

## **Section 27.6 Landscape Conservation**

This landscape conservation section integrates a range of Town requirements related to native plant salvage and preservation, revegetation, constructed landscape improvements and plant materials, irrigation and outdoor water conservation.<sup>1</sup>

### **A. Purpose**

The Town of Oro Valley's adopted General Plan includes agreed upon goals and policies related to natural resource conservation and water resources. The goals and policies provide the framework for conservation in water use for irrigation, low-water-use plants in landscaping, preservation of the Town's native vegetation and visual qualities, and promotion of compatibility between adjacent and distinct land uses.

These native plant preservation, landscape and irrigation regulations are to be applied to protect the public health, safety, and general welfare by:

1. Preserving Land Values
  - a. Preserving the existing desert landscape and creating an attractive appearance along public streets.
  - b. Preserving existing views and screening from view those uses which may be detrimental to adjacent property values.
  - c. Encouraging in-place preservation of native vegetation which is an integral part of the Sonoran Desert and which contributes to property values, high quality of life, and the unique lifestyle which the community enjoys.

## 2. Preserving Environmental Quality

- a. Preserving, salvaging and replacing native vegetation, which is important in stabilizing desert soils and providing food and protection for desert wildlife.
- b. Requiring use of native vegetation which is drought-tolerant and requires less maintenance than other types of landscaping materials.
- c. Contributing to the reduction of air pollution by encouraging the use of vegetation for air filtration and absorption of carbon dioxide and production of oxygen.
- d. Encouraging the preservation of wildlife habitat and wildlife-friendly design through improved site design.
- e. Preserving the Sonoran Desert landscape, including riparian and rock outcroppings.

## 3. Protecting Water Quality and Promoting Conservation

- a. Reducing the amount of water utilized for landscaping while achieving aesthetic objectives specified in the General Plan.
- b. Raising awareness of water conservation objectives and savings realized by utilizing desert vegetation, water-wise irrigation, and rainwater harvesting.
- c. Increasing Town-wide compliance by residents and business owners not subject to conservation requirements made effective June 1, 2010, by providing education and neighborhood outreach to support and implement landscape water conservation techniques.
- d. Reducing soil erosion by slowing storm runoff, which increases infiltration.
- e. Restricting the use of turf to recreational purposes.
- f. Establishing techniques for the installation and maintenance of landscape materials.
- g. Implementing sustainable irrigation standards including the required use of rainwater harvesting techniques.

## 4. Enhancing Design

- a. Enhancing the design qualities of each site and using landscape designs to reduce the mass of buildings.
- b. Reducing adverse impacts between potentially incompatible uses and zones by requiring an appropriate level of buffering and screening.
- c. Using context-sensitive design by considering existing landscaping within four hundred (400) feet of the project site to provide and maintain landscape continuity within the community.

## 5. Promoting Living Quality

- a. Protecting the right of property enjoyment through nuisance reduction.
- b. Promoting the use of low-pollen-producing plants, thereby reducing the risks of airborne respiratory ailments.
- c. Providing direct and important physical and psychological benefits to human beings through the use of landscaping, to reduce glare and to break up the monotony and soften the harsher aspects of urban development, while addressing security issues related to landscape design.

## **B. Native Plant Preservation, Salvage and Mitigation**

### 1. Applicability

- a. The provisions of this subsection shall apply to all new development, both public and private.

- b. The provisions of this subsection shall not apply to expansion of existing development or redevelopment projects unless native vegetation, specified in Addendum C, Tables C-1 and C-2, exists in the area to be impacted by the expansion or redevelopment.

## 2. General Provisions

- a. Native plant preservation and salvage plans shall include an inventory of, and specifications for, the proposed treatment of all protected native plants, listed in Addendum C, Tables C-1 and C-2, which are being disturbed due to development.
- b. Protected native plants shall not be destroyed, mutilated, removed from the premises or relocated on the premises except in accordance with an approved native plant preservation, salvage and mitigation plan and all Arizona Department of Agriculture and Horticulture requirements.
- c. Preservation of significant native on-site vegetation, as characterized in subsection B.3.b of this section, shall be a primary objective of site planning for development. Mature native trees shall be given particular consideration for retention in place. All saguaro cacti shall be preserved in place or relocated on site, unless otherwise approved by the Planning and Zoning Administrator.

## 3. Site Resource Inventory Standards and Requirements

### a. Site Resource Inventory

- i. The site resource inventory (SRI) shall be a primary evaluative design tool upon which the site design and salvage plans are based. The information contained in the SRI shall be utilized for purposes of site planning and design, and shall describe and identify natural characteristics of the site as listed below, including areas of significant vegetation. Preservation of protected natural areas and significant vegetation shall be a primary consideration.
  - ii. The SRI shall strive to:
    - (A) Minimize native plant disturbance, destruction, or removal.
    - (B) Promote creative plat or development design to preserve significant vegetation.
    - (C) Propose mitigation that maintains, as nearly as possible, significant native vegetation and animal habitat while preserving site soil stability.
    - (D) Incorporate native vegetation of a size, quality, and type consistent with native vegetation and the development.
    - (E) Maintain significant vegetation, as described herein, in place, unless there is no other area available for construction.
    - (F) Identify any prohibited plants (Addendum E) such as buffelgrass or tamarisk.
- b. Significant Vegetation. "Significant vegetation (SV)" is characterized as specific plant communities, and/or unique plant occurrences and/or unique individual specimens that demonstrate, through the presence of certain criteria, as listed below, areas of special value to the Sonoran Desert ecosystem.
- i. "Plant community" is an area of vegetation dominated by one (1) or more species. Climate, elevation, soil types, and other factors ultimately determine the limits and boundaries of particular plant communities. Examples of a plant community dominated by one (1) species are desert grassland and creosote bush association, or a grove of trees, for example, a mesquite bosque. These communities can form almost pure stands of single species. Examples of co-dominate plant communities are cottonwood-willow and palo verde-saguaro association. Plant communities create an environment that is beneficial, unique, and/or valuable to the desert ecosystem.
  - ii. "Unique plant occurrences" are areas of vegetation that exist in contrast to the majority of the surrounding vegetative community, due to either

microclimates or availability of water sources. Examples are stands of ironwood trees or riparian areas.

- iii. "Unique plant" refers to any native tree, shrub or cactus that meet the following criteria:
  - (A) Extraordinary characteristics such as, but not limited to, age, size, shape, form, canopy cover, or aesthetic value. Examples may be crested saguaros, or any saguaro fifteen (15) feet or higher with more than two (2) branches, a rare, massive ancient tree or tree such as a healthy ironwood with a trunk diameter larger than twelve (12) inches, or tree with an unusual shape.
  - (B) A plant species that is rare – particularly if it has been listed for Endangered Species Act protection.
- iv. Criteria for identifying areas of significant vegetation include the presence of the following (in addition to being characterized as a plant community, unique plant and/or unique plant occurrence):
  - (A) Plant species that are native to the area.
  - (B) Plant species composition is typical for the area.
  - (C) Plants are generally healthy and will survive for five (5) or more years.
  - (D) Plant density is normal for the site conditions (soil, slope, orientation, water availability).
  - (E) Mature specimens of individual trees and/or columnar cactus species are present.
  - (F) Noxious/invasive species are few and not visually prominent, such as buffelgrass, desert broom, tamarisk, Mexican palo verde, and tree of heaven.
  - (G) Grading or clearing has not substantially altered the landscape in the area.
  - (H) Constructed non-native landscapes do not qualify as significant vegetation.
  - (I) Specific groups of plant communities that are known to be habitat for protected species, for example: ironwood, saguaro, mesquite, and palo verde are known pygmy owl habitat.
- v. Preservation of significant vegetation should emphasize maintenance or creation of connections between natural areas and significant vegetation. Areas of significant vegetation include, but are not limited to, other natural areas protected by this zoning code, such as riparian habitat.

c. Mitigation

- i. When areas of significant vegetation are present but are not preserved in place due to development, salvage and mitigation shall be required. For example, for one hundred (100) plants identified as significant vegetation that are not preserved in place, those that meet the salvage criteria in subsection B.4.c of this section will be salvaged. If ten (10) are salvaged, the ninety (90) remaining shall be mitigated as set forth in Table 27-1.
- ii. Mitigation of significant vegetation, understory requirements, and area measurement.
  - (A) Mitigation of significant vegetation shall be according to the ratios in Table 27-1.
  - (B) The percentage of significant vegetation shall be measured as the square footage of the groundcover area.

If the mitigated plant does not survive the first eighteen (18) months of transplanting after landscaping is complete, mitigation standards, as listed above, shall apply.

- d. **Preservation Incentives.** In order to promote preservation in place, development standard incentives are offered to permit clustering of development, as set forth in Table 27-2.
- e. **Mitigation Remedy.** When a proposed development is in conformance with the General Plan and meets other development standards of the code, but unique circumstances exist in regard to significant vegetation, such as when a large percentage of a site is covered with significant vegetation and mitigation results in plants too numerous to survive on the site, the developer may request approval for a mitigation remedy. Remedies include provision of required vegetation, irrigation materials, and associated labor as follows:
  - i. Relocation to an adjacent property.
  - ii. Placement on a Town property.
  - iii. In-lieu fee for a Town landscape or restoration project.
  - iv. Other similar relocation effort.

The developer must make his/her request to the Town for a mitigation remedy before or concurrent with a preliminary plat or development plan submittal. The request shall include a mitigation proposal and rationale and justification for the proposal. The Development Review Board (DRB) shall consider the proposal and make their decision at a public meeting.

#### 4. Native Plant Preservation, Salvage and Mitigation Plan Requirements

- a. A native plant preservation, salvage, and mitigation plan shall be prepared for the entire site. Areas of significant vegetation from the SRI and all protected native plants listed in Addendum C, Tables C-1 and C-2, and related mitigation shall be clearly identified on the native plant preservation, salvage and mitigation plan.
- b. All existing native plants shall be preserved in their original location, except within those areas permitted to be graded. Any areas of disturbance outside of significant vegetation shall be inventoried for protected native plants and mitigated according to the standards set forth in subsection B.4.d of this section.
- c. **Determination of Transplantability.** The following standards shall apply to any protected native plant salvaged, removed from the site, or destroyed:
  - i. Transplantability shall be indicated on the native plant preservation, salvage and mitigation plan submittal and may be reviewed, at the discretion of the Planning and Zoning Administrator, by a third party plant salvage specialist. The evaluation of protected native plants shall be based on the stipulations in this section.
  - ii. All protected trees with a minimum caliper of three (3) inches, or protected multiple trunk plants with a three (3) inch combined caliper measurement of the three (3) largest trunks, and all protected cacti, shall be included in the native plant inventory. All caliper measurements are to be taken one (1) foot from ground level.
  - iii. All plants that meet the following criteria shall be either preserved in place or salvaged:
    - (A) Plant health is good to excellent with no major infestations or apparent diseases. "Plant health" is defined as a plant in a sound state, free from disease and expected to survive for five (5) or more years.
    - (B) The plant is of a size and age to suggest a likely chance of transplant survival.
    - (C) Plant is undamaged and is conducive to box or spade transplanting (upright branching).
    - (D) Soils can be excavated, are cohesive, and appear capable of supporting a boxed or spaded root ball.
    - (E) Surrounding topography permits access with the appropriate equipment needed to box or spade and remove the plant.

- (F) Adjacent plants do not pose a likely interference with root systems or interfere with plant removal.
  - (G) The overall form and character is representative of the species and is a valuable specimen for landscape or habitat purposes.
- d. Mitigation of Protected Native Plants Not in an Area of Significant Vegetation. Any tree, shrub, or cactus that meets the salvage criteria shall be salvaged and either relocated on site or utilized on another site within the town. Any tree, shrub, or cactus that meets the salvage criteria as salvageable but is destroyed shall be replaced on a one-to-one (1:1) ratio of the same species and size as that destroyed. Five (5) understory plants from the supplemental Arizona Department of Water Quality native plant list will be planted for every mitigated tree.
  - e. Mitigation Remedy. When a proposed development is in conformance with the General Plan and meets other development standards of the code, but unique circumstances exist in regard to mitigation requirements, such as when a large percentage of a site is covered with vegetation and mitigation results in plants too numerous to survive on the developed site, the developer may request approval for a mitigation remedy as specified in subsection B.3.e of this section.
  - f. Native plants salvaged from the site shall be transplanted into common areas, landscaped areas, or front yards. Whenever feasible, plant salvage shall include immediately transplanting salvaged plants in a permanent location as indicated on the landscape plan. Immediate transplant is preferred to placing salvage plants in a holding nursery for future relocation on site.
  - g. All native plants salvaged from a site (or a plant comparable in size and species salvaged from another site) shall be utilized in the corresponding project landscape plan.
  - h. All significant vegetation mitigation and native plant mitigation requirements, as documented on the native plant preservation, salvage and mitigation plans, shall be included with the plant schedule of the landscape plan.
  - i. In no case may native understory plants be removed, destroyed, or relocated from an existing stand of native plants which is to be preserved in place. The perimeter of the area preserved in place shall be designated in accordance with standards set forth in subsection B.7.c.ii of this section. Any spaded or boxed tree transplanted on site that dies due to neglect or lack of maintenance shall be replaced with the same size and species of the original salvaged tree, as required by the approved salvage and mitigation plan.
  - j. Protected native plants determined to be transplantable shall be salvaged when they are located within areas designated to be graded. Any salvaged plant utilized on site shall either be spaded directly into the new location or stored in a temporary holding nursery. All work shall be performed in accordance with development standards and/or technical bulletins as may be adopted by the Town. All temporary nurseries shall:
    - i. Provide fertilizer to promote plant health.
    - ii. Provide automatic drip irrigation systems.
    - iii. Provide adequate, routine water and maintenance of the plants.
    - iv. Nursery plants that die due to neglect shall be replaced with the same size and species of the salvaged plant.
  - k. Native plants to be transplanted on site shall be used within those areas designated as "common area" or landscaped area such as buffer areas, streetscapes, and parking lots and within the front yards of residential lots, or other areas as may be approved by the Development Review Board.
  - l. Any spaded or boxed tree transplanted on site that dies due to neglect or lack of maintenance shall be replaced with the same size and species of the original salvaged tree, as required by the salvage plan.
  - m. The limits of grading shall be staked in the field, in accordance with subsection B.7.c.ii of this section. Disturbance outside the approved grading limits shall not be permitted.

- n. Areas needed for root zone protection for native plants preserved in place shall be indicated on the native plant preservation, salvage, and mitigation plan, grading plan, development plan, and/or preliminary plat.
5. Plant Salvage Protocol. The Town of Oro Valley reserves the right to publish and modify technical bulletins establishing recommended protocol for boxing, spading, and salvage techniques.
  6. Compliance
    - a. Failure to comply with the requirements of the approved native plant preservation salvage and mitigation plan may cause immediate revocation of all permits. New permits may not be issued until the required fines are paid to the Town for the purposes of replacing and maintaining protected native plant materials as required in the approved native plant preservation and salvage plan.
    - b. The Planning and Zoning Administrator shall assess fines based on the approved fee and penalty schedule. Fines exceeding one hundred thousand dollars (\$100,000) may be assessed.
    - c. The developer shall replace removed or damaged plant materials with like size and species, and shall maintain and guarantee (in accordance with Section 26.6.C and I) the replacement plant materials for a period of three (3) years.
    - d. Prior to issuance of any permits for development of the property on which the violation occurred, the property owner shall enter into an agreement, with a landscape installation and maintenance service and the Town, to ensure replacement and three (3) years' maintenance of the replacement plant materials. Any fines in excess of the amounts specified in the agreement to replace and maintain plants shall be refunded.
  7. Approval for Salvage
    - a. All protected native plants scheduled to remain in place or authorized for destruction, removal or relocation by the approved native plant preservation and salvage plan must be tagged and numbered, in accordance with the native plant preservation, salvage and mitigation plan, prior to an on-site inspection by the Town staff. Salvage operations shall not commence until the Zoning Inspector has performed an inspection and given approval to begin salvage.
    - b. No salvage of plants regulated by the Endangered Species Act and/or the Arizona Native Plant Law may occur without the issuance of the appropriate permit by the State Department of Agriculture.
    - c. Tagging and fencing shall be completed as outlined below:
      - i. Once affixed, the tags shall not be removed until the approved native plant preservation and salvage plan is implemented and Town staff has performed a final inspection in accordance with subsection E.3.a of this section.
      - ii. All areas designated to remain as natural open space shall be fenced or taped off for protection during the grubbing and/or grading operation. The applicant shall be responsible for maintaining this "no disturbance" boundary line and no plants shall be salvaged from this protected area.
    - d. No plant salvage shall begin until approval by the Planning and Zoning Administrator. After approval of the native plant preservation, salvage, and mitigation plan, the Planning and Zoning Administrator may approve limited boxing of trees. Such boxing shall be at the applicant's risk. No plant materials will be removed from the site until such time as the applicant may apply for a grading permit. When the final grading limits are established, any boxed tree outside the limits will be reestablished in place and any areas disturbed by equipment will be revegetated. All areas to be preserved in place shall be protected from grading.

## **C. Landscape Design**

### **1. Applicability**

- a. The provisions of this subsection apply to all projects where a development plan or plat is required in accordance with Section 22.9 of the Oro Valley Zoning Code Revised.
- b. The provisions of this subsection apply to front yard landscaping for individual residential lots in all zoning districts with exceptions specified in subsection F of this section. This section does not apply to residential rear or side yards.
- c. All projects that entail a twenty-five percent (25%) or more expansion of parking area shall meet the requirements of this code for the entire project area.
- d. The provisions of this subsection apply to all projects that entail cumulative revegetation of twenty-five percent (25%) or more landscaped area.
- e. Specific applicability provisions and exceptions to requirements within this section are detailed in subsection F of this section.
- f. Any activity requiring a Type 3 grading permit shall be treated or revegetated in accordance with subsection C.8 of this section.

## 2. General Landscape Standards

- a. Any part of the development site which has been disturbed and is not required for buildings, structures, private residential yards, loading and vehicular access ways, streets, parking and utility areas, pedestrian walks and hard-surfaced activity areas shall be landscaped.
- b. Natural desert is an acceptable form of landscape. Plants meeting requirements of subsection C.3 of this section, walkways, sculpture rock groupings, and organic and inorganic groundcovers may be used as an alternative. Inorganic groundcovers and architectural features shall not be used exclusive of living plants.
- c. For all proposed subdivisions where front yards are to be graded, one (1) of the following options shall be incorporated:
  - i. One (1) tree, placed in the front yard, that has been salvaged from the site.
  - ii. One (1) nursery tree, Type 1 or 2 water use and a minimum of twenty-four (24) inch box size, placed in the front yard; and one boulder at least four (4) feet by three (3) feet by three (3) feet in size or two (2) boulders at least three (3) feet by three (3) feet by two (2) feet, and two (2) cacti or shrubs.
  - iii. Two (2) nursery trees, Type 1 or 2 water use and a minimum of twenty-four (24) inch box size, placed in the front yard. Tree spacing must comply with subsections C.2.j and k of this section.
- d. In all subdivisions where sidewalks are required, a low-maintenance landscaped curb-way consisting of inorganic groundcover or plants not to exceed Type 2 water use shall be incorporated into the landscape design. A "curb-way" shall be defined as that area between the edge of pavement or back of curb and the sidewalk of any public or private street.
- e. Additional landscaping in street rights-of-way may be required by the Town and shall be subject to acceptance and issuance of a permit from the Town Engineer, or where appropriate, from the Arizona Department of Transportation. Where aggregate groundcover is used as part of the landscape treatment along a street right-of-way, the Town may require that the aggregate groundcover be extended into the street right-of-way, to the edge of the street pavement or curb.
- f. Landscape materials shall not obstruct sight distances or vehicle turning movements.
- g. Landscaped areas that are susceptible to damage by pedestrian or auto traffic shall be protected by appropriate curbs, tree guards, or other devices.
- h. Landscape shall be designed to minimize sediment, sand and gravel being carried into the streets by storm water or other runoff.

- i. A landscape architect must certify that tree species selected and actual planting has been done in a manner that precludes overcrowding at maturity by providing the following:
  - i. A general note must be included on the landscape plan verifying that the design enables adequate plant spacing to ensure survivability at plant maturity.
  - ii. Prior to release of landscape assurances, the landscape architect must provide a letter with registrant's stamp verifying that actual planting has been accomplished in a manner to preclude overcrowding.
- j. Mesquite and palo verde trees may not be planted closer than twenty (20) feet on center of another mesquite or palo verde tree with the following exceptions:
  - i. A landscape architect documents in writing that a particular variety, such as a screwbean mesquite, will thrive at a closer distance without negative impact to adjacent trees or vegetation.
  - ii. Riparian area restoration projects.
- k. Trees shall not be planted under outdoor lighting structures. Landscape plant material shall be arranged in a manner not to obstruct security lighting.

### 3. Plant Materials and Plant Restrictions

- a. Only plants listed within Addendum C are permitted. Within Addendum C, the plants are organized by specific location requirements that include consideration of plant origin and water use characteristics at maturity. Water use types are delineated as follows:

Type 1: Irrigation needed once a month or less.

Type 2: Irrigation needed twice a month.

Type 3: Irrigation needed once a week.
- b. Use of plant species listed in Addendum C are subject to the following location requirements:
  - i. Sonoran and Chihuahuan species that are Type 1 or 2 water use and listed in Addendum C, Tables C-1, C-2, and C-3, may be utilized in all areas of a site.
  - ii. Buffer yards, common areas, and parking areas are restricted to Sonoran and Chihuahuan species that are Type 1 or 2 water use and listed in Addendum C, Tables C-1, C-2, and C-3.
  - iii. Plantings abutting nonresidential buildings and within residential front yards may include use of species not naturally occurring in the Sonoran and Chihuahuan desert that are Type 1 or 2 water use and listed in Addendum C, Table C-4.
  - iv. All Type 3 or 4 water use plants depicted in Addendum C, Table C-4, are restricted to courtyards receiving shade or adjacent to buildings on the north or east elevations.
- c. Plants not specified within Addendum C are considered prohibited, unless approved by the Planning and Zoning Administrator. To be approved, it must be demonstrated that the proposed species or hybrid conforms to the following:
  - i. All location requirements in subsection C.3.b of this section.
  - ii. Low-pollen-producing relative to typical Sonoran and Chihuahuan desert species.
  - iii. All other zoning code provisions, including, but not limited to, the prohibited plant list and height limitations.
  - iv. Type 1 or 2 water use.
  - v. Noninvasive.

- d. Salvaged native plants must be clearly specified on the landscape plan.
- e. The planting seed mixes listed in Addendum D are required for all revegetation projects in Oro Valley.
- f. The plants listed in Addendum E are specifically prohibited from use in Oro Valley.
- g. Natural turf is prohibited with the following exceptions:
  - i. Town of Oro Valley public parks.
  - ii. Private parks that serve more than one neighborhood.
  - iii. Private parks serving only one (1) neighborhood are limited to no more than fifteen percent (15%) of the total park area.
  - iv. Private schools.
  - v. Golf course greens and tee boxes only.

For all uses enabled by exception, turf may only be utilized for activity areas and not for ornamental purposes. Private park areas may not be seeded with winter rye.

- h. The following minimum size requirements apply to all required plant materials:
  - i. Trees shall be a minimum of fifteen (15) gallons in size, except for off-street parking areas and subdivision front yards as provided herein.
  - ii. All shrubs and accent plants shall be a minimum of five (5) gallons in size.
  - iii. Cactus shall be a minimum of three (3) gallons in size.
  - iv. All groundcover plants shall be a minimum of one (1) gallon in size.
- i. Prior to release of landscape assurances (residential only) and certificate of occupancy (commercial only), a registered landscape architect shall certify that all plant material meets the minimum standards contained in the current editions of the Arizona Nursery Association's Growers Committee Recommended Tree Specifications and the American Association of Nurserymen as to size, condition, and appearance.
- j. All landscaped areas shall be finished with a natural topping material that may include, but is not limited to, the following: groundcover planting, hydroseed, or mulch (organic or inorganic) of at least two (2) inches in depth. Cactus, shrubs, or other native vegetative groundcover must be planted to cover at least sixty percent (60%) of the area at maturity.
- k. Trees and large shrubs shall be adequately supported when planted.
- l. No trees shall be planted under overhead service wires if their mature heights will interfere with those wires.
- m. Earth berms shall have adequate plant material or groundcover treatment to prevent erosion.
- n. Only plants classified as water use Type 1 shall be permitted in street medians and rights-of-way. Type 2 or 3 plants may be utilized if the designer establishes sufficient rainwater harvesting to ensure survival and compliance with landscape water plan requirements (subsection D.3 of this section).
- o. To ensure plant survival within rainwater harvesting areas, the following must be accomplished:
  - i. Type 2 and Type 3 plants shall be located in areas that are designed to harvest the highest amount of water runoff.
  - ii. Type 1 plants must be selected and positioned in a manner to ensure tolerance of periodic rainwater harvesting.

#### 4. Buffer Yards

- a. The purpose of buffer yards is to physically transition and visually minimize adjacent land uses, thereby reducing or mitigating visual and living quality impacts associated with particular land uses.
- b. Standards
  - i. A buffer yard consists of horizontal space (land) and vertical elements (plants, berms, fences, or walls).
  - ii. Buffer yards shall be located on the outer perimeter of a parcel of land, adjacent to the property lines. Buffer yards shall be located in common areas, not in individual lots.
  - iii. All plant materials used in required buffer yards shall be Type 1 or 2 water use. Type 3 or 4 plants may be utilized if the designer certifies availability of sufficient rainwater harvesting to ensure survival and compliance with all landscape water plan requirements (subsection D.3 of this section).
  - iv. When buffer yards occur adjacent to each other (i.e., along the property lines of two (2) adjacent properties) the Development Review Board may require a pedestrian trail running through the buffer yard(s). The Development Review Board may also require a minimum twenty (20) foot wide corridor that provides pedestrian ingress/egress between the two (2) properties from the adjoining buffer yards.
  - v. Buffer yards shall not be located within any portion of an existing or dedicated public or private street or right-of-way, unless specifically permitted by zoning or approved by the Town Engineer.
  - vi. Determination of buffer yard requirements:
    - (A) Buffer yards for all zoning districts shall be provided as specified in Table 27-7.
    - (B) Buffer yards between districts are not required where the boundary between the districts is a street.
    - (C) Buffer yards are not required within a POS (parks and open space) district for any areas left as natural open space.
    - (D) Where a development abuts a public street, buffer yards shall be provided along all perimeter street frontages as provided in Tables 27-8 and 27-9.
    - (E) Perimeter street buffer yards are not required where homes front on the perimeter street.
    - (F) Where conflicts with sight visibility, scenic views or other standards and requirements occur, modification to the buffer yard requirements may be made by the Planning and Zoning Administrator.
  - vii. Buffer Yards "A" and "B" are defined in the following tables:
  - viii. The natural desert buffer areas must provide trees for visual relief and screening. Any trees added to meet this requirement shall be grouped to buffer existing uses and to minimize disturbance of natural desert areas.
- c. Responsibility for Buffer Yard
  - i. When a use is the first to develop on two (2) adjacent vacant parcels, the first use shall provide the required buffer per Table 27-7, based on existing zoning.
  - ii. The second property owner may develop an additional, parallel, full buffer yard as specified in Table 27-7, Required Buffer Yards, or may supplement the requirements by using elements of the existing, abutting property buffer yard as described below.
    - (A) Deduct the width of the existing buffer yard from the required buffer yard width specified in Table 27-7. The remaining width is the amount of land to be provided by the second property owner to meet the buffer yard requirements.

(B) Deduct the number of plants from the existing buffer yard from the number specified for the required buffer yard in Table 27-7. The remaining number of plants shall be provided on the second property to meet the buffer yard requirements.

(C) The second property owner shall design the required buffer yard to be compatible with the existing buffer yard.

d. Use of Buffer Yards

i. Individual or combined buffer yards of twenty-five (25) foot width, or wider, may be used for passive recreation. They may contain sculpture, benches, and pedestrian, bike or equestrian trails; provided, that:

(A) For natural desert buffer yards, disturbance of existing plants shall be minimized. Any disturbed areas shall be revegetated. Trees that must be moved shall be relocated within the buffer yard.

(B) For constructed buffer yards, no plant material shall be eliminated.

(C) All other regulations of this section are met.

ii. In no event shall the following uses be permitted in buffer yards:

(A) Playfields.

(B) Stables.

(C) Swimming pools.

(D) Racquetball and tennis courts.

(E) Other active, structured recreational uses.

(F) Parking lots.

(G) Circulation drives except at required access points.

5. Screening

a. The purpose of screening requirements is to provide a partial visual barrier between adjacent land uses to enhance buffering, improve compatibility, aesthetics and visual quality of the community.

b. Standards

i. When new development is adjacent to developed residential uses, the entire perimeter landscape buffer and screening along property lines common with the developed residential use shall be installed in the first phase of the new development.

ii. Screening devices shall be installed and maintained in accordance with the following table:

iii. The requirement for a screen may be waived or the height lowered by the Development Review Board if the buffer yard, topography, or layout of development provides adequate screening to surrounding properties, or if it would create an unsafe, unusable alley between two (2) walls.

iv. The Development Review Board may increase the height of a wall and/or the number of required plantings if the buffer yard, topography, or layout of the development does not otherwise adequately screen surrounding properties.

v. Screening devices required by this section shall be masonry (or functionally similar material) construction to provide a five (5) foot high screen. The screen shall create a complete visual barrier for its entire height and length.

vi. Where new nonresidential development is adjacent to residential uses, the perimeter screen must consist of a five (5) foot high (minimum) wall and desert trees. Tree spacing shall provide for canopies at maturity to form a continuous visual screen.

- vii. Solid walls greater than forty (40) feet in length shall be articulated or varied by using at least two (2) of the following techniques:
  - (A) Decorative features such as caps, patterns, and variations in texture or materials.
  - (B) Use of swales, berms and landscaping.
  - (C) Undulations or offset areas.
  - (D) Varied setbacks.
- viii. All required screening devices shall be architecturally compatible with the materials and design of the buildings on the site.
- ix. Vegetation shall be required and maintained on the external side of a screen wall to provide visual relief when viewed from the property being buffered. For residential development the wall shall be on the property line of the lots and all of the vegetation buffer shall be outside the wall in a common area.
- x. Breaks in screens may be required by the Planning and Zoning Administrator to provide pedestrian and bicycle access between residential areas and commercial/service uses, particularly if these uses serve the adjoining neighborhood.
- xi. Parking facilities and/or internal drives which abut a public right-of-way or where vehicle headlights may shine on adjacent residences or natural open space shall provide a minimum three and one-half (3 1/2) foot high decorative masonry wall and/or depressed parking, or a combination thereof.
- xii. All refuse areas shall be screened on three (3) sides with a six (6) foot masonry wall and plantings and shall be finished to match the architectural character of the project. A self-closing, self-latching gate shall be installed on the fourth side of the enclosure. The gate shall be designed to provide a complete visual barrier and finished to match the architectural character of the project.
- xiii. All operations and storage shall be conducted within a completely enclosed building or within an area enclosed by a solid wall at least six (6) feet in height; provided, that no objects shall be stacked higher than the wall so erected.
- xiv. Additional screening requirements for a sexually oriented business:
  - (A) Wrought-iron fencing shall be used to enhance surveillance. No solid block walls are permitted, except in the following cases:
  - (B) If a business adjoins a site utilized for residential purposes, a continuous solid eight (8) foot high wall shall be utilized along the full length of the common adjoining property line.
  - (C) If the business is located in a standalone pad, a combination solid and wrought-iron eight (8) foot high view fence shall be utilized around the entire perimeter.

## 6. Off-Street Parking and Vehicle Use Areas

- a. The purpose of parking and vehicle use area landscaping requirements is to provide pedestrian refuge, adequate shade, heat reduction and visual relief. Landscape design is a primary component of off-street parking areas.
- b. Standards
  - i. Every sixth row of parking spaces shall be separated by a landscaped island measuring a minimum ten (10) feet wide (inside of curb to inside of curb) running the length of the parking row. Pedestrian walkways, four (4) feet in width, shall be provided inside the curb, running the length of the parking row and meandering around the trees. The island shall include one (1) canopy tree a minimum thirty-six (36) inch box in size for every six (6) parking spaces abutting the island.

- ii. Along each parking row, one (1) landscape island shall be provided for every nine (9) parking spaces. The island shall measure a minimum of ten (10) feet wide and twenty (20) feet in length. One (1) canopy tree shall be planted in each island.
  - iii. Trees within parking islands shall be a minimum of twenty-four (24) inch boxed, or two (2) inch spaded, or larger size.
  - iv. Light poles shall not be located within parking islands.
  - v. Parking area landscape islands may be designed to harvest rainwater, as approved by the Town Engineer. This practice is encouraged to meet rainwater harvesting volume requirements.
  - vi. Loading areas shall be screened from adjoining properties and public thoroughfares with a six (6) foot high opaque screen, consisting of a decorative wall, earth berms, or a combination of such elements.
  - vii. If a loading zone is visible from an adjacent street, residential use, or residential zoning district where development is anticipated, a minimum five (5) foot wide landscaped area must be provided adjacent to required opaque screens.
  - viii. Drive-through windows and stacking lanes shall be screened from adjacent properties and public thoroughfares with a five (5) foot wide landscape island. Screening shall be a minimum of three (3) feet in height. The screen shall be located on the outside of the drive-through lane and shall screen queuing automobiles from any adjacent use.
7. Nonresidential Uses. The following standards supplement buffering and screening requirements and apply to all nonresidential development projects and are intended to provide appropriate mitigation for incompatibilities and aesthetic enhancements of commercial and auto-oriented development.
- a. For all new projects that include phases for future completion, a master landscape palette shall be developed as part of the first phase and applied as development progresses.
  - b. When part of a center with two (2) or more lots or building pads, the landscaping of any pad building shall be compatible with the landscape design of the main center.
  - c. When located in a center with two (2) or more lots or building pads, clearly identifiable landscaped pedestrian walkways shall be installed connecting the pad buildings to parking areas, streets, and the larger commercial center.
  - d. All buildings, whether freestanding pads or part of a larger center, shall have a minimum ten (10) foot landscaped area on all four (4) sides of the building subject to the following:
    - i. Clusters of potted plants and raised planter areas may be utilized where planting beds are impractical.
    - ii. Walkways, sidewalks, or patios may be included in the ten (10) foot landscaped area; provided, that the planting area is at least four (4) feet wide except where required for access.
    - iii. If the building has a loading zone, drive-through window, and/or stacking lanes, then the five (5) foot landscaped island required per subsection C.6.b.viii of this section may be substituted for the landscaped area along the corresponding side of the building.
  - e. Landscaping around automatic teller machines (ATMs) or weekend deposit boxes and restrooms shall be placed so as to maximize outside visibility of the ATM, deposit box, and restrooms.
  - f. Planting and selection of landscape materials for use at sexually oriented businesses shall allow sight lines to remain open and create barriers to minimize places of concealment. The following landscape requirements shall be incorporated:
    - i. Plants that have thorns or needles and a dense structure shall be used as barriers in the following areas:

- (A) Spaces that are largely unobserved and enable a potential hiding place.
  - (B) Within a fifteen (15) foot radius of gathering places such as sidewalks, pathways, parking lots, open space areas, and pay phones.
  - (C) All sides of the building shall have a continuous perimeter of six (6) foot high landscape material within a minimum of six (6) feet of the structure, excluding entrance doors, loading zones, and windows.
  - (D) The entire area under each window shall be landscaped up to the edge of the window sill. Landscaping may not extend above the window sill.
- ii. Tree canopies shall be maintained to ensure that branches or canopy foliage is not below a height of six (6) feet so to not hinder the site visibility around the building, specifically in front of windows, and into the parking lot.
  - iii. Shrubs, accents, and groundcovers shall not exceed two (2) feet in height, within parking areas and landscaped buffer yards.
8. **Revegetation.** Revegetation is required in order to restore natural vegetation and habitat and to minimize soil erosion potential of graded and/or disturbed land resulting from any permitted or nonpermitted construction activity in the Town. Further, revegetation provides improved air filtration and absorption of carbon monoxide and production of oxygen and is considered an essential measure in preserving the natural resources and character of the unique Sonoran Desert ecosystem existing in Oro Valley and Eastern Pima County.
- a. A revegetation plan shall be submitted for all development projects, public and private, that require a landscape plan or grading permit. The revegetation plan shall be included with the landscape plan submittal.
  - b. Graded areas that are to be revegetated shall be planted with species appropriate to the site and its surrounding native habitat. "Appropriate," in this sense, means that revegetation will be done, to the extent practical, with the same species and density present on undisturbed adjacent or nearby sites.
  - c. Acceptable revegetation includes the planting of desert trees, desert shrubs, and large specimen cacti or the seeding of desert trees, desert shrubs, and grasses, with an adequate density to control erosion. Only those species that are compatible with the site, soils, and conditions in which they will be planted shall be used.
  - d. The seed mixes specified in Addendum D are required for all revegetation work. Seeds may be raked into the soil with appropriate mulch material or established by hydroseeding, anchored mulches, or jute, rolled straw or similar material approved by the Planning and Zoning Administrator and the Town Engineer.
  - e. Temporary irrigation of revegetated plant materials may be appropriate, along with other maintenance procedures needed to establish the plants. Temporary irrigation systems shall utilize components, designs and best practices in order to minimize water use.
  - f. In the process of establishing vegetation in areas of low soil productivity, the following minimum slope and surface requirements shall be followed as preconditions for revegetation:
    - i. Slopes shall be no steeper than three to one (3:1) unless otherwise specified in a site-specific soils report prepared by a registered civil engineer and approved by the Town Engineer.
    - ii. Slopes/surfaces shall be designed for stability.
    - iii. Slopes/surfaces shall be designed for control of surface runoff and groundwater recharge.
    - iv. Slopes/surfaces shall be designed for quick establishment of vegetation.

- v. A system of bench terraces or diversions may be needed to reduce effective slope length.
- g. For slopes steeper than three to one (3:1) that will not readily support soil-binding plants, plant material may have to be held in place with mechanical structures such as retaining walls or rip-rap in accordance with a soils report prepared by a licensed professional engineer and approved by the Town Engineer.
- h. Sites that are marginal for stabilization with vegetation alone, as determined by the Town Engineer, shall be successfully held in place by a combination of mechanical and vegetative means as approved by the Town Engineer.

#### **D. Irrigation and Water Management**

The provisions set forth in this section are designed to conserve groundwater using standards for the installation of efficient, intelligent landscape irrigation systems, establishing annual water plans for landscaped areas, and requiring the installation of passive rainwater harvesting systems.

##### **1. Applicability**

- a. The provisions of this subsection apply to all projects where a development plan or plat is required in accordance with Section 22.9 of the Oro Valley Zoning Code Revised, with appropriate exceptions as noted herein.
- b. The provisions of this subsection apply to front yard landscaping of individual residential lots in all zoning districts with exceptions specified in subsection F of this section. This section does not apply to residential rear or side yards.
- c. All projects that entail a twenty-five percent (25%) or more expansion of parking area shall meet requirements for the entire project area, except as provided in subsection D.1.f of this section.
- d. The provisions of this subsection apply to all projects that entail cumulative revegetation of twenty-five percent (25%) or more landscaped area, except as provided in subsection D.1.f of this section.
- e. All development, or redevelopment projects that propose an increase or replacement of landscaped area of five thousand (5,000) square feet or more, shall install an intelligent irrigation control system that meets the requirements of subsection D.2.d of this section to manage water distribution for the entire site.
- f. Developments are eligible for exemption from the requirements of subsections D.3, Landscape Water Plan, and D.4, Rainwater Harvesting, of this section if one (1) of the following requirements is met on or before June 1, 2010:
  - i. The specific development has a valid unexpired master development plan, development plan, or recorded final plat. Any of the aforementioned "plans" or "plat" subsequently submitted for any reason cannot take advantage of this exemption.
  - ii. Substantial drainage improvements to accommodate the entire specific development are constructed.
- g. Specific applicability provisions and exceptions to requirements within this section are detailed in subsection F of this section.

##### **2. Irrigation System. Provision shall be made for an approved method of underground automatic irrigation.**

- a. An irrigation system shall be employed until such time as the plant materials are sustained by natural water sources. The purpose of the irrigation system is to provide adequate watering for plant establishment and to supplement rainfall as needed.
- b. Not less than quarterly inspections and seasonal maintenance of irrigation systems are required. Compliance will be enforced as specified in subsection E.2.c.ii.A of this section.
- c. Irrigation systems shall be designed to be site-specific, reflecting plant type, soil type, infiltration rates, slopes, and prevailing wind direction.

- d. All properties that employ an irrigation system shall install and maintain a control system. Control systems, including single-family residential applications, shall sense localized conditions to preclude over-watering. It shall prevent the irrigation system from turning on when specified minimum soil moisture content is present; and shall provide for differentiated plant watering needs.
- e. An irrigation control schedule must be provided. Schedule must indicate compliance with the following:
  - i. Landscape water plan (subsection D.3 of this section) requirements with emphasis on methods to successfully implement required irrigation reduction.
  - ii. All irrigation control systems shall be operated and maintained to reduce water application during the months of October through February.
- f. Irrigation must be provided in the following manner:
  - i. Drip irrigation, low-flow bubblers, or similar components are permitted. Only pressure-compensating and self-flushing emitters may be utilized.
  - ii. Sprinkler heads may only be utilized for turf applications. Use shall conform to individual site conditions and be tested for uniformity and distribution performance in accordance with subsection E.2.a.ii.B of this section.
  - iii. All irrigation system components shall be durable and long lasting. The type utilized depends on long- or short-term use as follows:
    - (A) Rigid piping such as polyvinyl chloride (PVC) or other materials with a similar or longer service life is encouraged for areas that require irrigation beyond a period of five (5) years.
    - (B) A minimum of one-half (1/2) inch poly tubing must be utilized for all irrigation areas.
  - iv. Irrigation systems connected to potable water mains (public or private) shall be equipped with backflow preventors.
  - v. Irrigation water shall not leave the landscaped areas and flow onto roads, parking areas or sidewalks.
  - vi. Sprinkler heads shall be installed at least eight (8) inches away from impermeable surfaces (e.g., sidewalks, buildings, walls, etc.).
  - vii. The irrigation system shall be operated such that annual water use is the same or less than the approved, annual landscape water plan (subsection D.3 of this section). Seasonal adjustments of the irrigation schedule and maintenance are required and are the responsibility of the property owner.
- g. Irrigation and/or watering plans shall meet the minimum standards of the American Society of Irrigation Consultants.
- h. Metering
  - i. Separate water meters dedicated to irrigation systems are an important tool in managing water use and measuring water conservation. Separate irrigation water meters shall be installed for the following types of development:
    - (A) Nonresidential.
    - (B) Multifamily.
    - (C) Residential subdivision common areas only.
  - ii. Irrigation submeters may be approved if:
    - (A) Adequate capacity exists in the primary meter to meet site water demands including domestic, irrigation, and other uses.
    - (B) Use of a submeter does not interfere with Town's ability to collect water usage data.

(C) Compliance with all design and location standards is established by the water utility provider.

### 3. Landscape Water Plan

- a. To ensure irrigation efficiency and water conservation goals are accomplished, a landscape water plan specifying a maximum amount of water to be applied on an annual basis shall be established for any irrigated landscape.
- b. The plan shall include:
  - i. Calculation of the monthly and total annual water use (gallons) required for all specified plant materials at maturity stage.
  - ii. Specific water use reduction in accordance with subsections D.3.e and f of this section.
  - iii. Delineation of project phases, if applicable, with corresponding water use details for each phase so that actual water use can be clearly compared with allocated amounts.
- c. The landscape water plan, including the reduction amounts, shall be listed on the landscape plans.
- d. Plant water use calculations shall be based on the most current plant water use information from the Arizona Department of Water Resources.
- e. The irrigation reduction plan for landscaping shall be implemented three (3) years after issuance of the first certificate of occupancy. Metered water use for landscape irrigation shall be reduced by fifty percent (50%) five (5) years from the date of the issuance of the certificate of occupancy.
- f. Eventual discontinuation of irrigation is preferred for all landscaped areas. Irrigation within the following landscape areas must be discontinued from irrigation:
  - i. All vegetation located in buffer yards shall not receive irrigation water after five (5) years from the certificate of occupancy date.
  - ii. All vegetation within roadway medians and rights-of-way shall not receive irrigation water after five (5) years from the date of project completion.
- g. The annual water use for a project shall not exceed the annual landscape water plan.
- h. Meter readings are to be accomplished as follows:
  - i. Irrigation meter readings shall be used to determine compliance with the landscape water plan. Noncompliance is subject to penalties under Oro Valley Town Code.
  - ii. Meter readings shall be taken, at a minimum, on an annual basis. Monthly readings may be required, at the discretion of Planning and Zoning Administrator, in order to address noncompliance with the Water Plan.
  - iii. An initial meter reading taken prior to the issuance of the certificate of occupancy shall be recorded for reference as part of water plan reporting requirements (subsection E.2.b of this section).
- i. The landscape rainwater plan shall not be enforced for the first year, commonly referred to as the plant establishment period.
- j. Within three (3) years from the date of issuance of a final certificate of occupancy, the applicant, or a successor in interest, may request to revise the landscape rainwater plan. The request shall be submitted to the Planning and Zoning Administrator. The request shall be granted only if one (1) of the following applies:
  - i. A mathematical error was made in the calculation of water required for on-site landscaping.

- ii. Additional data on plant water consumption relevant to or relative to the subject site has been obtained, and results indicated a needed change in landscape water plan calculations included with the landscape plan.
4. Rainwater Harvesting. "Rainwater harvesting" is defined as intercepting, catching, storing, diverting, or directing storm water runoff from roofs, parking areas, etc., during rain events and putting it to beneficial use. Adopted Town goals and policies specify the use of rainwater harvesting systems to supplement irrigation and reduce water use while supporting the area's flora and fauna.
  - a. Rainwater Harvesting Plan
    - i. The rainwater harvesting plan is required and shall:
      - (A) Specify the rainwater harvesting system(s) to be utilized.
      - (B) Integrate with the landscape water plan (subsection D.3 of this section) and include the design details for implementing on-site rainwater harvesting.
      - (C) Integrate with site grading design and show how any combination of capture, conveyance, storage, and distribution will be utilized on site to harvest rainwater runoff.
      - (D) Be provided concurrently with a development plan, preliminary plat, landscape plan, and grading plan.
      - (E) Be stamped by a registered landscape architect and civil engineer.
      - (F) Ensure catchment of rainwater into all landscaped buffer yards and common area landscaped elements.
      - (G) When a project is phased, represent how each phase will meet rainwater harvesting requirements.
      - (H) For subdivisions that propose fully graded front yards, the plan shall include alternatives to facilitate the construction of rainwater harvesting systems and specific planting options on the variety of front yard configurations found in the proposed subdivision. The plan shall be implemented on each lot prior to issuance of a certificate of occupancy for that residence.
    - b. Rainwater Harvest System General Provisions
      - i. Both active and passive rainwater harvesting systems are permitted. Only passive systems are required. Types of systems:
        - (A) Passive System. Diverts or directs rainwater runoff to appropriate locations where it is collected and allowed to infiltrate the soil naturally. This system contains no long-term storage capabilities.
        - (B) Active System. This type of system employs a reservoir or other water storing apparatus to catch and store rainwater for later use with conventional landscape irrigation systems. It typically involves electric pumps and valves, and will be cross-connected to the site irrigation system.
      - ii. Passive rainwater harvesting systems shall provide for the drainage of rainwater into a system of catchments on the site.
      - iii. Site discharge water budgeting shall be in accordance with the criteria set forth in Section 11.3.5 of the Town of Oro Valley Drainage Criteria Manual. Reductions in detention requirements will not affect the overall site water budget requirements.
      - iv. Standing water must be managed as follows:
        - (A) Standing water for passive rainwater harvesting systems must infiltrate or dissipate within twelve (12) hours of rainfall cessation.
        - (B) Active rainwater harvesting systems by definition shall be able to store water for future use. All active rainwater harvesting storage systems must be enclosed, covered and mosquito proof.

- v. All water collected and utilized for rainwater harvesting from parking lots and streets must meet the same discharge quality as stipulated within the Town of Oro Valley Drainage Criteria Manual, Section 11.7, First Flush Requirements.
  - vi. Active rainwater harvesting systems shall be approved by the Town Engineer and Building Official. Systems that connect to a potable water supply must have backflow protection installed and meet the requirements of Article 15-23 of the Town of Oro Valley Town Code, Backflow Prevention and Cross-Connection Control Program.
  - vii. All passive rainwater harvesting catchment areas shall be vegetated. The landscape architect shall certify that species appropriate to the anticipated level of water collection have been utilized.
  - viii. Eighty (80) percent of the area within each linear buffer yard segment must be graded to a minimum depth of four (4) inches to enable collection of rainwater with the following exceptions:
    - (A) The area or a portion thereof will remain undisturbed and in a natural state.
    - (B) There are prohibitive site characteristics such as slope as determined by the Planning and Zoning Administrator and the Town Engineer.
- c. Rainwater Harvest System Single-Family and Townhouse Residential Provisions
- i. There is not a minimum required volume of rainwater harvesting; however, design for water catchments is required within all buffer yards, common areas, recreation areas, and front yards.
  - ii. For lots with fully graded front yards, catchment areas to utilize rainwater must be established for plant use. At a minimum, depressions and/or wells must be established for all trees.
  - iii. Plants in front yards, buffer yards, and common areas that require irrigation may not be established in areas that are shaped in a manner to not enable partial containment of irrigation or rainwater.
  - iv. Eighty (80) percent of the areas within recreation and common areas must be graded to a minimum depth of four (4) inches to enable collection of rainwater deposited in the immediate area with the following exceptions:
    - (A) The area or a portion thereof will remain undisturbed and in a natural state.
    - (B) There are prohibitive site characteristics such as slope as determined by the Planning and Zoning Administrator and Town Engineer.
    - (C) The specific footprint of a recreation fixture may be exempted when positive drainage is required to ensure function and durability as determined by the Planning and Zoning Administrator. Examples include swimming pools, tennis courts, and tot facilities.
  - v. Active systems may be established within building setbacks.
- d. Rainwater Harvest System Multifamily Residential, Commercial, Technical Park, and Other Nonresidential Provisions
- i. Projects shall include a minimum volume of rainwater harvesting in accordance with the following equation:
 
$$VWHgal = \sum AIS \times 3,000 \text{ gal/acre}$$

Where: VWHgal = Volume of rainwater harvesting in gallons

$\sum AIS$  = Sum of all impervious surface areas including pavements, sidewalks, hardscape elements, and buildings.
  - ii. When a project is planned and developed in phases, each individual phase must independently achieve the extent of rainwater harvesting

required. Harvesting requirements may not be transferred from one (1) phase to another.

- iii. Rainwater harvesting basins may be combined with site detention basins; provided, that the residual ponding will dissipate within twelve (12) hours. This shall be demonstrated by a combination of percolation, evapotranspiration and positive outflow device such as a metered pipe. At a minimum, a positive outflow pipe shall be installed no higher than four (4) inches above the basin invert.
- iv. No passive rainwater harvesting basins shall be allowed within ten (10) feet of a building or vertical structural element greater than four (4) feet in height without special structural consideration and design approved by the Town Engineer and the Town Building and Safety Official.
- v. Access is to be provided to all rainwater harvesting basins, appurtenant structures and facilities. The following must be achieved to evaluate and provide access:
  - (A) Clearly delineate area on the grading and landscape plans.
  - (B) Position as to provide minimal disturbance to the site vegetation.
  - (C) Must be sized to enable maintenance by the methods with the least potential for ground disturbance and reduction of planting area.
- e. Detention Credit. Detention volume may be reduced at a one-to-one (1:1) volumetric ratio by the volume utilized for rainwater harvesting. This volumetric ratio must be confirmed for the two (2), ten (10), twenty-five (25) and one hundred (100) year storm events and approved by the Town Engineer.

5. Water Features. The use of water for ornamental purposes, such as water fountains, as a component of landscaping is not permitted.

## **E. Administration**

### **1. Application, Processing and Approval**

#### **a. Application**

- i. SRI and native plant preservation, salvage and mitigation plans (NPPSM plans), prepared in accordance with subsection B of this section, shall accompany applications for development plans, use permits, and preliminary plats.
- ii. Landscape and water plans for landscape, irrigation, buffer yards, common areas, screening, water harvesting and revegetation, prepared in accordance with requirements of this section, shall accompany applications for development plans, use permits and preliminary plats.
- iii. For subdivisions with fully graded front yards, landscape plan options must be submitted for front yards at the time of preliminary plat review.
- iv. The SRI, NPPSM plans and the landscape plans and supporting data shall be prepared in accordance with any supplemental requirements detailing rainwater harvesting, landscape or irrigation design. NPPSM plans and landscape plans may be submitted for Town review as a single package.
- v. Landscape plans shall indicate the location of required publicly accessible artwork required as stipulated in Section 27.3.

#### **b. Processing**

- i. A preapplication conference is required prior to the submittal of landscape plans, preliminary plat, or development plan, at which the applicant shall present conceptual landscape and irrigation plans, including an integrated design for rainwater harvesting features in the project.
- ii. The landscape plan submittal will be checked by the Planning and Zoning Administrator for completeness. If found to be incomplete as to those requirements set forth in subsections C and D of this section, the

submittal will be rejected and the applicant notified within ten (10) working days of the date the plans were received.

- iii. Upon the Planning and Zoning Administrator's certification of completeness of the landscape plan submittal, copies of the plans will be distributed to the reviewing agencies and any other interested parties, who will make known their recommendations in writing.
- iv. The Planning and Zoning Administrator will assemble the responses from the various reviewing agencies and submit them with a report to the Development Review Board.

c. Approval

- i. The SRI and NPPSM plans will be reviewed and may be approved by the Planning and Zoning Administrator.
- ii. Landscape plans will be reviewed and may be approved by the Development Review Board. Landscape plans submitted with development plans will be considered concurrently by the Development Review Board.

2. Audits, Reporting, and Compliance

a. Audits

- i. A landscape irrigation audit is required prior to the issuance of a certificate of occupancy and otherwise may be mandated by the Zoning Inspector due to suspected or reported noncompliance with the provisions of this section.
- ii. When a new irrigation system is installed within new residential subdivision common areas, multifamily common areas, and nonresidential development, an on-site landscape irrigation audit of the newly installed irrigation system shall be performed by a Town-approved certified landscape irrigation auditor, prior to the issuance of a certificate of occupancy.
  - (A) The auditor shall be independent of the property owner and of all contractors associated with the property.
  - (B) The audits shall be conducted in accordance with the current edition of the Landscape Irrigation Auditor's Handbook, published by the Irrigation Association. The average distribution uniformity results for the site audit shall be a minimum of eighty percent (80%) emission uniformity for drip irrigation and seventy-five percent (75%) for all rotary systems.
  - (C) The results of the audit shall be provided to the Zoning Inspector in a letter or other form acceptable to the Town, and shall be signed by the auditor.
- iii. The licensed contractor must certify that all irrigation was installed in the manner specified on the landscape and irrigation plans prior to issuance of certificate of occupancy.

b. Water Plan Reporting

- i. In order to assess compliance with the water plan when applicable, the irrigation meter or meters shall be assessed, at a minimum, on an annual basis by the Oro Valley Water Utility. When a violation occurs, as determined by the Planning and Zoning Administrator, meter reading may be repeated on a monthly basis until conformance is achieved.

c. Compliance

- i. Upon review of annual water use, the Planning and Zoning Administrator shall make a determination of compliance with the approved annual landscape water plan for the site. Noncompliance is subject to penalties under Oro Valley Town Code.
- ii. The Planning and Zoning Administrator may provide an exception to landscape water plan compliance subject to the following conditions:

- (A) Applicant must provide records to establish that irrigation has been routinely inspected at least on a quarterly basis and maintained accordingly within one (1) month of any noted deficiencies; and
- (B) Overage is due to unforeseen event, such as a broken private service irrigation line that has been repaired within one (1) month of recorded water use increase; or
- (C) Drought conditions not occurring within a ten (10) year statistical trend require a justifiable increase during the months of March through September. This provisional increase allowance will be negated if the water utility provider mandates water reductions due to severe drought; or
- (D) A significant number of plants must be replaced due to disease or insect infestation. Overage must directly correspond with specific replacement plant needs and a three (3) year establishment period.

### 3. Inspections

#### a. Native Plant Salvage

- i. No permit for grubbing or grading of a site may be issued prior to the completion of the initial on-site inspection.
- ii. For single-family lot development, the Zoning Inspector shall verify limits of grading and the relocation of any salvaged plants in accordance with the approved site plan.
- iii. A follow-up inspection shall be performed which verifies the required on-site relocation of salvaged plants to their new locations or the holding nursery, and the required in-place preservation of native plants.

#### b. Landscape and Revegetation

- i. All property required by the Oro Valley Zoning Code Revised to be landscaped, stabilized or revegetated shall pass a landscape inspection prior to the issuance of a certificate of occupancy. Such inspections shall be requested by the applicant at least twenty-four (24) hours prior to being performed.
- ii. The Planning and Zoning Administrator will have the right to refuse to pass any project not in conformance with the approved landscape plans or not meeting the provisions of this chapter.
- iii. The Zoning Inspector will also have the right to reject landscape materials as being substandard as to size, condition, or appearance.
- iv. After the landscape installation is complete, periodic on-site landscape inspections may be performed by the Zoning Inspector to ensure proper maintenance.

### 4. Maintenance

- a. Property owners, lessees, and occupants shall maintain required landscape, irrigation, buffering, screening and rainwater harvesting system improvements to the standards identified herein and on the approved plans.
- b. Maintenance of landscape, irrigation, rainwater harvesting basins, buffering and screening improvements shall consist of:
  - i. Regular watering until plants are established and capable of surviving without irrigation.
  - ii. Watering of replacement vegetation within buffer yards is limited to only the replacement vegetation after implementation of the five (5) year irrigation stoppage requirement.
  - iii. Checking, adjusting, repair and replacement of irrigation equipment, with the originally specified materials or their equivalents, as necessary to ensure water efficiency, prevent leaks and maintain water plan compliance. Broken or leaking irrigation components shall be repaired within seventy-two (72) hours of notice.

- iv. Removing debris, sediment, sand, and gravel carried into streets or parking areas within seventy-two (72) hours of notice.
  - v. Checking, clearing and repair of water collection basins, spillways, and distribution systems including maintenance of basin infiltration capabilities in accordance with the approved plans.
  - vi. Inlet and outlet structures are to be kept free of vegetation and debris at all times.
  - vii. Pruning and fertilizing.
  - viii. Clearing of prohibited species, debris and weeds.
  - ix. Removal and replacement of dead plants within forty-five (45) days of notice with plant materials of the same species and of similar size and quality.
  - x. Aerating and de-thatching turf areas.
  - xi. Replenishing mulch.
  - xii. Repair of architectural features.
- c. The maintenance schedule and requirements for rainwater harvesting basins shall be detailed in private covenants, conditions and restrictions (CC&Rs). The homeowner's association (HOA) or responsible party shall be clearly identified within the CC&Rs and shall be responsible for maintenance of basins and rainwater harvesting appurtenances and maintenance recordkeeping.
- d. Lack of maintenance as above described shall constitute a violation of this section. The property owner and/or occupant or lessee shall be held jointly and severally liable for any infraction of the requirements set forth in this section.
- e. During the effective period of the grading permit, any weedy species (e.g., buffelgrass, Russian thistle, telegraph plant, desert broom, ragweed, pigweed, or burrow brush, among others) that have grown in a graded area shall be removed in order to prevent the spread of such species.

## **F. Applicability Provisions and Exceptions**

1. This subsection identifies specific exceptions to standards contained in this section. It is to be utilized in conjunction with specific applicability provisions provided in subsections C and D of this section.
2. Table 27-13 identifies code sections that do not apply to specific types of development activity.
3. The Planning and Zoning Administrator shall make a determination of applicability in cases where applicability is unclear or ambiguous.

((O)09-20, Amended, 11/04/09; (O)07-33, Amended, 09/19/07; (O)06-06, Amended, 04/19/06)

## Addendum C: Approved Native Plant List

TABLE C-1: ORO VALLEY PROTECTED NATIVE PLANT LIST		
Latin Name	Common Name	Legal Protection
<i>Acacia greggii</i>	Catclaw Acacia	
<i>Acacia constricta</i>	Whitethorn Acacia	
<i>Carnegiea gigantea</i>	Saguaro	NPL-SR
<i>Carnegiea gigantea</i>	Saguaro, crested form	NPL-HS
<i>Castela emoryi</i>	Crucifixion Thorn	NPL-SR
<i>Celtis pallida</i>	Desert Hackberry	
<i>Celtis reticulata</i>	Netleaf Hackberry	
<i>Cercidium floridum</i>	Blue Palo Verde	NPL-SA
<i>Cercidium microphyllum</i>	Foothills Palo Verde	NPL-SA
<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>	Blue Barrel Cactus	NPL/ESA-NPL/HS
<i>Ferocactus wislizenii</i>	Fishhook Barrel	NPL-SR
<i>Fourquieria splendens</i>	Ocotillo	NPL-SR
<i>Mammillaria thornberi</i>	Thornber Clustered Pincushion	NPL-SR
<i>Opuntia fulgida</i> var. <i>fulgida</i>	Chain-fruit Cholla*	NPL-SR
<i>Opuntia phaeacantha</i> var. <i>discata</i> *	Desert or Engelmann Prickly-Pear*	NPL-SR
<i>Olneya tesota</i>	Ironwood	NPL-SA/HR
<i>Peniocereus greggii</i>	Desert Night-blooming Cereus	NPL-SR
<i>Prosopis pubescens</i>	Screwbean Mesquite	NPL-HR/SA
<i>Prosopis velutina</i>	Velvet Mesquite	NPL-HR/SA
<i>Tumamoca maddougallii</i>	Tumamoc Globeberry	NPL-SR
<i>Yucca elata</i>	Soaptree Yucca	NPL-SR
<i>Zizyphus obtusifolia</i> var. <i>canescens</i>	Greythorn	
KEY: NPL = Plants regulated by the Arizona Native Plant Law HR = Harvest Restricted SR = Salvage Restricted SA = Salvage Assessed ESA = Plants protected by the Federal Endangered Species Act HS = Highly Safeguarded * = See "2" below		

**TABLE C-2: ORO VALLEY SUPPLEMENTAL PROTECTED NATIVE PLANT LIST  
(UNDER-STORY)**

Latin Name	Common Name	Occurrence	Legal Protection
<i>Abutilon Incanum</i>	Indian Mallow	C	
<i>Abutilon Parishii</i>	Tucson Indian Mallow	UC	SR
<i>Acacia Angustissima</i> var. <i>Hirta</i>	Fern Acacia	UC	
<i>Acacia Constricta</i>	White Thorn Acacia	CW	
<i>Acacia Greggii</i>	Catclaw Acacia	C	
<i>Agave Chrysantra</i>	Golden-Flowered Agave	UC SR	
<i>Agave Palmeri</i>	Palmer Agave	UC	SR
<i>Ambrosia Ambrosioides</i>	Canyon Ragweed	C	
<i>Ambrosia Deltoidea</i>	Triangleleaf Bursage	CW	
<i>Anemone Tuberosa</i>	Desert Windflower	UC	
<i>Anisacanthus Thurberi</i>	Thurber Desert Honeysuckle	UC	
<i>Astrolepis Cochisensis</i>	Cochise Scaley Astrolepis	UC	
<i>Astrolepis X Integerrima</i>	Hybrid Cloak Fern	UC	
<i>Astrolepis Sinuata</i>	Wavy Astrolepis	UC	
<i>Astrolepis Standleyi</i>	Standley Astrolepis	UC	
<i>Baccharis Salicifolia</i>	Seep Willow	C	
<i>Baileya Multiradiata</i>	Desert Marigold	C	
<i>Calliandra Eriophylla</i>	Fairy Duster	C	
<i>Celtis Pallida</i>	Desert Hackberry	C	
<i>Clematis Drummondii</i>	Texas Virgin Bower	UC	
<i>Clematis Ligusticifolia</i>	White Virgin's Bower	UC	
<i>Condalia Warnockii</i> var. <i>Kearneyana</i>	Kearney Condalia	C	
<i>Coursetia Microphylla</i>	Baby Bonnets	UC	
<i>Crossosoma Bigelovii</i>	Bigelow Ragged Rock Flower	UC	
<i>Dasyliirion Wheeleri</i>	Wheeler Dasyliirion	UC	SR
<i>Dichelostemma Pulchellum</i> var. <i>Pauciflorum</i>	Small-Flowered Covena	C SR	
<i>Dodonaea Viscosa</i> var. <i>Angustifolia</i>	Hop Tree	UC	
<i>Echinocereus Fasciculatus</i> var. <i>Fasciculatus</i>	Bundle Hedgehog Cactus	C SR	
<i>Encelia Farinoba</i>	Brittle Bush	C	
<i>Ephedra Trifurca</i>	Long-Leaved Joint-Fir	C	
<i>Eragrostis Intermedia</i>	Plains Lovegrass	UC	
<i>Ericameria Laricifolia</i>	Turpentine Bush	C	
<i>Eriogonum Wrightii</i>	Wright Buckwheat	UC	
<i>Glandularia Gooddingii</i>	Goodding Verbena	C	
<i>Gossypium Thurberi</i>	Desert Cotton	UC	
<i>Hibiscus Coulteri</i>	Desert Rose Mallow	C	
<i>Hymenoclea Monogyra</i>	Burro Brush	C	
<i>Hymenoclea Salsola</i>	Burro Brush	C	
<i>Hyptis Emoryi</i>	Desert Lavender	UC	
<i>Jatropha Cardiophylla</i>	Limberbush	UC	
<i>Justicia Californica</i>	California Chuparosa	UC	
<i>Krameria Parvifolia</i>	Range Ratany	C	
<i>Larrea Divaricata</i> var. <i>Tridentata</i>	Creosote Bush	C	
<i>Lycium Berlandieri</i> var. <i>Parviflorum</i>	Berlandier Wolfberry	C	
<i>Lycium Fremontii</i>	Fremont Desert Thorn	C	

Marah Gilensis	Big Root	UC	
Menodora Scabra	Yellow Menodora	C	
Mimosa Biuncifera	Wait-a-Minute Mimosa	UC	
Mimulus Guttatus	Seep-Spring Monkey Flower	UC	
Muhlenbergia Porteri	Bush Muhly	C	
Muhlenbergia Rigens	Deer Grass	UC	
Opuntia Arbuscula	Pencil Cholla	C	SR
Opuntia Ffulgida var. Mammillata	Smooth Chain-Fruited Cholla	C SR	
Opuntia Kleiniae var. Tetracantha	Four-Spined Pencil Cholla	UC SR	
Opuntia Leptocaulis	Desert Christmas Cholla	C SR	
Opuntia Spinosior Cane	Cholla	C	SR
Opuntia Versicolor Sta	ghorn Cholla	C	SR
Pellaea Truncata	Spiny Cliff Brake	UC	
Penstemon Parryi	Parry Penstemon	C	
Psilostrophe Cooperi	Cooper Paper Flower	CW	
Simmondsia Chinensis	Jojoba	UC	
Sporobolus Contractus	Spike Dropseed	UC	
Sporobolus Cryptandrus	Sand Dropseed	UC	
Sporobolus Wrightii	Sacaton	UC	
Tiquilia Canescens	Shrubby Tiquilia	UC	
Trixis Californica	Trixis	C	
Zinnia Acerosa	Desert Zinnia	C	
(Oro Valley Occurrence: CW = Common Widespread, C = Common, UC = Uncommon)			

TABLE C-3: ORO VALLEY APPROVED PLANT LIST (ALL AREAS)					
*See Bottom of List for Key to Symbols			List Sorted Alphabetically by Botanical Name		
Botanical Name	Common Name	Status	Origin	Needs	Hardy
Abronia villosa	Sand Verbena	Gc, an	SD	1	
Acacia angustissima	White Ball Acacia	S	SD	2	sh
Acacia cavenia	Cavenia Acacia	T	SD, CD	2	
Acacia constricta	Whitethorn Acacia, Mescat	T, S*	SD, CD	1	
Acacia eburnia	Needle Acacia	T	SD, CD	1	
*Acacia farnesiana	Sweet Acacia	T	SD, CD	2	sh
Acacia greggii	Cat's Claw Acacia	T, S	SD, CD	1-2	
*Acacia minuta (smallii)	Southwestern Sweet Acacia	T, S, cl	SD, CD	2	
Acacia schaffneri	Twisted Acacia	T	CD	1-2	
Acacia smallii	Sweet Acacia	T	SD, CD	1-2	sh
Acacia willardiana	Palo Blanco	T	SD	1-2	sh
Agave americana	Century Plant	Sc	CD	1-2	
Agave colorata	Agave	Sc	SD	1	
Agave filifera	Agave	Sc	CD	1-2	
Agave huachucensis	Huachuca Agave	Sc	SD	1-2	
Agave lophantha (univittata)	Agave	Sc	CD	2	
Agave ocahui	Ocahui Agave	Sc	SD	1-2	
Agave palmeri	Palmer Agave	Sc	SD	1	
Agave victoriae-reginae	Victoria Regina Agave	Sc	CD	1-2	
*Agave vilmoriniana	Octopus Agave	Sc	SD	1-2	sh
Aloysia gratissima	Fragrant Bush, Bee Brush	S	SD, CD	2	
Aloysia wrightii	Wright's Oregano, Lemon Verbena	S	SD, CD	2	
Ambrosia (Franseria) deltoidea	Triangle-Leaf Bursage	S	SD		
Ambrosia (Franseria) dumosa	White Bursage	S	SD	1	
Anisacanthus thurberi	Desert Honeysuckle	S	SD	2	
*Antigonon leptopus	Queen's Wreath	V, cl	SD	2-3	(t)
Asclepias linaria	Pine-Leaf Milkweed	S	SD, CD	2	
Asclepias subulata	Desert Milkweed	A	SD	2	sh
Aster bigelovii	Aster	an	SD	1	(t)
Aster tanacetifolius	Aster	an	SD, CD	1	(t)
Atriplex canescens	Four-Wing Saltbush	S	SD, CD	1	
Atriplex hymenelytra	Desert Holly	S	SD, CD	1	
Atriplex lentiformis	Quail Bush	S	SD	1	
Atriplex lentiformis breweri	Brewer Saltbush	S	SD	1-2	
Atriplex polycarpa	Desert Saltbush	S	SD	1	
Bahia absinthifolia	Desert Daisy	p, cl	SD	2	
Baileya multiradiata	Desert Marigold	p, cl*	SD, CD	1-2	
Bothriochloa barbinodis	Cane Beardgrass	Gr, cl	SD, CD	1	
Buchloe dactyloides	Buffalo Grass	Gr	CD	2-3	
Bursera microphylla	Elephant Tree	T	SD	2,1	(t)
*Caesalpinia (Poinciana) mexicana	Mexican Bird of Paradise (Yellow)	S, cl*	CD	2	

<i>Calliandra eriophylla</i>	Fairy Duster, False Mesquite	S, cl	SD	1	
<i>Carnegiea gigantea</i>	Saguaro	C	SD	1	
<i>Cathostecum erectum</i>	False Grama	Gr, cl	SD	1	
<i>Celtis pallida</i>	Spiny or Desert Hackberry	S	SD, CD	1-2	
* <i>Celtis reticulata</i>	Netleaf or Western Hackberry	T	SD, CD	2	
<i>Cephalophyllum 'Red Spike'</i>	Red Spike Ice Plant	Gc, Sc, cl		2	
* <i>Cercidium Hybrid</i>	Desert Museum Palo Verde			1-2	
* <i>Cercidium floridum</i>	Blue Palo Verde	T, cl	SD	2-3	
<i>Cercidium microphyllum</i>	Littleleaf or Foothill Palo Verde	T, cl	SD	1	
<i>Cercidium praecox</i>	Palo Brea	T, cl	SD	2	sh
<i>Cercidium sonorae</i>	Sonoran Palo Verde	T, cl	SD	1-2	
* <i>Chilopsis linearis</i>	Desert Willow	T, S, cl	SD, CD	2-3	
<i>Cissus incisa</i>	Desert Grape Ivy	V	CD	1-2	I
<i>Cissus trifoliata</i>	Desert Grape Ivy	V	SD	1-2	
<i>Condalia warnockii</i> var. <i>kearneyana</i>	Condalia	S	SD, CD	1	
<i>Cordia parvifolia</i>	Littleleaf Cordia	S, cl	SD, CD	1-2	
<i>Cupressus arizonica</i>	Arizona Cypress	T	SD, CD	2	
<i>Dasyliiron acrotriche</i>	Green Desert Spoon	A	CD	1	
<i>Dasyliiron wheeleri</i>	Sotol, Desert Spoon	A	SD, CD	1	
<i>Digitaria californica</i>	Arizona Cottontop	Gr	SD, CD	1	
<i>Dodonaea viscosa</i>	Hopbush	S	SD, CD	1-2	sh
<i>Echinocactus grusonii</i>	Golden Barrel	C, cl	SD	1-2	
<i>Echinocereus spp.</i>	Hedgehog, Rainbow Cactus	C, cl	SD, CD	1	
<i>Encelia californica</i>	California Brittlebush (Green)	S, cl	SD	1-2	sh
<i>Encelia farinosa</i>	Brittlebush	S, cl	SD	1-2	sh
<i>Euphorbia antisiphilitica</i>	Wax Plant, Candelilla	S	CD	1	
<i>Euphorbia myrsinites</i>	Euphorbia	Gc		2	
<i>Fallugia paradoxa</i>	Apache Plume	S	SD	2,1	
<i>Ferocactus spp.</i>	Barrel Cactus	C, cl	SD, CD	1	
<i>Forestiera neomexicana</i>	Desert Olive	S	SD	1,2	
<i>Fouquieria splendens</i>	Ocotillo	A, cl	SD, CD	1	
<i>Gossypium harknessii</i>	Gossypium	S, cl	SD	2	(t)
<i>Haplopappus (Ericameria) laricifolius</i>	Turpentine Bush	S, cl	SD, CD	1	
<i>Hesperaloe funifera</i>	Giant Hesperaloe	A	CD	1-2	
<i>Hesperaloe parviflora</i>	Red Yucca, Red Flowered Hesperaloe	A, cl	CD	1-2	
<i>Hibiscus coulteri</i>	Yellow Hibiscus, Coulter's Hibiscus	S	SD, CD	2	
<i>Hilaria berlanderi</i>	Curly Mesquite	Gr	SD, CD	2	
<i>Hilaria mutica</i>	Tobosa Grass	Gr	SD, CD	1	
<i>Hilaria rigida</i>	Big Galleta Grass	Gr	SD, CD	2	
<i>Jatropha cardiophylla</i>	Limberbush	S	SD	1	
<i>Jatropha dioica</i>	Jatropha	S, cl	CD	1	(t)
* <i>Justicia (Beloperone) californica</i>	Chuparosa	S, cl	SD	2-3	(t)

<i>Larrea tridentata</i> (divaricata)	Creosote Bush, Greasewood	S, cl	SD, CD	1	
<i>Leucaena retusa</i>	Golden Leadball	T, S, cl	CD	1-2	
<i>Lupinus arizonicus</i>	Lupine	an, cl	SD	1	
<i>Lupinus sparsiflorus</i>	Desert Lupine	an, cl	SD	1	
<i>Lupinus succulentus</i>	Arroyo Lupine	an, cl	SD	1	
<i>Lycium exsertum</i>	Lycium	S	SD	1	
<i>Lycium fremontii</i>	Wolfberry	S	SD	1	
* <i>Lysiloma candida</i>	Palo Blanco	T, S	SD	2,3	(t)
* <i>Lysiloma thornberi</i>	Feather Tree	T, S	SD	2-3	sh
<i>Mamillaria</i> spp.	Mamillaria Cactus	C, cl	SD, CD	1-2	
* <i>Mascagnia macroptera</i>	Yellow Orchid Vine	V, cl	SD, CD	2-3	sh
<i>Maytenus phyllanthoides</i>	Mangle Dulce	S	SD, CD	2	
<i>Melampodium leucanthum</i>	Blackfoot Daisy	Gc, p, cl	SD, CD	2	
* <i>Merremia aurea</i>	Yellow Merremia	V, cl	SD	2-3	(t)
* <i>Mimosa biuncifera</i>	Wait-a-Minute Bush	S	SD	2-3	
<i>Mimosa dysocarpa</i>	Velvetpod	S, cl	SD	2	
* <i>Muhlenbergia dumosa</i>	Bush Muhlenbergia, Bamboo Muhly	Gr	SD	3-4	
<i>Muhlenbergia emersleyi</i>	Bullgrass	Gr, cl	SD	1	
<i>Muhlenbergia porteri</i>	Bush Muhly	Gr, cl	SD, CD	1	
<i>Nolina bigelovii</i>	Beargrass	A	SD	1-2	
<i>Nolina matapensis</i>	Tree Beargrass	A, T	SD	1-2	
<i>Nolina microcarpa</i>	Beargrass	A	SD	1-2	
<i>Nolina parryi</i>	Parry's Beargrass	A	SD	1-2	
<i>Olneya tesota</i>	Desert Ironwood, Tesota	T	SD, CD	1	(sh)
<i>Opuntia</i> spp.	Prickly Pear, Cholla	C	SD, CD	1	
<i>Pappophorum mucronulatum</i>	Pappusgrass Gr		SD	1	
<i>Pedilanthus macrocarpus</i>	Slipper Flower	A, Sc, cl*	SD	2	
<i>Penstemon baccharifolius</i>	Cutleaf Penstemon	p, cl	CD	1	
<i>Penstemon barbatus</i>	Beardtongue Penstemon	p, cl	SD, CD	1	
<i>Penstemon eatoni</i>	Eaton's Penstemon	p, cl	SD	1	
<i>Penstemon parryi</i>	Parry Penstemon	p, cl	SD	1	
<i>Penstemon pseudospectabilis</i>	Canyon Penstemon, Mohave Beardtongue	p, cl	SD	1	
<i>Penstemon superbus</i>	Superb Penstemon	p, cl	CD	1	
<i>Pithecellobium flexicaule</i>	Texas Ebony	T	CD	2	sh
<i>Pithecellobium pallens</i>	Tenaza	T	CD	2	sh
<i>Prosopis glandulosa glandulosa</i>	Honey or Texas Mesquite	T#	CD	2	
<i>Prosopis pubescens</i>	Screwbean Mesquite	T	SD, CD	2	
<i>Prosopis velutina</i>	Velvet Mesquite	T#	SD	2	
<i>Psilostrophe cooperi</i>	Paper Flower	p, cl	SD, CD	2	
<i>Rhus microphylla</i>	Littleleaf Sumac	S, cl	CD	2	
<i>Rhus ovata</i>	Sugar Bush, Sugar Sumac	S	SD	2	
<i>Rhus virens</i>	Evergreen Sumac	S, cl	CD	2	
<i>Ruschia uncinatus</i>	Ruschia	Sc, Gc		2	
<i>Sambucus mexicana</i>	Mexican Elderberry	T	SD, CD	2	

<i>Senna covesii</i>	Desert Senna	P, cl	SD	1-2	
<i>Senna wislizenii</i>	Cassia, Shrubby Senna	S, p, cl	SD, CD	2	
<i>Simmondsia chinensis</i>	Joboba, Goat Nut	S	SD	1-2	
<i>Sphaeralcea</i> spp.	Globe-Mallow	P, cl	SD, CD	1	
<i>Sporobolus contractus</i>	Spike Dropseed	Gr	SD, CD	1	
<i>Sporobolus wrightii</i>	Sacaton	Gr	SD, CD	1	
<i>Stenocereus</i> ( <i>Lemaireocereus</i> ) <i>thurberi</i>	Organ Pipe Cactus	C	SD	1	(t)
<i>Stipa neomexicana</i>	New Mexico Feathergrass	Gr	SD, CD	2	
<i>Trucklers crinita</i>	Two-Feather Trichloris	Gr	SD, CD	2	
<i>Trichocereus</i> spp.	Trichocereus Cactus	C		1-2	
<i>Tridens muticus</i>	Slim Tridens	Gr	SD, CD	2	
<i>Vauquelinia californica</i>	Arizona Rosewood	S, T#	SD	2	
<i>Verbesina encelioides</i>	Crown Beard	an, cl	SD, CD	2	
<i>Viguiera deltoidea</i>	Golden Eye	p, cl	SD	2	
<i>Vitex agnus-castus</i>	Chaste Tree, Monk's Pepper	T, S, cl		2	
<i>Yucca aloifolia</i>	Spanish Bayonet Yucca	A	SD	1	
<i>Yucca baccata</i>	Banana Yucca	A	SD, CD	1	
<i>Yucca brevifolia</i>	Joshua Tree	A	CD	1	
<i>Yucca carnerosana</i>	Giant Dagger Yucca	A	CD	1	
<i>Yucca elata</i>	Soaptree Yucca	A	SD, CD	1	
<i>Yucca glauca</i>	Small Soapweed Yucca	Sc	U.S.A.	1	
<i>Yucca rigida</i>	Blue Dagger Yucca	A, cl	CD	1	
<i>Yucca rostrata</i>	Beaked Yucca	A	CD	1	
<i>Yucca schottii</i>	Mountain Yucca	Sc	SD	1	
<i>Yucca treculeana</i>	Tree Yucca	A	CD	1	
<i>Yucca whipplei</i>	Our Lord's Candle	A	SD	1	
<i>Zinnia acerosa</i>	Desert Zinnia	P, cl	SD, CD	1	
<i>Zinnia grandiflora</i>	Rocky Mountain Zinnia	P, cl	CD	2	
<i>Zizyphus obtusifolia</i>	Greythorn	S, T	SD	1	sh

TABLE C-4: ORO VALLEY APPROVED PLANT LIST (COURTYARDS AND NORTH OR EAST BUILDING ELEVATIONS ONLY)					
*See Bottom of List for Key to Symbols		List Sorted Alphabetically by Botanical Name			
Botanical Name		Status	Origin	Needs	Hardy
Acacia abyssinica	Abyssinian Acacia	T	Africa	3	sh
Acacia aneura	Mulga	T	Australia	2	sh
Acacia berlandieri	Guajillo	S, T	CD	3	
Acacia crasspedocarpa	Waxleaf Acacia	T, S	Australia	1	
Acacia cultriformis	Knife-Leaf Acacia	T, S	Australia	2	sh
Acacia notabilis	Acacia	S	Australia	2	
Acacia redolens	Prostrate Acacia	S, Gc	Australia	2	
Acacia rigidula	Black Brush Acacia	S, T	CD	3	
*Acacia salicina	Weeping Wattle	T, cl	Australia	2	sh
*Acacia saligna	Wattle Tree	T	Australia	1-2	sh
Acacia stenophylla	Pencilleaf Acacia	T	Australia	1-2	
Aloe barbadensis	Barbados Aloe	Sc, cl	Africa	2-3	sh
Aloe ferox	Cape Aloe	Sc, cl	Africa	2-3	sh
Aloe saponaria	Mediterranean Aloe	Sc, cl	Africa	2-3	sh
Atriplex nummularia	Old Man Saltbush	S	Australia	1	
Atriplex semibaccata	Australian Saltbush	S	Australia	2	
Berberis harrisoniana	Barberry	S	SD	3	
Berberis trifoliata	Agritos	S	SD	3	
Bougainvillea spp.	Bougainvillea	V, S, cl	Brazil	3	(t)
Brachychiton populneus	Bottle Tree	T	Australia	2-3	
Brahea (Erythea) armata	Mexican Blue Palm	T	SD	2-3	
Buddleia marrubifolia	Wooly Butterfly Bush	S, cl	CD	2-3	
Caesalpinia (Poinciana) gilliesii	Yellow Bird of Paradise	S, cl*	Argentina	1-2	
*Caesalpinia pulcherrima	Red Bird of Paradise	S, cl*	Caribbean	3	sh
*Calliandra californica	Red Fairy Duster, Baja Fairy Duster	S, cl	SD	2-3	
*Calliandra peninsularis	Red Calliandra, Baja Fairy Duster	S, cl	SD	2-3	sh
Callistemon citrinus	Lemon Bottlebrush	T, S, cl	Australia	3	sh
Calylophus hartwegii	Calylophus	Gc, cl	CD	3	
Campsis radicans	Common Trumpet Creeper	V, cl	SD, CD	2-3	
Carpobrotus edulis	Ice Plant	Gc, Sc, cl, Africa	Africa	3	(t)
Cassia artemisioides	Wormwood Senna, Feathery Cassia	S, cl	Australia	2-3	sh
Cassia nemophila (eremophila)	Green Cassia	S, cl	Australia	2	
Cassia phyllodinea	Silvery Cassia S,	cl	Australia	2-3	
Cassia wislezanii	Shrubby Cassia	S, cl	Australia	2-3	
Centaurea cineraria	Dusty Miller	p, cl	Mediterranean	3	
Cercis canadensis var. mexicana	Mexican Redbud	T, S	CD	3	
Cereus peruvianus 'Monstrosus'	Peruvian Cereus	C	South America	1-2	sh
Chamaerops humilis	Mediterranean Fan Palm	T	Spain	2-3	
Convolvulus cneorum	Bush Morning Glory	S, Gc, cl* Medit.	Mediterranean	1-2	
Convolvulus	Ground Morning Glory	Gc, cl	Africa	3	sh

mauritanicus					
<i>Cordia boissieri</i>	Anacahuita, Texas Olive	T, S, cl	CD	2-3	sh
<i>Cupressus glabra</i>	Smooth Bark Cypress	T	SD	2-3	
<i>Dalbergia sissoo</i>	Rosewood	T	India	3	sh
<i>Dalea bicolor</i> var. <i>argyrea</i>	Silver Dalea	S	SD	2-3	
<i>Dalea formosa</i>	Feather Dalea	S	SD, CD	2-3	
<i>Dalea frutescens</i>	Black Dalea	S, cl	CD	2-3	
<i>Dalea greggii</i>	Trailing Indigo Bush	Gc	CD	2-3	
<i>Dalea psorothamus spinosus</i>	Smoke Tree	S, T	CD, SD	2-3	
<i>Dalea pulchra</i>	Indigo Bush	S, cl	SD	2-3	
<i>Dalea versicolor</i> var. <i>sessilis</i>	Indigo Bush, Dalea	S, cl	SD	3	
<i>Dimorphotheca sinuata</i>	African Daisy, Cape Marigold	An, cl	South Africa	4	
<i>Dyssodia acerosa</i>	Dogweed	Gc, p, cl	SD, CD	2-3	
<i>Dyssodia pentachaeta</i>	Dyssodia	Gc, an, p, c	SD, CD	2-3	l
<i>Echinopsis</i> spp.	Easter Lily, Sea Urchin Cactus	C, cl	S. America	1	
<i>Ephedra nevadensis</i>	Ephedra	S	SD	3	
<i>Eremophila decipiens</i>	Emu Bush	S, cl	Australia	1	
<i>Eucalyptus campaspe</i>	Silver Gimlet	T	Australia	2-3	sh
<i>Eucalyptus formanii</i>	Eucalyptus	T	Australia	2	
<i>Eucalyptus leucoxylon</i> ( <i>rosea</i> )	White Iron Bark	T, cl	Australia	2	
<i>Eucalyptus microtheca</i>	Tiny Capsule Eucalyptus	T	Australia	1-2	
<i>Eucalyptus polyanthemos</i>	Silver Dollar Gum	T	Australia	2	
<i>Eucalyptus rudis</i>	Desert Gum	T	Australia	2	
<i>Eucalyptus spathulata</i>	Swamp Mallee	T	Australia	3	
<i>Euphorbia rigida</i> ( <i>biglandulosa</i> )	Gopher Plant	A, Sc, cl* Africa	Africa 2		
<i>Feijoa sellowiana</i>	Pineapple Guava	T, S, cl	S. America	3	
<i>Ficus pumila</i>	Creeping Fig	GC, V		3,4	
<i>Gazania rigens</i> 'Copper King'	Copper King Gazania	Gc, cl	Africa	3-4	
<i>Gazania rigens</i>	Treasure Flower Gazania	Gc, cl	Africa	3-4	
<i>Gazania rigens leucolaena</i>	Trailing Gazania	Gc, cl	Africa	3-4	(t)
<i>Geoffreyia</i> ( <i>Gourleia</i> ) <i>decorticans</i>	Chilean Palo Verde	T, cl	S. America	1	
<i>Hyptis emoryi</i>	Desert Lavender	S SD		3	sh
<i>Juniperus deppeana</i>	Alligator Bark Juniper	T	SD, CD	3	
<i>Justicia candicans</i>	Red Jacobinia	S, cl	SD	3	sh
<i>Justicia spicigera</i>	Mexican Honeysuckle, Firecracker Bush	S, cl	SD	3	sh
<i>Lantana camara</i>	Bush Lantana (many cultivars)	S, cl*	N. America	3-4	(t)
<i>Lantana montevidensis</i>	Trailing Lantana	Gc, cl*	S. America	3-4	(t)
<i>Leucophyllum</i> spp.	Texas Ranger (all cultivars)	S, cl	CD	2	
<i>Linum grandiflorum Rubrum</i>	Scarlet Flax	Gc, an, cl		3	
<i>Linum lewisii</i>	Blue Flax	an, cl	SD, CD	3	
<i>Macfadyena unguis-cati</i>	Cat's Claw Vine	V, cl	America	2-3	

Malephora crocea	Croceum, Ice Plant	Gc, Sc, cl		2-3	
*Mascagnia lilacina	Lavender Orchid Vine	V, cl	CD	2-3	
Muhlenbergia rigens	Deer grass	Gr	SD	3	
Muhlenbergia rigida	'Nashville' TM	Gr, cl	SD	3	
Myoporum parvifolium	Myoporum	Gc	Australia	3	
Myrtus communis 'Boetica'	Twisted Myrtle	S#	Mediterranean	3	
Myrtus communis 'Compact'	Dwarf Myrtle	S	Mediterranean	3	
Nandina domestica	Heavenly Bamboo (many cultivars)	S, cl		3	
Oenothera berlandieri (speciosa childsii)	Mexican Evening Primrose	Gc, cl	CD	3	
Oenothera caespitosa	Tufted Evening Primrose	p, cl	SD	2-3	
Oenothera stubbei	Chihuahuan Primrose, Baja Primrose	Gc, cl	CD	2-3	
Olea europaea 'Swan Hill'	Swan Hill Olive	T	Mediterranean	3	
Oryzopsis hymenoides	Indian Ricegrass	Gr	SD, CD	3	
Osteospermum fruticosum	Trailing African Daisy	Gc, cl	Africa	3-4	sh
Passiflora foetida	Passion Flower	V SD		3	sh
Pentzia incana	Karoo Bush	Gc	Africa	1-2	
Phoenix canariensis	Canary Island Date Palm	T		3	
Phyla nodiflora	Lippia	Gc, cl		3-4	
Pinus edulis	Piñon Nut Pine	T		2-3	
Pinus eldarica	Afghan Pine	T#	Asia	2	
Pinus monophylla	Singleleaf Piñon Pine	T	Mojave	2	
Pinus pinea	Italian Stone Pine	T	Mediterranean	2-3	
Pinus roxburghii	Chir Pine	T	Asia	3	
Pistacia atlantica	Mt. Atlas Pistache	T	Africa	2	
Pistacia chinensis	Chinese Pistache	T, cl	Asia	3	
Pistacia terebinthus x integerrima	Pistache Hybrid terebinthus x integerrima	T, cl		3	
Pistacia vera	Pistachio	T	Asia	2-3	
Pithecellobium mexicanum	Mexican Ebony	T	SD	3	
Pittosporum phillyraeoides	Willow Pittosporum	T	Australia	2	
Prosopis (S. Amer. hybrid)	Thornless Mesquite (S. Amer. Hybrid)	T#	S. America	2	
Prosopis alba	Argentine Mesquite	T#	S. America	2	
Prosopis chilensis	Chilean Mesquite	T#	S. America	2	
Punica granatum	Pomegranate	S, T, cl	India	2-3	
Quercus arizonica	Arizona White Oak	T	SD, CD	3	
Quercus emoryi	Emory Oak	T	SD, CD	3	
Quercus ilex	Holly Oak	T		3	
Quercus suber	Cork Oak	T*	Mediterranean	2	
Quercus virginiana 'Heritage'	Heritage Live Oak	T	SE U.S.A.	3	
Rosa banksiae	Lady Banks Rose, Tombstone Rose	S, Gc, V		3	
Rosmarinus officinalis	Bush Rosemary	S, cl	Mediterranean	2-3	
Rosmarinus officinalis 'Prostratus'	Dwarf or Trailing Rosemary	Gc, cl	Mediterranean	2-3	

<i>Ruellia californica</i>	Ruellia	S, cl	SD	3	(t)
<i>Ruellia peninsularis</i>	Ruellia	S, cl	SD	3	(t)
<i>Salvia chamaedryoides</i>	Blue Sage	S, p, cl	CD	2-3	
<i>Salvia clevelandii</i>	Cleveland Sage	S, cl		3	
<i>Salvia columbariae</i>	Chia	An, cl	SD	3	
<i>Salvia farinacea</i>	Mealy Blue Sage	S, cl	CD	3-4	
<i>Salvia greggii</i>	Texas Red Salvia, Autumn Sage	S, cl	CD	2-3	
<i>Salvia leucantha</i>	Mexican Bush Sage	S, cl	CD	2-3	
<i>Salvia mohavensis</i>	Mohave Sage	S, cl	SD	2	
<i>Salvia splendens</i>	Scarlet Sage	S, cl	CD	2-3	
<i>Santolina chamaecyparissus</i>	Lavender Cotton	S, Gc	Mediterranean	2-3	
<i>Santolina virens</i>	Green Santolina	Gc, S, cl	Mediterranean	3-4	
<i>Sapindus saponaria</i>	Soapberry	T*	SD, CD	3-4	
<i>Senecio cineraria</i>	Dusty Miller, Silver Plant	P, cl*		3	
<i>Senna lindheimeriana</i>	Senna	S	CD	4	sh
<i>Sesuvium verrucosum</i>	Sea Purslane, Ice Plant	Gc	Africa	2	(t)
<i>Sophora secundiflora</i>	Mescal Bean, Texas Mountain Laurel	S, T, cl*	CD	2-3	
<i>Sophora arizonica</i>	Arizona Sophora	S, T, cl*	SD	2-3	
<i>Sporobolus airoides</i>	Alkali Sacaton	Gr	SD, CD	3	
<i>Tecomaria capensis</i>	Cape Honeysuckle	S, cl	Africa	4	sh
<i>Tagetes lemmoni</i>	Mountain Marigold	p, cl	SD	3-4	
<i>Tecoma stans</i> var. <i>angustata</i>	Trumpet-Bush	S, cl	SD, CD	2-3	sh
<i>Teucrium chamaedrys</i> ( <i>prostratum</i> )	Prostrate Germander	Gc, p	Mediterranean	2-3	
<i>Teucrium fruticans</i>	Bush Germander	S 3			
<i>Ungnadia speciosa</i>	Mexican Buckeye	T, cl	CD	3	
<i>Verbena gooddingii</i>	Goodding Verbena	p, cl	SD	3-4	
<i>Verbena peruviana</i>	Peruvian Verbena	p, cl	S. America	4	
<i>Verbena tenuisecta</i> ( <i>pulchella</i> )	Moss Verbena, Fineleaf Verbena	p, cl	S. America	3	
<i>Yucca recurvifolia</i> ( <i>pendula</i> )	Pendulous or Curveleaf Yucca	A	U.S.A.	2	
<i>Zauschneria californica</i>	Hummingbird Trumpet	Gc, cl	SD	3	
<i>Zauschneria latifolia</i>	Hummingbird Flower	S	SD	3	

KEY TO SYMBOLS	
STATUS	<p><b>T</b> - TREE</p> <p><b>S</b> - SHRUB</p> <p><b>A</b> - ACCENT PLANT</p> <p><b>GC</b> - GROUND COVER</p> <p><b>C</b> - CACTUS</p> <p><b>SC</b> - SUCCULENT (OTHER THAN CACTI)</p> <p><b>V</b> - VINE</p> <p><b>GR</b> - ORNAMENTAL GRASS</p> <p><b>AN</b> - ANNUAL</p> <p><b>P</b> - PERENNIAL</p> <p><b>CL</b> - SEASONAL COLOR (SHOWY FLOWERS, FALL COLOR OR BERRIES)</p>
ORIGIN	<p><b>CD</b> - Chihuahuan Desert Region - (broadly interpreted to include a large area of north central and northwest Mexico, southwest Texas, southern New Mexico and extreme southeast Arizona.)</p> <p><b>SD</b> - Sonoran Desert Region - (broadly interpreted to include the arid and semi-arid areas of northwest Mexico, southeast California and most of Arizona south of the Mogollon Rim.)</p> <p>(Note: Chihuahuan and Sonoran Desert Regions annotated by Matt Johnson, Native Plant Society.)</p>
APPROXIMATE WATERING NEEDS (depending on soil and climate conditions)	<p><b>1</b> - No supplemental irrigation once established.</p> <p><b>2</b> - Once a month during the growing season once established.</p> <p><b>3</b> - Twice a month during the growing season once established.</p> <p><b>4</b> - Once a week during the growing season once established</p>
HARDINESS	<p><b>sh</b> - Semi-hardy -- some dieback in a hard frost</p> <p><b>(t)</b> - Tender (may be severely damaged or killed in a hard frost)</p> <p><b>*</b> - Toxic; may be harmful if eaten. (For more information call Arizona Poison Control Center at (520) 626-6016.)</p> <p><b>#</b> - Exceptions to the nomenclature in <u>Hortus III</u>.</p> <p><b>I</b> - Invasive -- may spread and intrude into natural areas.</p>

((O)09-20, Amended, 11/04/09)



**Current through Ordinance (O)10-04, passed April 7, 2010**

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# Addendum D: Oro Valley Approved Revegetation Seed Mix

## ADDENDUM “D”: ORO VALLEY APPROVED REVEGETATION SEED MIX LIST SHRUBS: at least 4 species and minimum of 5 PLS/acre

*Ambrosia deltoidea*, Triangle-leaf Bursage (P,C)

*Acacia constricta*, Whitethorn Acacia (P,W)

*Atriplex canescens*, *A. polycarpa*, or *A. lentiformis*, Salt Bush (P,C)\*

*Calliandra eriophylla*, Fairy Duster (P,C/W)

*Celtis pallida*, Desert Hackberry (P,C/W)

*Encelia farinosa*, Brittlebush (P,C/W)

*Haplopappus laricifolius* [= *Ericameria laricifolia*], Turpentine Bush (P,C,W)

*Larrea tridentata* [= *L. divaricata*], Creosote (P,W)

## SMALL PERENNIALS: at least 4 species and minimum of 5 PLS/acre

*Bahia absinthifolia*, Desert Bahia (P,C)

*Baileya multiradiata*, Desert Marigold (P,C/W)

*Cassia* [= *Senna*] *covesii*, Desert Senna (P,W)

*Datura wrightii*, Sacred Datura (P,W)

*Isocoma tenuisecta*, Burrowwed (P,C/W)

*Glandularia* [= *Verbena*] *gooddingii*, Goodding's Verbena (P, C/W)

*Psilostrophe cooperi*, Paper Flower (P,C/W)

*Sphaeralcea ambigua*, Desert Globemallow (P,C,W)

*Zinnia pumila*, Desert Zinnia (P, C)

## PERENNIAL GRASSES: at least 4 species and minimum of 5 PLS/acre

*Aristida purpurea*, Purple Three-Awn (P,W)

*Aristida ternipes*, Spidergrass (P,W)

*Bothriochloa* [= *Andropogon*] *barbinodis*, Cane Beardgrass (P,W)

*Bouteloua curtipendula*, Side-Oats Grama (P,W)

*Bouteloua rothrockii*, Rothrock Grama (P,C/W)

*Digitaria californica*, Arizona Cottontop (P,W)

*Eragrostis intermedia*, Plains Love Grass, (P,W)

*Erioneuron pulchellum*, Fluffgrass (P,C)

*Heteropogon contortus*, Tanglehead (P,W)

*Leptochloa dubia*, Green Sprangle Top (P,W)

*Muhlenbergia porteri*, Bush Muhly (P,W)

*Pappophorum mucronulatum*, Pappus Grass (P,W)

*Setaria macrostachya*, Plains Bristlegrass (P,W)

*Sporobolus airoides*, Alkali Sacaton (P,W)

*Sporobolus cryptandrus*, Sand Dropseed (P,W)

**ANNUAL HERBS AND GRASSES: at least 4 species and minimum of 5 PLS/acre**

*Allionia incarnata*, Trailing Windmills (A,C)  
*Bouteloua aristidoides*, Needle Grama (A,W)  
*Bouteloua barbata*, Six Weeks Grama (A,C)  
*Datura discolor*, Sacred Datura (A,W)  
*Erigeron divergens*, Spreading Fleabane (A,W)  
*Eschscholtzia mexicana*, Mexican Poppy (A,C)  
*Evolvulus arizonicus*, Arizona Blue Eyes (A,C)  
*Hymenothrix wislizenii* (A,W)  
*Kallstroemia grandiflora*, Arizona Poppy (A,W)  
*Lesquerella gordonii*, Bladderpod (A,C)  
*Lupinus arizonicus*, Arizona Lupine (A,W)  
*Lupinus concinnus*, Bajada Lupine (A,W)  
*Lupinus sparsiflorus*, Desert Lupine (A,W)  
*Nama hispidum*, Purplemat (A,C)  
*Orthocarpus purpurascens*, Owlclover (A,C)  
*Pectis papposa*, Dogweed (A,C)  
*Penstemon parryi*, Parry's Penstemon (P,A,C/W)  
*Penstemon subulatus*, Scarlet Buglar (P,A,C/W)  
*Plantago insularis*, Indian Wheat (A,C)  
*Proboscidea parviflora*, Devil's Claw (A,W)  
*Salvia columbariae*, Chia (A,C)  
*Sphaeralcea coulteri*, Globemallow (A,C)  
*Tidestromia lanuginosa*, Woolly Tidestromia (A,W)

**TOTAL: AT LEAST 16 SPECIES and 20 PLS/ACRE**

A = Annual;

P = Perennial;

C = Germinates and thrives in the cool season;

W = Germinates and thrives in warm season;

C/W = Germinates and thrives in cool/warm seasons.

(Note: The cool season in Oro Valley runs September through March, and the warm season is from March through October. There is an overlap of seasons.)

*\*any combination of these species, but not more than 1.5 PLS/acre total*

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