City of Ukiah

Doolin Creek

A Vision for Restoration and Enhancement

May 20, 2015

Doolin Creek
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Acknowledgements

The effort to create a vision for the restoration and enhancement of Doolin Creek was a collaborative effort by many individuals and groups over a twelve-year time span. The effort began in 2002 when the City contracted with the RRM Design Group, but the project was never completed. In late 2012, interested citizens and City staff brought the incomplete document to the attention of the Paths, Open Space, and Creeks Commission. Although over a decade had passed since it was initially drafted, the Commission decided that the ideas for restoring and enhancing the creek were worth revisiting. However, more work needed to be done to finish the document. The Commission, with the help of community partners, embarked on a project to revise and complete the Vision document and present it to the Ukiah City Council.

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PURPOSE

The purpose of the Doolin Creek Restoration and Enhancement Plan is to provide long-term guidance for the preservation of the healthy portions of the creek, restoration and enhancement of degraded areas, and reestablishing parts of the creek as a place for human use and appreciation. In attempting to manage the creek in an environmentally sensitive manner and protect it from further degradation, the City of Ukiah hired RRM Design Group and Golden Bear Biostudies to prepare a conceptual restoration and enhancement plan. In the interest of implementation, this document presents guidelines to achieve these goals over time.

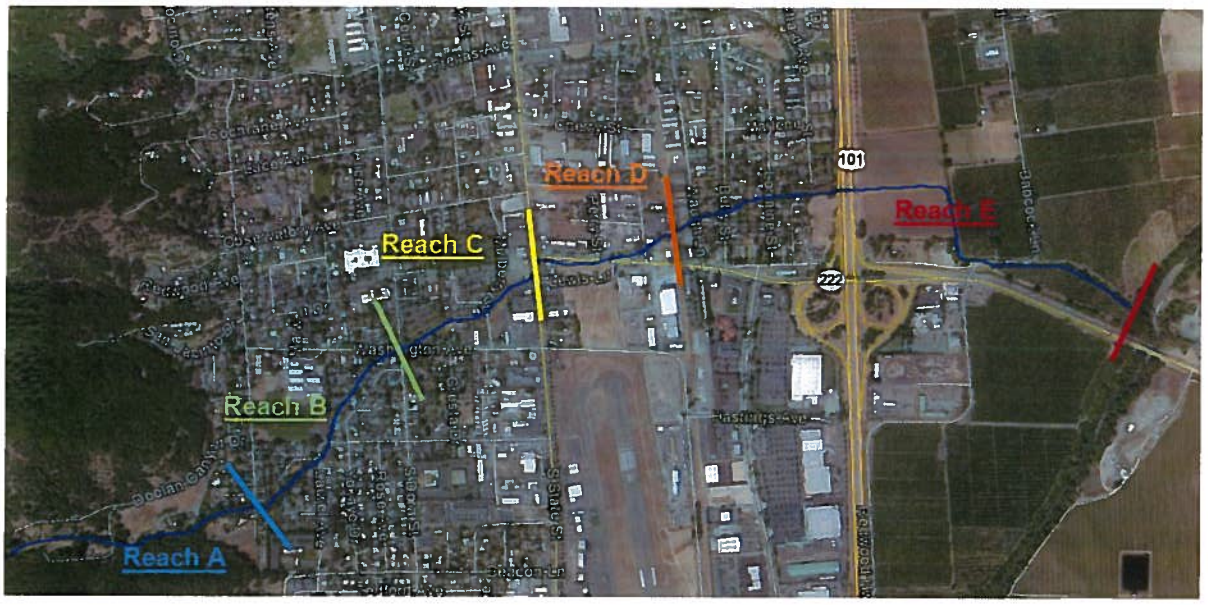
Although this Plan is site-specific and provides some detail, it is conceptual in nature. It is intended to help inform long-term planning and development decisions that would affect Doolin Creek. It is not intended to replace or supersede existing City plans or codes. If any of the improvements presented in this document were to be planned or built, the City would need to perform environmental review pursuant to the California Environmental Quality Act (CEQA) and follow all other applicable regulations and City planning review procedures. Furthermore, in many areas along its length, private property ownership extends to the centerline of the creek; permission must be obtained from private landowners prior to working on private property. Also, a California Department of Fish & Game Streambank Alteration Permit would be required to implement many of the enhancement opportunities discussed later in this document.

EXISTING CONDITIONS

The creeks in the Ukiah Valley serve as drainage channels for stormwater runoff, groundwater recharge, domestic and agricultural water supply, flood management, and habitat for fish and other aquatic life. Different types of urban activity have varying effects on vegetation and wildlife in a riparian corridor. Doolin Creek is a confined, heavily modified drainage channel that is surrounded by residential, commercial, open space and recreational land. Many of these uses over time have altered the natural features of the creek.

As a tributary that flows to the Russian River, Doolin Creek is a valuable natural resource capable of supporting a variety of habitats and wildlife. The majority of the creek only has flows during the wet winter months. A series of bridges and culverts allow for both pedestrian and vehicle crossings along the creek.

For the purpose of this Plan, the project area has been divided into reaches, distinguished by vegetation, hydrology, topology, adjacent land use, and access. The following map shows each of these reaches, with the creek bed roughly outlined to help orient the reader. The coloration of the reach boundaries indicates the ecological integrity of that portion of the creek, with blue indicating where the creek retains more of its natural characteristics, with each color thereafter indicating generally progressive degradation as it is channeled through urban and agricultural uses before emptying into the Russian River.



Doolin Creek Reach Map

Reach A – Foothills to Helen Avenue

Reach A stretches from the foothills down to Helen Avenue. It is the westernmost stretch of creek and remains the most natural section of the corridor. Along this stretch there are areas of severe erosion exposing tree roots and concrete footings. The vegetation is low with a medium density. The banks are narrow and steep, exaggerating the erosion problem.

Looking west at the end of Helen Avenue

Reach B – Helen Avenue to Dora Street

Reach B starts at Helen Avenue and continues to the intersection of Washington and Dora Streets. Many of the banks in this reach are covered in non-native and invasive species. This stretch of the creek is mainly residential, although it abuts school property. While a small number of residents have decided to make it a prominent feature of their home, the majority has turned its back to the potential. In one residential area there are bridges across the creek leading to slivers of land covered with rundown sheds. At the eastern most part of this reach an eight-foot tall wooden fence at the immediate back of a sidewalk blocks the creek from street view. On the west side of this narrow strip is Nokomis School which has a high chain link fence separating the school from the creek.

Washington and Dora – looking west

Washington and Dora – looking east

Reach C – Dora Street to State Street

This reach begins near a senior living center with a landscaped parking lot where Doolin Creek daylights at the north-eastern corner of Dora Street and Washington Avenue. This landscaped area is located in front of the retirement residence and features an attractive pedestrian bridge over the creek to the entrance of the building. Downstream, the creek widens into a rock-lined channel installed as part of a subdivision along Creekside Court and Mulberry Street. The homes are oriented with their back to the creek and the

Mulberry Street culvert – after a storm – looking west

Mulberry Street culvert – in dry period – looking west

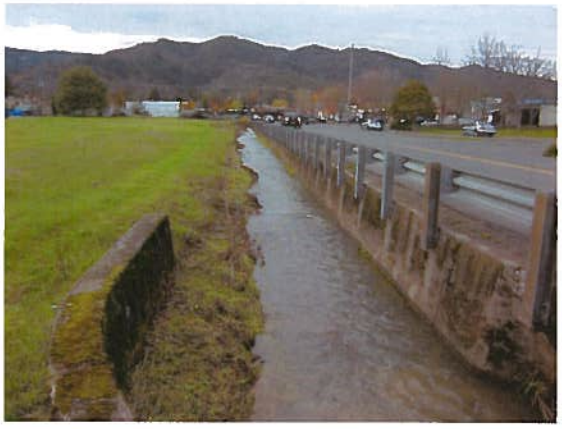
improvements lack the vegetation to provide a more natural look. Despite the lack of designed integration of the creek into nearby residences, there is an active community garden on the west side of Mulberry Street (visible in the images above), and community members incorporate outdoor space between the garden and the subdivision into their neighborhood when permitted by the season. The creek then follows along Mulberry Street's edge until it is choked down to a width of a few feet. This tight segment is covered in dense vegetation.

Mulberry Street – looking east

Brookside Retirement Residence – looking west

Reach D – State Street to Northwestern Pacific Railroad

This reach begins as a culvert under State Street. It continues under a gas station and then day lights as no more than a confined channel approximately six feet wide along the south side of Talmage Road. The creek then tunnels under to the north side of the street where it meanders between residential neighborhoods and commercial and industrial uses. This reach provides the most opportunity for a restoration and enhancement project due to the City-owned property in the Runway Protection Zone, and the potential Talmage Road widening project.



South of Talmage Street – looking west

North of Talmage Street – looking east

Betty Street – looking east

Caldwell Frontage Road – looking west

Reach E – Northwestern Pacific Railroad to Russian River

Doolin Creek passes beneath the Northwestern Pacific Railroad (owned by the North Coast Railroad Authority) and then back into a residential area where high brick walls force it into a narrow channel where it is crossed by three residential streets. An apartment complex and undeveloped parcel, zoned for medium-density residential development (R-2; up to 14 dwelling units per acre), borders the east end of this reach. At this point, Doolin Creek crosses under Highway 101 and is channeled around an orchard, finally emptying into the Russian River.

CREEK ENHANCEMENT AND PUBLIC ACCESS OPPORTUNITIES

The goal of the Doolin Creek Restoration and Enhancement Plan is to create guidelines to help restore the creek to a more ecologically functioning and visually appealing amenity that safely conveys storm flows. The community should view Doolin Creek as an attractive resource, where people can observe natural processes through the seasons, and even gather for a picnic, have dinner at a restaurant along the creek, or learn more about their environment. To support this vision, restoration should include the following measures:

- Removal of invasive non-native plant species;
- Revegetation of degraded areas with native plant species;
- Annual debris clean-up;
- Sedimentation and/or erosion control measures;
- Restrictions to incompatible human activities including camping, graffiti, litter, etc.;
- Reconfiguration and naturalization of modified channels; and
- Enhancement of aquatic resources.

To improve aquatic habitat, shading of the creek bottom and pools may be established by planting and maintaining native trees, shrubs and emergent vegetation wherever possible, while maintaining creek flow. At least 75% of water surface area should be shaded at any given time to help keep the water temperature consistent and low. Logs, root wads, tree bundles, and boulders can serve as the primary cover elements added to pools. Cover may be incorporated with other stream enhancement structures such as log and boulder weirs, boulder clusters, and single and opposing wing deflectors. In all cases, proper hydraulic analysis by a registered civil engineer shall be required prior to installation of habitat structures in order to not create problems downstream. The following section explains these improvements in more detail.

Creek Improvement Measures

This section includes the following improvement measures designed to preserve healthy portions of the creek, restore and enhance degraded areas, and reestablish parts of the creek for human use and appreciation for the benefit of Ukiah residents.

1. Boulders

Boulder structures may be placed in the channel and along outside bends of the creek bank to create a desired habitat. They can be used to break up stream flow and to provide stream cover. It is desirable to create a variety of stream flow velocities, because young fish will select different velocities depending on whether they are feeding or resting. Different water velocities will also sort gravel and create diversity in the substrate. Boulders are well suited for diversifying flows because they are resistant to being displaced by high flows. They can be placed mid-channel without constructing a full-channel spanning structure. The interval in boulder clusters and between large boulders can provide escape cover for juvenile and adult fish.

There are some disadvantages to using boulders. One problem is that boulders often must be hauled to the construction site from a quarry. If there is not a quarry nearby, the cost of buying and trucking boulders can be very high. A second problem with using boulders is that if they are placed in mobile substrate, perimeter scour may cause the boulder to bury itself. For this reason, it may be necessary to use large boulders, or to secure boulders using polyester resin adhesive and cable to form a larger structure. Design of boulder structures depends upon the primary function to be served. The range of flows to which a particular structure or series of structures may be subjected will dictate size of boulders to be used, and proper anchoring techniques.

Boulders can be used in a variety of situations and configurations to perform a desired function or fulfill a particular habitat need. Possible configurations of boulders include weirs, clusters, and single and opposing wing-deflectors.

2. Boulder Weirs

Boulder weirs are primarily used to collect and retain gravel for spawning habitat, or to create one or more jump pools to facilitate fish passage on marginally accessible or impassable stream reaches. The boulders

used should be larger than boulders occurring naturally in the stream. Large angular boulders are most desirable as they are least likely to roll out of place during high flows.

Weirs that span the full channel width can be configured in several shapes including: 1) perpendicular to the flow (if used for back-flooding); 2) diagonal; 3) downstream-oriented "V"; and 4) "U"-shaped (if used to improve spawning gravel). Weirs should be keyed 4 to 6 feet horizontally into stream banks with a gradual downward slope of the weir height toward the lowest point of the creek. At the low point of the weir a "spillway" should be constructed by creating an opening one to two feet wide. This creates a notch through which flow is concentrated at low flows. The notch should be roughly triangular in shape with the apex of the triangle oriented down. Flat, broad spillways make fish passage difficult.

3. Boulder Clusters

Boulder clusters can be used to create scour pockets around boulders, provide rearing habitat for young fish, build quiet water resting areas for upstream migrating spawners, and sort spawning gravel. At least 3- to 5-foot diameter boulders are recommended.

In general, adjacent boulders should be 0.5 to 1 foot apart. The best configuration for boulders is usually a triangle of three boulders. Several of these clusters may be aggregated to increase scour area and create greater habitat complexity. If large angular quarry boulders are available, a single boulder can create good cover for juvenile and adult fish. Boulders should be placed within the middle two quarters of channel width, and not in a deposition zone. If boulders are too big they will divert the stream from its channel, or into soft stream banks.

4. Single and Opposing Boulder Wing-Deflectors

Single wing-deflectors are built to protect a portion of one bank by deflecting the flow away from the bank. They are also used to create scour by constricting the channel, thereby accelerating the flow. Wing-deflectors can also create quiet water resting areas for use by upstream migrating spawners. Opposing wing-deflectors are built to constrict the flow to create a scour pool and sort spawning gravel. These structures are best installed in long, uniform glides or riffles. They create rearing habitat for younger fish, as well as resting areas for upstream migrating spawners. The upstream side of the deflector will develop deposition that may become suitable spawning habitat.

5. Log Structures

Applications for log structures are similar to those for boulder structures. Logs may be used to provide in-stream cover for young fish and spawning adults, to scour pools for rearing habitat, to collect spawning gravel, and to stabilize eroding stream banks. Log structures have a variety of shapes and uses. These include straight log weirs, downstream-V weirs, diagonal weirs, upstream-V weirs, upsurge weirs, wing-deflectors, divide logs, digger logs, and Hewitt ramps. The various structures have specific purposes, which often dictate the specifications to which they are built. Many of these structures serve the dual purpose of trapping, sorting, and stabilizing gravel for spawning habitat as well as creating scour pools which act as rearing habitat for young fish and escape cover or resting areas for spawning adults.

6. Paths

There are several options for paths along Doolin Creek. A multiple-use soft path provided to serve pedestrians and all terrain cyclists could be created from decomposed granite, bark, compacted rock, or hard packed materials and earth. The material chosen should depend on the particular location of the path and the ability to accommodate multiple users. Depending on space and topography, a soft path may be appropriate at the top of the bank in order to reduce the maintenance due to washout. This type of pathway should be a width that is safe, be environmentally and aesthetically sensitive, provide for intended user groups, and meet funding requirements. In general, new public paths should also be ADA-accessible.

A multiple-use hard path would best accommodate individuals with disabilities, road bicycles and pedestrians. The surface could be constructed of smooth, hard or hard-packed, all weather material that is appropriate to the particular location and constructed to standards that consider use, safety, site characteristics, and funding. The optimal width would be eight feet with two-foot shoulders; however, path dimensions depend on surrounding properties and channel characteristics. To minimize impacts on fish, wildlife and vegetative habitat, and to reduce maintenance costs, the hard path trail should be keep out of environmentally sensitive creek channels.

If it is determined that a pedestrian-only path is the best alternative, then a soft path is the most cost-effective approach. These paths are low-impact trails approximately four feet wide and have earth, bark or other soft, appropriate, and aesthetically pleasing surface material.

Where creek channel characteristics make it undesirable to have a path on the bank, a cantilevered boardwalk may be an option, provided that any environmental impacts are appropriately mitigated.

General Improvement Measures

Within the City of Ukiah, storm water discharges to Doolin Creek are permitted under the State Water Resources Control Board Phase II Municipal Separate Storm Sewer System (MS4). As of this writing, the City of Ukiah is covered under a Phase II permit which has expired; the City has elected to seek coverage with the City of Santa Rosa and County of Sonoma when their Phase I permit is renewed in the near future. The Stormwater Low Impact Development (LID) Technical Design Manual[1] was developed by the City of Santa Rosa, County of Sonoma, and Sonoma County Water Agency (SCWA) to provide technical guidance and best management practices (BMPs) for project design. The new Phase I permit will require development projects of a certain size, type, and location to consider the types of measures that are included in the manual. The following is a brief list of measures for consideration in the Doolin Creek corridor as a means to improve storm water quality and to reduce the potential for further erosion.

[1] Available at: http://srcity.org/departments/utilities/stormwatercreeks/swpermit/Pages/swLIDtechManual.aspx

1. Trash Removal

The Mulberry Street stretch of Doolin Creek requires direct efforts of trash removal. During the summer months, the dry creek bed is used as a pedestrian footpath due to the proximity of nearby housing complexes and lack of direct access to State Street. An Adopt-A-Creek program should be feasible within this area of Doolin Creek (General Recommendation 7).

2. Plant Native Species and Invasive Species Removal

Planting native species to increase bank vegetation density is recommended along Reach D, particularly along Talmage Road at the airport, as well as North of Talmage Road. Plantings of native willow species should replace creek-choking blackberry and ornamental bushes.

3. Removal of debris

Failed riprap should be removed in Reach C, in the area of Mulberry Street.

4. Community Education

Phase II permit holders are required to educate the public on the impacts of human activities on waterways and the environment. However, specific community education efforts should be undertaken specifically targeting the Doolin Creek corridor to increase awareness of activities which have a direct and/or indirect effect on the quality and integrity of the creek. Such efforts can include a focused outreach campaign for residential areas and businesses along Doolin Creek to help minimize polluted runoff, which can contain fertilizer and pesticides from lawns, oil and antifreeze from driveways, and organic matter from pet waste and gardens.[2] These education activities could also be combined with a city-wide creek stewardship program, discussed in the following case study.

CASE STUDY – CITY OF SANTA ROSA CREEK STEWARDSHIP PROGRAM

In 2002, the City of Santa Rosa partnered with the Sonoma County Water Agency to form the Creek Stewardship Program.[3] The stewardship program is responsible for managing 35-miles of trails along creeks and 100 creek miles and helps fulfill the City's General Plan goals for storm water treatment and recreational enhancements. The program's objectives include the following:

1. Increase the public's awareness of the values provided by local creeks by providing creek restoration, education, and recreation activities in conjunction with community partners.
2. Support volunteer Creek Stewards who serve as additional "eyes, ears and voice" to identify and report undesirable conditions and activities. Creek Stewards also perform minor maintenance and monitoring tasks and provide suggestions to enhance creek areas.

[2] U.S. EPA. *Getting in Step: A Guide for Conducting Watershed Outreach Campaigns*. Available at: http://www.epa.gov/owow/watershed/outreach/documents/getnstep.pdf

[3] More information available at: http://srcity.org/departments/utilities/stormwatercreeks/steward/Pages/default.aspx

3. Provide timely and effective response to citizens' concerns regarding creek related maintenance, environmental, safety, and recreational issues.

In the mid-1990s, the City of Santa Rosa adopted a parcel fee for storm water treatment. A parcel is currently assessed by the amount of impervious surface area; parcels are generally assessed at $39 for homeowners and approximately $1,000 for large retail developments. The program collects about two million dollars annually through these fees. Half of the funds are used for compliance with regulatory permits under the National Pollutant Discharge Elimination System (NPDES) and the Small Municipal Separate Storm Sewer System (MS-4). The remaining $1 million are used for creek restoration, stewardship projects, and community outreach. With its stable source of funding, the program has successfully leveraged additional grant funding for large restoration projects.

A Creek Stewardship Program employee works with the City's creek committee and is responsible for maintaining various records including a reporting system that tracks problems; coordinates with city departments; communicates an exact location, known situation and telephone number of the property owner. The public appreciates having one phone number for reporting their concerns. The program acts as a clearinghouse for complaints about trash, vandalism, graffiti, camping, poaching, etc. Such activities are dispatched to the appropriate department for a response. According to City staff, the program is especially valued by fire, police, and public works.

The program partners with the community, schools, government, watershed groups and property owners. Creek cleanup days are well attended; in 2013, approximately 2,000 volunteers participated. Like the City of Ukiah, the City of Santa Rosa is a member of the Russian River Watershed Association and has participated in the "Ours to Protect" signage program. These signs are posted near creeks and bridges throughout Sonoma and Mendocino County. The City of Santa Rosa is also presently working on an urban creek guide.

The stewardship program funds an environmental educational consultant that provides outreach to 6,000 students annually as part of their award winning educational program. The program has received awards from the Association of Environmental Professionals and from the California Storm Water Quality Association for its annual water quality survey work conducted by Santa Rosa high school students.[4]

The stewardship program supports improved water quality, flood control, and public safety. Members of the public also value having trails nearby for a nature and recreational experience within walking distance. According to City of Santa Rosa staff, the program has an excellent relationship with the Regional Water Quality Control Board since its functions support the RWQCB permit, and the general public, community groups, decision-makers, and regulators are satisfied with the program's accomplishments.

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[4] The City of Santa Rosa's Aquatic Macroinvertebrate Bioassessment Program involves area high schools each monitoring a creek near their campus. More information regarding this specific program is available at: http://ci.santa-rosa.ca.us/departments/utilities/stormwatercreeks/schoolresources/Pages/study.aspx

DOOLIN CREEK PROJECT AREAS

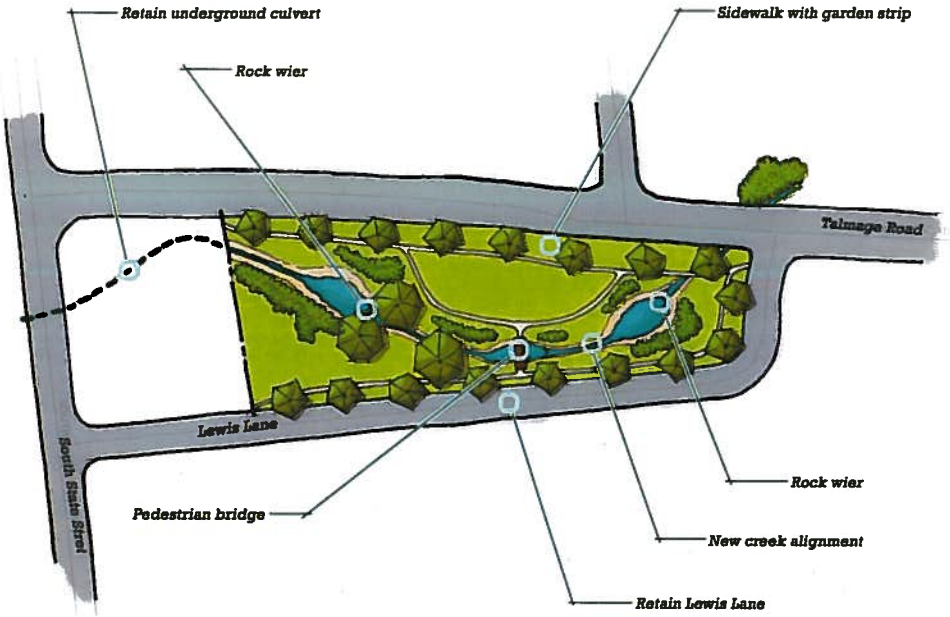
South of Talmage

Four potential project areas are identified along Doolin Creek. The first and largest is in Reach D along Talmage Road. This site presents the timeliest opportunity to be implemented due to the potential Talmage Road widening project. This stretch of creek is on City-owned land and is currently designated as Runway Protection Zone (RPZ). This zone prohibits "assemblages of people" but allows pastures, field crops, and vineyards. Prior to any of the concepts discussed in this document being built, a positive Airport Land Use Plan consistency determination would need to be made by the Airport Land Use Commission.

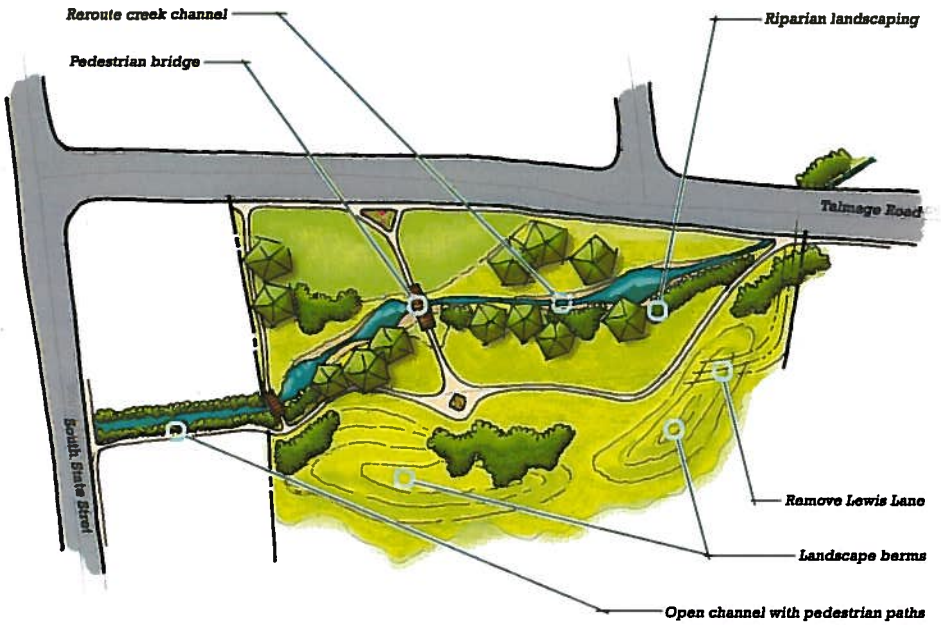
While this zone has density and building restrictions, it lends itself well to a passive park-like setting. This Plan includes two separate alternative conceptual designs, both of which would require modifying the configuration of the present channel.

Alternative 1, below the existing culvert under State Street and the gas station, bends the creek channel away from Talmage to create a small park contained by Talmage and Lewis Streets. In this alternative, paths follow along the streets and bridge over the creek.

Alternative 2 includes a new culvert under State Street and day lighting between businesses where Lewis Street is today. After passing those businesses, Lewis Street would be removed to create a large greenway flanked by landscaped berms between the greenway and the Runway Protection Zone. This more natural approach to the greenway allows for a slightly larger park area and more meandering of the path. Based on meetings held with staff and stakeholders, this alternative represents the preferred direction for the South of Talmage area.



South of Talmage: Alternative 1

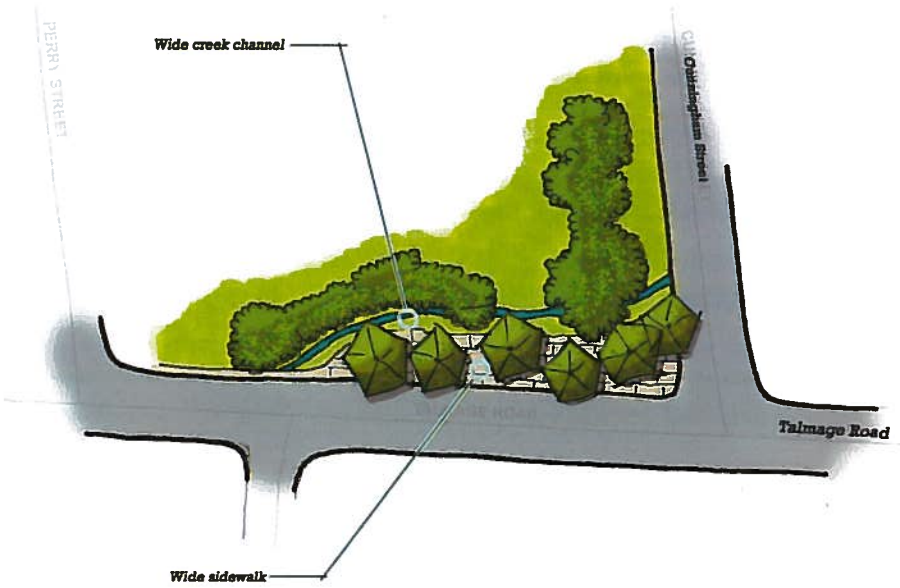


South of Talmage: Alternative 2

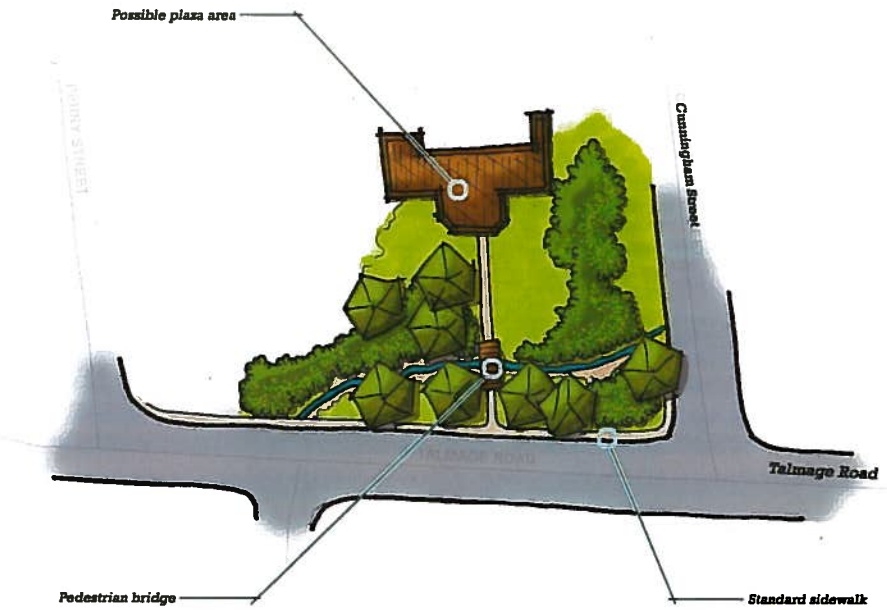
North of Talmage

The second project area is also in Reach D on the North side of Talmage Road near Cunningham Street. This area is immediately downstream from the South of Talmage project area. At this corner there are large aluminum sided warehouses. The part of this lot facing Talmage is sizeable and open with a large canopy tree.

Alternative 1 for this site envisions widening the creek channel and providing a weir. A wide sidewalk between the creek and Talmage will contain street trees that will provide shade and allow for optimal viewing of the creek. Alternative 2 shows a more standard sidewalk with benches and grass mounds near the creek. Trees shade the creek on the south side and a small bridge provides a pedestrian connection to a possible restaurant or retail shop plaza area.



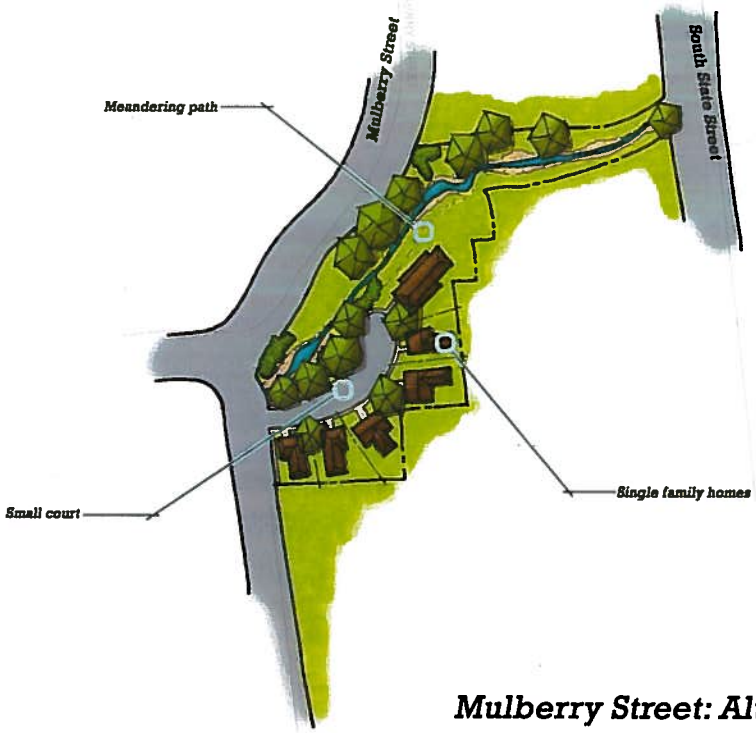
North of Talmage: Alternative 1



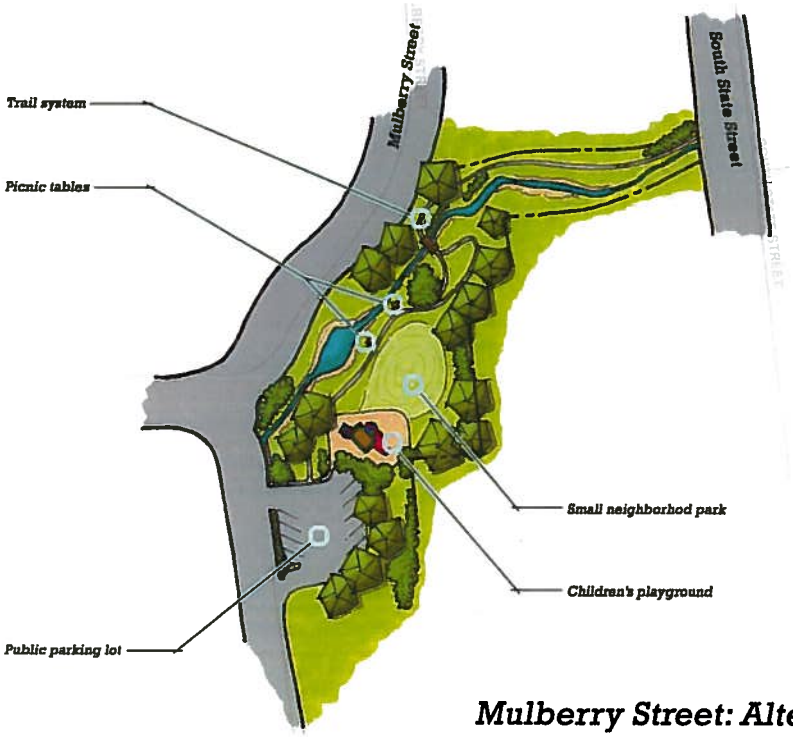
North of Talmage: Alternative 2

Mulberry Street

The third project area is bordered by a dead-end street that could be used for access off Washington Avenue. This site is in Reach C and is zoned for high-density residential (R-3; up to 28 units per acre). Alternative 1 includes developing the vacant parcel east of Mulberry Street with six homes on a small court set back from the creek, with a meandering path and trees shading the widened creek. Alternative 2 includes a small neighborhood park and playground with a parking lot, picnic tables, and a trail system that bridges the creek. Trees would buffer the park front adjacent business and while providing shade for the creek and playground. Stakeholders reviewing these concepts preferred Alternative 2. Both alternatives would complement the existing community garden located on the west side of Mulberry Street south of the bridge.



Mulberry Street: Alternative 1



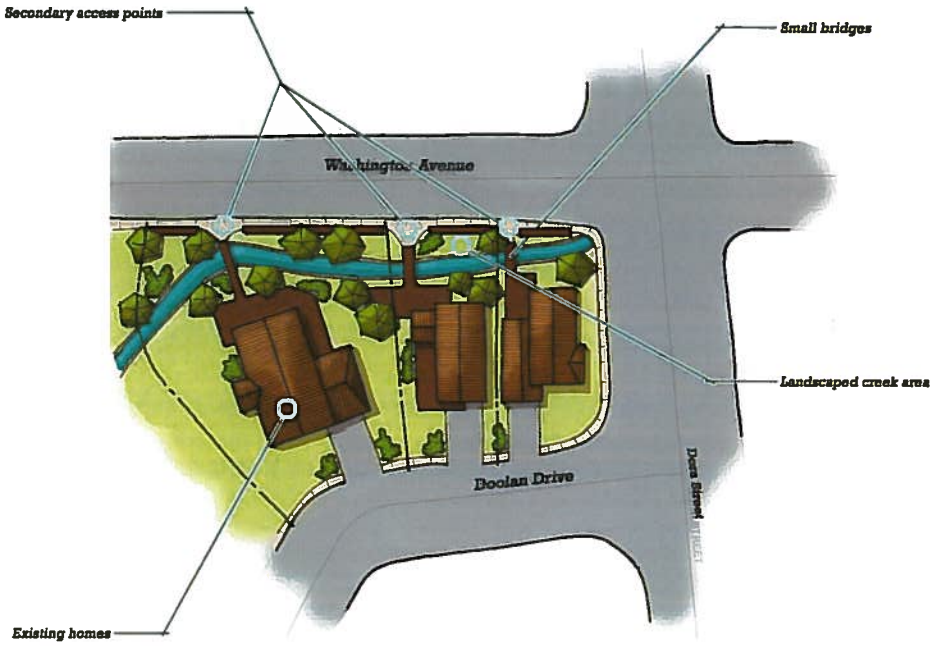
Mulberry Street: Alternative 2

Washington Avenue – An Example of Flexible Creek Setback Design

This site is located at the southwest corner of Washington Avenue and Dora Street, in an area where the creek is fenced off from the street. This concept demonstrates how residents could turn the creek into an attractive feature of their property to both their benefit and that of the streetscape and surrounding community. This could include removing the tall fence, opening the back yards, and creating a secondary access to these homes off of Washington Avenue. The sidewalk could be connected to with small bridges crossing the landscaped creek, leading to decks where residents could enjoy the creek view.

Rather than focusing on this concept as an isolated project, it serves as an example of how homeowners and developers could incorporate the natural features of a creek into the design of their homes. Retaining or restoring the natural characteristics of the waterway could be incentivized through flexible creek setback requirements. As of this writing, City staff members are preparing to draft the City's first setback regulations. It is recommended that these regulations incorporate incentives that allow a flexible siting and design approach for development near waterways. If property owners maintain, protect, and develop their properties in accordance with the natural features of the creek, or restore and enhance degraded creek areas, they should be given appropriate flexibility in siting and design.

It is recommended that the City adopt this strategy citywide to benefit the waterways within its jurisdiction and provide opportunities for creative creek-side property development.



Washington Avenue

Overall Project

The Mulberry, South of Talmage, and North of Talmage projects discussed above should be viewed as three components of one overall project. Taken together, these subprojects would restore and enhance Doolin Creek in those areas where most opportunity exists. These areas are both within the city limits and include vacant and under-developed properties. The following image shows all of these projects overlaid on an aerial map of the vicinity.

RECOMMENDED STRATEGIES FOR ENHANCEMENT

General Recommendations

1. Approve the Doolin Creek Restoration and Enhancement Plan as a strategic guide for enhancing the Doolin Creek corridor.
2. Treat the three corridor improvement project areas and enhancement strategies in this Plan as components of an overall long-term plan to restore Doolin Creek. The City should act opportunistically to enhance these areas as funds and opportunities become available.
3. Anticipate the future Talmage Road widening project as the best opportunity of greatest positive impact to Doolin Creek by mitigating the environmental effects of widening the road.

4. Adopt creek setback regulations to protect riparian vegetation and prevent further ecological degradation of the creek. These guidelines should be flexible so that they can adapt to the differing conditions that are found along the creek. They should also contain incentives to encourage property owners to incorporate the natural features of the creek into the siting and design of individual projects.
5. Apply for appropriate grants to enhance certain stretches of Doolin Creek and to repair areas of degradation, particularly in and near the Mulberry Street and Talmage Road project areas.
6. Work with local environmental organizations and the schools to sponsor a Doolin Creek "clean-up day" similar to the annual Gibson Creek and Orr Creek clean up days, to clear out garbage and debris.
7. Develop Adopt-A-Creek programs where active neighbors will work together to maintain and enhance their particular stretch of creek. The first such Adopt-A-Creek program should focus on the Mulberry Street neighborhood, given the residential density, nearby community garden, and opportunities for significant creek enhancement.

Project Area Recommendations

South of Talmage

1. Alternative 2 was the preferred approach to this area in public meetings when the Plan was first developed, and is also preferred by the Paths, Open Space, and Creeks Commission. It is recommended that the City identify this alternative as a priority in conjunction with a potential Talmage Road widening project and any other projects within its jurisdiction that would require impact mitigation for this waterway.
2. Plans for this area should include abandoning the stretch of culvert that goes beneath State Street and the service station at the corner of State and Talmage, and creating a new culvert connection along the alignment of Lewis Lane and the natural alignment of the creek.
3. A new and enhanced creek channel could be constructed from State Street to Talmage Road that would connect to the existing culvert at the northeastern edge of this planning area.
4. With the rerouting of Doolin Creek and the elimination of Lewis Lane, a passive use park area with landscaping could be created along this stretch of creek.
5. The City should consider further refining the design of Alternative 2 for the South of Talmage project to show a wider spreading basin, particularly in the eastern portion of the property, which could be planted with reeds and used to enhance water quality in the area.
6. Under this option, the segment of Lewis Lane between the businesses fronting State Street would be an open channel with pedestrian pathways on either side of the creek connecting to the park. Should this prove to be difficult with the existing businesses (who are presently using it for a service alley and garbage storage), then the culvert should be placed under the section of Lewis Lane and terminate at the back of businesses to allow access not just to the businesses, but to the park, as well.

North of Talmage

1. This area could be enhanced along the lines of Alternative 1 or 2.
2. The actual enhancement of the creek itself and the provision of public access improvements could be a part of a potential Talmage Road widening project, and could be included to mitigate the environmental effects of widening Talmage Road and also to improve pedestrian and bicycle access.

Mulberry Street

1. Although staff and participants in the 2002 Doolin Creek Workshops preferred Alternative 2, which proposes that the City acquire vacant property on the west side of Doolin Creek at Mulberry Street, the City should consider both the housing and non-housing approaches to this stretch of creek.
2. If the City is able to obtain funds in order to acquire this key property, a refined plan should be developed for a small park to be constructed at this location along the lines of that designed in Alternative 2.
3. If the City does not feel it can acquire this property, it should then develop the design guidelines and creek setback regulations suggested under the general recommendations to assure that the property develops in a manner that is respectful of and enhancing to the creek environment (Alternative 1).

Washington Avenue – An Example of Flexible Creek Setback Design

1. The City could use this concept as a model to develop creek setback requirements that include incentives for restoring and retaining the natural characteristics of waterways by giving project applicants more siting and design flexibility.

Project Prioritization

If possible, the three projects presented in this document should be programmed as a single project. However, if not possible, they may be pursued individually as funds become available, and prioritized in the following order:

1. South of Talmage (Alternative 2)
2. Mulberry Street (Alternative 2 preferred; Alternative 1 without grant or mitigation funding)
3. North of Talmage (Alternative 1 or 2)

APPENDIX A – PROJECT SUMMARY

Project	Estimated Cost*	Potential Funding Source	Other Considerations
South of Talmage	Alternative 1: $1.5M	Impact mitigation/grants	City-owned property. Project may be consistent with current zoning (Public Facilities Zone); trees or structures must not obstruct air navigation
	Alternative 2: $3.0M	Impact mitigation/grants	
North of Talmage	Alternative 1: $800K	Impact mitigation/grants	Project may be consistent with current zoning (Public Facilities)
	Alternative 2: $1.5M	Private development	Restaurant or retail plaza would not be consistent with current zoning (Public Facilities)
Mulberry Street	Alternative 1: $1.5M	Private development	Consistent with current zoning (R-3)
	Alternative 2: $1.5M	Grants	Park may be permitted in current zoning (R-3), subject to a use permit

** Rough estimated costs include planning, design, environmental compliance and construction. Estimates determined by City of Ukiah Public Works Department.*

APPENDIX B – POTENTIAL FUNDING SOURCES

Funding Source	Description	Amount	Deadline	Website
CA State Water Resources Control Board	Grant 319 (h) – Funding for improving water quality including riparian restoration projects resulting from non-point source pollution.	$4 million per year	August	http://www.waterboards.ca.gov/water_issues/programs/nps/grant_program.shtml
Funder's Network for Smart Growth	Matching funds for local sustainability.	N/A – matching fund	January 8	http://www.fundersnetwork.org/participate/green-building/partners-for-places/
National Endowment For the Arts	Must involve two partners: local government and a non-profit organization that create transformative projects which are sustainable and beautify the community.	$25,000 – $200,000	Jan 13	http://arts.gov/grants-organizations/our-town/grant-program-description/
The Forest Service's Community Forest and Open Space Program	Provides assistance to establish community forests for community benefit.	Not stated	January 15	http:www.grants.gov/web/grants/view-opportunity.html?oppId=241953
Environmental Justice Collaborative Problem	Focuses on local environmental issues that affect communities – provides small grants to save native species and wild ecosystems.	Not stated, but small amounts	May 1	http://www.fundwildnature.org/proposal-dates-a-guidelines/dates-a-guidelines.html
US Fish and Wildlife Service Coastal Program	Provides funding for projects that restore and protect fish and wildlife habitat on public and private land.	Not stated	September 30	http:www.grants.gov/web/grants/view-opportunity.html?oppId=246793
CA Wildlife Conservation Board	Provides funding for wetland, riparian, oak woodland and fish habitat improvement projects concerning wastewater technical assistance.	Up to $50,000	Not stated	Meghan Brown (916) 341-5729 mgbrown@waterboards.ca.gov Diana Conkle (916) 341-5660 dconkle@waterboards.ca.gov
Fisheries Restoration Grant Program, California Dept of Fish and Wildlife and NOAA	The purpose of the program is to restore, enhance, or protect anadromous salmonid habitat in the coastal watersheds of California, or fund projects that lead to the restoration, enhancement, or protection of anadromous salmonid habitat.	In 2014, $150,000 was available for restoration of steelhead streams (referred to as the Steelhead Report Card or SHRRC Focus)	Mid-March	https://www.dfg.ca.gov/fish/Administration/Grants/FRGP/Solicitation.asp
NFWF (National Fish and Wildlife Foundation) *5 Star* and Urban Streams Program Purpose	Provides wetland, riparian, in-stream and/or coastal habitat restoration. Implements meaningful education and training activities, either through community outreach, participation and/or integration	*5 Star*: In 2014, NFWF anticipates that approximately $1,800,000 of funding will be available.	*5 Star*: Jan-Feb *Bring Back the Natives*: Late April	*5 Star*: Claire Thorp claire.thorp@nfwf.org (415) 243-3104 http://www.nfwf.org/fivestar/Pages/2014rfp.aspx

Bring Back the Natives	with K-12 environmental curriculum.	*Bring Back the Natives*: In 2012 funded 23 projects, minimum award $23,000.00 to $300,000.00 Non-federal grant match required		*Bring Back the Natives*: http://www.nfwf.org/bbn/Pages/home.aspx
State of CA Department of Water Resources	Flood potential Public agency with citizen group or non profit	grant cap of 1 million	Not stated	www.grantsloans.water.ca.gov
CA Infrastructure and Economic Development Bank (I-Bank)	revolving direct loan program sustain long term employment Interest rates change monthly until board approval	up to 20 Million over 30 years	Not stated	www.ibank.ca.gov
State Water Resources Control Board CWSRF Program Clean Water State Revolving Fund	Nonpoint source projects identified in CA NPS Plan stormwater reduction and treatment facilities stormwater Grant Program (Prop 84) project must reduce and/or prevent stormwater contamination of rivers, lakes and streams	$250,000 minimum grant proposal with a maximum amount of $3,000,000 20% funding match 2-3% low interest loan, standard 20 years; repayment begins 1 yr after construction	Not stated	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/
US Department of Agriculture	curb and gutter improvements road and automobile bridge	3.5% low interest loan	Not stated	www.usda.gov
CA Fisheries Fund	Provides three types of loans: fishing association fund, infrastructure loans, business loans	Not stated	Not stated	http:/www.californiafisheriesfund.org/loan.html

APPENDIX C – ADDITIONAL INFORMATION

U.S. Environmental Protection Agency. *Low Impact Development (LID) "Barrier Busters" Fact Sheet Series*. Available at: http://water.epa.gov/polwaste/green/bbfs.cfm

City of Ukiah. *2006 Storm Water Management Plan*. Available at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/swmp/ukiah_swmp.pdf

City of Santa Rosa and County of Sonoma. *Low Impact Development Technical Design Manual*. Available at: http://srcity.org/departments/utilities/stormwatercreeks/swpermit/Pages/swLIDtechManual.aspx