



integrated Site Design Practices Sample Ordinance Language

The following matrix provides Sample Ordinance Language which can be used as a guide for municipalities wishing to achieve the ‘full application’ of iSWM program outcomes which require updates to municipal codes. The Sample Ordinance Language provided should not be considered ‘model’ language, rather compilations of language used by other municipalities. Each municipality should craft ordinance language which supports and aligns with not only stormwater management objectives, but land use and community objectives as well.

The integrated Site Design Practices and techniques are covered in the iSWM Technical manual for Planning. These Practices are generally grouped into four categories:

- Conservation of Natural Features and Resources
- Lower Impact Site Design Techniques
- Reduction of Impervious Cover
- Utilization of Natural Features for Stormwater Management

More detail on each site design practice is provided in the integrated Site Design Practice Summary Sheets in Section 2.2 of the iSWM Technical Manual for Planning.

Category	iSWM Outcomes	Code Objective(s)	Sample Ordinance Language	Presumptions & Code Connections
Recommended Mandatory Outcome No. 16 – Water Quality				
Option 1: integrated Site Design and Credits				
Overview	Require <i>integrated</i> Site Design	Incorporate a point system in the code which requires the integrated site design during the site development process for regulated projects based on total existing natural feature area.	<p>Definition – Natural Feature: Area which, if preserved, will contribute to the protection of water resources by reducing stormwater runoff, providing runoff storage, reducing flooding, preventing soil erosion, promoting infiltration and removing stormwater pollutants. These areas include:</p> <ul style="list-style-type: none"> • All of the floodway and flood fringe within the 100-year floodplain, as shown on official FEMA maps; • Wetlands; • Natural drainageways; • All riparian buffers within twenty-five (25) feet of the top of bank of any perennial stream, wetland or shoreline; • Slopes exceeding fifteen (15) percent; and • Undisturbed forested and vegetated areas. <p>Integrated Site Design. All regulated projects must incorporate integrated site design practices which reduce the “environmental footprint” of new and redevelopment projects.</p> <ol style="list-style-type: none"> Applicants can choose from a menu of practice options which best suit the project’s use objectives and individual site constraints. Each practice has been assigned a certain number of Water Quality Protection Points (WQPPs). Sites with greater than fifty percent (50%) natural feature coverage must achieve a water quality protection score of fifty (50) WQPPs; sites with between twenty percent (20%) and 	<p>To properly authorize this site design standard, a municipality must define what the trigger is for the provision. At a minimum must meet the iSWM applicability standard. iSWM is applicable to land disturbing activity of one acre or more or land disturbing activity of less than one acre where the activity is part of a common plan of development that is one acre or larger. If use this trigger, must define “common plan of development.”</p> <p>In addition, the municipality must set the point requirements necessary to qualify for approval. At a minimum the points must correlate to Table 3.4 in the <i>iSWM Criteria Manual</i>.</p> <p>* Presumes the municipality has a preliminary plan review process.</p>



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Overview	Require integrated Site Design (continued)		<p>fifty percent (50%) natural feature coverage must achieve thirty (30) WQPPs; and sites with less than twenty percent (20%) natural feature coverage must achieve twenty (20) WQPPs.</p> <p>iii. Each regulated project must achieve a certain number of points based on the area of existing natural feature on the site per [Section XXXXii]. Available points are assigned to each site design practice and points may be accrued based on the extent the practice is implemented on the site as compared to the total implementation possible. For example, if a development site has four (4) acres of riparian area and proposes to preserve two (2) acres, the site would only accrue fifty percent (50%) of the total points available.</p> <p>iv. The following table shows the integrated site design practices which may be used to achieve the required water quality protection score and the total number of points available for each:</p> <p style="text-align: center;">[Insert table from <i>iSWM Criteria Manual</i>.]</p> <p>v. The following must be submitted with [insert appropriate plan, e.g. stormwater pollution prevention plan, site plan, etc.] for preliminary plan review (PPR): *</p> <ol style="list-style-type: none"> a. Map showing location of boundaries of total existing natural feature? areas and the preservation boundaries which will be maintained during development. b. Completed worksheet (Table 3.5 of <i>iSWM Criteria Manual</i>) and associated calculations documenting accumulated WQPPs. 	
Overview	Require <i>integrated</i> Site Design	Require preservation of environmentally sensitive areas and other buildable areas.	<p>Definition – Environmentally Sensitive Areas: Natural features which can be used in the protection of water resources by reducing stormwater runoff, providing runoff storage, reducing flooding, preventing soil erosion, promoting infiltration and removing stormwater pollutants. These areas include:</p> <ul style="list-style-type: none"> • All of the floodway and flood fringe within the 100-year floodplain, as shown on official FEMA maps; • Wetlands; • Natural drainageways; • Areas of highly erodible soil and soils with high infiltrative ability as defined in [local citation or the NCTCOG <i>Hydrology Technical Manual</i>]; • All riparian buffers within twenty-five (25) feet of the top of bank of any perennial stream, wetland or shoreline; • Slopes exceeding fifteen (15) percent; and • Undisturbed forested and vegetated areas 	<p>Presumes zoning regulations include density limitations.</p> <p>Should limit this provision to low density, rural zones.</p> <p>Should incorporate other preservation criteria such as scenic views and agricultural lands, wildlife management areas, and historic, archeological and culture features in order to ensure preserved areas provide multiple benefits.</p> <p>Open space developments typically allow some managed uses in conserved areas. These uses should be specified in the code as well as the</p>



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Overview (continued)	Require <i>integrated</i> Site Design (continued)		<p>All subdivisions over [twenty (20) acres] in [insert low density rural zones] must preserve all environmentally sensitive areas [and conserve other areas] and fifty percent (50%) of remaining buildable area.</p> <p>In order to meet the preservation standard, no land disturbance or impervious cover shall be allowed within the Environmentally Sensitive Areas except as follows:*</p> <ul style="list-style-type: none"> i. To implement erosion and flood control measures except excavated detention basins. ii. To facilitate a water-dependent use. iii. To control noxious or invasive vegetation. iv. To implement stormwater controls v. To undertake activities related to environmental remediation. vi. To undertake activities related to the protection or restoration of shoreline buffers, wetlands, or sensitive habitats. <p>Adjusted tract acreage or developable area shall be calculated by deducting the area preserved to protect Environmentally Sensitive Areas from the total tract acreage. The by-right density allowed on the total tract shall be allowed on the adjusted tract acreage.</p>	<p>planning necessary to manage the land for those uses.</p> <p>Code should specify the required legal instruments to conserve the open space on the development.</p>
1.Conservation of Natural Features	1.1 Preserve undisturbed natural area	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
1.Conservation of Natural Features	1.2 Preserve floodplain buffers	Prevent creation of impervious surface within floodplain buffers.	For developments within [insert zones], no buildings or other impervious surfaces may be built within the floodway and fringe within the 100-year floodplain, as shown on official FEMA maps.	
1.Conservation of Natural Features	1.3 Avoid floodplains	Prevent creation of impervious surface within floodplains.	For developments within [insert zones], no buildings or other impervious surfaces may be built within the floodway and fringe within the 100-year floodplain, as shown on official FEMA maps.	
1.Conservation of Natural Features	1.4.1 Avoid steep slopes	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
1.Conservation of Natural Features	1.4.2 Avoid steep slopes	Limit the impervious cover created on steep slopes.	<p>The restrictions on impervious cover described below shall apply in addition to impervious cover maximums identified in [include citation].</p> <ul style="list-style-type: none"> i. Slopes of between fifteen percent (15%) and twenty percent (25%) shall have maximum impervious cover limitations of thirty-five percent (35%). ii. Slopes greater than twenty percent (25%) shall have maximum impervious cover limitations of twenty percent (20%). 	



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1.Conservation of Natural Features	1.5 Minimize siting on porous or erodible soils	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
2.Low Impact Site Design Techniques	2.1 Fit design to the terrain	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
2.Low Impact Site Design Techniques	2.2 Locate development in less sensitive areas	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
2.Low Impact Site Design Techniques	2.3 Reduce limits of clearing and grading	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
2.Low Impact Site Design Techniques	2.4 Utilize open space development	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
2.Low Impact Site Design Techniques	2.5 Consider creative designs	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
3.Reduction of Impervious Cover	3.1 Reduce roadway lengths and widths	Require that the reduction of impervious cover be considered each time a roadway is reconstructed.	Road Diets. Wherever an existing right-of-way is reconstructed or reconfigured, consideration must be given to the appropriateness of a road diet, defined as a reduction in the number or width of travel lanes within a right-of- way, allowing reallocation of vehicular space to alternative	



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3.Reduction of Impervious Cover (continued)	3.1 Reduce roadway lengths and widths (continued)		uses (i.e., parking lanes, bicycle facilities, medians, pedestrian refuge islands, or widened sidewalks or planting strips). A road diet is typically appropriate on rights-of-way carrying fewer vehicles per day than the right-of-way is designed to accommodate (i.e., a right-of-way with four travel lanes carrying less than 20,000 VPD may be a prime candidate for a four-lane to three-lane conversion).	
3.Reduction of Impervious Cover	3.2 Reduce building footprints	Include building coverage and/or impervious cover limits by zoning or zoning district.	<p>Single Family Rural Residential District: The SF-R Rural Residential District is intended for the development of single family uses in larger lot subdivision in a more rural setting. Units per Gross Acre: 0.8 maximum Impervious Cover: 40% maximum</p> <p>Neighborhood District. The district is primarily intended for residential living. Additional building types are allowed that provide opportunities for affordable and diverse housing types. This district should be applied in areas where the land use pattern is mixed with various detached and attached single-family or small scale multi-family. Uses that would substantially interfere with the residential nature of the district are not allowed.</p> <p>Units Per Gross Acre 16 max. Impervious Cover 75% max</p>	
3.Reduction of Impervious Cover	3.1.1 Reduce parking footprint	Require parking maximums for surface parking but no maximums for structure parking.	Vehicular parking shall be provided as required by the minimum and maximum parking requirements in [insert citation]. [Insert citation] establishes minimum parking requirements for all parking types (surface, structured, underground). [Insert citation] establishes maximum parking standards for surface parking only.	
3.Reduction of Impervious Cover	3.1.2 Reduce parking footprint	Allow on-street parking to count towards parking minimums.	On-street parking immediately adjacent to the frontage lines of a lot shall count toward the minimum (not maximum) parking requirement of the building on the lot.	
3.Reduction of Impervious Cover	3.1.3 Reduce parking footprint	Allow off street parking to serve multiple uses.	The required parking may be provided within one-quarter mile of the site that it serves. A form based parking plan for the area must be provided to exercise this option. a. A form based parking plan shall include the location of public or private surface or structured parking facilities.	
3.Reduction of Impervious Cover	3.4 Reduce setbacks and frontages	Allow waivers of setbacks via open space development techniques.	See <i>Require preservation of environmentally sensitive areas.</i>	
3.Reduction of Impervious Cover	3.5 Use fewer or alternative cul-de-sacs		See <i>Require that the reduction of impervious cover be considered each time a roadway is reconstructed.</i>	
3.Reduction of Impervious Cover	3.6 Create parking lot stormwater islands		Interior landscaping. Off-street parking areas for operable, private passenger vehicles that have [twenty-five (25) or more parking spaces], shall contain landscaped areas, located entirely within the edges of the off-street parking area, and serve to break up the expanse of pavement and manage storm water. A raised curb shall edge the landscaped area, shall be at least six (6)	



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3.Reduction of Impervious Cover (continued)	3.6 Create parking lot stormwater islands (continued)		<p>inches in height and shall contain inlets at appropriate intervals to allow stormwater infiltration from the open parking area.</p> <p>Stormwater Islands. Required perimeter and interior landscaped areas shall maximize effective stormwater management by incorporating any one of the following:</p> <ul style="list-style-type: none"> i. A bioretention system that is designed in accordance with the <i>iSWM Technical Manual</i>; or ii. Curbs at the edge of the required perimeter and interior landscaped areas to protect the plants, with planted areas installed at a lower grade than the parking lot pavement, and curbing shall have openings allowing drainage from the pavement to enter and percolate through the landscaped areas. 	
4.Utilization of Natural Features for Stormwater Management	4.1 Use buffers and undisturbed areas	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
4.Utilization of Natural Features for Stormwater Management	4.2 Use natural drainageways instead of storm drain systems	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
4.Utilization of Natural Features for Stormwater Management	4.3 Use vegetated swale design	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.
4.Utilization of Natural Features for Stormwater Management	4.4 Direct runoff to pervious areas	Incorporate individual integrated site design practices into development projects.	See <i>Require preservation of environmentally sensitive areas.</i>	Similar language can be used to require specific, and limited, environmentally sensitive areas based on water quality impacts, watershed condition, etc.



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Option 2: Treat Water Quality Protection Volume				
	To require that regulated development projects treat the runoff from a high frequency storm to remove most of the sediment using structural control practices which meet a minimum performance standard.	The Water Quality Volume (WQV) shall be defined as the runoff volume from the entire development site resulting from storm events up to and including the 85 th percentile storm. This shall include up to the first 1.5 inches of rainfall falling on the regulated development site. For all regulated projects extended detention shall be used to detain and release this WQv over a minimum of 24 hours as detailed in the NCTCOG <i>iSWM Technical Manual</i> . The WQv can be reduced by utilizing the site design practices outlined in the NCTCOG <i>iSWM Technical Manual (Water Quality Protection Volume Reduction Methods)</i> .	In order to properly authorize this performance standard, a municipality must define what the trigger is for the regulation/performance standard. At a minimum must meet the iSWM applicability standard. iSWM is applicable to land disturbing activity of one acre or more or land disturbing activity of less than one acre where the activity is part of a common plan of development that is one acre or larger. If a municipality uses this trigger, must define ‘common plan of development.’”	To require that regulated development projects treat the runoff from a high frequency storm to remove most of the sediment using structural control practices which meet a minimum performance standard.
Option 3: Assist with Off-Site Pollution Prevention Programs and Activities				
		Allow developers to contribute to an in-lieu fund to pay for regional treatment facilities instead of installing controls on-site.	A property owner shall pay a fee-in-lieu to satisfy the requirements of [insert water quality performance standard citation] in accordance with the following procedures: i. Applicant must pay [insert fee] for each gallon of WQv annually to {insert department}. ii. A site’s obligation to use fee-in-lieu to achieve its WQv shall begin on the date of successful completion of the final construction inspection. iii. Annually, the property owner shall provide [the department] proof of payment of the fee.	Presumes the municipality has a water quality performance standard in place to be met using the in-lieu fee. Fee will need to be calculated per municipality legal authority and state law. Will require a nexus study to determine the fee amount and basis. Utilization of the fund for stormwater management facilities will need to be



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				properly authorized and accounted for.
	Recommended Optional Outcome No. 20 – Conservation and Utilization of Natural Resources and Features			
	Encourages preservation of natural resources such as riparian buffers and/or natural open space areas and utilization of natural design features for stormwater conveyance	<p>To incentivize the preservation of environmentally sensitive areas (ESAs) by using one or more of the following “credit bundling” approaches:</p> <ul style="list-style-type: none"> • Assigning ESAs additional parkland/open space credit (i.e. higher area ratios) • Assigning additional tree canopy credit for new trees established in a riparian buffer area • Assigning additional tree preservation credit for trees preserved in an ESA 	<p>Definition – Riparian Buffer. A riparian buffer is a special type of natural conservation area along a stream, wetland or shoreline.</p> <hr/> <p>Definition – Water Dependent Use: Use which can only be conducted in, on, over, or adjacent to a water body because such use requires direct access to that water body, and which involves, as an integral part of such activity, the use of the water.</p> <hr/> <p>Definition – Environmentally Sensitive Areas: Natural features which can be used in the protection of water resources by reducing stormwater runoff, providing runoff storage, reducing flooding, preventing soil erosion, promoting infiltration and removing stormwater pollutants. These areas include:</p> <ul style="list-style-type: none"> • All of the floodway and flood fringe within the 100-year floodplain, as shown on official FEMA maps; • Wetlands; • Natural drainageways; • Areas of highly erodible soil and soils with high infiltrative ability as defined in [local citation or the NCTCOG <i>Hydrology Technical Manual</i>]; • All riparian buffers within twenty-five (25) feet of the top of bank of any perennial stream, wetland or shoreline; • Slopes exceeding fifteen (15) percent; and • Undisturbed forested and vegetated areas. <p>ESA Open Space Credit. The applicant shall receive [1.5 open space area credit] acres for all Environmentally Sensitive Areas preserved which meets the criteria established at [insert definition location]. This credit may meet up to [fifty (50) percent] of the site’s open space requirements. In order to meet the preservation standard, no land disturbance or impervious cover shall be allowed within the Environmentally Sensitive Areas except as follows:*</p>	<p>* Incentive language presumes that the municipality has open space requirements.</p> <p>† Incentive language presumes that the municipality has tree canopy requirements.</p> <p>o Incentive language presumes that the municipality has tree preservation requirements.</p>



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			<p>i. To implement erosion and flood control measures except excavated detention basins..</p> <p>ii. To facilitate a water-dependent use.</p> <p>iii. To control noxious or invasive vegetation.</p> <p>iv. To implement stormwater controls.</p> <p>v. To undertake activities related to environmental remediation.</p> <p>vi. To undertake activities related to the protection or restoration of shoreline buffers, wetlands, or sensitive habitats.</p> <hr/> <p>Riparian Buffer Canopy Credit. The applicant shall receive a canopy cover credit of [1.5 times] the area of the newly planted riparian buffer area. The newly planted riparian buffer shall, at a minimum meet the width specification found in the Environmentally Sensitive Area definition to qualify for this credit and be comprised of riparian vegetation specified at [insert appropriate local citation]. †</p> <p>Riparian Buffer Tree Preservation Credit. The applicant shall receive a tree preservation credit of [1.5 times] the number of existing trees preserved in a riparian buffer. The riparian buffer shall, at a minimum meet the width specification found in the Environmentally Sensitive Area definition to qualify for this credit and the trees preserved shall meet the standards found at [insert tree preservation specifications]. o</p>	
		Reduction in parking spaces provided if existing trees are preserved.	Parking Reduction for Trees. Where trees exist within a proposed parking facility, the City shall allow a reduction up to five percent of the number of required parking spaces, an increase of compact parking to 25 percent of the required parking spaces, or a combination thereof to preserve existing trees. In cases where less than ten parking spaces are required, the City shall allow the number of required parking spaces to be reduced by one if trees are preserved.	Presumes that interior landscaping is required for parking lots,
		Allow by-right densities with smaller lots sizes when amount of	By-Right Density Allowance on Acreage Adjusted by ESA. Adjusted tract acreage or developable area shall be calculated by deducting the area	Presumes zoning regulations include minimum lot sizes.



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		<p>developable land is reduced through preservation of ESAs.</p>	<p>preserved to protect Environmentally Sensitive Areas from the total tract acreage. The by-right density allowed on the total tract shall be allowed on the adjusted tract acreage.</p>	<p>Should limit this provision to lower density zones in areas served by adequate infrastructure.</p>
		<p>Allow by-right densities and density bonuses when ESAs and other open space is preserved to a minimum level using open space development techniques.</p>	<p><i>See Chapter 35, Article II, Section 35-203 of the City Code of San Antonio (Unified Development Code) Conservation Subdivision for an example of language which incentivizes subdivisions which conserve 40 percent or more of the total tract area, including ESA, by providing density bonuses based on zone in addition to by-right densities. NCTCOG Water Quality Protection points (Table 3.4 of iSWM Criteria Manual) could be substituted for open space percentage.</i></p>	<p>Presumes zoning regulations include density limitations.</p> <p>Should limit this provision to low density, rural zones.</p> <p>Should incorporate other preservation criteria such as scenic views and agricultural lands, wildlife management areas, and historic, archeological and culture features in order to ensure preserved areas provide multiple benefits.</p> <p>Open space developments typically allow some managed uses in conserved areas. These uses should be specified in the code as well as the planning necessary to manage the land for those uses.</p> <p>Code should specify the required legal instruments to conserve the open space on the development.</p>