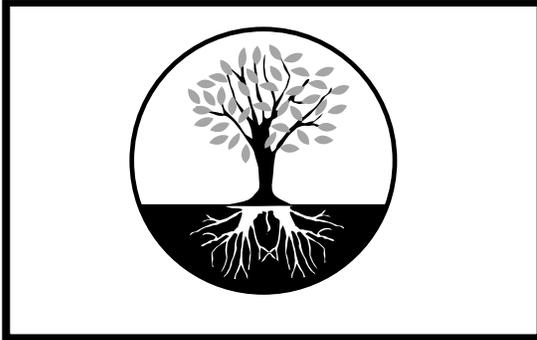


CHAPTER 66



Landscaping, Irrigation and Grading

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17.66.01 Purpose

The City of Woodlake finds that there is a limited supply of water and the demand for this resource is ever increasing; that Woodlake's economic well-being is dependent upon having an adequate supply of water in the future; and that it is important to Woodlake's long-term environmental goals that water be conserved and used in an efficient manner.

Woodlake realizes that well-designed and maintained urban landscapes improve the appearance of the community and its quality of life by cleaning the air, providing shade and reducing erosion; and that these landscapes should be designed, installed and maintained to be water efficient.

The purpose of this chapter is to provide for local landscaping, irrigation and grading regulations that are consistent with the State's Model Water Efficient Landscape Ordinance.

17.66.02 Applicability

This chapter shall apply to landscape projects that involve new construction for public agency projects and private development projects with a landscaped area equal to or greater than 2,500 square feet and which require a building or landscape permit, plan check or design review.

17.66.03 Landscaping, Irrigation and Grading Plan

The landscaping, irrigation and grading plan shall contain the following elements:

- A. Project Information
 - 1. Date.
 - 2. Project Applicant.
 - 3. Project Address.
 - 4. Total landscaped area.
 - 5. Project type.
 - 6. Water supply type.
 - 7. Project Contacts.
 - 8. Applicant signature and date with statement, "I agree to comply with the requirements of the water efficient landscape ordinance.
- B. Water Efficient Landscape Worksheet.
 - 1. Hydrozone information table.
 - 2. Water budget calculations.
- C. Maximum applied water allowance (MAWA)
- D. Estimated total water use (ETWU)

- E. Soil management report.
- F. Landscape design plan.
- G. Irrigation design plan.
- H. Grading design plan.

17.66.04 Water Efficient Landscape Worksheet

A project applicant shall complete the Water Efficient Landscape Worksheet that contains two sections:

- A. A hydrozone information table for a landscape project (see State of California's Model Landscaping Ordinance).
- B. A water budget calculation for the landscaped project (see State of California's Model Landscaping Ordinance). The water budget calculations shall adhere to the following:
 - 1. The plant factor shall use the following ranges: 0 to .3 for low water use plants; from .4 to .6 for moderate water use plants; and from .7 to 1.0 for high water use plants.
 - 2. All water features shall be include in the high water use hydrozone and temporary irrigated areas shall be included in the low water use hydrozone.
- C. The maximum applied water allowance shall be calculated using the following equation:

$MAWA = (ET_o)(.62) [.7 \times LA] + (.3 \times SLA)$, where MAWA = maximum applied water allowance, ET_o = Evapotranspiration in inches per year; LA= landscaped area; and SLA = special landscaped area.

17.66.05 Soil Management Report

In order to reduce runoff and encourage healthy plant growth, the project applicant shall complete a soil management report as follows:

- A. Soil samples shall be submitted to a laboratory for analysis and recommendations.
 - 1. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

2. The soil analysis may include soil texture, infiltration rate, pH, total soluble salts, sodium, percent organic matter and recommendations.
- B. The applicant shall comply with the following:
1. If significant mass grading is not planned, the soil analysis report shall be submitted to the local agency as part of the Certificate of Completion.
 2. The soils analysis report shall be made available to the professional preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.

17.66.06 Landscape Design Plan

For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

- A. A landscape design plan shall contain the following:
1. Delineate and label each hydrozone by number, letter or other method.
 2. Identify each hydrozone as low, moderate, high water, or mixed-use water. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation.
 3. Identify recreation areas.
 4. Identify areas permanently and solely dedicated to edible plants.
 5. Identify areas irrigated with recycled water.
 6. Identify type of mulch and application depth.
 7. Identify soil amendments, type and quantity.
 8. Identify type and surface area for water features.
 9. Identify hardscapes, pervious and impervious.
 10. Identify location and installation details of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encourage in the landscape design plan and examples include, but are not limited to:

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- a. Infiltration beds, swales, and basins that allow water to collect and soak into the ground.
 - b. Constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants.
 - c. Pervious or porous surfaces that minimize runoff.
11. Identify any applicable rain harvesting or catchment technologies.
 12. Bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape.
- B. Any plant may be selected for the landscape, providing the Estimated Total Water Use (ETWU) in the landscaped area does not exceed the Maximum Applied Water Allowance ((MAWA). To encourage the efficient use of water, the following is highly recommended:
1. Protection and preservation of native species and natural vegetation.
 2. Selection of water-conserving plant and turf species.
 3. Selection of plants based on disease and pest resistance.
 4. Selection of trees based on applicable local tree ordinances or tree shading guidelines.
 5. Selection of plants from local and regional landscape program plant lists.
- C. Each hydrozone shall have plant materials with similar water use.
- D. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended:
1. Use the Sunset Western Climate Zone System that takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate.
 2. Recognize the horticultural attributes of plants to minimize damage to property or infrastructure.
 3. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.

- E. Turf is not allowed on slopes greater than 15 percent where the toe of the slope is adjacent to an impermeable hardscape.
- F. The use of invasive and/or noxious plant species is strongly discouraged.
- G. Recirculating water systems shall be used for water features.
- H. Where available, recycled water shall be used as a source for decorative water features.
- I. Pool and spa covers are highly recommended.
- J. A minimum of two inches of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications.
- K. Stabilizing mulching products shall be used on slopes.
- L. Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected.

17.66.07 Irrigation Design Plan

For the efficient use of water, an irrigation system shall meet all the requirements listed in this section. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following criteria shall be submitted as part of the Landscape Documentation Package.

- A. The irrigation design plan shall contain:
 - 1. Location and size of separate water meters for landscape.
 - 2. Location, type and size of components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices.
 - 3. Static water pressure at the point of connection to the public water supply.
 - 4. Flow rate, application rate, and design operating pressure for each station.

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5. The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor or any other person authorized to design an irrigation system.
- B. Dedicated landscape water meters are highly recommended on landscape areas smaller than 5,000 square feet to facilitate water management.
- C. Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation in all irrigation systems.
- D. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
 1. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
 2. Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
- E. Sensors, either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy, rainy or freezing weather.
- F. Manual shut-off valves shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency or routine repair.
- G. Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system.
- H. High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.
- I. Check valves or auto-drain valves are required for all irrigation systems.
- J. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.

- K. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers and turf.

17.66.08 Grading Design Plan

For the efficient use of water, a grading plan for a project site shall be designed to minimize soil erosion, runoff and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A civil engineer shall prepare a comprehensive grading plan.

- A. The grading design plan shall include the following:
1. Height of graded slopes.
 2. Drainage patterns.
 3. Pad elevations.
 4. Finished grade.
 5. Stormwater retention improvements, if applicable.
- B. To prevent excessive erosion and runoff, it is highly recommended that the project applicants grade so that all irrigation and normal rainfall remains within the property lines and does not drain onto impervious hardscapes, avoid disruption of natural drainage patterns and undisturbed soils, and avoid soil compaction in landscaped areas.

17.66.09 Certificate of Completion

- A. The Certificate of Completion shall include the following elements.
1. Date.
 2. Project name.
 3. Applicant name, telephone and mailing address.
 4. Project address and location.
 5. Property owner name, telephone, and mailing address.
 6. Certification by either the signer of the landscape design plan, signer of the irrigation plan or the licensed landscape contractor that the landscape

project has been installed per the approved Landscape Documentation Package.

- B. The project applicant shall submit the signed Certificate of Completion to the City Planner for review. The Planning Director shall approve or deny the Certificate of Completion. The applicant may appeal the Planning Director's decision consistent with Chapter 17.06 Appeals.

17.66.10 Irrigation Scheduling

For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria.

- A. Irrigation shall be regulated by automatic controllers.
- B. Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions such as rain or freezing temperatures prevent it.
- C. For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, flow rates, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use (ETWU). Automatic irrigation controllers using current reference evapotranspiration data or soil moisture sensor data shall regulate actual irrigation schedules.
- D. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
 - 1. The plant establishment period.
 - 2. The established landscape.
 - 3. Temporary irrigated areas.
- E. Each irrigation schedule shall consider for each station all of the following that apply.
 - 1. Irrigation intervals, days between irrigation.
 - 2. Irrigation run times, hours or minutes per irrigation event.
 - 3. Number of cycle starts required for each irrigation event.
 - 4. Amount of water to be applied on a monthly basis.

5. Application rate setting.
6. Root depth setting.
7. Plant type setting.
8. Soil type.
9. Slope factor setting.
10. Shade factor setting.

17.66.11 Irrigation Maintenance, Audit and Analysis

- A. Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.
- B. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.
- C. All landscape irrigation audits shall be conducted by a certified landscape irrigation audit.