Best Practices for Implementing Water Conservation and Demand Management Through Land Use Planning Efforts

Addendum to 2012 Guidance Document

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I. WHY INVOLVE WATER PROVIDERS IN LAND USE PLANNING?

Water providers in Colorado have been improving the efficiency of their use of water for many years. Enhancing water efficiency and conservation can bolster water supplies, enhance resilience, and contribute to quality of life for customers. Incorporating input from water providers into land use planning efforts can lead to the development of water efficiency strategies and provide a new suite of opportunities to achieve greater water savings, and is another tool in the toolkit for dealing with increased demand and potentially decreasing supplies.

Colorado's Water Conservation Act was amended in 2015 to require an evaluation of best practices for implementing water conservation through land use measures. This legislation recognized that the designation of acceptable land uses by the planning authority in its long-range planning process and the subsequent approval of specific development proposals are significant factors in the water demand of new development. Configuring new development to reduce its water footprint will in turn provide enhanced ability to absorb new growth, meet community priorities, and contribute to better resiliency of existing supplies without sacrificing quality and desirability.

There are numerous ways in which a land use authority can influence water demand, such as requirements or incentives for low water use landscaping, efficient outdoor fixture requirements, turf limitations, incentivizing density, and requiring water conservation commitments or adherence to green building standards. Conversely, other land use decisions can result in unnecessary increased water demand, such as requirements for turf landscaping of open space or detention areas, preferences for large single-family lots, and inattention to water use in general.

Coordination between water providers and land use planners in the land use planning and development approval processes can ensure that planners and developers are aware of the water impacts of the proposed development and of the potential to reduce tap fees and ultimate costs to consumers through adjustments to the development proposal. This type of coordination requires more from the water provider than simply responding to a referral of a new or re-development proposal from the land use authority. True integration of the water supply and land use planning functions will help ensure that planned development does not exceed the water provider's ability to adequately supply services, within the limits of its available water supplies, infrastructure, and finances. The need for and location of additional infrastructure to serve proposed development can entail a significant cost. Early discussion of these constraints and opportunities to reduce costs can significantly benefit the developer and the community.

After development is approved and occupancy occurs, it is the water provider's rates, tap fees, and policies that primarily influence conservation and efficient use of water. For Colorado providers that already utilize inclining block rate structures, tap fees based on the amount of water the development will need, and other techniques that incentivize lower water use, **the greatest potential for future additional savings may lie with the initial land use approval**.

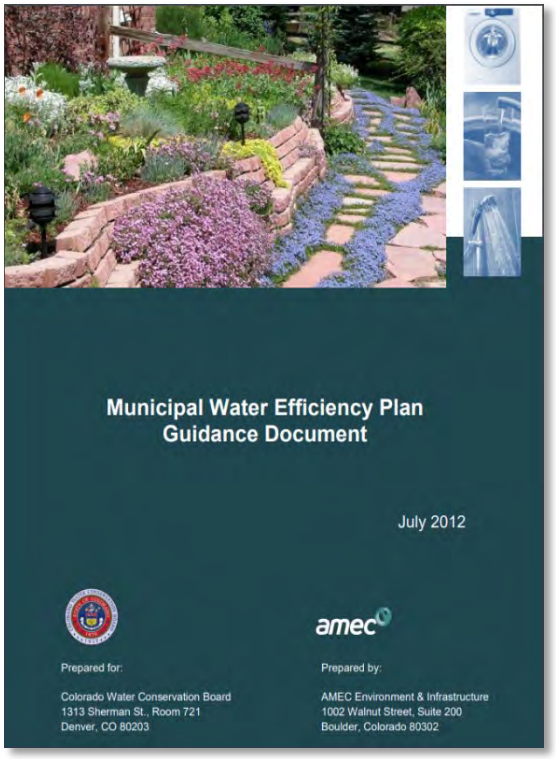
II. USING THIS DOCUMENT

A. About This Guidance Addendum

This guidance addendum addresses the State of Colorado Senate Bill 2015-008 requirement that a Water Efficiency Plan (WEP or Plan) evaluate "best management practices for water demand management, water efficiency, and water conservation that may be implemented through land use planning efforts."[1] A measurable objective in Colorado's Water Plan is that by 2025, 75 percent of Coloradans will live in communities that have incorporated water-saving actions into land use planning. This guidance addendum is intended to address both of these statewide goals.

1. Organization and Applicability

In 2012, the Colorado Water Conservation Board (CWCB) adopted detailed guidance for creating Water Efficiency plans, which has been closely adhered to by most providers submitting WEPs. This guidance addendum augments, and does not replace, the existing 2012 Municipal Water Efficiency Plan Guidance Document of the Colorado Water Conservation Board (2012 Guidance). The same organization of potential water conservation activities, originally from the 2010 Statewide Water Supply Initiative Conservation Levels Framework, is used here as in the 2012 Guidance. The various types of water conservation activities in this framework are divided into: (1) Foundational; (2) Targeted Technical Assistance and Incentives; (3) Ordinances and Regulations; and (4) Education and Outreach. Foundational activities are intended to establish a platform for ongoing communication and collaboration between the water provider and the land use authorities that govern development within the provider's service area. The next three categories can build on the foundational relationship established between the water and land use professionals.



2012 Guidance for Water Efficiency Plans

The techniques and activities identified in this guidance addendum include hyperlinks to descriptions, research, or implementation examples that further illustrate each concept.

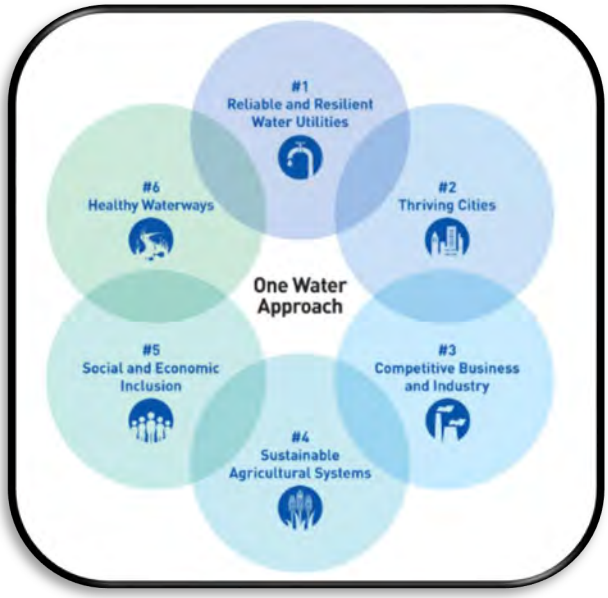
[1] Now codified at Colo. Rev. Stat. § 37-60-126(4)(f)(I).

Not all best practices listed in this guidance addendum will be applicable to or suitable for every water provider. The information presented here is intended for review by water providers to determine which techniques might be useful to them, based on their particular needs, size, geography, water availability and cost, development level and potential, and likely citizen and elected official interest and acceptance. More detailed information is provided on each technique so that water providers can delve into those that are of the most interest.

Some of the techniques described here, particularly those in the chapter on Ordinances and Regulations, are already identified in the 2012 Guidance. The inclusion of such activities in this guidance addendum is intended to encourage consideration of whether cooperation between the water provider and land use authority creates additional potential for implementation of water conservation or demand management that would not be possible or practical by the water provider alone.

2. One Water Planning

Many of the techniques described in this guidance addendum on best practices for implementing water conservation through land use planning efforts are consistent with a "One Water" approach, also known as Integrated Water Resource Management. According to the Blueprint for One Water funded by The Water Research Foundation, One Water is "an integrated planning and implementation approach to managing finite water resources for long-term resilience and reliability, meeting both community and ecosystem needs." This approach is intended to provide greater opportunities to optimize regional infrastructure, and increased coordination among agencies and departments, all within the context of economic growth.



Because the components of an integrated water system come under the responsibility of different agencies, collaborative planning and action is required to create a plan that will capitalize on the tools and resources available. Greater integration of the land use planning function and the water supply and conservation function is one element in the overall One Water framework. Amendments in 2018 to the Colorado Water Quality Control Commission's Regulation 84 on reclaimed water provide greater flexibility in the use of reclaimed water for non-potable purposes and a potential tool in the One Water toolkit. Water providers and land use planners can benefit from a review of the *Blueprint for One Water* when collaborating on long range planning documents and the water provider's WEP.

3. Audience for This Guidance Addendum

As with the 2012 Guidance, this guidance addendum is intended for water provider staff and contractors who have a moderate level of experience in water efficiency and water supply planning.

4. Note on Terminology

Throughout this guidance addendum, the term "planning department" is used to refer to the entity within the relevant land use authority with responsibility for new or re-development approvals and drafting and modifying long-range planning documents like the comprehensive plan or zoning regulations. This term is used generically, recognizing that the applicable department in a local government may be referred to as Development Services, Community Planning, Planning and Building, or some similar name. In smaller jurisdictions, there may not be a separate department or dedicated staff person, but a designated official—such as a town clerk or public works staff—that provides planning services. All such entities or personnel are included in the term "planning department." The term "land use authority" refers to the local governmental entity, a municipality or a county, that is authorized to plan for and regulate the use of land within its jurisdictional boundaries. For further understanding or a refresher of terminology used in this guidance addendum, see Appendix A, Water and Planning Glossary, of Water Research Foundation's report, Joining Up Urban Water Management with Urban Planning and Design.

5. Hyperlinks

The links in this guidance addendum are current as of the date of publication. The Colorado Water Conservation Board will review this guidance addendum and its links annually to ensure that linked information is active and to provide appropriate examples and materials.

B. Incorporating Land Use Planning Efforts into a Water Efficiency Plan

WEPs have been required for Covered Entities in Colorado since 1991 and over 80 water providers serving approximately three-quarters of the state's population have filed these plans. The 2012 Guidance provides a step-by-step framework for planning for water efficiency. To comply with the requirement added in 2015, the water provider's evaluation of land use planning measures should also be addressed in the Plan.[2]

Funding. The Colorado Water Conservation Board can provide financial assistance for water efficiency planning and implementation of Water Efficiency Plans through its Water Efficiency Grant Program.

Water providers should work with the land use authorities governing their service areas to determine which activities will best serve their current and future customers. The potential costs and benefits of selected strategies should be evaluated, and consideration given to non-quantifiable benefits using a triple bottom line approach: economic, social, environmental. Selected techniques may result in per capita water savings that can be made available to advance many different community objectives, such as serving future growth, supporting more resilience in overall water supplies, preservation of adjacent agricultural land, or keeping more water in regional streams.

1. Addressing Barriers to Collaboration with Land Use Authorities

Water providers and planning department personnel identify a lack of time as the biggest barrier to meaningful collaboration. While time and human resources are often limited, the increasing stress on water from population growth and demand on supplies suggests that it is critical to allocate the time required to influence water demand through land use measures. A 2018 report sponsored by The Water Research Foundation, Joining up Urban Water Management with Urban Planning and Design, discusses this and other perceived barriers, and suggests strategies for overcoming barriers to achieve better integration of land and water planning. A webtool is provided to help identify priorities for collaboration and strategies to overcome any barriers that may arise.

2. Choosing Among the Best Management Practices

The breadth and diversity of water providers in Colorado necessitates an expansive list of best practices in the integration of water and land use planning for consideration. Differences in

[2] Initially called Water Use Efficiency Plans, the terms "water conservation plan," "water efficiency plan," "water use efficiency plan," and simply "plan" are now used interchangeably and made equivalent in the statutory definition. A "Covered Entity" is a municipality, agency, or utility, with a legal obligation to supply, distribute, or otherwise provide water at retail to domestic, commercial, industrial, or public facility customers, and that has a total demand for such customers of 2,000 acre-feet or more. See Colo. Rev. Stat. § 37-60-126 (1)(b) and (1)(h).

geographic location, size, water supply sources and constraints, and financial resources mean that land use strategies appropriate for one provider may not work for others. In addition, some water providers are components of local governments with land use authority over their service areas, whereas others, such as special water districts, have no internal land use authority and provide water to areas for which land use decisions are made by other entities. This guidance addendum is intended to be useful by any Colorado water provider filing a WEP and, therefore, includes a comprehensive list of best practices that must be considered, winnowed, and adapted to best suit the provider and the land use authorities with jurisdiction over the provider's service area.

The Foundational Activities section of this guidance addendum is applicable to all water providers. The strategies outlined there are fundamental to building the relationship between the water provider and land use authority that will allow implementation of appropriate water conservation techniques.

The 2012 Guidance describes an approach for screening and selecting water efficiency activities to be pursued (pages 42–44) and includes worksheets for evaluating and selecting among best practices. The same techniques can be employed for selecting land use-related strategies and the modified worksheets included in Appendix B of this guidance addendum can assist the selection process. Section II.B.3. below addresses the unique issues in selecting screening and evaluation criteria for land use measures.

There are, however, several general principles to guide the selection of appropriate best management practices for a particular provider and land use authority. A non-exclusive list is provided on the next page. The process of closer coordination between the water provider and the planning department will likely result in a deeper understanding of the land use mechanisms that are viable within a particular jurisdiction, and the water provider should adopt a "learning by doing" approach.

GENERAL PRINCIPLES FOR SELECTION OF BEST MANAGEMENT PRACTICES

Community Challenges	The major challenges faced in a service area inform which practices will be most effective. For example, if water supplies are limited or decreasing, reducing overall water use will be critical. To address this, requirements or incentives for both retrofits and conservation in new development could be appropriate.
Community Goals	The particular goals of the community should guide the selection process. For example, if the community wants to reduce "buy and dry" of agricultural lands, infill or density incentives could help. If preservation of stream flows is an objective, reducing outdoor uses will have more impact than reducing indoor sewered uses.
Anticipated Growth	If development is proceeding rapidly in the water provider's service area or much buildout area remains, measures that address new development, such as water budgets, a water efficient landscape code, and incentives for increased density and smaller irrigated areas will be important to consider.
Outdoor Use	Measures addressing outdoor water use generally provide a greater volume of water savings than those focused on indoor uses.
Customer Demographics	Communities should choose strategies impacting their biggest water users or sectors. Resort communities may want to focus on measures that decrease commercial water use in hotels and restaurants. Monetary incentives may be less effective for providers with a more affluent customer base.
Self-Assessments	Water providers that have not previously performed a self-assessment may find it a useful tool for identifying areas in which water conservation could be meaningfully enhanced through collaboration with land use authorities. Section III.A.1.b. provides further information and examples.
Cost/Benefit Analysis	A preliminary cost/benefit analysis, tailored to the community, can assist in selecting the best management practices that appear to have merit. Estimating the costs and benefits of strategies is addressed in Section II.B.4.

3. Developing Evaluation Criteria to Screen and Select Best Practices

The 2012 Guidance (pages 42–44) recommends a four-phase approach for screening and evaluating the water efficiency activities the water provider will pursue. The four phases include:

The 2012 Guidance provided worksheets D through G to assist in the evaluation and selection process. Modified versions of these worksheets that include land use planning efforts are included here in Appendix B: Worksheets to Guide Selection Process.

Examples are provided in the 2012 Guidance (pages 43–44) of screening and evaluation criteria that can be used to winnow down and assess various water efficiency strategies. They include cost/benefit, likelihood of success, public acceptance, and a variety of other factors.

Because, the inclusion of land use measures is a relatively new addition to the suite of potential water efficiency activities, there may be supplementary evaluation factors that should be considered for this purpose. Implementation of land use controls necessarily requires cooperation and collaboration between the water provider and the land use authority. **The interest of the land use authority and its willingness to engage in this type of joint endeavor for the purpose of reducing water demand is a critical factor in determining the likelihood of success.** In addition, the market and developer support for adoption of requirements targeting new development should be considered. Finally, best management practices that expand existing code or regulatory provisions, as opposed to being completely new, will likely be easier to adopt.

Other criteria that have been used in the past to screen and evaluate water efficiency practices may take on increased importance in the land use context. These include:

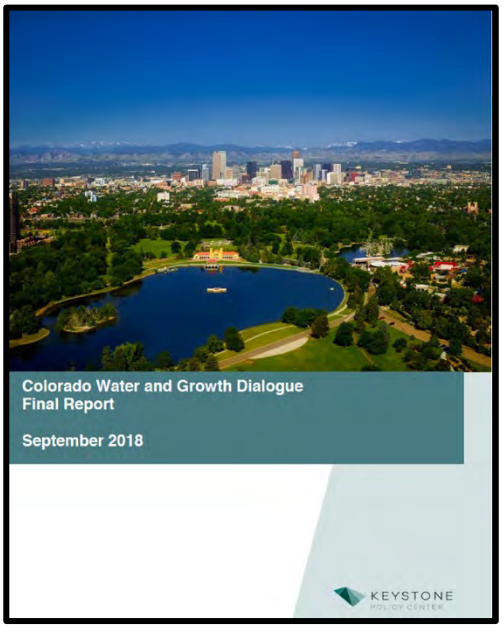
External conditions, for instance drought, that create public interest in water efficiency
Political leadership's support for water efficiency goals
Incentives preferred over mandatory enactments

4. Evaluating the Costs and Benefits of Best Management Practices

The impact of land use decisions on water consumption, while viewed as significant, has not yet been extensively measured and objectively documented. Although some information on the cost and benefit of specific practices is available and described below, it must be recognized that experiences and outcomes may be site specific. As the practice of integrating water supply planning with land use planning becomes more widespread, more analyses and evidence will be developed. This guidance addendum provides examples of adoption of the various best management practices described and identifies objective analysis to the extent it is available. Each water provider, in conjunction with the applicable land use authority, must analyze the potential costs and benefits of proposed practices in the context of their own circumstances.

Available information on estimating costs and savings from integration with land use planning activities can be found in the following documents:

a. Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, pages 9–20, describes methodologies for estimating water savings from increased density of development and associated landscaped area. This work is based on data from 2014 in the Denver Water and Aurora service areas. While not necessarily applicable to all Colorado climate zones, it is useful in demonstrating the direction and general magnitude of water demand change from increased density.



KEYSTONE CENTER REPORT

b. Water Research Foundation's Coordinated Planning Guide – A How-To Resource for Integrating Alternative Water Supply and Land Use Planning, pages 17–25, contains estimates of water savings from a variety of land use techniques and provides examples and links to reference information.

c. Colorado WaterWise Guidebook of Best Practices for Municipal Water Conservation in Colorado, Chapter 4, pages 32–188, discusses a variety of water conservation strategies and how to estimate costs, water savings, and other benefits.

d. Calculation tools are available for estimating water savings that result from proposed new and re-development and comparing demand for different configurations of development. See Section III.A.2.b. of this guidance addendum for more information.

5. Specific Sections of Water Efficiency Plan Affected

Specific land use planning efforts that are being considered or have been adopted should be incorporated into several of the WEP sections recommended by the 2012 Guidance, including:

Demand forecasting. Population projections and land use categories, along with their descriptions, should be determined through a collaborative process with the land use authority. See 2012 Guidance pages 33–35. Designated land use categories can significantly impact water usage and should be considered in addition to population estimates in projecting demand. This guidance addendum provides information on several tools that can be used to assist in projecting water demand based on different land use types. See Section III.A.2.b. and Section III.C.3.c.

Forecast modified water demands reflecting estimated water efficiency savings. Estimated savings should reflect savings gained through collaboration with the land use authority. See 2012 Guidance pages 36–39. While it is often difficult to project estimated water savings, those resulting from land use techniques may prove particularly challenging. Savings from strategies such as incentives for low water use landscaping, turf limits, or cluster development may be estimated using conventional techniques involving estimated uptake rates, average savings per lot, and development projections. Techniques directed at better collaboration between water provider and land use authority personnel may be evaluated through the same type of analysis currently used for education and outreach activities. Information on estimating costs and benefits, including water savings, is provided in Section II.B.4. above. The various tools described therein can be used to project savings from anticipated changes in land use types. Both Colorado State University's Integrated Urban Water Model and Colorado Water and Growth Dialogue's Residential Land Use and Water Demand Tool allow the user to calculate and compare water demand from different densities of residential development.

Evaluation and selection of water efficiency activities. Land use techniques should be included in this evaluation and selection process. A checklist of the various best management practices described in this guidance addendum is provided below. The refinement of criteria for the purpose of screening and selecting land use practices is discussed in Section II.B.3. above. A summary of the land use efforts being implemented to achieve water conservation will also be included.

Implementation and monitoring. Providers should work with the land use authority on implementation and monitoring of the land use activities selected in the Plan. As with any water efficiency activity, a plan for implementation is essential, together with ongoing monitoring to ensure that anticipated results are being achieved or to allow adjustment. These steps are also required by statute. The monitoring techniques adopted will facilitate ongoing evaluation of effectiveness for all water efficiency activities and will inform future Water Efficiency Plans. See 2012 Guidance pages 56–60.

Colo. Rev. Stat. § 37-60-126(4)(c)

A Plan must include the steps the covered entity used to develop, and will use to implement, monitor, review, and revise its water conservation plan.

6. Using the Model Template

The Model Template in the 2012 Guidance pages 70–86, is a framework that water providers can use to develop WEPs. Additions to the Model Template that promote land use planning efforts are:

Introduction. This section describes the general approach used to develop the WEP and describes the entities involved with the Plan development. The Introduction should include a description of the land use authority or authorities with jurisdiction over the

service area of the water provider and their water-related policies. See 2012 Guidance page 70.

Section 2.3. Past and Current Demand Management Activities and Impact to Demands summarizes demand management activities, goals, and projected savings, and discusses how these activities and other factors have impacted historical water use. The demand management activities described should include any previously adopted land use measures, such as implementation of a planning team, participation in development review meetings for development proposals, coordinated adoption of water conservation ordinances, regulations, incentive or assistance programs, or educational activities. The impact on demands of these activities should be included in the overall analysis. See 2012 Guidance page 74.

Section 3.1. Water Efficiency and Water Supply Planning describes how modifications to water acquisitions and/or planned capital improvements may result from demand reductions through enhanced water efficiency activities. Water providers should include a separate subsection here on how land use planning efforts affecting water conservation could modify planned acquisitions or improvements. See 2012 Guidance pages 75–76.

New Section 3.3. Section 3 of the WEP describes the Integrated Planning and Water Efficiency Benefits and Goals. A summary of all of the water and land use integration efforts, and the expected benefits and goals of those efforts, should be provided in a new Section 3.3. The various land use measures undertaken and anticipated may be scattered throughout the WEP, and this summary will allow all of them to be viewed together.

Section 4. Describes the Selection of Water Efficiency Activities. This section will include any land use planning efforts evaluated. The selected best practices for integrating land use planning efforts into water conservation should be included with the lists of Foundational Activities (Section 4.2.1), Targeted Technical Assistance and Incentives (Section 4.2.2), Ordinances and Regulations (Section 4.2.3), and Education Activities (Section 4.2.4) to be undertaken by the water provider. Revised Worksheets D through G, provided in Appendix B of this guidance addendum, can help guide the Summary of Selection Process described by Section 4.1 of the Model Template. See 2012 Guidance pages 77–84. Some may find it helpful to go through the checklist below of best management practices first, determine which practices are of most interest, and then delve more deeply into the relevant sections of this guidance addendum for more information and examples on any of the practices.

Section 5. Addresses the Implementation and Monitoring Plan. This section should describe how any selected land use planning efforts will be implemented and monitored. See 2012 Guidance pages 84–86.

An Addendum to the CWCB's Municipal Water Efficiency Sample Plan provides examples of the additions to the sections described above.

C. Checklist of Best Management Practices

Each of the practices in this checklist is addressed in further detail in this guidance addendum. While the Foundational Activities should be pursued by all water providers in some form, the subsequent sections contain a wide variety of strategies that can be narrowed down to those most appropriate to community needs. Water providers may wish to examine this checklist first to determine which of the many techniques described might be most useful given their particular circumstances, and then review the detail provided for the techniques selected.

Best Management Practices	Consider	In Place
Foundational Activities		
1. Establish Regular Contact and Information Sharing	✔	
A. Initiate discussions between the water provider and planning department		
B. Do a self-assessment		
C. Establish a procedure for regular meetings		
D. Convene joint meetings among elected decision-makers		
E. Participate in training or educational programs		
F. Coordinate with other water providers and land use authorities in the region		
2. Align Data and Information Used	✔	
A. Align population and growth projections		
B. Estimate water demand for new development		
C. Measure, utilize, and communicate data on water use and savings		
3. Establish Coordinated Procedures for Post-Occupancy Monitoring and Enforcement	✔	
A. Allocate responsibility for monitoring for compliance		
B. Allocate responsibility for pre- and post-occupancy inspections		
C. Track and coordinate pre-occupancy estimates		
D. Require post-occupancy documentation		
E. Determine consequences of exceeding post-occupancy estimates		
F. Coordinate enforcement of water use violations		
4. Integrate Water Considerations into the Development Approval Process	✔	
A. Water provider participates in pre-application meetings with developers		
B. Water use is consistent with the final approved development plan		
C. Development agreements impose water conservation requirements		
5. Integrate Long Term Land Use and Water Planning	✔	
A. Include water in the comprehensive or master plan		
B. Adequate water supply demonstration		
C. Water dedication requirements		
D. Integrate planning efforts		

Best Management Practices	Consider	In Place
Targeted Technical Assistance and Incentives		
1. Developer Incentives to Reduce Water Demand		
2. Conservation-Oriented Tap Fees		
3. Water Efficient Land Development Patterns		
A. Encourage compact development through developer incentives		
B. Encourage cluster unit development		
C. Development offsets for water efficiency measures		
4. Model Landscape Plans		
5. Incentives for Reduced Irrigation		
A. Turf replacement programs		
B. Low water use vegetation list		
C. Outdoor fixture rebates		
D. Relief from otherwise applicable regulations		
6. Water-Smart Home Options		
7. Become a WaterSense Partner		
8. Low Water Use Demonstration Homes		
9. Water Audits		
10. Rainwater Reuse		
Ordinances and Regulations		
1. Examine Existing Land Use Regulations for Barriers and Conflicts		
2. Adopt or Strengthen Water-Related Ordinances or Regulations		
A. Ordinance prohibiting water waste		
B. Watering or irrigation restrictions		
3. Water Conservation in New Development, Re-Development, and Annexation		
A. Require water conservation for new development or re-development		
B. Annexation includes water demand and conservation		
4. Incorporate Water Efficiency into Zoning Codes and Rezoning Procedures		
A. Condition rezonings or discretionary reviews on low water use commitments		
B. Zone for more varieties of multi-family and attached housing		
C. Designate zoning categories to reflect water use		
D. Adopt an overlay zone		
5. Subdivision or Site Plan Regulations that Include Water Conservation		
6. Implement Requirements that Contribute to Water Efficiency and Compact Infrastructure		
A. Water demand offset requirement		
B. Prioritize infill development		
C. Adopt stormwater management policies		
D. Enable use of graywater		

Best Management Practices	Consider	In Place
7. Water Efficient Landscape Code		
A. Landscape code provisions		
B. Require certification or registration of landscape professionals		
C. Adopt a model landscape ordinance		
8. Building and Plumbing Codes		
A. Codify water efficiency standards in green building codes		
B. Establish sustainable development bonuses		
9. Ordinances Promoting Efficient Fixtures in Existing Buildings		
A. Retrofit on resale		
B. Retrofit requirements for new building permits		
10. Regional Coordination of Water Policy and Procedures		
A. Water conservation requirements are consistent		
B. Uniform landscape codes		
C. Uniform landscape and irrigation contractor certification		
D. Coordinate education and outreach		
E. Collaborate to adopt or promote green building standards		
F. Designate a growth management area		
Education Activities		
1. Consistent Online Information		
2. Water Provider and Planning Department Work Together to Educate the Public		
A. Provide public information on water conservation		
B. Develop water budgets and information		
C. Provide landscape efficiency evaluations		
D. Hold public meetings		
E. Conduct a public survey		
F. Provide information on water conservation to developers		
G. Communicate benefits of water conservation		
3. Lead by Example		
A. Water efficiency in buildings owned by the provider or land use authority		
B. Build demonstration gardens		
4. Jointly Engage with the Development Community and HOAs		
5. Share Success Stories and Case Studies with Other Communities and the Public		
6. Coordinate Education and Outreach Across the Region		

III. BEST PRACTICES FOR IMPLEMENTING WATER EFFICIENCY THROUGH LAND USE PLANNING EFFORTS

A. Foundational Activities

These activities address the establishment of a working relationship between the water provider and the land use authority. This connection will form the basis for regular interaction on the use of water in the community, collaboration on specific development proposals, and informed positions on water in the community's long-range planning documents. The best practices listed in this section are fundamental for collaborative implementation of land use measures that further water conservation or efficiency and should be addressed before the best practices in the three subsequent sections.

Each water provider should review the techniques suggested here and determine how to implement them in a manner appropriate for its specific circumstances. The Water Research Foundation's report Joining Up Urban Water Management with Urban Planning and Design includes a thorough discussion of the barriers to collaboration between the planning department and the water provider, together with concrete strategies for collaboration (see particularly Chapters 4 and 5 and Appendix B, C, and D).

1. Establish Regular Contact and Sharing of Information Between Water Provider and Planning Department

This is the basic building block of better integration of water planning and land use planning to improve water conservation. Land use planners and water provider personnel must establish personal relationships that support a basic understanding of the goals and challenges of each group and allow for free exchange of ideas and information. Training on this initial integration is available: see Breaking Down Silos: Integrating Water Efficiency Into Land Use Planning: A Guide for Colorado Communities, and associated webinar.

a. **Initiate discussions** between the water provider and the planning department of the land use authority. The appropriate leader of such discussions will vary according to the circumstances, but the water provider should ensure that this dialogue is taking place and instigate it if necessary. A good tool on the initiation of discussions can be found in Western Resource Advocates' Integrating Water Efficiency into Land Use

Planning in the Interior West: A Guidebook for Local Planners, Chapter 3.d., "When Water Providers Take the Lead." Explanatory materials and suggestions for the initial discussions between the water provider and the land use planners are included in Breaking Down Silos pages 31–33.

i. Form a Water and Land Use Planning Team with members of both the water provider and the land use planning department.

ii. Alternatively, include land use and water integration in the responsibilities of an existing cross-department coordinating agency and ensure that the agency organizes regular meetings.

> **Example:** The **City and County of Denver** has an Office of Sustainability whose goals include water conservation. This Office serves as a conduit for connecting multiple departments within the city, including connecting Denver Water to the City's planning processes.

iii. The members of the planning team **educate each other** about the goals, opportunities, challenges, and anticipated projects of the water provider and the planning department.

iv. **Water provider facts** of which the planning team should be made aware:
- Procedures used to determine tap size and fees
- Landscape and irrigation plan requirements
- Indoor and outdoor fixture standards
- Procedures for inspections prior to setting a new water meter
- Water use restrictions and triggers for such restrictions
- Monitoring of compliance with regulations
- Revenue stability issues associated with water conservation
- Infrastructure needs and plans
- The impact of development on such needs
- The water provider's ability to serve future growth and associated costs

v. **Planning department facts** of which the water provider should be made aware:
- Procedures used to approve new or re-development
- Procedures used to encourage growth in particular areas
- Landscape and irrigation plan requirements
- Water dedication requirements for new development. See Section III.A.5.c. below.
- Indoor and outdoor fixture standards and other water-related building code requirements

- Procedures used to determine compliance with the local government's water adequacy requirements. See Section III.A.5.b. below.
- Provisions addressing water in the comprehensive or master plan
- Growth projections in the water provider's service area
- The department's general development goals

vi. **Stormwater and wastewater.** Foster a better understanding between the water provider, the planning department, and the personnel involved in stormwater and wastewater planning to allow exploration of efficiencies gained through the use of low impact design.

b. **Do a self-assessment** to understand where your community currently stands on water and land use integration.

i. The Sonoran Institute has a self-assessment tool to help water providers and local governments start linking land use planning with water resource management. A video presentation provides an overview of the tool and shares examples of the tool in use.

ii. The Water Research Foundation's report, Joining Up Urban Water Management with Urban Planning and Design, also includes a description of a self-assessment process for selecting the most effective strategies for collaboration between water and land use planning professionals (Chapter 6).

c. Establish a procedure for **regular meetings** of the planning team and update all relevant information on a consistent basis. Formalize this procedure through a memorandum or directive to ensure that it continues when the

Case Study: City of Monte Vista

Even small municipalities can thoroughly integrate their water and land use planning activities. In Monte Vista, population 4,500, the senior management team, including the heads of the Public Works and Community Development Departments, meets once or twice a month to discuss new developments and think through "what if" scenarios including water impacts. When an annexation is proposed, the implications for water supply are at the top of the list of concerns.

Water conservation is a paramount consideration for assisting the City in reducing the amount of water needed for augmentation that could require drying up surrounding agricultural land – an outcome the City is committed to avoiding. The two departments jointly compile the Water Efficiency Plan and are working together on a xeriscape demonstration garden. The City Council recently adopted outdoor watering restrictions that apply to all city residents, which will be enforced by a designated officer in the Police Department. City leaders intend to formalize the currently informal interaction to ensure that it continues beyond the tenure of the existing leadership.

original participants are no longer in the same positions. The frequency of the meetings will likely be dependent on the number and pace of applications for new development approvals and whether the comprehensive plan is under review or revision.

d. Convene **joint meetings among elected decision-makers** of the land use authority and the water provider (City Council, County Commissioners, water district board of directors, water provider board). See Breaking Down Silos, page 34; Coordinated Planning Guide: A How-To Resource for Integrating Alternative Water Supply and Land Use Planning, page 8. Such meetings could be suggested and facilitated by the planning team.

   i. Conduct initial discussions or provide briefings to inform decision-makers about actions proposed or taken to increase the integration of water conservation into land use planning.

   ii. Obtain feedback and direction from decision-makers on actions proposed; adjust if needed and provide appropriate direction to staff.

   iii. Convene a standing committee of elected decision-makers for briefings and joint decision-making when appropriate.

e. Participate in **training or educational programs** on incorporating water-saving actions into land use planning efforts. Technical assistance resources may also be available to participants in these programs.

Example: The Growing Water Smart: Integrating Water and Land Use Planning Workshops, sponsored by the Sonoran Institute and the Babbitt Center for Land and Water Policy, introduces communities to the full range of communications, public engagement, planning, and policy implementation tools to better integrate land use and water planning and realize their watershed health and community resilience goals. Many of the Colorado water suppliers and communities that have participated in this training credit it with helping to improved procedures between water and land use professionals. At the time of writing, the Growing Water Smart training is funded through 2020.

Example: Breaking Down Silos is an online educational and training module created by Pace University's Land Use Law Center in collaboration with the Colorado Water Conservation Board and the Colorado Department of Local Affairs. It includes webinars and training materials on several land use and water integration topics and can prepare individuals to train others in their community on this topic.

f. **Coordinate with other water providers and land use authorities in the region** or within the same river basin. See Section III.C.10. of this guidance addendum for more information.

2. Align Data and Information Used

Data used by both the water provider and planning department should be consistent and jointly developed where appropriate. Water providers can benefit from the population projections made by the land use authority and the projected development categories embodied in the comprehensive plan. The land use authority should understand the water demand implications of the comprehensive plan. Use of different growth or demand estimates by the water provider and the land use authority can lead to confusion, over- or under-development of water-related infrastructure, and, in extreme cases, to thwarted planning or litigation. See Coordinated Planning Guide: A How-To Resource for Integrating Alternative Water Supply and Land Use Planning, page 8; Integrating Land Use and Water Resources: Planning to Support Water Supply Diversification, pages 25–26.

a. **Align the population and growth projections** of the water provider, the planning department, and other relevant authorities (special districts, counties, etc.). Align commercial development and other projections with water use implications. Address and resolve any inconsistencies. The Sonoran Institute's self-assessment tool can help entities determine where data aligns, and where data-sharing needs to occur.

b. **Estimate water demand for new development.** The water provider and planning department work together to utilize available tools for estimating water demand for proposed new development and comparing demand for different configurations of development. Refinement of zoning categories may be useful to support the development of more accurate water demand estimates. See Section III.C.4.c. of this guidance addendum for additional discussion.

Examples: Several tools have been developed to assist in the analysis of water demand based on land use type. See Colorado State University's Integrated Urban Water Model and Colorado Water and Growth Dialogue's Residential Land Use and Water Demand Tool.

c. **Measure, utilize, and communicate data on water use and savings.** Cooperate to determine and develop data that will help both the water provider and the planning department. Required data can be input for new development as it comes online, with older records updated as time allows. Metrics can be established for the water use of different types of development upon which water budgets can be based. See Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, page 28.

Examples:

- Water provider's accounts designate the applicable land use authority, class of customer (single family, multi-family, commercial, etc., using the same designations as the land use authority), year account created, and property identifier. Account usage is tracked over time. If applicable, water budgets are attached to each account.
- Planning department attaches water supplier information to parcel designations. Population projections are broken down into water provider service areas.
- Sorting capability is enabled for this type of information.

See the 2012 Guidance, pages 58–60, for more information on collecting and monitoring water savings data. Worksheets K and L provide a template for collecting demand data to track the effectiveness of water efficiency activities.

3. **Establish Coordinated Procedures for Post-Occupancy Monitoring and Enforcement.** Water regulations, incentives supporting reduced use, water budgets, and landscape codes can be undermined by an absence of tracking and enforcement. The efforts devoted to integration of land and water planning will be less effective if there is no plan for compliance. This section addresses allocation of the responsibilities for various aspects of post-occupancy monitoring and enforcement and identifies the various components to be considered. Detailed information on post-occupancy is provided in Western Resource Advocates' Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter 15.

   a. Allocate responsibility for **monitoring** for compliance with water use regulations and water-related development approval requirements, and enforcement of such requirements.

   b. Allocate responsibility for pre- and post-occupancy **inspections** as appropriate. Include inspections and enforcement of compliance with landscape plans, landscape maintenance standards, and water use regulations.

   c. Water provider tracks actual water use and coordinates with the land use authority to compare to pre-occupancy estimates. Advanced Metering Infrastructure (AMI), Automatic Meter Reading (AMR), or similar technologies makes this type of compliance monitoring and forecast checking much easier and more feasible.

   d. Require post-occupancy **documentation** to demonstrate that a project is operating as planned, not just constructed as planned.

Example: As part of the approval of the Sterling Ranch development southwest of Denver, **Douglas County** required recording and delivery of water use data from new development for the purpose of evaluating the appropriateness of its water demand estimates. See Douglas County Commissioners Resolution No. R-13-080, pages 16–19.

e. Determine **consequences** of exceeding pre-occupancy estimates, water-related development approval conditions, or applicable water budgets, and allocate responsibility for follow-up. See Douglas County Commissioners Resolution No. R-13-080, pages 15–16.

f. Coordinate observations of water use violations with action by an enforcement authority. This may include allocating responsibility for enforcement between the water provider and land use authority. Enforcement actions will vary depending on how water use is regulated. For example, a water use regulation that has been adopted into the land use code or development approval conditions may be enforced as a code violation, whereas a water use regulation adopted by the water provider may be enforced by fees on a water bill or other techniques available to the provider.

4. Integrate Water Considerations into the Development Approval Process

Include a water provider representative in the development approval process and include water considerations throughout the development process, from pre-application meetings to final plans. Water providers should be involved at an early stage of the development approval process, at a time and in a manner that enables them to make recommendations related to water conservation or efficiency that can influence the configuration of the proposed development as it impacts water use. This includes more than the statutorily required referral process, in which the water provider is sent a copy of the development proposal and invited to comment.[3]

a. Provide and formalize a means for meaningful participation by the water provider in **pre-application meetings with developers** and/or at specific points in the development review process, and in rezoning applications for land within the provider's service area, to provide information about anticipated water use of the proposed development and means of reducing usage and cost (landscaping, lot size, fixtures, etc.). The type and configuration of water utility infrastructure necessary to serve a proposed development should be specifically addressed. Required infrastructure improvements and upgrades may be necessary miles away from the development due to constraints in pipes and treatment facilities. Developers should be made aware of these requirements at an early stage as costs can be significant and alternatives may be available.

[3] See Colo. Rev. Stat. §§ 29-20-301 to -305; 30-28-133(3)(d); 30-28-136.

b. Ensure that the configuration of proposed development for which a water service commitment has been made by the water provider is **consistent with the final approved development plan** (for example, provide for an update of the water provider's service commitment before final approval of the development proposal by the governing body).

> **Example: Eagle County and Eagle River Water & Sanitation District** (ERWSD) have a procedure in which the County requires a final Ability to Serve letter from ERWSD prior to final plat. Previously, ERWSD would provide a conditional capacity to serve letter to the developer at an early stage in the development approval process, and no further commitment was obtained even if the development proposal was changed. Now, the County requires developers to obtain a service commitment from ERWSD for the final development configuration prior to final plat approval.

c. Use **development agreements** to impose water conservation and verification requirements. See Section III.C.5. of this guidance addendum for more information.

5. Integrate Long Term Land Use and Water Planning

a. **Include water in the comprehensive or master plan.** Integrate water conservation or demand management into the land use authority's comprehensive or master planning processes. Extensive information on this subject is available in the CWCB and DOLA-sponsored training program on Integrating Water Efficiency into the Comprehensive Plan and associated webinar. See also Clarion Associate's Colorado Water and Growth Dialogue Research Report, pages 25–27; and the Sonoran Institute's Growing Water Smart Workbook, Section 1, pages 10–14.

i. Create a formal mechanism for **cross-fertilization in the long-range planning processes**, both for water provider input during comprehensive or master planning conducted by the planning department and for planning department input during water resources planning lead by the water provider. The water provider can contribute information and data to the land use authority on the water supply and demand impacts of various development types being considered during the long-range planning processes.

ii. Incorporate a **water element** into the comprehensive or master plan or strengthen the existing water element. Review the comprehensive plan to identify other areas where water conservation, demand management, or water efficiency concepts could be incorporated and add as appropriate.

- Evaluate the extent to which the comprehensive plan already addresses water. See Pace University's Land Use Leadership Alliance Questions

to Guide Water and Land Use Planning Integration to help determine the level of water incorporation into an existing comprehensive plans.

- Draft a **water element** for the comprehensive plan addressing conservation (complete with an introduction, goals, objectives, strategies, and implementation techniques). See Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter 5, Section b, on drafting water elements.

b. **Adequate water supply demonstration.** Make water conservation part of the demonstration of adequate water supply. Agree on the process and standards to be used by the land use authority for determining compliance with the adequate water supply requirements in the Colorado statutes.[4] Counties and municipalities must determine that the proposed water supply for any new development of 50 units or more will be adequate before the development permit can be approved. These local governments have significant discretion in determining water adequacy for new development and can utilize this discretion to emphasize conservation and water supply sustainability. The land use authority is encouraged to require the incorporation of water conservation or demand management measures as part of the demonstration of water adequacy to ensure sustainability and resilience of the water supply, the ability to serve future growth, and address other community goals. See the Sonoran Institute's Growing Water Smart Workbook, Section 2, pages 14–19. The land use authority has discretion to apply the water adequacy requirements to developments of less than 50 units. The water provider and the planning department should discuss whether the 50-unit minimum appropriately reflects the constraints on the water provider's supplies. Any modification of the minimum number of single-family equivalent units would need to be adopted by the land use authority.

c. **Examine water dedication requirements.** While it is incumbent on water providers and land use authorities to ensure that adequate water is available for new development, overly rigid or conservative water dedication requirements can reduce motivation for conservation and force unnecessary dry-up of agricultural land. The amount of water required for dedication (or the amount of the cash-in-lieu fee) should be based on realistic water use data and provide a means for developers to reduce the amount required through the adoption of significant or extraordinary water conservation measures or through the initial configuration of the development.

[4] Local governments, including counties, cities, and towns, are required to determine that an adequate water supply exists before approving any application for a new development permit for 50 single-family equivalent units or more. Colo. Rev. Stat. §§ 29-20-303, 103(1)(b). Counties are subject to additional rules that prohibit approval of any preliminary plan or final plat unless evidence has been provided that a water supply sufficient in quantity, dependability, and quality will be available. Colo. Rev. Stat. § 30-28-133(6)(a). This requirement applies to subdivisions of two or more parcels. Colo. Rev. Stat. § 30-28-101(10).

Example: The **Little Thompson Water District** revised its water dedication and tap fee structure to better correlate the requirements to the actual water use trends of its customers. It now has a smaller water dedication requirement (or alternatively, cash-in-lieu fee) for "urban" taps with smaller lot sizes. The urban tap has an associated water budget, with a significant monthly surcharge if the budgeted amount is exceeded. The lower dedication requirement and associated tap fee provides options and a powerful incentive for developers. The motivation for this change and the overall structure are described in A Guide to Designing Conservation-Oriented System Development Charges, pages 69–73.

d. **Integrate other planning efforts** between the water provider and the planning department, such as Integrated Water Management Plans, Neighborhood Plans, Drought Mitigation Plans, Regional Watershed Plans, Stream Management Plans, Energy Plans, Sustainability Plans, etc. See Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter 6, on incorporating water into sustainability plans.

   i. Discuss the impact on water use and cost to customers of land use patterns such as increased density or infill development in appropriate areas compared to large lot, single-family suburban development.

   ii. Discuss opportunities for constraining costs to customers and reducing additional infrastructure expansion by concentrating development within existing water service areas.

   iii. **Calculate a per unit water use for different zoning categories** to facilitate the projection of future water use. This could be water use per acre, per 1,000 square feet, or some other appropriate unit.

   iv. Incorporate a **One Water** approach into planning, recognizing the interconnectedness of water supply, stormwater, and wastewater. See Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, page 26 and the American Planning Association's Planners and Water Report.

B. Targeted Technical Assistance and Incentives

The 2012 Guidance, pages 49–52, discusses incentives and assistance that may be offered by the water provider. This section of the addendum addresses incentives and assistance programs that can be considered and operated jointly by the land use authority and the water provider.

Local governments, water providers, property owners, and developers generally prefer incentives to mandates. The technical assistance and incentive programs described herein can be used instead of regulations to encourage practices or to help developers and others comply with ordinances or regulations. Alternatively, many of the techniques described here could: be adopted by ordinance or regulation; work in concert with or support ordinances or regulations; or be imposed as a requirement rather than as an encouraged practice. It is important to note that incentives may be unnecessary if ordinances or regulations require one or more of the techniques described below. The most appropriate means of implementing these programs will vary by community.

1. Developer Incentives to Reduce Water Demand

Work with the land use authority to provide developer incentives to reduce water demand in new development. Examples include:

- Fee guarantee for future building permits in the development
- Immediate credit in water development fees
- Payment of fee at issuance of certificate of occupancy as opposed to at time of construction permit
- Density bonuses
- Infill incentives
- Tap fee reduction program
- Priority inspections

The Verde Land and Water Planning Toolbox provides a menu of water-conserving development incentives. Western Resource Advocates' Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapters 7 and 14,

has extensive information and specific examples on different types of incentives for property owners and developers.

2. **Conservation-Oriented Tap Fees**
Incentivizing conservation through the prospect of reduced tap fees or system development charges is an effective method for influencing customer behavior and reducing water use. The water provider and planning department can work together to determine a tap fee incentive structure that furthers the land use goals of the community as well as water conservation. The 2012 Guidance includes a discussion of tap fee incentives. In-depth information and examples are provided in Western Resource Advocates' Water Connection Charges: A Tool for Encouraging Water-Efficient Growth and Guide to Designing Conservation-Oriented Water System Development Charges.

Example: The City of Fountain reduces its tap fee for residential lots that have limited the irrigated area to less than 50 percent of the total pervious area, with an even greater reduction if the irrigated area is less than 30 percent. The City has developed landscape plan templates to help builders and contractors meet the requirements for the reduced fees.

3. **Water Efficient Land Development Patterns**
Encourage land development patterns that contribute to water efficiency and compact infrastructure. While increased density can lower per capita water demand, it may increase total water demand for the project if more units are allowed. There may be limits to the per capita water savings that can be achieved with very high-density development. The Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report presents research from Arizona State University on how residential development and re-development at higher densities can reduce water demand, based on data from the Denver Metro area, page 9. See also Clarion Associate's Colorado Water and Growth Dialogue Research Report for data from other Western states on reducing water demand with increased density, pages 2–13.

   a. Encourage increased residential density or compact, mixed-use development through **developer incentives**, such as density bonuses or infill incentives. See the Verde Land and Water Planning Toolbox section on developer incentives.

Example: The **Town of Castle Rock** Code 4.04.120 provides that if a developer prepares and uses a water efficiency plan meeting certain minimum standards, the Town may reduce its presumptive water use standards for tap connections.

   b. Encourage **cluster unit** development. See Integrating Water Efficiency into the Zoning Code, pages 4–9, for further explanation and examples.

c. Offer **development offsets**, reduced fees or requirements, increased credits, or preference in water allocation, for example, in return for implementation of water efficiency measures. See the Verde Land and Water Planning Toolbox section on development offsets.

4. Model Landscape Plans

Cooperate with the land use authority to develop and provide model landscape plans for new residential and large landscape developments. Such a plan could include any of the techniques listed as potential components of a landscape code in Section III.C.7. of this guidance addendum. Incentives or technical assistance could be provided to encourage adoption of the techniques in the model plan.

Example: The Northern Colorado Water Conservancy District provides information, fact sheets, and case studies on water-saving lawns and gardens for use by its customers.

5. Incentives for Reduced Irrigation

Because irrigation water usage normally represents the greatest share of overall municipal use, reducing irrigation through incentive or technical assistance programs provides the best opportunities for water savings. Residential, commercial, public space irrigation, or all the above, could be targeted. Specific types of incentives for reduction of outdoor use are described below, and more information can be found in the Guidebook for Local Planners, Chapter 14, also referenced in Section III.B.1. Limiting turf can also contribute to reduced irrigation. See Clarion Associate's Colorado Water and Growth Dialogue Research Report, pages 13–23.

a. **Turf replacement payments.** Many communities in Colorado and throughout the West have adopted programs that pay homeowners for removing turf and replacing it with landscapes that require less water use. California offers a statewide rebate program.

Case Study: South Metro Water Authority Model Landscape Code

The thirteen members of the Authority, all water providers in the southern Denver Metro area, expressed a desire for regional collaboration on water conservation. An identified obstacle to the implementation of regional partnering on water efficiency efforts was lack of land use authority. The Authority produced a Model Regional Water Efficient Landscape and Irrigation Ordinance that is intended to support, not supersede, other existing landscape and irrigation water conservation programs. It contains a comprehensive menu of best management practices, but is not intended as a required set of regulations.

Local land use authorities are encouraged to seek input from local water and land use officials in determining which components can be implemented and enforced in their own local regulations or ordinances. An associated checklist provides the minimum recommended components of the model ordinance, based on the experience of local water efficiency experts, to provide consistency and clarity in best management practices.

These programs may provide a payment per square foot of turf removed or reimburse the homeowner for the cost of installation of the new landscape. They typically have an overall cap and require post-removal inspection. Southern Nevada Water Authority (SNWA) also has a Water Smart Landscape Rebate, offering a rebate for conversion of grass to desert landscaping. The program has saved SNWA billions of gallons of water.

Examples:
City of Lafayette – Homeowners in the city may replace landscape turf with functional hardscape and receive a credit on their utility bill in the amount of $1 per square foot (cap of 1,000 sq. ft.) upon verification. Support (but no rebate) is also available for replacement of turf with xeric plants.
Centennial Water and Sanitation District – A pilot program adopted in 2018 encourages residential customers to replace water-thirsty plant materials with xeric or drought tolerant vegetation by providing a rebate of $1 per square foot ($1,000 maximum).
City of Aurora – The Water Wise Landscape Rebate program incentivizes conversion to lower water use yards by rebating (with different caps for residential and commercial properties) the cost of materials, partially dependent upon verification of water savings.

b. **Low water use vegetation list**. Water providers or land use authorities can provide a recommended list of low-water use plants. This information allows homeowners and developers to select options from a trusted source. The Colorado Native Plant Society has gardening guides applicable to five regions in Colorado: Plains/Prairie, Front Range/Foothills, Southeastern Colorado, Mountains above 7,500 feet, and Lower Elevation Western Slope. The model landscape plans described in Section III.B.4. above frequently include recommended vegetation lists.

Examples:
The Town of Castle Rock provides a Recommended Plant List.
The Town of Silver City, New Mexico offers a bonus to applicants for development permits as an incentive to use only low-water use trees and vegetation contained on a pre-approved list. The bonus allows applicants to reduce their overall landscaping area requirements by 10 percent.

c. **Outdoor fixture rebates.** Incentives can be offered to encourage the installation of water-efficient fixtures such as rain sensors or high efficiency nozzles.

Example: Centennial Water and Sanitation District provides a rebate for the addition of rain sensors that will interrupt the normal watering schedule when it rains and for the replacement of traditional fixed spray nozzles with more efficient rotary nozzles.

d. **Relief from otherwise applicable regulations.** Reductions of irrigation water use can be incentivized through the waiver or modification of other requirements, such as watering restrictions, stormwater fees, or even property tax abatements.

Example: The City of La Junta allows applicants to request relief from otherwise applicable water use restrictions if they implement an approved alternative water management plan that includes water reduction measures.

6. **Water-Smart Home Options**
Cooperate with the land use authority to define and encourage adoption of water-smart home options. Colorado requires developers to offer a water-smart home option and provides detailed criteria for qualification as water-smart. Visit the U.S. Environmental Protection Agency's (EPA) WaterSense Labeled Homes for more information and criteria for water-smart homes. Water-smart options are frequently paired with energy efficient features, for example KB Homes eDifference program.

Colo. Rev. Stat. § 38-35.7-107(1)(a)
Builders of new single-family detached residences must offer the buyer the opportunity to select a water-smart home option.

7. **Become a WaterSense Partner**
WaterSense is a voluntary program sponsored by the EPA. It provides specifications and certifications for water efficient products and partners with multiple types of organizations, including water utilities and local governments, to promote water efficiency. WaterSense partners have access to promotional materials and messaging to educate consumers on the importance of saving water for future generations.

8. **Low Water Use Demonstration Homes**
Encourage developers to provide demonstration homes with low water use outdoor fixtures and landscapes.

9. **Water Audits**
Many water providers offer indoor or outdoor audits to customers to assess water conservation potential and provide information on efficiency measures. Such audits can also be offered through the land use authority to applicants for development permits, for either new or existing structures.

Examples:
Fort Collins Utilities offers free sprinkler system audits that include a system evaluation, watering schedule, and information on how to find leaks and keep vegetation healthy all summer long.
The City of Greeley makes free audits available to residences and businesses within the community. Both indoor and irrigation use are examined.

10. Rainwater Reuse

Encourage rainwater capture and use or incentivize through water dedication requirements. Colorado has specific rules related to rainwater capture and water harvesting. See Colorado State University's fact sheet explaining the 2016 legislative changes to allow rainwater collection. See also CWCB's precipitation harvesting pilot program for new developments.

C. ORDINANCES AND REGULATIONS

This section addresses municipal or county code provisions for adoption by the land use authority. The water provider should evaluate whether the ordinances and regulations presented would be helpful in achieving further water conservation and appropriate for the community. Therefore, consideration of the ordinances and regulations requires discussion between the water provider and the land use authority. Some of the ordinances and regulations described in this section may also be within the sole purview of the water provider and may have already been considered in the WEP. Because individual water providers vary greatly in terms of their legal authority to adopt regulations, multiple potential regulations are listed for consideration and evaluation. The Alliance for Water Efficiency's Net Blue Project includes a template for a model ordinance addressing water conservation that can be tailored to address the specific challenges and goals of the local government.

Some of the techniques described could alternatively be implemented as incentive or technical assistance programs, if deemed appropriate by the water provider and land use authority. Water providers and land use authorities may want to consider providing incentives or technical assistance as a pilot program prior to passing a regulation or as an accompaniment to a regulation in order to determine suitability and boost compliance. Please see Section III.B. of this guidance addendum, for more discussion of these strategies.

Follow-up and enforcement are critical to the success of ordinances and regulations. Please see Section III.A.3. for an overview of monitoring and enforcement. Western Resource Advocates' Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter 15, offers further information about post-occupancy enforcement.

1. **Examine Existing Land Use Regulations for Barriers and Conflicts**
   Evaluate the zoning, subdivision, and development regulations of the land use authority to determine whether there are unintentional barriers to the adoption of water conservation or efficiency measures. If so, discuss appropriate modifications. See Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapters 4 and 10.a., for discussions of how to identify barriers to water conservation. Once

identified, the water provider and planning department should work together to eliminate barriers or harmonize conflicting provisions.

2. **Adopt or Strengthen Water-Related Ordinances and Regulations**
Discuss the adoption or strengthening of the following ordinances and regulations, and partner with the land use authority to educate the public.

   a. Ordinance prohibiting **water waste**.

> **Example: The City of Aurora** is one of many land use authorities that has a specific ordinance prohibiting water waste.

   b. **Watering or Irrigation Restrictions**. Some restrictions may have already been adopted by the water provider; these options can also be considered by the land use authority.

      i. Time of day watering restrictions, for example, no outside watering between 10:00 a.m. and 5:00 p.m.

> **Example: The City of Cortez** has adopted an ordinance establishing water use restrictions due to severe drought conditions. Exemptions can be obtained for new lawns.

      ii. Day of week watering restrictions, for example, odd house numbers irrigate Monday, Wednesday, and Friday, even house numbers irrigate Tuesday, Thursday, and Saturday; or limit to watering three days per week.

> **Example: The City of Monte Vista** passed a resolution requiring odd numbered addresses to water on Tuesday, Thursday, and Saturday, and even numbered addresses to water on Wednesday, Friday, and Sunday.

3. **Water Conservation in New Development, Re-Development, and Annexation**
See Clarion Associate's Colorado Water and Growth Dialogue Research Report for research from across the West on reducing water demand in new development.

   a. Require water conservation for **new development or re-development**. Adopt criteria for water conservation against which new or re-development proposals are assessed.

Examples:
Any amendment to the **City of Westminster's** land use plan must, among other requirements, not negatively impact water infrastructure or water supply (Westminster Municipal Code 11-5-21).
Prior to permitting, new construction and remodeling in the **City of Santa Fe, New Mexico** are required to receive a certificate of compliance before permitting stating that all plumbing fixtures meet water conservation restrictions (Santa Fe Ordinance No. 1997-17).

b. Include water demand and conservation among the considerations for **annexation**.

Example: The City of Colorado Springs coordinates its annexation policies with Colorado Springs Utilities to ensure there is projected available water surplus both at the time of the annexation request and into the foreseeable future (Conditions for Annexation Code 7.6.203).

4. Incorporate Water Efficiency into Zoning Codes and Rezoning Procedures

Extensive information on this subject is available in the CWCB and DOLA-sponsored training program on Integrating Water Efficiency into the Zoning Code and associated webinar. See Integrating Water Efficiency Into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter 7, for a full overview of incorporating water into zoning codes and rezonings.

Case Studies: PUDs in Westminster and Eagle County

Westminster uses a PUD process for all sites two acres or greater and thus almost all development approvals are the result of negotiation. Water conservation is a key consideration with the PUD approval process, particularly in regard to site design and landscaping. See Westminster's PUD code (11-4-7) and comprehensive plan amendment code (11-5-21).

Eagle County and Eagle River Water and Sanitation District (ERWSD) work together to incorporate water-saving measures into new developments in the PUD process. Three developments have incorporated water efficiency measures as a result: Fox Hollow; 6 West; and Stillwater. Measures included outdoor irrigation budgets and planting limited to those on the Colorado State University recommended plant list.

Additionally, ERWSD included language in the PUDs to allow for future adjustments: "These requirements may be adjusted with approval of the Eagle River Water and Sanitation District if such adjustments maintain the water efficiency goals as outlined in these requirements."

a. Condition **rezoning or discretionary reviews** like planned unit developments (PUDs) on low water use commitments. Note that individual agreements or conditions may be unnecessary if ordinances or regulations require water conservation.

b. Change current zoning definitions, or rezone land, to allow for **more varieties of multi-family and attached housing** that decrease per capita water use. See Integrating Water Efficiency into the Comprehensive Plan, pages 49–50.

c. Designate zoning categories that narrow the range of water use within the category, to allow for more accurate **forecasts of actual water use based on zoning**. Coordinate with the planning department to develop water demands for different types of zoning and/or land use categories, that is, how much water per household, per capita, or per acre would be consumed for varying development patterns, such as large-lot or small-lot single-family residential, multifamily residential, mixed-use, retail categories, etc. See Pace University's Land Use Leadership Alliance Questions to Guide Water and Land Use Planning Integration.

Example: The **City of Westminster** is working to refine some of its zoning categories to better reflect anticipated water use. Zoning designations with a broad range of potential uses with very different water demands, such as retail stores and restaurants, make it difficult to accurately project water demand.

d. Adopt an **overlay zone** or jurisdiction-wide development standard addressing water demand and conservation.

Example: **Douglas County** has a water supply overlay district encompassing the entire county, tailored to the supplies available in specific areas. The district was designed to "ensure that development in all areas of Douglas County provides for a water supply that is sufficient in terms of quantity, quality, and dependability."

5. Subdivision or Site Plan Regulations that Include Water Conservation

Subdivision regulations are commonly used to impose requirements applicable to all new development. Require the inclusion of water conservation and water demand management measures in the water supply report provided as part of a development permit application. Structure

Colo. Rev. Stat. § 29-20-304
"An applicant for a development permit shall submit estimated water supply requirements for the proposed development." The statute does not mandate water conservation, but it could be required through ordinance or regulation.

development or subdivision improvement agreements to include water conservation commitments.

6. **Implement Requirements that Contribute to Water Efficiency and Compact Infrastructure**

   a. Implement a **water demand offset** requirement, in which the projected water demand of new development is offset with water efficiency measures to create a neutral impact on overall service area demands and water use.

> **Example: The Alliance for Water Efficiency's** Net Blue Ordinance Toolkit describes water demand offset requirements that have been adopted by communities across the country, together with various methodologies for calculating offsets, a model ordinance, and suggestions for community outreach.

   b. Prioritize **infill development**. See Integrating Water Efficiency into the Comprehensive Plan, pages 44–49, for further explanation and examples.

   c. Adopt **stormwater management** policies to mitigate increased density or impervious surface area. See Integrating Water Efficiency into the Comprehensive Plan, pages 50–53, for further explanation and examples.

   d. Enable use of **graywater** and/or municipally supplied reclaimed water for nonpotable purposes, to the extent consistent with Colorado and local law. See Pitkin County and City and County of Denver enabling ordinances for graywater reuse. The Colorado Division of Water Resources provides additional information on the legal constraints on the use of graywater.

> **Example:** The Verde Land and Water Toolbox explains how conditional zoning can include water conservation and provides an example from the Civano master planned community in Tucson, Arizona.

7. **Water Efficient Landscape Code**
   Discuss the adoption, revision, or implementation of a water efficient landscape code, landscape design, or installation rules and regulations. See Green Industry Best Management Practices (BMPs) for the Conservation and Protection of Water Resources in Colorado. Outdoor water use generally provides the biggest return in terms of water savings, particularly for communities with newer developments, which tend to have higher efficiency indoor fixtures, and communities with large single-family lots. However, with any of these

strategies effectiveness should be determined by the water provider according to their local conditions.

> **Examples:**
> **Sterling Ranch** adopted water demand management rules and regulations as a framework for "water-smart" development. See Amended Sterling Ranch Water Demand Initiatives, Section 3, pages 4–20, and Attachments C and D.

Any or all of the techniques listed below could alternatively be included in a model landscape plan with incentives and/or technical assistance as described in Section III.B.4. of this guidance addendum.

a. **Landscape code** provisions could include:

i. Xeriscape requirements.

ii. Turf limitations or minimums for low-water use vegetation for new development. See the Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, page 20, for research from the City of Aurora about landscape regulations generally; and Aurora's Landscape Reference Manual, page 52, for the city's turf regulations, or the city's Z-Zone policy incentivizing irrigation only during plant establishment.

> **Example:** The **Town of Buena Vista** limits the amount of high water use vegetation and turf grass for any new development. See Buena Vista Municipal Code, Section 16-255.

iii. Soil amendment requirements.

> **Example:** **Denver Water** provides extensive information for compliance with its soil amendment requirements.

iv. Rain/weather/soil moisture sensors requirements. See Douglas County's Comprehensive Plan Policy 4-1 W.3, pages 4 –10.

v. Efficient outdoor fixture requirements that meet Green Building standards. See Section III.C.8.a. of this guidance addendum for more information.

vi. Require low water use vegetation in open space or for areas used for stormwater or runoff control purposes.

vii. Require use of plants from a native/drought-resistant plant list. Prohibit invasive, non-native, or high-water use trees and shrubs. See Section III.B.5.b. of this guidance addendum for more information.

> **Example: Commerce City** maintains a list of prohibited trees and invasive species, together with its designation of approved species. See Approved Plant List pages 3–4.

b. Require **certification or registration** of landscape professionals. Potential types of certifications include:

i. Qualified Water Efficient Landscaper certification. Individual landscapers can become certified through this program, and retail water agencies, non-government organizations, and educational institutions can adopt this program as a standard or requirement for landscapers in a region or service area. The City of Aspen offers certification for this program.

ii. WaterSense certification in irrigation system design, irrigation system installation and maintenance, or irrigation system audits.

> **Example: Northern Water** provides WaterSense-approved training and then refers customers to find qualified contractors through WaterSense's "Find a Pro" portal.

iii. Certified Irrigation Designer Certificate from the Irrigation Association.

iv. Landscape industry certified technician through the Associated Landscape Contractors of Colorado.

> **Example:** The **Town of Castle Rock** requires landscape professionals, including designers, installers, and maintenance contractors performing commercial landscape and/or irrigation work within the Town Limits, to be registered and have one or more specified certifications.

v. Complete Green Industries of Colorado (GreenCo) best management practices program.

c. Model landscape ordinances for consideration.

i. The Colorado Department of Local Affairs has developed a model landscape ordinance utilizing a water conservation oriented planning approach.

ii. The South Metro Water Supply Authority has produced a Model Regional Water Efficient Landscape and Irrigation Ordinance for consideration and use by its thirteen water provider members. See Section III.B.4. of this guidance addendum for more information.

iii. The State of California has a Model Water Efficient Landscape Ordinance that local agencies are required to adopt.

8. Building and Plumbing Codes

Adopt or strengthen building and plumbing codes that promote water efficiency, low water use, fixture improvements, or water benchmarking.

Colo. Rev. Stat. § 6-7.5-102
As of September 1, 2016, manufacturers are required to sell only WaterSense labeled indoor fixtures within the State of Colorado.

a. Codify water efficiency standards set forth by **green building codes**, for example LEED guidelines for water conservation, national green building standards, Green Industries of Colorado (GreenCo) standards, Water Efficiency Rating Score (WERS), and WaterSense labeled homes. The Alliance for Water Efficiency provides background on green building standards and guidelines with examples and comparisons of programs.

Example: The **City of Fort Collins** and the **City and County of Denver** require green building certification from LEED, Energy Star, or other applicable programs, for new city-owned buildings over 5,000 square feet. These programs include water efficiency measures for certification.

b. Establish **sustainable development bonuses** for development that is green building certified.

Example: The **City of Pittsburgh, Pennsylvania,** provides Sustainable Development Bonuses for LEED-certified buildings, specifically mentioning the benefits that green buildings have for water quality and conservation in the ordinance.

9. Ordinances Promoting Efficient Fixtures in Existing Buildings

a. Require **retrofit on resale properties** to include low water use fixtures.

> **Example: Colorado WaterWise** includes a section on retrofit ordinances in its Guidebook of Best Practices for Municipal Water Conservation in Colorado, pages 162–164, and includes a California ordinance as an example in Appendix B, pages 224–226.

b. **Require retrofit** to include low water use fixtures when new building permits are required. Set a reasonable value threshold for triggering retrofit requirements.

10. Regional Coordination of Water Policy and Procedures

Implement regional coordination among water providers for consistent policy and procedures, and to de-escalate competition among jurisdictions for new development. Any of the following techniques can be enacted by a water provider and/or local government and, through collaboration with the appropriate entities, scaled up to the county or region. Water providers in each county are listed in the Centers for Disease Control and Prevention's My Waters Fluoride database.

> **Example**: The **City of Fort Collins** and surrounding water districts have formed a Regional Water Collaboration Steering Committee to identify and pursue regional water collaboration opportunities in and around the City's Growth Management Area.

Case Study: Fort Collins-Loveland Water District

The District is one of many in the state serving more and more suburban customers on formerly rural land in quickly developing areas. New supplies from the Colorado-Big Thompson project, the District's primary existing source, are becoming more expensive and harder to obtain. Conservation is seen as an effective method of stretching supplies for increased growth and development, driving down demand and saving existing customers money, but the District hesitates to impose water restrictions on its own.

Because the District serves customers in two cities, two towns, and rural areas of Larimer County, regional cooperation is key to creating more uniform expectations among customers and developers and strengthening overall water management. The District is helping to draft water elements for the comprehensive plan updates of the City of Fort Collins and Larimer County. Regular meetings are beginning with other water providers in the region, and the District and City of Fort Collins cooperate to perform residential irrigation audits.

a. Make water conservation requirements consistent among land use authorities in the region.

b. Adopt uniform landscape code or irrigation regulations for the region. See Section III.C.7. of this guidance addendum for more information.

c. Adopt uniform landscape and irrigation contractor certifications in the region. See Section III.C.7.b. of this guidance addendum for more information.

d. Coordinate education and outreach across the region. See Section III.D.6. of this guidance addendum for more information.

e. Collaborate on promotion, incentives, or requirements for green building techniques. See Section III.C.8.a. of this guidance addendum for more information.

f. Designate a **growth management area** outside municipal boundaries that addresses water use. See Integrating Water Efficiency into the Comprehensive Plan, pages 37–41.

Example: The **City of Boulder** has established growth boundaries and limited water service for development outside of these boundaries—see City of Boulder Charter, Article VIII, Section 128A.

D. EDUCATION ACTIVITIES

The activities described in this chapter are intended to be carried out collaboratively by the water provider and the land use authority to educate constituents about the water policies and regulations described throughout this guidance addendum. Coordination of education and outreach enables a unified message to water customers and developers about water use, preventing confusion and contradiction.

1. Consistent Online Information

Ensure that information concerning water and water conservation on the respective websites of the water provider and the planning department is consistent and cross-linked. This helps water customers and users easily find the same information about water conservation and relevant policies and regulations as well as eliminates confusion.

> **Example:** The **Town of Eagle** links to Eagle River Water and Sanitation District's policies and services on its water conservation page.

2. Water Provider and Planning Department Work Together to Educate the Public

a. Provide **public information** and education on water conservation. This can be led by the water provider in creating materials such as brochures that can easily be distributed to the land use authority for coordinated dissemination.

> **Examples:**
> The **City of Cortez** and **City of Glenwood Springs** have water conservation brochures.
> **American Water Works Association** has a Water Conservation Communications Guide.
> The **City of Santa Fe, New Mexico,** requires that all persons applying for a building permit or installing new landscaping receive water conservation literature (Santa Fe Ordinance No. 1997-17).

b. Develop and disseminate landscape **water budgets** and information.

> **Example:** The **City of Greeley** uses a water budget rate structure, as do Centennial Water and Sanitation District, City of Boulder, and Town of Castle Rock (as described in the Guidebook of Best Practices for Municipal Water Conservation in Colorado, pages 105–107).

c. Develop and provide landscape **efficiency evaluations**, irrigation audits, and green building codes. See Section III.B.9. of this guidance addendum for more information on irrigation audits, and Section III.C.8.a. of this guidance addendum for more information on green building codes.

> **Example:** The **City of Fort Collins** supplies free sprinkler audits and self-audit kits to water customers in the area, including for Fort Collins-Loveland Water District and East Larimer County Water District customers.

d. The water provider and planning department work together to **communicate the benefits** of water conservation to the community. Different communities will have unique values based on their particular circumstances. Colorado communities cite numerous benefits from water conservation:

i. Allows service to additional growth if water supplies are limited.
ii. Services more customers without increasing costs.
iii. Reduces the need to "buy and dry" agricultural land and retains more agricultural land to preserve historic heritage, scenic qualities, and food production.
iv. Mitigates drought impacts and increases drought resilience.
v. Eliminates or delays need for additional water infrastructure and associated costs.
vi. Eliminates or reduces the need to acquire additional water rights.
vii. Increases water system reliability, stability, and resiliency.
viii. Reduces costs to customers.
ix. Reduces water and wastewater treatment needs and effluent discharge.
x. Reduces surface water runoff during irrigation season.
xi. Maintains instream flows by reducing the amount of water diverted from rivers and streams.
xii. Reduces energy demand and greenhouse gas emissions through reduced water demand.
xiii. Demonstrates a commitment to the sustainability of the community and leadership in improved stewardship of a public resource.

More benefits that can result from coordinated planning are described on page 3 of the Coordinated Planning Guide.

e. Hold **public meetings** for input on water policy in the comprehensive or master plan. Public meetings are a staple of the comprehensive or master planning process; thus, if water is included within the comprehensive or master plan, feedback will naturally be collected on water policy. Representatives from the water provider should attend these meetings to hear feedback and adjust accordingly.

f. Conduct a **public survey** or survey of developers on which land use mechanisms for water conservation respondents would most like to see implemented. See Development Community Perspectives on Water Efficiency in New Construction.

g. **Provide information** on which approaches most effectively conserve water so that developers and planners can make informed decisions. See Section III.A.2. of this guidance addendum for more information.

3. Lead by Example

a. Target buildings and facilities owned by the water provider and land use authority for water efficiency improvements to provide education and lead by example. See Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, page 29; LEED credits for water efficiency; and EPA's WaterSense Best Management Practices for Commercial and Institutional Facilities.

i. Measure and communicate water savings of the building.

> **Example:** EPA's Energy Star program includes water benchmarking in buildings. An Energy Star communications toolkit presents strategies for sharing energy and water efficiency gains with the public.

ii. Give tours and/or provide educational materials for interested customers and citizens.

b. **Build demonstration gardens** following the landscape standards, regulations, or encouraged practices of the jurisdiction**.** If no such programs exist, plant native and drought-tolerant plants.

4. **Jointly Engage with the Development Community and Homeowners' Associations (HOAs).**
The planning department and water provider can provide information to potential developers about water rates and fees, development incentives, potential for cost savings, water conservation techniques, incentives, and requirements, and ensure that any concerns are understood and addressed. This can be done as part of a community's pre-application meeting, as described in Section III.A.3. of this guidance addendum.

   After new residential development is complete, the planning department and water provider should continue to collaborate with any HOAs that manage the property, in order to provide information about water conservation. This may include information about proper irrigation techniques for open space or parks, how to encourage household water conservation, and recommended plant lists.

5. **Share Success Stories and Case Studies with Other Communities and the Public**
See Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, page 28.

6. **Coordinate Education and Outreach Across the Region**
Implement regional coordination among water providers for consistency in education and outreach. This can be helpful among providers that depend upon the same watersheds or water sources, face the same challenges, or are implementing similar conservation activities across their service areas.

Example: One of the goals of the **Northwest Colorado Council of Governments Water Quality/Quantity Committee** is to educate its member communities about water issues facing the region in order to promote regional solutions and sound water management. This effort has included tours of watersheds and data sharing.

Case Study: Northern Colorado Water Conservancy District Demonstration Garden and Pilot Projects

Northern Water hosts Conservation Gardens at its headquarters in Berthoud, CO, with over 700 plants and 60 turf grasses that use less water and are adapted to the region's semiarid climate. These gardens are free and open to the public year-round, and contain different areas showcasing different plant types and combinations—including eight different Xeriscape examples. This project is currently undergoing renovations to include additional examples, such as a street strip demonstration.

In 2018, Northern Water also initiated a Collaborative Water-Efficient Landscape Grant in order to promote water efficiency within its service area. The program was open to a variety of water users, including public facilities, open spaces, businesses, schools, multi-family complexes, and HOAs. Landscapes were to be designed to use substantially less turf and include 50 percent plant cover at maturity. Grant amounts were ranged from $5,000 to $15,000.

APPENDIX A: REFERENCES

Alliance for Water Efficiency. 2016. *Green Building Guidelines and Standards.* Chicago, IL.

AMEC Earth and Environmental. 2012. *CWCB Municipal Water Efficiency Plan Guidance Document.* Denver, CO: Colorado Water Conservation Board.

American Water Works Association. 2018. *Water Conservation Communications Guide.* Denver, CO.

Aquacraft, Inc. 2010. *Colorado Water Wise Guidebook of Best Practices for Municipal Water Conservation in Colorado*. Denver, CO: Colorado WaterWise.

Aquacraft, Inc. 2012. *Sample of a Municipal Water Efficiency Plan*. Denver, CO: Colorado Water Conservation Board.

Arnold, Craig Anthony. 2005. *Wet Growth: Should Water Law Control Land Use?* Washington, D.C.: Environmental Law Institute.

Associated Landscape Contractors of Colorado. 2018. *Landscape Industry Certified Technician.* Denver, CO.

Cabot, P.E., C.C. Olson, R.M. Waskom, R.M., and K.G. Rein. 2016. *Rainwater Collection in Colorado.* Fort Collins, CO: Colorado State University.

California Department of Water Resources. 2017. *Institutional Turf Replacement Program.* Sacramento, CA.

Centers for Disease Control and Prevention. 2018. *My Water's Fluoride.* Atlanta, GA.

Cesanek, William, Vicki Elmer, and Jennifer Graeff. 2017. *Planners and Water.* Chicago, IL: American Planning Association.

City of Fort Collins Water Board. 2012. *City of Fort Collins Water Supply and Demand Policy.* Fort Collins, CO: City of Fort Collins City Council.

Clarion Associates. 2015. *Colorado Water and Growth Dialogue Research Report.* Keystone, CO: Keystone Policy Center.

Colorado Division of Natural Resources. 2016. *Graywater and Storm Water.* Denver, CO.

Colorado Native Plant Society. 2017. *Choosing Plants for Your Garden.* Fort Collins, CO.

Colorado State University, 2018. *Yard & Garden.* Fort Collins, CO.

Colorado Water Conservation Board. 2016. *Authorization of Pilot Projects for the Beneficial Use of Captured Precipitation in New Real Estate Developments.* Denver, CO: Department of Natural Resources.

Colorado Water Conservation Board. 2018. *Water Efficiency Grants.* Denver, CO: Department of Natural Resources.

Colorado Water Quality Control Commission. 2000. *Reclaimed Water Control Regulation.* Denver, CO: Department of Public Health and Environment.

Colorado Water Wise. 2018. *Colorado WaterWise Website.* Denver, CO.

Denver Water and Keystone Policy Center. 2018. *Residential Land Use and Water Demand Tool.* Denver, CO.

Energy Star. 2010. *Communicate Your Success.* Washington, D.C.: U.S. Environmental Protection Agency.

Fedak, Rebecca; Sommer, Shelby; Hannon, Derek; Sands, Russ; Beckwith, Drew; Nuding, Amelia; and Stitzer, Linda. 2018. *Coordinated Planning Guide – A How-To Resource for Integrating Alternative Water Supply and Land Use Planning.* Denver, CO: Water Research Foundation.

Fedak, Rebecca; Sommer, Shelby; Hannon, Derek; Sands, Russ; Beckwith, Drew; Nuding, Amelia; and Stitzer, Linda. 2018. *Integrating Land Use and Water Resources: Planning to Support Water Supply Diversification.* Denver, CO: Water Research Foundation.

Friends of the Verde River. 2017. *Verde Land and Water Planning Toolbox.* CottonwoodAZ.

Great Western Institute. 2010. *SWSI Conservation Levels.* Denver, CO: Colorado Water Conservation Board.

GreenCO Green Industries of Colorado. 2015. *Best Management Practices.* Denver. CO.

Howe, Carol, and Mukheibir, Pierre. 2015. *Pathways to One Water.* Sydney, NSW: Water Education and Research Foundation.

Irrigation Association. 2018. *Certified Irrigation Designer—Landscape.* Fairfax, VA.

KB Homes. 2018. *Water-Conserving Homes—Savings in Every Drop.* Denver, CO.

Keystone Policy Center. 2018. *Colorado Water and Growth Dialogue Final Report.* Keystone, CO.

Lackey, Katy; Katie Henderson, Amelia Nuding, Philip Stoker, and Gary Pivo. 2017. *Coordinating Water Management and Urban Planning Efforts Webinar.* Denver, CO: Water Research Foundation.

Northwest Colorado Council of Governments. 2018. *NWCCOG Model Water Quality Protection Standards.* Silverthorne, CO: Quantity and Quality Committee.

Nuding, Amelia, Sharlene Leurig, and Jeff Hughes. 2015. *Water Connection Charges: A Tool for Encouraging Water-Efficient Growth.* Boulder, CO: Western Resource Advocates.

Nuding, Amelia, Todd Cristiano, Andrew Rheem, and Melissa Elliott. 2018. *A Guide to Designing Conservation-Oriented Water System Development Charges.* Boulder, CO: Western Resource Advocates.

Nuding, Amelia. 2018. *Development Community Perspectives on Water Efficiency in New Construction.* Boulder, CO.

Open Water Foundation and WaterDM. 2018. *Colorado River Urban Water Use Data Availability and Metrics.* Fort Collins, CO.

Pace University Land Use Law Center. 2017. *Breaking Down Silos: Integrating Water Efficiency into Land Use Planning.* Denver, CO: Colorado Water Conservation Board and Colorado Department of Local Affairs.

Pace University Land Use Law Center. 2017. *Questions to Guide Water & Land Use Planning Integration.* Boulder, CO: Western Resource Advocates.

Pace University Land Use Law Center. 2018. *Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners.* Boulder, CO: Western Resource Advocates.

Paulson, Cynthia, Wendy Broley, and Lynn Stephens. 2017. *Blueprint for OneWater*. Denver, CO: Water Research Foundation.

Quay, Ray, Cyrus Hester, Kelli Larson, and Dave White. 2018. *Urban Landscape Water Use Research Evaluation.* Denver, CO: Water Research Foundation.

Richards, Lynn. 2006. *Protecting Water Resources with Higher-Density Development.* Washington, D.C.: U.S. Environmental Protection Agency.

Sonoma-Marin Saving Water Partnerships. 2018. *Qualified Water Efficient Landscaper.* Santa Rosa, CA.

Sonoran Institute and Lincoln Institute of Land Policy. 2017. *Growing Water Smart Workbook: The Water Land-Use Nexus.* Phoenix, AZ.

Sonoran Institute and Lincoln Institute of Land Policy. 2018. *Growing Water Smart RFP.* Phoenix, AZ.

Sonoran Institute. 2017. *Growing Water Smart: Community Self-Assessment Questions.* Phoenix, AZ.

South Metro Water Supply Authority. 2017. *Model Regional Water Efficient Landscape and Irrigation Ordinance.* Denver, CO.

Southern Nevada Water Authority. 2018. *Water Smart Landscapes Rebate.* Las Vegas, NV.

State of Colorado. 2015. *Colorado's Water Plan.* Denver, CO.

Stoker, Philip, Gary Pivo, Carol Howe, Vicki Elmer, Alexandra Stoicof, Jacob Kavkewitz, and Neil Grigg. 2018. *Joining-Up Urban Water Management with Urban Planning and Design.* Denver, CO: Water Research Foundation.

Tarlock, A. Dan, and Sarah B. Van de Wetering. 2013. "Western Growth and Sustainable Water Use: If There Are No 'Natural Limits' Should We Worry About Water Supplies?" Missoula, MT: Public Land & Resources Law Review, 18 July.

Thomas, Harold, Brandon Ruiz, and Marjo Curgus. 2018. Growing Water Smart Webinars. Phoenix, AZ: Sonoran Institute.

U.S. Environmental Protection Agency. 1998. *USEPA Water Conservation Plan Guidelines.* 1998. Washington, D.C.

U.S. Environmental Protection Agency. 2012. *WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities.* Washington, D.C.

U.S. Environmental Protection Agency. 2016. *Community Solutions for Stormwater Management: A Guide for Long-Term Planning.* Washington, D.C.

U.S. Environmental Protection Agency. 2018. *WaterSense.* Washington, D.C.

U.S. Green Building Council. 2018. *LEED v4.* Atlanta, GA.

U.S. Green Building Council. *Water Strategies in LEED v4.* Atlanta, GA.

Urban Water Center. 2018. *Integrated Urban Water Model.* Fort Collins, CO: Colorado State University.

Whitler, John and Jennifer Warner. 2014. *WRF/APA Integrated Urban Water Management for Planners.* Chicago, IL: American Planning Association and Water Research Foundation.

Wright Water Engineers. 2008. *Green Industry Best Management Practices (BMPs) for the Conservation and Protection of Water Resources in Colorado: Moving Toward Sustainability.* Denver, CO: The Green Industries of Colorado.

APPENDIX B: WORKSHEETS TO GUIDE SELECTION PROCESS

WORKSHEET D - IDENTIFICATION AND SCREENING OF FOUNDATIONAL ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification		Qualitative Screening [5]					Carry to Evaluation [6]	Reason for Elimination [7]
		Existing/ Potential Activity [3]	Targeted Customer Category [4]	*Enter screening criteria*	*Enter screening criteria*	*Enter screening criteria*	*Add additional screening criteria*	Notes on Additional Pros/Cons to Consider		
Metering (BP1)	V, VII									
Automatic Meter Reading Installation and Operations										
Submetering for Large Users (Indoor and Outdoor)										
Meter Testing and Replacement										
Meter Upgrades										
Identify Unmetered/Unbilled Treated Water Uses										
Add additional activities										
Data Collection - Monitoring and Verification (BP2)										
Frequency of Meter Reading										
Tracking Water Use by Customer Type										
Upgrade Billing System to Track Use by Sufficient Customer Types										
Tracking Water Use for Large Customers										
Area of Irrigated Lands in Service Area (e.g. acres)										
Add additional activities										
Water Use Efficiency Oriented Rates and Tap Fees (BP1)	VII, VIII									
Volumetric Billing										
Water Rate Adjustments										
Frequency of Billing										
Inclining/Tiered Rates										
Water Budgets										
Tap Fees with Water Use Efficiency Incentives										
Add additional activities										
System Water Loss Management and Control (BP3)	V									
System Wide Water Audits										
Control of Apparent Losses (with Metering)										
Leak Detection and Repair										
Water Line Replacement Program										
Add additional activities										
Planning (BP2)										
Integrated Water Resources Plans										
Master Plans/Water Supply Plans										
Capital Improvement Plans										
Feasbility Studies										
Add additional activities										
Staff (BP4)										
Water Conservation Coordinator										
Add additional activities										
Integration of Land Use Efforts	IV(f)(i)									
Establish Regular Contact and Information Sharing										
Align Data and Information Used										
Establish Coordinated Procedures for Post-Occupancy Monitoring and Enforcement										
Integrate Water Considerations into the Development Approval Process										
Integrate Long Term Land Use and Water Planning										
Add additional activities										

Instructions:

[1] This column provides a list of possible activities & identifies the Best Practice activity as defined in the Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is "Existing" or a "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[5] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[6] Based on the screening process, indicate which activities will be carried onto the the evaluation phase with an "X".
[7] If eliminated via screening, comment on why.

WORKSHEET E - IDENTIFICATION AND SCREENING OF TARGETED TECHNICAL ASSISTANCE & INCENTIVES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification					Qualitative Screening [6]					Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]	*Enter screening criteria*	*Enter screening criteria*	*Enter screening criteria*	*Add additional screening criteria*	Notes on Additional Pros/Cons to Consider		
			Level 1 Municipal Uses	Level 2 Customers with the Largest Water Use	Level 3 Customer Type(s) in Service Area								
Installation of Water Efficient Fixtures and Appliances	I												
Indoor Audits													
Toilet Retrofits													
Urinal Retrofits													
Showerhead Retrofits													
Faucet Retrofits (e.g. aerator installation)													
Water Efficient Washing Machines													
Water Efficient Dishwashers													
Efficient Swamp Cooler and Air Conditioning Use													
Add additional activities													
Low Water Use Landscapes	II												
Drought Resistant Vegetation													
Removal of Phreatophytes													
Irrigation Efficiency Evaluations/Outdoor Water Audits													
Outdoor Irrigation Controllers													
Irrigation Scheduling/Timing													
Rain Sensors													
Residential Outdoor Meter Installations													
Xeriscape													
Other Low Water Use Landscapes													
Irrigation Equipment Retrofits													
Add additional activities													
Water- Efficient Industrial and Commercial Water-Using Processes	III												
Specialized Nonresidential Surveys, Audits and Equipment Efficiency Improvements													
Commercial Indoor Fixture and Appliance Rebates/Retrofits													
Cooling Equipment Efficiency													
Restaurant equipment													
Add additional activities													
Incentives	X												
Toilet Rebates													
Urinal Rebates													
Showerhead Rebates													
Water Efficient Faucet or Aerator Rebates													
Water Efficient Washing Machine Rebates													
Water Efficient Dishwasher Rebates													
Efficient Irrigation Equipment Rebates													
Landscape Water Budgets Information and Customer Feedback													
Turf Replacement Programs/Xeriscape Incentives													
Give-aways													
Add additional activities													
Integration of Land Use Efforts	IV(f)(i)												
Developer Incentives to Reduce Water Demand													
Conservation-Oriented Tap Fees													
Water Efficient Land Development Patterns													
Model Landscape Plans													
Incentives for Reduced Irrigation													
Water-Smart Home Options													
Become a WaterSense Partner													
Low Water Use Demonstration Homes													
Water Audits													
Rainwater Reuse													
Add additional activities													

Instructions:

[1] This column provides a list of activities & if applicable, identifies the Best Practice activity as defined under *Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado*. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] Specify which level the historical/potential activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[7] Based on the screening process, indicate which activities will be carried on the the evaluation phase with an "X".
[8] If eliminated via screening, comment on why.

WORKSHEET F - IDENTIFICATION AND SCREENING OF ORDINANCES AND REGULATIONS

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification					Qualitative Screening [6]					Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]	*Enter screening criteria*	*Enter screening criteria*	*Enter screening criteria*	*Add additional screening criteria*	Notes on Additional Pros/Cons to Consider		
			Level 1 Customer Type(s) within the Existing Service Area	Level 2 New Development	Level 3 Point of Sales on Existing Building Stock								
General Water Use Regulations	IX												
Water Waste Ordinance (BP 5)													
Time of Day Watering Restriction													
Day of Week Watering Restriction													
Water Overspray Limitations													
Add additional activities													
Landscape Design/Installation Rules and Regulations	IX												
Rules and Regulations for Landscape Design/Installation (BP 9)													
Landscaper Training and Certification (BP 8)													
Irrigation System Installer Training and Certification (BP 8)													
Soil Amendment Requirements (BP 9)													
Turf Restrictions (BP 9)													
Irrigation Equipment Requirements													
Outoor Water Audits/Irrigation Efficiency Regulations (BP 10)													
Outdoor Green Building Construction (BP 8,9)													
Add additional activities													
Indoor and Commercial Regulations	IX												
High Efficiency Fixture and Appliance Replacement (BP 12)													
Commercial Cooling and Process Water Requirements (BP 14)													
Green Building Construction (BP 12)													
Indoor Plumbing Requirements (BP 12)													
City Facility Requirements (BP 12)													
Required Indoor Residential Audits (BP 13)													
Required Indoor Commercial Audits (BP 14)													
Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.)													
Add additional activities													
Integration of Land Use Efforts	IV(f)(i)												
Examine Existing Land Use Regulations for Barriers and Conflicts													
Adopt or Strengthen Water-Related Ordinances or Regulations													
Water Conservation in New Development, Re-Development, and Annexation													
Incorporate Water Efficiency into Zoning Codes and Rezoning Procedures													
Subdivision or Site Plan Regulations that Include Water Conservation													
Implement Requirements that Contribute to Water Efficiency and Compact Infrastructure													
Water Efficient Landscape Code													
Building and Plumbing Codes													
Ordinances Promoting Efficient Fixtures in Existing Buildings													
Regional Coordination of Water Policy and Procedures													
Add additional activities													

Instructions:

[1] This column provides a list of possible activities & if applicable identifies the Best Practice activity as defined under Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[7] Based on the screening process, indicate which activies will be carried on the the evaluation phase with an "X".
[8] If eliminated via screening, comment on why.

WORKSHEET G - IDENTIFICATION AND SCREENING OF EDUCATION ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification						Qualitative Screening [6]					Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]		*Enter screening criteria*	*Enter screening criteria*	*Enter screening criteria*	*Add additional screening criteria*	Notes on Additional Pros/Cons to Consider		
			Level 1 One-Way	Level 2 One-Way with Feedback	Level 3 Two-way communication									
Customer Education (BP6)	VI													
Bill Stuffers														
Newsletter														
Newspaper Articles														
Mass Mailings														
Web Pages														
Water Fairs														
K-12 Teacher and Classroom Education Programs														
Message Development/Campaign														
Interactive Websites														
Social Networking (e.g Facebook)														
Customer Surveys														
Focus Groups														
Citizen Advisory Boards														
Add additional activities														
Technical Assistance	VI													
Customer Water Use Workshops														
Landscape Design and Maintenance Workshops														
Xeriscape Demonstration Garden														
Water Conservation Expert Available														
Add additional activities														
Integration of Land Use Efforts	IV(f)(i)													
Consistent Online Information														
Water Provider and Planning Department Work Together to Educate the Public														
Lead by Example														
Jointly Engage with the Development Community and HOAs														
Share Success Stories and Case Studies with Other Communities and the Public														
Coordinate Education and Outreach Across the Region														
Add additional activities														

Instructions:

[1] This column provides a list of possible activities & if applicable identifies the Best Practice activity as defined under Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.

[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.

[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.

[4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.

[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.

[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.

[7] Based on the screening process, indicate which activities will be carried on the the evaluation phase with an "X".

[8] If eliminated via screening, comment on why.

Addendum to 2012 Sample of a Water Efficiency Plan

City of Shallow Creek and Shallow Creek Water District Fiction County, CO

January 2019

Prepared for:

Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman St., Room 721
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PURPOSE AND SCOPE OF THIS SAMPLE PLAN ADDENDUM

This Addendum to the CWCB's "Sample of a Municipal Water Efficiency Plan" dated August 2012 (2012 Sample Plan) is based on the "Best Practices for Implementing Water Conservation and Demand Management through Land Use Planning Efforts" dated January 2019 (2019 Guidance Addendum). It is intended to supplement the 2012 Sample Plan by providing examples of the activities promoting water conservation that may be adopted by water providers in conjunction with the land use authorities and planning departments with jurisdiction over their service areas.

Some water providers submitting Water Efficiency Plans are sub-entities within the same municipal government structure as the planning department, both ultimately reporting to the same city or town council. Other water providers are independent of the land use authorities with jurisdiction over their service areas and may serve regions within multiple different land use jurisdictions. The opportunities and challenges in the implementation of land use measures for these two different types of water providers may be quite diverse. Accordingly, this Sample Plan Addendum includes separate sections for those water providers that are part of the local government with land use authority (Water Providers With Land Use Authority) and those that are not part of a municipal government and serve areas governed by other authorities (Water Providers Without Land Use Authority). Water providers within a municipal government that also serve areas outside of the municipal jurisdiction may want to refer to both sections.

This Sample Plan Addendum contains paragraphs and sections addressing various land use measures that might be adopted by water providers in concert with the applicable land use entity. These examples are taken from the 2019 Guidance Addendum and represent only a subset of the many possible land use efforts described there. Used together, the 2019 Guidance Addendum and this Sample Plan Addendum are intended to provide a comprehensive tool for the incorporation of land use efforts into Water Efficiency Plans.

The discussion of land use measures will be dispersed throughout many sections in an actual Water Efficiency Plan. This Sample Plan Addendum includes only the land use-related discussions with reference to the broader sections in which they would occur. Many water providers have adapted the organizational structure of the template in the 2012 Guidance and 2012 Sample Plan to better fit their needs; accordingly, the organizational structure used here should be considered exemplative, not mandatory.

This Sample Plan Addendum continues the example of the fictitious municipality of Shallow Creek located in Fiction County, as described in the 2012 Sample Plan. In the section for Water Providers with Land Use Authority, the water utility within the Public Works Department of the City of Shallow Creek serves the entirety of the City and no areas outside the City. In the section for Water Providers Without Land Use Authority, the water provider is the Shallow Creek Water District, which serves certain areas in unincorporated Fiction County, the City of Shallow Creek, and the Town of Spruce.

SAMPLE PLAN ADDENDUM ADDRESSING LAND USE MEASURES FOR WATER PROVIDERS WITH LAND USE AUTHORITY

Provided below are examples of sections and paragraphs describing land use measures that may be adopted by municipal water providers. The section headings in this Sample Plan Addendum correspond to those in the 2012 Sample Plan. These land use-related discussions should be integrated into the same sections in a Water Efficiency Plan that will also contain discussions of all applicable water conservation and efficiency measures considered and undertaken.

Executive Summary

Add to "Profile"

The City's water utility functions are managed within the Public Works Department. The Public Works Director, assisted by the Deputy Director for Water Resources, oversees the City's water utility. The water utility serves all development within the City boundaries and does not serve any areas outside the City limits.

Development in the City of Shallow Creek is overseen by the Community Planning Department (Planning Department), which reports to the City Manager and ultimately, the City Council. The Planning Department is led by the Community Planning Director who is also known as the City Planner (City Planner). Review of development proposals occurs first by Planning Department personnel, then by a volunteer Planning and Zoning Commission, which makes recommendations to the City Council as the ultimate decision-maker. The Planning Department's responsibilities include:

- Planning for long term economic vitality, environmental quality and development design quality, demonstrated through the Shallow Creek Community Comprehensive Plan.
- Consideration of proposals for new development and zoning changes within the City and formation of recommendations to the Planning and Zoning Commission and the City Council.
- Managing building permit applications, reviewing building plans and inspecting work in progress to ensure public health and safety.
- Ensuring compliance with the City of Shallow Creek's Municipal Code and response to citizens' concerns.

The City has a comprehensive plan that provides the vision for the community and includes policies on development and re-development. The comprehensive plan addresses water supply and conservation as follows:

"Land use density and intensity should correspond to existing and/or planned infrastructure capacity and natural resource capacity, including water resources. The City of Shallow Creek will promote infill development, where possible, in order to more efficiently manage the resulting growth in infrastructure so as to minimize costs of operations and maintenance. Development proposals will be reviewed by the City of Shallow Creek to ensure that there are no potential adverse impacts to the City's water supply as a result of the development."

Add to "Efficiency Program"

The City has begun to better integrate its water utility and land use planning functions. The City recognizes that the initial configuration of new development will significantly influence the amount of water used over time by that development, and the overall water use within the City. The Public Works and Planning Departments are exploring optimal methods for ensuring that new and existing development within the City is water efficient. Landscape requirements and outdoor watering restrictions have been adopted and the City is planning to require water conservation as a component of its water adequacy determination and to modify its building code to require adherence to green building standards, all as described further below.

Section 2.3 Past and Current Demand Management Activities

New subsection on Land Use Efforts

Land Use Efforts. The City's Public Works Director and the City Planner meet quarterly to discuss matters of mutual concern, such as development trends, water supply constraints, infrastructure plans, population projections, changes to the zoning map, and the anticipated water demands for the next ten years. The water utility has worked with the Planning Department and the City Council to implement a water waste ordinance, outdoor watering restrictions, landscape requirements for new homes, and a xeriscape demonstration garden. The estimated savings as a result of these activities is included in Table 5, and totals approximately 9.2 AF/year (2.4 AF/year from the "development proposal review" in the section on Foundational Activities and 6.8 AF/year from the activities in the section on Ordinances and Regulations).

Table 5: Current and past water efficiency program measures, land use partners, and estimated water savings (based on Worksheet A from CWCB Guidance Document)

[This Table expands Table 5 from the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Water Efficiency Activities	Land Use Jurisdiction Partner	Period of Implementation	Annual Water Savings for Past Five Years (AF)					Total Five-Year Water Savings	Average Annual Water Savings
			2007	2008	2009	2010	2011		
Foundational Activities									
Increasing block rate structure		**1984-present**	5	5	5	5	5	25	5
Passive indoor savings (Res. & CII)		**1994-present**	25	25	25	25	25	125	25
Regular meetings	***County, City***	***2010-present***						*0*	*0*
Development proposal review	***County***	***2002-present***	*4*	*0*	*2*	*3*	*3*	*12*	*2.4*
Subtotal			**34**	**30**	**32**	**33**	**33**	**162**	**32.4**
Targeted Technical Assistance and Incentives									
Toilet rebate program		**2007-2009**	3	5	5			13	4.3
Clothes washer rebate program		**2007-2010**	3	3	6	6		18	4.5
Xeriscape loan program		**2009-present**			6	8	12	26	8.7
Commercial indoor audits		**2008-2010**		3	4	6		13	4.3
Assistance with CII efficiency plans		**2007-present**	2	3	4	4	4	17	3.4
Subtotal			**8**	**14**	**25**	**24**	**16**	**87**	**17.4**
Ordinances and Regulations									
Outdoor watering time restrictions	**County, City**	**1999-present**	4	4	4	4	4	20	4
Water waste ordinance	**County, City**	**2002-present**						0	0
Landscape regs. for new homes	**County, City**	**2004-present**	5	7	0	0	2	14	2.8
Subtotal			**9**	**11**	**4**	**4**	**6**	**34**	**6.8**
Education Activities									
Provide historic use data on water bill		**2010-present**							
Public information and education	**County, City, Town**	**1993-present**							
Xeriscape demonstration garden	**City**	**1999-present**							
Subtotal			**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Total Savings	51	55	61	61	55	283	**56.6**

Section 3.1 Water Efficiency and Water Supply Planning

Add to "Revised Demand Forecast"

Incorporating water conservation into new development approvals through better integration of the water utility and planning functions of the City will decrease the amount of water required per unit for new development. Accordingly, a decreased amount of water per unit can be used to project future demand. This impacts the amount of new water supplies required for acquisition and the required capacity of water treatment, water distribution, and wastewater treatment infrastructure. The impact of the projected decrease in water consumption as a result of land use measures is taken into account in Figures 10 and 11. Water savings resulting from land use measures have been estimated using Colorado State University's Integrated Urban Water Model.

New Section 3.3 Summary of Land Use Activities

[New Section 3.3 will be used to summarize the City's water and land use integration activities that may be scattered in other sections throughout the Plan.]

Past and Current Land Use Activities

- Adopted water waste ordinance – "Water Waste Prohibited. Water shall be used only for beneficial purposes and shall not be wasted."
- Adopted permanent outdoor watering restrictions – Outdoor watering is prohibited during the hours of 10am to 5pm from May through October. Residential outdoor watering may occur on Tuesday, Thursday, and Saturday for odd-numbered, and on Wednesday, Friday, and Sunday for even-numbered addresses.
- Adopted a landscape ordinance that limits the amount of turf installed and provides a list of low-water use plants that must be utilized by new residential and commercial development.
- Planted and maintained a xeriscape demonstration garden on the grounds at City Hall.

Planned Land Use Activities

The water utility and Planning Department have reviewed and considered all of the activities identified as "Foundational" in the CWCB's Best Practices for Implementing Water Conservation and Demand Management Through Land Use Planning Efforts, Addendum to 2012 Guidance Document and are planning to implement some of the recommended activities in each subsection. The Planning Department and Public Works Department have already established regular contact, but will now form a Water and Land Use Planning Team with members from each department and ensure that the members of the team are educated on the goals,

opportunities, challenges, and anticipated projects of each department. A self-assessment process is underway, and the results will be used to inform future collaboration.

The water utility and the Planning Department are working together on future population, land use, and water demand estimates, using the same publicly available data. A procedure has been established for communication of water-related conditions in development and zoning change approvals and for follow-up and enforcement by the water utility. A designated representative of the water utility will be included in all pre-application meetings between development proposal applicants and Planning Department personnel for the purpose of providing information about how adoption of water efficiency or conservation measures in the proposed development can impact overall water use and the need for new infrastructure, thereby potentially reducing the cost of tap fees, water dedications, and required infrastructure improvements.

The Water District and the City are working together to allocate responsibilities for post-occupancy enforcement of the water-related requirements in development approvals.

After consultation between the water utility and the Planning Department, the Planning Department is recommending to the Planning and Zoning Commission and the City Council a modification of the water element in the City's comprehensive plan. The proposed revision will include a full description of the City's water supplies and demands, now and into the future, compared to population growth and development projections. The comprehensive plan will detail the past and current land use activities identified above, as well as state the City's water conservation goals. The revised water element will also state the City's desire to minimize "buy and dry" transactions in surrounding agricultural land made necessary by water supply needs and to maintain the quantity and quality of water flowing in regional streams and rivers.

The water utility and Planning Department are working together to make water conservation part of the demonstration of the adequacy of water supplies for new development. This means that developers will be required to show that they have incorporated water conservation techniques into the development proposal. This will allow developers to select the water conservation techniques that best fit with the development proposal. The development permit application will include a water demand assessment, quantifying the amount of water expected to be used by the development, per unit and total volume at buildout. The inclusion of water conservation measures will be required as one of the checklist items in the Planning Department's review of any new development application.

As part of this same discussion, the Public Works and Planning Departments are also exploring whether the 50-unit minimum for which a water adequacy determination is required by state law is appropriate in light of the impacts on the City's water supplies or whether the minimum should be decreased for development within the City of Shallow Creek. The results of that discussion will be proposed and recommended to the Planning and Zoning Commission and the City Council for adoption.

The water utility and Planning Department are working together to "right-size" the City's water dedication requirements. Conservation measures that have already been adopted and those anticipated have resulted in decreased water usage per single-family equivalent unit. That reduction can allow a correspondingly decreased water dedication requirement, while maintaining appropriately conservative safety factors, and further the City's goal of minimizing the economic and environmental impacts of future water supply acquisition.

The City intends also to create developer incentives to further reduce water demand, incorporate water efficiency into its zoning code and rezoning procedures, offer a turf replacement rebate, and coordinate education and outreach across the region. As a developer incentive, the City will establish a building permit fee refund program for new development that incorporates water conservation measures over and above existing requirements. For zoning and rezoning, the City will revise its Planned Unit Development (PUD) requirements to include water conservation. A turf replacement rebate is being investigated to reduce irrigation on all outdoor properties (residential, commercial, and industrial).

Education and outreach across the region will be coordinated in tandem with a "Know Your Water" campaign, which the City will start and then work to expand over a three-year period. The water utility and Planning Department will convene a meeting of other water suppliers and land use authorities in the Shallow Creek and Fiction County region in order to share educational resources with other municipalities and water providers as needed.

All of the land use measures listed above are further described in Section 4 below.

Section 4 Selection of Water Efficiency Activities

Add at end of introductory material on screening criteria

In addition to the factors of Efficiency and Practicality, Estimated Cost per AF, and Water Savings identified above, two additional factors were used to evaluate and screen potential land use activities. These two factors are:

- Likely support by new home customers, and therefore, developers, for proposed land use measures.
- Preference for expansion or modification of existing regulations rather than completely new requirements.

These factors were incorporated into the selection process described below for consideration of land use measures.

The addition of land use activities within the existing suite of water efficiency activities undertaken by the City has increased projected water savings from 2,725 AF/year to 2,850 AF/year—an addition of 125 AF/year in savings—as shown in Table 9 below.

4.2 Components of Water Efficiency Plan

New Section 4.2.5 Land Use Activities

The final component of the efficiency plan is the suite of coordinated land use and water conservation activities described in Section 3.3 above and, in additional detail, in Section 4.3 below. These activities are collectively estimated to result in additional savings of 125 AF/year when fully implemented.

4.3 Demand Management Activities

Revised Tables 8 and 9 (on following pages)

Table 8: New and updated water efficiency activities

[This Table expands Table 8 in Section 4.3 of the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Water Efficiency Activities	Sectors Impacted	Implementation Period of New Activities
Foundational Activities		
Individualized, Informational Water Budget Program	All, indoor & outdoor	2013 - 2036
Enhanced Water Loss Control	Municipal	2012 - 2036
Form Land Use Planning Team and Conduct Self-Assessment	*All, indoor & outdoor*	*2019*
Joint Estimate of Population and Projected Water Demand	*All, indoor & outdoor*	*2019 - 2036*
Water Utility Rep Participates in Pre-application Meetings	*All, indoor & outdoor*	*2019 - 2036*
Post-occupancy Enforcement of Water Conditions	*All, indoor & outdoor*	*2019 - 2036*
Enhance Water Element in Comprehensive Plan	*All, indoor & outdoor*	*2019 - 2020*
Conservation Required to Demonstrate Water Adequacy	*All, indoor & outdoor*	*2020 - 2036*
Targeted Technical Assistance and Incentives		
Expanded Multi-Family Toilet and Clothes Washer Rebates	Multi-family, indoor	2012 - 2036
Targeted Irrigation Audits and Landscape Efficiency Rebates	All, outdoor	2012 - 2036
Pre-Rinse Spray Valve Direct Installation	CII, indoor	2012 - 2036
Cooling Tower Efficiency Tune Ups	CII, indoor	2012 - 2036
Building Permit Fee Refund Program	*All, indoor & outdoor*	*2019 - 2036*
Turf Replacement Refund Program (5-year pilot program)	*All, outdoor*	*2019 - 2023*
Ordinances and Regulations		
Conservation Oriented Tap Fee Ordinance	CII, indoor & outdoor	2013 - 2036
All New Residential Development Must Meet EPA WaterSense New Home Specifications	SF & MF residential, indoor & Outdoor	2014 - 2036
Water Efficient Landscape Ordinance	All, outdoor	2011 - 2036
Certification of Landscape Professionals	All, outdoor	2010 - 2036
PUD Regulations Amended to Require Outdoor Conservation	*All, outdoor*	*2020 - 2036*
Water Dedication Requirements "Right-Sized"	*All, indoor & outdoor*	*2019 - 2036*
Education Activities		
Public Information and Education	All	2010 - 2036
K-12 Education	SF & MF residential	2010 - 2036
"Know Your Water" Campaign	*SF & MF residential*	*2019 - 2036*
Coordinate Education and Outreach Across the Region (3-year Campaign)	*All, indoor & outdoor*	*2019 - 2021*

Table 9: Projected water savings by customer category

[This Table expands Table 9 in Section 4.3 of the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Sector	Water Efficiency Activities Impacting Sector	Projected Water Savings 2012-2036 (AF)
SF & MF Residential – Indoor	Individualized, Informational Water Budget Program	1135
	Expanded Multi-Family Toilet and Clothes Washer Rebates	
	All New Residential Development Must Meet EPA WaterSense New Home Specifications	
	K-12 Education	
	"Know Your Water" Campaign	
SF & MF Residential – Outdoor	Individualized, Informational Water Budget Program	635
	Targeted Irrigation Audits and Landscape Efficiency Rebates	
	All New Residential Development Must Meet EPA WaterSense New Home Specifications	
	Water Efficient Landscape Ordinance	
	Certification of Landscape Professionals	
	K-12 Education	
	"Know Your Water" Campaign	
	PUD Regulations Amended to Require Outdoor Conservation	
CII Indoor & Outdoor & Dedicated Irrigation	Targeted Irrigation Audits and Landscape Efficiency Rebates	345
	Pre-Rinse Spray Valve Direct Installation	
	Cooling Tower Efficiency Tune Ups	
	Conservation Oriented Tap Fee Ordinance	
	Water Efficient Landscape Ordinance	
	Certification of Landscape Professionals	
	PUD Regulations Amended to Require Outdoor Conservation	
Dedicated Irrigation	Water Reuse System	635
	Turf Replacement Program	
All	Public Information and Education	100
	Form Land Use Planning Team and Conduct Self-Assessment	
	Joint Estimate of Population and Projected Water Demand	
	Water Utility Rep Participates in Pre-application Meetings	
	Post-occupancy Enforcement of Water Conditions	
	Enhance Water Element in Comprehensive Plan	
	Building Permit Fee Refund Program	
	Conservation Required to Demonstrate Water Adequacy	
	Water Dedication Requirements "Right-Sized"	
	Coordinate Education and Outreach Across the Region (3-year Campaign)	
Total Projected Savings		**2,850**

Section 4.3.1 Foundational Activities

New subsection on Land Use Measures

The water utility within the Public Works Department and the Planning Department have formed a Water and Land Use Planning Team with members from each department. This integrated team will educate its members on the goals, opportunities, challenges, and anticipated projects of each department related to water supplies and future development. The water utility and Planning Department are conducting a self-assessment for the purpose of better understanding the degree to which some integration of the land use and water functions has already occurred and the areas in which integration is lacking.

The Water and Land Use Planning Team is working to estimate future population in the City, based on current land use designations in the comprehensive plan. Future water demand is being projected from these population estimates, based on published information on water use by various types of residential and commercial development.

A designated representative of the water utility will be included in all pre-application meetings between development proposal applicants and Planning Department personnel for the purpose of providing information about how adoption of water efficiency or conservation measures in the proposed development can impact overall water use. Adoption of measures that reduce anticipated water demand may decrease the up-front cost to developers in the form of tap fees and, potentially, reduce or eliminate the need for new infrastructure that the development might be required to pay for. This information is provided for the purpose of allowing prospective developers to make economic and market-based decisions based on information concerning the water impacts of the proposed development.

A procedure has been established for communication of water-related conditions in development and zoning change approvals and for follow-up and enforcement by the water utility. The water utility and Planning Department are working together to allocate responsibilities for post-occupancy enforcement of the water-related requirements in development approvals.

As described in Section 3.3 above, the Planning Department has recommended to the Planning and Zoning Commission an addition to the water element in the City's comprehensive plan to include a full description of the City's water supplies and demands, now and into the future, compared to population growth and development projections. The revised water element will also state the City's desire to minimize "buy and dry" transactions in surrounding agricultural land made necessary by water supply needs and to maintain the quantity and quality of water flowing in regional streams and rivers, in addition to the previously stated goals of minimizing the costs of infrastructure and avoiding adverse impact on water supplies.

The Planning Department, in consultation with the water utility, is making water conservation part of the demonstration of the adequacy of water supplies for new development pursuant to Colo. Rev. Stat. § 29-20-303. Developers will be required to show that they have incorporated water conservation techniques into the development proposal. Developers are able to select the additional water conservation techniques that best fit with the development proposal. The development permit application will also include a water demand assessment, quantifying the amount of water expected to be used by the development, per unit and total volume at buildout. The inclusion of water conservation measures will now be required as one of the checklist items in the Planning Department's review of any new development application.

The Planning Department and Public Works Department are examining the 50-unit minimum for which a water adequacy determination is required by state law to determine whether this minimum is sufficient to protect against adverse impacts to the City's water supplies. The two departments are considering a lower threshold of development that would require a water adequacy determination. The results of this discussion will be proposed and recommended to the Planning and Zoning Commission and the City Council for adoption.

Section 4.3.2 Targeted Technical Assistance and Incentives

New subsection on Land Use Measures

The Planning Department is establishing a building permit fee refund program for new development that incorporates certain listed water conservation measures that exceed those already required by the landscape ordinance. Standards are being established for further reductions in turf areas for new development and developers choosing to follow such standards will receive a 50% refund of building permit fees associated with the development. The refund will be provided after inspection by the City of the established landscape. The funding for the partial refund is being provided by the water utility and the Planning Department.

The water utility, in consultation with the Planning Department, is instigating a turf replacement program for residential and commercial property. Standards are being developed for appropriate replacement materials that will consume less water while not adversely impacting stormwater flows and maintaining the quality of the residential properties and neighborhoods.

Section 4.3.2 Ordinances and Regulations

New subsection on Land Use Measures

The Planning Department, working with the water utility, is proposing an amendment to the City's Planned Unit Development (PUD) regulations that will require adherence to water conservation best practices, including Water Sense outdoor fixtures, landscaping standards, and

soil amendment requirements. The potential water savings associated with these proposed changes are being estimated and the results will be provided to the Planning and Zoning Commission and City Council with an appropriate recommendation.

The water utility and Planning Department are working together to "right-size" the City's water dedication requirements. Conservation measures that have already been adopted and those anticipated have resulted in decreased water usage per single-family equivalent unit. That reduction can allow a correspondingly decreased water dedication requirement, while maintaining appropriately conservative safety factors, and further the City's goal of minimizing the economic and environmental impacts of future water supply acquisition.

Section 4.3.2 Education Activities

New subsection on Land Use Measures

The water utility and the Planning Department are jointly sponsoring a "Know Your Water" campaign designed to help customers and citizens understand the source of the City's water supplies and their limitations and challenges. Information on these topics will be provided to all prospective developers and included in water utility billing statements. It will also be available on the web pages of both departments.

The water utility and Planning Department will convene a meeting of other water suppliers and land use authorities in the Shallow Creek and Fiction County region. The purpose of this meeting is to explore joint messaging and a jointly designed and operated regional education campaign on drought and water efficiency. This regional campaign is intended as a three-year effort.

Section 5.1 Implementation Plan

Betty Bodean, Water Conservation Coordinator for the City, will work directly with the City Planner, Craig Waters, to implement the land use measures described in this Plan. Land use measures are included in the implementation schedule shown in Table 13.

Table 13: Water efficiency activity implementation schedule

[This Table expands Table 13 in Section 5.2 of the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Water Efficiency Activities	Implementation Period of New Activities
Foundational Activities	
Individualized, Informational Water Budget Program	2013 - 2036
Enhanced Water Loss Control	2012 - 2036
Form Land Use Planning Team and Conduct Self-Assessment	*2019*
Joint Estimate of Population and Projected Water Demand	*2019 - 2036*
Water Utility Rep Participates in Pre-application Meetings	*2019 - 2036*
Post-occupancy Enforcement of Water Conditions	*2019 - 2036*
Enhance Water Element in Comprehensive Plan	*2019 - 2020*
Conservation Required to Demonstrate Water Adequacy	*2020 - 2036*
Targeted Technical Assistance and Incentives	
Expanded Multi-Family Toilet and Clothes Washer Rebates	2012 - 2036
Targeted Irrigation Audits and Landscape Efficiency Rebates	2012 - 2036
Pre-Rinse Spray Valve Direct Installation	2012 - 2036
Cooling Tower Efficiency Tune Ups	2012 - 2036
Building Permit Fee Refund Program	*2019 - 2036*
Turf Replacement Refund Program (5-year pilot program)	*2019 - 2023*
Ordinances and Regulations	
Conservation Oriented Tap Fee Ordinance	2013 - 2036
All New Residential Development Must Meet EPA WaterSense New Home Specifications	2014 - 2036
Water Efficient Landscape Ordinance	2011 - 2036
Certification of Landscape Professionals	2010 - 2036
PUD Regulations Amended to Required Outdoor Conservation	*2020 - 2036*
Water Dedication Requirements "Right-Sized"	*2019 - 2036*
Education Activities	
Public Information and Education	2010 - 2036
K-12 Education	2010 - 2036
"Know Your Water" Campaign	*2019 - 2036*
Coordinate Education and Outreach Across the Region (3-year Campaign)	*2019 - 2021*

Section 5.2 Monitoring Plan

Data on water usage will be collected and maintained as described in Table 14 (Worksheet K). Curated information from these data sets of water use will be shared at every meeting of the Water and Land Use Planning Team. Additionally, the water utility and Planning Department will coordinate every year to present this information and updates about water efficiency programs to the City Council.

The Planning Department will convey immediately to the water utility any water-related conditions contained in development approvals and zoning changes. The entities will allocate responsibility for monitoring compliance and enforcement action.

In order to monitor the implementation and effectiveness of land use practices, the Planning Department will collect and maintain data on building permit refunds, and the water utility will collect and maintain data on per unit water use, turf replacement square feet implemented, and post-occupancy enforcement actions. This monitoring data is reflected in Table 14 (Worksheet K).

Table 14: Worksheet K – Selection of Demand Data for Efficiency Plan Monitoring

[This Table expands Table 14 in Section 5.2 of the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Monitoring Data	HB 10-1051 Reporting Requirement			Selection		Entity/Staff Responsible for Data Collection and Evaluation	Schedule/Timing of Monitoring
	Annual	Monthly		Annual	Monthly		
Total Water Use							
Total treated water produced (metered at WTP discharge)				√		Betty Bodean	First quarter of the year.
Total treated water delivered (sum of customer meters)	√			√		Betty Bodean	First quarter of the year.
Raw non-potable deliveries				√		Betty Bodean	First quarter of the year.
Indoor and outdoor treated water deliveries				√		Betty Bodean	First quarter of the year.
Treated water peak day produced							
Raw water peak day produced/delivered							
Non-revenue water	√			√		Betty Bodean	First quarter of the year.
Building Permit Refunds					√	Craig Waters	First of each month.
Turf Replacement Square Feet Implemented					√	Betty Bodean	First of each month.
Post-Occupancy Enforcement Actions					√	Betty Bodean	First of each month.
Water Use by Customer Type							
Treated water delivered		√			√	Betty Bodean	First quarter of the year.
Raw non-potable deliveries					√	Betty Bodean	First quarter of the year.
Indoor and outdoor treated water deliveries				√		Betty Bodean	First quarter of the year.
Large users							
Unit water use (e.g. AF/account or AF/irrigated acre)					√	Betty Bodean	First of each month.
Other Demand Related Data							
Irrigated landscape (e.g. AF/acre or number of irrigated acres)				√		Betty Bodean	First quarter of the year.
Precipitation							
Temperature							
Evapotranspiration				√		Betty Bodean	First quarter of the year.
Drought index information							
Economic conditions							
Population				√		Betty Bodean	First quarter of the year.
New taps				√		Betty Bodean	First quarter of the year.

SAMPLE PLAN ADDENDUM ADDRESSING LAND USE MEASURES FOR WATER PROVIDERS WITHOUT LAND USE AUTHORITY

Provided below are examples of sections and paragraphs describing land use measures that may be adopted by water providers that are not part of a municipal governmental entity and serve areas for which land use authority is exercised by other entities. This example assumes that the water provider is the Shallow Creek Water District, a special district under Title 32 of the Colorado Revised Statutes, as opposed to the City of Shallow Creek as described in the 2012 Sample Plan and in the section above.

The section headings in this Sample Plan Addendum correspond to those in the 2012 Sample Plan. These land use-related discussions would be integrated into the same sections in a Water Efficiency Plan that will also contain discussions of all applicable water conservation and efficiency measures considered and undertaken.

Executive Summary

Add to "Profile"

The Shallow Creek Water District (Water District) serves properties in three different land use jurisdictions: certain areas of unincorporated Fiction County, the City of Shallow Creek, and the Town of Spruce. The land use function for each is described below.

Fiction County's Planning Department (County Planning Department) reviews development applications and provides information to the Fiction County Planning Commission, which in turn makes recommendations to the Board of County Commissioners. Fiction County's comprehensive plan contains no water element, but does provide that the County will develop and incorporate green building guidelines that address energy and resource efficiency, including water use efficiency.

Development in the City of Shallow Creek is overseen by the Community Planning Department (City Planning Department), which reports to the City Manager and ultimately, the City Council. The City Planning Department is led by the Community Planning Director who is also known as the City Planner (City Planner). Review of development proposals occurs first by City Planning Department personnel, then by a volunteer Planning and Zoning Commission, which makes recommendations to the City Council as the ultimate decision-maker. The City Planning Department's responsibilities include:

- Planning for long term economic vitality, environmental quality and development design quality, demonstrated through the Shallow Creek Community Comprehensive Plan.

- Consideration of proposals for new development and zoning changes within the City and formation of recommendations to the Planning and Zoning Commission and the City Council.
- Managing building permit applications, reviewing building plans and inspecting work in progress to ensure public health and safety.
- Ensuring compliance with the City of Shallow Creek's Municipal Code and response to citizens' concerns.

The City has a comprehensive plan that provides the vision for the community and includes policies on development and re-development. The comprehensive plan addresses water supply and conservation as follows:

> "Land use density and intensity should correspond to existing and/or planned infrastructure capacity and natural resource capacity, including water resources. The City of Shallow Creek will promote infill development, where possible, in order to more efficiently manage the resulting growth in infrastructure so as to minimize costs of operations and maintenance. Development proposals will be reviewed by the City of Shallow Creek to ensure that there are no potential adverse impacts to the City's water supply as a result of the development."

In the Town of Spruce, review of development applications is performed by the Town Planner, who makes recommendations to the Town Council. The Town has no comprehensive plan, but has design standards that seek to promote variety and visual interest compatible with the rural town atmosphere and to encourage structures that respect the environment and character of the Town. These design standards suggest native landscaping and water-conserving fixtures.

Add to "Efficiency Program"

The Water District has begun to better integrate its provision of water service with the long-range planning processes and development approvals of Fiction County and the City of Shallow Creek. The Water District recognizes that the initial configuration of new development will significantly influence the amount of water used over time by that development, and the overall water use within its service area. Because the Water District itself does not have land use authority, it has and will continue to work with the County and the City to explore optimal methods for ensuring that new and existing development is water efficient. As a result of this collaboration, both the County and the City have adopted water efficiency measures, and more are anticipated, all as described further below. The Water District will initiate better communication and collaboration with the Town of Spruce.

Section 2.3 Past and Current Demand Management Activities

New subsection on Land Use Efforts

Fiction County: The General Manager of the Shallow Creek Water District meets quarterly with the Planning Director for Fiction County to discuss matters of mutual concern within the portions of the Water District's service area in unincorporated areas of the county, such as development trends, water supply constraints, infrastructure plans, population projections, changes to the zoning map, and anticipated water demands for the next ten years. The Water District comments on all referrals from the County on subdivision proposals, noting particularly any additional infrastructure needs that the proposed development will instigate.

The Water District has worked with the County Planning Department to develop a water waste ordinance that was adopted by the Board of County Commissioners. After discussions between the Water District and the County Planning Department, the Water District's outdoor watering time restrictions have been adopted by the County Commissioners for all unincorporated areas within the County, even those outside of the Water District's service area. The Water District and the County Planning Department worked together to develop appropriate landscape regulations for new homes, to be included in the conditions applicable to all new development permits. The estimated savings as a result of these activities are included in Table 5.

City of Shallow Creek: The Shallow Creek Water District is housed in the same City-owned building as the City Planning Department. Regular interaction occurs between Water District and Planning Department personnel. The City has adopted a landscape ordinance, developed with help from the Water District, that limits the amount of turf installed and also provides a list of low-water use plants that must be utilized by new residential and commercial development. The Water District and City have collaborated to build a xeriscape demonstration garden on the grounds of the City facility, and offer regular tours of this demonstration garden to residents and developers. The Water District and City have also collaborated to adopt a water waste ordinance and outdoor watering time restrictions, resulting in an additional 4-acre feet of water savings annually. These savings are included in Table 5.

Town of Spruce: Interaction between the Water District and the Town of Spruce is more limited. Periodic meetings between the Water District General Manager and the Town Planner have occurred in the past, but have not been conducted on a regular basis. The Spruce Town Council's focus on expanding economic development within the Town boundaries has tended to supersede concerns about water efficiency. The Water District aspires to work with the Town to enact native landscaping standards and require water-conserving outdoor fixtures in new developments, in harmony with the Town's existing design standards that seek to promote variety and visual interest compatible with the rural town atmosphere and to encourage structures that respect the environment and character of the Town.

Table 5: Current and past water efficiency program measures, land use partners, and estimated water savings (based on Worksheet A from CWCB Guidance Document)

[This Table expands Table 5 from the 2012 Sample Plan to include the land use measures described in the text and list the land use jurisdiction partner for each land use-related activity. The land use measures appear in blue italics.]

Water Efficiency Activities	Land Use Jurisdiction Partner	Period of Implementation	Annual Water Savings for Past Five Years (AF)					Total Five-Year Water Savings	Average Annual Water Savings
			2007	2008	2009	2010	2011		
Foundational Activities									
Increasing block rate structure		**1984-present**	5	5	5	5	5	25	5
Passive indoor savings (Res. & CII)		**1994-present**	25	25	25	25	25	125	25
Regular meetings	***County, City***	***2010-present***						*0*	*0*
Development proposal review	***County***	***2002-present***	*4*	*0*	*2*	*3*	*3*	*12*	*2.4*
Subtotal			**34**	**30**	**32**	**33**	**33**	**162**	**32.4**
Targeted Technical Assistance and Incentives									
Toilet rebate program		**2007-2009**	3	5	5			13	4.3
Clothes washer rebate program		**2007-2010**	3	3	6	6		18	4.5
Xeriscape loan program		**2009-present**			6	8	12	26	8.7
Commercial indoor audits		**2008-2010**		3	4	6		13	4.3
Assistance with CII efficiency plans		**2007-present**	2	3	4	4	4	17	3.4
Subtotal			**8**	**14**	**25**	**24**	**16**	**87**	**17.4**
Ordinances and Regulations									
Outdoor watering time restrictions	**County, City**	**1999-present**	4	4	4	4	4	20	4
Water waste ordinance	**County, City**	**2002-present**						0	0
Landscape regs. for new homes	**County, City**	**2004-present**	5	7	0	0	2	14	2.8
Subtotal			**9**	**11**	**4**	**4**	**6**	**34**	**6.8**
Education Activities									
Provide historic use data on water bill		**2010-present**							
Public information and education	**County, City, Town**	**1993-present**							
Xeriscape demonstration garden	**City**	**1999-present**							
Subtotal			**0**	**0**	**0**	**0**	**0**	**0**	**0**
		Total Savings	51	55	61	61	55	283	**56.6**

Section 3.1 Water Efficiency and Water Supply Planning

Add to "Revised Demand Forecast"

Incorporating water conservation into new development approvals through better integration between the Water District and the three land use authorities in its service area will decrease the amount of water required per unit for new development. Accordingly, a decreased amount of water per unit can be used to project future demand. This impacts the amount of new water supplies required for acquisition and the required capacity of water treatment, water distribution, and wastewater treatment infrastructure. The impact of the projected decrease in water consumption as a result of land use measures is taken into account in Figures 10 and 11. Water savings resulting from land use measures have been estimated using Colorado State University's Integrated Urban Water Model.

New Section 3.3 Summary of Land Use Activities

[New Section 3.3 will be used to summarize the Water District's water and land use integration activities undertaken with each land use authority that may be scattered in other sections throughout the Plan.]

Past and Current Land Use Activities

Fiction County:

- County invites Water District to comment on every development proposal review, with a particular focus on increased infrastructure needs or costs.
- Adopted water waste ordinance – "Water Waste Prohibited. Water shall be used only for beneficial purposes and shall not be wasted."
- Adopted permanent outdoor watering restrictions for all unincorporated areas within the County, even those outside of the Water District's service area – Outdoor watering is prohibited during the hours of 10am to 5pm from May through October. Residential outdoor watering may occur on Tuesday, Thursday, and Saturday for odd-numbered, and on Wednesday, Friday, and Sunday for even-numbered addresses.
- Adopted landscape regulations for new homes and all new development proposals.

City of Shallow Creek:

- Adopted water waste ordinance – "Water Waste Prohibited. Water shall be used only for beneficial purposes and shall not be wasted."
- Adopted permanent outdoor watering restrictions – Outdoor watering is prohibited during the hours of 10am to 5pm from May through October. Residential outdoor watering may occur on Tuesday, Thursday, and Saturday for odd-numbered, and on Wednesday, Friday, and Sunday for even-numbered addresses.

- Adopted a landscape ordinance that limits the amount of turf installed and provides a list of low-water use plants that must be utilized by new residential and commercial development.
- Planted and maintained a xeriscape demonstration garden on the grounds at City Hall.

Town of Spruce:

- Periodic meetings between the Water District General Manager and Town Planner.

Planned Land Use Activities

All Land Use Jurisdictions:
A Water and Land Use Planning Team is being formed with members from the Water District, the County, and the City of Shallow Creek. Members of the team will be educated on the goals, opportunities, challenges, and anticipated projects of each entity. The Town of Spruce will also be invited to participate. The Water and Land Use Planning Team is conducting a self-assessment, and the results will be used to inform future collaboration.

The Water District will coordinate education and outreach across the region in a "Know Your Water" campaign. The Water District will start this campaign in its service area and work with each appropriate land use authority for proper implementation. The Water District will convene a meeting of other water suppliers and land use authorities in the Shallow Creek and Fiction County region to explore joint messaging and a jointly designed and operated regional education campaign on drought and water efficiency. This regional campaign is intended as a three-year effort.

Fiction County:

The Water District and the County have already established regular contact and will now participate in the Water and Land Use Planning Team described above.

The County's comprehensive plan includes a goal that the County will develop and incorporate green building guidelines that address energy and resource efficiency, including water use efficiency. Thus, the Water District will work with the County Planning Department to identify and incorporate appropriate green building guidelines into its building standards, to adequately address water conservation and provide for water-saving fixtures in new development.

A designated representative of the Water District will be included in all pre-application meetings between development proposal applicants and County Planning Department personnel for the purpose of providing information about how adoption of water efficiency or conservation measures in the proposed development can impact overall water use and the need for new infrastructure, thereby reducing the cost of tap fees, water dedications, and required infrastructure improvements.

City of Shallow Creek:

The Water District and City Planning Department have reviewed and considered all of the activities identified as "Foundational" in the CWCB's Best Practices for Implementing Water Conservation and Demand Management Through Land Use Planning Efforts, Addendum to 2012 Guidance Document, and are planning to implement some of the recommended activities in each subsection. The Water District and City have already established regular contact, but will now both participate in the Water and Land Use Planning Team described above, and ensure that the members of the team are educated on the goals, opportunities, challenges, and anticipated projects of each entity.

The Water District and City are working together on future population, land use, and water demand estimates, using the same publicly available datasets. A procedure has been established for communication of water-related conditions in development and zoning change approvals and for follow-up and enforcement by the Water District. A designated representative of the Water District will be included in all pre-application meetings between development proposal applicants and City personnel for the purpose of providing information about how adoption of water efficiency or conservation measures in the proposed development can impact overall water use and the need for new infrastructure, thereby potentially reducing the cost of tap fees, water dedications, and required infrastructure improvements.

After consultation between the Water District and City, the City Planning Department is recommending to the City Planning and Zoning Commission and the City Council a modification of the water element in the City's comprehensive plan. The proposed revision will include a full description of the City's water supplies and demands, now and into the future, compared to population growth and development projections. The comprehensive plan will detail the past and current land use activities identified above, as well as state the City's water conservation goals. The revised water element will also state the City's desire to minimize "buy and dry" transactions in surrounding agricultural land made necessary by water supply needs and to maintain the quantity and quality of water flowing in regional streams and rivers.

The Water District and City are working together to make water conservation a required component of the demonstration of the adequacy of water supplies for new development. This means that developers will be required to show that they have incorporated water conservation techniques into the development proposal. This will allow developers to select the additional water conservation techniques that best fit with the development proposal. The development permit application will include a water demand assessment, quantifying the amount of water expected to be used by the development, per unit and total volume at buildout. The inclusion of water conservation measures will be required as one of the checklist items in the City's review of any new development application.

As part of this discussion, the Water District and City Planning Department are also exploring whether the 50-unit minimum for which a water adequacy determination is required by state

law is appropriate in light of the impacts on the City's water supplies or whether the minimum should be decreased for development within the City of Shallow Creek. The results of that discussion will be proposed and recommended to the Planning and Zoning Commission and the City Council for adoption as appropriate.

The City also intends to create developer incentives to further reduce water demand, incorporate water efficiency into its zoning code and rezoning procedures, and offer a turf replacement rebate. As a developer incentive, the City will establish a building permit fee refund program for new development that incorporates water conservation measures over and above existing requirements. For zoning and rezoning, the City will revise its Planned Unit Development (PUD) requirements to include water conservation. A turf replacement rebate is being investigated to reduce irrigation on all outdoor properties (residential, commercial, and industrial).

The water utility and Planning Department are working together to "right-size" the City's water dedication requirements. Conservation measures that have already been adopted and those anticipated have resulted in decreased water usage per single-family equivalent unit. That reduction can allow a correspondingly decreased water dedication requirement, while maintaining appropriately conservative safety factors, and further the City's goal of minimizing the economic and environmental impacts of future water supply acquisition.

The Water District and the City are working together to allocate responsibilities for post-occupancy enforcement of the water-related requirements in development approvals.

Town of Spruce:

The Water District will work to establish regular meetings with representatives from the Town of Spruce and their Town Planner in particular and will encourage participation by the Town in the Water and Land Use Planning Team. Meetings have occurred between the two entities before but have not been regular or institutionalized. These meetings will allow for exploration of the other Foundational Activities described in the CWCB's Best Practices for Implementing Water Conservation and Demand Management Through Land Use Planning Efforts, Addendum to 2012 Guidance Document.

The Water District recognizes potential to promote water conservation through interpretation of the existing Town design standards. Specifically, the Town's design standards that "seek to promote variety and visual interest that is compatible with the rural town atmosphere and to encourage structures that respect the environment and character of the Town" could be strengthened to create native and low-water use landscape standards and encourage water-saving fixtures in new development. The District is working on a list of native and low-water use plants that would be appropriate for the Town of Spruce. This list will exist as a model for voluntary adoption and could be codified by the Town through ordinance if the Town Council determines to adopt it as a requirement. The Water District will encourage the Town to

consider the green building standards promoted by the County as a means to require water-saving fixtures in new development.

All of the land use measures listed above are further described in Section 4 below.

Section 4 Selection of Water Efficiency Activities

Add at end of introductory material on screening criteria

In addition to the factors of Efficiency and Practicality, Estimated Cost per AF, and Water Savings identified above, two additional factors were used to evaluate and screen potential land use activities. These two factors are:

- Likely support by new home customers, and therefore, developers, for proposed land use measures.
- Preference for expansion or modification of existing regulations rather than completely new requirements.

These factors were incorporated into the selection process described below for consideration of land use measures.

The addition of land use activities within the existing suite of water efficiency activities undertaken by the Water District and its land use authorities has increased projected water savings from 2,725 AF/year to 2,865 AF/year—an addition of 140 AF/year in savings, as shown in Table 9 below.

4.2 Components of Water Efficiency Plan

New Section 4.2.5 Land Use Activities

The final component of the efficiency plan is the suite of coordinated land use and water conservation activities described in Section 3.3 above and, in additional detail, in Section 4.3 below. These activities are collectively estimated to result in additional savings of 140 AF/year when fully implemented.

4.3 Demand Management Activities

Revised Tables 8 and 9 (on following pages)

Table 8: New and updated water efficiency activities

[This Table expands Table 8 in Section 4.3 of the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Water Efficiency Activities	Land Use Jurisdiction	Sectors Impacted	Implementation Period of New Activities
Foundational Activities			
Individualized, Informational Water Budget Program		All, indoor & outdoor	2013 - 2036
Enhanced Water Loss Control		Municipal	2012 - 2036
Form Land Use Planning Team and Conduct Self-Assessment	*County, City, Town*	*All, indoor & outdoor*	*2019*
Joint Estimate of Population and Projected Water Demand	*City*	*All, indoor & outdoor*	*2019 - 2036*
Water Utility Rep Participates in Pre-application Meetings	*County, City*	*All, indoor & outdoor*	*2019 - 2036*
Post-occupancy Enforcement of Water Conditions	*City*	*All, indoor & outdoor*	*2019 - 2036*
Enhance Water Element in Comprehensive Plan	*City*	*All, indoor & outdoor*	*2019 - 2020*
Conservation Required to Demonstrate Water Adequacy	*City*	*All, indoor & outdoor*	*2020 - 2036*
Targeted Technical Assistance and Incentives			
Expanded Multi-Family Toilet and Clothes Washer Rebates		Multi-family, indoor	2012 - 2036
Targeted Irrigation Audits and Landscape Efficiency Rebates		All, outdoor	2012 - 2036
Pre-Rinse Spray Valve Direct Installation		CII, indoor	2012 - 2036
Cooling Tower Efficiency Tune Ups		CII, indoor	2012 - 2036
Building Permit Fee Refund Program	*City*	*All, indoor & outdoor*	*2019 - 2036*
Turf Replacement Refund Program (5-year pilot program)	*City*	*All, outdoor*	*2019 - 2023*
Native and Low Water Use Plant List	*Town*	*All, outdoor*	*2019-2020*
Water-Saving Fixtures in New Development	*Town*	*All, indoor*	*2022-2036*
Ordinances and Regulations			
Conservation Oriented Tap Fee Ordinance		CII, indoor & outdoor	2013 - 2036
All New Residential Development Must Meet EPA WaterSense New Home Specifications		SF & MF residential, indoor& outdoor	2014 - 2036
Water Efficient Landscape Ordinance		All, outdoor	2011 - 2036
Certification of Landscape Professionals		All, outdoor	2010 - 2036
Water Dedication Requirements "Right-Sized"	*City*	*All, indoor & outdoor*	*2019 - 2036*
PUD Regulations Amended to Require Outdoor Conservation	*City*	*All, outdoor*	*2020 - 2036*
Green Building Guidelines	*County, Town*	*All, indoor*	*2019 - 2022*

Education Activities			
Public Information and Education		All	2010 - 2036
K-12 Education		SF & MF residential	2010 - 2036
"Know Your Water" Campaign	*County, City, Town*	*SF & MF residential*	*2019 - 2036*
Coordinate Education and Outreach Across the Region (3-year Campaign)	*County, City, Town*	*All, indoor & outdoor*	*2019 - 2021*

Table 9: Projected water savings by customer category

[This Table expands Table 9 in Section 4.3 of the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Sector	Water Efficiency Activities Impacting Sector	Projected Water Savings 2012-2036 (AF)
SF & MF Residential – Indoor	Individualized, Informational Water Budget Program	1150
	Expanded Multi-Family Toilet and Clothes Washer Rebates	
	All New Residential Development Must Meet EPA WaterSense New Home Specifications	
	K-12 Education	
	"Know Your Water" Campaign	
	Green Building Guidelines	
	Water-Saving Fixtures in New Development	
SF & MF Residential – Outdoor	Individualized, Informational Water Budget Program	635
	Targeted Irrigation Audits and Landscape Efficiency Rebates	
	All New Residential Development Must Meet EPA WaterSense New Home Specifications	
	Water Efficient Landscape Ordinance	
	Certification of Landscape Professionals	
	K-12 Education	
	"Know Your Water" Campaign	
	PUD Regulations Amended to Require Outdoor Conservation	
	Native and Low Water Use Plant List	
CII Indoor & Outdoor & Dedicated Irrigation	Targeted Irrigation Audits and Landscape Efficiency Rebates	345
	Pre-Rinse Spray Valve Direct Installation	
	Cooling Tower Efficiency Tune Ups	
	Conservation Oriented Tap Fee Ordinance	
	Water Efficient Landscape Ordinance	
	Certification of Landscape Professionals	
	PUD Regulations Amended to Require Outdoor Conservation	
	Native and Low Water Use Plant List	
Dedicated Irrigation	Water Reuse System	635
	Turf Replacement Program	
	Native and Low Water Use Plant List	

All	Public Information and Education	100
	Form Land Use Planning Team and Conduct Self-Assessment	
	Joint Estimate of Population and Projected Water Demand	
	Water Utility Rep Participates in Pre-application Meetings	
	Post-occupancy Enforcement of Water Conditions	
	Enhance Water Element in Comprehensive Plan	
	Building Permit Fee Refund Program	
	Conservation Required to Demonstrate Water Adequacy	
	Water Dedication Requirements "Right-Sized"	
	Coordinate Education and Outreach Across the Region (3-year Campaign)	
Total Projected Savings		**2,865**

Section 4.3.1 Foundational Activities

New subsection on Land Use Measures

All Land Use Jurisdictions:
The District will form a Water and Land Use Planning Team with members from each land use jurisdiction. This integrated team will meet regularly and educate its members on the goals, opportunities, challenges, and anticipated projects of each entity related to water supplies and future development.

The Water and Land Use Planning Team is working to estimate future population in the Water District's service area, based on current land use projections. Future water demand is being projected from these population estimates, based on published information on water use by various types of residential and commercial development and using the Water District's projected per unit usage, incorporating the impact of past and future conservation and efficiency measures.

The Water District and the City and County Planning Departments are conducting a self-assessment for the purpose of better understanding the degree to which some integration of the land use and water functions has already occurred and the areas in which integration is lacking. The Town of Spruce will be invited to participate as well.

Fiction County:
A designated representative of the Water District will be included in all pre-application meetings between development proposal applicants and the County Planning Department personnel, for the purpose of providing information about how adoption of water efficiency or conservation measures in the proposed development can impact overall water use. Adoption of measures that reduce anticipated water demand may decrease the up-front cost to developers in the form of tap fees and, potentially, reduce or eliminate the need for new infrastructure that the development might be required to pay for. This information is provided to allow

prospective developers to make economic and market-based decisions based on information concerning the water impacts of the proposed development.

City of Shallow Creek:

A designated representative of the Water District will be included in all pre-application meetings between development proposal applicants and the City Planning Department personnel, to provide information about how adoption of water efficiency or conservation measures in the proposed development can impact overall water use, and allow for market-based decisions as described above in the section on Fiction County. A procedure has been established for communication of water-related conditions in development and zoning change approvals and for follow-up and enforcement by the Water District.

As described in Section 3.3 above, the City Planning Department has recommended to the City Planning and Zoning Commission an addition to the water element in the City's comprehensive plan to include a full description of the City's water supplies and demands, now and into the future, compared to population growth and development projections. The revised water element will also state the City's desire to minimize "buy and dry" transactions in surrounding agricultural land made necessary by water supply needs and to maintain the quantity and quality of water flowing in regional streams and rivers, in addition to the previously stated goals of minimizing the costs of infrastructure and avoiding adverse impact on water supplies.

The City Planning Department, in consultation with the Water District, is making water conservation part of the demonstration of the adequacy of water supplies for new development pursuant to Colo. Rev. Stat. § 29-20-303. Developers will be required to show that they have incorporated water conservation techniques into the development proposal. Developers are able to select additional water conservation techniques that best fit with the development proposal. The development permit application will also include a water demand assessment, quantifying the amount of water expected to be used by the development, per unit and total volume at buildout. The inclusion of water conservation measures will now be required as one of the checklist items in the Planning Department's review of any new development application.

The City Planning Department and Water District are examining the 50-unit minimum for which a water adequacy determination is required by state law to determine whether this minimum is sufficient to protect against adverse impacts to the City's water supplies. The two entities are considering a lower threshold of development that would require a water adequacy determination. The results of this discussion will be proposed and recommended to the Planning and Zoning Commission and the City Council for adoption.

The Water District and the City are working together to allocate responsibilities for post-occupancy enforcement of the water-related requirements in development approvals.

Section 4.3.2 Targeted Technical Assistance and Incentives

New subsection on Land Use Measures

City of Shallow Creek:
In the City of Shallow Creek, the City Planning Department is establishing a building permit fee refund program for new development that incorporates certain listed water conservation measures that exceed those already required by the landscape ordinance. Standards are being established for further reductions in turf areas for new development and developers choosing to follow such standards will receive a 50% refund of building permit fees associated with the development. The refund will be provided after inspection by the City of the established landscape. The funding for the partial refund is being provided by the Water District and the Planning Department.

The Water District is working with the City to initiate a five-year pilot turf replacement program for residential and commercial property. Standards are being developed for appropriate replacement materials that will consume less water while not adversely impacting stormwater flows and maintaining the quality of the residential properties and neighborhoods. The funding for the turf replacement program will be provided by the Water District.

Town of Spruce:
The Water District is compiling a native and low water use plant list, for the purpose of providing evidence-backed information that can be voluntarily adopted by developers and residents in the Town of Spruce, and potentially considered for formal adoption by the Town Council. The Water District is also working with the Town of Spruce to identify ways to encourage low water use fixtures in new development.

Section 4.3.2 Ordinances and Regulations

New subsection on Land Use Measures

Fiction County:
Fiction County's comprehensive plan laid out a goal that the County will develop and incorporate green building guidelines that address energy and resource efficiency, including water use efficiency. The Water District is working with the County to realize this goal, by reviewing and assessing the water conservation standards utilized in green building guidelines and recommending appropriate standards for incorporation into the County building standards. Such standards will require adoption of water conservation measures and utilization of water-saving fixtures, both indoor and outdoor.

City of Shallow Creek:
The City Planning Department, working with the Water District, is proposing an amendment to the City's Planned Unit Development (PUD) regulations that will require adherence to water conservation best practices, including utilization of Water Sense outdoor fixtures, landscaping standards, and soil amendment requirements. The potential water savings associated with these proposed changes are being estimated and the results will be provided to the City Planning and Zoning Commission and City Council with an appropriate recommendation.

The Water District and the City Planning Department are working together to "right-size" the City's water dedication requirements. Conservation measures that have already been adopted and those anticipated have resulted in decreased water usage per single-family equivalent unit. That reduction can allow a correspondingly decreased water dedication requirement, while maintaining appropriately conservative safety factors, and further the City's goal of minimizing the economic and environmental impacts of future water supply acquisition.

Section 4.3.2 Education Activities

New subsection on Land Use Measures

All Land Use Jurisdictions:
The Water District is starting a "Know Your Water" campaign designed to help customers and citizens understand the source of their water supplies and the associated limitations and challenges. Information on these topics will be provided to all prospective developers and included in Water District billing statements. It will also be available on the web pages of all land use jurisdictions.

The Water District will convene a meeting of other water suppliers and land use authorities in the Shallow Creek and Fiction County region. The purpose of this meeting is to explore joint messaging and a jointly designed and operated regional education campaign on drought and water efficiency. This regional campaign is intended as a three-year effort.

Section 5.1 Implementation Plan

Betty Bodean, Water Conservation Coordinator for the Water District, will work directly with the Fiction County Planning Department, Shallow Creek's City Planner, Craig Waters, and the Town of Spruce's Planner, Tina Palmer, to implement the land use measures described in this Plan. Land use measures are included in the implementation schedule shown in Table 13.

Table 13: Water efficiency activity implementation schedule

[This Table expands Table 13 in Section 5.2 of the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Water Efficiency Activities	Implementation Period of New Activities
Foundational Activities	
Individualized, Informational Water Budget Program	2013 - 2036
Enhanced Water Loss Control	2012 - 2036
Form Land Use Planning Team and Conduct Self-Assessment	*2019*
Joint Estimate of Population and Projected Water Demand	*2019 - 2036*
Water Utility Rep Participates in Pre-application Meetings	*2019 - 2036*
Post-occupancy Enforcement of Water Conditions	*2019 - 2036*
Enhance Water Element in Comprehensive Plan	*2019 - 2020*
Conservation Required to Demonstrate Water Adequacy	*2020 - 2036*
Targeted Technical Assistance and Incentives	
Expanded Multi-Family Toilet and Clothes Washer Rebates	2012 - 2036
Targeted Irrigation Audits and Landscape Efficiency Rebates	2012 - 2036
Pre-Rinse Spray Valve Direct Installation	2012 - 2036
Cooling Tower Efficiency Tune Ups	2012 - 2036
Building Permit Fee Refund Program	*2019 - 2036*
Turf Replacement Refund Program (5-year pilot program)	*2019 - 2023*
Native and Low Water Use Plant List	*2019 - 2020*
Water-Saving Fixtures in New Development	*2019-2036*
Ordinances and Regulations	
Conservation Oriented Tap Fee Ordinance	2013 - 2036
All New Residential Development Must Meet EPA WaterSense New Home Specifications	2014 - 2036
Water Efficient Landscape Ordinance	2011 - 2036
Certification of Landscape Professionals	2010 - 2036
PUD Regulations Amended to Required Outdoor Conservation	*2020 - 2036*
Water Dedication Requirements "Right-Sized"	*2019 - 2036*
Green Building Guidelines in County Building Standards	*2019 - 2021*
Education Activities	
Public Information and Education	2010 - 2036
K-12 Education	2010 - 2036
"Know Your Water" Campaign	*2019 - 2036*
Coordinate Education and Outreach Across the Region (3-year Campaign)	*2019 - 2021*

Section 5.2 Monitoring Plan

Data on water usage will be collected and maintained as described in Table 14 (Worksheet K). Curated information from these data sets will be shared at every meeting of each Water and Land Use Planning Team. Additionally, the Water District will coordinate with each land use authority to present information and updates about water efficiency programs to their governing councils as appropriate.

The City and County Planning Departments will convey immediately to the Water District any water-related conditions contained in development approvals and zoning changes. The entities will allocate responsibility for monitoring, compliance, and enforcement action.

In order to monitor the implementation and effectiveness of land use practices, the City will collect and maintain data on building permit refunds, and the Water District will collect and maintain data on per unit water use, turf replacement square feet implemented, and post-occupancy enforcement actions. This monitoring data is reflected in Table 14 (Worksheet K).

Table 14: Worksheet K – Selection of Demand Data for Efficiency Plan Monitoring

[This Table expands Table 14 in Section 5.2 of the 2012 Sample Plan to include the land use measures described in the text. The land use measures appear in blue italics.]

Monitoring Data	HB 10-1051 Reporting Requirement			Selection		Entity/Staff Responsible for Data Collection and Evaluation	Schedule/Timing of Monitoring
	Annual	Monthly		Annual	Monthly		
Total Water Use							
Total treated water produced (metered at WTP discharge)				√		Betty Bodean	First quarter of the year.
Total treated water delivered (sum of customer meters)	√			√		Betty Bodean	First quarter of the year.
Raw non-potable deliveries				√		Betty Bodean	First quarter of the year.
Indoor and outdoor treated water deliveries				√		Betty Bodean	First quarter of the year.
Treated water peak day produced							
Raw water peak day produced/delivered							
Non-revenue water	√			√		Betty Bodean	First quarter of the year.
Building Permit Refunds					√	Craig Waters	First of each month.
Turf Replacement Square Feet Implemented					√	Betty Bodean	First of each month.
Post-Occupancy Enforcement Actions					√	Betty Bodean	First of each month.
Water Use by Customer Type							
Treated water delivered		√			√	Betty Bodean	First quarter of the year.
Raw non-potable deliveries					√	Betty Bodean	First quarter of the year.
Indoor and outdoor treated water deliveries				√		Betty Bodean	First quarter of the year.
Large users							
Unit water use (e.g. AF/account or AF/irrigated acre)					√	Betty Bodean	First of each month.
Other Demand Related Data							
Irrigated landscape (e.g. AF/acre or number of irrigated acres)				√		Betty Bodean	First quarter of the year.
Precipitation							
Temperature							
Evapotranspiration				√		Betty Bodean	First quarter of the year.
Drought index information							
Economic conditions							
Population				√		Betty Bodean	First quarter of the year.
New taps				√		Betty Bodean	First quarter of the year.