City of Fort Collins Parks and Recreation

Environmental Best Management Practices Manual

2011

Index	Environmental Best Management Practices Manual

In keeping with the City's commitment to the environment, Parks and Recreation has prepared this "Environmental Best Management Practices Manual" to support City wide environmental goals and policies. A park, trail or recreation facility can be sustainable over the long term only if it addresses competing demands on three fronts-environmental, economic and social. The more we put sustainable practices to work as part of our "Triple Bottom Line" the better stewards we will be of the community's park, trail and recreation facilities.

The purpose of this Manual is to provide a tool for park and recreation professionals to improve our efforts to include sustainability and protection of the environment in our decision making process. The Manual's chapters follow the normal process of acquiring, designing, constructing, maintaining, operating, and programming. Each Chapter contains information about environmental best management practices pertinent to the topic. This format allows users to quickly find information for diverse items such as purchasing land for a park, creating a trail design, constructing a recreation center, performing day-to-day operations and maintenance at a park, and programming events at a recreation center.

Leadership in Energy and Environmental Design (LEED) and the Sustainable Sites Initiative (SSI) are two processes that are referenced throughout this Manual. LEED is primarily applicable to buildings. LEED has been in place for many years and most people have experienced a LEED Gold or Platinum building. The City's goal is to meet the LEED gold standard. The full LEED document and the City's building requirements are included by reference in this Manual.

SSI was being developed at the time of this Manual's creation in 2011 and relates to the sustainability of the outdoor environment. To date, rating categories are in place and the process has started to rate pilot projects. The pilot project phase will cover the years 2010 through 2012. A rating system, very similar to the LEED system, will be in place at the completion of the pilot program. SSI expands the previous outdoor section of LEED and is very applicable to parks and recreation projects.

SSI requirements for site selection, design, construction and operation and maintenance are introduced in this Manual with a short statement about each requirement. The full SSI document contains an extensive explanation of the evaluation items and should be consulted as needed to achieve sustainability objectives.

Each requirement contains three questions that need to be answered. First: What are the regulations, guidelines, City policies and goals that give direction for this requirement? Second: Who can provide the needed expertise and knowledge to address these regulations, guidelines, and polices? Third: How do we implement the regulations, guidelines, City polices and goals to create a successful and sustainable project?

Chapter One	Introduction and Purpose

A. Introduction

In keeping with the City's commitment to the environment, Parks and Recreation has prepared this "Environmental Best Management Practices Manual" in order to achieve our City wide environmental goals. The goals are as follows:

1. Air Quality – Reduce greenhouse gas emissions (carbon footprint) 20% below 2005 levels by 2020 and 80% by 2050.
2. Recycling – 50% diversion from landfill disposal.
3. Water Use – Goal of 140 gallons per capita per day
4. Energy Use – Achieve annual energy efficiency and conservation program savings of at least 1.5% of annual energy use (based on a three year average history)

The community gains both financial and environmental benefits from implementing environmental best management practices within all levels of Parks and Recreation. By implementing these practices, Parks and Recreation seeks to:

- Increase accountability for efficient use of resources and protection of the environment
- Institutionalize environmental best management practices
- Maximize collaboration and knowledge-sharing, capture efficiencies and cost savings
- Provide a platform for communicating Parks and Recreation's environmental efforts
- Help the City remain a leader and model for other communities in the application of environmental practices and technologies

Parks and Recreation facilities and operations comprise a large and very visible component of our community. As such, we need to be leaders in the stewardship of these resources. This Manual, in part, provides structure and a collection place for numerous environmental efforts presently being accomplished in Parks and Recreation. Future updates will keep the Manual current as practices, technology and environmental knowledge evolves.

The Manual's chapters are organized to follow the normal process of acquiring, designing, constructing, maintaining and operating, and finally programming facilities. Each chapter contains information about environmental best management practices pertinent to that chapter's topic.

B. Purpose

The purpose of this Manual is to provide a handy resource to enable parks and recreation professionals to make design and operational decisions with the environment in mind.

The triple bottom line of economic, social and environmental sustainability are already woven into our decision making process. This Manual strengthens the "environmental" portion of the triple bottom line in a format specifically developed for use by parks and recreation professionals.

Chapter Two	Best Management Practices for Site Selection

Introduction

The Parks and Recreation Policy Plan identifies the general location for park, trail and recreation facilities. Final site selection will depend upon many items such as; landowner willingness to sell, area development plans, site topography, stormwater requirements, location of streets and utilities, raw water availability, partnership potential, and similar considerations.

Partnerships with other City Departments such as Natural Resources and Stormwater, outside agencies such as: Poudre School District, Colorado State University, Larimer County along with developers should be reviewed as sites are being considered. Partnerships can result in reduced costs for land, street and utility infrastructure, stormwater watershed and water quality improvements. Partnerships can also maximize multi-purpose uses of sites and enhance energy and sustainability efficiencies.

The Sustainable Sites Initiative (SSI) contains a section on site selection. The elements that relate to our purchase of a site are as follows:

2.1 - Farmland protection

Limit development of soils designated as prime farmland, unique farmland, and farmland of statewide importance. Protect soils designated by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime farmland, unique farmland, or farmland of statewide importance to conserve for future generations the most productive farmland in the United States.

Prime farmland refers to soils designated by the Natural Resources Conservation Service as "prime farmland". Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high crop yields.

Unique farmland refers to soils designated by the Natural Resources Conservation Service as farmland other than prime farmland that is used for the production of specific high-value food and fiber crops.

Farmland of statewide importance refers to soils designated by each state Natural Resources Conservation Service as farmland which does not meet all the prime farmland criteria, but is still able to economically produce high crop yields.

Benefits

- Protects the most valuable prime farmland from development.

What farmland protection needs should be applied to our site selection effort?

Prime farmland is important to agriculture across the county and in Colorado. Colorado has identified prime farmland, unique farmland, and farmland of statewide importance. These lands are the best we have for agriculture and their use should be minimized for development.

Who can provide the needed expertise/knowledge for our site selection effort?

The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) web site contains information on prime farmland and unique farmland. The State of Colorado Natural Resources Conservation Service web site contains information on farmland which does not meet all the prime farmland criteria, but is still able to economically produce high yields of crops. The site selection team needs to have this information for the design process.

How do we incorporate this into our site selection effort?

The U.S. Department of Agriculture's Natural Resources Conservation Services web site indicates within the Urban Growth Boundary of Fort Collins no farmland exists that is prime, unique or of statewide importance. The State of Colorado Natural Resources Conservation Service web page indicates within the Urban Growth Boundary of Fort Collins no farmland exists that meets the criteria to produce economically high crop yields. These web sites should be consulted when a site is being considered to determine if the land is prime, unique or farmland of statewide importance.

Example
With the above information we should not be impacting prime farmland with projects within the Urban Growth Boundary. If for some reason we are reviewing a site outside of the Urban Growth Boundary the potential conflict with prime farmland should be researched against current Federal and State information.

2.2 - Protect floodplain functions

Protect floodplain functions by limiting new development within the 100-year floodplain for waterways of all sizes.

Benefits

- Allows for the river system to function in a natural condition during flood events.
- Improves the ecology of the river riparian zone.

What are the floodplain functions that should be applied to our site selection effort?

Floodplains along waterways in the city are mapped and managed by the City's Stormwater Department. Some floodplains are also regulated by the Federal Emergency Management Agency (FEMA).

Who can provide the needed expertise/knowledge for our site selection effort?

Stormwater staff is an excellent resource to provide information on the floodplain regulations and requirements for a particular site. Each drainage basin in the city has a floodplain that can be displayed on maps and photos of a site. Consultants who do considerable work for Stormwater have the knowledge and expertise to help on this topic. Expertise in this area includes hydrology and hydraulic engineers, floodplain regulators, and river morphology scientists.

How do we incorporate this into our site selection effort?

The site is reviewed to determine if it is within the floodplain and Stormwater staff is consulted to determine any requirements or restrictions that may affect the planned improvement to the site.

It is important to determine the floodplain during the site evaluation for the potential development of a park, trail or recreation facility. Preliminary adjustments can be explored at this stage to resolve floodplain issues and identify mitigation options and associated costs.

Example
The 2011 design of Staley Neighborhood Park near Zach Elementary School has McClellands Creek going from west to east through the park site. The purchase of the site was from Poudre School District in 2000. At the time Stormwater had mapped the floodway, floodplain and erosion buffer. A review of these items indicated ample room for the development of park facilities/features.

2.3 - Preserve wetlands

Wetlands are defined by the Clean Water Act as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated conditions.

Avoid development of areas that contain wetlands, including isolated wetlands. The delineation of the full extent of the wetland(s) should be made utilizing U.S. Army Corps of Engineering guidelines. Designate a vegetation and soil protection zone for the area within 100 feet of any wetlands(s) or within setback distances from wetlands prescribed in state or local regulations, as defined by local or state rules or law, whichever is more stringent. Restoration activities may occur within this zone to increase the quality of the wetland. An existing wetland cannot be utilized for primary water quality treatment.

Benefits

- Improves water quality for streams, lakes and shorelines.
- Provides habitat for fish and other organisms.
- Supports natural biological activity.
- Increases biodiversity and creates healthier ecosystems.

What wetlands regulations and policies apply to our site selection effort?

Wetlands are required to be identified by the City's Land Use Code. The Code is the City's tool for the review and approval of development proposals and includes set-backs or buffer zones to protect wetlands from development impacts. The Ecological Characterization Study required to be performed on the site includes the identification of wetlands.

Who can provide the needed expertise/knowledge for our site selection effort?

Consultants who are certified in wetland identification are hired to survey the site and prepare the proper delineation map and report. The wetland identification is completed per the requirements in the Land Use Code. Expertise on this topic comes from wildlife and aquatic biologists, hydrological and soils engineers, agronomists, and other scientists knowledgeable about wetland protection and rehabilitation.

This information will be shared with the City's Environmental Planner in Current Planning and the City's Natural Resource Department for their review and input. Also, the wetland is reviewed to determine if the area falls under the jurisdiction of the Army Corps of Engineers.

How do we incorporate this into our site selection effort?

It is important to include the wetlands analysis during the site evaluation to determine the application of regulations and associated costs. Wetlands may have mitigation requirements and buffer distances that can impact the development of the site.

Example
Radiant Neighborhood Park had the wetlands delineated in the summer of 2010 in preparation of the preliminary design and public process starting in 2011. The mapping was done by an environmental consultant who specializes in wetland delineation and can submit the information for any regulatory requirements. These areas were then available for the designer to integrate into the preliminary design and show at the public open houses. Doing the wetlands delineation a year early allows staff time to prepare design options that protect the wetlands.

2.4 - Preserve threatened or endangered species and their habitats

Avoid development of areas that contain habitat for plant and animal species identified on federal or state threatened or endangered lists or on the International Union for Conservation of Nature Red List of Threatened Species as critically endangered or endangered.

Benefits

- Preserves natural features and important habitat for identified species.
- Complies with regulatory requirements at the local, state, and national levels.

What threatened or endangered species and habitat regulations should be applied to our site selection effort?

The Land Use Code (Development Review process) requires an Ecological Characterization Study be performed on the development site. This Study will identify if the site has any threatened or endangered species and their habitats.

Who can provide the needed expertise/knowledge for our site selection effort?

A consultant(s) who is certified to perform the needed study will be hired and will produce the required maps and reports for the Development Review process. These same reports should be prepared for review and approval by the regulatory agency. Biologists with special knowledge of threatened and endangered species and their habitat requirements are critical on this item. A mistake on this item can result in a project being delayed or canceled.

How do we incorporate this into our site selection effort?

The report will be shared with the Environmental Planner in Current Planning and the City's Natural Resource Department for their review and input. The report will indicate if any State or Federal action is required. This information is important to understand during the site evaluation in order to have preliminary informed discussions about regulatory requirements, buffers, mitigation and associated costs and impacts on the project.

Example
Park Planning and Development works with typically two consultants knowledgeable on this topic. One specializes in the endangered mouse study, while the other specializes in endangered plants. The Wildlife Biologist in Natural Areas was involved in the review of the field information and the report to the various affected agencies. A review by the staff biologist at the time the park site is acquired is typically sufficient to know if we have any potential problems in this area. A visit by one of the experts may be needed if any areas appear to support any endangered species. Some endangered species field data is only good for one year, while other date has a two year window. It is not uncommon to have to do more than one field evaluation/ review depending on the project design and construction schedule.

2.5 - Select brownfields or greyfields for redevelopment.

Consider channeling development to urban areas to reduce pressure on undeveloped land, reduce resource consumption and restore ecosystem services to damaged sites.

Benefits

- Puts land that presently has limited social, economic or environmental value into a productive mode for the community.

What brownfields or greyfields needs should be applied to our site selection effort?

The Environmental Protection Agency should have information about area brownfields and/or greyfields. This information should also be available from the City's Current and Advanced Planning Departments.

Who can provide the needed expertise/knowledge for our site selection effort?

The development of any type on brownfields and/or greyfields requires extensive legal, environmental and regulatory expertise/knowledge for a successful project. Funding needs for items such as site clean-up can be beyond the amount revealed by a first look at the site. Staff and consultants who specialize in brownfields and/or greyfields are critical to a successful project that meets all the regulatory and corresponding financial obligations. Expertise would be from legal staff, EPA area managers, soils and water consultants knowledgeable about brownfield and greyfield development.

How do we incorporate this into our site selection effort?

Potential park, trail or recreation project sites located on brownfields or greyfields need considerable study before moving forward into acquisition. These sites can require extensive clean-up efforts or construction mitigation efforts that may make the site cost prohibitive. Caution must be used in reviewing these sites and considerable environmental studies need to be in place before assurances can be given that site conditions can be mitigated and are cost effective for a park, trail or recreation facility. These sites also can increase operation and maintenance costs due to restrictions that may prohibit or limit work on the site. Workers may need to have mandatory training to do basic items such as planting trees, repairing irrigation lines, etc. Environmental monitoring of work performed by a certified professional below ground can add significant costs even for a very small amount of excavation.

Example
Old Fort Collins Heritage Park is located at the site of a City landfill and is a brownfields site. The EPA has worked on the site to clean-up coal tar from reaching the Poudre River. Also, the site has asbestos that limits the amount of soil excavation to a few shovel fulls before a professional has to be on site to monitor for asbestos being exposed and mitigation steps taken to protect people.

2.6 - Select sites within existing communities

Encourage site development within existing communities to reduce pollution and development impacts, support local economy and improve human health.

Benefits

- The recreation facility is located close to where residents live and doesn't contribute to the impacts associated with urban sprawl.

The Parks and Recreation Policy Plan identifies the general location for parks, trails and recreation facilities. These areas are located within the urban growth boundary of the City. "Plan Fort Collins" was adopted by Council in 2010 and contains the framework for the development of the community for the next 10 years. The Parks and Recreation Policy Plan is a part of "Plan Fort Collins."

Example
The Parks and Recreation Policy Plan extends to the City planning boundary and shows the location of future recreation facilities that provide an equal level of service to the community.

2.7 – Alternative modes of transportation

Select sites that encourage non-motorized transportation and use of public transit. Encourage site development that is accessible by pedestrians and bicyclists and near public transit to reduce pollution and improve human health.

Benefits

- Reduces carbon dioxide emissions
- Allows for citizens to select a variety of transportation modes to reach the recreation facility.

What alternative modes of transportation needs should be applied to our site selection effort?

Incorporating alternative modes of transportation into development projects is required in the Development Review process. Also, Plan Fort Collins, the Master Transportation Plan, and the Parks and Recreation Policy Plan support this effort. Alternative modes of transportation support the City's goal to improve air quality and encourage transportation travel by methods other than the individual automobile.

Who can provide the needed expertise/knowledge for our site selection effort?

The site can be evaluated for alternative modes of transportation by a review of the City's Transportation Plans (vehicle, mass transit, bicycle, and pedestrian) that include existing and planned bicycle lanes, sidewalk requirements and standards, and existing and proposed mass transit routes. The Parks and Recreation Policy Plan contains information on the existing and planned trail system. Expertise from a traffic engineer can be helpful when looking at alternative transportation modes.

How do we incorporate this into our site selection effort?

Interaction with Transportation Planning staff at this point helps with the discussion of alternative mode service to the site. The Transportation Planning staff will have information on their development schedule, knowledge of surrounding development plans and possibility of cost sharing or efficiency ideas. Also, preliminary layouts for any facilities needed on the site can be explored as to how they allow for the integration of alternative transportation modes. City Engineering staff will also have road standards about bike lanes and sidewalk width requirements.

Example
The planned location for the Northeast Community Park was coordinated during the Mountain Vista Planning effort in 2009. This effort included the conceptual layout of roads, bus routes, and trails to serve the area. The park location adjacent to a planned Poudre School District school site and community employment center ensures the park will have service by alternative transportation methods.

Chapter Three	Best Management Practices for Design

Introduction

Design of a park, trail or recreation facility will require a competent design team that is aware of the City's environmental requirements and incorporates these into the design effort. Following the triple bottom line process throughout the design process will result in a facility that provides the services needed by the community and is cost effective and supports the City's sustainability goals. The design process is the time when detailed options need to be considered in all areas of the project including sustainability. Even though it may add cost and time to explore and refine sustainability options during the design process; once the project is under construction it typically becomes more difficult and costly to make any changes.

The continuation of partnerships formed during the site selection process will be encouraged during the design process. Partnerships can result in reduced construction and long term operation and maintenance costs on many projects. Energy and sustainability efficiencies that can be obtained through partnerships can be particularly important for large recreation facilities.

The Leadership in Energy and Environmental Design (LEED) program will be applied to buildings at the beginning of the project and through the design process. LEED is a very detailed design process that brings sustainability practices and methods to all aspects of the building design. The Sustainable Site Initiative (SSI) also contains a section on design for the outdoor environment. The application of both programs to the design of a facility will result in a very sustainable project.

The SSI elements that relate to our outdoor design process are as follows:

3.1 - Conduct a pre-design site assessment for site sustainability

Conduct an accurate and detailed assessment of the site condition and explore options for sustainable outcomes prior to design to inform decisions about site design, construction, operation, and maintenance.

Benefits

- Understanding the site early in the process can determine if the site has any "fatal flaws" that may hinder or prevent the long term success of the site for a recreation facility.
- Site constraints and opportunities identified early in the process can provide insight into potential costly development items.

What are the site sustainable regulations and policies that need to be applied to our design effort?

The City's Land Use Code seeks to increase public access to mass transit, sidewalks, trails, bicycle routes and other alternative modes of transportation. It also has provisions to reduce energy consumption and demand. Article 3 of the Code has sections related to site lighting, air quality (compliance with all regulations and standards regulating odor, dust, fumes or gases, water quality) compliance with Storm Drainage Design Criteria, and soil amendments (soil shall be loosened and amended per Code Section 12-132(a)).

City Resolution 2006-096 requires buildings over 5,000 square feet in size to meet the LEED Gold standard, if economically cost effective. The City's Building Permit Code contains the latest sustainability standards for all buildings requiring a permit.

City Resolution 2008-051 requires the City to proactively identify and implement actions to reduce greenhouse gas emissions within the City by 20% below 2005 levels by 2020 and by 80% below 2005 levels by 2050.

Who can provide the needed expertise/knowledge for our design effort?

The City Environmental staff will have expertise on the City's sustainability effort that can relate to the project. Consultants knowledgeable with environmental/sustainable issues such as air quality, greenhouse gas emission, alternative transportation options, recycling, etc. help to ensure compliance with sustainability regulations and guidelines.

How do we incorporate this into our design effort?

City sustainability regulations and guidelines need to be discussed early in the design process. This allows the design team to understand how the project needs to be designed to ensure sustainability requirements are met. As key components of the project are identified, the experts in each area of sustainability can then be consulted for their input.

Example
The site assessment for Spring Canyon Community Park included staff from Stormwater (floodplain issues), Natural Resources (adjacent to City natural area), Transportation Planning (required street connection and improvements), the design team (landscape architects, architects, and civil engineers), Recreation (passive and programmed recreation opportunities), and Parks Maintenance (irrigation water supply info and current maintenance practices).

3.2 - Use an integrated site development process

Use a multidisciplinary team of professionals experienced in sustainable practices to collaborate on the design, construction and maintenance of the site in an integrated design and implementation process. Design the facility for broad appeal and accessibility.

Benefits

- Flexibility of use allows facilities to evolve as user groups do
- Provides recreational opportunities for diverse groups
- Promotes social interaction and integration

What is the integrated site development process that needs to be applied to our design effort?

Projects that go through the City's Development Review process require an integrated team to meet the many and varied requirements of the process, including sustainability regulations and guidelines.

Who can provide the needed expertise/knowledge for our design effort?

Parks and recreation facility projects are assigned a planner in Current Planning who will lead the project through the Development Review process. This ensures the project meets the numerous Land Use Code requirements and can be approved at the end of the design process. The planner assigned to the project is experienced at shepherding projects through the Development Review process and is relied upon as the expert in the process. Mistakes in the Development Review process can result in a project being delayed or not obtaining approval.

The design team will typically include many disciplines, such as Transportation Planning, Current Planning, Natural Resources, City Utilities (water, waste water, stormwater), Recreation, Park Maintenance and numerous consultants who have a variety of expertise. Stakeholders outside of the design team may include utility companies, potential users of the facility and adjacent landowners. The project may also receive numerous reviews by affected Boards, Commissions and City Council.

How do we incorporate this into our design effort?

Develop a specific plan for collaborative work sessions with the design team, operation and maintenance staff, and stakeholders to maximize the benefits that can be reached through a "whole system approach." During the design effort the various "experts" will provide the direction and process needed to ensure each discipline's needs and values are included in the design process. Alternative concepts will be developed based on "must have" needs of numerous disciplines until a design is reached that provides the best mix of options to fulfill as many of the needs that can be accomplished with the project.

Example
The Fossil Creek Community Park design included about 5 public open houses to gather public input and show park plans leading to the final Master Plan for the park. Through the process, the stakeholders listed above were involved in providing information and direction in their area of expertise to the core park design team. Several meetings with adjacent landowners were also held to focus on their unique needs related to more specific site related concerns.

3.3 - Engage users and other stakeholders in site design

Engage with site users and other stakeholders in meaningful participation during the site design process to identify needs and to supplement professional expertise with local knowledge.

Benefits

- Promotes community ownership of the facility
- Encourages involvement of volunteers in the facility upkeep
- Incorporates valuable, local knowledge that can inspire design innovation
- Promotes awareness about sustainable design considerations
- Community support helps obtain required approvals

What is the stakeholder involvement process that needs to be applied to our design effort?

The design process should include a public outreach process. The public process presents an opportunity for the public to provide their input and ideas for the new project. The Development Review process outlines the public outreach process required for new development. Typically, parks and recreation facility designs will be going through the Development Review process and need to meet or exceed the public outreach requirements. Trail designs are of a smaller nature and are more typically handled with meeting with affected HOA s and landowners adjacent to the trail.

Who can provide the needed expertise/knowledge for our design effort?

The public outreach process identified in the Development Review process identifies when meetings should be held at key steps during the design, the extent of the neighborhood notification area, etc. During this process a group of "stakeholders" will likely also be developed who may be different from the general public. This group could include adjacent property owners, utility contacts, City Boards, special interest groups, user groups, etc.

How do we incorporate this into our design effort?

Open houses, the City's media and numerous meetings, calls and e-mails with the general public, and stakeholders are methods used for the public outreach. The planner assigned to the project verifies that the public outreach meets the requirements of the Development Review process. Typically, our public process will require more outreach and interaction with the public than is required in the Development Review process. Interaction with the public by showing proposed design options, sharing schedules and budget, obtaining their input on design elements all helps to improve and validate the project.

Example
The Development Review Process requires outreach to residents within 500 feet of a project. The City will typically exceed this distance on public projects by going to the nearest arterial street around a site. The public meetings are advertised in the news media and all residents across the community are welcome to attend the meetings.

3.4 - Reduce potable water use for landscape irrigation

Reduce the use of potable water by using natural surface water (such as lakes, rivers, and streams), and groundwater withdrawals for landscape irrigation.

Benefits

- Reduced use of domestic water is energy and cost effective.
- Reduced use of domestic water conserves a limited resource.

What are the policies and regulations for the use of water for landscape irrigation that need to be applied to our design effort?

The City's Climate Wise Plan encourages the use of raw water instead of domestic water for landscape watering. The laws for water use in the State of Colorado currently prohibit the storage and collection of rain water for longer than 24 hours and prohibit consumptive use.

Who can provide the needed expertise/knowledge for our design effort?

The design team will include City staff and consultants knowledgeable in evaluating the use of raw water and methods to reduce water consumption. The team could include maintenance staff, architects, engineers, irrigation design experts, and landscape architects who are knowledgeable about local water needs and regulations.

How do we incorporate this into our design effort?

The availability of raw water to the site should have been determined during the site selection process. If raw water is available the design team can develop the method to deliver the water and pumping requirements and infrastructure needs such as an irrigation pond and pump house for a complete system. Domestic water design also needs to be evaluated to minimize uses to meet City requirements. These items need to be shown on the drawings and/or in the specifications so the contractor can accomplish this work.

Example
Spring Canyon Community Park could be irrigated with raw water from the existing pond used to presently irrigate an adjacent neighborhood park. Also, the park design included several areas of low-maintenance turf along the restored Spring Creek Channel and the developed canyon walls. The low-maintenance turf areas were not irrigated and have established themselves with the water nature supplies.

3.5 - Protect and restore riparian, wetland, and shoreline buffers

Preserve and enhance riparian, wetland, and shoreline buffers to improve flood control and water quality, stabilize soils, control erosion, and provide wildlife corridors and habitat.

Benefits

- Improves water quality for streams, lakes, and shorelines.
- Provides habitat for fish and other organisms.
- Supports natural biological activity.
- Increases biodiversity and creates healthier ecosystems.

What are the protection and restoration of riparian, wetlands and shoreline buffer regulations and policies that need to be applied to our design effort?

The information developed on this topic during the site selection can now be applied to the design process. Again, wetlands are required to be identified as per the City's Land Use Code. Final decisions are made at this time depending on if the wetland is regulated by the Army Corps of Engineers or is under local control

Who can provide the needed expertise/knowledge for our design effort?

The design team needs to include wildlife and aquatic biologists, ecologists and others who are experts in this field to ensure the wetlands are properly identified and protected. Wetlands can many times be improved and better protected and become even more of a valuable asset to the site.

How do we incorporate this into our design effort?

The wetlands need to be incorporated into the design to ensure they are not damaged by the project or impacted in some way that is not allowed by regulations or City requirements. The needed permits (Corps, etc.) can be started at this time so requirements can be utilized as the project moves toward final design and construction. The required protection, restoration and buffers need to be shown on the drawings and/or in the specifications so the contractor can complete the needed work.

Example
Fossil Creek Community Park had the wetlands identified as part of the pre-design effort. The wetlands were connected to "waters of the United States" and fell under the jurisdiction of the Army Corps of Engineers. A Corps' Nation Wide Permit was obtained and the wetlands mitigated at the west edge of the park in the area leading to the ponds

3.6 - Rehabilitate lost streams, wetlands, and shorelines

Rehabilitate ecosystem functions and values of streams, wetlands, or shorelines that have been artificially modified, using stable geomorphological and vegetative methods.

Benefits

- Rehabilitation can improve biodiversity and create healthier ecosystems

What are the rehabilitation of lost streams, wetlands and shorelines regulations and policies that need to be applied to our design effort?

A project following the Development Review process will require an Ecological Assessment to be completed on the site. The Assessment will determine any potential to restore lost streams, wetlands and shorelines. Projects that are not going through the Development Review process will need to have wetlands, waterways, etc. identified to determine their suitability for protection, enhancement and/or rehabilitation.

Who can provide the needed expertise/knowledge for our design effort?

Consultants who specialize in water restoration could include aquatic and wildlife biologists, ecology scientists, hydrology and hydraulic engineers, soils engineers and plant ecologists. The consultants would bring the proper expertise and knowledge related to the need to restore lost stream, wetlands and shorelines to the design team.

How do we incorporate this into our design effort?

The site selection process should have started the discussion about the need to rehabilitate any streams, wetlands or shorelines on the project site. The design team needs to understand these needs and where possible, develop strategies to incorporate them into the design. Rehabilitation work needs to be shown on the drawings and/or in the specifications so the contractor can complete this work

EXAMPLE
At Spring Canyon Community Park Spring Creek was placed in ditches and underground pipes before 1950 to facilitate the leveling of the area for agricultural purposes. The park design included the re-establishment of Spring Creek through the park with improved wetlands along the channel.

3.7 - Manage stormwater on site

Replicate the hydrologic condition (infiltration, runoff, and evapotranspiration) of the site based on historic, natural, and undeveloped ecosystems in the region.

Benefits

- Reduces runoff and impact to the water quality of receiving water ways.
- Increases groundwater recharge.
- Reduces local erosion with properly designed stormwater facilities.

What are the stormwater hydrologic regulations and policies that need to be applied to our design effort?

The stormwater analysis developed during the site selection process can now be expanded to generate alternatives to handle site stormwater. Local, state, or federal stormwater and floodplain regulations will need to be reviewed for areas of needed compliance. The "water storage capacity" of the site is defined as the capacity of a landscape or site to temporarily store and release water through infiltration, evapotranspiration, and water harvesting/storage.

Who can provide the needed expertise/knowledge for our design effort?

The design team needs to include City Stormwater staff and consultants familiar with the regulations and methodology of the management of stormwater. The team could include stormwater managers, hydrologic and hydraulic engineers, soils engineers, aquatic scientists, and biologists.

How do we incorporate this into our design effort?

The City's Stormwater management regulations and guidelines include ways to control the quality of stormwater leaving a site or entering into receiving waters. Water quality ponds, for example, will provide places for water to settle erosion loads, allow for infiltration and for evapotranspiration. Landscaping with un-mowed grasses and shrubs along water ways that create a buffer improve the chance of erosion material not reaching the water.

Efforts to minimize hardscape areas and include landscape areas that can receive stormwater flows and allow for water quality improvements need to be included into the site design. Protection of existing waterways needs to be included in the design process. Stormwater features and the movement of stormwater across the site need to be included on the drawings and/or in the specifications so the contractor can complete this work.

Example
Spring Canyon Community Park was identified as a location for a City regional stormwater detention pond. The detention pond was designed in to the north area of the park with proper grading to allow Spring Creek storm flows to exit the main channel and enter the pond area

3.8 – Water quality

Protect and enhance on-site water resources and "receiving water" quality. Prevent or minimize generation, mobilization, and transport of common stormwater pollutants and watershed-specific pollutants of concern to receiving waters, including surface water and groundwater, and combined sewers or stormwater systems.

Benefits

- Lessens the impact of site flows to the water quality of receiving water ways.
- Properly designed facilities reduce pollutants to receiving water ways.

What are the water quality regulations and policies that need to be applied to our design effort?

Projects that go through the City's Development Review process are required to comply with Code 3.4.3 Water Quality. The development shall comply with all applicable local, state and federal water quality standards, including those regulating erosion and sedimentation, storm drainage and runoff control, solid wastes, and hazardous substances. The project shall be designed so that precipitation runoff flowing from the site is treated in accordance with the criteria in the Storm Drainage Design Criteria and Construction Standards found in the Code.

Who can provide the needed expertise/knowledge for our design effort?

The design team needs to include the appropriate staff from Stormwater and consultants as needed to ensure the design meets the appropriate standards. This can include floodplain regulators, stormwater and hydraulic engineers, water quality scientists, aquatic biologists, and plant ecologists.

How do we incorporate this into our design effort?

The Storm Drainage Design Criteria and Construction Standards will provide direction for the project's water quality design effort. Requirements need to be applied early in the design process to ensure these needed facilities fit on the site and are compatible with the other design items. The needed water quality improvements need to be shown on the drawings and/or specifications so the contractor can complete this needed work.

Example
The hard surfaced areas at Soft Gold Neighborhood Park have stormwater collected and piped to a water quality pond near the entrance. This pond is sized to detain small storm events, per Stormwater regulation, before being released to the Poudre River basin.

3.9 - Integrate rainwater/stormwater into the design

Design rainwater/stormwater features to provide a landscape amenity. Integrate visually and physically accessible rainwater/stormwater features into the site in an aesthetically pleasing way.

Benefits

- Reduces irrigation needs if features can help irrigate certain project areas.
- Requires reduced maintenance if features are protected and properly used.

What are the water quality/stormwater features regulations and policies that need to be applied to our design effort?

The site design that can take rainwater/stormwater and make it beneficial to the site is preferred and supports the City's sustainable efforts related to water consumption. Rainwater falling on the site should be treated as an amenity through the way it is received, conveyed and managed on the site, and made accessible to site users. A special note about rain water is that in Colorado our State Water Laws require this water return to the basin without being interrupted. Many "beneficial" uses such as for site irrigation are presently not allowed by State laws.

Who can provide the needed expertise/knowledge for our design effort?

The design team should include staff and consultants who have expertise/knowledge on how rainwater/stormwater can benefit the site. These could include Stormwater staff, hydrologists, civil engineers, and landscape architects who have knowledge of regulations and methods to incorporate rainwater/stormwater into a project design.

How do we incorporate this into our design effort?

During the design process the design team needs to review various site designs with a focus on how rainwater/stormwater can be beneficial to the site. How the water can be directed to a certain location for the benefit of the site needs to be considered as part of the design process. Water movement across the site needs to be shown on the drawings and/or in the specifications so the contractor can complete this important work.

Example
Bioswales between the parking areas collect parking lot runoff at Fossil Creek Community Park and naturally irrigate the plants that grow in the swales and help purify the water as it moves to the water quality pond.

3.10 - Maintain water features to conserve water and other resources

Design and maintain water features in the landscape with minimal or no make-up water from potable sources or other natural surface or subsurface water resources.

Benefits

- Reduces the need for domestic or raw water.
- Provides educational opportunities about the conservation of water.

What are the water uses for landscape water feature regulations and policies that need to be applied to our design effort?

It is the goal of the City's Water Utilities to reduce water consumption.

Who can provide the needed expertise/knowledge for our design effort?

The City's Sustainability team has staff with expertise/knowledge in water conservation. Park maintenance and horticulture staffs also have information the design team will find valuable in this area. Water feature designers who specialize in water supply, use and storage will be able to review the technical options for various ideas as water features are developed for the project.

Water quality experts are also needed to evaluate the potential health hazards associated with water features that have human contact with untreated water sources, such as at lakes, ponds, streams, irrigation ditches and stormwater.

How do we incorporate this into our design effort?

The design team will need to have a strong presence of staff and consultants in this area to ensure any water feature is correctly designed to minimize water usage. A water feature will need design team review for such items as source of water, amount of water needed, how the water is treated or not treated, and methods to minimize or eliminate any negative impacts of the feature on the surrounding water ecosystem. The water feature information needs to be placed in the drawings and/or in the specifications so the contractor can complete this work.

Example
The splash park area at Oak Street Plaza user domestic water that is purified and recycled, thus minimizing the amount of water needed to operate the splash park.

3.11 - Control and manage known invasive plants found on site

Develop and implement an active-management plan for the control and subsequent management of known invasive plants found on site to limit damage to local ecosystems.

Benefits

- Restores habitat conditions that have been altered by invasive species.
- Benefits native species and increases the likelihood of establishing a more diverse, self sustaining vegetation community.
- Allows for the development of complex ecological relationships.
- Improves potential habitat value for local fauna through increased biodiversity.

What are the invasive plants regulations and policies that need to be applied to our design effort?

Larimer County maintains a list of noxious plants that are prohibited from being allowed to grow on a site. Invasive plants not in the noxious plant category need to be controlled on the site to enable a healthy stand of vegetation to develop and to protect adjacent property owner's landscaped areas.

Who can provide the needed expertise/knowledge for our design effort?

The design team should consult with known local plant scientists, biologists, and County weed control staff. CSU can be a very helpful resource due to their agricultural expertise and research into weeds and their control.

How do we incorporate this into our design effort?

The site assessment should include a listing of the vegetation on the site and any concerns about noxious or invasive plants. During the design time frame the site should be managed to remove unwanted plants. The long-term management of the site should be included in the discussion of the site design so control of unwanted vegetation can be a part of the design effort. Doing so can result in minimizing or the elimination of these plants. Conditions on the edge of the site can be analyzed to ensure neighboring unwanted plants do not enter the site through proper design elements.

The design phase should also include methods during construction to control any unwanted vegetation. The requirements to control invasive plants needs to be shown on the drawings and/or listed in the specifications for the contractor to do the needed work.

Example
An undeveloped park site typically has a majority of the site in alfalfa for a crop that protects the soil and requires minimal control of unwanted weeds. The Iron Horse Park site has a dry land pasture cover crop. Both sites can be hayed as needed with the hay helping to cover operation and maintenance costs. Noxious and invasive plants for undeveloped and developed sites are controlled per Parks Maintenance's weed control process.

3.12 - Use appropriate, non-invasive plants

Use only plants that are non-invasive and appropriate for site conditions, climate, and design intent to improve landscape performance and reduce resource use.

Benefits

- Encourages biodiversity.
- Appropriate vegetative systems are far less susceptible to invasive species.

What are the plant regulations and policies that need to be applied to our design effort?

Larimer County maintains a list of noxious plants that are prohibited from being allowed to grow on a site. Invasive plants not in the noxious plant category need to be controlled on the site to enable a healthy stand of vegetation to develop and to protect adjacent property owner's landscaped areas.

Who can provide the needed expertise/knowledge for our design effort?

Park Maintenance, the City's horticulture staff, CSU plant specialists, and agronomists will have the expertise/knowledge to ensure the proper vegetation is applied to the site. Soils and site drainage information will also play a part in the vegetation selection process.

How do we incorporate this into our design effort?

During the design process the team will meet with the experts to develop a planting plan for the site. Consideration needs to be given to such items as: how use of the site will impact the health of the selected vegetation; compatibility with the surrounding ecosystem vegetation; water usage; mowing and fertilizer needs, and control of unwanted vegetation. Any information needed to control invasive plants during the construction phase needs to be shown on the drawings and/or listed in the specifications.

Example
The plants for the irrigated turf areas at parks are selected based upon the intended use, latest grass information from suppliers, review of grass types in our system, and site soil and water information. The low-maintenance grasses are also selected based on the same criteria that included the desire for various height grasses for visual character and wildlife value.

3.13 - Create a soil management plan and minimize soil disturbance

Develop and communicate to construction contractors a soil management plan (SMP) prior to construction to limit disturbance, assist soil restoration efforts, and define the location and boundaries of all vegetation and soil protection zones. Limit disturbance of healthy soil to protect soil horizons and maintain soil structure, existing hydrology, organic matter, and nutrients stored in soils.

Benefits

- Maintains natural soil structure and thus the beneficial microorganisms and soil organic content.
- Limits soil compaction and reduces runoff.
- Maintains vegetation, reducing the need for replanting.
- Maintains habitat.

What are the soil management regulations and policies that need to be applied to our design effort?

If a site contains soil and vegetation that is appropriate for the finished project and the area does not need to be disturbed for construction, the less soil and vegetation disturbed the better. Not having to disturb un-needed areas results in less chance of erosion from wind and water during the construction of the project. This effort supports the City's effort of reducing soil erosion that could possibly impact air or water quality.

Who can provide the needed expertise/knowledge for our design effort?

Staff and consultant expertise/knowledge about the construction of the project and existing soil and vegetation will result in the identification of soil/vegetation areas needing preservation. Experts in soil/plant ecology, biologists, engineers, landscape architects and project managers are needed to ensure soil management is accomplished as part of the project.

How do we incorporate this into our design effort?

The design effort will include the "limits of disturbance" boundary to minimize the construction to areas needing work. Areas outside of the "limits of disturbance" will be identified on the drawings as areas of "no work." Disturbed areas will then have vegetation established per the developed specifications. The site drawings should show disturbed areas and how they will be re-landscaped and preserve the soil's microbiological functions.

Example
The development of Spring Canyon Community Park included a plan for stripping, storage, and replacement of topsoil. Areas not being disturbed were protected by temporary fencing controlling vehicle access. This was very evident on the hill side west of the park where the new irrigation line was installed in the natural area and limits of construction were closely set and monitored during construction to minimize soil disturbance and exposure to erosion.

3.14 - Preserve all vegetation designated as special status

Identify and preserve all vegetation designated as special status by local, state, or federal entities.

Benefits

- Preserves mature ecosystems and animal habitat.
- Reduces energy use by minimizing new plantings and transportation.
- Protects desirable plants from being crowded or shaded out.

What are the appropriate soil disturbance regulations and policies that need to be applied to our design effort?

During the design process the identification of any trees or plants that are of cultural, historical, or of local, state, or federal importance need to be identified and protected to the extent possible.

Who can provide the needed expertise/knowledge for our design effort?

Staff and the consulting team needs to have the expertise/knowledge to ensure special plants and trees on the site are protected. This may require such information as the City Forester has on trees, plant ecologists, biologists and landscape architects knowledgeable of local plants and trees.

How do we incorporate this into our design effort?

If any special status trees or plants are identified then the drawings and specifications need to reflect this importance to the contractor. Highlighting these vegetation areas on the drawings and even having special notations about the cost of preservation on the bid schedule help the contractor not overlook these trees and plants during construction.

Example
The development of Spring Canyon Community Park required the preservation of a stand of old cottonwood trees. Typically, being in a park with the public in the area of the trees would have resulted in pruning of the trees and the removal of some if they posed a hazard to the public. A more appropriate solution was to identify the tree area as a wildlife area and fence to keep people out of the area. The solution resulted in the trees remaining for people to visually enjoy while maintaining their significant wildlife value.

3.15 - Preserve or restore appropriate plant biomass on site

Maintain or establish regionally appropriate vegetative biomass to support the ecosystem benefits provided by vegetation on site.

Benefits

- Protects existing plant and animal communities, prevents species extinction, and helps maintain genetic diversity.
- Protects nutrients held in the biomass of native vegetation.

What are the regional vegetative biomass regulations and policies that need to be applied to our design effort?

The Ecological Assessment Study done as part of the Development Review process will contain information about the plants and trees found on the project site. Maintaining these plants and trees is an important topic for the design discussion. Existing trees and plants that do not need to be removed provide instant benefits to the project.

Who can provide the needed expertise/knowledge for our design effort?

The needed expertise/knowledge for this item should be found with staff environmental experts, landscape architects, forestry, biologists, and plant ecologists.

How do we incorporate this into our design effort?

The existing plant biomass and the proposed biomass should be compared to determine how the project does in this area. Many times, for example, park development will result in more trees than contained on the original site. Vegetated areas need to contain adequate soil depth and water through natural runoff and/or irrigation for healthy plant growth. This information needs to be placed on the drawings and/or in the specifications so the contractor knows how to complete this needed work.

Example
The trees and shrubs added to Soft Gold Neighborhood Park were selected by City Forestry and the design team. Native cottonwood trees were added that complement the cottonwood trees in the adjacent natural area. Sections of the park that abut the natural area had grass species selected by Natural Resource staff that will match their selected grasses for their restoration efforts on the natural area.

3.16 - Use native plants

Plant appropriate vegetation that is native to the eco-region of the site.

Benefits

- Conserves local water supply.
- Helps preserve and increase genetic diversity.
- Helps preserve local pollinators, insects, birds, and mammals.

What are the native plant regulations and policies that need to be applied to our design effort?

The City's water conservation goals support the use of native plants due to their need for less water.

Who can provide the needed expertise/knowledge for our design effort?

The City's Environmental staff, plant ecologists, biologists, and landscape architects knowledgeable about native plants will have the expertise/knowledge to determine how new areas of native plants can fit into the project design.

How do we incorporate this into our design effort?

The project may have opportunities for the use of native plants and they should be used were appropriate. Native plant areas need to be shown on the drawings and/or in the specifications so the contractor can accomplish this work.

Example
The development of new trails results in the establishment of buffalo and blue gramma grasses along the trail edges. Both grasses are more natural than other grasses and have the advantage of being low growing and require less mowing. The grasses also can survive without irrigation and fertilizers.

3.17 - Preserve plant communities native to the eco-region

Preserve plant communities native to the eco-region of the site to contribute to regional diversity of flora and provide habitat for native wildlife.

Benefits

- Stable vegetative systems are far less susceptible to invasive species, pests, and disease.
- Vegetative systems on the project site that are linked to surrounding systems expand upon the systems.

What are the native plant preservation regulations and policies that need to be applied to our design effort?

The Ecological Assessment Study done as part of the Development Review process will contain information about the vegetation found on the project site. Maintaining this vegetation is an important topic for the design discussion. Existing native vegetation that does not need to be removed provide instant benefits to the project. The City's water conservation goals support the use of native plants due to their need for less water.

Who can provide the needed expertise/knowledge for our design effort?

City Natural Resource staff, plant ecologists, biologists, and landscape architects will have the expertise/knowledge to determine how existing areas of native plants can fit into the project design.

How do we incorporate this into our design effort?

The project may have opportunities for the preservation of native vegetation and the effort should be made to use this vegetation were appropriate. The preservation of native plant communities must be noted on the drawings and/or specifications so the contractor can protect these areas.

Example
The Poudre Trail at La Porte resulted in the elevation of the trail on bridges along about 400 feet of the Poudre River bank edge to avoid damage to plants that support the rare brown eyed butterfly

3.18 - Restore plant communities native to the eco-region

Restore appropriate plants and plant communities native to the eco-region of the site to contribute to regional diversity of flora and provide habitat for native wildlife.

Benefits

- Restoring plant communities which are native to the eco-region protect and enhance ecological connectivity and habitat.

What are the native plant restorative regulations and policies that need to be applied to our design effort?

The City does not have a requirement or regulation for the restoration of native plants on a site. However, incorporating native plants into a design will add landscape diversity, reduce water and mowing needs and help demonstrate to the community that such areas are attractive and appropriate in an urban setting.

Who can provide the needed expertise/knowledge for our design effort?

City Natural Resource staff, plant ecologists, biologists and landscape architects and other disciplines knowledgeable about plant ecosystems are important to the success of native plant restoration.

How do we incorporate this into our design effort?

The design team will be able to determine what is needed on the site for the site to function for its intended uses. During this process opportunities should be explored for native plants and grasses to be incorporated into the site design. The drawings and/or specifications need to contain this information so the contractor can accomplish this work.

Example
The canyon walls in Spring Canyon Community Park are planted with a variety of grasses and trees found in Colorado. They add character to the park, are visually appealing, and create additional wildlife cover in the park.

3.19 - Use vegetation to minimize building heating requirements

Place vegetation in strategic locations around buildings to reduce energy consumption and costs associated with indoor climate control for heating.

Benefits

- Properly placed vegetation can reduce building heating needs.

What are the building landscaping regulations and policies that need to be applied to our design effort?

The placement of landscaping to help reduce energy heating consumption supports the City energy reduction efforts.

Who can provide the needed expertise/knowledge for our design effort?

Landscape architects, City Forestry and architects will have the expertise/knowledge to evaluate the ability of landscaping to help with building heating.

How do we incorporate this into our design effort?

The design team shall review various tree and shrub types to determine their suitability to help with reducing heating energy consumption. It should be noted that in the Land Use Code (Section 3.2.3(d) shading) has requirements about shade not limiting access to sunshine for solar applications and the effect of shadows on adjacent property must be considered in the design process. Landscaping designed to help with building heating must be placed on the drawings and/or in the specifications so the contractor can complete this work.

Example
The Forestry Division has been working on this item for some years and recommends that shade trees be planted on the east, west, and north sides of buildings. Keeping the south side of a building open of tall shade trees allows for passive light and roof solar panels.

3.20 - Use vegetation to minimize building cooling requirements

Place vegetation and/or vegetated structures in strategic locations around buildings to reduce energy consumption and costs associated with indoor climate control.

Benefits

- Properly placed vegetation can reduce building cooling needs.

What are the building landscaping regulations and policies that need to be applied to our design effort?

The placement of landscaping to help reduce energy consumption for cooling supports the City energy reduction efforts.

Who can provide the needed expertise/knowledge for our design effort?

Landscape architects, City Forestry, and architects will have the expertise/knowledge to evaluate the ability of landscaping to help with building cooling.

How do we incorporate this into our design effort?

The design team shall review various tree and shrub types to determine their suitability to help with reducing energy consumption for cooling. It should be noted that in the Land Use Code (Section 3.2.3(d) shading) there are requirements about shade not limiting access to sunshine for solar applications and the effect of shadows on adjacent property must be considered in the design process. This information needs to be placed on the drawings and/or in the specifications so the contractor can accomplish this work.

Example
The Forestry Division has been working on this item for several years and recommends that shade trees be planted on the east, west, and north sides of buildings. The east and west trees provide shading in the early morning and late into the afternoon. The summer sun's high elevation prevents shade trees from being overly effective if planted on the south side of the building on any structure more than one story high. Keeping the south side of a building open of tall shade trees allows for passive light to enter the building and roof solar panels..

3.21 - Reduce urban heat island effects

Use vegetation and reflective materials to reduce heat islands and minimize effects on microclimate and on human and wildlife habitat.

Benefits

- Reduces the energy cooling need of buildings.
- Provides landscape spaces that reduce the heat island effect with shade and cooling vegetation landscapes.

What are the reduction of urban heat island regulations and policies that need to be applied to our design effort?

The placement of landscaping and reflective material can help reduce heat islands. This reduction in energy consumption supports the City energy reduction efforts. City Codes require tree plantings in parking lots and urban heat island reduction standards are included in projects that will be LEED certified.

Who can provide the needed expertise/knowledge for our design effort?

Landscape architects, City Forestry, and architects will have the expertise/knowledge to evaluate the ability of landscaping and shade structures to help with reducing heat islands.

How do we incorporate this into our design effort?

The design team should review various vegetation types to determine their suitability to help with reducing heat islands. It should be noted that in the Land Use Code (Section 3.2.3(d) shading) there are requirements about shade not limiting access to sunshine for solar applications and the effect of shadows on adjacent property must be considered in the design process. This information will need to be placed on the drawings and/or in the bid specifications so the contractor can accomplish the work items as designed.

Example
The Land Use Code requires that 6% of parking areas have vegetation. The introduction of shade trees in parking lots minimizes the heat island affect of the parking lot and adds aesthetic value. At Spring Canyon Community Park, the overflow parking areas were put into grass to help minimize the heat island affect.

3.22 - Reduce the risk of catastrophic wildfire

Design, build, and maintain sites to manage fuels to reduce the risk of catastrophic wildfire both on site and in adjacent landscapes.

Benefits

- Project sites that contain landscape irrigation can potentially help reduce area fire danger.

What are the prevention of wildfire regulations and policies that need to be applied to our design effort?

Poudre Fire Authority will have any regulations or guidelines that would apply to the landscaping of a site and risk of wildfires.

Who can provide the needed expertise/knowledge for our design effort?

Poudre Fire Authority staff will be a reviewer of any project brought through the Development Review process. If a project does not go through the Development Review process, the Fire Authority should still be contacted to review the landscape plan.

How do we incorporate this into our design effort?

The design team needs to be aware of the fire potential of a landscape plan. The team should consider such items as where turf and decorative irrigation systems are planned, how tall and thick will the grasses be in low maintenance areas, what is the maintenance of these areas, and emergency and emergency access points into the site.

Example
Spring Canyon Community Park is located between a 500 acre natural area on the west and residential homes and a school on the east. Prevailing winds come from the west and any wildfire on the natural area could spread toward the park and east to the residential units. The activation of the park irrigation system during the time of a wildfire on the natural area could help contain the fire and reduce damage to the park and residential units.

3.23 - Eliminate the use of wood from threatened tree species

Only purchase wood products extracted from non-threatened tree species to minimize negative effects on other ecosystems.

Benefits

- Preserves the rain forest and other ecosystems.
- Reduces carbon dioxide and pollution emission.

What are the threatened tree species regulations and policies that need to be applied to our design effort?

The use of non-threatened tree species would support the City's sustainability effort. Information about threatened trees can be found from publications such as the Convention on International Trade in Endangered Species or from organizations such as the International Union for Conservation of Nature Red List of Threatened Species.

Who can provide the needed expertise/knowledge for our design effort?

The design team needs to have expertise/knowledge about non-threatened tree species. City Forestry will be a key contact on threatened tree species. City Purchasing will also have information from their process to supply to the design team.

How do we incorporate this into our design effort?

The City's Purchasing Department can help with any needed language required for this effort in the bid documents. City Forestry will be able to supply information about tree suppliers and their non-use of threatened tree species.

Example
The iron wood used on trail bridges is certified to be from plantations and not from endangered forests.

3.24 - Maintain on-site structures, hardscape, and landscape amenities

Maintain existing structures, hardscape, and landscape amenities (e.g., retaining walls and benches) in their existing form to extend the life cycle of existing building stock, conserve resources, and reduce waste.

Benefits

- Reduces material that may have to be sent to a landfill.
- Reduces new site items that will have increased energy and carbon emissions.
- Reduces project costs.

What are the existing site amenities regulations and policies that need to be applied to our design effort?

The City does not have any regulations related to the actual protection and re-use of existing site amenities. However, sustainability efforts should always include the incorporation of existing site amenities into the design to reduce energy and costs by not removing the items plus the potential to recycle any un-needed items on site should be evaluated.

Who can provide the needed expertise/knowledge for our design effort?

Hardscape and landscape items usefulness can be determined by civil engineers, architects, and landscape architects on the design team. Structures will need to be evaluated by an architect to determine their suitability for re-use on site.

How do we incorporate this into our design effort?

The potential for re-use of site amenities should have begun during the site selection process. Early in the design process the site amenities need to have their final evaluations done to determine if their remaining is helpful to the project. If they are not; then the most sustainable method(s) need to be applied for their incorporation into the site and/or their removal from the site.

Example
Waters Way Neighborhood Park is located adjacent to Benson Reservoir with a portion of the irrigation ditch from the dam crossing the park site. The ditch is no longer active and the head gate at the dam for the ditch was salvaged and incorporated into the Art in Public Places display.

3.25 - Design for deconstruction and disassembly

Design to facilitate reuse and avoid sending useful materials to the landfill.

Benefits

- Reduces material that may have to be sent to a landfill.
- Allows for recycling of as many materials as possible.

The deconstruction and disassembly of the facility will be many years (20 years plus) into the future. At the time a facility is ready for replacement the team working on the facility's deconstruction will be able to determine the cost effectiveness of careful disassembly for materials to be recycled or reused in some fashion.

Example
The removal of the Creamery Building in 2011 resulted in the salvage of some metal for recycling and numerous old bricks for future use. New recreation facilities will have a life of at least 20 years; thus the actual adjustment to a design for envisioned deconstruction and disassembly are difficult to envision and accomplish. Items such as dry stack block and segmented pavement are presently in use and portions or all can be recycled easier than more conventional walls or pavements.

3.26 – Reuse salvaged materials and plants

Reuse salvaged materials and appropriate plants to conserve resources and avoid sending useful materials to the landfill.

Benefits

- Reduces materials that may be sent to the landfill.

What are the reuse of materials regulations and policies that need to be applied to our design effort?

The effort to reuse materials and plants on the project supports the City's recycling goal.

Who can provide the needed expertise/knowledge for our design effort?

City staff and consultants will have the needed expertise/knowledge to determine if any reuse of materials is appropriate for the project. This could include engineers, landscape architects, architects, and plant specialists. Local salvage companies who deal with, for example, building materials and steel will have information about their supplies that may be recycled into a project.

How do we incorporate this into our design effort?

The design process will include at numerous steps the ability to determine if reuse of materials can be included in the project. Examples include such items as: existing vegetation, site furnishings, structural building materials, paving materials, etc. A survey of local recycle companies for available materials can be beneficial to the project.

Example
The construction of Spring Canyon Community Park required the removal of several large hazard trees. In one case, the trunk was saved and the Art in Public Places artist carved a mountain lion into the trunk piece. Downed larger timbers were also used as features in the bike course at the park. The Fort Collins Museum and Discovery Science Center reused stone and concrete slabs in the construction on benches.

3.27 - Use recycled content materials

Use materials with recycled content to reduce the use of virgin materials and avoid sending useful materials to the landfill.

Benefits

- Using recycled materials reduces landfill burdens, carbon emissions, and mining of raw materials.
- Use of locally available recycled materials may reduce cost.

What are the recycled materials regulations and policies that need to be applied to our design effort?

The effort to use recycled materials on the project supports the City's recycle goals.

Who can provide the needed expertise/knowledge for our design effort?

City Sustainability Staff, architects, and landscape architects will have the needed expertise/knowledge to determine if any use of recycled materials is appropriate for the project.

How do we incorporate this into our design effort?

The design process will include at numerous steps the ability to determine if recycled materials can be included in the project. Examples include such items as: structural building materials, paving materials, etc. These items would then be identified on the drawings, specifications and bid schedule.

Example
At numerous parks, the benches and trash receptacles are made from recycled plastic materials. Many playground components are manufactured with recycled plastic and steel.

3.28 - Use certified wood

Purchase certified lumber to encourage exemplary forest management that is both environmentally and socially responsible.

Benefits

- Preserves the rain forest and other ecosystems
- Reduces carbon dioxide and pollution emission

What are the certified wood regulations and policies that need to be applied to our design effort?

Staff will need to do more research into certified wood to determine how the certification applies to our park and recreation facilities.

Who can provide the needed expertise/knowledge for our design effort?

City staff and consultants will have expertise/knowledge about wood products and the sustainability efforts of wood suppliers and manufactures. Architects will be the primary source of information about wood products.

How do we incorporate this into our design effort?

Wood products specified in the design process that support sustainability will need to be detailed in the drawings, specifications and bid schedule to ensure the contractor supplies these products.

Example
Staff has not researched the certified wood topic. Research into a supplier's environmental practices should be able to be obtained from the supplier and an evaluation made of their sustainability efforts to determine if they support City goals.

3.29 - Use regional materials

Reduce energy use for transportation and increase demand for materials, plants, and soils that are extracted, manufactured, or grown within the region in order to support the use of local resources and promote a regional identity.

Benefits

- Use of local resources and manufacturing facilities reduces transportation costs and benefits the local economy.

What are the uses of regional material guidelines that need to be applied to our design effort?

The use of regional materials reduces transportation energy use, supports the local economy and promotes a regional identify for suppliers.

Who can provide the needed expertise/knowledge for our design effort?

The design team should include members who have expertise/knowledge of regional materials. Sources of information could include the City's Purchasing Department, staff from various departments who have recently completed a similar project, and regional contractors. Organizations and associations that support sustainable living are additional resources.

How do we incorporate this into our design effort?

The design team should have an understanding of the materials that can be found within the region. Suppliers, manufacturers, and contractors should be consulted during the design phase for their ideas and information on the availability and suitability of regional products.

Example
The sandstone used for decorative features at numerous recreation facilities is obtained locally from a quarry located about 20 miles from Fort Collins.

3.30 - Use adhesives, sealants, paints, and coatings with reduced VOC emission

Select paints, sealants, adhesives, coatings, and other products used in site development that contain reduced amounts of volatile organic compounds to reduce harmful health effects associated with air pollution.

Benefits

- Protects the ozone layer.
- What are the VOC emission regulations and policies that need to be applied to our design effort?

There are numerous regulations and guidelines that provide information on products that can be harmful to the environment or to human health.

Who can provide the needed expertise/knowledge for our design effort?

Architectural firms will have staff that will have expertise and knowledge about VOC's and the latest federal, state and city regulations. The architects will also have information related to adhesives, paints, sealants, and other products that could be harmful to the environment and human health.

How do we incorporate this into our design effort?

The design team can specify low-VOC materials in the construction documents.

Example
This is a difficult item due to the longer lasting performance of such products as epoxy paints for outdoor applications. Paints for interior surfaces have products available that are less harmful to the ozone layer and are part of the LEED certification process. Staff will continue to monitor improvements in low VOC paints as they continue to improve their durability and longevity.

3.31 - Support sustainable practices in plant production

Purchase plants from providers who reduce resource consumption and waste.

Benefits

- Reduces energy uses, carbon emissions and landfill waste

What regulations and policies govern the use of sustainable practices in plant production?

The suppliers of plant material for a project should be using sustainable practices and be locally grown to the extent possible. These practices should include the reduction of water and energy, proper soil amendments, landfill waste reduction and the recycling of materials.

Who can provide the needed expertise/knowledge for our design effort?

The design team should purchase plants from companies that produce the plants using sustainable practices. This information should be available on the supplier's web site and in product information. Landscape architects and the plant nursery will have expertise to help with plant selection.

How do we incorporate this into our design effort?

Suppliers who have embraced sustainability are more prevalent than in past years. The design team will find all suppliers to some degree actively working to make their product more sustainable. Sustainable practices should be reviewed at the time the plantings and supplier are selected by the design team. The suppliers' sustainability practices should support the City's sustainability goals.

Example
Local suppliers of plant materials utilize practices that reduce water demand by using, for example, ground covers around plants and drip irrigation. They also create compost on site for their use and for sale to customers.

3.32 - Support sustainable practices in materials manufacturing

Support sustainable practices in materials manufacturing by purchasing materials from manufacturers whose practices increase energy efficiency, reduce resource consumption and waste, and minimize negative effects on human health and the environment.

Benefits

- Supports the City's environmental sustainability efforts.

What are the sustainable practices in materials manufacturing regulations that need to be applied to our design effort?

Manufacturers that support the sustainability effort have information on their environmental practices that reduce negative environmental effects and increase operating efficiency. Manufacturers are developing "Environmental Management System" policies that include such items as their energy consumption, emissions, use of chemicals, life cycle assessment, and practices that reduce the impact to the environment and promote human health.

Who can provide the needed expertise/knowledge for our design effort?

The design team will be able to research the companies that produce the larger manufactured items in the project for their sustainability efforts. This information should be available on the manufacture's web site and in product information.

How do we incorporate this into our design effort?

Manufacturers who have embraced sustainability are more prevalent than in past years. Likely, the design team will find all manufacturers to some degree actively working to make their product more sustainable. This effort should be reviewed at the time a product is selected by the design team. If the sustainability effort for this product is not to a level of similar products, and price, lifecycle, etc. being equal; the decision to select another manufacturer may be warranted.

Example
Playground manufacturers have made considerable efforts to be sustainable. Many suppliers that use materials that are both recycled and recyclable have a web page that displays their sustainability efforts and have a goal of being carbon neutral.

3.33 - Promote equitable site development

Ensure that the project provides economic or social benefits to the local community.

Benefits

- Builds public awareness of high performance construction initiatives as they are happening.
- Projects create local and regional employment opportunities.

What are the equitable economic and social benefit regulations and policies that need to be applied to our design effort?

The project will be bid for construction through the City's Purchasing Department. Bids are solicited from all contractors who are on the City's bidders list for this type of construction work. The City does not have a local preference regulation, but many times the winning contractor and sub contractors are from Fort Collins or the immediate area.

Who can provide the needed expertise/knowledge for our design effort?

The City's Purchasing Department provides the expertise for the bidding process on all City projects. Typically, City construction bids are awarded to the low - responsible bidder. Purchasing can also help determine if sections of the project are appropriate for construction by community volunteers, youth corps or organizations such as the Boy Scouts.

How do we incorporate this into our design effort?

Purchasing is consulted as the project is being designed to help determine how the bid schedule should be organized and if "work by others" is appropriate, what contractor requirements are necessary, when the bid should be advertised, the length of the bid period and assists with reference checks on the apparent low/responsible bidder. Opportunities may exist to partner with local businesses to provide complementary services to facility or park users.

Example
The Larimer County Youth Corps has been working for several years to install the gravel walking/running path next to new concrete trail sections. The crew can typically install about one mile of gravel path during a week of work.

3.34 - Promote equitable site use

Ensure that the use of the project provides economic or social benefits to the local community.

Benefits

- Promotes community ownership of the facility.
- Community social and cultural events serve a large portion of the population.

What economic and social benefits can be derived from use of the project?

The facility should be open, as much as possible as the need for revenues allow, for free use by the public. Areas that require a fee for use should be clearly identified to the public to avoid confusion. Facilities should be designed to encourage social gathering places for the public to enjoy.

Who can provide the needed expertise/knowledge for our design effort?

Staff who are in charge of running and programming a facility, such as a recreation center, best understand how the facility or site works for the economic and social benefits to the public. Interaction with people who will be using the facility during the design process can result in ideas for events, partnership opportunities, and discussions about reduced fees for lower income users.

How do we incorporate this into our design and operations effort?

The design team will coordinate with staff members who will actually be running or programming a facility. Their information can help shape the layout of a facility, dimensions, location, accessibility, free or fee areas, etc. Public outreach with such tools as open houses, multi-media pages, news releases and other means provide opportunities for the public to provide input into the facility design. During this process, the community can be made aware of the uses available at the facility and coordination could begin with special event organizations.

Example
Soft Gold Neighborhood Park is located in a portion of the community that is economically challenged. Rather than reduce their park to match the very little revenue from park impact fees, additional General Fund revenue was obtained, so Soft Gold Park had the same features and quality to match other parks in our system.

3.35 - Promote sustainability awareness and education

Interpret on-site features and processes to promote understanding of sustainability in ways that positively influence user behavior on site and beyond.

Benefits

- Promoting sustainability is a City goal.
- Education opportunities about sustainability exist at all sites.

What are the sustainability awareness/education opportunities that need to be applied to our design effort?

Education is a very important part of the City's sustainability effort. The design team should be aware of the City's education goals in this area.

Who can provide the needed expertise/knowledge for our design effort?

The City's Environmental Services Department will have staff that is involved in the City's education effort for sustainability. They will be a resource for Parks and Recreation staff to see how environmental education can be included at our facilities and programming effort.

How do we incorporate this into our design effort?

The design team needs to contact the appropriate staff in Environmental Services during the design process. During these contacts items such as: educational opportunities during the design process, during construction, and after the facility is open can be explored. Educational opportunities may include such things as: interactive elements at the facility, programming about sustainable practices, and partnerships that extend sustainability education. Staff who will be working in the facility should be included in this effort to understand how they can help run the facility to support the City's sustainability goals.

Example
The City's conversion from gas golf carts to electric golf carts at Collindale Golf Course was featured in a City sustainability video on the City's web page. The Gardens on Spring Creed emphasizes sustainability in their growing practices and education effort to the community

3.36 - Protect and maintain unique cultural and historical places

Protect and maintain cultural and historical locations, attributes and artifacts to enhance a site's sense of place and meaning.

Benefits

- Preserves important cultural and historical places.
- Cultural and historical places add value to the project.

What are the unique cultural and historical regulations that need to be applied to our design effort?

Cultural and historical places should have been identified as designated, listed, or identified during the site selection process. Building on those findings, the specific historical and/or cultural requirements/regulations now need to be understood by the design team. The Land Use Code contains in Article 3, General Development Standards, Division 3.4.7 "Historic and Cultural Resources" requirements for the preservation and incorporation of historical and cultural site, structures, or objects.

Who can provide the needed expertise/knowledge for our design effort?

The City's Historical Preservation staff will have the expertise related to historical items to guide the design team. The City's Cultural staff will have the expertise related to cultural items to guide the design team.

How do we incorporate this into our design effort?

The design team needs to include the historical and/or cultural staff person so these items are included in the design. The proper recognition and protection of historical and cultural features can be critical to the success of the project. The protection effort needs to continue during the facility's construction and eventually into the site maintenance effort. Many times these items become focal points and educational opportunities for site visitors.

Example
City Park is nearly 100 years old and has retained the character the park obtained many years ago. The main hardscape feature in the park is moss rock which is used for walls. Recent improvements to the park have included moss rock to continue this theme. Also, The Farm at Lee Martinez Park refurbished several existing out-buildings to contain items such as a farm equipment museum and a gift

3.37 - Provide for optimum site accessibility, safety, and wayfinding

Promote site use by increasing user's ability to understand and safely access outdoor spaces.

Benefits

- Allows and encourages users to be efficient with several access options.
- Supports the City's efforts at encouraging alternative modes of transportation.

What are the site accessibility, safety, and wayfinding regulations that need to be applied to our design effort?

The City's Master Transportation Plan contains regulations, guidelines, and information about the City's efforts to effectively and efficiently move the public about the city. The City's Land Use Code contains transportation and circulation standards in Article 3, Division 3.6. The City's Risk Management Department has information on the City's safety policies related to all City activities, sites, etc. The City's Transportation Planning Department and Communication Department have knowledge of how the City sign system works related to wayfinding for the public.

Who can provide the needed expertise/knowledge for our design effort?

If the project is going through Development Review (Land Use Code) then the assigned planner will have expertise on the code requirements for site accessibility. Included in this review is information related to the requirements in the City's Transportation Plans. This plan includes a mass-transit, pedestrian, and bicycle components. Contact with Transportation Planning staff is needed to understand the information related to regulatory and wayfinding signage. The City's Therapeutic Recreation Division is a valuable resource for expertise on service to those with special needs. On-site lighting designers need to be able to balance the nuances of light needs for all users against over lighting a facility. Emergency service providers need to also be consulted to obtain their needs.
How do we incorporate this into our design effort?

During the design effort the team needs to include the planner, if going through the Development Review process, and information from the City's Transportation Planning and Communications Departments. Their expertise and knowledge are critical to ensure all codes and regulations in this area are fulfilled. Risk Management needs to review the design to identify safety and liability risks. Risk Management should be involved early in the design process when site items are being explored; not later when decisions are more difficult to reverse if the risk associated with an item cannot be managed by the City.

Example
Throughout 2011, the City worked on new signage along the trail system. Part of the signage effort involves redoing the regulatory signs (stop signs and warning signs) that will be reviewed by Risk Management for sign location, size, style, etc. for compliance with trail regulatory signs at the local, state, or federal level.

3.38 - Provide opportunities for outdoor physical activities

Provide on-site opportunities that encourage outdoor physical activity to improve human health.

Benefits

- Encourages healthy behavior
- Provides access to fitness and recreation
- Encourages neighborhood interaction
- Addresses the emerging health epidemic of obesity

What are the outdoor physical activities of the community that can be applied to our design effort?

The Parks and Recreation Policy Plan is the resource for understanding the outdoor recreation needs of the community. The Plan has information about recreation trends, comparisons with other communities, community surveys and outdoor recreation action items.

Who can provide the needed expertise/knowledge for our design effort?

The development of the Parks and Recreation Policy Plan will typically include the hiring of a consultant team that specializes in the parks and recreation field. The consultant can bring information about other communities similar to Fort Collins, their view of recreation trends, surveys as to the size of user groups, how one facility fits into the overall recreation system, etc. Parks and Recreation staff will also have considerable knowledge about the community's outdoor physical recreation needs.

How do we incorporate this into our design effort?

The design team needs to be familiar with the Parks and Recreation Policy Plan sections related to the community's outdoor recreation needs. Open houses for the project will provide specific neighborhood, organized sports, etc. information that should build upon the Policy Plan information. The development of an outdoor area to include active and passive recreation spaces encourages all types of outdoor recreation. A variety of recreation features, fields and amenities such as trails, walking paths, bicycle racks, drinking fountains and restrooms help to encourage outdoor recreation.

Example
Parks contain a variety of active and passive recreation spaces. Outdoor physical activities can occur on open turf areas, ballfields, skate parks, basketball and tennis courts, and on park loop trail and sidewalk systems. Playgrounds provide physical play space for younger children and contain a variety of challenging features.

3.39 - Provide views and outdoor spaces for mental restoration

Provide visual and physical connections to the outdoors to optimize the mental health benefits of site users.

Benefits

- Encourages visitor to relax, re-energize and disconnect from the busy urban environment.

What are the policies that guide provisions of views and quiet outdoor spaces?

The Parks and Recreation Policy Plan at the beginning of Chapter VIII states the importance recreation facilities have on the ability to "enhance health and safety, and create a positive quality of life for citizens". Balance passive, self-directed activities with programmed, active sports, games and events.

Who can provide the needed expertise/knowledge for our design effort?

Landscape architects are trained to analyze a site and layout a design that meets the recreation needs of the users. Part of this analysis would be related to creating views and quiet areas that provide spaces for mental restoration.

How do we incorporate this into our design effort?

A landscape architecture site analysis will contain constraints and opportunities. Part of the next steps in the design will include identifying quiet areas and views of on-site or off-site vegetation, landscape areas, promenade features, etc. can provide mental restoration. Many times an active part of the facility will also allow the same mental restoration when the area is not busy or changes by the seasons of use. Shade trees, benches, separation from high use areas, and appropriate vegetation can improve the comfort and aesthetics of these areas for mental restoration.

Example
Fossil Creek Community Park has benches and resting areas located throughout the park with views of the foothills. These quiet spaces were designed in the park to encourage the public to rest and enjoy the wonderful park landscape. The hill area is a popular place for people to sit and enjoy the solitude.

3.40 - Provide outdoor spaces for social interaction

Provide outdoor gathering spaces of various sizes and orientations to accommodate groups, for the purpose of building community and improving social ties.

Benefits

- Increases participation at the facility.
- Promotes social interaction and integration
- Provides recreational opportunities for diverse groups.

What are the social interaction needs that can be included in our design effort?

The site design should include areas where social interaction is allowed to happen. Such areas could include picnic shelters, quiet shaded resting areas, wide spots on trails where people can meet and interact, plazas outside of building, etc. Not forgetting that programmed spaces also provide social interaction for players and spectators.

Who can provide the needed expertise/knowledge for our design effort?

Landscape architects are trained to analyze a site to determine if social gathering places are possible and their appropriate size.

How do we incorporate this into our design effort?

During the site assessment process the areas on the site that may accommodate many different group sizes. Plan for groups from one-on-one to larger gatherings and the facilities needed for the variety of users. These areas should be explored during the design process and as their shape develops such items as parking, access routes, shade, seating types and areas, and other site amenities should continue to be refined.

Example
City Park has seven large picnic shelters that are available for large social events. The area is accessible to parking, restrooms, the playground, City Park Pool, and Club Tico.

3.41 - Reduce light pollution

Reduce light pollution by minimizing light trespass off site for the purpose of reducing sky-glow, increasing nighttime visibility and minimizing negative effects on nocturnal environments and human health and functioning.

Benefits

- Helps reduce “night glow” and supports the City’s Dark Sky effort.
- Reduces the disturbance to nocturnal species.

What are the light pollution reduction regulations that need to be applied to our design effort?

The Land Use Code Article 3, General Development Standards contains Division 3.2 Site Planning and Design Standards, 3.2.4 – Site Lighting. If a project is going through the Development Review process then the lighting requirements in the Land Use Code will apply. These lighting standards are a good source of information even if a project is not required to go through the development review process.

Who can provide the needed expertise/knowledge for our design effort?

The design team needs to have a light designer that is familiar with the City’s site lighting requirements and any other (Federal or State) requirements that are appropriate to the project. Special attention needs to be given when the planned facility is near sensitive natural areas or adjacent to residential areas to ensure light spillage is not a problem.

How do we incorporate this into our design effort?

The design team needs to involve the electrical firm in the layout process so the firm can give valuable site requirement information. The design may need to be modified to satisfy site lighting requirements. Lighting requirements need to be placed in the construction drawings and specifications.

Example
The lights at parks are downward directional and are sparingly located throughout the park. The lighting systems are designed by firms that make sure the lights comply with the current City regulations and support the “Dark Sky” effort.

Introduction

The construction of a park, trail or recreation facility is another opportunity to apply sustainability practices. Construction specifications and drawings developed during the design phase will contain sustainability items that need to be adhered to during the construction process. The City's Environmental and Purchasing Departments can also be a source of construction standards that relate to the City's sustainability efforts.

The Leadership in Energy and Environmental Design (LEED) and The Sustainable Site Initiative (SSI) programs will continue to be applied during the construction process. LEED and SSI are very detailed processes that bring sustainability practices and methods to all aspects of construction. Also, the City's sustainable building requirements are to be applied to the project.

The application of both the Sustainable Site Initiative (SSI) and the LEED programs to the outdoor area around a building, and a building, during construction will increase the sustainability of the project.

The Sustainable Sites Initiative (SSI) contains a section on construction. The elements that relate to our construction process are as follows:

4.1 – Control and retain construction pollutants

Prevent and minimize discharge of construction site pollutants and materials to protect receiving waters (including surface water, groundwater, and combined sewers or stormwater systems), air quality, and public safety.

Benefits

- Lessens the impact of site flows to the water quality of receiving water ways.
- Properly designed construction facilities reduce pollutants to receiving water ways.

What are the site pollutant regulations that need to be applied to our construction effort?

The County Dust Discharge and State Stormwater Discharge permits are aimed at protecting the air and water quality at a construction site. The Stormwater Pollution Prevention Plan (SWPPP) required as part of the Stormwater Discharge permit is very detailed and controls ground water discharges at a construction site through best management practices. The Larimer County Dust Discharge permit outlines the requirements to control air borne pollutants at a construction site.

Who can provide the needed expertise/knowledge for our construction effort?

Staff with construction project management expertise/knowledge of the required permits is critical to the success of the construction process. The City's Regulatory Department in Utilities has staff that can assist with the regulatory compliance requirements needed during the construction process.

How do we incorporate this into our construction effort?

The required permits are to be obtained by the contractor and this requirement should be included in the construction specifications. Staff needs to actively monitor the permit requirement for compliance since the City can, in some instances, be also responsible for any fines or penalties.

Example
The construction of the BMX Track at the Southeast Community Park is an example of where the contractor was required to obtain the Larimer County Dust Control permit and State Stormwater Discharge permit. Both permits have regulatory requirements that have to be documented for the life of the project The documentation can be checked at any time by the County and the State.

4.2 – Restore soils disturbed during construction

Restore soils disturbed during construction in all areas that will be re-vegetated (all areas that will not be built upon) to rebuild soils' ability to support healthy plants, biological communities, water storage and infiltration.

Benefits

- Restoring soils that are ready for vegetation reduces wind and water erosion.
- Proper soil restoration can ensure a healthy vegetative landscape.

What are the soil restoration regulations that need to be applied to our construction effort?

City Code Chapter 12, HEALTH AND ENVIRONMENT, Division 2, SOIL AMENDMENT applies to projects with the intent to enhance soil water storage capacity, improve conditions for plant growth and reduce water runoff. Projects going through the development review process will need to comply with Land Use Code, 3.8.21 related to soil amendments.

Who can provide the needed expertise/knowledge for our construction effort?

Staff and consultants with expertise/knowledge of soil properties to support healthy plants, biological communities, water storage and infiltration need to be a part of the construction process. Experts in the field of soil analysis such as agronomists, vegetation types such as landscape architects, soil and hydrologic engineers will all be needed to ensure the soil can properly support the planned vegetation.

How do we incorporate this into our construction effort?

Drawings and specifications related to restoring of site soils need to be defined so the contractor can perform the needed work to ensure the soils are properly prepared for site vegetation. Such items as: how topsoil is protected during the development process, the type and amount of soil amendments to be applied to the soil, and the type and amount of import topsoil (not from prime farmland) need to be defined in the drawings and specifications.

Example
Registry Neighborhood Park topsoil was removed, stored, and replaced at the completion of site construction. The soil was amended and scarified per the Land Use Code requirements. During construction, the top soil piles were watered as needed to prevent soil movement due to wind.

4.3 – Restore soils disturbed by previous development

Restore soil function in areas of previously disturbed topsoils and subsoils to rebuild the site's ability to support healthy plants, biological communities, water storage, and infiltration.

Benefits

- Restoring soil function to previously disturbed soils enables the entire site to be suitable for the planned vegetation.

What are uses for the restoration of soil regulations for previous disturbed soils that need to be applied to our construction effort?

The site selection and design process will have identified any disturbed topsoil and subsoil that will need to be restored as part of the project. As in 7.2 the appropriate City Code and Land Use Codes will apply to these areas.

Who can provide the needed expertise/knowledge for our construction effort?

Experts in the field of soil analysis such as agronomists, vegetation types such as landscape architects, soil and hydrologic engineers will all be needed to ensure the soil can properly support the planned vegetation.

How do we incorporate this into our construction effort?

Soil fertility tests can determine environmentally responsible amendments that will improve the soil readiness for vegetation. Drawings and specifications for the contract documents need to inform the contractor how and what to do to accomplish a soil profile that supports the intended vegetation.

Example
Old Fort Collins Heritage Park is located on a City landfill. During the closure of the landfill, the site was "topped" with 6 inches to 1 foot of good topsoil. This effort allowed for park grass areas to be established.

4.4 – Divert construction and demolition materials from disposal

Divert construction and demolition (C&D) materials generated by site development from disposal in landfills and combustion in incinerators. Recycle and/or reuse C&D materials on site, when possible, or redirect these materials back to the manufacturing process, other construction sites, or building materials reuse markets.

Benefits

- Reduces the amount of material that goes to the landfill.
- Supports the City's recycle effort.

What are the regulations for the disposal of materials in a landfill that need to be applied to our construction effort?

The City has goals to reduce the amount of material that goes to the landfill. Purchasing may have requirements to this effort in a contract.

Who can provide the needed expertise/knowledge for our construction effort?

City Environmental staff working in the recycle area will have expertise/knowledge about the City's recycle effort and how it applies to construction projects. Also, the City's Purchasing Department will have information about how recycling can be incorporated into the construction contract and any current City requirements contained in the contract. Local composting contractors or City operations can receive unneeded clearing materials or even on-site mulching may be possible.

How do we incorporate this into our construction effort?

The drawing and/or specifications for the construction of the project will need to include information for the contractor as to how recycling is to be accomplished during the construction process.

Example
The old asphalt removed from the Gustav Swanson Natural Area trails was transported to the City's asphalt recycle plant where it was processed into material that could be reused or repurposed not only for other City projects, but also by external customers.

4.5 – Reuse or recycle materials generated during construction.

Divert from disposal vegetation, soils, and mineral/rock waste generated during construction.

Benefits

- Reduces energy and greenhouse gas emissions by reusing site materials.
- Can result in a cost savings to the project.

What are the uses of recycled materials regulations that need to be applied to our construction effort?

The reuse of vegetation, rocks, and soil generated during construction will support the City's recycling effort.

Who can provide the needed expertise/knowledge for our construction effort?

The design team needs to include the recycle of site materials as an important aspect of the design effort. Landscape architects and other disciplines have training and expertise/knowledge about how materials can be recycled into this or another project. Many times coordination with other City departments, the development community and contractors can lead to materials being recycled.

How do we incorporate this into our construction effort?

The existing site materials need to be evaluated for their reuse or recycle ability during the design process. The project drawings and/or specifications will then tell the contractor how these items will be recycled.

Example
Waters Way Neighborhood Park was able to reuse the old dam ditch diversion rock and gate as part of an Art in Public Places project. The material was used by the artist to show a ditch diversion structure with irrigation ditches in the ground, flowing from the structure.

4.6 – Minimize generation of greenhouse gas emissions and exposure to localized air pollutants during construction

Use construction equipment (for example trucks that use bio-fuels) that reduces emissions of localized air pollutants and greenhouse gas emissions.

Benefits

- Efficiency of operations is key to good construction practices and as a by-product, reduces greenhouse gas emissions.
- Efficiency of operations results in contractor reducing costs.

What are the greenhouse gas emissions and air pollutants regulations that need to be applied to our construction effort?

Reducing greenhouse gas emissions during the construction phase of a project will support the City's goal of reducing greenhouse gas emissions.

Who can provide the needed expertise/knowledge for our construction effort?

Staff, project managers, consultants, and contractors who have expertise/knowledge about construction equipment emissions need to be part of the design team. Conversations with contractors and the City's Purchasing Department can provide valuable information on how contractors attempt to reduce their greenhouse gas emissions.

How do we incorporate this into our construction effort?

Contractors should operate in an efficient manner that reduces fuel consumption and thus greenhouse gas emissions. The City's ability to be a partner in understanding the construction schedule, what types of equipment are needed for the project, and the contractor's fuel efficiency help reduce greenhouse gas emissions.

Example
The review of the construction sequence for the Fossil Creek Trail underpass at County Road No. 38E project focused on contractor efficiency to reduce miles driven, greenhouse gas emissions, and fuel usage. The adjustment to waste excavation to an adjacent property resulted in nearly 2,000 cubic yards of material being moved a short distance (200 feet) by scapers rather than trucks to a site miles away.

Chapter Five | Best Management Practices for Operation and Maintenance

The operation and maintenance of parks, trails, cemeteries, golf courses, and facility grounds creates opportunities to apply sustainability maintenance practices after site development. Currently, the City of Fort Collins has over 1,650 acres of managed landscapes. These parks, gardens, medians and streetscapes, and facility grounds are important to the mental and physical health of the community. Collectively, they are a heritage of significant value dating back more than 115 years.

This section includes the management of both undeveloped and developed sites. Parkland stewardship programs are an integral part of resource management and sustainable maintenance practices. The development of site maintenance plans that outline long-term strategies and identify actions to achieve sustainable maintenance goals meets the philosophy of our organization.

5.1 Utilize operation and maintenance practices that result in water conservation.

Water conservation is an essential effort preformed by staff. All parkland is irrigated to meet an annual goal of not exceeding 95% of the plants water requirement. This is measured by collecting and sharing daily evapotranspiration rates of the plant by staff. Evapotranspiration (ET) is a term used to describe the sum of evaporation and plant transpiration from the Earth's land surface to the atmosphere. Evaporation accounts for the movement of water to the air from sources such as the soil, canopy interception, and water bodies.

Benefits

- This effort fosters a conservation ethic and eliminates waste.
- Supports the City's Water Supply and Demand Management Policy (2003).
- Supports the City's Water Conservation Plan (2009).

What are the water conservation efforts that need to be applied to our O & M effort?

The acquisition and use of raw water is recommended when available at all sites. A drought plan has been developed that prioritizes areas in the park for conservation; this plan is enacted in years when water use restrictions are required by the community. No mow areas are designed into a new park construction while older parks are surveyed for areas that can be less irrigated and less maintained so as to become no-mow areas.

Who can provide the needed expertise/knowledge for our O & M effort?

The entire maintenance staff will to be educated on the water conservation efforts. Select individuals are certified as water auditors and they perform audits at various sites throughout the irrigation season. Expertise from staff at Water Utilities and irrigation companies can provide additional resources.

How do we incorporate this into our O & M effort?

Employees attend training on the newest conservation practices and products. Training on aspects of conservation for all staff is preformed monthly. An annual goal of irrigating all park sites at 95 % or less of the yearly evapotranspiration rate is measured monthly.

Example
In 2011, the seasonal need for irrigated turf was 17.26 inches of moisture (95% Evapotranspiration (ET) need for May to October). Of the 45 developed parks monitored by staff, 33 parks measured lower than the 95% ET level. The other 12 parks have undergone audits to suggest improvements for 2012.

5.2 Utilize operation and maintenance practices that control weeds.

The City's Parks Department has adopted an Integrated Pest Management (IPM) program as its approach to prevent and suppress unacceptable, injurious levels of pests within landscapes. Damages can be aesthetic, economic, or injurious to public health and safety. IPM is defined as a decision making process that allows staff to determine if pest suppression or control is needed, what actions are to be taken and how strategies of treatment are measured. It is the department's philosophy to place an emphasis on non-pesticide strategies whenever possible.

Benefits

- Supports the Parks Department's IPM program
- Provides a healthier ecosystem of vegetation.
- Protects adjacent property from unwanted weeds and pests.

What are the weed control regulations that need to be applied to our O & M effort?

The State of Colorado and Larimer County maintain a list of noxious plants that are prohibited from being allowed to grow on a site. Invasive plants not in the noxious plant category need to be controlled on the site to enable a healthy stand of vegetation to develop and to protect adjacent property owner's landscaped areas.

Who can provide the needed expertise/knowledge for our O & M effort?

Select department staff will be certified as State applicators and State supervisors. These individuals will oversee the IPM program and train all employees who may have a need to use a pesticide. Colorado State University can be a very helpful resource due to their agricultural expertise and proximity to our managed landscapes.

How do we incorporate this into our O & M effort?

The Department follows an Integrated Pest Management program. According to the EPA "In technical terms, Integrated Pest Management (IPM) is the coordinated use of pest and environmental information with available pest control methods to prevent unacceptable levels of pest damage by the most economical means and with the least possible hazard to people, property, and the environment." The IPM strategy employs four common sense approaches to effectively manage the pests. These are:

- Thresholds for action
- ID and monitor the pests
- Prevention
- Control

The City assumes that all pesticides are potentially hazardous to human and environmental health. Therefore, reasonable non-pesticide alternatives shall be given preference over chemical controls by following the IPM procedure. City staff will evaluate alternatives to chemical treatment including the cost-effectiveness of the treatments.

Undeveloped site management:

The site may be undeveloped for many years. During this time the site needs to be maintained in a condition that meets requirements for such items as dust and weed control, stormwater management, and protection of environmentally sensitive areas, cultural and historical sites.

Typically sites are in agriculture production for farming. Leases can be extended for farming to generate revenue. Environmentally sensitive areas on the site should be evaluated and proper adjustments to the site management made to protect these areas.

The site will be managed for weed or pest control by the following IPM procedures:

1. **Prevention** - This is the most effective pest management strategy. By reducing the capacity of the ecosystem to support the target weed or pest populations through design and appropriate management, the opportunities for weed and pest establishment can be reduced or eliminated.
2. **Cultural** - Cultural control is the use of management activities that prevent weeds and pests from developing due to enhancement of desired conditions.
3. **Mechanical** - Mechanical control is accomplished by using physical methods or mechanical equipment to control weeds and pests. Rough mowing of sites is the most prevalent.
4. **Biological** - Biological controls include the introduction or enhancements of natural enemy populations to target weeds or pests.
5. **Chemical** - Reasonable non-pesticide alternatives shall be given preference over chemical controls. Organic fungicides, plant growth regulators and insect pheromones are a few that are suggested. When chemical control of weeds or pests is necessary non restricted use pesticides are suggested. No restricted use pesticides will be used in park landscapes.

Example
The Integrated Pest Management Program was reviewed and updated by the Agronomic Team. Each division (Forestry, Parks, and Golf) reviewed their perspective thresholds taking action. In 2011, an application of an organic based fungicide used on the golf course greens affected by dollar spot and anthracnose fungi provided very satisfactory results.

5.3 Utilize operation and maintenance practices that support solid waste reduction.

Divert materials generated by site operation and maintenance from disposal in landfills and combustion in incinerators. Recycle and/or reuse materials on site, when possible, or redirect these materials back to the manufacturing process, other sites, or materials reuse markets.

Benefits

- Reduces the amount of material that goes to the landfill.
- Supports the City's sustainability goals.
- Supports City's Administrative Policy for recycling.

What are the solid waste regulations that need to be applied to our O & M effort?

State of Colorado Statutes Section 6 and the Federal 40 CFR Part 261 and 262 are the hazardous waste regulations that must be followed. Objectives in the City's Action Plan for Sustainability require a 50% reduction in solid waste.

Who can provide the needed expertise/knowledge for our O & M effort?

The Office of Regulatory and Governmental Affairs employees in the Utilities Department are consulted on all hazardous waste procedures to assure compliance with current regulations. The Parks Department staff is trained to respond to abandoned waste situations. All staff members are trained to determine if waste is hazardous waste or solid waste. Purchasing controls are in place to prevent us from generating hazardous waste, i.e. chlorinated solvents.

How do we incorporate this into our O & M effort?

Each Parks Shop has collection points for recycling and solid waste. All maintenance activities that produce solid waste are evaluated for the opportunity to recycle any part of the waste stream. The staff monitors and measures the diversion rate in coordination with the Natural Resources Department. Coordination with the recycling and composting processes are evaluated on a yearly basis.

The Park Shop has a secure site for abandoned waste that is found on our properties.

Areas within parks have been ranked for recycling opportunities. Playgrounds, ballfields and shelter areas will have stationary recycling bins available to the public. Data will be collected on diversion rates and monitored. The downtown core area has solar powered trash compactors with an attached recycling component. These new "Big Belly" fixtures will be the standard in the core area going forward.

Example
In 2011, Parks added ten "Solar Big Bellies" in the downtown core and another 50 recycling/trash unites were placed at playgrounds, picnic shelters, and selected ballfields. The "Big Bellies" provided 4,200 lbs. of recycled material..

5.4 Utilize operation and maintenance practices that support composting

Composting of appropriate material results in the generation of a biomass that can have many beneficial applications. Recycle organic matter generated during site operations and maintenance.

Benefits

- Composting appropriate material results in energy and cost savings.
- Composting reduces material going to a landfill.

What are the composting regulations that need to be applied to our O & M effort?

Regulations pertaining to composting are located in Section 14 of the State of Colorado Statutes.

Who can provide the needed expertise/knowledge for our O & M effort?

The Office of Regulatory and Governmental Affairs employees in the Utilities Department are consulted about all composting operations to assure compliance to the regulations. Select staff has attended composting classes at CSU. Staff also works with the Natural Resource Department to use composted materials from the downtown Earth Tubs in the botanical program.

How do we incorporate this into our O & M effort?

Park's staff operates the green cone food digesters at each maintenance shop.

Staff is in the process of setting up several <100 yard composting sites throughout town until a large operation can be coordinated in the organization. Staff is currently stockpiling compostables at Roselawn Cemetery until a permitted operation can begin. Any excess material that we can not handle will be routed to a local vendor that provides this service for a fee. Composting of food waste, soils, leaves, and any organic matter are monitored and measured for inclusion into the solid waste diversion goals.

Example
In 2011, Park's staff worked with Natural Resources to add a second "Earth Tub" for composting of botanical materials and local restaurant waste in the downtown area. The soil from this operation is used in the downtown flower beds.

5.5 Reduce energy consumption during operation and maintenance operations

Reduce outdoor energy consumption for all landscape and exterior operations. Explore renewable energy opportunities that support operation and maintenance operations. Reduce emissions and promote the use of fuel-efficient vehicles. Promote the use of vehicles that have reduced emissions and/or high fuel efficiency to reduce pollution and land development impacts from automobile use.

Benefits

- Energy savings reduces greenhouse gas emissions.
- Supports the City's Climate Action Plan

What are the renewable energy regulations that need to be applied to our O & M effort?

The City of Fort Collins has a municipal GHG goal to reduce emission 20% below 2005 levels by 2020. In 2005, the City of Fort Collins piloted the use of biodiesel (B20) in all fleet vehicles and equipment. Since in 2006, the City has used biodiesel (B20) exclusively in place of regular diesel fuel for all applications, including on-road vehicles and heavy equipment.

Who can provide the needed expertise/knowledge for our O & M effort?

Staff will work with Operations and Fleet services to discuss the need for replacement of all vehicles. If replacement is warranted, staff will factor into the decision alternative fuel opportunities, size of vehicle, and longevity. Staff must keep abreast of all new technology to make informed decisions that help meet the City's primary goal to reduce CHG. Among selected staff members who have playground safety certifications, a replacement schedule is developed and as fixtures wear out, the team researches the newest technology and safest possible solution.

How do we incorporate this into our O & M effort?

All infrastructures when renovated or replaced will be investigated for the newest and best components available at acceptable costs. Variable speed pumping plants, electric utility vehicles, solar powered bike pump stations, aeration systems for water quality, alternative fuel vehicles, efficient lighting system upgrades, LED scoreboards and any other resource saving components are part of this program.

Example
Staff has worked with Fleet Services to continue to phase out gas powered utility vehicles from parks, replacing these vehicles with electric vehicles. In 2011, all 65 gas golf carts at Southridge Golf Course were replaced with electric golf carts.

5.6 Utilize operations and maintenance to support turf management

Sustainable agronomic practices are applied at all sites. These maintenance duties of mowing, irrigating, aerating, fertilizing, topdressing, and overseeding are required to provide safe and playable surfaces at park, cemetery, and golf sites.

Benefits

- Reduced water and fuel consumption.
- Vegetative biodiversity is maintained.
- Supports the City's landscape standards policy.
- Provides safe playable athletic fields.

What are the regulations that need to be applied to our turf management effort?

Staff will follow and periodically update the Parks Department's IPM program. Staff must stay abreast of any changes in State and local ordinances on weed control.

Who can provide the needed expertise/knowledge for our O & M effort?

All staff is trained in agronomic practices. Quality improvement teams are supported by management. Current teams in the department concern themselves with water conservation, soil management, and overall progressive agronomic practices.

How do we incorporate this into our O & M effort?

Sustainable agronomic practices are practiced at all park sites. Mowing operations follow the 1/3 rule of not mowing off more than 1/3 of the plant. General parkland is mowed at a 3.5 inch height. Select athletic fields are mowed during the playing seasons at 2.5 inches. Golf course tees and greens are mowed much lower. Irrigation best management practices can be read in section 5.1. The application of both organic and synthetic organic fertilizer is used individually and together at many sites. Soil tests are conducted bi-annually to select the best fertilizer product for the system. The scheduling of renovation programs such as aeration of soils, overseeding and top dressing are worked out with selected staff annually. The spring and fall are best suited to grow new grass in any disturbed areas. Athletic field scheduling needs are to be factored in as the schedule is prepared. No mow area vegetative site protection zones (VSPZ) are selected due to their proximity to stream and ponds, these areas are not mowed and left to go wild. They are maintained for weed control and other pests. They act as a boundary for all agronomic practices.

The Audubon Cooperative Sanctuary Program certification has been sought for all community parks, cemeteries and golf courses. The Audubon Cooperative Sanctuary Program is sponsored by Audubon International. Parks seeks Cooperative Sanctuary status by partnering with community volunteers. Together, we are working towards better habitat management, wildlife identification, stewardship of resources, and program awareness.

Example
In 2011, staff developed an organic fertility program for Spring Canyon Community Park which will be funded for two years. As part of this program, the committee researched and created a custom blend of organic fertilizer. The custom blend will be used for the duration of the program and will contribute to a reduced carbon footprint. Together, with Dr. Tony Koski of Colorado State University, fertilizer test plots were conducted to visually compare synthetic and organic fertilizers and effective duration times.

5.7 Life Cycle Program

The purpose of the Life Cycle Program is to replace or renovate infrastructure components to their original condition, purpose, and efficiency. At that time, any new technology and efficiencies that improve the sustainability of the recreation facility are investigated and evaluated. Any old components are recycled if possible.

Benefits

- Supports the City's Climate Action Plan with efficiency upgrades of infrastructure.
- Allows the facility to maintain its original design concept.

What are the regulations that need to be applied to our Life Cycle effort?

There are a number of regulations staff must follow when projects are initiated. Among them include the American Disability Act, EPA regulations regarding lead paint, asbestos abatement requirements, stormwater regulations, and current building code upgrades for energy efficiencies. Staff must also be certified in current playground safety standards.

Who can provide the needed expertise/knowledge for our Life Cycle effort?

Staff must be trained to secure the most current knowledge of code and regulations for successful renovation of park infrastructure. Staff also must have the ability to bring together teams with diverse specialties.

How do we incorporate this into our Life Cycle effort?

The Park Maintenance Life Cycle program itself is defined as a renovation/replacement fund. Annually staff prioritizes all unfunded projects and vets them with management staff. Projects are selected on the criteria of mandates, health and safety, resource conservation, and use by the public. Recreation works with City Facilities to ensure building equipment (waterless urinals, dual flush toilets, light bulbs, copiers, computers, room motion sensors, and fitness equipment) are replaced with the latest technology in energy efficiency.

Example
Over the past ten years, 501 projects have been completed at a total cost of $4,571,372, making park infrastructure safer and more sustainable. One of the major efforts over this time frame was to convert irrigation pumps from single speed to variable speed motors. This effort resulted in over eight pumping plants being more energy efficient.

Chapter Six	Best Management Practices for Programs and Special Events

Introduction

Programs and special events at parks and recreation facilities and on the trail system present another opportunity for the inclusion of sustainability. Use of a recreation facility, an outdoor park site, or a trail is usually handled by a rental contract or permit from Recreation or Park Maintenance. Staff interaction with the user group provides an opportunity for the discussion of the City's sustainability effort and the expectations at each particular site. Information can be shared on such items as recycling containers at the site, energy and water use, and the City's air quality effort by noting opportunities for alternative modes of transportation.

6.1 Programmed and special event environmental practices

Events in parks and on trails that include such items as shelter reservations, large events, trail walk/runs, and any exclusive use of a park or trail will be authorized by Park's event process. The use of recreation facilities for programs and events such as weddings, receptions, group parties, music programs, etc. will be authorized by Recreation's rental contact process.

Benefits

- Supports the City's sustainability plan 2009.
- Generates sales tax revenue.
- Many events and programs support local business.
- Supports the mission of the Convention & Visitors Bureau.

What are the regulations or policies that need to be applied to this effort?

It is the goal of the Parks and Recreation Departments to manage all events and programs so that other site users, adjacent neighbors, and event or program coordinators are successful. The park and trail event customers are required to complete an application which is reviewed by Park Maintenance staff before an event may be permitted. Many topics are discussed to help facilitate a successful event. A few regulations that are required are:

- Sales Tax Licensing
- Emergency Management Contingency Plans
- Noise Ordinance Regulations
- Recycling – Requirements are identified in support of the City's recycling program and applied to the program or event. These requirements are to be included in the program literature or event permit.
- Parks Rules & Regulations
- Insurance Requirements
- Site Selection – Includes a review of the carrying capacity of the park or facility.
- Air Quality – Minimize air quality impacts and reduce greenhouse gas emissions for a program or event. Examples include location accessible by the trail system, adequate bike racks, and encouraging participants to car pool, use buses or other alternative means of transportation.

Who can provide the needed expertise/knowledge for this effort?

An outdoor event requires coordination with several other City departments. Traffic and Police may need to be consulted to determine if the event needs to close a street or portion of the trail system. Code Compliance, PSA Emergency Management, the Bike Library, and City Environmental Services are routinely consulted to provide assistance with event planning. Recreation facility programs are more self-contained than outdoor events, but from time to time, they will require the assistance of other City departments or agencies.

All front office staff in Parks and Recreation are trained in customer service. User input is obtained by follow-up surveys to determine the quality of the customer service, facility maintenance, and overall experience is meeting expectations.

How do we incorporate this into our effort?

Parks staff will meet with the event coordinator and walk through the logistics and needed sustainability efforts. Recreation staff will hand out information flyers to further educate users about effective recycling and Recreation's overall goal of reducing our impact on the land fill. Recreation programmers make an effort to host waste free events. Recyclable, compostable, and reusable equipment is used to minimize waste. Food and bar services utilize recycled plates and glasses while the public is encouraged to use recyclable materials over paper. All cleaning products are rated "Green." Information received from user follow-up surveys are discussed and in some cases, ideas implemented to create a better experience for the user. Survey information can also lead to improved sustainability practices.

Example
Printed publications of the Recreation Department's Recreator and Enrich have been reduced by about 65% over the past few years. This reduction was possible due to the online availability of these publications, and recently, the implementation of a mobile version of the Recreator which is accessible using an iPhone or iPad.

Chapter Seven | Monitor Performance of Sustainable Practices

Introduction

Monitor and document sustainable practices to evaluate their performance over time and improve the body of knowledge on long-term sustainability. The monitoring and reporting effort should be widely communicated throughout Parks and Recreation to all levels in the organization. Parks and Recreation needs to continue to supply data for numerous reports that are prepared yearly within the City on such items as the recycle effort, air quality improvement efforts, and energy and water use reduction efforts.

The sustainable decisions made during site selection, design, and construction of a recreation facility need to be tracked and can then be compared with previous projects to determine how sustainable efforts have improved over time. Each project should be a resource that will help future projects become more sustainable.