE PLAN EXAMPLE

Applicant: Iam Resident
555 South A Street
Newberg, OR 97132

Project Parcel No. 322708
Project Address: 999 NE Q Street
Newberg, OR 97132

Section/ Township/ Range: 20-35-2W
Total Site Acreage 0.75 Acres

Current Impervious Area: 5,130 sq ft
Proposed Impervious Area: 10,635 sq ft



APPENDIX F: INSPECTION LOGS AND REPORTS

INSPECTION LOG

Jobsite Name: _____ Address: _____

Date: ____/____/____ Time (24-hr format): ____:____ Precip (last 24 hours) ____

ESC Measure	Condition*			Repair or Replace?	Date Completed	Comments (include area and section e.g., SW corner of storage area)
Clearing Limit and Sensitive Area	G	F	P			
Construction Entrance/Exit	G	F	P			
Tire Wash	G	F	P			
Vegetated Areas and Buffer Zones	G	F	P			
Vegetated Strip	G	F	P			
Ground Cover	G	F	P			
Dust Control	G	F	P			
Matting	G	F	P			
Wattles	G	F	P			
Biobags	G	F	P			
Straw Bales	G	F	P			
Catch Basin Insert	G	F	P			
Swales	G	F	P			
Outlet Protection	G	F	P			
Surface Roughening	G	F	P			
Dewatering Area	G	F	P			
Sediment Fence	G	F	P			
Material Storage and Disposal	G	F	P			

* G: Good condition - needs only scheduled maintenance; F: Fair condition - needs repair and/or maintenance; P: Poor condition - needs to be replaced.

INSPECTION REPORT

Inspection Date: ____/____/____ Time (24-hr format): ____:____

Jobsite Name: _____ Address: _____

Applicant Name: _____ Address: _____

City: _____ State: _____ Zip: _____

Email: _____

Inspector Name: _____

Emergency Phone Number: _____

Precipitation in the last 24 hours: ____ inches

Has the city of Newberg been notified? Yes No

If not, reason why: _____

Action Item to be Completed	Reason	Date Completed

I certify that this report is true, accurate, and complete to the best of my knowledge.

Signature of Inspector: _____

Printed Name of Inspector: _____

Emergency Contact Phone: _____

Inspector License Number, if applicable: _____

EXAMPLE INSPECTION LOG

Jobsite Name: Jack's Deli **Address:** 999 NE Q Street

Date: 08/_05/_12_ **Time (24-hr format):** 13:30 **Precip (last 24 hours)** 0.5"

ESC Measure	Condition*			Repair or Replace?	Date Completed	Comments (include area and section e.g., SW corner of storage area)
Clearing Limit and Sensitive Area	G	F	P	Repair	8/7	Wind blew fence down in NE quad.
Construction Entrance/Exit	G	F	P	Okay	----	----
Tire Wash	G	F	P	NA	----	----
Vegetated Areas and Buffer Zones	G	F	P	Replace	8/12	Re-seed area in SE quad and by stream. Use seed mix #1.
Vegetated Strip	G	F	P	NA	----	----
Ground Cover	G	F	P	Okay	----	----
Dust Control	G	F	P	Okay	----	----
Matting	G	F	P	Okay	----	----
Wattles	G	F	P	Okay	----	----
Biobags	G	F	P	Replace	8/5	Biobags in W quad broken open.
Straw Bales	G	F	P	Replace	8/5	Remove sediment and replace. Twine is fraying and bale is close to breaking
Catch Basin Insert	G	F	P	NA	----	----
Swales	G	F	P	Okay	8/6	Remove Sediment
Outlet Protection	G	F	P	Repair	8/6	Add rock to outlet on S quad
Surface Roughening	G	F	P	Repair	8/6	Rills forming. Regrade and track stockpile on W side
Dewatering Area	G	F	P	NA	----	----
Sediment Fence	G	F	P	Okay	----	----
Material Storage and Disposal	G	F	P	Okay	----	----

* G: Good condition - needs only scheduled maintenance; F: Fair condition - needs repair and/or maintenance; P: Poor condition - needs to be replaced.

EXAMPLE INSPECTION REPORT

Inspection Date: __08__/_5__/_12__ Time (24-hr format): _13:30_

Jobsite Name: __Jack's Deli__ Address: __999 NE Q Street__

Applicant Name: _Iam Resident__ Address: __555 South A Street__

City: _Newberg__ State: _OR__ Zip: _97132__

Email: _2bgold@mycompany.com__

Inspector Name: _Ibee Smith__

Emergency Phone Number: __503-555-5555__

Precipitation in the last 24 hours: __0.5__ inches

Has the city of Newberg been notified? Yes **No**

If not, reason why: _No sediment or spills have left site

Action Item to be Completed	Reason	Date Completed
Repair clearing limit fence in NE section	Wind blew it down	8/7/2012
Re-seed area in SE quad and by stream. Use seed mix #1.	Bare areas are visible	8/12/2012
Replace biobags in W quad.	Biobags are starting to break apart	8/5/2012
Remove sediment and replace straw bale.	Sediment has accumulated 1 foot. Twine is fraying.	8/5/2012
Remove Sediment from swale forebay	Sediment is starting to block flow	8/6/2012
Add rock to outlet on S quad	Outlet has bare spots where rock has moved.	8/6/2012
Regrade and track stockpile on W side	Rills are forming.	8/6/2012

I certify that this report is true, accurate, and complete to the best of my knowledge.

Signature of Inspector: _____ Ibee Smith _____

Printed Name of Inspector: _ Ibee Smith _____

Inspector License Number, if applicable: _ODOT-5-55555555__

APPENDIX G: HYDRAULIC APPLICATIONS

WOOD FIBER MULCH HYDRAULIC APPLICATION

Average Water Required for Application

$$V_{wa} \text{ (gal)} = (W_{wf}) / (40\text{lbs mulch} / 100\text{gal water})$$

Maximum Water Required for Application

$$V_{wm} \text{ (gal)} = (W_{wf}) / (50\text{lbs mulch} / 100\text{gal water})$$

Area of Coverage

$$A \text{ (acre)} = (W_{wf} / R_{wf})$$

$$A \text{ (ft}^2\text{)} = (W_{wf} / R_{wf}) * (43,560 \text{ ft}^2/\text{acre})$$

R_{wf}	Wood Fiber Application Rate (lb/acre)
W_{wf}	Weight or Mass of Wood Fiber (lbs)
V_{wa}	Average Water Requirement (gal)
V_{wm}	Maximum Water Requirement (gal)
A	Area of Coverage (ft ²) & (acres)

SEED OR FERTILIZER HYDRAULIC APPLICATION

Area of Coverage

$$A \text{ (acre)} = (W_{sf} / R_{sf})$$

$$A \text{ (ft}^2\text{)} = (W_{sf} / R_{sf}) * (43,560 \text{ ft}^2/\text{acre})$$

R_{sf}	Seed or Fertilizer Application Rates (lb/acre)
W_{sf}	Weight or Mass of Seed or Fertilizer (lbs)
A	Area of Coverage (ft ²) & (acres)

Wood Fiber Mulch Hydraulic Application

Table C-1		2,000lb/acre Application Rate (R_{wd})			Area of Coverage (A)	
Wood Fiber (W_{wd})		Water Required for Application				
		Average (V_{wa})	Maximum (V_{wm})			
Pounds		40 lbs mulch / 100gal water	50lbs mulch / 100gal water			
500		*Gallons	*Gallons		ft ²	Acres
600		1,250	1,000		10,890	0.25
700		1,500	1,200		13,068	0.30
800		1,750	1,400		15,246	0.35
900		2,000	1,600		17,424	0.40
1,000		2,250	1,800		19,602	0.45
1,100		2,500	2,000		21,780	0.50
1,200		2,750	2,200		23,958	0.55
1,300		3,000	2,400		26,136	0.60
1,400		---	2,600		28,314	0.65
1,500		---	2,800		30,492	0.70
		---	3,000		32,670	0.75

Table C-2		2,500lb/acre Application Rate (R_{wd})			Area of Coverage (A)	
Wood Fiber (W_{wd})		Water Required for Application				
		Average (V_{wa})	Maximum (V_{wm})			
Pounds		40 lbs mulch / 100gal water	50lbs mulch / 100gal water			
500		*Gallons	*Gallons		ft ²	Acres
600		1,250	1,000		8,712	0.20
700		1,500	1,200		10,454	0.24
800		1,750	1,400		12,197	0.28
900		2,000	1,600		13,939	0.32
1,000		2,250	1,800		15,682	0.36
1,100		2,500	2,000		17,424	0.40
1,200		2,750	2,200		19,166	0.44
1,300		3,000	2,400		20,909	0.48
1,400		---	2,600		22,651	0.52
1,500		---	2,800		24,394	0.56
		---	3,000		26,136	0.60

* Largest Typical Hydro seeding equipment has a 3,000 gallon working volume.

Table A-1
Seed or Fertilizer Hydraulic Application

Application Load (W _s)	Area of Coverage (A)													
	Application Rates of Pure Live Seed (R _{sl})													
	20 lb/acre		40 lb/acre		60 lb/acre		80 lb/acre		100 lb/acre		200 lb/acre		400 lb/acre	
Pounds	acre	ft. ²	acre	ft. ²	acre	ft. ²	acre	ft. ²	acre	ft. ²	acre	ft. ²	acre	ft. ²
10	0.50	21,780	0.25	10,890	0.17	7,260	0.13	5,445	0.10	4,356	0.05	2,178	0.03	1,089
20	1.00	43,560	0.50	21,780	0.33	14,520	0.25	10,890	0.20	8,712	0.10	4,356	0.05	2,178
30	1.50	65,340	0.75	32,670	0.50	21,780	0.38	16,335	0.30	13,068	0.15	6,534	0.08	3,267
40	2.00	87,120	1.00	43,560	0.67	29,040	0.50	21,780	0.40	17,424	0.20	8,712	0.10	4,356
50	2.50	108,900	1.25	54,450	0.83	36,300	0.63	27,225	0.50	21,780	0.25	10,890	0.13	5,445
60	3.00	130,680	1.50	65,340	1.00	43,560	0.75	32,670	0.60	26,136	0.30	13,068	0.15	6,534
70	3.50	152,460	1.75	76,230	1.17	50,820	0.88	38,115	0.70	30,492	0.35	15,246	0.18	7,623
80	4.00	174,240	2.00	87,120	1.33	58,080	1.00	43,560	0.80	34,848	0.40	17,424	0.20	8,712
90	4.50	196,020	2.25	98,010	1.50	65,340	1.13	49,005	0.90	39,204	0.45	19,602	0.23	9,801
100	5.00	217,800	2.50	108,900	1.67	72,600	1.25	54,450	1.00	43,560	0.50	21,780	0.25	10,890
120	6.00	261,360	3.00	130,680	2.00	87,120	1.50	65,340	1.20	52,272	0.60	26,136	0.30	13,068
140	7.00	304,920	3.50	152,460	2.33	101,640	1.75	76,230	1.40	60,984	0.70	30,492	0.35	15,246
160	8.00	348,480	4.00	174,240	2.67	116,160	2.00	87,120	1.60	69,696	0.80	34,848	0.40	17,424
180	9.00	392,040	4.50	196,020	3.00	130,680	2.25	98,010	1.80	78,408	0.90	39,204	0.45	19,602
200	10.00	435,600	5.00	217,800	3.33	145,200	2.50	108,900	2.00	87,120	1.00	43,560	0.50	21,780
220	11.00	479,160	5.50	239,580	3.67	159,720	2.75	119,790	2.20	95,832	1.10	47,916	0.55	23,958
240	12.00	522,720	6.00	261,360	4.00	174,240	3.00	130,680	2.40	104,544	1.20	52,272	0.60	26,136
260	13.00	566,280	6.50	283,140	4.33	188,760	3.25	141,570	2.60	113,256	1.30	56,628	0.65	28,314
280	14.00	609,840	7.00	304,920	4.67	203,280	3.50	152,460	2.80	121,968	1.40	60,984	0.70	30,492
300	15.00	653,400	7.50	326,700	5.00	217,800	3.75	163,350	3.00	130,680	1.50	65,360	0.75	32,670

"Application Load" is in Pure Live Seed.

Gross weight of seed can be converted by the Pure Live Seed (PLS) Rate [%Purity x % Germination = %PLS; Wsf = Gross Weight x %PLS]

To evaluate mulch tracer material, use Table C-1.

APPENDIX H: SPILL PREVENTION AND RESPONSE

(from <http://www.deq.state.or.us/lq/cu/emergency/reportspill.htm>)

The National Response Center (NRC): 1-800-424-8802

The Oregon Emergency Response System (OERS): 1-800-452-0311 or 503-378-4124

WHEN TO REPORT

If a serious emergency occurs and the local fire department has been called, or if there has been a spill that could reach surface water, immediately call the phone numbers above.

NRC and OERS are required to be notified when an accident involving a hazardous material results in:

- Death
- Hospitalization
- Property damage in excess of \$50,000
- Any situation a business thinks should be reported
- A discharge of a hazardous material in excess of the reportable quantity in the current 40 CFR Table 302.4 and OAR 340-142

The NRC will inform the caller if the incident merits reporting. But anyone who should call but does not call is subject to a \$10,000 fine, one year in jail, or both.

Spills should also be reported to OERS and the City's Erosion Control Inspector for the project. When reporting a spill, be prepared to give the following information:

- Name and address of the project site
- Date, time, and type of incident
- Quantity and type of hazardous material, substance, or waste involved in the incident
- Extent of any injuries
- Estimated quantity and disposition of any recovered materials

OREGON STATE SPILL RULES

State rules regarding spills or releases of oil and/or hazardous substances is found in OAR 340, Division 142 or go to <http://www.deq.state.or.us/regulations/rules.htm>

In the event of a spill or release or threatened spill or release of oil or hazardous material, the person owning or having control over the oil or hazardous material shall take the following actions, as appropriate.

- Immediately implement the site's Spill Prevention Control and Countermeasure (SPCC) or contingency plan.
- If no plan exists, immediately take the following actions:
 - o Call 911 in the event of a medical emergency or public safety hazard.

- o Activate alarms or warn persons in the immediate area.
- o Undertake every reasonable method to contain the oil or hazardous material.

If the amount of oil or hazardous material exceeds the reportable quantity listed below in any 24-hour period, report it to the **Oregon Emergency Response System (1-800-452-0311 in-state, and (503) 378-4124 out-of-state)**.

If the quantity of oil or hazardous material exceeds the quantity referenced in 40CFS Part 302 – Table 302.4, report the spill or release to the **National Response Center, 1-800-424-8802**.

- Any quantity of radioactive material or radioactive waste;
- If spilled or discharged into waters of the state or in a location from which it is likely to escape into waters of the state **any quantity of oil that would produce a visible film**, sheen, oily slick, oily solids, or coat aquatic life, habitat or property with oil
- If spilled on the surface of the land, and not likely to escape into waters of the state, any quantity of oil over one barrel (42 gallons)
- An amount equal to or greater than the quantity listed in 40 CFR Part 302– Table 302.4 (List of Hazardous Substances and Reportable Quantities) and amendments adopted prior to July 1, 2002
- Ten (10) pounds or more of a hazardous material not otherwise listed as having a different reportable quantity by 40 CFR 302.4
- Any quantity of chemical agent (such as nerve agents blister agent HD, etc)
- Two hundred (200) pounds or twenty-five (25) gallons of pesticide residue
- Any quantity of a material regulated as a Chemical Agent under ORS 465.550
- One (1) pound or one (1) cup or more of dry cleaning solvent, including perchloroethylene, spilled or released outside the designed containment by a dry cleaning facility regulated under ORS 465.505(4).

CLEANUP

Anyone liable for the spill or release or threatened spill or release shall **IMMEDIATELY CLEAN UP THE SPILL OR RELEASE**. Spills or releases must be cleaned up as completely as possible.

The Department's Environmental Cleanup Program and/or the appropriate DEQ region office should be contacted to assure that cleanup meets state requirements. The Environmental Cleanup Program can be reached at (503) 229-5913.

REPORT

The Department may require the responsible party to submit a written report to the department describing all aspects of the incident and steps taken to prevent a recurrence. A sample report is listed below, however **all spills must be reported in the format specified by DEQ [on their website](#)**.

NOTE: A hazardous waste determination will have to be conducted on any cleanup debris, including contaminated soil, water, or groundwater. If the generator determines that the cleanup debris is hazardous waste, it must be handled accordingly.

Hazardous waste cleanup debris may be managed in tanks and containers without a facility permit following requirements of 40 CFR 262.34

NOTE: When in doubt about reporting the spill or release — **always report** the incident to the Oregon Emergency Response System (OERS). .

DEQ SPILL RELEASE REPORT



1 - GENERAL INFORMATION

OERS No. (if applicable) _____

- a. Company Name: _____
- b. Address: _____
- c. Company Contact Person: _____
- d. Emergency Phone Number(s): _____
- e. Specific on-site location of the release:

Please provide a map of the site showing area(s) where the release occurred, any sample collection locations, location of roadways/ditches/surface water bodies, etc.

2 - RELEASE INFORMATION

- a. Date/Time Release started: _____ Date/Time stopped: _____
- b. Release was reported to (specify Date/Time/Name of Person contacted where applicable):
 - DEQ _____
 - OERS _____
 - NRC _____
 - City _____
- c. Person(s) reporting release: _____
- d. Released material's name, quantity and physical state (gas, liquid, solid or semi-solid):

Please attach copies of material safety data sheets (MSDS) for released material(s).

- e. The release affected: ☐ Air ☐ Groundwater ☐ Surface Water ☐ Soil ☐ Sediment
- f. Name and distance to nearest watercourse, even if unaffected (include locations of creeks, streams, rivers and ditches that discharge to surface water on maps):

Has the release reached the surface water identified above?: ☐ Yes ☐ No
Could the release potentially reach the surface water identified above? ☐ Yes ☐ No
Explain: _____

- g. Depth to nearest aquifer/groundwater: _____
Is nearest aquifer/groundwater potable (drinkable)? ☐ Yes ☐ No
Has the release reached the nearest aquifer/groundwater? ☐ Yes ☐ No
Explain: _____

- h. Release or potential release to the air occurred? ☐ Yes ☐ No

Explain: _____

- i. Was there a threat to public safety? ☐ Yes ☐ No

- j. Is there potential for future releases? ☐ Yes ☐ No

Explain: _____

- k. Describe other effects/impacts from release (emergency evacuation, fish kills, etc.):

- l. Describe how the release occurred. Include details such as the release source, cause, contributing weather factors, activities occurring prior to or during the release, dates and times of various activities, first responders involved in containment activities, etc.:

3 - SITE INFORMATION

- a. Adjacent land uses include (check all that apply and depict on site maps):

☐ Residential ☐ Commercial ☐ Light Industrial ☐ Heavy Industrial
☐ Agricultural ☐ Other (describe): _____

- b. What is the population density surrounding the site: _____

- c. Is the site and/or release area secured by fencing or other means? ☐ Yes ☐ No

- d. Soil types (check all that apply): ☐ alluvial ☐ bedrock ☐ clay ☐ sandy
☐ silt ☐ silty loam ☐ artificial surface (cement/asphalt/etc.)

- e. Describe site topography: _____

4 - CLEANUP INFORMATION

- a. Was site cleanup performed? ☐ Yes ☐ No

If No, explain: _____

- b. Who performed the site cleanup?

Company Name: _____

Address: _____

Cleanup Supervisor: _____

Phone Number(s): _____

- c. Has all contamination been removed from the site? ___Yes ___No

If No, explain: _____

- d. Estimated volume of contaminated soil removed: _____

- e. Estimated volume of contaminated soil left in place: _____

- f. Was a hazardous waste determination made for cleanup materials? ___Yes ___No

- g. Based on the determination, are the cleanup materials hazardous wastes?

___Yes ___No If Yes, list all waste codes: _____

- h. Was contaminated soil or water disposed of at an off-site location? ___Yes ___No

If yes, attach copies of receipts/manifests/etc., and provide the following information:

Facility Name: _____

Address: _____

Facility Contact: _____

Phone Number(s): _____

- i. Is contaminated soil or water being stored and/or treated on-site? ___Yes ___No

If yes, please describe the material(s), storage and/or treatment area, and methods utilized (attach additional sheets if necessary):

- j. Describe cleanup activities including what actions were taken, dates and times actions were initiated and completed, volumes of contaminated materials that were removed, etc. (attach additional sheets or contractor reports if necessary or more convenient):

5 - SAMPLING INFORMATION

Attach copies of all sample data and indicate locations of sample collection on maps.

- a. Were samples of contaminated soil collected? ___Yes ___No ___N/A

- b. Were samples of contaminated water collected? ___Yes ___No ___N/A

- c. Were samples collected to show that all contamination had been removed?
___Yes ___No ___N/A

- d. Describe sampling activities, results and discuss rationale for sampling methods:

6 - SPILL REPORT CHECKLIST

To ensure that you have gathered all the information requested by the Department in this Spill/Release Report, please complete the following checklist:

- ___ Map(s) of the site showing buildings, roads, surface water bodies, ditches, waterways, point of the release, extent of contamination, areas of excavation and sample collection locations attached.
- ___ Material Safety Data Sheet (MSDS) for released material(s) attached. **Note: an MSDS is not required for motor fuels.**
- ___ Sampling data/analytical results attached.
- ___ Receipts/manifests (if any) for disposal of cleanup materials attached.
- ___ Contractor reports (if any) attached.

If you would like to submit your report by e-mail it can be submitted electronically to:
DOSPILLS@deq.state.or.us