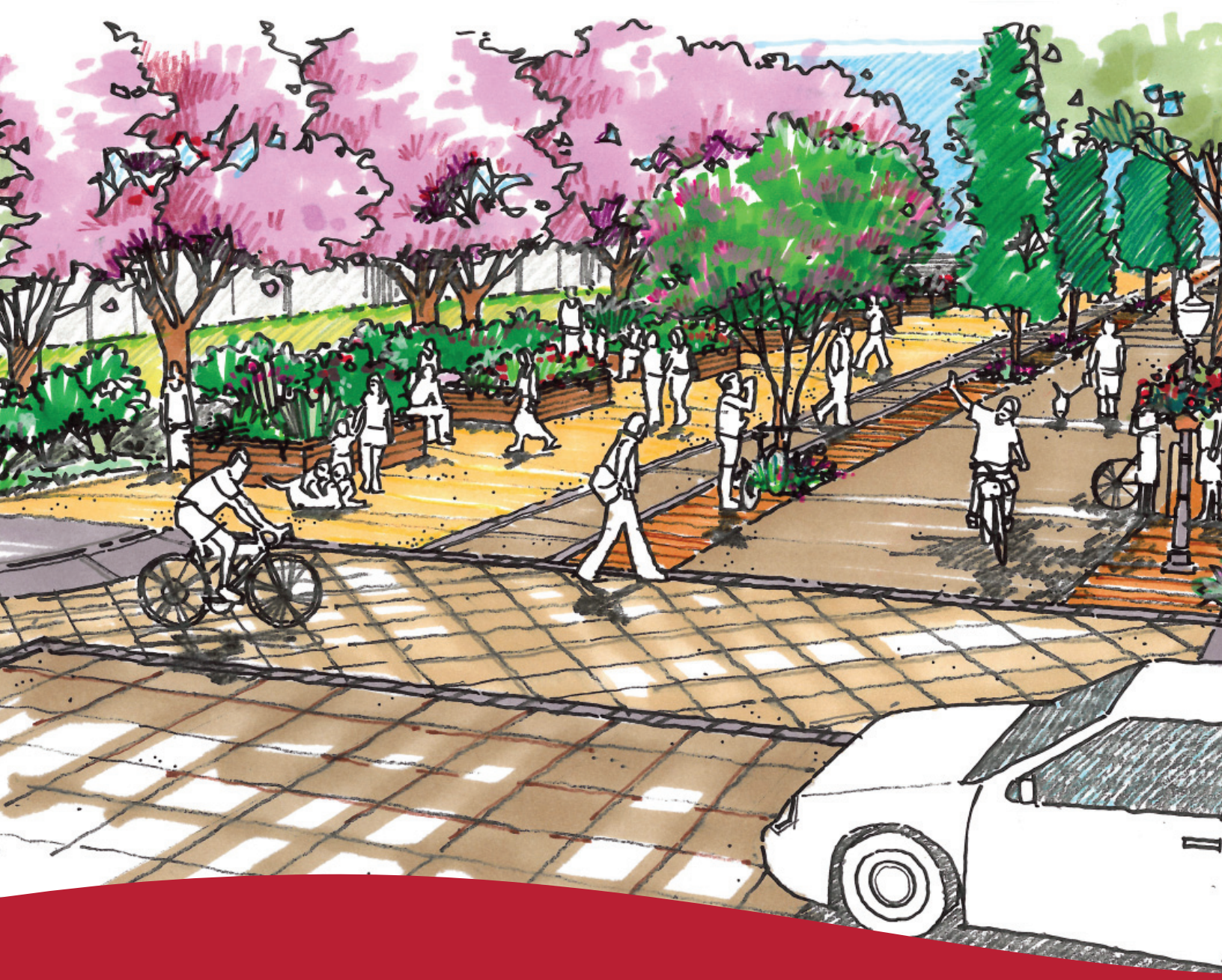


Arcata Rail With Trail Feasibility Study and Operations Plan

JUNE 2010 - FINAL DRAFT

PREPARED BY:
Alta Planning + Design
IN ASSOCIATION WITH:
Winzler & Kelly
City of Arcata

alta
PLANNING + DESIGN

ACKNOWLEDGEMENTS

California State Coastal Conservancy

1330 Broadway, 13th Floor
Oakland, CA 94612
Susan Corbaley, Project Manager, North Coast Region
www.scc.ca.gov

City of Arcata

736 F Street, Arcata, CA 95521
Karen Diemer, Environmental Services Deputy Director
Mark Andre
Doby Class, Director of Public Works
Morgan Kessler, Public Works

Steering Committee

Mitch Stogner	NRCA
John Williams	NCRA-Operator
Dave Stewart	CPUC
Eric Nelson	USFWS
Rex Jackman	Caltrans
Cheryl Willis	Caltrans
Ralph Martinelli	Caltrans
Alyson Hunter	Caltrans
Jen Rice	RCAA
Marcella Clem	HCAOG
Ray Bosch	USFWS
Michael van Hattem	CA DFG
Kelley Reid	USACOE

Stakeholders

Agency/Organization	Representative
Humboldt Bay Harbor District	Dave Hull Adam Wagschal Mike Wilson
Local Birding Groups / Audubon	Chet Ogen
Local Waterfowl Hunters	Ted Romo
PG&E	Allison Talbott
County of Humboldt Public Works	Tom Mattson Hank Seemann Chris Whitworth
Friends of the Arcata Marsh	Sue Leskiw
Green Wheels	Ashley Hanson
Humboldt Baykeeper	Pete Nichols
Coastwalk	Mike Lee
Humboldt Bay Bicycle Commuter's Association	Rick Knapp Brett Gronemeyer

Agency/Organization	Representative
Humboldt State University - shorebirds	Mark Coldwell
Trails Trust of Humboldt Bay	Karen Brooks
Corridor Access Project	Marty McClelland Tim Shreeve Doc Johnson
Pacific Coast Joint Venture	Sharon Kahara
Arcata Chamber of Commerce	Brenda Bishop
Eureka Chamber of Commerce	Warren Hockaday
Humboldt Co. Convention & Visitors Bureau	Tony Smithers
Timber Heritage Association	Marcus Brown Dan Hauser
Bracut 101	Dave Wells Dave Meserve

Consultants

Winzler & Kelly
633 Third Street, Eureka, CA 95501
707.443.8326

Planwest Partners
1125 16th Street, Suite 200, Arcata, CA 95521
707.825.8260

Alta Planning + Design, Inc.
711 SE Grand Avenue Portland, OR 97214
503.230.9862

Special thanks to the community for providing input at the public meeting.

CONTENTS

INTRODUCTION

Overview and Project History

The current Arcata Rail with Trail Connectivity project seeks to determine the best possible route for the placement of a Class I, ADA Accessible, non-motorized, 3.9 mile long multi-use pathway. The study corridor follows the eastern edge of Humboldt Bay from the Bracut and Highway 101 intersection to the southern boundary of the City of Arcata, winds through the Arcata Marsh and Wildlife Sanctuary through the town to the skate park. The existing corridor includes three transportation arteries: the North Coast Railroad Authority's railroad right of way, a portion of the Highway 101 corridor and also segments of City-owned road right of way.

The City currently has 20 miles of off-road trails and 16 miles of bike lanes. Although the City's active non-motorized transportation system is institutionally established, there are several large gaps that make the City difficult to navigate for pedestrians and bicycles, especially those traveling along the California Coastal Trail. The City has prioritized projects that total over 35 miles to meet the increasing local demand for non-motorized alternatives and connectivity to and from the Pacific Coast and Humboldt Bay.

This trail was identified in the 2004 Arcata Pedestrian and Bicycle Master Plan to provide connectivity between recreational and central spots, including three popular Arcata parks, the local pool, tennis courts, the Arcata Plaza, the Arcata Marsh and Wildlife Sanctuary, and Humboldt Bay. The trail also serves several daily commuter destinations such as Arcata High School and the central Arcata business zone.

Two events have in part stimulated considerable interest in this idea:

- In 2000, the California State Legislature passed legislation calling for the establishment of the California Coastal Trail, a 1,200-mile trail running the length of the California Coast. The Arcata Rail with Trail segment could become a major link in this larger chain of trail segments, connecting the City of Arcata with the rest of the California Coast.
- In 2001, the Redwood Community Action Agency authored "The Humboldt Bay Trails Feasibility Study." This study identified areas of Humboldt Bay where trails might be located or expanded. The Highway 101 corridor was considered to be of the highest priority because of its ability to connect the Cities of Eureka and Arcata and, by way of Arcata, the Hammond Trail. The Hammond Trail is already part of the California Coastal Trail.

Humboldt Bay Mudflats

In the fall of 2006, the National Parks Service Rivers, Trails, and Conservation Assistance Program began a series of facilitation meetings with non-profit and government stakeholders and the Planning Team to discuss the possibility of constructing a multi-use trail between Arcata and Eureka, within a corridor that contains the North Coast Railroad rail line and Highway 101. The Planning Team is a collaborative effort between public agencies, nonprofit organizations, and the public to construct a bicycle and pedestrian trail that would connect the Cities of Arcata and Eureka.

Interpretive pullouts offer a venue for educational opportunities.

Project Goals

The Planning Team adopted the following goals for the Humboldt Bay Trail:

- Be planned for bicyclists, walkers and hikers, runners, skaters, wildlife viewers, nature educators, and other non-motorized outdoor users.
- Be a key connection in the California Coastal Trail and Humboldt Bay Trail, promoting coastal access regionally and state-wide.
- Highlight the natural, cultural, and historic resources of Humboldt Bay.
- Promote environmentally sensitive access to the Bay for wildlife viewing and a variety of recreational and educational activities.
- Serve local residents and visitors as a community amenity and nature tourism destination, promoting economic vitality.
- Promote healthy lifestyles, active volunteerism, and community stewardship.
- Be planned, promoted, developed, and managed by a collaborative multi agency partnership.

BENEFITS OF TRAILS

Implementing the Arcata RWT will help the region achieve a world-class recreation and transportation system. A multi-use trail facility will result in expanded recreation and mobility options for Arcata, Eureka, and Humboldt County residents and visitors, especially those who seek to integrate a healthy lifestyle into their daily activities. Given the scenic beauty of the area, the trail will also offer important recreational opportunities.

Quality of Life

The extent of bicycling and walking in a community has been described as a barometer of how well that community is advancing its citizens' quality of life. Areas that are busy with bicyclists and walkers are considered to be environments that work at a human scale, and foster a heightened sense of neighborhood and community. These benefits are impossible to quantify, but when asked to identify civic places that they are most proud of, residents will most often name places where walking and bicycling are common, such as a popular greenway, river front project, neighborhood market, Main Street, or downtown.

Walking increases quality of life and is a good choice for families.

Walking and bicycling are also good choices for families. A bicycle enables a young person to explore her neighborhood, visit places without being driven by parents, and experience the freedom of personal decision-making. More trips by bicycle and on foot mean fewer trips by car. In turn, this means less traffic congestion in the community. There are also more opportunities to speak to neighbors and more "eyes on the street" to discourage crime and violence. It is no accident that communities with low crime rates and high levels of walking and bicycling are generally attractive and friendly places to live.

Health

The United States is currently experiencing a health epidemic - caused, in part, by a lack of physical activity. Widespread concern over national health issues and rates of obesity make opportunities for recreation increasingly important for individuals, communities, and governmental organizations. The Surgeon General's 1992 report, "Physical Activity and Health," determined that physical activity can help reduce cardiovascular disease, lower the risk of colon cancer, lower the risk of diabetes, lower the risk of osteoporosis, reduce the risk of obesity, and relieve symptoms of depression and anxiety. The report further contains a Center for Disease Control 1991 study which determined that the most common form of exercise for all people over the age of 18 is walking, at 44.1 percent.

Walking increases health and is the most common form of exercise for people over 18.

Part of the solution to this epidemic is providing outdoor recreation opportunities such as trails in parks and open space areas where people can walk, bicycle, and be more physically active. Studies show that frequency of trail use is directly proportional to the distance that one lives from trail access points, and regular trail users see health benefits. It logically follows that communities with greater access to trail systems and recreational opportunities will have healthier populations.

Opportunities for transportation alternatives are important to the physical health of regional residents, not just to those enjoying the trail system. People choosing to ride or walk rather than drive are typically replacing short automobile trips, which contribute disproportionately high amounts of pollutant emissions.

Trails provide access to the natural environment.

Environmental

Access to trail systems and natural environments further provides opportunities for environmental education and the establishment of a conservation ethic. An understanding of one's natural environment leads to the future preservation of lands that are ecologically important as well as essential to a tourism industry that specifically relies on the presence of high quality open spaces and wilderness areas.

Since bicycling and walking replace automobile trips, contribute no pollution, require no external energy source, and use land efficiently, they effectively move people from one place to another while providing a net decrease in adverse environmental impacts. They further create no noise, no adverse odor, and no congestion.

Trails provide economic benefits in the form of tours, races, and other events.

Economic

An integrated and consistent trail system can further result in significant economic benefits to the region. This includes improvements in real estate values for homes near quality facilities and 'pedestrian-friendly' areas, retention and attraction of quality employees for businesses, and direct expenditures from residents and visitors. Economic activity related to trail systems further benefits the retail industry, manufacturing and distribution, professional services, and in the form of tours, races, rides, and other events.

Recreational walkers are one type of trail user that will be attracted to the Humboldt Bay Trail.

Potential Trail Users

The Humboldt Bay Trail will be used by thousands of pedestrians and cyclists, as demonstrated by the success of multi-use paths already constructed in the area and other parts of California. Each user group has specific needs that directly affect the planning and design of the Humboldt Bay Trail. Future pedestrian and bicycling activity in the corridor will range from intense to low depending on the location and time of year or week. Users are expected to be both commuters and recreationists.

Identifying the needs of trail users is critical to providing appropriate trail alignments and design features that respond to the surrounding community and anticipated uses of the trail. It is important to understand who will be using the trail, how they will use it, and what types of amenities will be most effective in making this trail an asset to the surrounding community. The trail's design will need to respond directly to the needs of the trail users and managers. Anticipated users of the Humboldt Bay Trail include:

Pedestrians

This group includes people of multiple ages and abilities from children through seniors, who require a smooth walking surface, clearly delineated crossings, benches, and shade for resting. This group may include long-distance hikers who are traveling through the region's trail system (and require camping sites), day-hikers who will walk a section of the trail (3-10 miles a day) and casual walkers looking for an hour of exercise and relaxation on the trail.

Runners

Many runners prefer soft (dirt, crushed stone or cinder) surfaces or trail shoulders as an alternative to asphalt or concrete. Generally recreational users, runners are less likely than bicyclists to be commuting on trails.

Disabled

People with disabilities require smooth, firm, ADA compliant pathways, with rest areas on steep grades, maximum 2% cross slopes, barrier-free facilities, and accessibility information at trailheads. It is important to note that the ADA applies to all types of physical and cognitive disabilities, including hearing and vision impairments as well as wheelchair access.

People with disabilities require ADA compliant pathways.

Bicyclists

People on bicycles include several types of skill levels, from children and seniors who ride between 5 to 10 mph to highly skilled cyclists capable of sustaining speeds of more than 20 mph, to mountain bicyclists who may use pathways for access to more rugged single track trails. Road and touring bicycles require smooth, firm surfaces free of cracks, seams, or other surface imperfections.

In-Line Skaters

Skaters require both a very smooth surface and wider pathways due to their swinging motion. They prefer asphalt pathways 10 ft. wide, with limited downhill grades.

Motorized Trail Uses

Motorized vehicles are generally not allowed on shared-use pathways. Exceptions include emergency and maintenance vehicles. This issue must be handled carefully, since the speed and range of motorized trail users can create safety and operational conflicts with non-motorized trail uses.

Cyclists encounter ducks on the Springwater Trail in Portland, OR.

Wildlife

A diversity of fauna make their home within the area of Humboldt Bay including fish, birds, amphibians and retiles. Sensitive design and trail management will help mitigate negative impacts of increased human activity in the area. During implementation, construction windows should consider spawning and nesting seasons. Design strategies in sensitive areas may include: the use of bird blinds, fences that allow for wildlife passage, and structures that minimally impact waterways. Where natural environments such as wetlands are impacted, replacement or restoration may be necessary.

Wildlife viewers observe birdlife at the Oaks Bottom Wildlife Refuge from Portland's Springwater Trail.

Wildlife Viewing

The bay is an ecologically rich resource, and environmental education and recreations activities are anticipated. As the trail would improve access to the Humboldt Bay National Wildlife Refuge and the Arcata Marsh and Wildlife Sanctuary, bird and wildlife viewing is anticipated to be an expanded use.

Hunting and Fishing

These uses are firmly established in the bay. The trail can provide improved access for hunting and fishing, as long as appropriate measures are provided to ensure the safety of people using the trail during hunting season. The hunting season occurs during the winter months, typically early in the morning, when recreational and commuter trail use is anticipated to be lowest.

NEEDS ANALYSIS

This chapter provides an overview of the user needs for the Arcata RWT and the greater Humbuldt Bay Trail. The need for an improved facility connecting Arcata, Eureka, and other Humboldt County destinations is called out specifically in several plans including the 2004 Humboldt County Regional Bicycle Plan Update. Local agencies and the public also realize the strong potential for the corridor to serve as a viable transportation and recreation facility.

Recreational trail users require amenities, such as even surfaces, to have an enjoyable experience.

Commuters and Recreationists

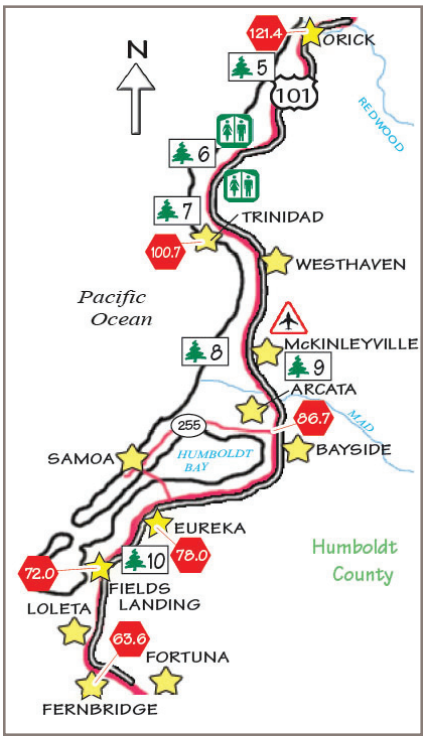
The project corridor is anticipated to be widely used by a variety of bicyclists and pedestrians because of its close proximity to Humboldt Bay, national and local wildlife refuges, shopping districts, employment centers, recreational areas, and the residential communities of Arcata and Eureka. Anticipated pedestrians and cyclists can be further broken down into two categories: commuters and recreationists. Short distances to the area's many destinations are the most likely to generate trips on foot or bicycle. Typically, destinations less than three miles from residential areas are attractive for bicycle trips, and destinations one-half mile or less attract pedestrian trips. Each user group has specific needs that directly affected the planning and design of the Arcata RWT.

Commuter Needs

A common commuter profile will consist of employed adults and adult students. Adult commuters are typically seasoned bicyclists and walkers, who can move at above average speeds and maneuver across busy arterials. Often, these commuters prefer to ride on-street rather than on a bike path: the Arcata RWT has been designed to be attractive to both the casual and serious bicyclist. Inexperienced recreational cyclists will be slower moving and less adept at crossing busy streets, and street and rail grade crossings have been designed with them in mind. A significant number of commuters already use the shoulder of Highway 101 between Arcata and Eureka. With this plan commuters can use the seperated path between Arcata and Bracut. Future plans call for the path to continue to Eureka. A separated path would encourage additional commuters while increasing safety for all. Common commute characteristics include:

- Commuter trips usually range from several blocks to 10 miles.
- Commuters typically seek the most direct and fastest route available.
- Commute periods typically coincide with peak traffic volumes and congestion, increasing the exposure to potential conflicts with vehicles.
- Places to safely store bicycles are of paramount importance to all bicycle commuters.
- Major commuter concerns include changes in weather (rain and heavy fog), riding in darkness, personal safety, and security.
- In general, a primary concern to all bicycle commuters are intersections with no control signs (i.e., stop or yield signs) or signal controls.
- Commuters generally prefer routes where they are required to stop as few times as possible, thereby minimizing delay.

Use of a dedicated facility may encourage some commuters who currently drive to



Caltrans Map of the Pacific Coast Bike Route in Humboldt County

Downtown Arcata

walk or bicycle, thereby offering commuters saved resources, less traffic congestion, and a reduction in the demand for parking.

Recreational Needs

Recreational use generally falls into one of three categories: exercise, non-work destinations (such as shopping or libraries), and sightseeing or cultural and natural educational experiences. Recreational users can be a varied user group in and of themselves, since the term encompasses a broad range of skill and fitness levels. Recreationists will include: families with young children, club bicyclists, long distance bicyclists, people walking their dogs, roller skaters/bladers, and joggers, to name a few. Regardless of the skill level of the recreational user, directness of route is typically less important than being in scenic surroundings, having amenities like restrooms and water fountains, and being on routes with few traffic conflicts. Visual interest, shade, protection from wind, moderate slopes, and artistic or informational features also have a much higher value.

All recreational corridor users require some basic amenities to have a comfortable and enjoyable experience. They include dedicated facilities, clear destination and intersection signage, and even surfaces. The aesthetic component of a facility is very important to most recreational users. In other words, most people prefer to walk or bicycle in pleasing surroundings. Some of the segments of the Arcata RWT will offer users more pleasing surroundings (such as along the wetlands) than others (such as directly along Highway 101).

The Arcata RWT itself is large long enough to serve as a major recreational destination. Additionally, it will provides the first piece of a significant connection linking the networks of Arcata and Eureka. A summary of connecting pathways and bikeways is provided below.

Surrounding Land Uses & Destinations

The Arcata RWT directly or indirectly serves local and regional destinations along the corridor. It is the first portion of a trail to link the towns of Arcata and Eureka. Each of these communities has both employment and recreation attractions, such as academic institutions, parks, museums, and shopping districts. It will attract residents from both communities as well as recreational users from all over Humboldt County. It will also provide a significant connection to the California Coastal Trail and serve as an alternative to the heavily-traveled Highway 101 corridor, which does not have bicycle facilities.

Cattails at the Arcata Marsh

Surrounding land uses directly impact potential usage on any bicycle or pedestrian facility. The town of Eureka is the largest in Humboldt County with a population of 26,000. According to the 2000 US Census data, Arcata has a population of nearly 17,000. The Arcata RWT corridor extends through residential, recreation and business areas as well as the Arcata Marsh and Wildlife Sanctuary. The various land uses adjacent or in proximity to the trail are summarized below.

Residential Communities

Residential communities occupy the ajdacent spaces to the trail through most of Arcata. Residents of these local communities are potential users of the Arcata RWT corridor for local errands, recreation, transportation connections, and commuting.

Residential communities in each area consist of single-family houses and small apartment complexes. Existing bicycle routes, sidewalks, and roadways from these neighborhoods provide access to the Arcata RWT corridor. The implementation of the Arcata RWT will enhance conditions for the already well-used surrounding bicycle system.

Commercial Centers

Retail shopping and businesses occupy portions of Arcata as well as the Highway 101 corridor. Local businesses include several small independent shops and restaurants in downtown Arcata, just a few blocks from the trail. A number of offices are also located right on the L Street portion of the trail The Highway 101 corridor segment of the trail terminates at the Bracut Business Park,

Recreational Destinations

The Arcata Marsh and Wildlife Sanctuary covers approximately 154 acres of publicly-owned open space and includes 4.5 miles of walking trails. Established in 1949, it is nationally recognized for its methods of treating wastewater via the natural processes of the marsh. The reserve provides habitat for nearly 200 species of birds. The section of the sanctuary that the trail will wind through is managed for wastewater treatment, public education and interpretation and habitat values. Where the City owns other properties that are more restricted to public access, this section of the sanctuary was in part constructed for public access and the goal of allowing the public to get close to nature. The trail design has features that will assist the City in minimizing the affects of the trail on the habitat but the trail upgrades through this section also allow the City to have a long stretch of trail that will be ADA accessible, a feature that is currently missing at the sanctuary. The City also finds benefit in having the California Coastal Trail wind through the Sanctuary to assist the City in meeting its goals of natural wastewater treatment interpretation.

The trail through this segment has been designed to slow trail traffic and to discourage community bicycles from going off the main trail.

The trail is adjacent to the Humboldt Bay National Wildlife Refugeas well as the Bracut Marsh.

South of the study area in Eureka is the Eureka or Palco Marsh and Sequoia Park including: a zoo, playground, petting zoo, picnic area and formal garden.

Within the county lands a KOA Campground serves as a potential stop for travelers using the California Coastal Trail.

Culture and Education

Humboldt State University is located near the northern end of the trail and offers numerous opportunities for cultural, art, and sporting events. Arcata's central plaza is the heart of the town and is home to numerous festivals and farmers' markets throughout the year, attracting thousands of visitors annually. The proposed improvements along L Street will make that location ideal for future small events like a street fair.

Projected Usage

One of the goals of the project is to encourage a variety of user groups who will benefit from it, including recreational and commuting user groups. The preferred alternative that was selected was chosen in part because of its balance of meeting the short and long commuter needs, the needs of visitors travelling the California Coastal trail and local recreation trail users looking for a pleasant trail user experience. The 2000 Census found that about 9% of work trips were made by walking/bicycling in Eureka and 22% in Arcata. Nationally, these percentages were 1.2% and 2.9% respectively; statewide for California they were 1.9% and 2.9% respectively. As can be seen, walking/bicycling to work in Eureka and Arcata are many times higher than either the U.S. or state averages—indicating a greater potential usage for the Arcata RWT. In addition, bicycling is one of the most popular forms of recreational activity in the United States. The Bureau of Transportation Statistics' October 2000 survey found that of the 41 million people riding bicycles (almost 15% of the 281,421,906 national population (Census 2000)), 54% are bicycling for recreation and 35% are bicycling for exercise. The 2001 American Sports Data Study by the Sporting Goods Manufacturer's Association tallied 84,182,000 national recreational walkers (almost 30% of the national population). If nothing else, this indicates a latent demand for connected trails and user facilities.

Cyclists on the Hammond Trail.

In 2008 the City of Arcata conducted a survey of over 1100 residents and visitors to assess its parks and recreation system. The number one recreational amenity that was requested through this survey was increase trails throughout the City and its parks system. When further asked why trails were desired, the number one response was for safer and more convenient non-motorized transportation options.

Using Alta Planning + Design's National Bicycle & Pedestrian Documentation (NBPD) Project trail usage model **Table 2-1** shows the trail usage estimate

When completed, the Arcata RWT is expected to be one of the most heavily used multi-use pathways in Northern California, with over 294,000 annual trips **(see Table 2-1)**. By way of comparison, an estimated 1.5 million persons per year use the Monterey Recreational Pathway. The estimate from the NBPD Model is based on a combination of factors: (a) comparisons with pathways counts from around the country; (b) the quality of the facility (length, aesthetics, access, etc); (c) climate; (d) population of area served; (e) regional population; and (f) annual visitors to the region. While the vast majority of current users in the corridor are bicyclists, the new pathway will attract a significant number of walkers/joggers and other users including roller bladers. Based on national surveys of pathway users, a slight majority of users are projected to be male, most people will drive to the pathway to use it, and most people will be using the pathway for health or recreational purposes. The pathway is projected to produce an estimated $2 million in local economic benefits, nearly $38 million in health benefits, and over 16,000 saved vehicle trips per year.[1]

1 A large percentage of the projected trips are recreational in nature and do not necessarily replace car trips.

Table 2-1 Arcata RWT Usage Estimate

Estimate of Annual Use[1]	294,405
By Mode of Travel:	
Walk/Jog	156,035
Bicycle	117,762
Rollerblade/Other	20,608
By Gender:	
Male	164,867
Female	129,538
Means of Travel to Trail:	
Drive	164,867
Bicycle	58,881
Walk/Jog	32,767
Other	11,776
Trip Purpose:[2]	
Health	223,748
Recreation	123,650
Commuting	11,776
Economic Benefits:	$2,060,836
Health Benefits:	$37,683,855
Transportation Benefits (saved VT/yr):	16,192

[1] *Based on counts on over 30 trails nationwide; calibrated for local environment, trail length, surrounding land use, population, density, climate, number of visitors, aesthetics, and other factors. Includes all trips on the trail, many of which may be for short distances.*

[2] *Adds to more than 100%, since users cited more than one trip purpose.*

DESIGN GUIDELINES

This chapter provides specific design guidelines for the Arcata Rail with Trail that are consistent with the guidelines currently observed in California and in the United States. Ultimately, the trail must be designed to meet both the operational needs of the roadways, the railway system, area businesses as well as the safety of trail users. The challenge is to find ways of accommodating motorized and non-motorized uses with minimum compromising of safety or functionality.

Planning, design, and implementation standards in this document are derived from the following sources:

- Rails-with-Trails: Lessons Learned, U.S. Department of Transportation, August 2002.
- American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 2004.
- AASHTO, Guide for the Development of Bicycle Facilities, 1999.
- U.S. Department of Transportation (USDOT), Federal Highway Administration (FHA), Manual of Uniform Traffic Control Devices (MUTCD), 2003.
- Caltrans: Highway Design Manual (Chapter 1000: Bikeway Planning and Design), 2006.
- Institute of Transportation Engineers (ITE), Design and Safety of Pedestrian Facilities, 1998.
- Rails-to-Trails Conservancy, Rails-with-Trails, Sharing Corridors for Transportation and Recreation, 1996.
- NCRA Policy and Procedures Manual

The sources listed above provide details on many aspects of trails, but a) may contain recommendations that conflict with each other; b) are not, in most cases, officially recognized "requirements;" and c) do not cover all conditions. All design guidelines must be supplemented by the professional judgments of the trail designers and engineers.

The above design standards and/or guidelines will be applied to the trail scenarios:

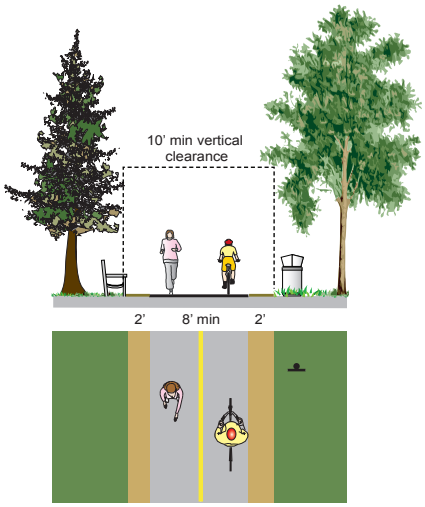
- Multi-use trail within and/or adjacent to roadways.
- Rail with multi-use trail within the North Coast Railroad's right-of-way.

The Arcata Rail with Trail will accommodate a wide range of users, including pedestrians, persons in wheelchairs, and bicyclists of varied abilities including family cycling. Assumptions regarding trail design include:

- Minimum tread width: eight feet, but will attempt to be 12 feet wherever possible.
- Typical shoulder width of trail: two feet.
- Minimum setback from edge of highway to edge of tread: 30 feet (without a barrier).
- Minimum setback from railroad track centerline to obstructions or edge of trail tread: 8.5 feet (9.5 feet on curves).
- Typical minimum setback from edge of tread to obstructions and buildings: three feet.

Multi-Use Trail Design

This section provides design guidance for Class I or multi-use trails. Engineering judgment and the requirements of the landholders must be applied to each specific situation.



Recommended Width

The recommended width for paved multi-use trails is 12 feet in moderate-use urban areas, with 2-3 feet of lateral clearance. In retrofit situations it can be difficult to achieve the desired 12', and 10' is commonly found. The minimum width from an operational standpoint is 8 feet in constrained situations and/or for short distances. The Arcata RWT includes segments from 12 feet down to 8 feet. Two-foot-wide unpaved shoulders with a compacted surface (often, gravel, crusher fines, or decomposed granite) have been located on each side of the paved surface to accommodate joggers and others who prefer a softer surface. The shoulder width has been reduced in locations of significat constraint.

Vertical Clearance

A 10 foot vertical clearance has been maintained on the Arcata RWT, This area will be free from tree limbs and any other obstructions that may interfere with pathway use. For segments where maintenance vehicles or equestrians are expected, a 12 foot minimum vertical clearance will be maintained.

Lateral Clearance on Horizontal Curves

Stopping sight distance on horizontal curves and lateral clearance can be calculated using the equations in the AASHTO Guide 2003. Sight distance is not a problem on the Arcata RWT.

Design Speed

The minimum design speed for bike paths is 20 miles per hour. Speed bumps or other surface irregularities have not been included in the design. Curves and closely spaced bollards designd for lower speeds have been included in the design before at grade crossings to reduce speed prior to the crossing.

Gradients

Steep grades should be avoided on any multi-use trail, with 5% being the recommended maximum gradient. Steeper grades can be tolerated for short distances (up to about 500 feet). The Arcata RWT corridor is nearly flat for most of the alignment.

Drainage

A 2% cross slope will resolve most drainage issues on a bike path and the Arcata RWT has been designed to accomodate this. A maximum 1:6 slope may be used for the shoulders. For sections of cut where uphill water is collected in a ditch and directed to a catch basin, water should be directed under the trail in a drainage pipe of suitable dimensions. Per NCRA guidelines, water should be directed away from rail tracks. The Arcata RWT runs along an existing rail corridor. Thus the slope is gentle and there are no sharp curves.

Bollards

Bollards at trail intersections and entrances are included to prevent vehicles from entering, and reduce the speed of bicyclists at crossings. Bollards are located adjacent to the trail with a removable center bollard for emergency and maintenance access. Bollards have not been located in the trail travel lanes. Bollards will be visible to bicyclists and others, especially at night time, with reflective materials and appropriate striping.

Bollards prevent vehicles from entering the trail.

Access Management

There are few driveways, residenst and business that will be affected by the Arcata RWT. Most are along L Street and the proposed improvements will accomodate the existing driveways and accessways for residents and businesses.

Multi-Use Trails and Highways

The Caltrans Highway Design Manual recommends separation between bike paths and Highways.

"A wide separation is recommended between bike paths and adjacent highways. Bike paths closer than 5 feet from the edge of the shoulder shall include a physical barrier to prevent bicyclists from encroaching onto the highway. Bike paths within the clear recovery zone of freeways shall include a physical barrier separation. Suitable barriers could include chain link fences or dense shrubs. Low barriers (e.g., dikes, raised traffic bars) next to a highway are not recommended because bicyclists could fall over them and into oncoming automobile traffic. In instances where there is danger of motorists encroaching into the bike path, a positive barrier (e.g., concrete barrier, steel guardrailing) should be provided."

The Arcata RWT is designed to stay out of the clear recovery zone except where it shares the Jacoby Creek Bridge with Highway 101.

Multi-use trail parallel to a California state highway

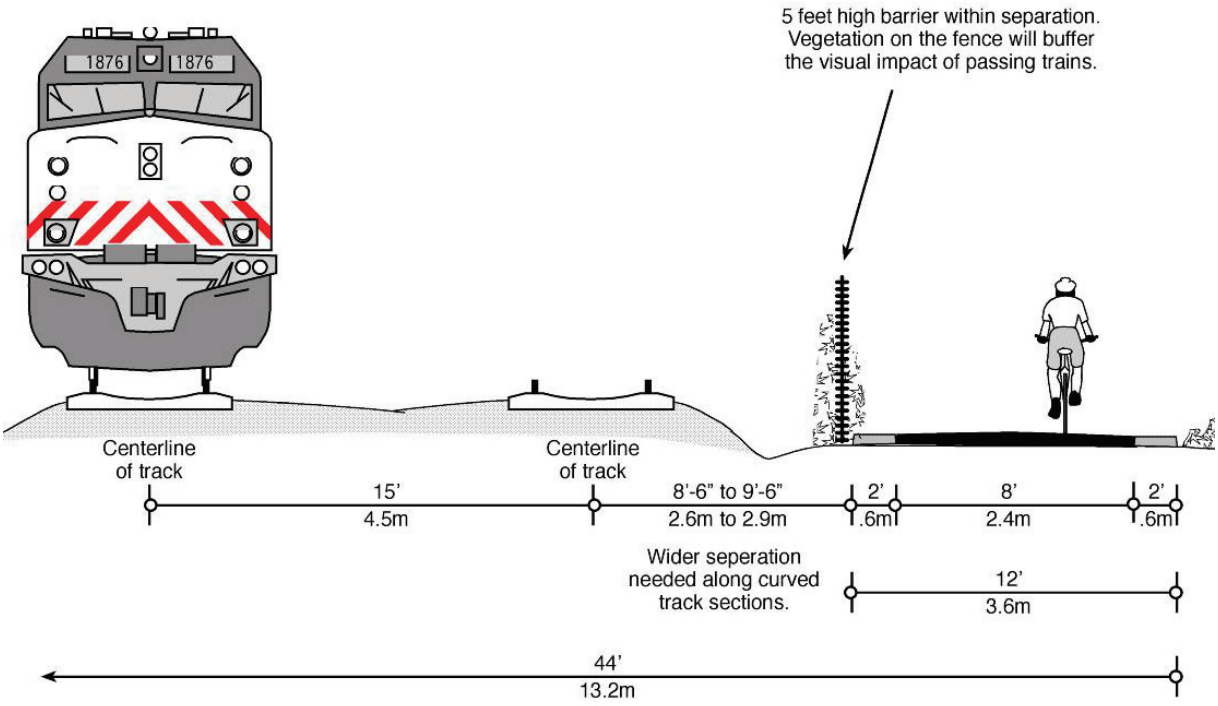
Rail-with-Trail Design

This section provides guidance for specific railroad safety issues and other design issues related to rail-with-trails (RWTs). Much of the information in this section is based on the "*Rails-with-Trails: Lessons Learned*" study. Again, engineering judgment and the requirements of the landholders must be applied.

Minimum Required Setbacks

Setback is measured from the nearest paved edge of the trail to the centerline of the nearest railroad track. A review of 65 existing trails as part of the *Rails-with-Trails: Lessons Learned* study shows wide variance in the setback distance used today. Researchers attempted to determine if narrower setback distances have a direct correlation to safety problems. However, based on the almost non-existent record of claims, crashes, and other problems on these RWTs, they were unable to conclude a strong correlation between setback and safety. At an absolute minimum, the setback must keep trail users outside the "dynamic envelope" of the trains, defined as "the clearance required for the train and its cargo overhang due to any combination of loading, lateral motion, or suspension failure." Additionally, in corridors with regular use of maintenance equipment that operates outside the dynamic envelope, the setback distance should allow adequate clearance between the maintenance equipment and the trail.

A popular RWT showing 8.5' minimum setback from edge of trail to rail centerline



A section showing rail-with-trail minimum design standards per Caltrans and CPUC.

The Federal Railroad Administration (FRA) already publishes minimum setback standards for fixed objects next to active railroad tracks, the distance between two active tracks, and adjacent walkways (for railroad switchmen). These published setbacks represent the legal minimum setbacks based on the physical size of the railroad cars, and are commonly employed along all railroads and at all public grade crossings. Most Public Utilities Commissions (PUCs), which regulate railroad activities within states, also have specific minimum setbacks for any structures or improvements adjacent to railroads, including any sidewalk or trail that parallels active railroad tracks. According to the PUC standards, minimum distances from the centerline of an active railroad to the outside edge of a trail or bikeway is 8.5 feet on tangent and 9.5 feet on curved track.

Fencing separates a multi-use trail from an active rail corridor.

Fencing

Given that most of the Arcata RWT alignment occurs within a scenic area and much of the trail is within 10 feet of the centerline of the tracks a split rail wooden fence has been included in the plans. This fence fits witin the senic context and has been identified as an acceptable barrier in the NCRA Guidelines. The fence will be installed only along the segments where the trail is within the minimum setbacks of the tracks. Openings of at least 5 feet wide are included at least every 500 feet to allow for emergency access and escape.

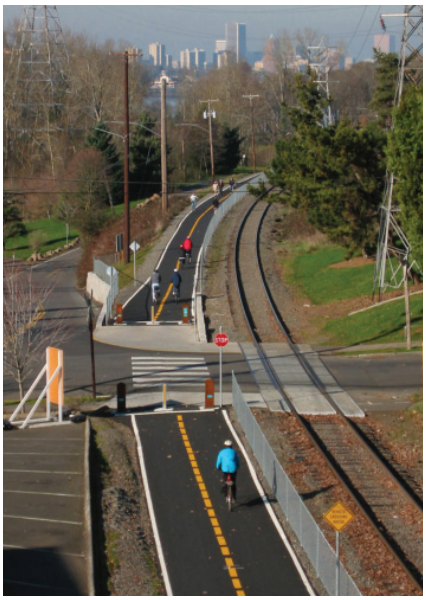
Intersections and Crossings

Trail-Roadway Crossings

The proposed Arcata RWT includes at-grade roadway crossings. When considering a proposed off-street multi-use path and required at-grade crossings of roadways,

it is important to remember two items: 1) trail users will be enjoying an auto-free experience and may enter into an intersection unexpectedly; and 2) motorists may not anticipate bicyclists riding out from a perpendicular trail into the roadway. The Arcata RWT road crossings have been designed for the safety of the motorists and the trail users.

Evaluation of multi-use trail crossings involved an analysis of vehicular traffic patterns, as well as consideration of the behavior of trail users. This includes traffic speeds (85th percentile), street width, traffic volumes (average daily traffic and peak hour traffic), line of sight, and trail user profile (age distribution, range of mobility, destinations). The at-grade trail-roadway crossings are unprotected, marked crossings. While routing to an existing signal is a common strategy, it is not recommended at the roadway crossings for the Arcata RWT.



Trail-roadway crossing on the Springwater Trail in Portland, OR.

Type 1: Unprotected Crossings

Uncontrolled or Type 1 crossings (unsignalized, but with other traffic control devices) are recommended for streets with 85th percentile travel speeds below 45 mph and Average Daily Trips (ADTs) below 10,000 vehicles. All streets in the study area are signed at (35) mph or less; and current ADTs are less than this threshold. An unprotected crossing consists of crosswalk striping, signing, and often no other devices to slow or stop traffic.

Type 2: Route to Existing Intersections

Bike paths that either parallel a roadway or emerge closer than 200 feet from a protected intersection should be routed to that crossing in most cases. The Arcata RWT does not have crossings that are at intersections or are within the distance rocommended to route to an intersection.

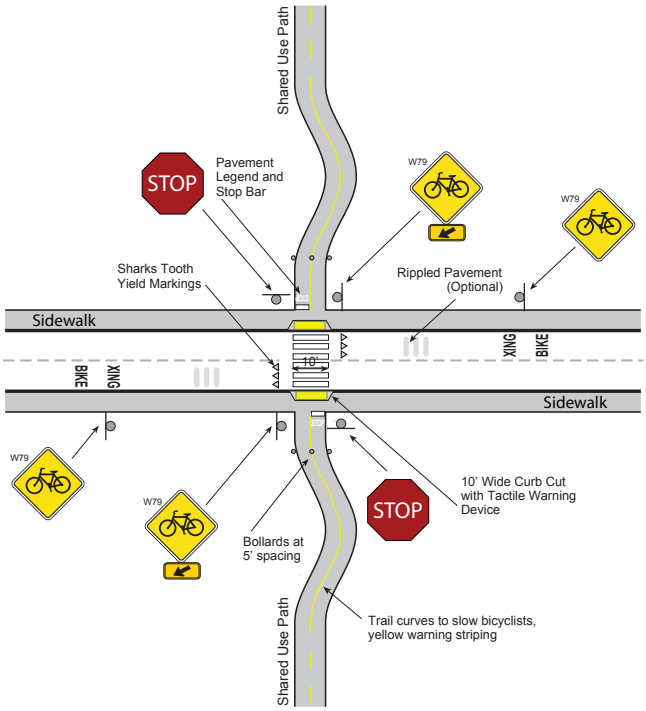
Type 3: Signalized Crossings

New or exclusive signalized crossings (Type 3) are identified for crossings more than 200 feet from an existing signalized intersection and where 85th percentile travel speeds are 45 mph and above and/or ADTs 10,000 vehicles. Signals require the input of local traffic engineers, who review potential impacts on traffic progression, capacity, and safety. On corridors with timed signals, a new trail crossing may need to be coordinated with adjacent signals to maximize efficiency. The Arcata RWT is not designed to include new signalized crossings.

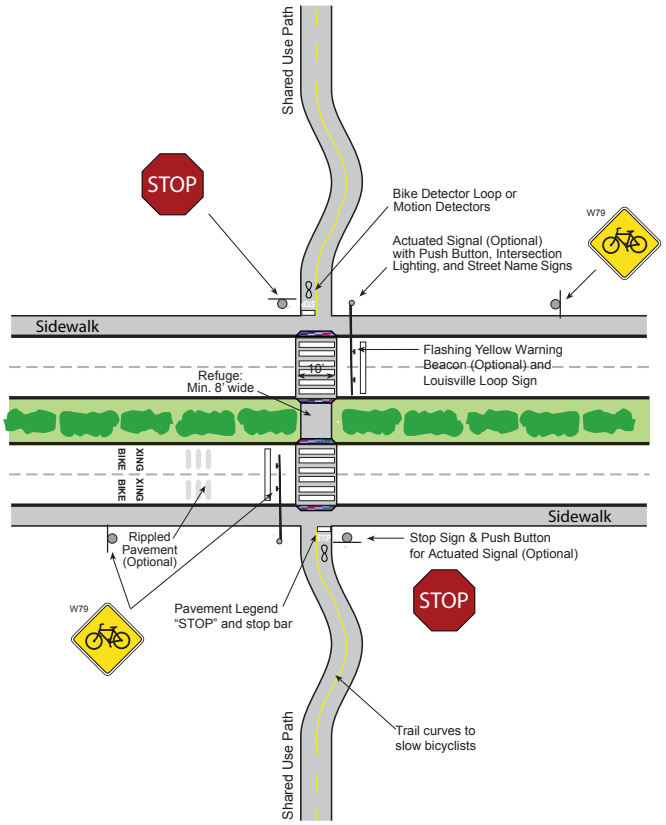
Railroad Crossings

The preferred Arcata RWT alignment includes at-grade crossings of the railroad tracks. All are at existing road crossings except one just North of the Gannon Slough Bridge. This additional crossing has been reviewd by the CPUC and is expected to be approved. All the proposed crossings cross the rails at or near a 90-degree angle. As crossing angles deviate from perpendicular angles, possibilities increase for a bicycle wheel to become trapped in the flangeway, or for cyclists to lose traction on wet rails. AASHTO guidelines do not specify a minimum crossing angle; however, they do recommend that any crossing that is less than a 45 degree angle should be accompanied by a widening in the trail or shoulder area in order to permit a cyclist to cross the track at a safer angle, preferably perpendicular.

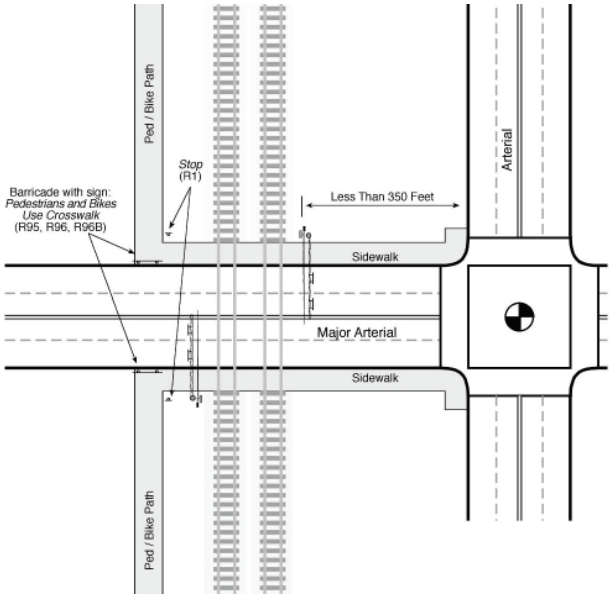
Standard concrete railroad crossings with compressible flangeway fillers permit rail operations while creating a smooth or subtle bump for cyclists.



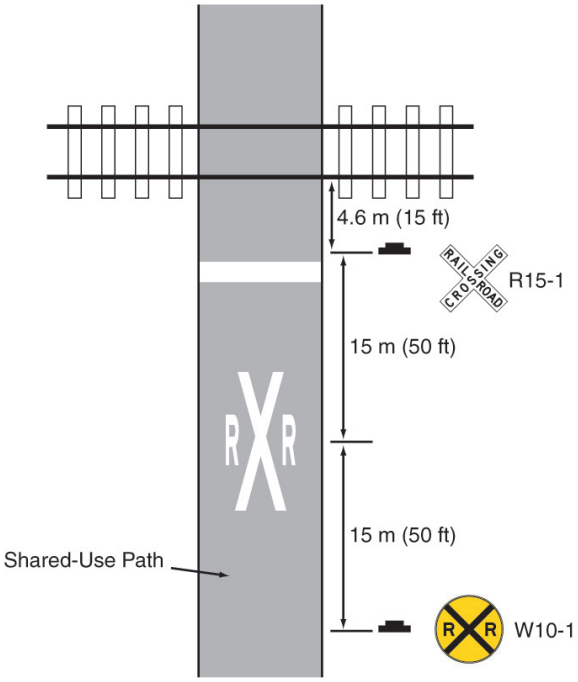
A multi-use trail crosses a roadway at a typical Type 1 unprotected crossing.



A multi-use trail crosses a roadway at a typical Type 3 signalized crossing.



A multi-use trail is diverted to a crossing at an existing signalized intersection.



MUTCD example of signing and marking for shared-use path / railroad crossing

Crossing materials should be skid resistant. Colored surfaces also help alert cyclists to potential conflict points. Rubber and concrete materials require less maintenance and have a longer lifespan than wood or asphalt.

Trail-Driveway Crossings

Driveway crossings shall include those of commercial businesses on L Street as well as some fronting onto Highway 101 and South G Street. Improvements to acceleration and deceleration lanes planned by Caltrans in front of those businesses on the west side of Highway 101 will need to be coordinated with trail crossings at those locations. Each of these require specific design treatments to improve trail user safety and can be seen on the plans.

Intersections will be marked and signed to alert vehicle drivers and trail users of the intersection. Advance warning signs, striping, and tactile warning devices are oriented towards path users. Motorized vehicle users will be warned with stop signs and bars.

MUTCD W8-10

Non-MUTCD sign option

Signs and Striping

General

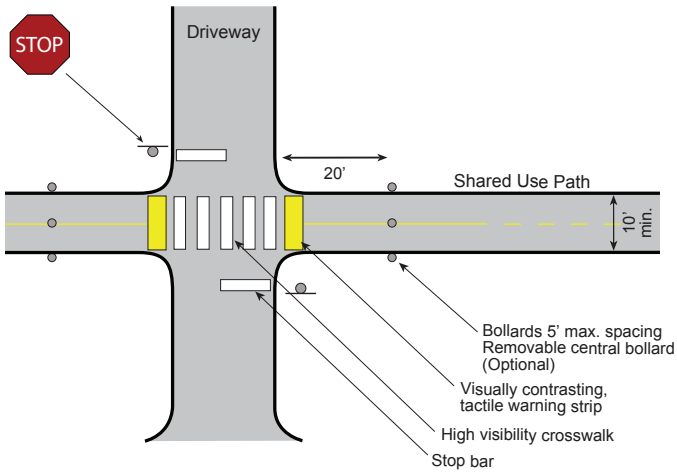
Multi-use trail signs and markings should include: regulatory, way-finding, identity, and informational or interpretive signs for bicyclists, pedestrians, and motorists. Sign selection and placement should generally follow the guidelines in the Manual on Uniform Traffic Control Devices.

All signs shall be retro-reflective on shared-use paths. Lateral sign clearance shall be a minimum of three feet and a maximum of six feet from the near edge of the sign to the near edge of the path. Mounting height shall be between four and five feet from the bottom edge of the sign to the path surface level. The final striping, marking, and signing plan for the Arcata RWT is included in the full design of the trail, and has been reviewed and approved by a licensed traffic engineer or civil engineer. All signs should be oriented so as not to confuse motorists. The designs (though not the size) of signs and markings are the same as used for motor vehicles.

Trail etiquette signs are highly recommended on multi-use paths

Regulatory

Regulatory signs should state the rules and regulations associated with trail usage, as well as the managing agency, organization or group. The purpose of trail regulations is to promote user safety and enhance the enjoyment of all users. It is imperative that before the trail is opened, trail use regulations are developed and posted at trailheads and key access points. Trail maps and informational materials might include these regulations as well. Establishing that the trail facility is a regulated traffic environment just like other public rights of way is critical for compliance, and often results in a facility requiring minimal enforcement. Be sure to have an attorney review the trail regulations for consistency with existing ordinances and enforceability. In some locations, it may be necessary to pass additional ordinances to implement trail regulations.



A multi-use trail crosses a motorized vehicle driveway.

Below is a sample of the most common items that should be covered in trail regulations:

Interpretive elements may discuss a variety of topics including cultural, environmental or historical.

- Hours of use
- Motorized vehicles, other than power-assisted wheelchairs, are prohibited
- Keep to the right except when passing
- Yield to on-coming traffic when passing
- Bicyclists yield to pedestrians
- Give an audible warning when passing
- Pets must always be on short leashes
- Travel no more than two abreast
- Alcoholic beverages are not permitted on the trail
- Do not wander off of trail onto adjacent properties

In addition, other warning signs informing users of approaching intersections and crossings of driveways will need to be installed.

Changes in bicycle surface may be indicated by the W8-10 Bicycle Surface Condition Warning Sign.

Interpretive features need not take the form of a sign panel. Intead they may be interactive.

Way-Finding and Identity

A comprehensive sign system makes a trail system memorable. Informational kiosks with maps at trailheads and other pedestrian generators can provide enough information for someone to use the trail system with little introduction. A trail way-finding map typically includes: current location, nearby destinations and prominent natural and built features.

Trail legibility and identity is enhanced by having a consistent, unique logo or design that will help guide people to and on the trail. Gateways or entry markers at major access points with trail identity information further augments the trail experience. They should be visually clear and distinctive while maintaining consistency with other sign features found on the trail.

Clear, pedestrian-scaled, signs and markers will aid in way-finding and separation of user groups. Signs should be consolidated to avoid clutter and sign fatigue. In addition to a trail logo being posted on bollards, gates and at the trailheads, way-finding markers and signs should be placed at key decision points. Distances may also be marked periodically so that trail users who wish to pace themselves have a means of doing so.

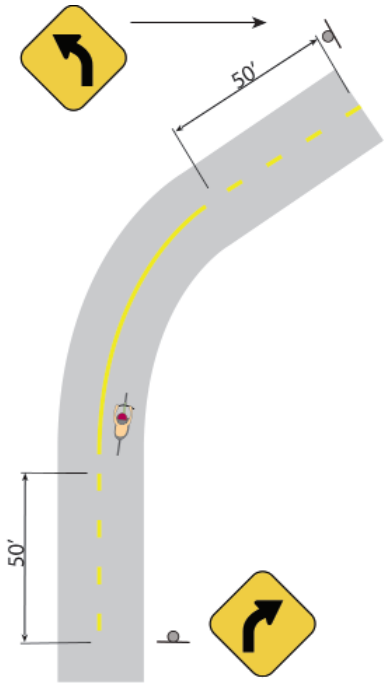
Pathway obstructions should be avoided. However, they should be clearly marked in areas where they must occur

Informational and Interpretive

Interpretive installations and signs enhance the trail experience by providing information about the history, environment and culture of the area. Installations provide educational information while creating a unique and memorable experience. The Arcata RWT interpretive signs use similar materials, forms and colors as other sign elements found throughout the trail in order to provide a unified trail experience. While signs are a typical used for interpretation, other forms are proposed that include art works and interactive pieces that invite play. Chapter 10 includes the locations of recommended interpretive signs, topics and conceptual design.

Striping

A solid centerline stripe is standard for multi-use paths, especially at: blind corners, high traffic areas, areas of narrow path width, intersection approaches, and/or areas where nighttime riding is expected with limited lighting. As with roadway standards, a dashed centerline is used where passing is allowed and a solid stripe in areas where passing should not occur. Warning markings shall be placed no less than 50 feet in advance of the cautionary condition.



EXISTING PLANS AND STUDIES

There has been extensive pre-planning work conducted by the Cities of Arcata and Eureka, HCAOG and the Humboldt Bay Planning Team facilitated by the National Parks Service Rivers, Trails, and Conservation Assistance Program and local non-profits. These plans and studies include:

- City of Arcata's 2004/05 Pedestrian and Bicycle Master Plan and 2009/10 Draft Update
- Arcata General Plan: 2020 (2000)
- Arcata Parks & Recreation Masterplan (2010)
- Humboldt Bay Trail Feasibility Study: Eureka to Arcata (2007)
- Caltrans Samoa Gateways Project (current)
- Caltrans plans for safety improvements to Highway 101
- The NCRA's Strategic Plan (February 2007) to repair and renovate the railroad tracks and restore rail freight service.
- Humboldt County's Bike and Pedestrian Plan

Summary of Relevant General Plans and Bicycle/ Pedestrian Plans

The Arcata General Plan: 2020 (2000)

This plan guides future development which supports bicycling and walking. Policy T-1 of the Transportation Element includes the following objective:

"Create and maintain a balanced transportation system with choice of bus transit, bicycle, and pedestrian as well as private automobile modes. Reduce the percentage of trips that are made by automobile and provide the opportunity and facilities to divert trips from automobiles to other modes."

It further specifically calls out for investment in intercity travel by means including bicycle.

City of Arcata Pedestrian & Bicycle Master Plan (2004/05 and 2009/10 update)

The City Pedestrian and Bicycle Master Plan identified the 101 Corridor for a Class I/ II Bikeway:

"Connecting neighboring communities with bikeways, benefits bicycle commuters, recreational bicyclists, and touring bicyclists. Residents in the cities of Arcata and Eureka often find themselves traveling from one city to the other for shopping, jobs, school, and recreation. Although a bike route between Eureka and Arcata technically exists, the shoulders of Highway 101 are not attractive to many potential bicyclists. Ideally, its supporters would like to see a Class I shared use facility between the two cities, potentially following the railroad corridor."

The 2009/10 Draft Update states the plan goal as:

"Work towards achieving 50% of all trips that begin and end in Arcata being made by non-motorized modes by year 2020."

The 2004 Arcata Pedestrian and Bicycle Master Plan update calls out I Street as being a proposed bicycle boulevard extending from 17th Street to Samoa Boulevard, and connecting to the Arcata Marsh and Wildlife Center. Both the 2004 plan and the 2009/10 update identify the Humboldt Bay Trail - Arcata segment as being a priority bicycle project for the city.

Arcata Parks & Recreation Masterplan

The Arcata Parks and Recreation Master Plan was updated in 2010. Survey results for this master plan indicated that the number one amenity that the community was interested in was trails and specifically trails for non-motorized transportation to and from work, school, shopping and recreational facilities.

Humboldt County Regional Bicycle Plan Update (2004)

The Humboldt County Regional Bicycle Plan Update in 2004 identified a Class I bike path between Arcata and Eureka as a top priority with an estimated program level cost of $3.5 million.

Humboldt Bay Management Plan (2005)

The Humboldt Bay Harbor, Recreation, and Conservation District in its 2005 Humboldt Bay Management Plan recognizes the use of corridors for recreation. This could apply to the Eureka-Arcata Highway 101 corridor.

"The recreation policies in this plan are meant to create, maintain, and enhance recreational opportunities for all constituents through a range of activities available in appropriate areas of the Bay. The policies acknowledge public outdoor recreation as an important component of the District's overall management of Humboldt Bay; recreational uses of Public Trust lands and waters are explicitly recognized in the District's authorizing legislation, as well as in established management doctrines for tidelands in California. The policies are also intended to promote coordination with other recreation providers. The policies support the dedication of specific areas, corridors, and access points for public outdoor recreation, and they are intended to foster an increase in recreational opportunities and facilities associated with Humboldt Bay."

Summary of Proposed Plans that Affect the Study Area

City of Arcata/Caltrans Samoa Gateways Project

The City of Arcata is in the planning stages of a gateway project on Samoa Boulevard. Improvements shall extend just west of the railroad tracks and K Street to east of Highway 101 in Arcata. Improvements are expected to include: reconfiguration of roadway geometries, widening of bike lanes, restriping for traffic calming, sidewalks, pedestrian refuges and bulb outs, landscaping and signs to enhance the appearance, functionality and safety of Arcata.

The North Coast Railroad Authority[2]

The North Coast Railroad Authority (NCRA) was formed in 1989 by the California

2 Humboldt Bay Trail Study Train Utilization Issues Update, April 13, 2007. SHN Engineering & Geologists Inc.

Legislature under the North Coast Railroad Authority Act. The Act was intended to ensure continuation of railroad service in Northwestern California and envisioned the railroad playing a significant role in the transportation infrastructure serving a vital part of the State that suffers from restricted access and limited transport options. In 1992, the State purchased the railroad line from Willits north. In 1995, a separate transaction added the railroad line from Healdsburg north to the NCRA's holdings and provided for a joint powers authority, the Northwestern Pacific Railroad Authority (NWPRA), to own the right-of-way from Healdsburg south to Schellville in Sonoma County. From Schellville, the railroad feeds a 12-mile shortline through Napa County that connects to the Union Pacific mainline at Fairfield-Suisun in Solano County.

Until the 1980s, the railroad primarily serviced the lumber mills in Humboldt County. According to HCAOG's records, the railroad shipped 65,000 cars in 1975 or almost 200 cars per day. At that time, there were 83 lumber mills in Humboldt County. In 2006, there were less than 10. By the time the last train ran in 1997, the railroad was running only three to four trains per week.

In 1997, severe winter storms caused substantial rock slides and erosion, damaging much of the NCRA's tracks and infrastructure. This included tunnel closures on the NCRA line at the Eel River Canyon, which cut off the north end of the line from the rest of the NCRA track system. Several locomotives and rolling stock were marooned in Eureka. Since 1997, the NCRA has been engaged in trying to obtain federal and state funds to reopen the line. The NCRA updated its strategic plan in February 2007.[3] The first phase of the strategic plan will involve repairs to rail lines south of Willits. The repairs to the sections of the railroad north of Willits to Arcata were estimated in April 2007 to cost $100 million.

Caltrans Highway 101 Projects

The California Department of Transportation (Caltrans) is responsible for Highway 101 between Arcata and Eureka. This stretch of freeway has several at-grade crossings (at Indianola, Bayside, Simpson, Bracut and Jacobs) that have raised safety concerns in the past, and Caltrans would like to eliminate the crossings. In the interim, the area has been designated a Safety Corridor and there are signs and other warning devices that promote traffic calming.

Northwestern Pacific Railroad Engine in Arcata - 1923.

This particular stretch of freeway allows cyclists to use the shoulders. A survey conducted in 1999 by the Redwood Community Action Agency recorded an average of 60 cyclists per day using the road shoulders. Pedestrians are not allowed to use the shoulders of Highway 101, but several pedestrians a day can be observed using the shoulders, particularly the west shoulder.

Caltrans has two safety related projects occurring within the Humboldt Bay Trail Feasibility Study corridor:

1. Safety Improvements to be constructed in 2010. These include improved acceleration and deceleration lanes in front of the Simpson and Bracut Business Park sites.
2. Elimination of at-grade crossings (crossing the medians) on Highway 101. There is a proposal to elevate the freeway at Indianola and have an underpass where the existing at-grade crossing is located. This project is not yet funded and there will soon be an EIR released on the project.

3 NCRA Strategic Plan Update, February 15, 2007.

TRAIL ALIGNMENT OPTIONS

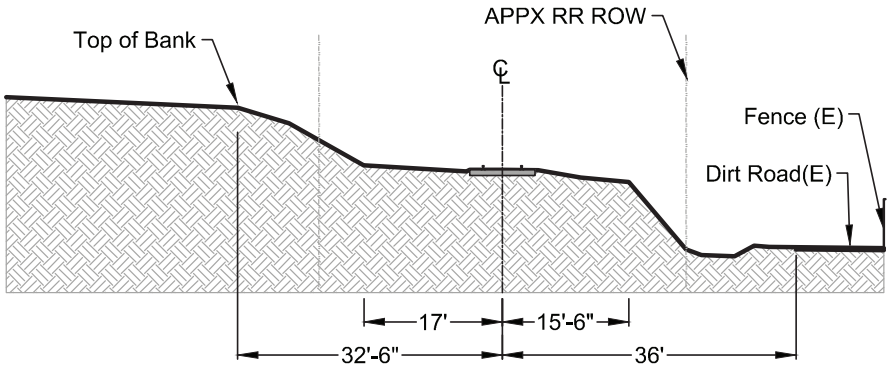
At the beginning of the project the project area was been divided into 23 segments. Each segment was selected because the ends were at logical break points along the potential trail route. Each segment has at least two different trail options for evaluation. The following pages identify the segments, provide photos and summarize the opportunities and constraints of each.

OPPORTUNITIES AND CONSTRAINTS

Segment 1: Sunset Avenue to End of Existing Foster Avenue

Description
Corridor between Sunset Avenue and Eastern Avenue
Length
1200 ft
Ownership
NCRA and City of Arcata
Key Land Uses / Destinations
Connection to Sunset Avenue Arcata Skateboard Park Arcata High School Sports Fields Future Foster Avenue on north side of track
Opportunities
Possibility of connections to sport fields enabling another mode of transporation to and from events
Constraints
side slope along track would require fill and retaining wall

Section



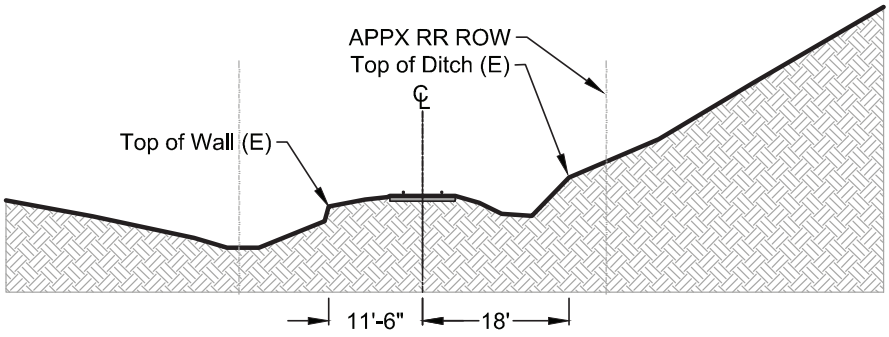
View of rail corridor near Sunset Avenue looking east

View of Arcata High School sports fields to the south

Segment 2: End of Existing Foster Avenue to railroad at Alliance Road

Description
Side sloping corridor between Shay Park and Arcata High School Buildings and Parking
Length
1500 ft
Ownership
NCRA
Key Land Uses / Destinations
Arcata High School Connection across Alliance Rd to L St
Opportunities
Shallow grade on existing railway corridor
Constraints
Side slope and dense vegetation

Section



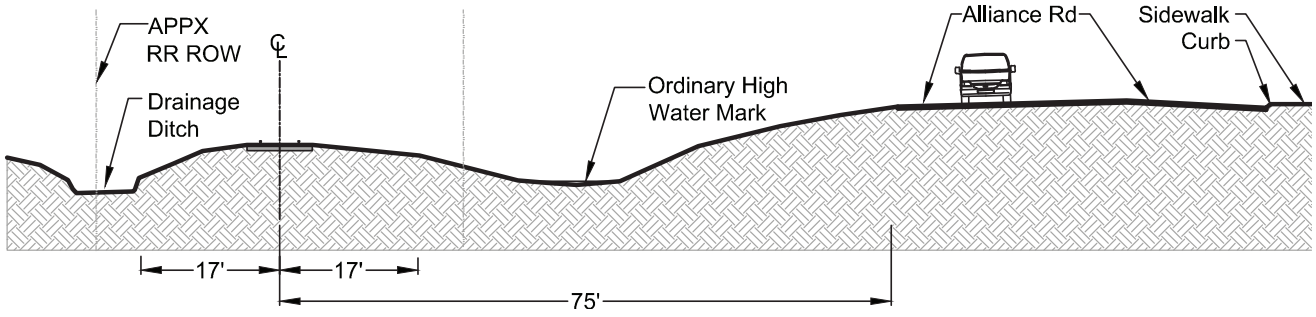
View of rail corridor looking east

View towards Shay Park to the north

Segment 3.1: Railroad at Alliance Road to 15th & M Streets

Description
Corridor between railroad and Alliance Road
Length
900 ft
Ownership
NCRA
Key Land Uses / Destinations
Arcata High School
Opportunities
Shallow grade on existing railway corridor
Constraints
There is some wetland area between Alliance Road and the railroad.

Section



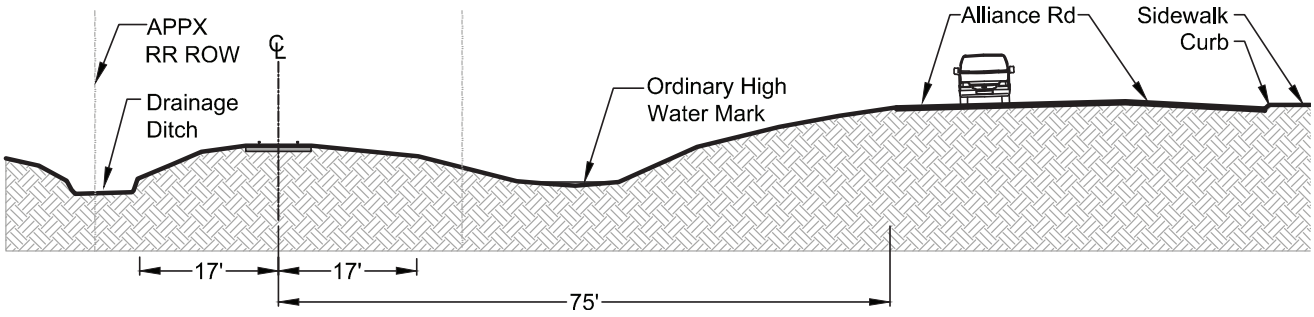
View of rail corridor looking north

Alliance Road and boulders east of the rails

Segment 3.2: 15th Street to L Street at 12th Street

Description
Corridor between railroad and Alliance Road
Length
850 ft
Ownership
NCRA
Key Land Uses / Destinations
Opportunities
Staying along Alliance Road provides more direct connection to L Street
Constraints
Storage buildings flank both sides of track

Section

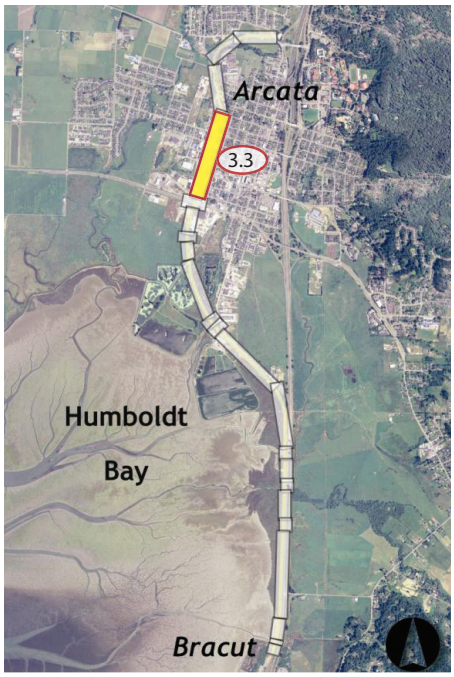


View of rail corridor looking south

Brush to west of railroad corridor

Segment 3.3: L Street at 12th Street to Samoa Blvd

Description
On Street corridor that travels the length of L Street shared with railroad
Length
2400 ft
Ownership
City of Arcata & NCRA
Key Land Uses / Destinations
Opportunities
Significant opportunity for pedestrian and bicycle oriented streetscape
Constraints
Many cross street intersections to contend with



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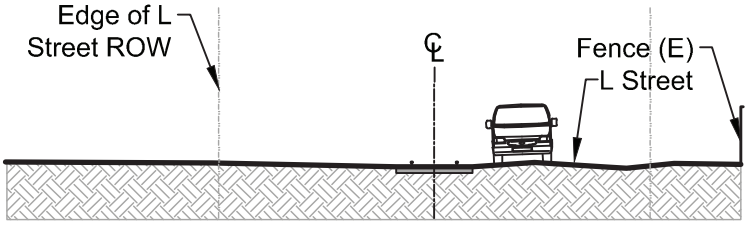


L Street looking north

L Street looking south

Segment 3.4: Samoa Blvd Intersection

Description

Intersection of trail and four lane divided highway at edge of town

Length

NA

Ownership

City of Arcata

Key Land Uses / Destinations

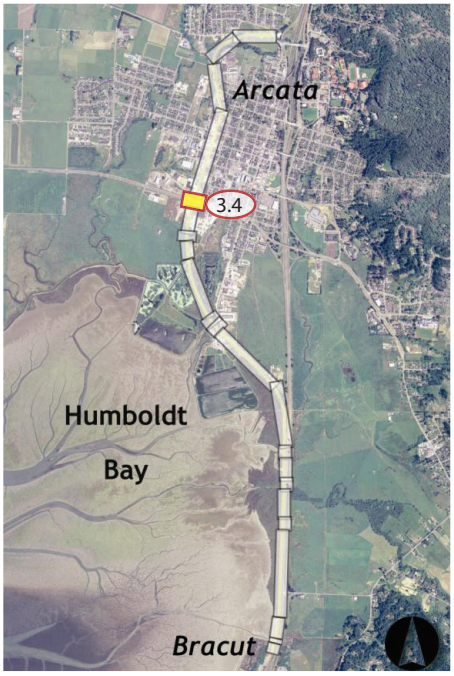
Gateway to L Street corridor from the south

Opportunities

Plans for future Samoa Blvd Gateway project will reduce the number of automobile traffic lanes to cross from four to two

Constraints

Unsignalized roadway intersection



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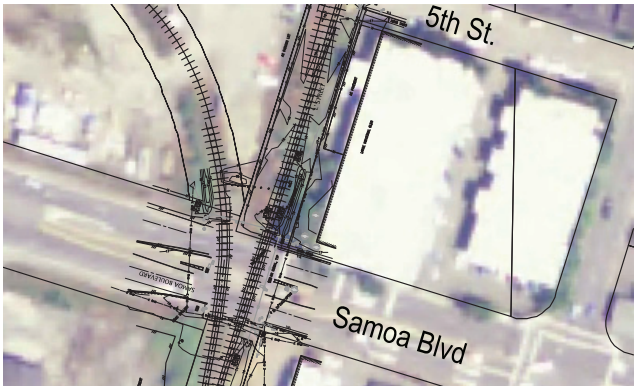


Plan view of existing intersection

Tracks across Samoa Blvd looking north

Aerial view of Samoa Blvd looking east

Aerial View of Samoa Blvd looking northeast

Segment 4: Samoa Blvd to S. end of Slack Property

Description

Industrial land with warehouse buildings and exterior storage space

Length

700 ft

Ownership

City of Arcata

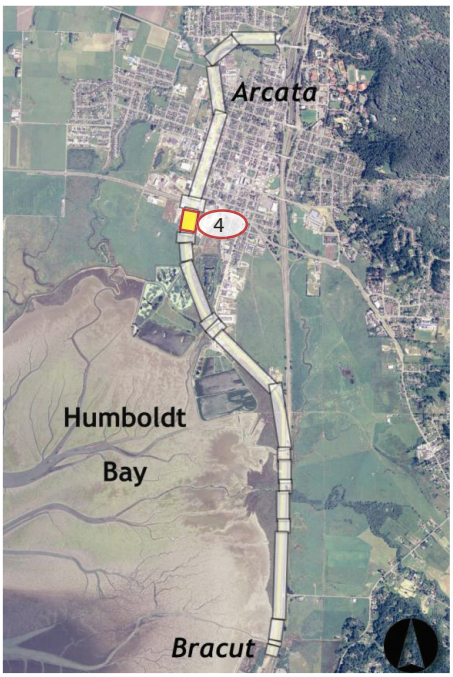
Key Land Uses / Destinations

Opportunities

Open land on east side of rail corridor provides room for a trail

Constraints

Existing warehouse and industrial use on west side of trail constrain possibilities



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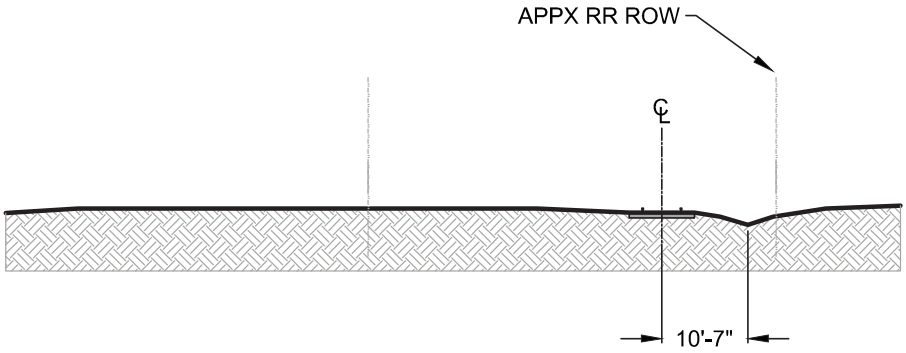


Looking south just past Samoa Blvd with industrial buildings to the east of tracks

Aerial view looking northeast with Samoa Blvd in the background

Segment 5.1: S. end of Slack Property to N. end of Levee

Description

open fields

Length

175 ft

Ownership

NCRA

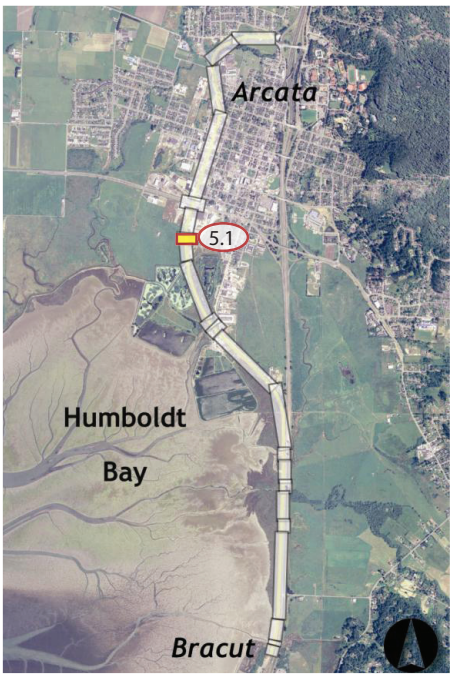
Key Land Uses / Destinations

Opportunities

Existing trails through Arcata Marsh
I Street well used as a recreation corridor
Existing pullouts on I Street
Existing pathways from I Street to Jolly Giant Creek through Arcata Marsh

Constraints

Wetlands on both sides of tracks
57 feet long railroad bridge crossing Jolly Giant Creek
Existing 6 ft wide pedestrian bridge



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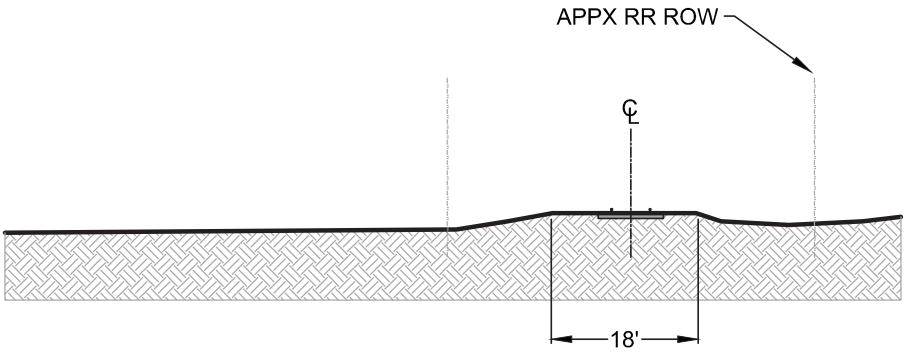


View to the south and west towards the Slack Property

Aerial view looking northeast with North end of levee in the foreground

Segment 5.2: N. end of Levee to I St.

Description

Corridor with Levee running parallel and to the west of railroad

Length

850 ft

Ownership

NCRA

Key Land Uses / Destinations

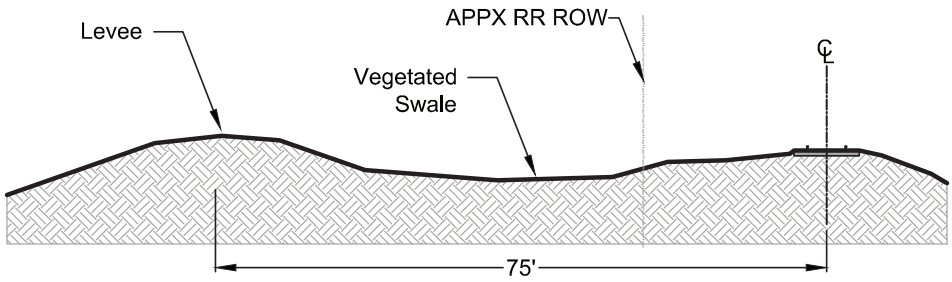
Opportunities

Existing trails through Arcata Marsh
Levee provides buildable location above water level and outside of railroad right of way

Constraints

Wetlands on both sides of tracks

Section



Looking north from atop the levee with existing dirt trail

View of missing tracks in rail corridor looking north

Segment 5.3: I Street to South end of I Street

Description

Corridor along railroad and east of I St. around Allen Marsh

Length

1100 ft

Ownership

NCRA

Key Land Uses / Destinations

Arcata Marsh

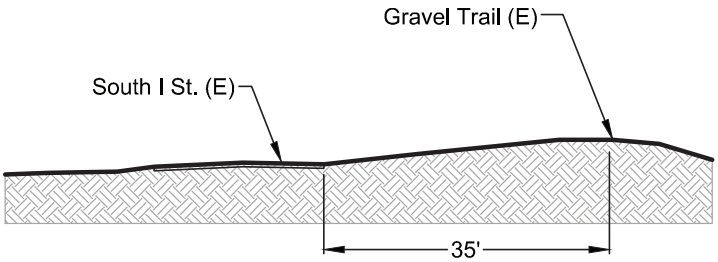
Opportunities

Existing trails through Arcata Marsh
I Street well used as a recreation corridor
Existing pullouts on I Street
Existing pathways from I Street to Jolly Giant Creek through Arcata Marsh
57 feet long railroad bridge crossing Jolly Giant Creek
Existing 6 ft wide pedestrian bridge

Constraints

Unsignalized roadway intersection at I Street and Samoa
Wetlands on both sides of tracks
57 feet long railroad bridge crossing Jolly Giant Creek
Existing 6 ft wide pedestrian bridge

Section



View to the southwest where the railroad crosses I Street

View of rail corridor south of I Street looking south

Segment 5.4: South end of I Street to Jolly Giant Creek at Waste Water Treatment Plant

Description

Constricted corridor through Arcata Marsh & Wildlife Sanctuary

Length

1600 ft

Ownership

NCRA

Key Land Uses / Destinations

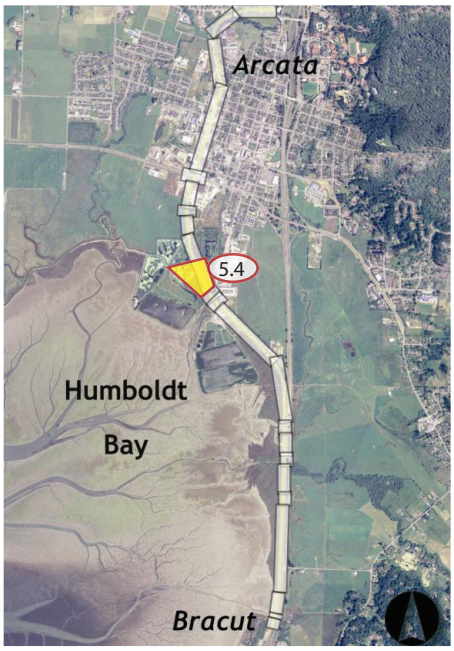
Connection to Samoa at I Street
Arcata Marsh Interpretive Center
City of Arcata Corporation Yard
I Street is a proposed Class III Bike Route

Opportunities

Existing trails through Arcata Marsh
I Street well used as a recreation corridor
Existing pullouts on I Street
Existing pathways from I Street to Jolly Giant Creek through Arcata Marsh

Constraints

Unsignalized roadway intersection at I Street and Samoa
Wetlands on both sides of tracks



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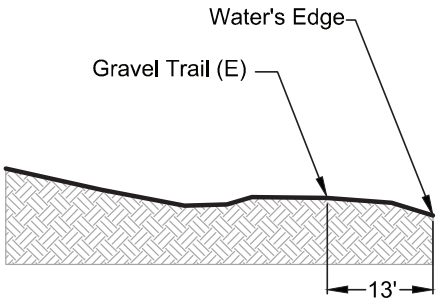


View of gravel trail around Allen Marsh looking northwest

Allen Marsh looking northwest from existing gravel trail

Segment 6.1: Jolly Giant Creek Bridge at Waste Water Treatment Plant

Description

Bridge over Jolly Giant Creek

Length

200 ft

Ownership

NCRA

Key Land Uses / Destinations

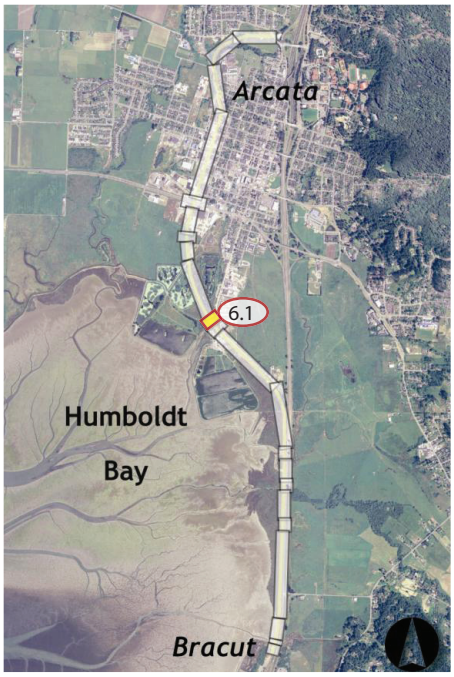
Waste Water Treatment Plant, Arcata Marsh

Opportunities

57 feet long railroad bridge crossing Jolly Giant Creek
Existing 6 ft wide pedestrian bridge

Constraints

57 feet long railroad bridge crossing Jolly Giant Creek
Existing 6 ft wide pedestrian bridge



Photos

Aerial view to the northeast of pedestrian bridge and railroad bridge (background) at Jolly Giant Creek

Looking southeast on railroad bridge at Jolly Giant Creek

Looking southeast towards City Corporate yard from bridge at Jolly Giant Creek

View of railroad bridge at Jolly Giant Creek Arcata Marsh interpretive center behind

Segment 6.2: Jolly Giant Creek to Waste Water Treatment Plant Driveway

Description

Jolly Giant Creek to Waste Water Treatment Plant Driveway

Length

400 ft

Ownership

NCRA & City of Arcata

Key Land Uses / Destinations

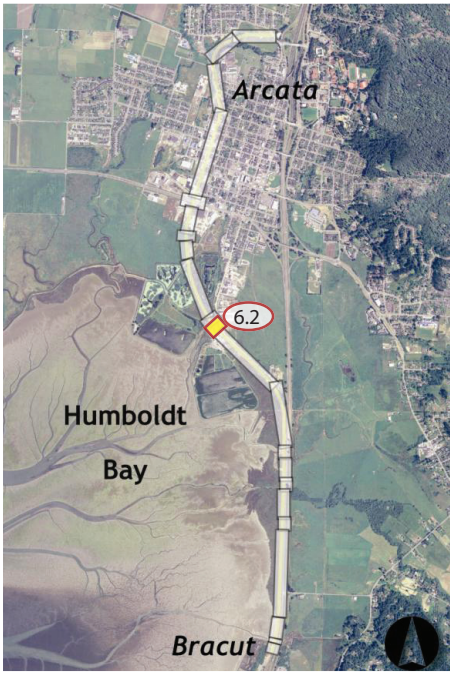
Waste Water Treatment Plant

Opportunities

Driveway crosses railroad tracks at Waste Water Treatment Plant
Limited space between railroad tracks and Waste WaterTreatment Plant
Existing Gravel Trail goes through this area

Constraints

Narrow corridor with significant infrastructure on either side of railway



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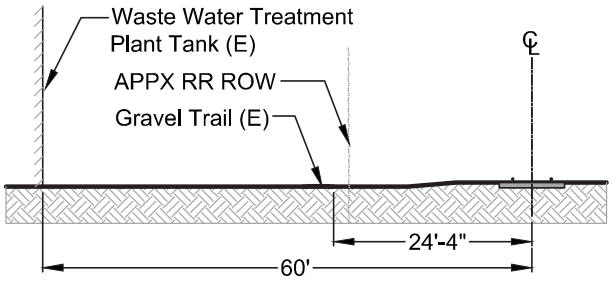


Aerial view with G Street in the background and Waste Water Treatment Driveway on right

Existing dirt trail and railroad looking northwest from Waste Water Treatment Plant Driveway

Segment 6.3: Waste Water Treatment Plant Driveway to G Street 101 On-ramp

Description

Corridor adjacent to South G Street

Length

2100 ft

Ownership

NCRA & City of Arcata

Key Land Uses / Destinations

City of Arcata Corporation Yard
G Street is a proposed Class III Bike Route

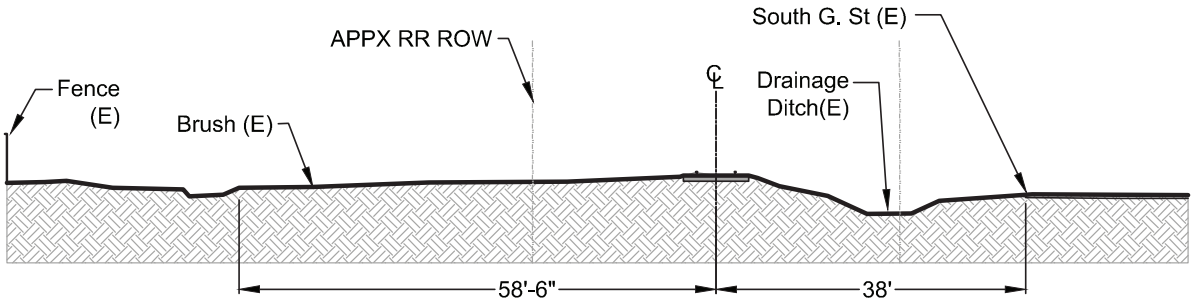
Opportunities

Driveway and trail cross railroad tracks at Corp Yard
Existing earthen trail between tracks and city property
Wide area of double tracks to the south

Constraints

Narrow area available between swale and tracks on north side
Driveway and trail cross railroad tracks at Corp Yard

Section



Available area to southwest towards marshes

Overgrown railroad tracks, G Street to the right

Segment 7.1: G Street 101 On-Ramp to Gannon Slough

Description

Corridor adjacent to 101 and marsh

Length

1250 ft

Ownership

NCRA & Caltrans

Key Land Uses / Destinations

Highway 101 to east
101 On-Ramp is a proposed Class III Bike Route
Gannon Slough to south

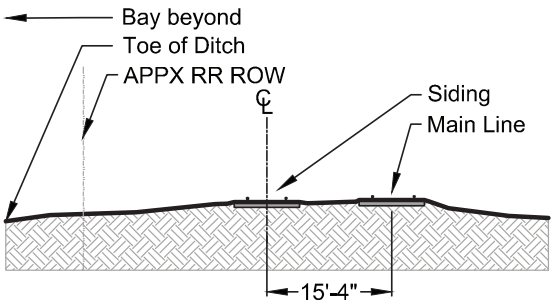
Opportunities

Wide area of double tracks
Existing Gannon Slough Bridges

Constraints

Wetland area between Highway 101 and tracks
Rail switching point location north of Gannon Slough Bridge

Section



Area of double track

View of Hwy 101 wetlands in foreground

Segment 7.2: Gannon Slough Bridge

Description

Bridge over Gannon Slough parallel to 101

Length

300 ft

Ownership

NCRA

Key Land Uses / Destinations

Highway 101 to east
101 On-Ramp is a proposed Class III Bike Route
Gannon Slough to south

Opportunities

Wide area of double tracks
Existing Gannon Slough Bridges

Constraints

Wetland area between Highway 101 and tracks
Rail switching point location north of Gannon Slough Bridge

Photos

Gannon Slough railroad bridge with context of highway bridge on left

Gannon Slough Bridge looking south

Aerial view looking northeast of Gannon Slough Bridge and Highway 101

View of Hwy 101 wetlands in foreground

Segment 7.3: Gannon Slough to Jacoby Creek Bridge

Description

Corridor adjacent to 101 and Wildlife Refuge

Length

800 ft

Ownership

NCRA & Caltrans

Key Land Uses / Destinations

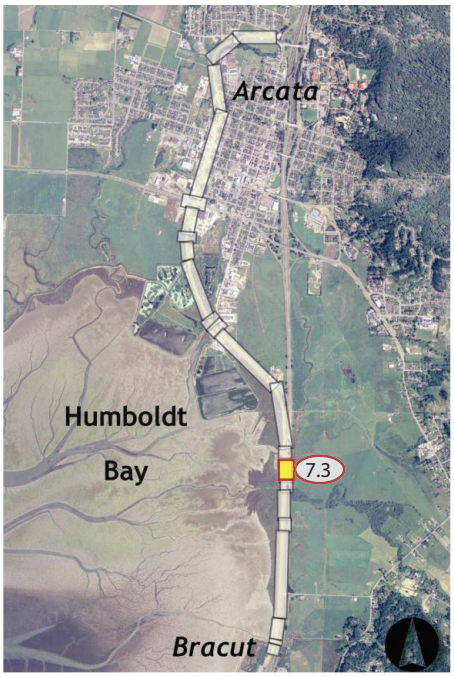
Wildlife refuge red house (Humboldt Bay National Wildlife Refuge)

Opportunities

Potential trailhead at wildlife refuge
Jacoby Creek Railroad Bridge to be replaced

Constraints

Wetland area between Highway 101 and tracks
Public access and Jacoby Creek used by hunters
Unregulated access drive at wildlife refuge



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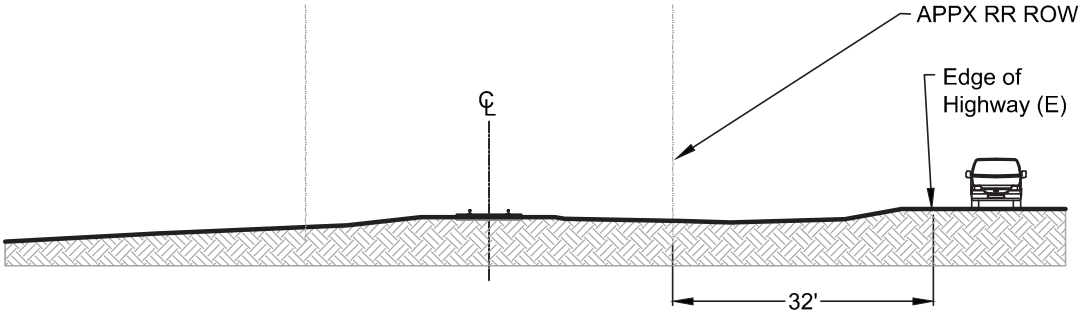


Red House formerly located at Jacoby Creek

Unpermitted access used by hunters

Segment 7.4: Jacoby Creek Bridge

Description

Corridor adjacent to 101 with bridge over Jacoby Creek

Length

220 ft

Ownership

NCRA & Caltrans

Key Land Uses / Destinations

Wildlife refuge red house (Humboldt Bay National Wildlife Refuge)

Opportunities

Potential trailhead at wildlife refuge
Jacoby Creek Railroad Bridge to be replaced

Constraints

Wetland area between Highway 101 and tracks
Public access and Jacoby Creek used by hunters
Unregulated access drive at wildlife refuge

Photos

Jacoby Creek Bridge looking northwest with Highway 101 context

Closup view of Jacoby Creek Bridge looking south

Aerial view of Jacoby Creek Bridge

Segment 7.5: Jacoby Creek Bridge to Jacoby Creek Culvert

Description

Corridor adjacent to 101 and Wildlife Refuge

Length

900 ft

Ownership

USF&W, NCRA & Caltrans

Key Land Uses / Destinations

Humboldt Bay National Wildlife Refuge

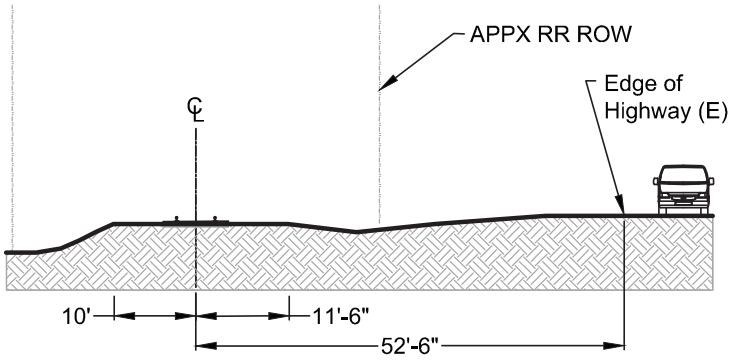
Opportunities

NA

Constraints

Wetland area between Highway 101 and tracks
Buildable surface constricted by wetland east and west of tracks

Section

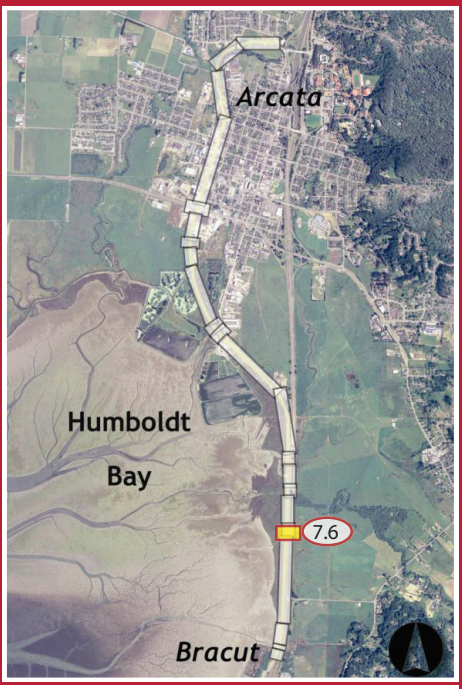


Aerial view with railroad in foreground looking northeast

Looking south along Highway 101

Segment 7.6: Jacoby Creek Drainage Culvert

Description
Corridor adjacent to 101 with Drainage Culvert
Length
250 ft
Ownership
USF&W, NCRA & Caltrans
Key Land Uses / Destinations
Humboldt Bay National Wildlife Refuge
Opportunities
NA
Constraints
Wetland area between Highway 101 and tracks Buildable surface constricted by wetland east and west of tracks



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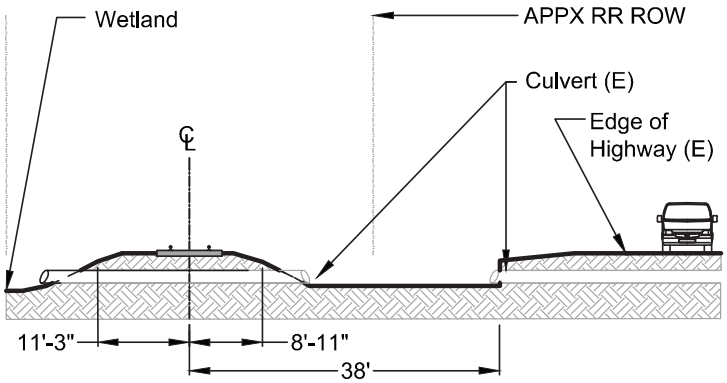


Jacoby Creek drainage culvert

Aerial view of drainage culvert looking northeast

Segment 7.7: Coastal Salt Marsh

Description

Corridor adjacent to 101 and Wildlife Refuge

Length

2550 ft

Ownership

USF&W, NCRA & Caltrans

Key Land Uses / Destinations

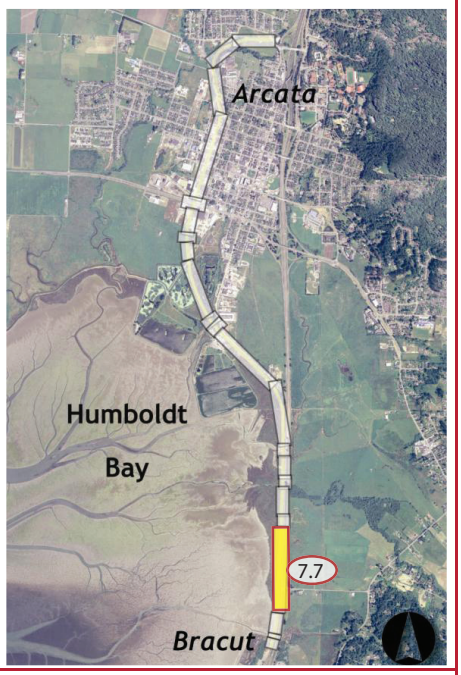
Humboldt Bay National Wildlife Refuge

Opportunities

Erosion along railroad tracks

Constraints

Wetland area between Highway 101 and tracks
Buildable surface constricted by wetland east and west of tracks
Erosion along railroad tracks



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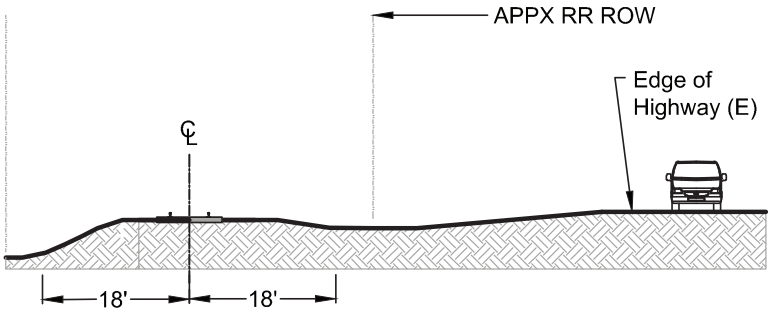


View looking north

View looking south

Segment 7.8: Adjacent to Humboldt Bay

Description

Narrow Corridor between Humboldt Bay and Highway 101

Length

550 ft

Ownership

NCRA & Caltrans

Key Land Uses / Destinations

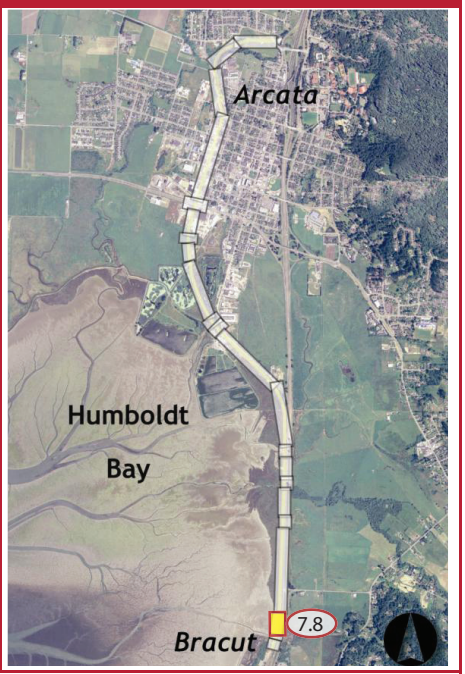
Bracut Marsh
Bracut Business Park

Opportunities

Erosion along railroad tracks
Possible connection and interpretive opportunity at Bracut Marsh
Driveway at Bracut Business Park

Constraints

Wetland area between Highway 101 and tracks
Buildable surface constricted by wetland west of tracks
Driveway at Bracut Business Park



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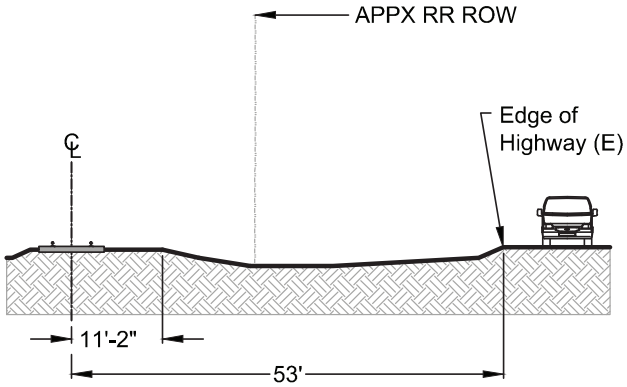


View of Humboldt Bay

Looking north along railroad and Highway 101

Segment 7.9: Drainage Culvert to Bracut Parking Lot

Description

Bracut Business Park Frontage

Length

1500 ft

Ownership

NCRA & Caltrans

Key Land Uses / Destinations

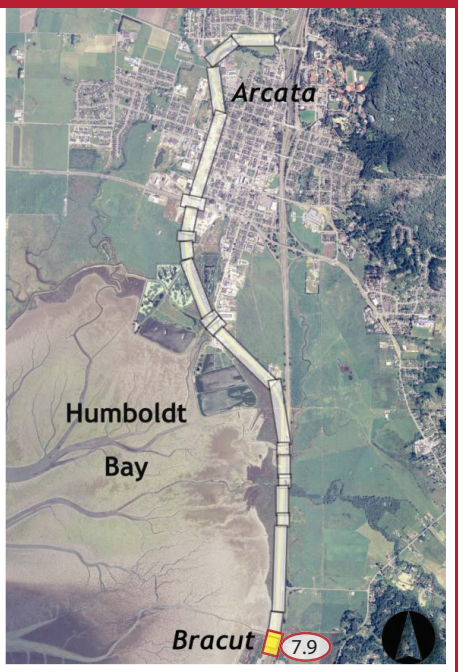
Bracut Marsh
Bracut Business Park

Opportunities

Erosion along railroad tracks
Possible connection and interpretive opportunity at Bracut Marsh
Driveway at Bracut Business Park

Constraints

Wetland area between Highway 101 and tracks
Buildable surface constricted by wetland west of tracks
Driveway at Bracut Business Park



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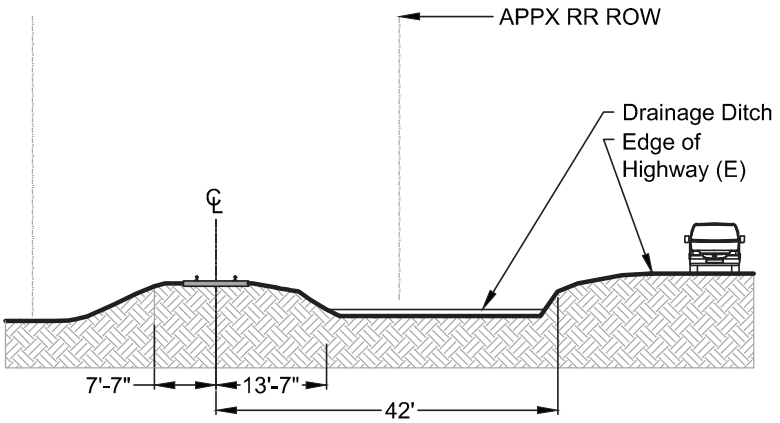


View of wetland on left and bay on right looking towards Bracut Industrial Park

Looking south toward Bracut Industrial Park

TRAIL ALIGNMENT EVALUATION

Each of the trail options within each segment has been identified and assigned a number and letter for identification. The following maps show the different options and their identifying numbers. Each trail segment was included in the evaluation matrix and evaluated based on a set of Environmental Impacts and Other Considerations.

The environmental impacts considered and their definitions can be found in the accompanying environmental document. The other considerations are as follows:

Number of Street Crossings:
Number of times a segment crosses a street

Safety (and Perception of):
If the segment in some way unsafe, or appears to be unsafe it will score poorly.

Impacts to Adjacent Properties:
Segments go near a neighborhood or business that may be impacted by the trail score poorly.

Availability of right-of-way:
Segments with right-of-way on City streets or City owned property that is adequate for the trail will score better.

Land Acquisition Considerations:
Better scoring segments are those that do not require Land Acquisition.

Operation and Maintenance Costs:
Segments requiring the fewest patrols and least amount of maintenance will score well

Overall User Experience:
Segments that are flat with nice views and few road crossings will score better than those that are steep, have poor views and numerous road crossings.

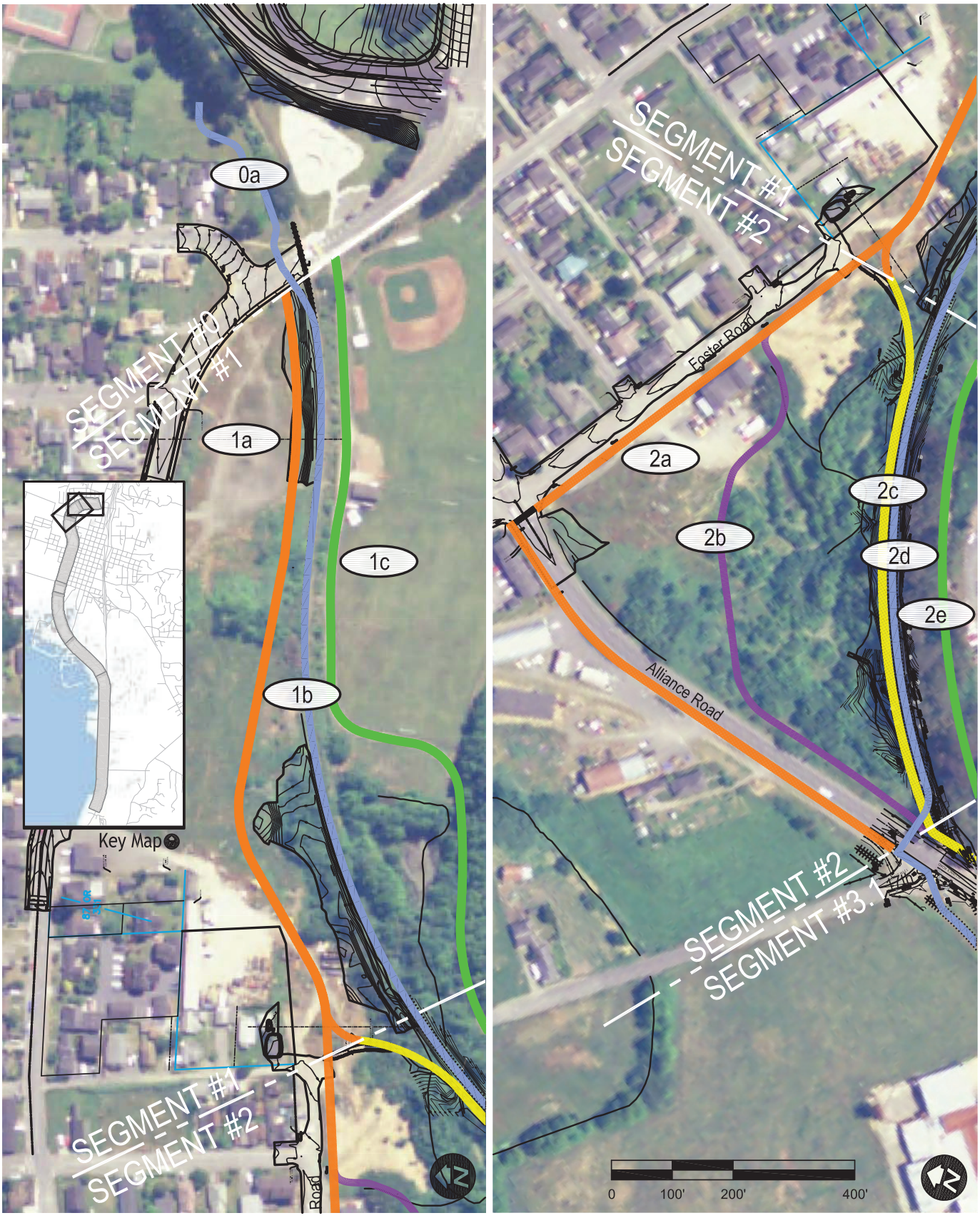
Accessibility of Trail Segment:
Is the segment universally accessible? Can it be easily accessed from surrounding streets and neighborhoods?

Connectivity:
Segments that connect with other facilities will score better.

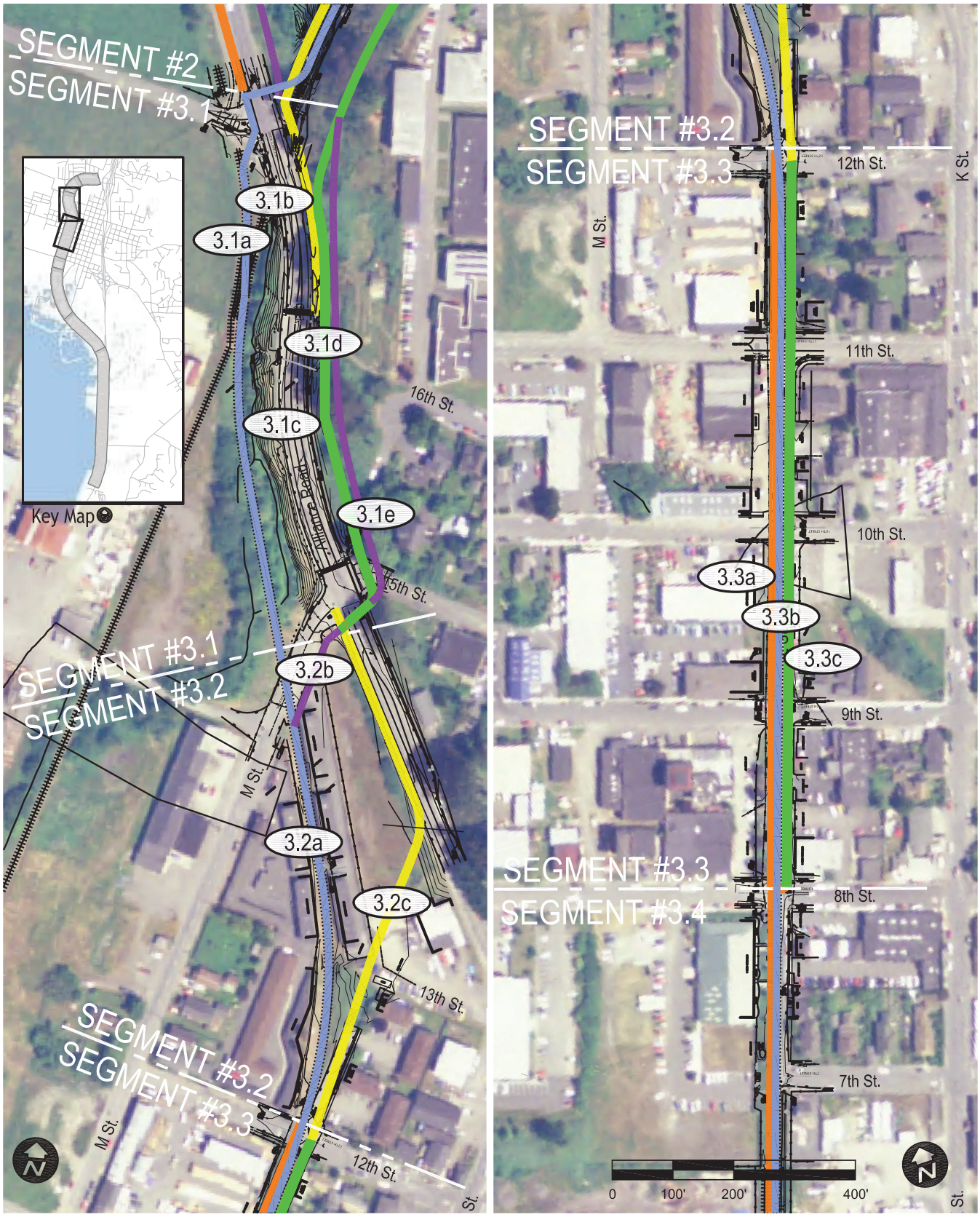
Potential Construction/Engineering Costs:
Segments that are the least expensive to build will score better.

Scoring is on a -2 to 10 scale as shown on the matrix following the segment maps.

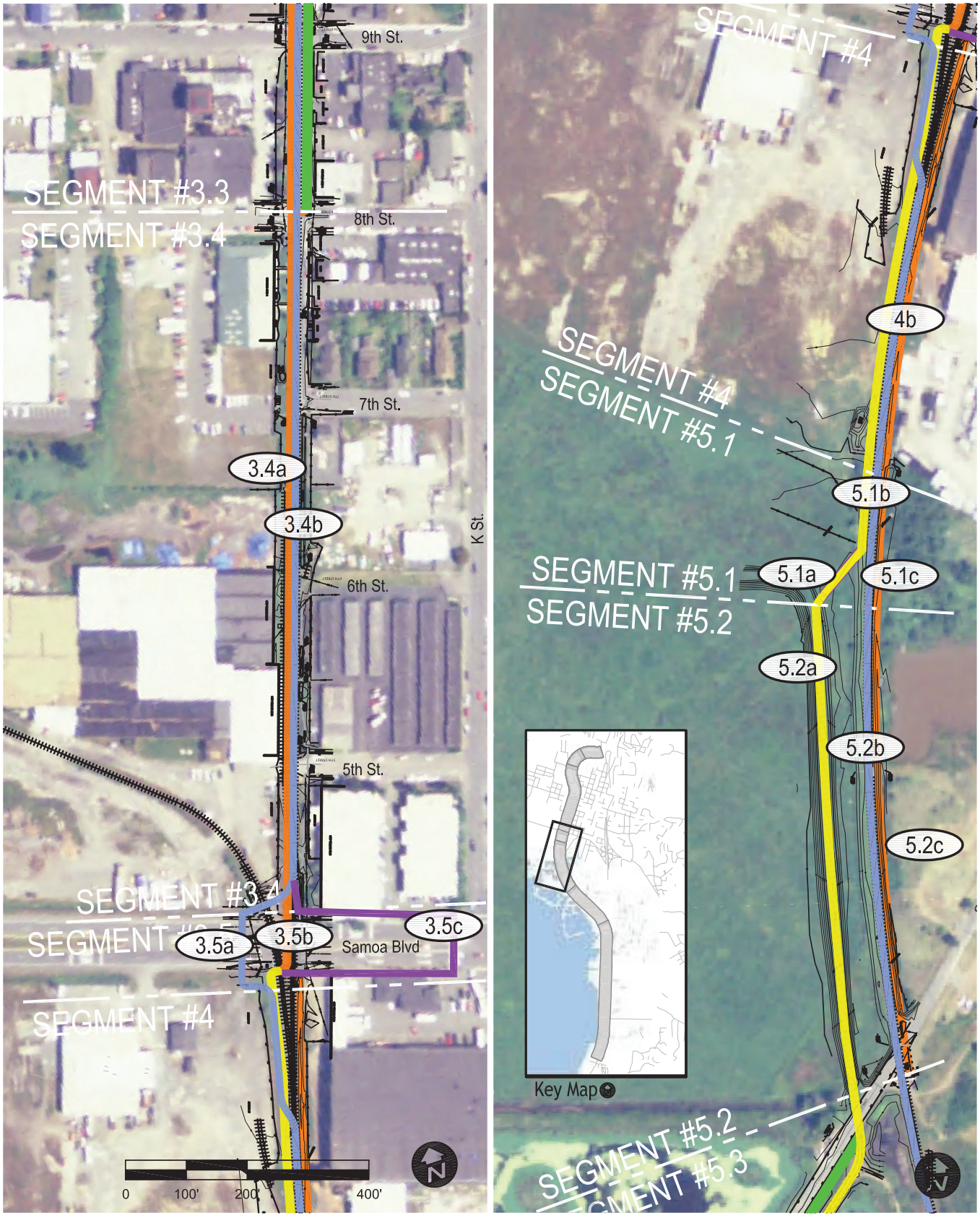
Segment 1 – 3.1


0a
1a
1b
1c
SEGMENT #0
SEGMENT #1
SEGMENT #1
SEGMENT #2
Key Map
SEGMENT #1
SEGMENT #2
Foster Road
2a
2b
2c
2d
2e
Alliance Road
SEGMENT #2
SEGMENT #3.1
0
100'
200'
400'

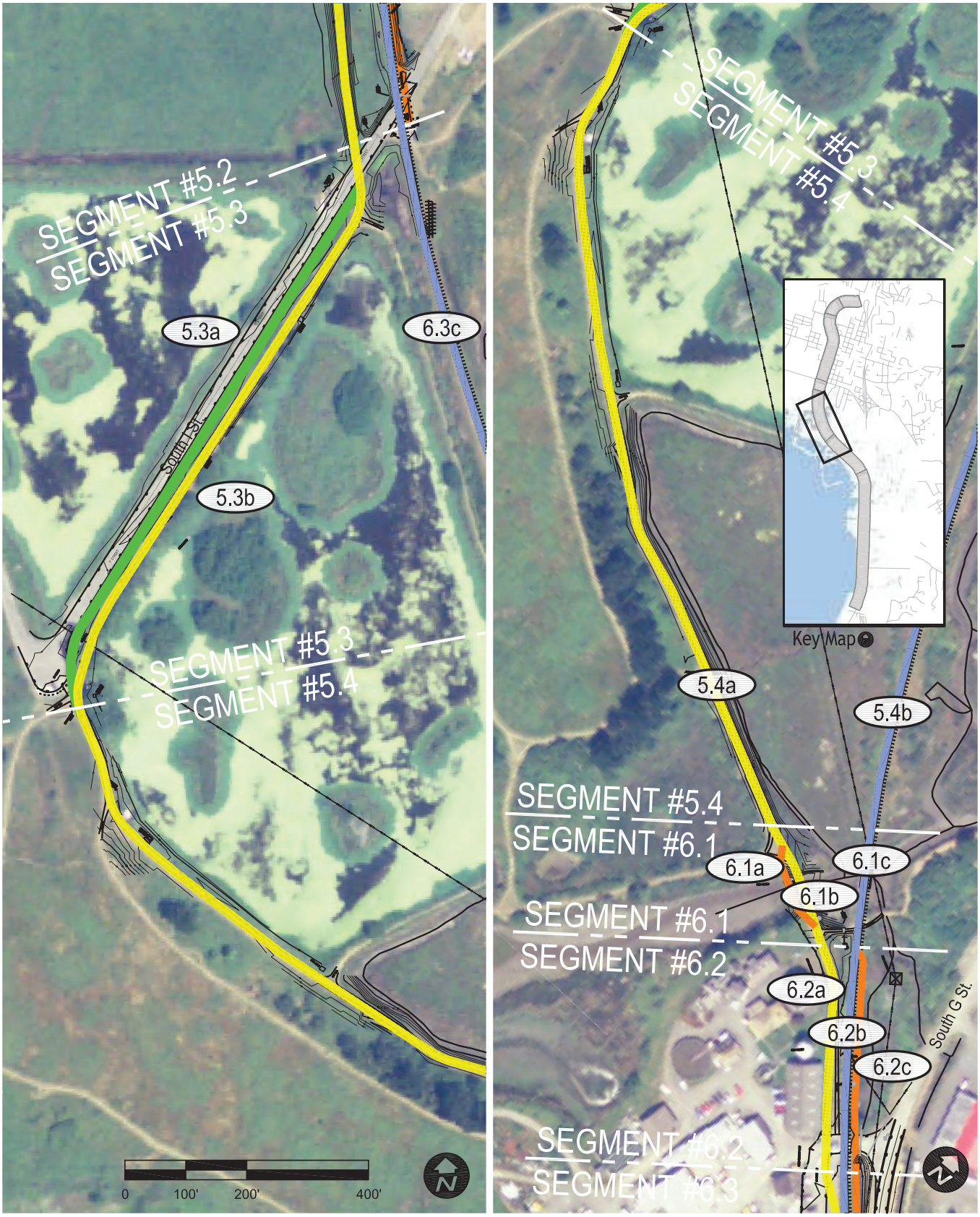
Segment 3.1 – 3.3



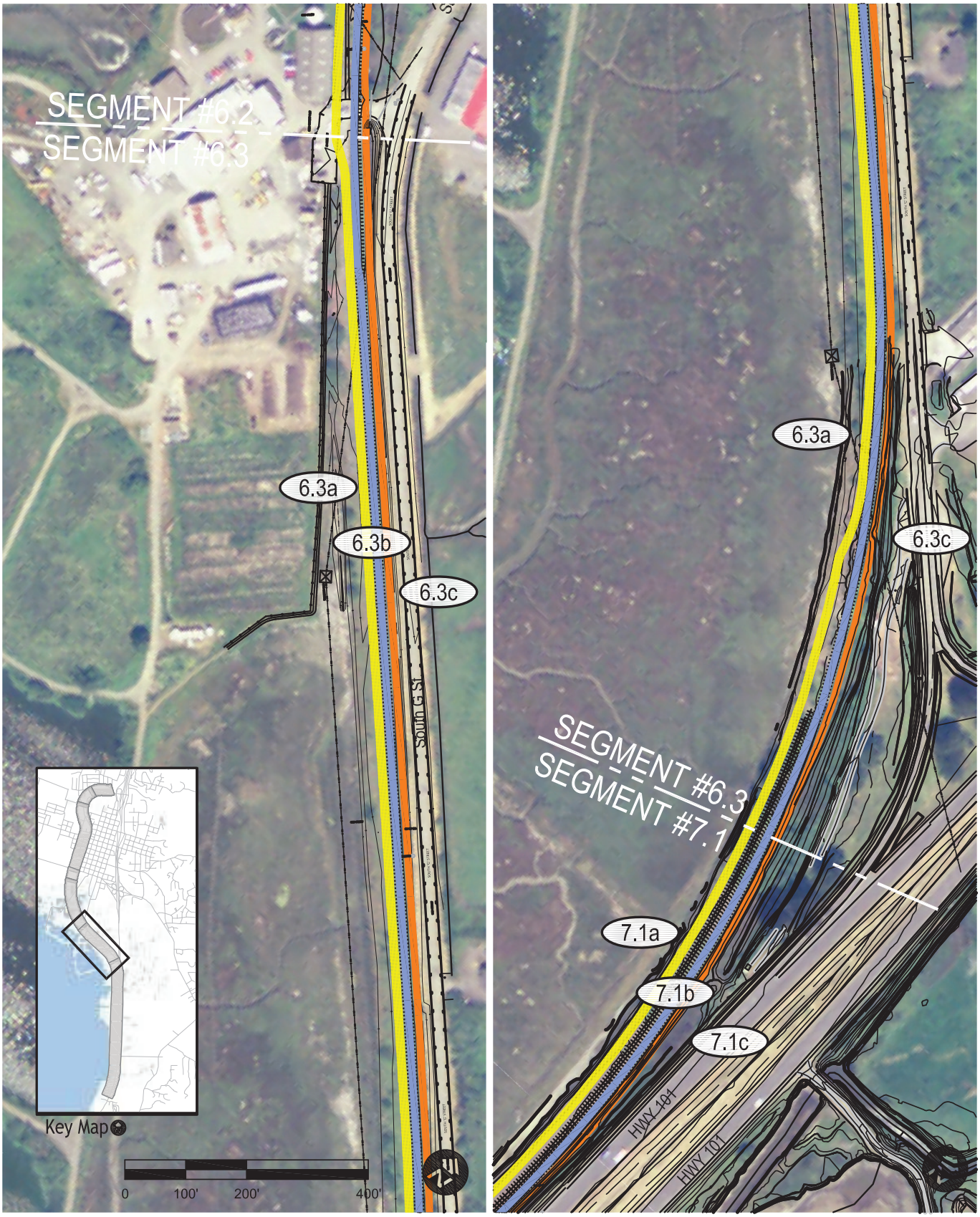
Segment 3.4 – 5.2



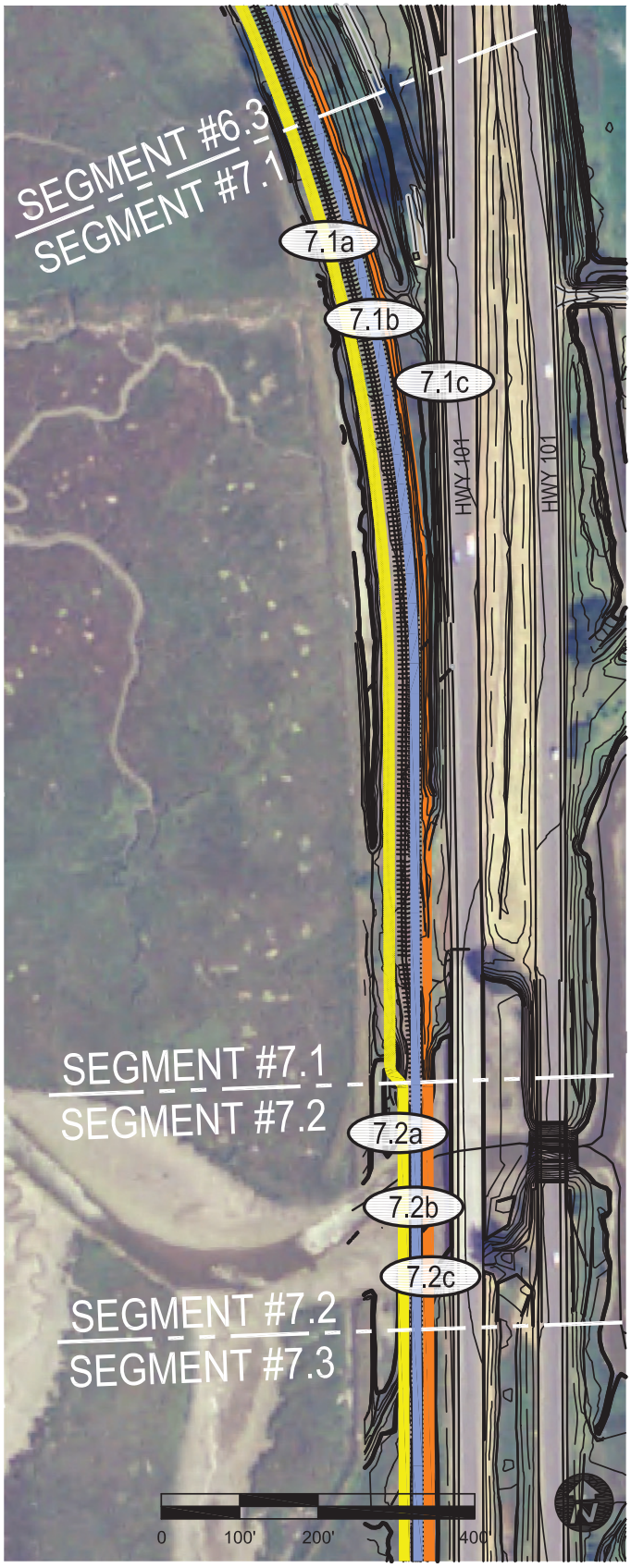
Segment 5.3 – 6.2

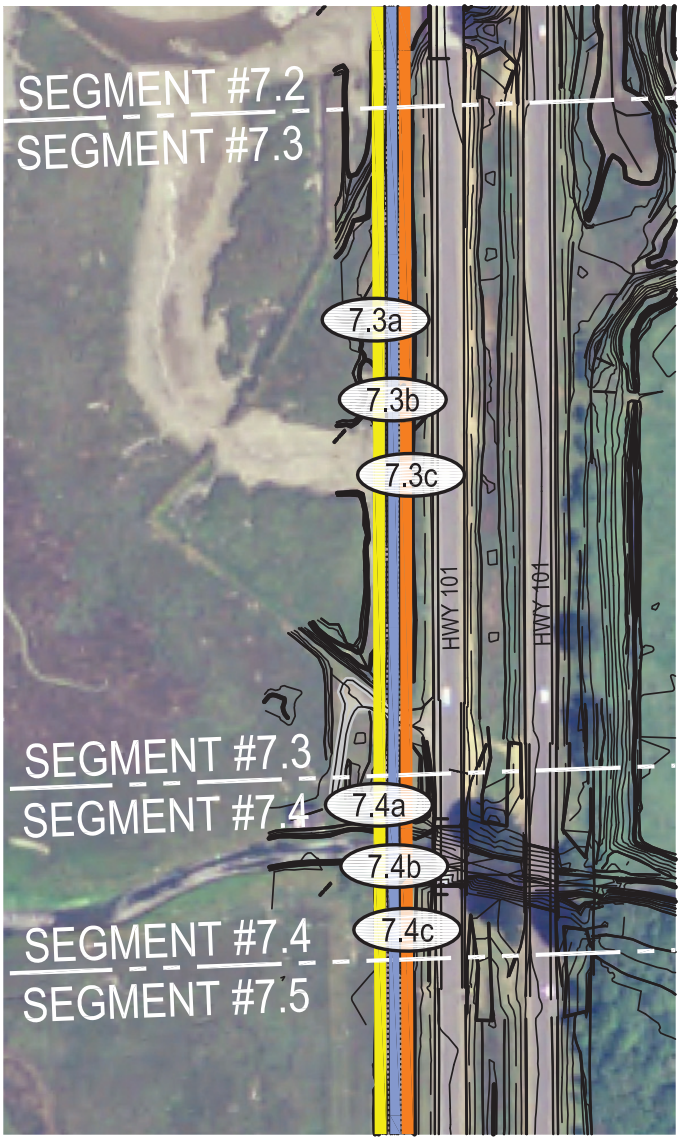


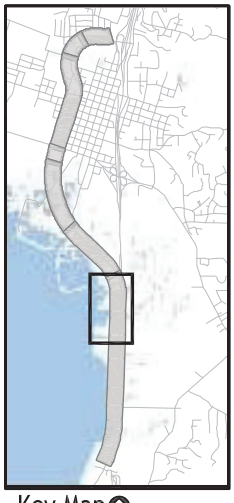
Segment 6.3


SEGMENT #6.2
SEGMENT #6.3
6.3a
6.3b
6.3c
South G St
Key Map
0
100'
200'
400'
6.3a
6.3c
SEGMENT #6.3
SEGMENT #7.1
7.1a
7.1b
7.1c
HWY 101

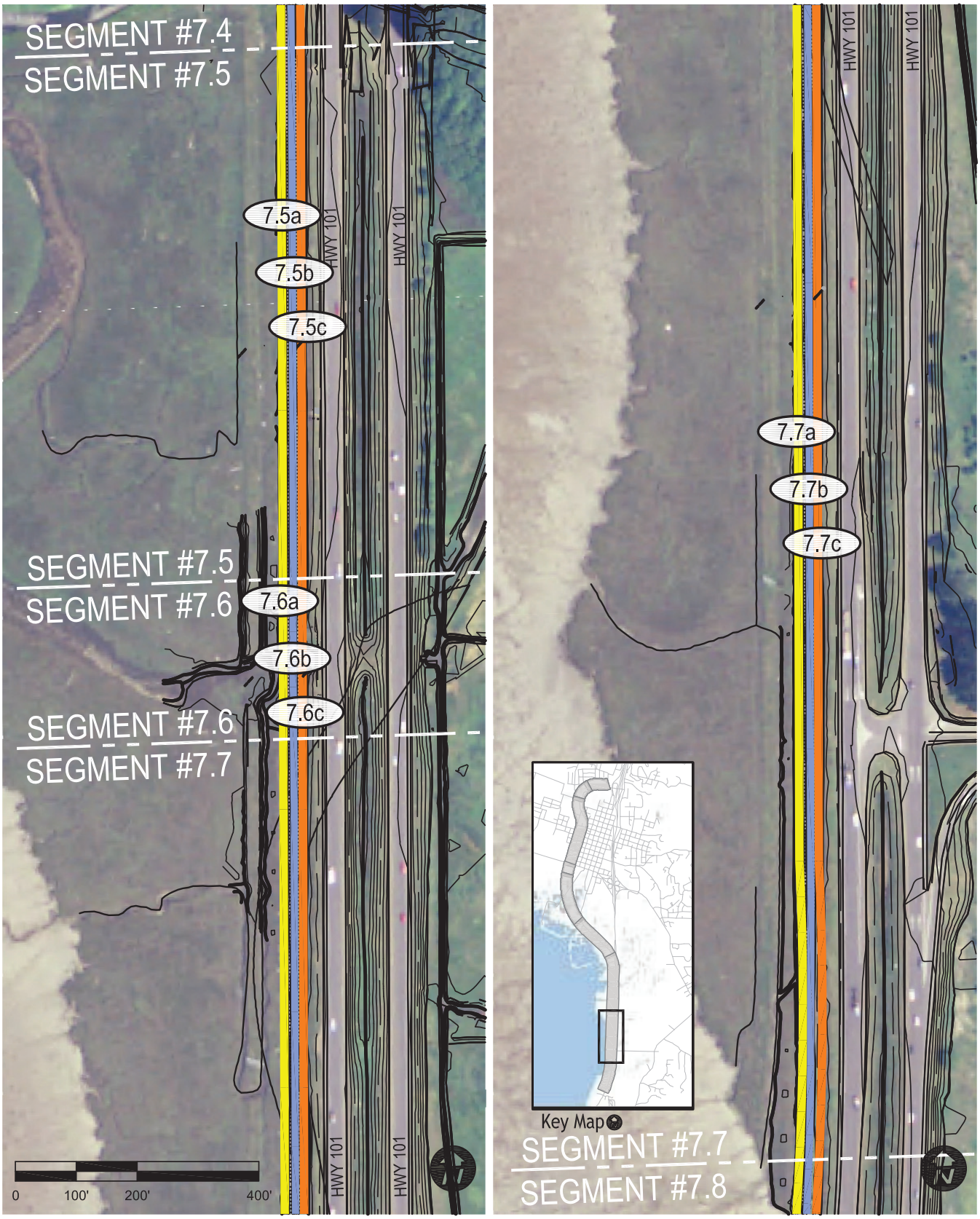
Segment 7.1 – 7.4



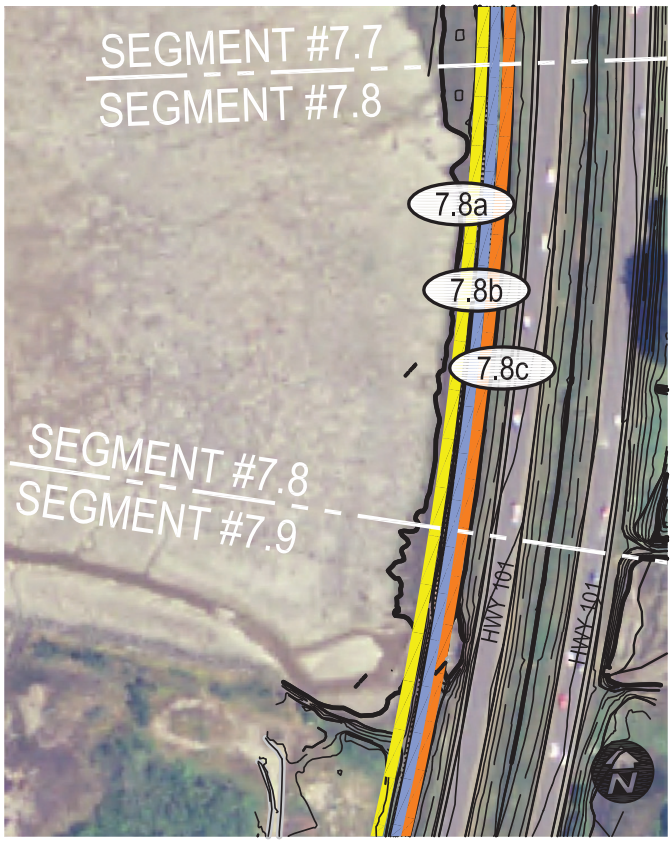


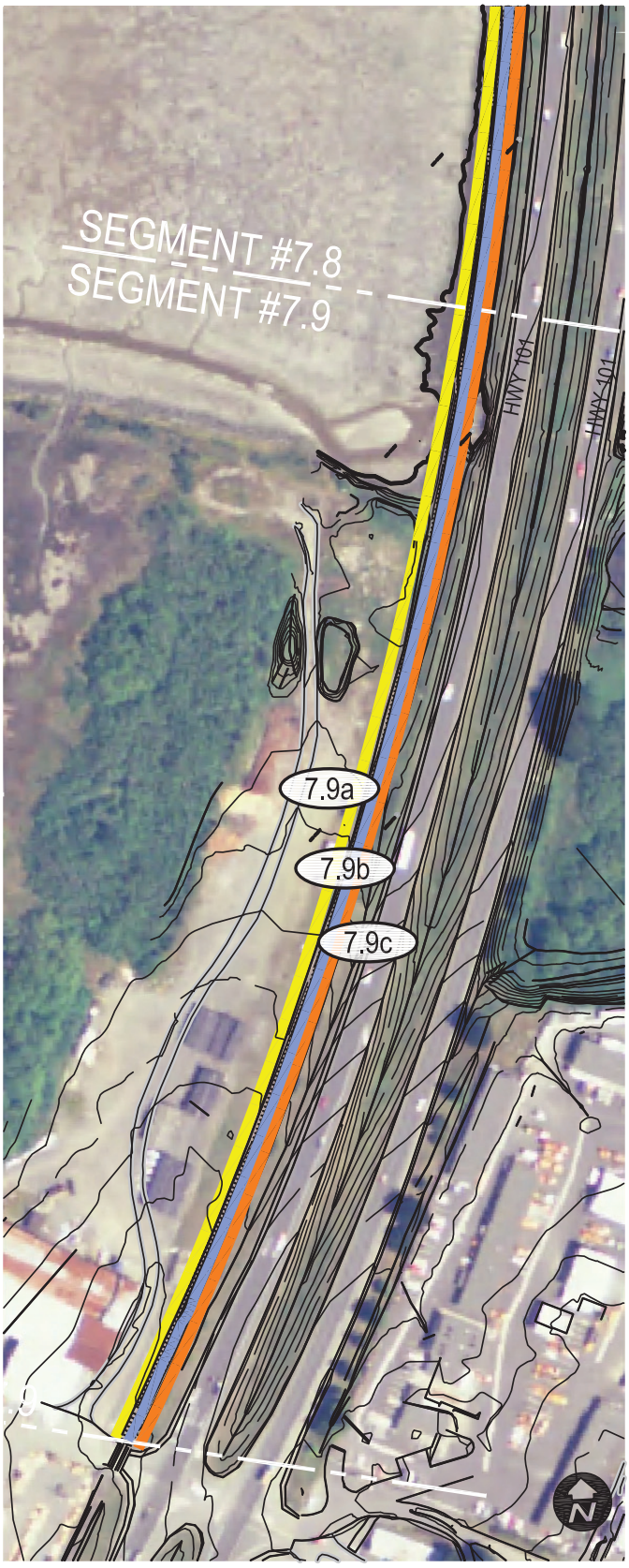


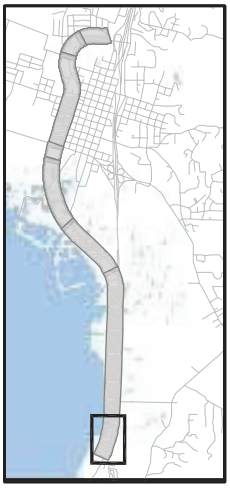
Segment 7.5 – 7.7



Segment 7.8 – 7.9







Arcata Rail - with - Trail Connectivity Project

Impact Analysis Matrix of Potential Project Alignments

Alignment Description Abbreviation Key

RR = Railroad
RR ROW = Rail Road Right of Way
CT ROW = CalTrans Right of Way
N., S., E., W. = North, South, East, West
Nt, St, Et, Wt = North, South, East, or West of tracks
RwT = Rail with Trail (off-set from tracks according to standards)
RtT = Rail to Trail (rail tracks converted to trail)
(E) = Existing

Degree of Potential CEQA-Category Impacts*

-2	=	Benificial Impact
-1	=	Benefitial Impact
0	=	No Impact
1	=	Less than Significant Impact
2	=	Less than Significant after Mitigation
3	=	Less than Significant after Mitigation (+1)*
4	=	Less than Significant after Mitigation (+2)*
5	=	Less than Significant after Mitigation (+3)*
10	=	Significant Unavoidable Impact

Other Considerations

-2	=	Exceeds Desired Expectations for Criteria
-1	=	Exceeds Desired Expectations for Criteria
0	=	None or Meets Desired Expectation of Criteria
1	=	One or Moderately Meets Criteria
2	=	Two or Does not Meet Criteria
3	=	Three or Does not Meet Criteria (+1)**
4	=	Four or Does not Meet Criteria (+2)**
5	=	Five or Does not Meet Criteria (+3)**
10	=	>Five or Significant Obstacle to Meeting Criteria

SEGMENT	SUBSEGMENT	ALIGNMENT	DESCRIPTION OF ALIGNMENT	Connections that can occur with next subsegment (to the south)	CEQA-CATAGORY IMPACTS DURING CONSTRUCTION AND OPERATIONS																													CEQA SUMMARY			OTHER CONSIDERATIONS										OTHER SUMMARY		Totals		
			Weight		2.0	1.0	1.0	1.0	2.0	2.0	1.5	4.0	2.5	2.5	1.0	2.0	1.5	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0				1.5	1.5	1.0	1.0	1.0	2.0	4.0	1.0	1.5	2.0					
					Aesthetics	Agriculture	Air Quality: Construction Emissions	Air Quality: Operational Emissions	Biological Resources: Sensitive Plant & Wildlife Species	Biological Resources: Sensitive Aquatic Species	Biological Resources: Sensitive Habitat & ESHA	Biological Resources: Saltmarsh/Brackish Wetlands	Biological Resources: Freshwater Wetlands	Biological Resources: Streams, Creeks, Riparian	Biological Resources: Conflict with HCPs or NCCs	Biological Resources: Operational Impacts to Wildlife and Habitat	Cultural Resources	Geology and Soils	Hazards and Hazardous Materials	Hydrology and Water Quality: Surface Water Quality	Hydrology and Water Quality: Drainage	Hydrology and Water Quality: Flooding/ Sea Level Rise	Hydrology and Water Quality: Tsunami Hazard	Land Use and Planning	Mineral Resources	Noise: Construction Noise	Noise: Operational Noise	Population and Housing	Public Services	Recreation	Trans. & Traffic: Safety	Trans. & Traffic: Loss of Parking Capacity	Utilities and Service Systems	Quantitative Sum of Environmental Impacts	Weighted Score of Environmental Impacts	Mitigation Required? ("Y" or "N")	Number of Street Crossings	Safety (Actual and Perception of)	Impact to Adjacent Properties	Availability of ROW	Land Acquisition Considerations	O&M Costs	Overall User Experience	Accessibility of Trail Segment	Connectivity	Potential Construction/Engineering Costs	Quantitative Sum of Other Impacts	Weighted Score of Other Impacts	Total Quantitative Sum	Total Weighted Score	Recommended? ("Y" or "N")
0			**Larson Park to Sunset Ave**																																																
	a		West of Tracks	1a, 1b, 1c, 1d	2	0	2	-1	1	0	1	0	1	0	0	1	2	1	0	1	1	0	0	0	0	1	1	0	1	-2	0	0	0	**13**	**21**	**Y**	0	1	1	0	0	1	-1	-1	-2	2	**1**	**0.5**	**14**	**22**	**Y**
			Sunset Ave to End of (E) Foster Ave																																																
	a		Foster Ave Extension Project	2a, 2b, 2c, 2d	1	0	2	-1	1	0	1	0	1	0	0	1	2	0	2	1	1	0	0	0	0	1	1	0	1	-2	1	0	0	**14**	**22**	**Y**	0	0	0	0	0	-1	1	-1	-2	0	**-3**	**-2**	**11**	**20**	**N**
1	b		RR ROW; RwT; Nt	2a, 2b, 2c, 2d	1	0	2	-1	2	0	2	0	2	2	0	1	2	0	0	1	1	0	0	0	0	1	0	0	1	-2	0	0	0	**15**	**28**	**Y**	0	1	0	1	0	0	-1	0	-2	1	**0**	**-2.5**	**15**	**26**	**N**
	c		RtT	2a, 2b, 2c, 2d	1	0	2	-1	0	0	0	0	0	0	0	0	0	1	2	1	1	0	0	1	0	1	0	0	1	-2	0	0	0	**8**	**10**	**Y**	0	1	0	2	3	0	0	2	-2	1	**7**	**7.5**	**15**	**18**	**Y**
	d		Arcata High Access Rd	2e	1	0	2	-1	1	0	1	0	1	0	0	1	2	0	2	1	1	0	0	0	0	1	0	0	1	-1	0	0	0	**13**	**20**	**Y**	0	1	1	1	1	0	-1	0	-2	1	**2**	**-0.5**	**15**	**20**	**N**
			End of (E) Foster Ave to RR @ Alliance Rd																																															
	a		(E) Foster Ave and Alliance Rd	3a, 3b, 3c, 3d	1	1	2	-1	1	0	1	0	1	0	0	1	2	0	2	1	1	0	0	0	0	1	1	0	1	-2	1	0	0	**15**	**23**	**Y**	1	0	0	0	0	0	1	-1	-2	0	**-1**	**1.5**	**14**	**24**	**N**
	b		North side of Shay Park	3a, 3b, 3c, 3d	1	0	2	-1	2	1	2	0	2	2	0	1	2	0	0	2	1	0	0	0	0	1	0	0	1	-2	0	0	0	**17**	**32**	**Y**											**0**	**0**	**17**	**32**	**N**
2	c		RR ROW; RwT; Nt	3a, 3b, 3c, 3d	1	0	2	-1	2	1	2	0	2	2	0	1	2	0	0	2	1	0	0	0	0	1	0	0	1	-2	0	0	0	**17**	**32**	**Y**	0	0	0	0	0	0	-1	0	-2	1	**-2**	**-5**	**15**	**27**	**N**
	d		RtT	3a, 3b, 3c, 3d	1	0	2	-1	0	0	0	0	0	0	0	0	0	1	2	1	1	0	0	1	0	1	0	0	1	-2	0	0	0	**8**	**10**	**Y**	0	1	0	2	3	0	0	2	-2	1	**7**	**7.5**	**15**	**18**	**Y**
	e		Arcata High Access Rd extension	3.1e	1	0	2	-1	1	0	1	0	1	0	0	1	2	2	2	1	1	0	0	0	0	1	1	0	1	-1	0	0	0	**16**	**23**	**Y**	0	0	1	0	1	0	-1	0	-2	1	**0**	**-3**	**16**	**20**	**N**
			RR @ Alliance Rd to 15th & M Sts																																															
	a		RtT	3.2a, 3.2b, 3.2c	2	1	2	-1	4	4	4	0	3	4	0	1	2	0	2	1	1	0	0	0	0	1	0	0	1	-2	1	0	0	**31**	**57**	**Y**	1	1	0	1	1	0	-1	-1	-2	0	**0**	**-3**	**31**	**54**	**N**

SEGMENT	SUBSEGMENT	ALIGNMENT	DESCRIPTION OF ALIGNMENT	Connections that can occur with next subsegment (to the south)	Aesthetics	Agriculture	Air Quality: Construction Emissions	Air Quality: Operational Emissions	Biological Resources: Sensitive Plant & Wildlife Species	Biological Resources: Sensitive Aquatic Species	Biological Resources: Sensitive Habitat & ESHA	Biological Resources: Saltmarsh/Brackish Wetlands	Biological Resources: Freshwater Wetlands	Biological Resources: Streams, Creeks, Riparian	Biological Resources: Conflict with HCPs or NCCs	Biological Resources: Operational Impacts to Wildlife and Habitat	Cultural Resources	Geology and Soils	Hazards and Hazardous Materials	Hydrology and Water Quality: Surface Water Quality	Hydrology and Water Quality: Drainage	Hydrology and Water Quality: Flooding/ Sea Level Rise	Hydrology and Water Quality: Tsunami Hazard	Land Use and Planning	Mineral Resources	Noise: Construction Noise	Noise: Operational Noise	Population and Housing	Public Services	Recreation	Trans.& Traffic: Safety	Trans.& Traffic: Loss of Parking Capacity	Utilities and Service Systems	CEQA Summary: Quantitative Sum of Environmental Impacts	CEQA Summary: Weighted Score of Environmental Impacts	CEQA Summary: Mitigation Required? ("Y" or "N")	Other Considerations: Number of Street Crossings	Other Considerations: Safety (Actual and Perception of)	Other Considerations: Impact to Adjacent Properties	Other Considerations: Availability of ROW	Other Considerations: Land Acquisition Considerations	Other Considerations: O&M Costs	Other Considerations: Overall User Experience	Other Considerations: Accessibility of Trail Segment	Other Considerations: Connectivity	Other Considerations: Potential Construction/Engineerng Costs	Other Summary: Quantitative Sum of Other Impacts	Other Summary: Weighted Score of Other Impacts	Totals: Total Quantitative Sum	Totals: Total Weighted Score	Totals: Recommended? ("Y" or "N")
				Weight	2.0	1.0	1.0	1.0	2.0	2.0	1.5	4.0	2.5	2.5	1.0	2.0	1.5	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0				1.5	1.5	1.0	1.0	1.0	2.0	4.0	1.0	1.5	2.0					
3	3.1	b	Bridge from 3.1b to RtT & RtT	3.2a, 3.2b, 3.2c	2	0	2	-1	3	3	3	0	2	3	0	1	2	0	0	2	1	0	0	0	0	1	0	0	1	-2	1	0	0	24	46	Y	0	0	0	0	0	1	0	0	-2	2	1	3	25	49	N
		c	W. side of Alliance Rd to 15th & M Sts	3.2a, 3.2b, 3.2c	2	0	2	-1	2	2	2	0	0	2	0	1	2	0	0	1	1	0	0	0	0	1	0	0	1	-2	1	0	0	17	31	Y	1	1	0	0	0	0	1	-1	-2	0	0	3	17	34	N
		d	E. side of Alliance Rd to 15th & M Sts	3.2a, 3.2b, 3.2c	2	0	2	-1	0	0	0	0	0	0	0	1	2	2	2	1	1	0	0	0	0	1	0	0	1	-2	1	0	0	13	19	Y	1	1	1	1	1	0	0	0	-2	1	4	5	17	24	N
		e	Arcata High Access Rd extension	3.2a, 3.2b, 3.2c	1	0	2	-1	1	0	1	0	1	0	0	1	2	2	2	1	1	0	0	0	0	1	1	0	1	-1	0	0	0	16	23	Y	0	0	1	0	1	0	-1	0	-2	1	0	-3	16	20	Y
	3.2		**15th St to L St at 8th St**																																															
		a	RtT	3.3a, 3.3b, 3.3c	2	0	2	-1	3	0	3	0	3	0	0	1	2	0	2	1	1	0	0	0	0	1	1	0	1	-2	1	0	0	21	36	Y	1	1	0	0	1	0	-1	-1	-2	0	-1	-4	20	32	N
		b	M St to tracks & RtT	3.3a, 3.3b, 3.3c	2	0	2	-1	2	0	2	0	2	0	0	1	2	0	2	1	1	0	0	0	0	1	0	0	1	-2	1	0	0	17	29	Y	0	1	0	0	0	0	1	-1	-2	0	-1	1.5	16	30	N
		c	Alliance Rd to extension of L St	3.3a, 3.3b, 3.3c	2	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	1	0	1	-2	0	0	0	8	12	Y	1	1	2	2	1	0	0	-1	-2	0	4	4	12	16	Y
	3.3		**L St at 8th St to Samoa Blvd**																																															
		a	RwT; Wt	3.4a, 3.4b	2	0	2	-1	0	0	0	0	0	0	0	0	2	0	3	1	1	0	0	0	0	1	0	0	1	-2	2	1	2	15	20	Y	5	1	1	-1	0	0	-1	-1	-2	0	2	1	17	21	Y
		b	RtT	3.4a, 3.4b	2	0	2	-1	2	2	2	0	2	2	0	1	2	0	3	1	1	0	0	0	0	1	0	0	1	-2	2	0	0	23	40	Y	5	1	0	1	1	0	0	-2	-2	0	4	6	27	46	N
		c	RwT; Et	3.4a, 3.4b	2	0	2	-1	3	3	3	0	3	3	0	1	2	0	3	1	1	0	0	0	0	1	0	0	1	-2	2	1	0	29	52	Y	5	1	0	-1	0	0	1	-2	-2	0	2	7	31	59	N
	3.4		**Samoa Blvd Intersection**																																															
		a	RwT; Wt	3.5a, 3.5b, 3.5c	2	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0	0	1	-2	2	0	0	9	14	Y	1	2	0	0	0	0	1	-2	-2	1	1	5.5	10	20	Y
		b	RtT	3.5a, 3.5b, 3.5c	2	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0	0	1	-2	1	0	0	8	13	Y	2	1	0	0	0	0	2	-2	-2	1	2	9.5	10	22	N
	3.5		**Samoa Blvd Intersection**																																															
		a	RR ROW; RwT; Wt	4a, 4b, 4c	2	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0	0	1	-2	2	0	0	9	14	Y	1	2	0	0	0	0	1	-2	-2	1	1	5.5	10	20	Y
		b	RtT	4a, 4b, 4c	2	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0	0	1	-2	1	0	0	8	13	Y	2	1	0	0	0	0	2	-2	-2	1	2	9.5	10	22	N
		c	K St Intersection	4a, 4b, 4c	2	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0	0	1	-2	1	0	0	8	13	Y	2	1	0	0	0	0	2	-2	-2	1	2	9.5	10	22	N
4			**Samoa Blvd to S. end of Slack Property**																																															
		a	East edge of Slack Winzler Property	5.1a, 5.1b, 5.1c	1	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	7	10	Y	0	-1	1	1	1	0	-1	0	-2	0	-1	-5.5	6	5	N
		b	RR ROW; RwT; Wt	5.1a, 5.1b, 5.1c	1	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	7	10	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	4	3	Y
		c	RtT	5.1a, 5.1b, 5.1c	1	0	2	-1	0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	7	10	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	4	3	Y
5	5.1		**S. end of Slack Property to N. end of Levee**																																															
		a	Structure from Slack Property to Levee	5.2a, 5.2b, 5.2c	2	1	2	-1	2	0	2	0	2	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	17	28	Y	0	-1	-1	0	0	0	-1	0	-2	1	-4	-7.5	13	21	N
		b	RR ROW; RwT; Wt	5.2a, 5.2b, 5.2c	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	6	5	Y
		c	RtT	5.2a, 5.2b, 5.2c	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	6	5	Y
	5.2		**XXX**																																															
		a	On Levee	5.3a, 5.3b, 5.3c	1	1	2	-1	3	0	3	0	3	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-1	2	0	0	22	36	Y	0	-1	0	0	0	0	-2	0	-2	0	-5	-13	17	24	N
		b	Bridge from 5.2b to Levee and On Levee	5.3a, 5.3b, 5.3c	2	1	2	-1	2	0	2	0	2	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	17	28	Y	0	-1	0	0	0	0	-1	0	-2	1	-3	-6.5	14	22	N
		c	RR ROW; RwT; Wt	5.3a, 5.3b, 5.3c	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	2	0	0	11	15	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	8	8	Y

SEGMENT	SUBSEGMENT	ALIGNMENT	DESCRIPTION OF ALIGNMENT	Connections that can occur with next subsegment (to the south)	Aesthetics	Agriculture	Construction Emissions (Air Quality)	Operational Emissions (Air Quality)	Sensitive Plant & Wildlife Species (Biological Resources)	Sensitive Aquatic Species (Biological Resources)	Sensitive Habitat & ESHA (Biological Resources)	Saltmarsh/Brackish Wetlands (Biological Resources)	Freshwater Wetlands (Biological Resources)	Streams, Creeks, Riparian (Biological Resources)	Conflict with HCPs or NCCs (Biological Resources)	Operational Impacts to Wildlife and Habitat (Biological Resources)	Cultural Resources	Geology and Soils	Hazards and Hazardous Materials	Surface Water Quality (Hydrology and Water Quality)	Drainage (Hydrology and Water Quality)	Flooding/ Sea Level Rise (Hydrology and Water Quality)	Tsunami Hazard (Hydrology and Water Quality)	Land Use and Planning	Mineral Resources	Construction Noise (Noise)	Operational Noise (Noise)	Population and Housing	Public Services	Recreation	Safety (Trans.& Traffic)	Loss of Parking Capacity (Trans.& Traffic)	Utilities and Service Systems	Quantitative Sum of Environmental Impacts (CEQA SUMMARY)	Weighted Score of Environmental Impacts (CEQA SUMMARY)	Mitigation Required? ("Y" or "N") (CEQA SUMMARY)	Number of Street Crossings	Safety (Actual and Perception of)	Impact to Adjacent Properties	Availability of ROW	Land Acquisition Considerations	O&M Costs	Overall User Experience	Accessibility of Trail Segment	Connectivity	Potential Construction/Engineerng Costs	Quantitative Sum of Other Impacts (OTHER SUMMARY)	Weighted Score of Other Impacts (OTHER SUMMARY)	Total Quantitative Sum (Totals)	Total Weighted Score (Totals)	Recommended? ("Y" or "N") (Totals)
				Weight	2.0	1.0	1.0	1.0	2.0	2.0	1.5	4.0	2.5	2.5	1.0	2.0	1.5	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0				1.5	1.5	1.0	1.0	1.0	2.0	4.0	1.0	1.5	2.0					
5			I St. to South end of I St.																																															
	5.2	a	Between I St and (E) Gravel Path	5.3a, 5.3b	1	0	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-1	1	0	0	10	14	Y	1	0	0	0	0	0	0	0	-2	0	-1	-1.5	9	12	N
		b	(E) Gravel Path through Arcata Marsh	5.3a, 5.3b	2	0	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-1	2	0	0	12	17	Y	1	-1	0	0	0	0	-2	0	-2	0	-4	-11	8	6	Y
		c	RR ROW; RwT; Wt	5.3c	1	0	2	-1	2	0	2	0	2	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	15	25	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	12	18	N
			I St. to Jolly Giant Creek Bridge @ WWTP																																															
	5.3	a	Along I Street on suth side of street	6.1a, 6.1b	2	0	2	-1	2	0	2	0	2	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-1	2	0	0	19	31	Y	1	-1	0	0	0	0	-2	0	-2	0	-4	-11	15	20	Y
		b	(E) Gravel Path through Arcata Marsh	6.1a, 6.1b	1	0	2	-1	4	0	4	0	4	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	21	37	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	18	30	N
		c	RR ROW; RwT; Wt	6.1c	1	0	2	-1	4	0	4	0	4	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	21	37	Y											0	0	21	37	N
			Jolly Giant Creek Bridge @ WWTP																																															
	6.1	a	New Bridge west of existing bridge	6.2a, 6.2b, 6.3c	2	0	2	-1	2	0	2	2	0	0	0	1	2	2	0	2	1	0	1	0	0	1	0	0	1	-1	2	0	2	23	39	Y	0	-1	0	0	0	1	-1	0	-2	2	-1	-2.5	22	37	N
		b	(E) Bridge at (E) Path through Marsh	6.2a, 6.2b, 6.3c	1	0	2	-1	3	0	3	3	0	0	0	1	2	2	0	2	1	0	1	0	0	1	0	0	1	-2	0	0	0	20	39	Y	0	-1	0	1	0	1	-1	0	-2	2	0	-1.5	20	37	N
		c	RR ROW; (E) Bridge at RR	6.2a, 6.2b, 6.3c	1	0	2	-1	3	0	3	3	0	0	0	1	2	2	0	2	1	0	1	0	0	1	0	0	1	-2	0	0	0	20	39	Y	0	-1	0	1	0	1	-1	0	-2	2	0	-1.5			Y
			Jolly Giant Creek Bridge to WWTP driveway																																															
6	6.2	a	(E) Gravel Path through Arcata Marsh	6.3a, 6.3b, 6.3c	1	0	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-1	2	0	0	11	15	Y	0	-1	0	0	0	0	-1	0	-2	0	-4	-8.5	7	7	Y
		b	RR ROW; RwT; Wt	6.3a, 6.3b, 6.3c	1	0	2	-1	2	0	2	0	2	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-1	2	0	0	18	29	Y	0	-1	0	0	0	0	0	0	-2	0	-3	-4.5	15	25	N
		c	RtT	6.3a, 6.3b, 6.3c	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	-1	0	0	0	0	0	0	-2	0	-3	-4.5	6	8	N
			WWTP driveway to G St. 101 On-ramp																																															
	6.3	a	RR ROW; RwT; Wt	7.1a	1	0	2	-1	2	0	2	2	0	0	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	15	28	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	12	21	N
		b	RtT	7.1b	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	0	0	1	0	0	0	0	-2	0	-1	-2	8	10	Y
		c	RR ROW; RwT; Et	7.1c	2	0	2	-1	4	2	4	0	4	2	0	1	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	26	48	Y	0	0	0	1	0	0	0	0	-2	0	-1	-2	25	46	N
			G St. 101 On-ramp to Gannon Slough																																															
	7.1	a	RR ROW; RwT; Wt	7.2a	1	0	2	-1	3	0	3	3	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	21	40	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	18	33	Y
		b	RR ROW; RtT; Move second siding	7.2b	2	0	2	-1	2	2	2	2	0	2	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	23	44	Y	0	0	0	1	0	0	0	0	-2	0	-1	-2	22	42	N
		c	CT ROW; RwT; Et	7.2c	2	0	2	-1	2	2	2	2	0	2	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	23	44	Y	0	0	0	1	0	0	0	0	-2	0	-1	-2	22	42	N
																																		0	0	N	0	0	0	1	0	0	0	0	-2	0	-1	-2	-1	-2	
			Gannon Slough Bridge																																															
	7.2	a	West side of Bridge	7.3a	1	0	2	-1	2	0	2	2	0	0	0	1	2	2	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	19	34	Y	0	-1	0	1	0	1	-1	0	-2	5	3	4.5	22	38	N
		b	RtT	7.3b	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	-1	0	1	0	1	1	0	-2	5	5	13	14	25	Y
		c	East side of Bridge	7.3c	1	0	2	-1	3	0	3	3	0	0	0	1	2	2	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	22	41	Y	0	-1	0	1	0	1	1	0	-2	5	5	13	27	54	N
			Gannon Slough to Jacoby Creek Bridge																																															
	7.3	a	RR ROW; RwT; Wt	7.4a	2	0	2	-1	3	0	3	3	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	22	42	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	19	35	N
		b	RtT	7.4b	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	0	0	2	3	0	0	0	-2	0	3	2	12	14	Y

SEGMENT	SUBSEGMENT	ALIGNMENT	DESCRIPTION OF ALIGNMENT	Connections that can occur with next subsegment (to the south)	CEQA-CATAGORY IMPACTS DURING CONSTRUCTION AND OPERATIONS																													CEQA SUMMARY			OTHER CONSIDERATIONS										OTHER SUMMARY		Totals		
			Weight		2.0	1.0	1.0	1.0	2.0	2.0	1.5	4.0	2.5	2.5	1.0	2.0	1.5	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0				1.5	1.5	1.0	1.0	1.0	2.0	4.0	1.0	1.5	2.0					
					Aesthetics	Agriculture	Construction Emissions	Operational Emissions	Sensitive Plant & Wildlife Species	Sensitive Aquatic Species	Sensitive Habitat & ESHA	Saltmarsh/Brackish Wetlands	Freshwater Wetlands	Streams, Creeks, Riparian	Conflict with HCPs or NCCs	Operational Impacts to Wildlife and Habitat	Cultural Resources	Geology and Soils	Hazards and Hazardous Materials	Surface Water Quality	Drainage	Flooding/ Sea Level Rise	Tsunami Hazard	Land Use and Planning	Mineral Resources	Construction Noise	Operational Noise	Population and Housing	Public Services	Recreation	Safety	Loss of Parking Capacity	Utilities and Service Systems	Quantitative Sum of Environmental Impacts	Weighted Score of Environmental Impacts	Mitigation Required? ("Y" or "N")	Number of Street Crossings	Safety (Actual and Perception of)	Impact to Adjacent Properties	Availability of ROW	Land Acquisition Considerations	O&M Costs	Overall User Experience	Accessibility of Trail Segment	Connectivity	Potential Construction/Engineerng Costs	Quantitative Sum of Other Impacts	Weighted Score of Other Impacts	Total Quantitative Sum	Total Weighted Score	Recommended? ("Y" or "N")
					Air Quality				Biological Resources											Hydrology and Water Quality						Noise				Trans.& Traffic																			
7		c	CT ROW; RwT; Et	7.4c	2	0	2	-1	2	2	2	2	0	2	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	23	44	Y	0	0	0	1	0	0	0	0	-2	0	-1	-2	22	42	N
			Jacoby Creek Bridge																																																
	7.4	a	West side of Bridge	7.5a	1	0	2	-1	3	3	3	3	0	2	0	1	2	2	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	27	52	Y	0	-1	0	1	0	1	-1	0	-2	5	3	4.5	30	57	N
		b	RtT	7.5b	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	0	0	2	3	0	0	0	-2	0	3	2	12	14	Y
		c	East side of Bridge	7.5c	1	0	2	-1	2	2	2	2	2	0	0	1	2	2	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	23	43	Y	0	-1	0	1	0	1	1	0	-2	0	0	2.5	23	45	N
			Jacoby Creek Bridge to Jacoby Creek Culvert																																															
	7.5	a	RR ROW; RwT; Wt	7.6a	1	0	2	-1	3	0	3	3	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	21	40	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	18	33	N
		b	RtT	7.6b	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	0	0	2	3	0	0	0	-2	0	3	2	12	14	Y
		c	CT ROW; RwT; Et	7.6c	2	0	2	-1	2	0	2	2	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	19	35	Y	0	0	0	1	0	0	0	0	-2	0	-1	-2	18	33	N
			Jacoby Creek Drainage Culvert																																															
	7.6	a	RR ROW; RwT; Wt	7.7a	1	0	2	-1	2	0	2	2	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	18	33	Y	0	-1	0	1	0	0	-1	0	-2	1	-2	-5.5	16	27	N
		b	RtT	7.7b	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	0	0	2	3	0	0	0	-2	0	3	2	12	14	Y
		c	CT ROW; RwT; Et	7.7c	1	0	2	-1	3	0	3	3	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	21	40	Y	0	0	0	1	0	0	0	0	-2	1	0	0	21	40	N
			Coastal Salt Marsh																																															
	7.7	a	RR ROW; RwT; Wt	7.8a	1	0	2	-1	3	0	3	3	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	21	40	Y	0	-1	0	1	0	0	-1	0	-2	0	-3	-7.5	18	33	N
		b	RtT	7.8b	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	0	0	2	3	0	0	0	-2	0	3	2	12	14	Y
		c	CT ROW; RwT; Et	7.8c	2	0	2	-1	2	2	2	2	2	2	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	25	49	Y	0	0	0	1	0	0	0	0	-2	0	-1	-2	24	47	N
			Adjacent to Humboldt Bay																																															
	7.8	a	RR ROW; RwT; Wt	7.9a	1	0	2	-1	2	2	2	2	0	2	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	22	42	Y	0	-1	0	1	0	0	-1	0	-2	3	0	-1.5	22	40	N
		b	RtT	7.9b	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	0	0	2	3	0	0	0	-2	0	3	2	12	14	Y
		c	CT ROW; RwT; Et	7.9c	2	0	2	-1	3	0	3	3	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	22	42	Y	0	0	0	1	0	0	0	0	-2	0	-1	-2	21	40	N
			Drainage Culvert @ RRMP 289.6 to Bracut																																															
	7.9	a	RR ROW; RwT; Wt	end	1	0	2	-1	2	0	2	0	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	16	25	Y	0	-1	0	1	0	0	-1	0	-2	1	-2	-5.5	14	19	N
		b	RtT	end	1	1	2	-1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	1	0	0	1	0	0	1	-2	0	0	0	9	12	Y	0	0	0	2	3	0	0	0	-2	0	3	2	12	14	Y
		c	CT ROW; RwT; Et	end	2	0	2	-1	2	0	2	0	0	0	0	1	2	1	0	2	1	1	1	0	0	1	0	0	1	-2	1	0	0	17	27	Y	0	0	0	1	0	0	0	0	-2	1	0	0	17	27	N

** Five possible scores exist for "less than significant after mitigation." This is because cases may exist in which two parallel alignments may both be less than significant after mitigation, though the mitigation required for one alignment may be substantially greater than for its paralell alignment (e.g. cost, complexity, size, permitting constraints). For example, five acres of wetlands could require mitigation in one alignment while two acres of wetlands could require mitigation in a parallel alignment. In another example, mitigation on one alignment could cost twice as much as mitigation in a parallel alignment. Therefore, in these example the first alignments would receive higher scores even though both sets of alignments have "less than significant impacts after mitigation."*

*** Three possible scores exist for "does not meet critiera." This is because cases may exist in which two parallel alignments may both fail to meet the desired criteria, though the qualities of one alignment may be substantially less desirable than for its paralell alignment.*

SELECTED ALIGNMENT

The following maps show the selected alignment. This alignment, in most cases, is not the alignment that scored best in the matrix, but the alignment that is the most feasible. The alignment that scored the best the most often is the alignment shown on the existing railroad tracks. At the time of this study the NCRA is planning to resume rail service, in some form, in the future and the rails must be preserved.

The rail alignment was evaluated as part of the planning process to provide a comprehensive evaluation of all the options within the corridor. If there is an opportunity for a rails to trails project along this corridor, this document includes the planning and evaluation work.


GRANT AVE
EYE ST
JAY ST
Larson Park
SUNSET AVE
Arcata Skateboard Park
101
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 01 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-01
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
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EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330


SUNSET AVE
BALDWIN ST
ROSS ST
Trail footprint wider than trail surface due to cut/fill prisms, typical
Future Arcata Fire Department
Temporary construction impacts includes a 5 ft buffer from trail footprint, typical
Arcata High School Sports Complex
Greenwood Cemetery
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 02 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-02
Project Design Features and Temporary Impact Areas
Project:
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EUREKA, CA 95521
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Existing trees and brush within trail footprint to be removed, typical
Existing trees and brush outside of cut/fill lines to remain, typical
Shay Park
Jolly Giant Creek
M ST
Greenwood Cemetery
Arcata High School
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 03 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-03
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330

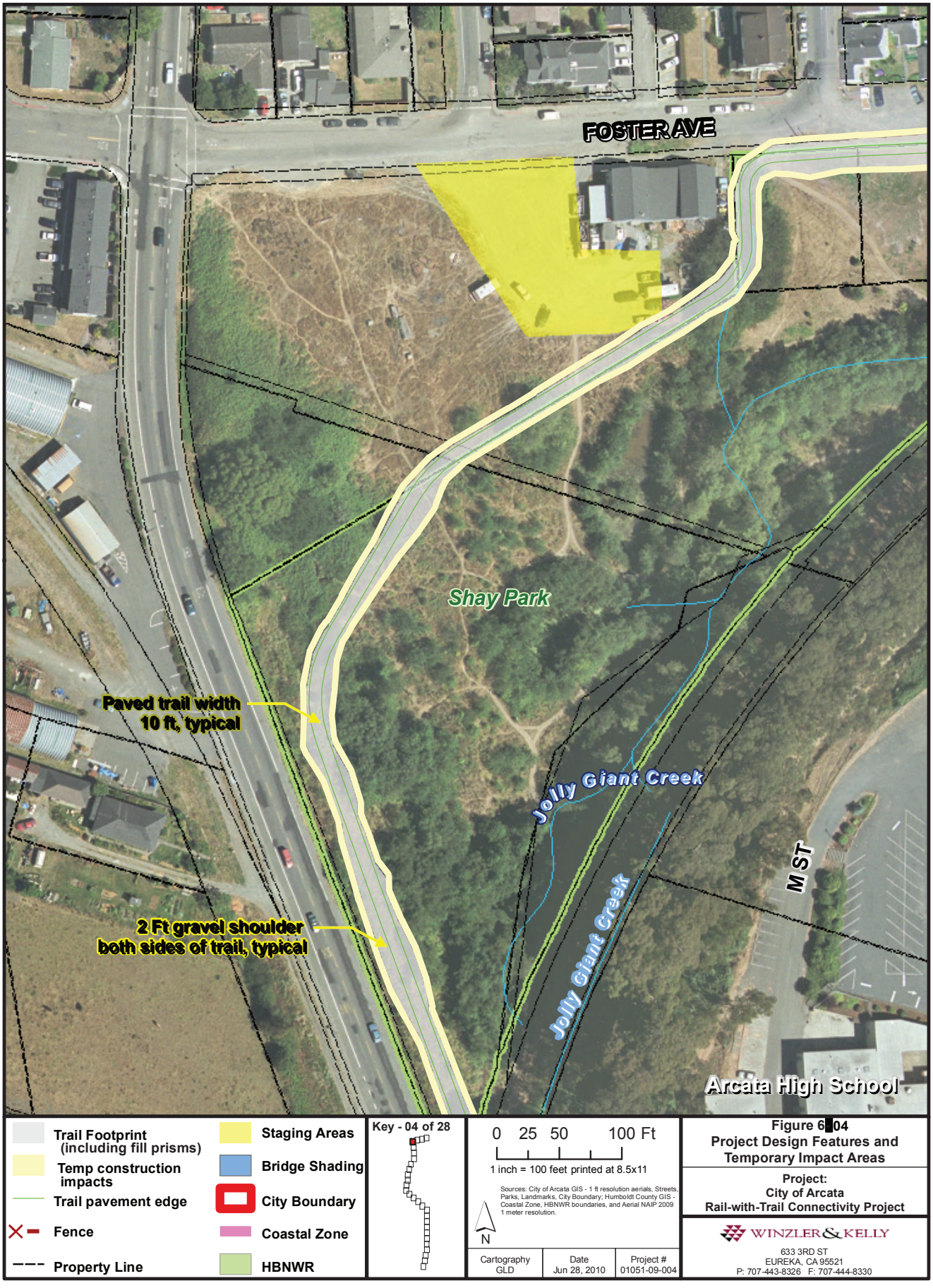

Figure 6-04
Project Design Features and Temporary Impact Areas

Project:
City of Arcata
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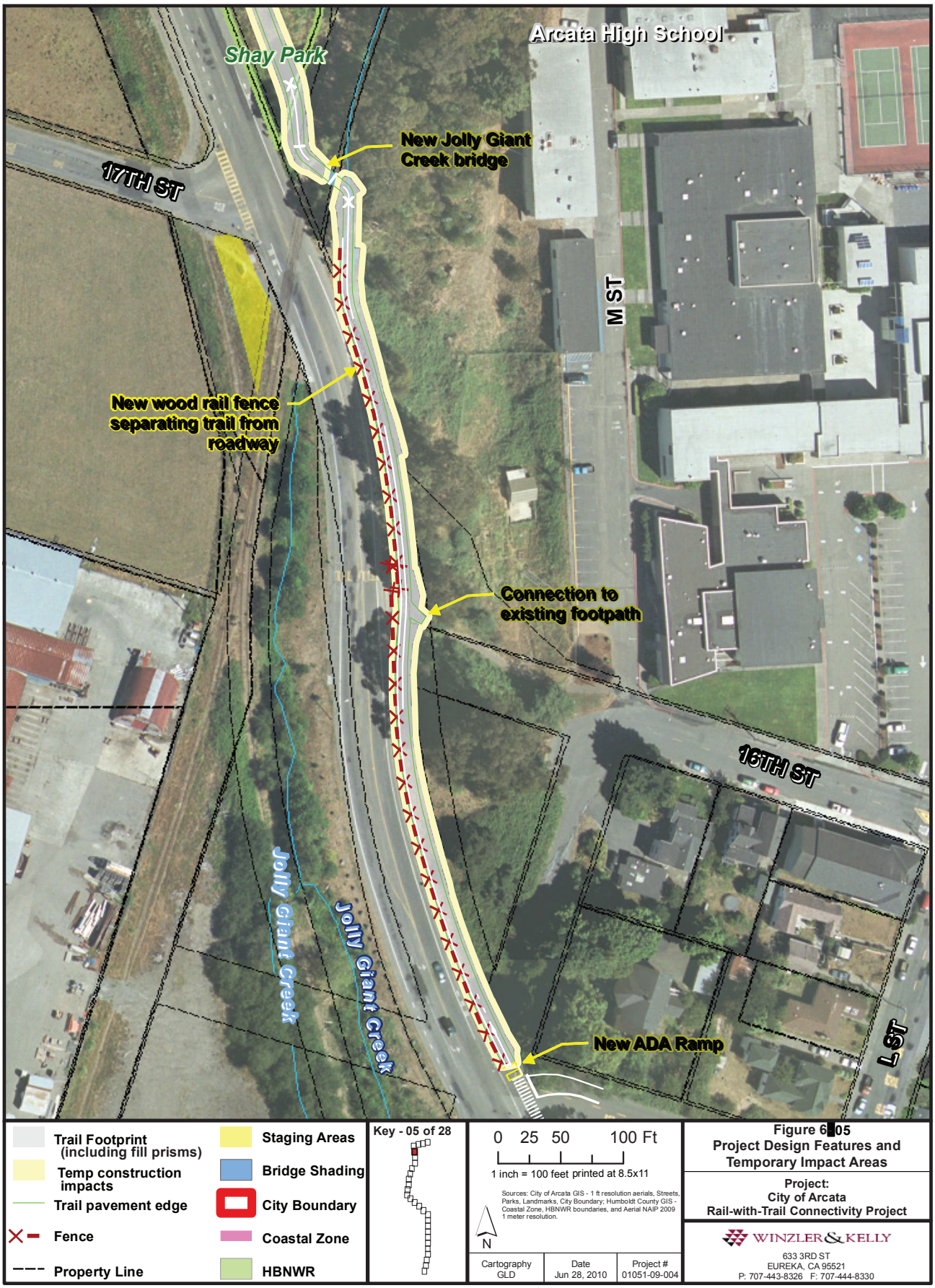
Shay Park
Arcata High School
New Jolly Giant Creek bridge
17TH ST
M ST
New wood rail fence separating trail from roadway
Connection to existing footpath
16TH ST
Jolly Giant Creek
Jolly Giant Creek
New ADA Ramp
1ST
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 05 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-05
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
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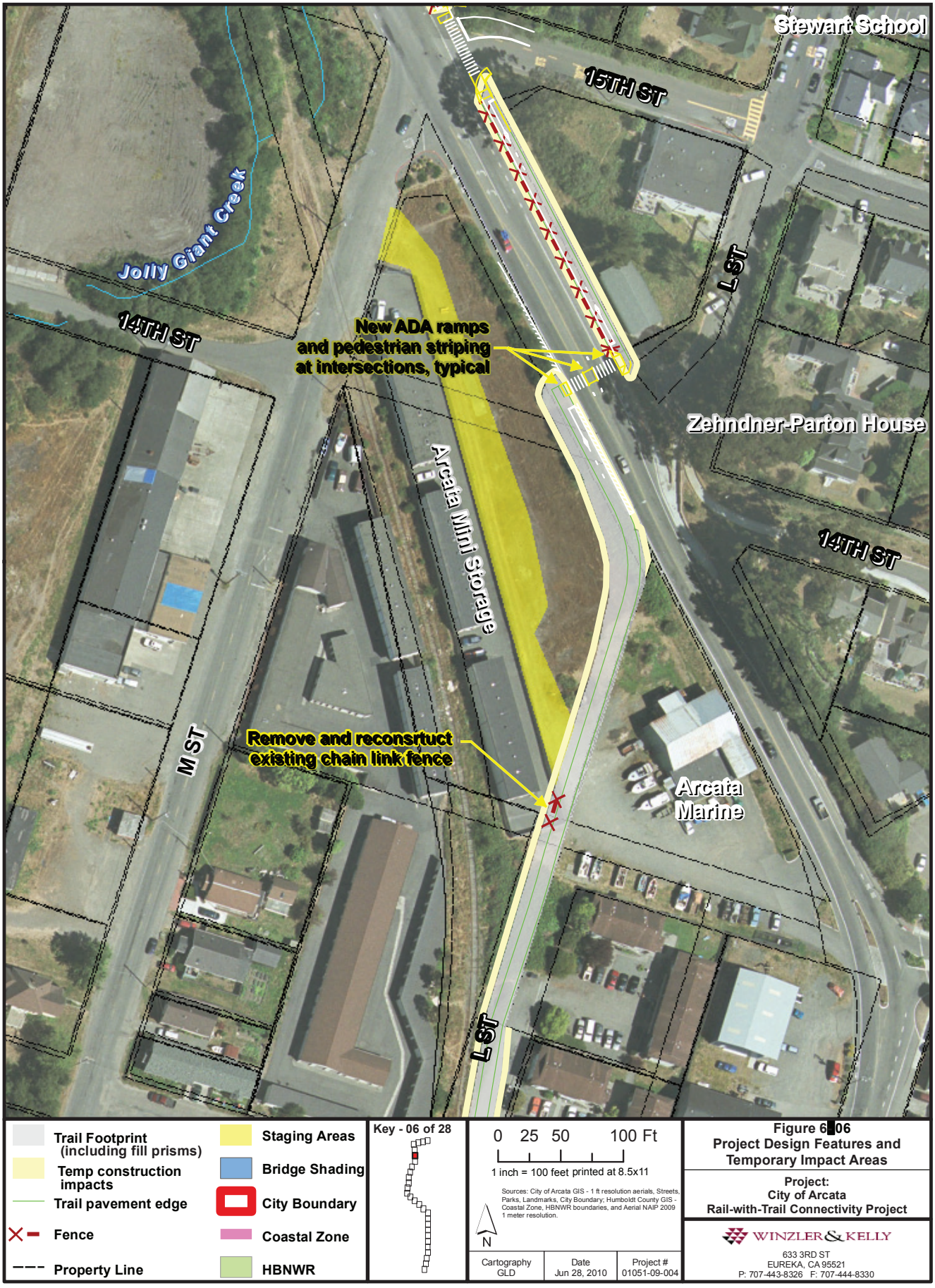

Figure 6-06
Project Design Features and Temporary Impact Areas

Project:
City of Arcata
Rail-with-Trail Connectivity Project

WINZLER & KELLY
633 3RD ST
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P: 707-443-8326 F: 707-444-8330


M ST
12TH ST
L ST
Begin L Street
"Urban Interface Corridor"
Arcata Do It
Best Lumber
Wagner Block House
11TH ST
Paved trail width
10 ft, typical
L ST
RR tracks to remain
and be protected
Nixon House
10TH ST
Trail Footprint
(including fill prisms)
Temp construction
impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 07 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary, Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography
GLD
Date
Jun 28, 2010
Project #
01051-09-004
Figure 6-07
Project Design Features and
Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330


9TH ST
Ca Central Creamery Plant
Thomas Devlin House
L ST
8TH ST
End L Street "Urban Interface Corridor"
RR tracks to remain and be protected
West 7TH ST
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 08 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary, Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-08
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330

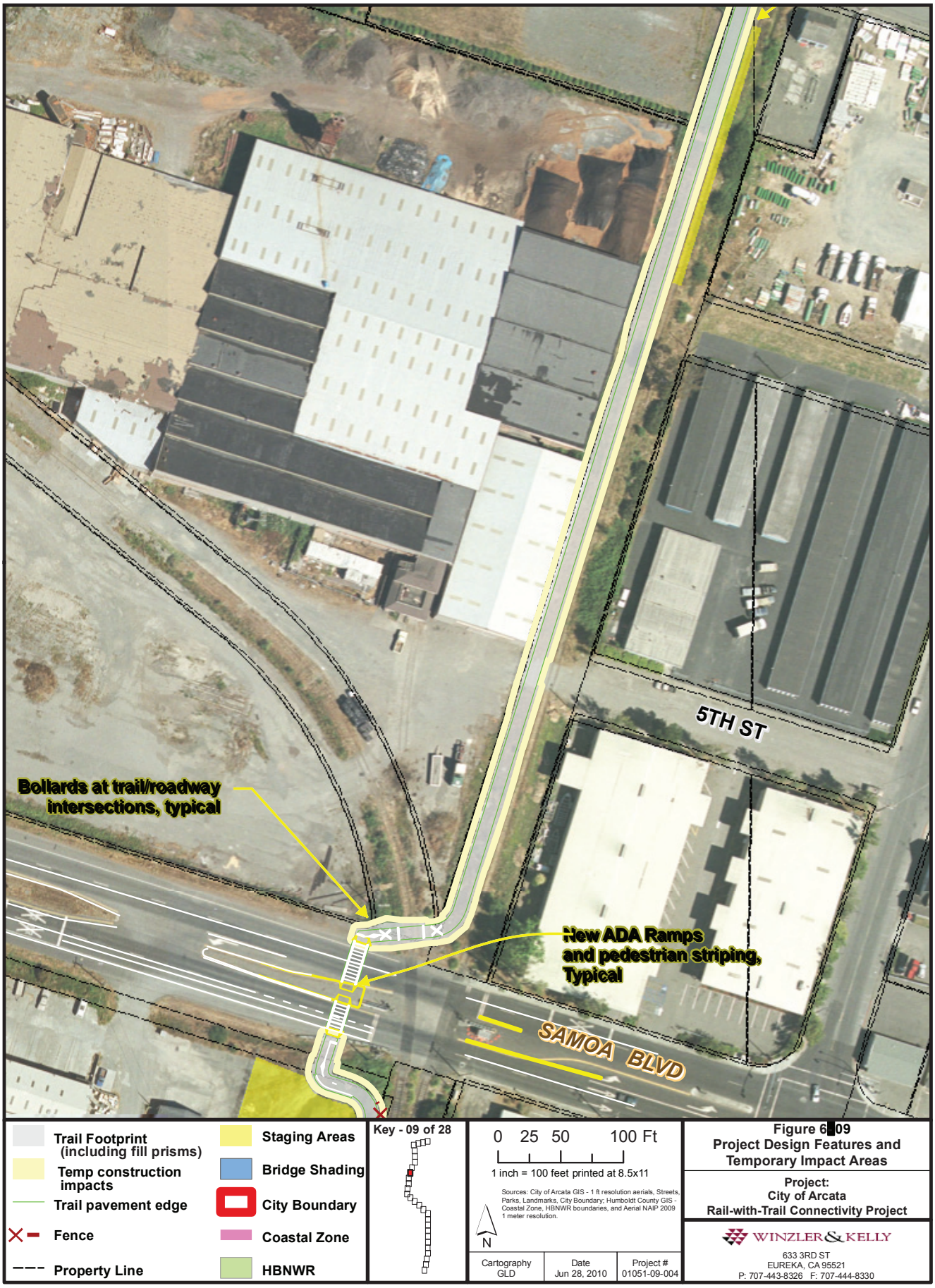
5TH ST
Bollards at trail/roadway intersections, typical
New ADA Ramps and pedestrian striping, Typical
SAMOA BLVD
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 09 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-09
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
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Figure 6-10
Project Design Features and Temporary Impact Areas

Project:
City of Arcata
Rail-with-Trail Connectivity Project

WINZLER & KELLY
633 3RD ST
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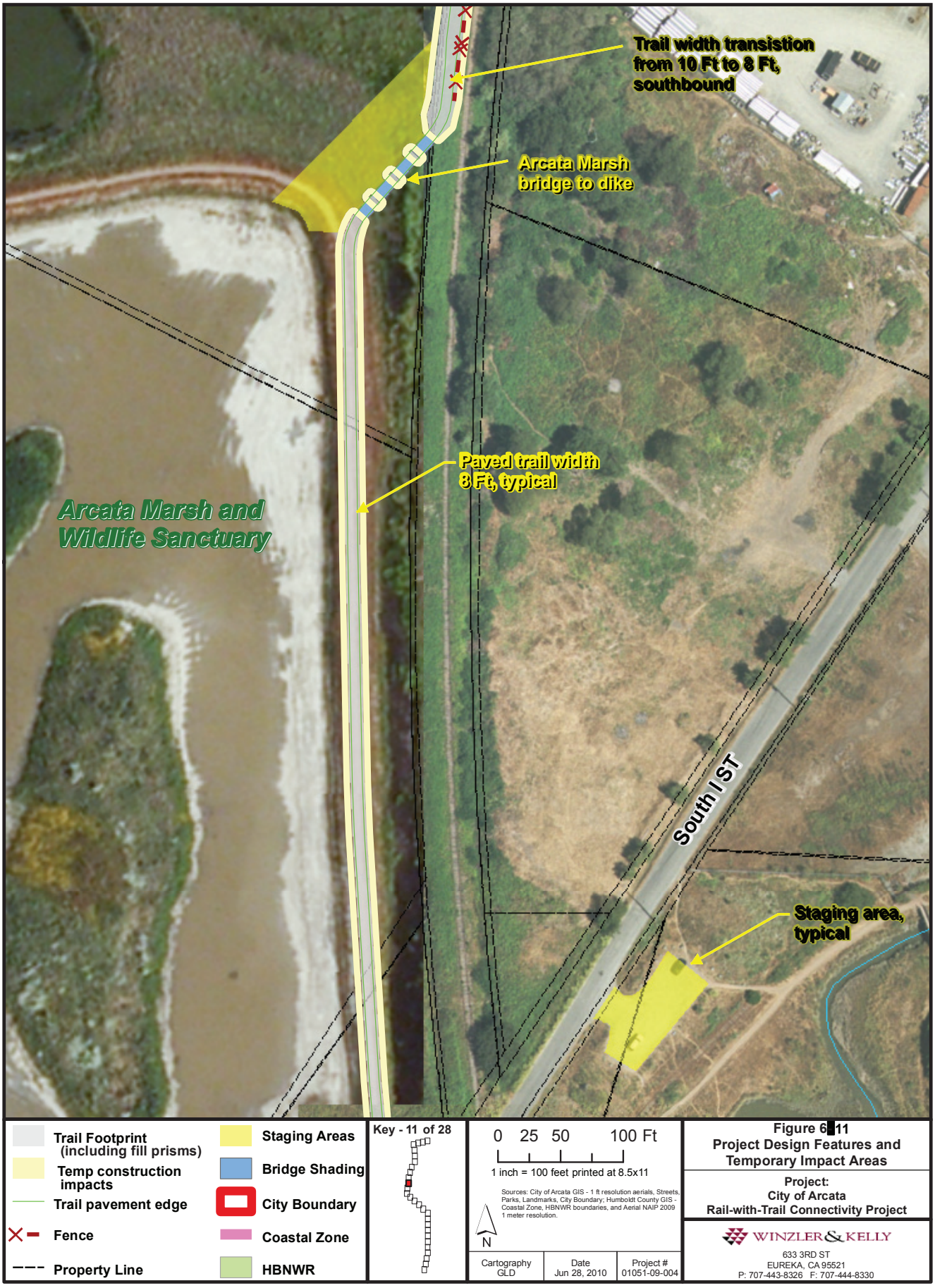
Trail width transistion from 10 Ft to 8 Ft, southbound
Arcata Marsh bridge to dike
Paved trail width 8 Ft, typical
Arcata Marsh and Wildlife Sanctuary
South I ST
Staging area, typical
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 11 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-11
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330

Figure 6-12
Project Design Features and Temporary Impact Areas

Project:
City of Arcata
Rail-with-Trail Connectivity Project

WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330


South I ST
New AC connection between new trail and exisitng parking area
Existing trail to be improved and paved
Arcata Marsh and Wildlife Sanctuary
Jolly Giant Creek
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 13 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-13
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
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Figure 6-14
Project Design Features and Temporary Impact Areas

Project:
City of Arcata
Rail-with-Trail Connectivity Project

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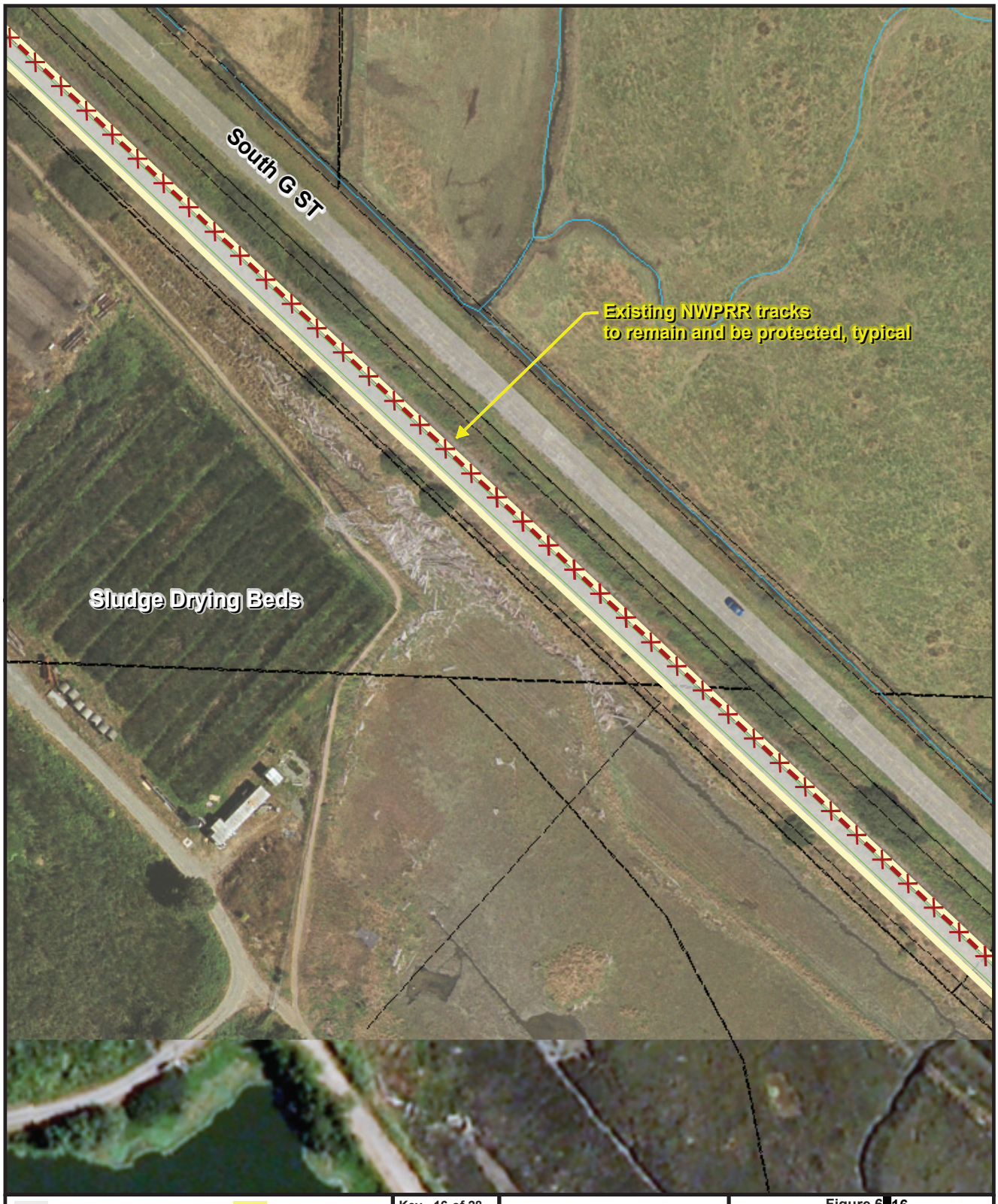
New bridge over Butcher Slough
Butcher Slough
New fence between trail and RR
Concrete transitions from trail to driveway, typical
Driveway
City of Arcata WWTP and Corp Yard
South G ST
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 15 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary, Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-15
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330



Trail footprint
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR

Key - 16 of 28

0 25 50 100 Ft

1 inch = 100 feet printed at 8.5x11

Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.

N

Cartography	Date	Project #
GLD	Jun 28, 2010	01051-09-004

Figure 6-16
Project Design Features and Temporary Impact Areas

Project:
City of Arcata
Rail-with-Trail Connectivity Project

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Centerline of existing tracks to new fence line 9.5', typical
South G ST
Trail footprint
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 17 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-17
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330

Figure 6-18
Project Design Features and Temporary Impact Areas

Project:
City of Arcata
Rail-with-Trail Connectivity Project

WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
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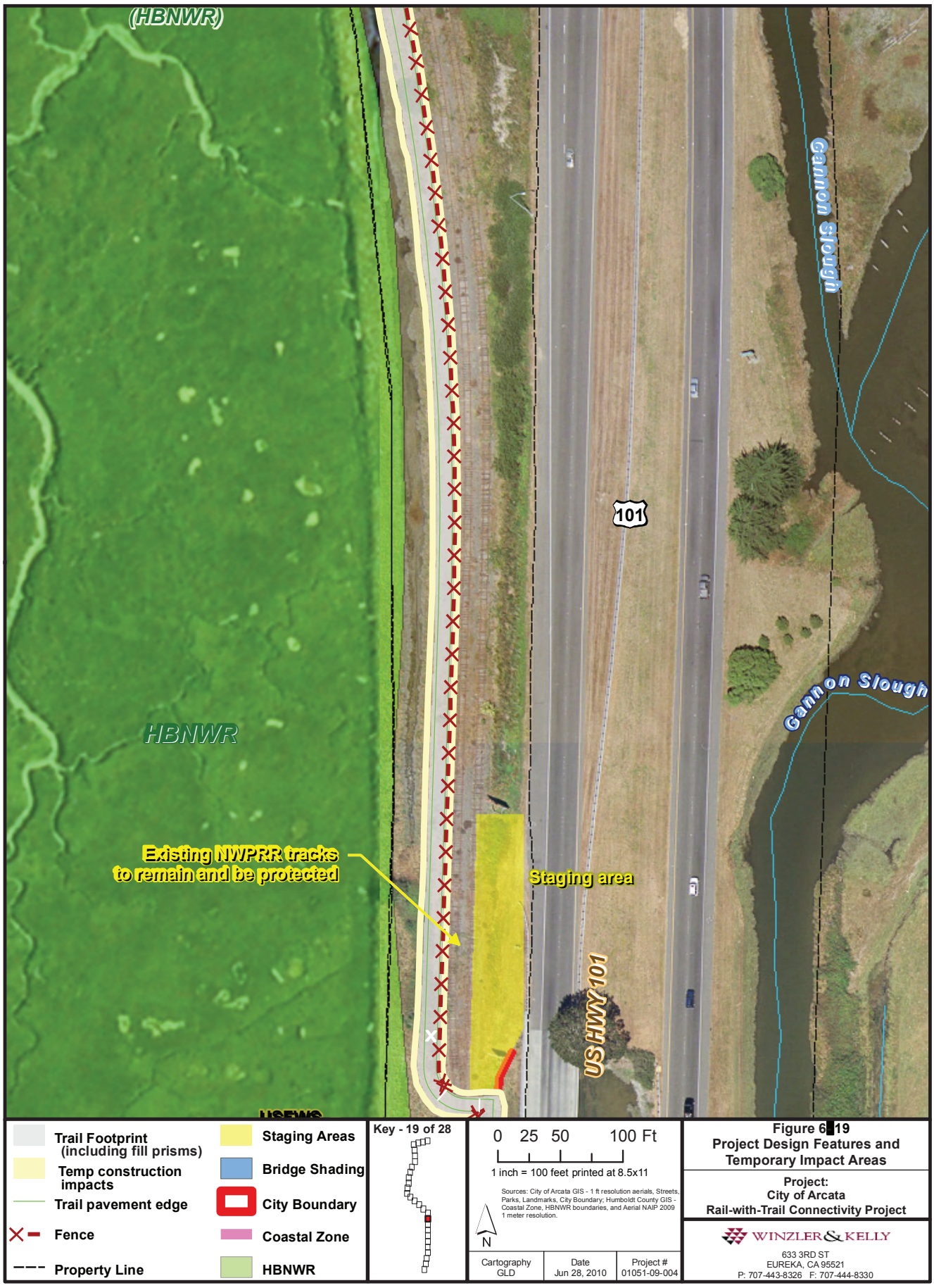
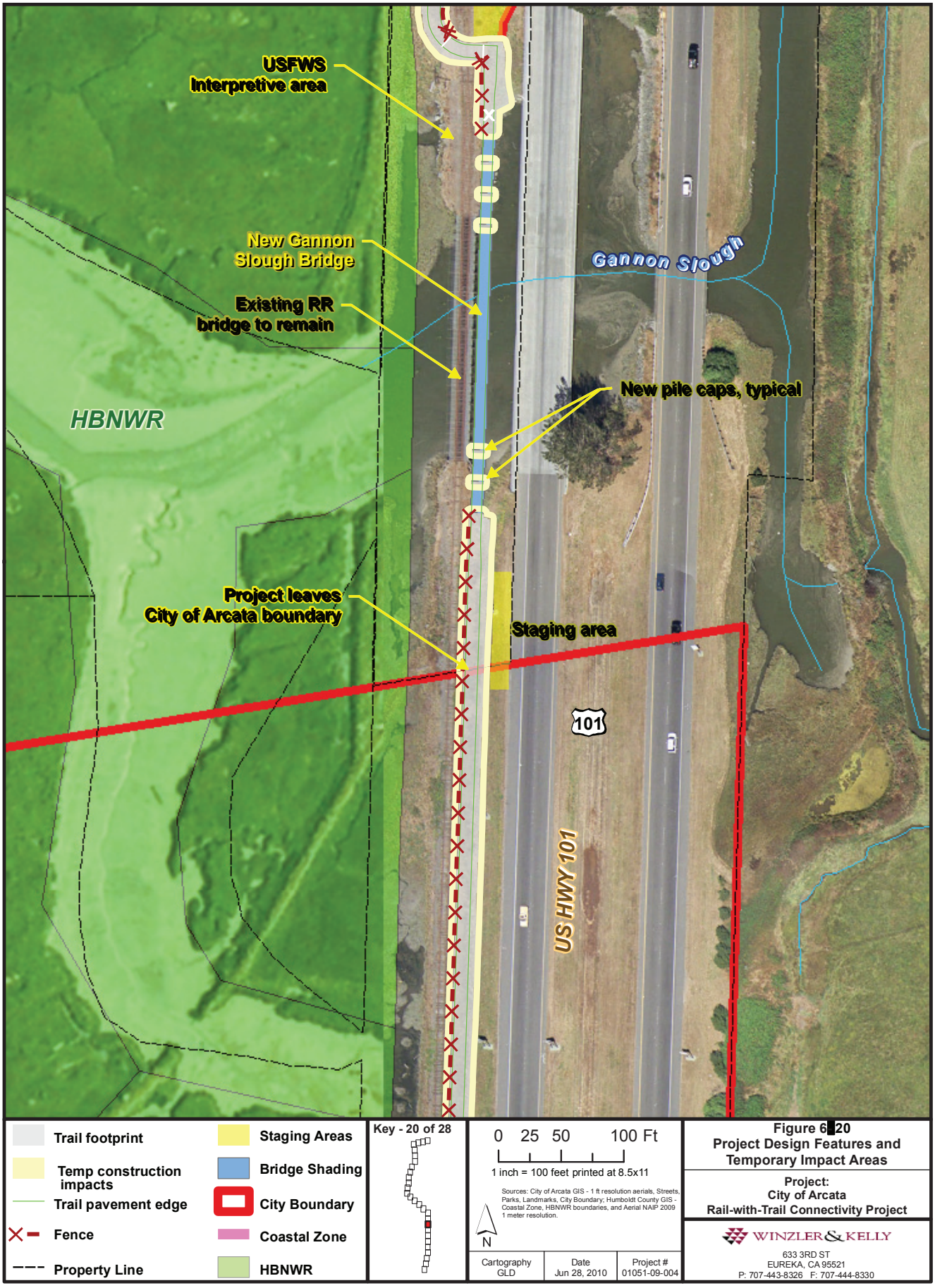
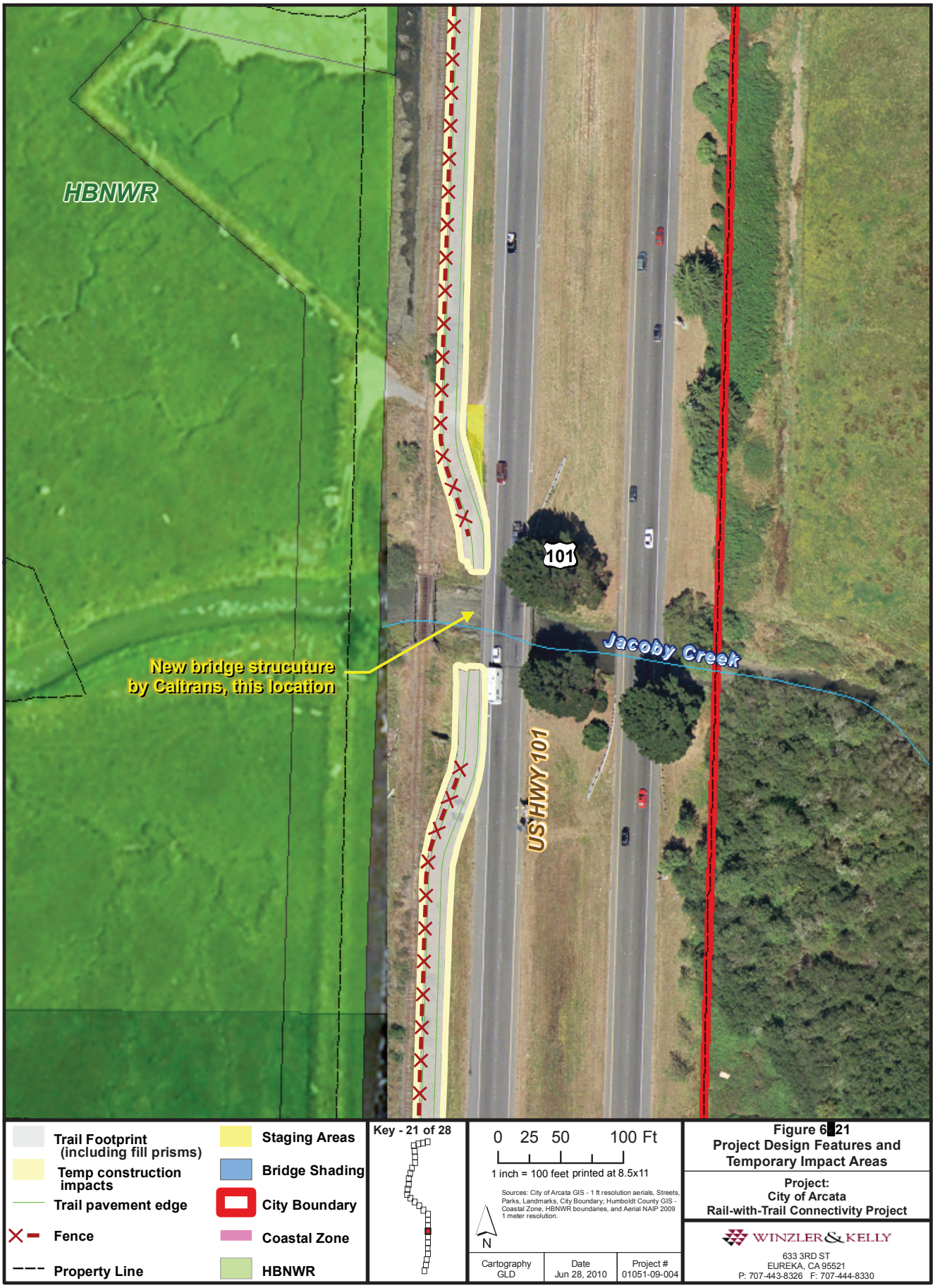
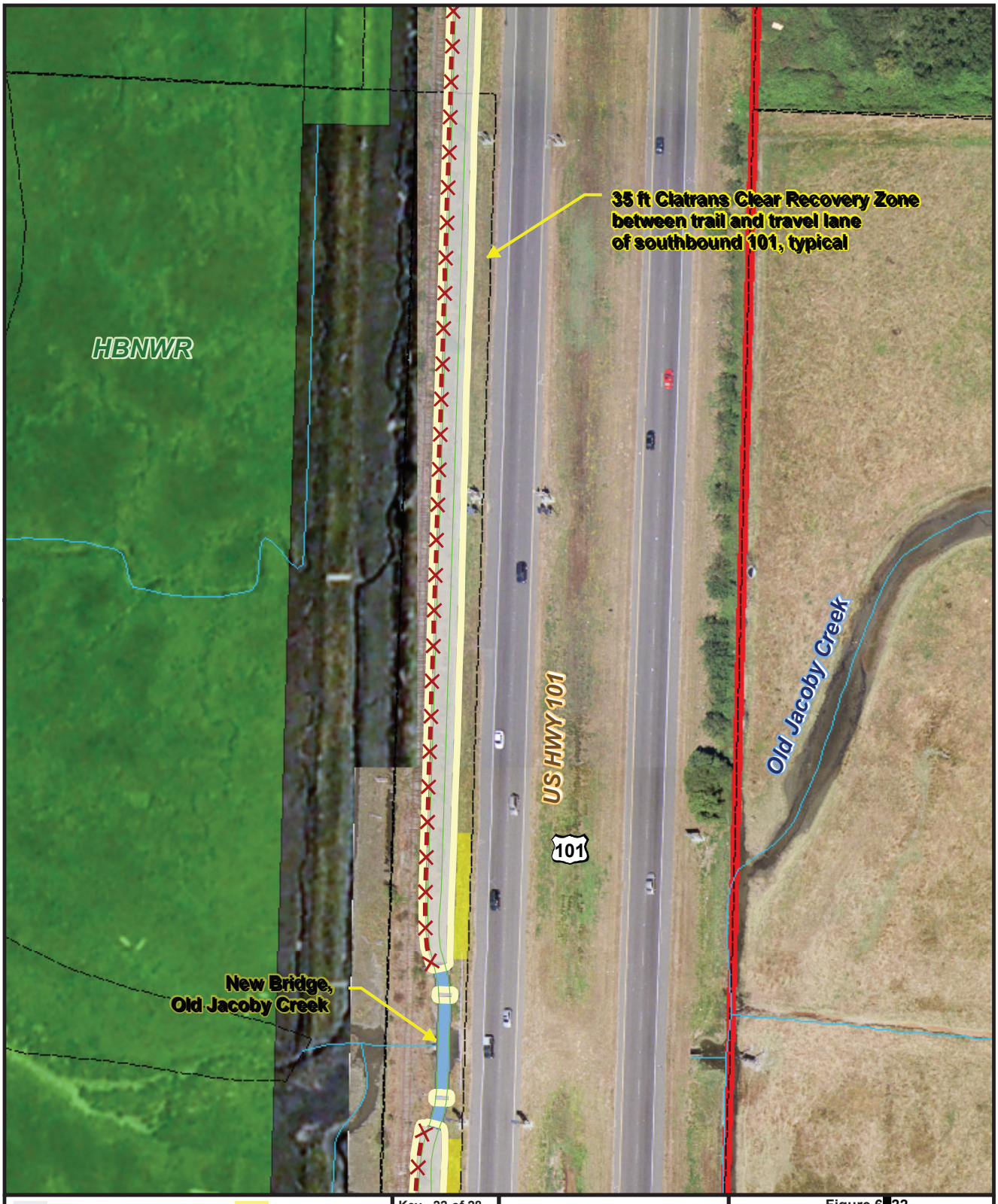

(HBNWR)
Gannon Slough
101
HBNWR
Existing NWPRR tracks
to remain and be protected
Staging area
US HWY 101
Gannon Slough
Trail Footprint
(including fill prisms)
Temp construction
impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 19 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography
GLD
Date
Jun 28, 2010
Project #
01051-09-004
Figure 6-19
Project Design Features and
Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330


USFWS
Interpretive area
New Gannon
Slough Bridge
Existing RR
bridge to remain
New pile caps, typical
Gannon Slough
HBNWR
Project leaves
City of Arcata boundary
Staging area
101
US HWY 101
Trail footprint
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 20 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-20
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330


HBNWR
101
Jacoby Creek
New bridge strucuture
by Caltrans, this location
US HWY 101
Trail Footprint
(including fill prisms)
Temp construction
impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 21 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography
GLD
Date
Jun 28, 2010
Project #
01051-09-004
Figure 6-21
Project Design Features and
Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330



Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR

Key - 22 of 28

0 25 50 100 Ft

1 inch = 100 feet printed at 8.5x11

Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.

N

Cartography	Date	Project #
GLD	Jun 28, 2010	01051-09-004

Figure 6-22
Project Design Features and Temporary Impact Areas

Project:
City of Arcata
Rail-with-Trail Connectivity Project

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633 3RD ST
EUREKA, CA 95521
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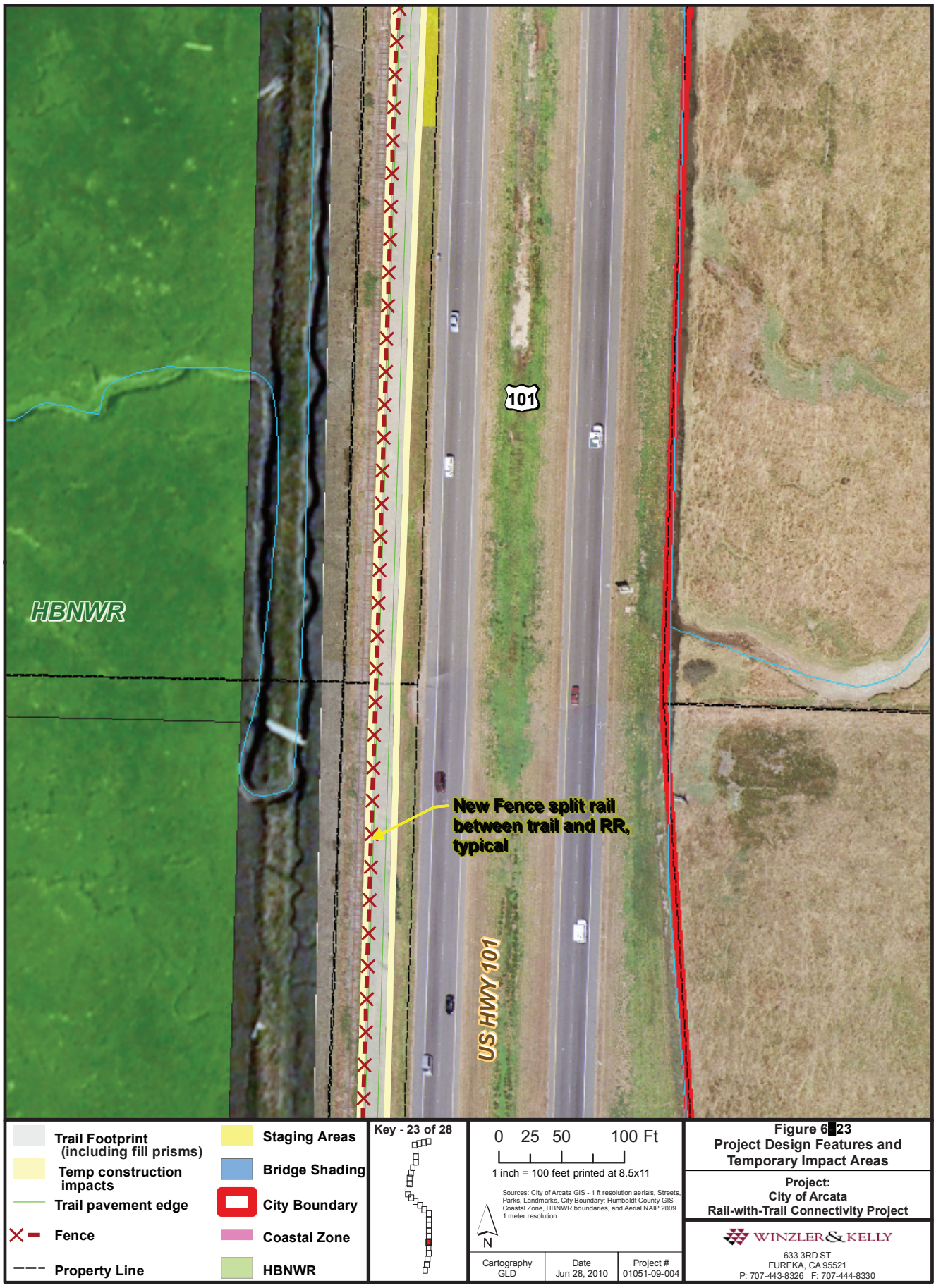
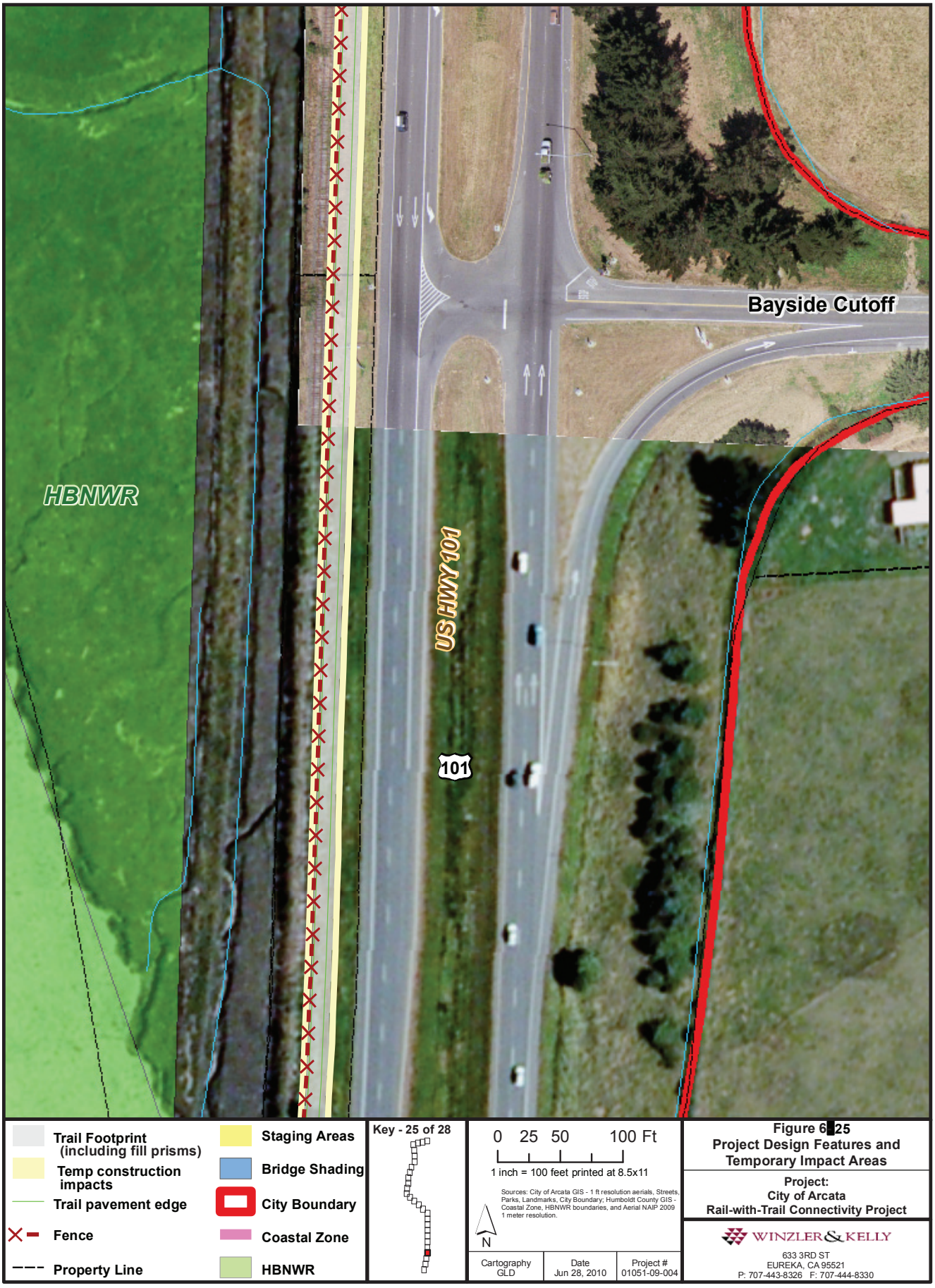
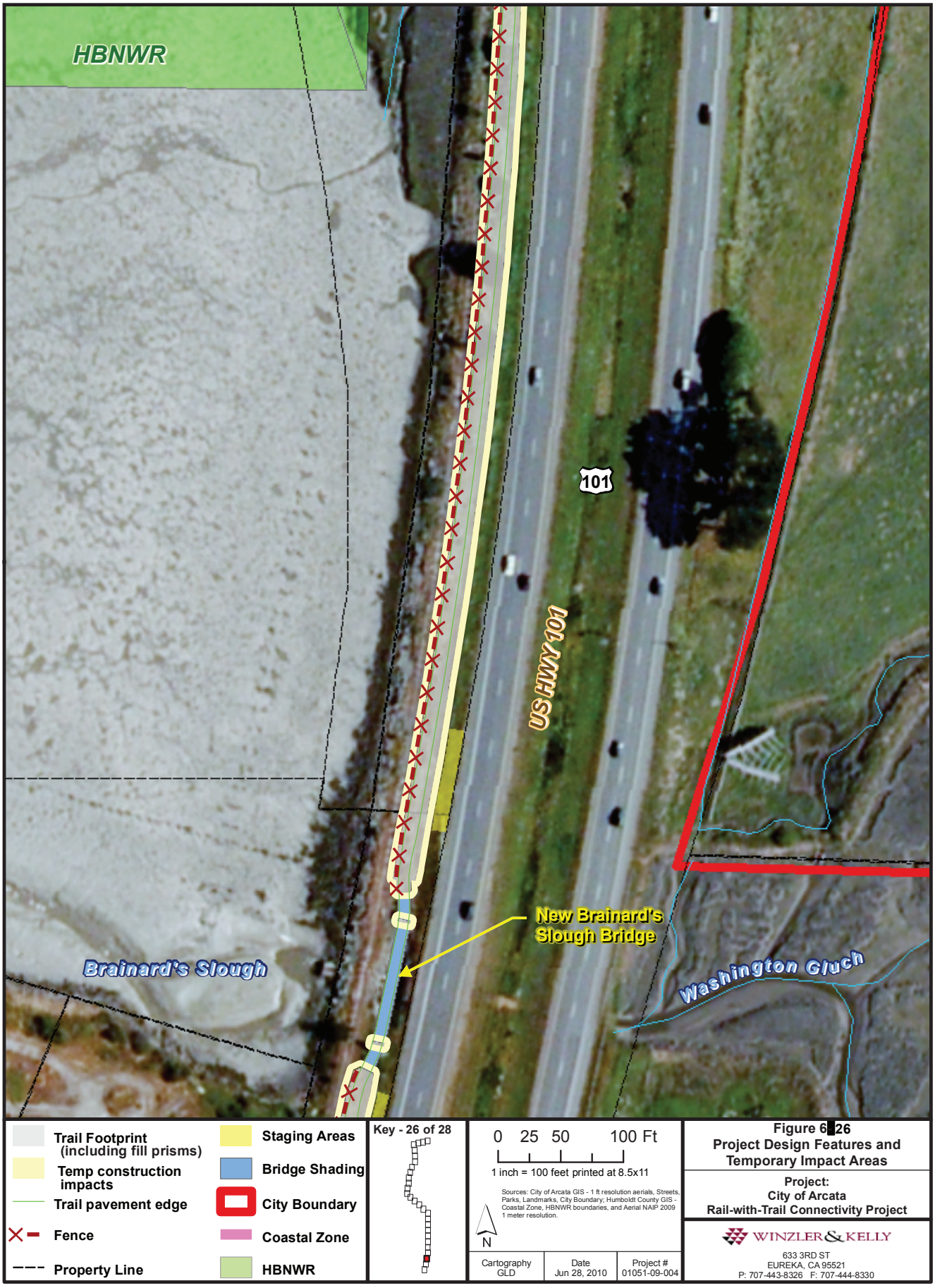

101
HBNWR
New Fence split rail between trail and RR, typical
US HWY 101
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 23 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary, Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-23
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330


HBNWR
US HWY 101
101
Trail footprint
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 24 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-24
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330


Bayside Cutoff
HBNWR
US HWY 101
101
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 25 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-25
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330


HBNWR
101
US HWY 101
New Brainard's Slough Bridge
Brainard's Slough
Washington Gluch
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 26 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-26
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
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US HWY 101
101
Bracut Industrial Park
Caltrans
Trail Footprint (including fill prisms)
Temp construction impacts
Trail pavement edge
Fence
Property Line
Staging Areas
Bridge Shading
City Boundary
Coastal Zone
HBNWR
Key - 27 of 28
0 25 50 100 Ft
1 inch = 100 feet printed at 8.5x11
Sources: City of Arcata GIS - 1 ft resolution aerials, Streets, Parks, Landmarks, City Boundary; Humboldt County GIS - Coastal Zone, HBNWR boundaries, and Aerial NAIP 2009 1 meter resolution.
N
Cartography GLD
Date Jun 28, 2010
Project # 01051-09-004
Figure 6-27
Project Design Features and Temporary Impact Areas
Project:
City of Arcata
Rail-with-Trail Connectivity Project
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Figure 6-28
Project Design Features and Temporary Impact Areas

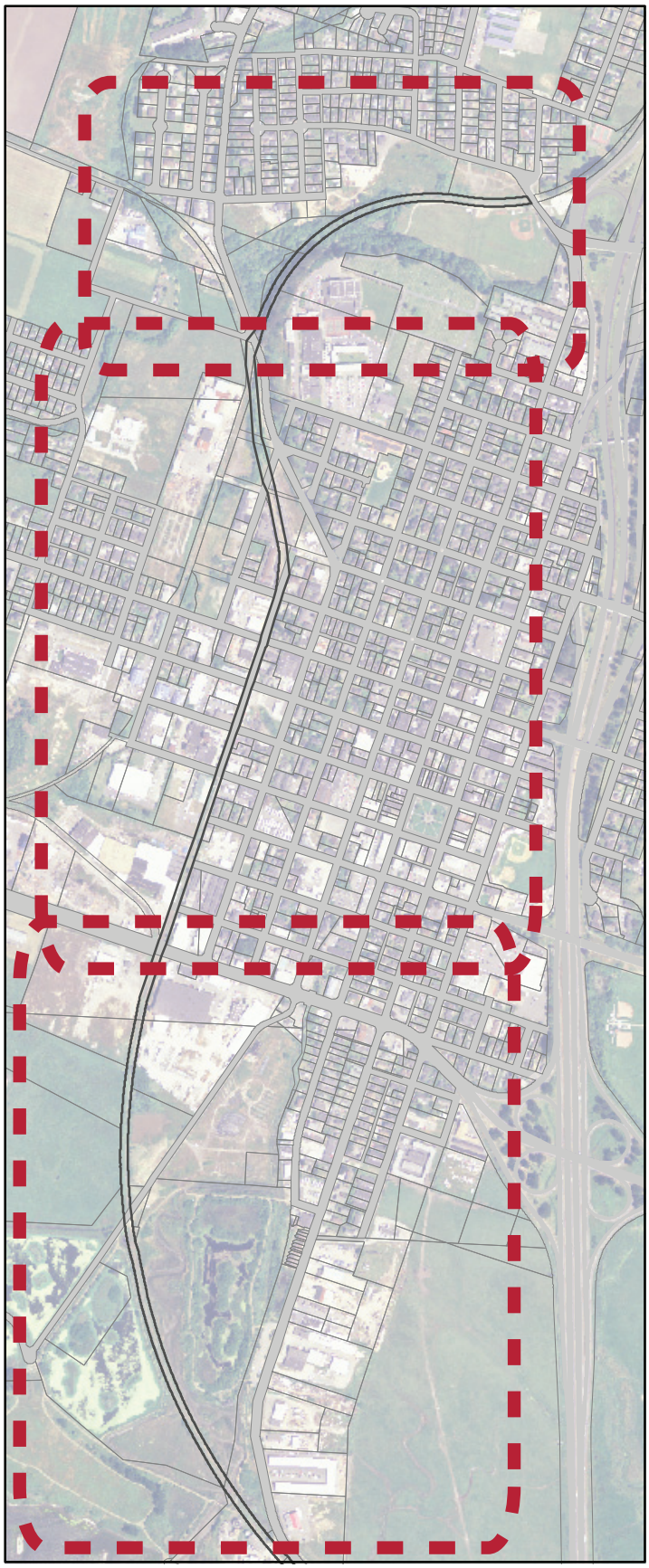
Project:
City of Arcata
Rail-with-Trail Connectivity Project

WINZLER & KELLY
633 3RD ST
EUREKA, CA 95521
P: 707-443-8326 F: 707-444-8330

PROJECT PHASING

It is the goal of the City to construct the entire trail as a single project, but in the event that funding is not available to achieve this the following standalone segments have been identified. Trails the length of the Arcata Rail with Trail are rarely constructed as single projects. More often than not, either individual segments of the trail are built as funding becomes available; or segments are tacked onto other projects in the area when efficiencies are gained by building both at the same time. Dividing the project into logical phases will allow the City and/or County to pursue smaller funding sources and therefore construct portions of the trail sooner than otherwise possible.

Phases for this project were identified with the primary goal of creating trail segments that would be useful if they were constructed as stand alone projects. There is very little value in building a portion of a trail that is not accessible until the rest of the trail is in place. The second goal was to delineate the phases in such a way that there was no specific sequence required. Each of the identified trail segments can stand alone and will not require another specific phase to be built in a specific sequence.



Arcata Rail with Trail: Phasing Plan - North

Phase I:

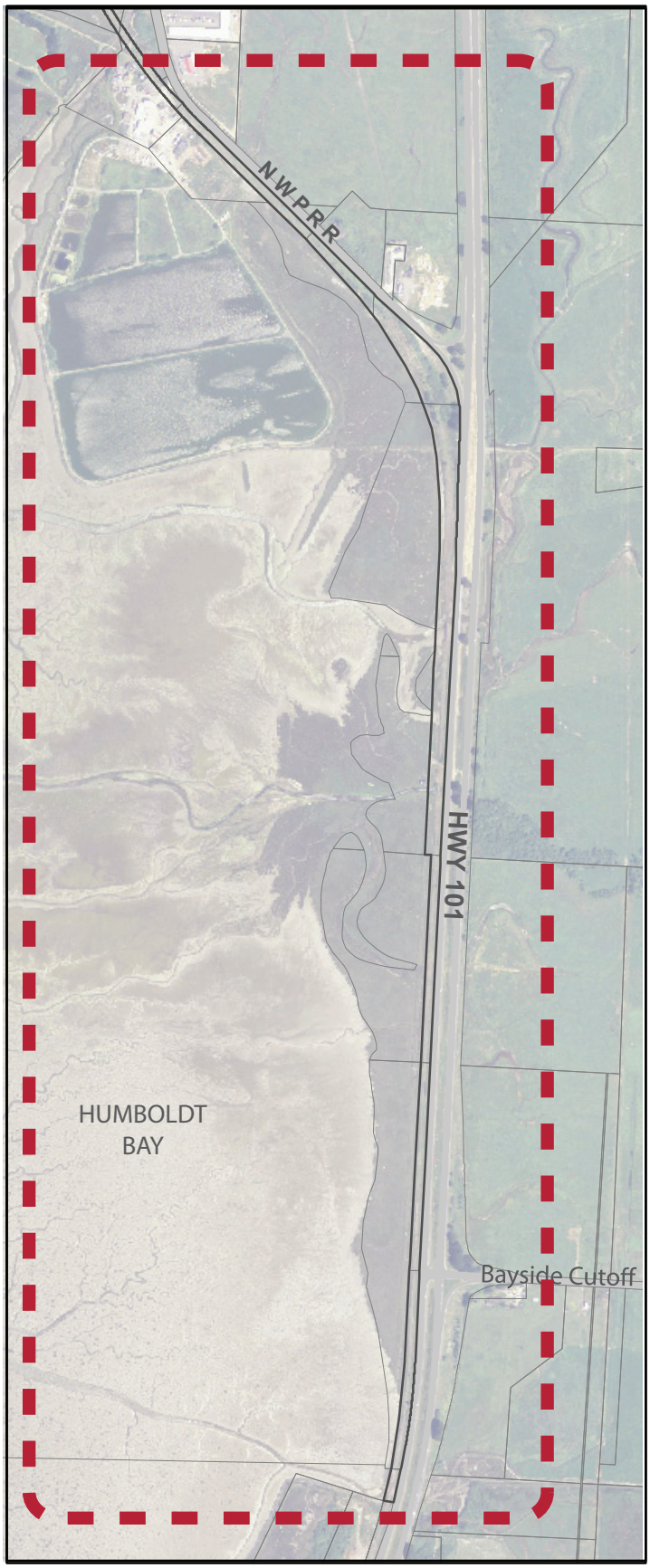
Starting at Larson Park, the alignment follows Foster Road and passes through Shay Park on its way to Alliance Road. Phase I provides a clearly marked pedestrian and bicycle route that improves non-motorized connections through the area. This phase will likely be most efficient if completed in conjunction with the Foster Road Extension Project.

Phase II:

Starting at Alliance Road, the second phase follows L Street and ends at Samoa Boulevard. This segment includes a number of improvements to L Street resulting in an upgraded streetscape with improved safety for people biking and walking on the trail through this section of Arcata. The upcoming Samoa Boulevard improvements, known as the Gateway Project, might be an opportunity to efficiently implement the Phase II improvements at the same time.

Phase III:

The Phase III alignment travels from Samoa Boulevard through the Arcata Marsh to the wastewater treatment plant. This alignment is perhaps the best recreational phase of the four. It provides access to the marsh, wildlife viewing, and an opportunity to enjoy a relatively lengthy section of trail away from a road or highway.



alta PLANNING + DESIGN

0 2,000 Feet

N

Arcata Rail with Trail: Phasing Plan - South

Phase IV:

Phase IV begins at the Arcata Wastewater Treatment Plant and follows Highway 101 southward to the Bracut Lumber Yard. This is the longest segment, and includes two bridges and the most fantastic views of the bay. Building any portion south of the treatment plant without providing a connection to the treatment plant will result in an orphaned segment that is of little use. If this phase is broken into smaller segments they must be sequential starting at the north end and working southward.

TRAIL AMENITIES

Multi-use trail s can be enhanced with amenities like trailheads, signs, and improved streetscapes. The following concepts are recommended amenities that should be included when the Arcata RWT is implemented.

L Street

The one location where the Arcata RWT interfaces with the street grid network of the City is at L Street. This is a very low volume street with almost exclusively local traffic. This is the ideal location for a shared use street that includes the Arcata RWT.

The following features are included in the design:

Mid block bollards to close the street to through traffic, but permit fire access

The narrow street insures slow moving vehicles on the street

The trees, benches, planters with seatwalls and lights provide pedestrian elements

Planters can be used as community garden space

Sculpture footings can be placed along the street for art installations

Colored pavers increase visibility of crosswalks

Curb extensions at the corners to calm traffic and improve safety for pedestrians

Plant palette:

California Bay

Umbellularia californica (to be used in planters on the east side of the multi-use street)

Coast Live Oak

Quercus agrifolia (to be used adjacent to seating area with crushed rock below)

Red Maple (columnar form)

Acer rubrum 'Columnare' (to be used next to railroad tracks)

Western Redbud

Cercis occidentalis (to be used as accent tree at intersections next to railroad tracks)

Bearberry

Arctostaphylos uva-ursi (to be used in stormwater planters)

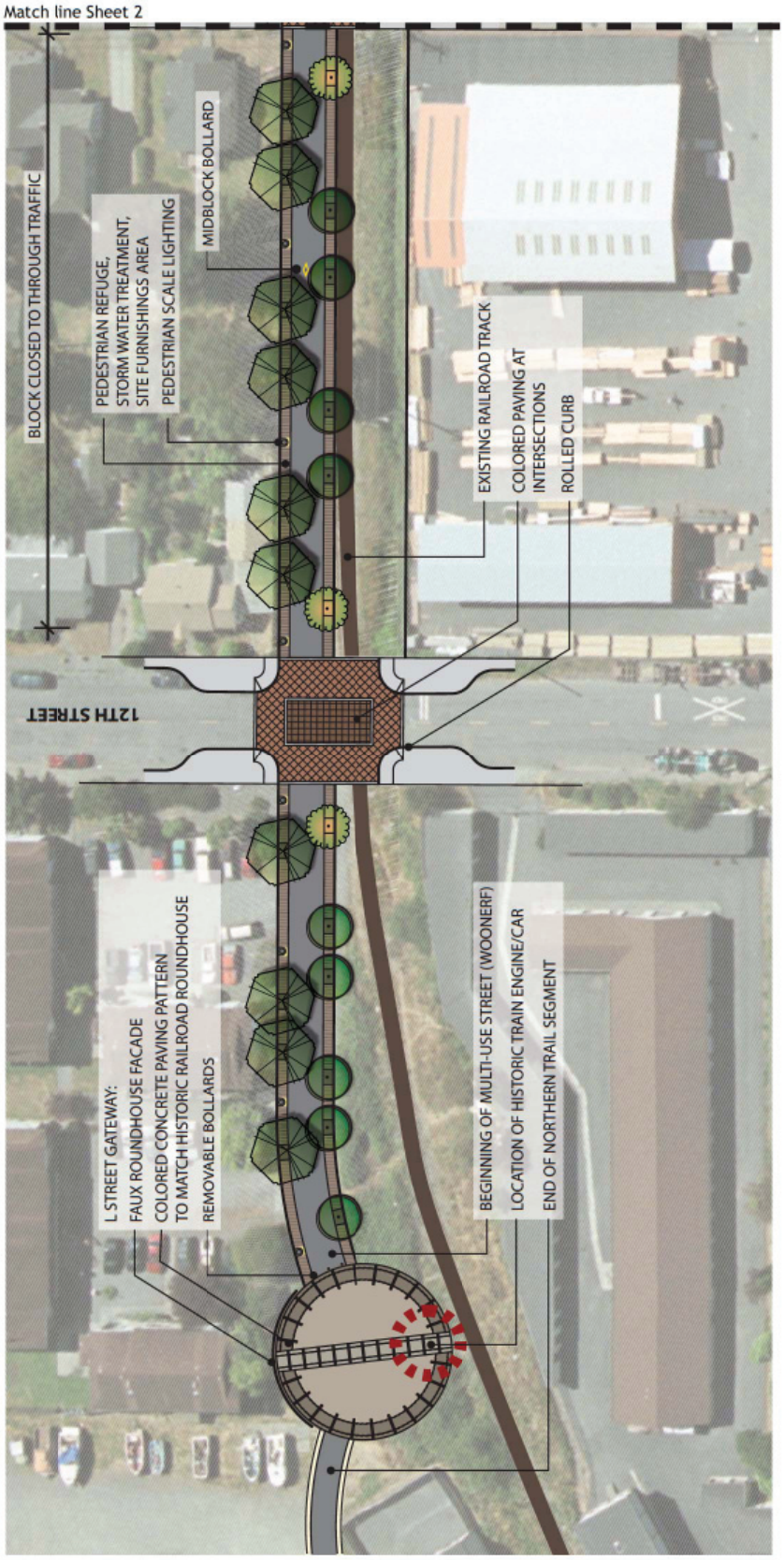
California Bay

Coast Live Oak

Red Maple

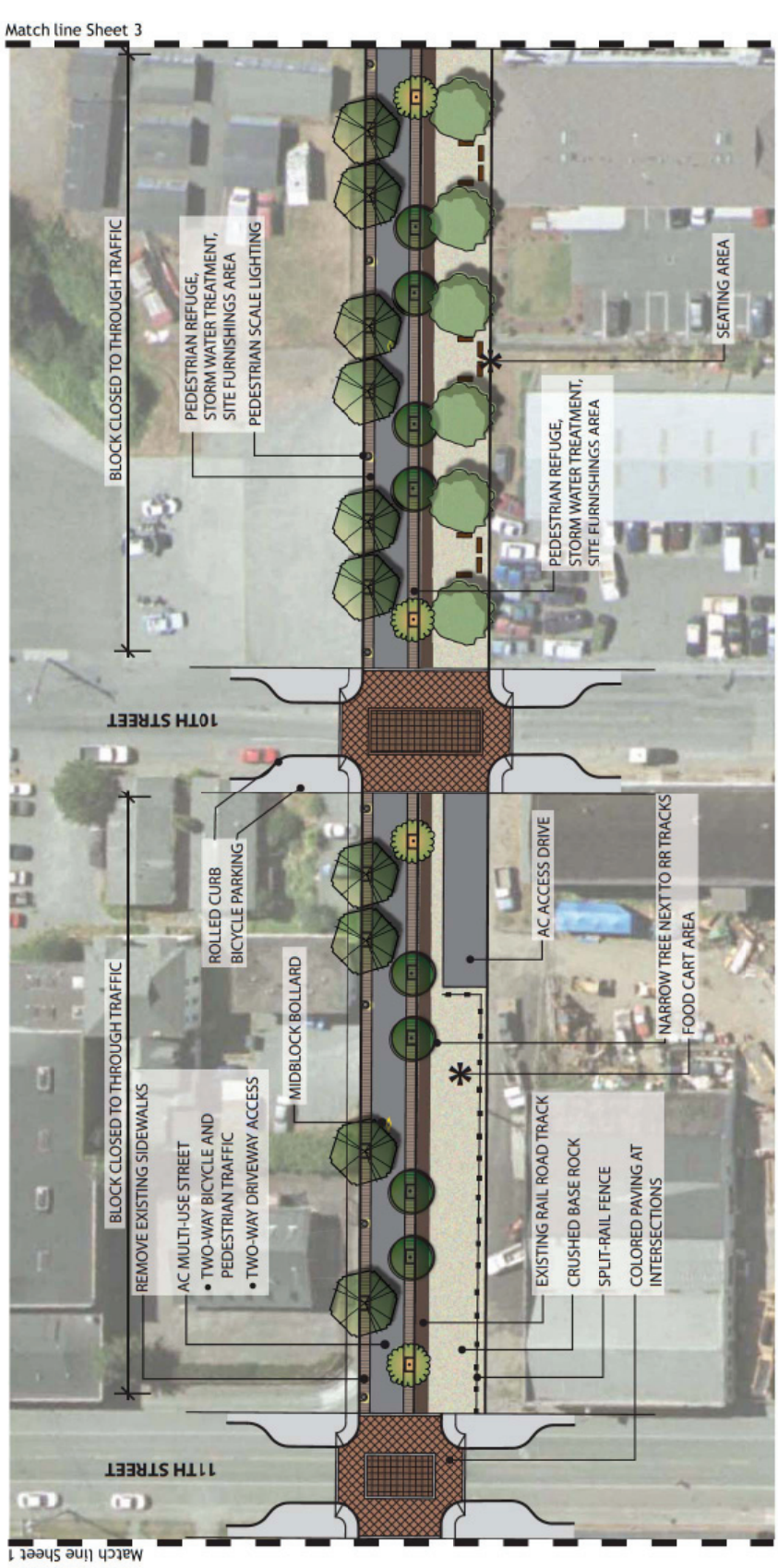
Bearberry

Western Redbud



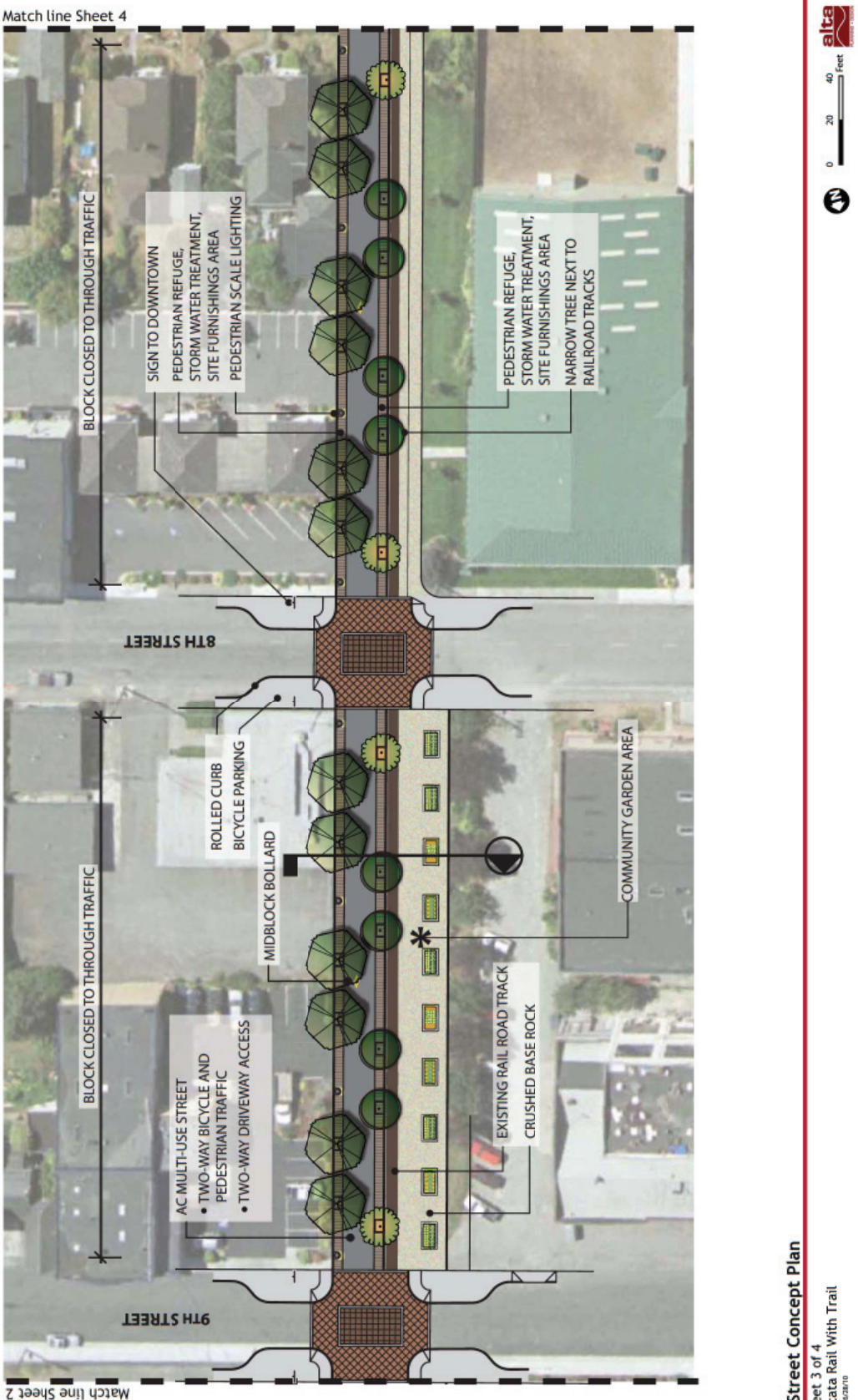
L Street Concept Plan

Sheet 1 of 4
Arcata Rail With Trail
Date: 6/28/10



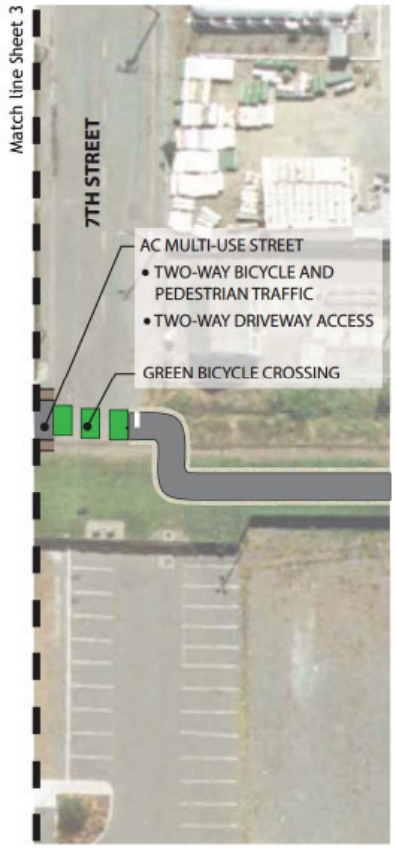
L Street Concept Plan
Sheet 2 of 4
Arcata Rail With Trail
Date: 6/28/10

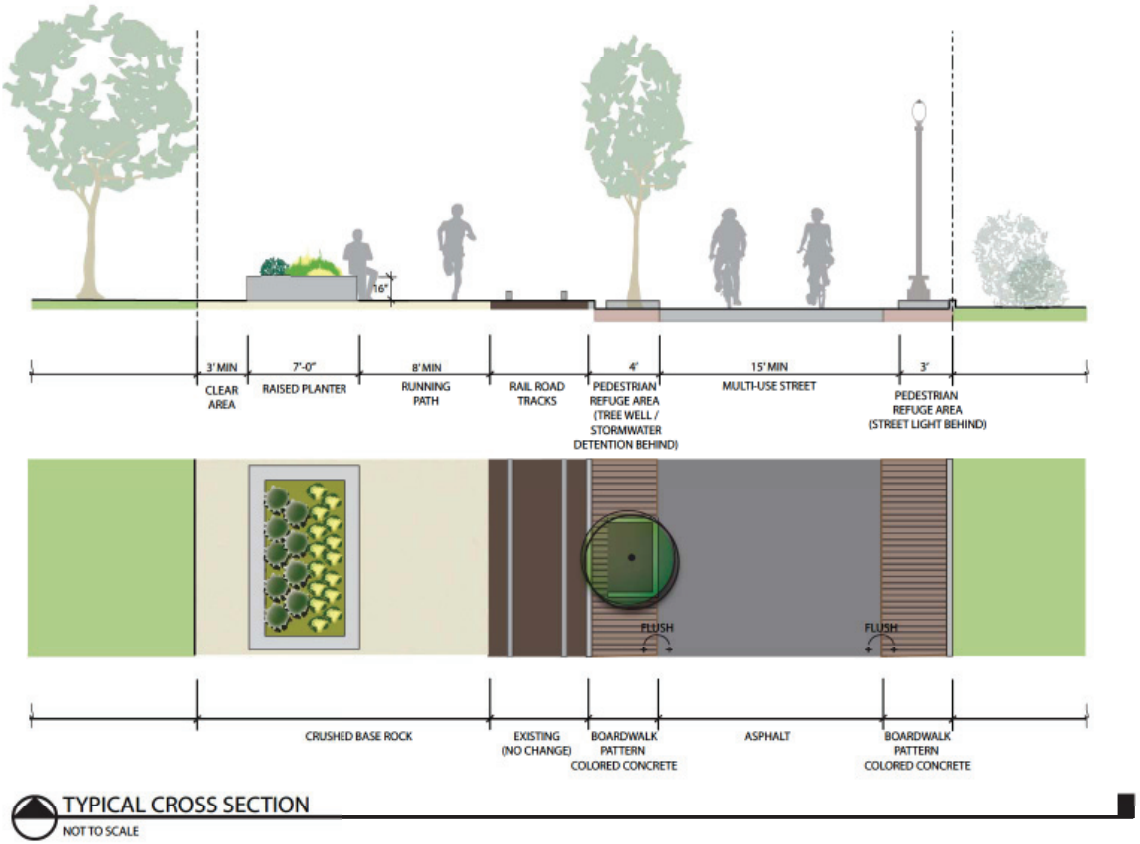
0 20 40 Feet



L Street Concept Plan

Sheet 3 of 4
Arcata Rail With Trail
Date: 6/28/10



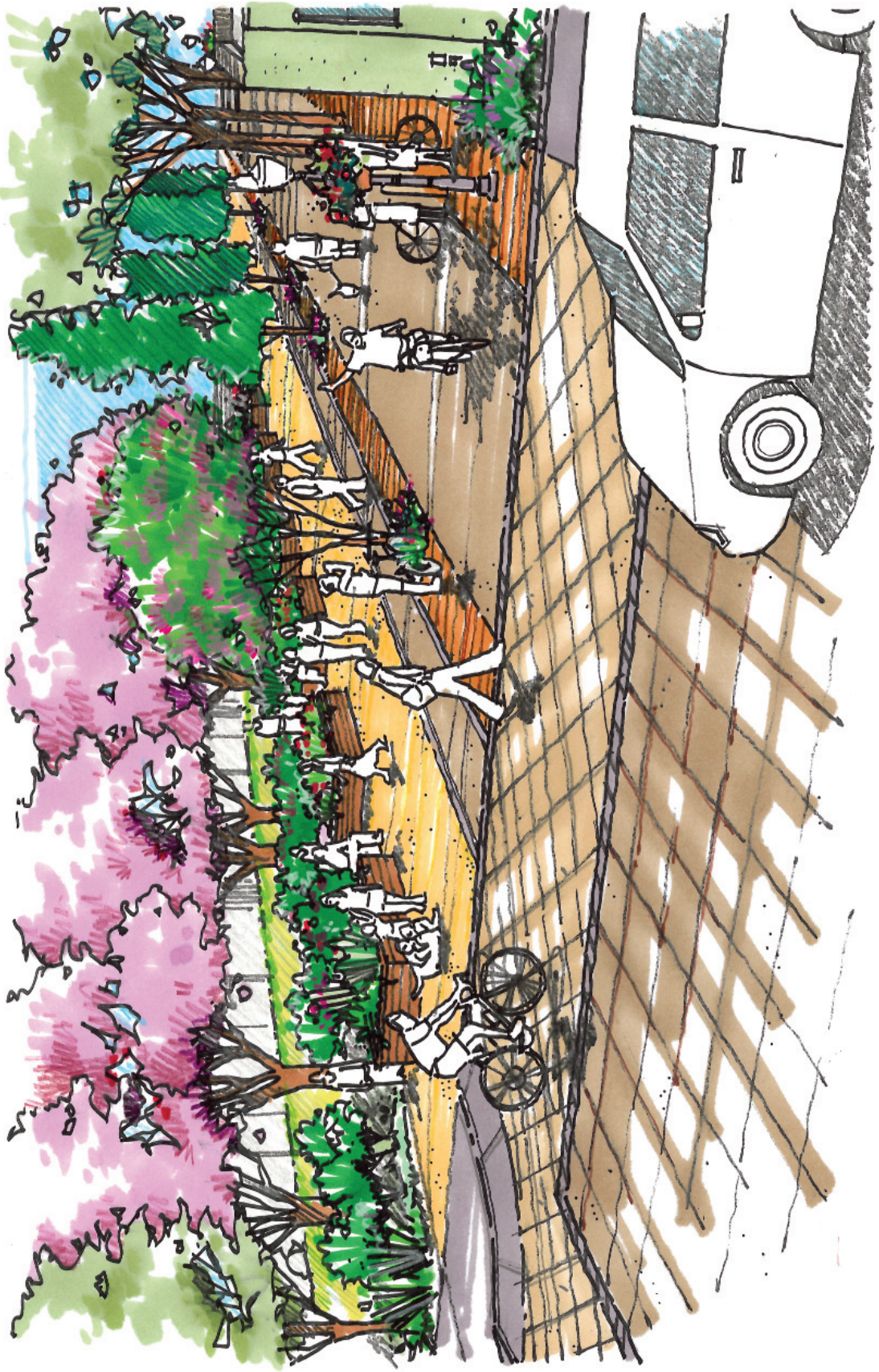


TYPICAL CROSS SECTION
NOT TO SCALE

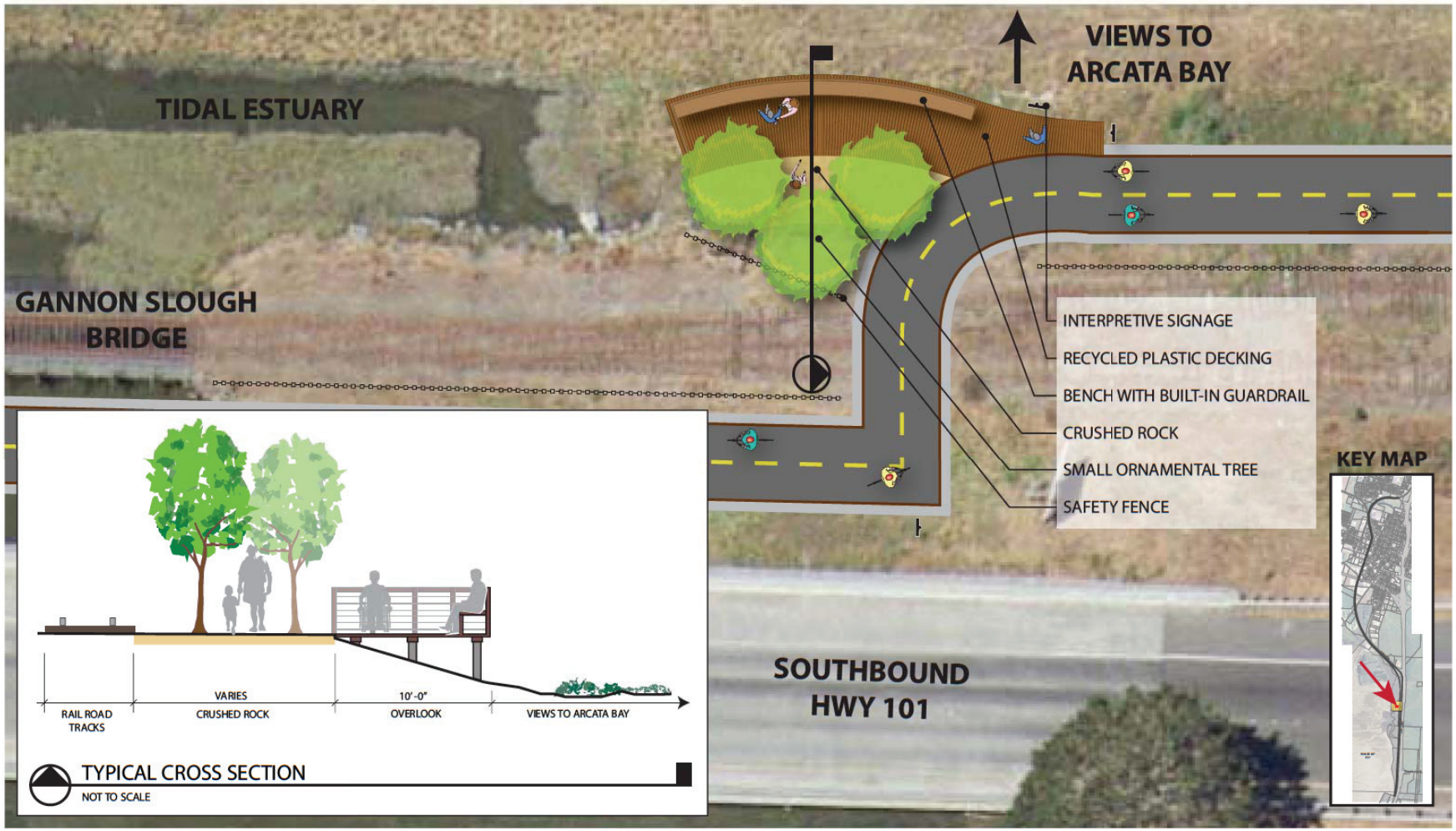
L Street Concept Plan

Sheet 4 of 4
Arcata Rail With Trail
Date: 6/28/10

0 20 40 Feet



L Street will be where the city and the trail converge, creating a vibrant community gathering space.



Gannon Slough Overlook

Arcata Rail With Trail

Date: 6/28/10

NOT TO SCALE

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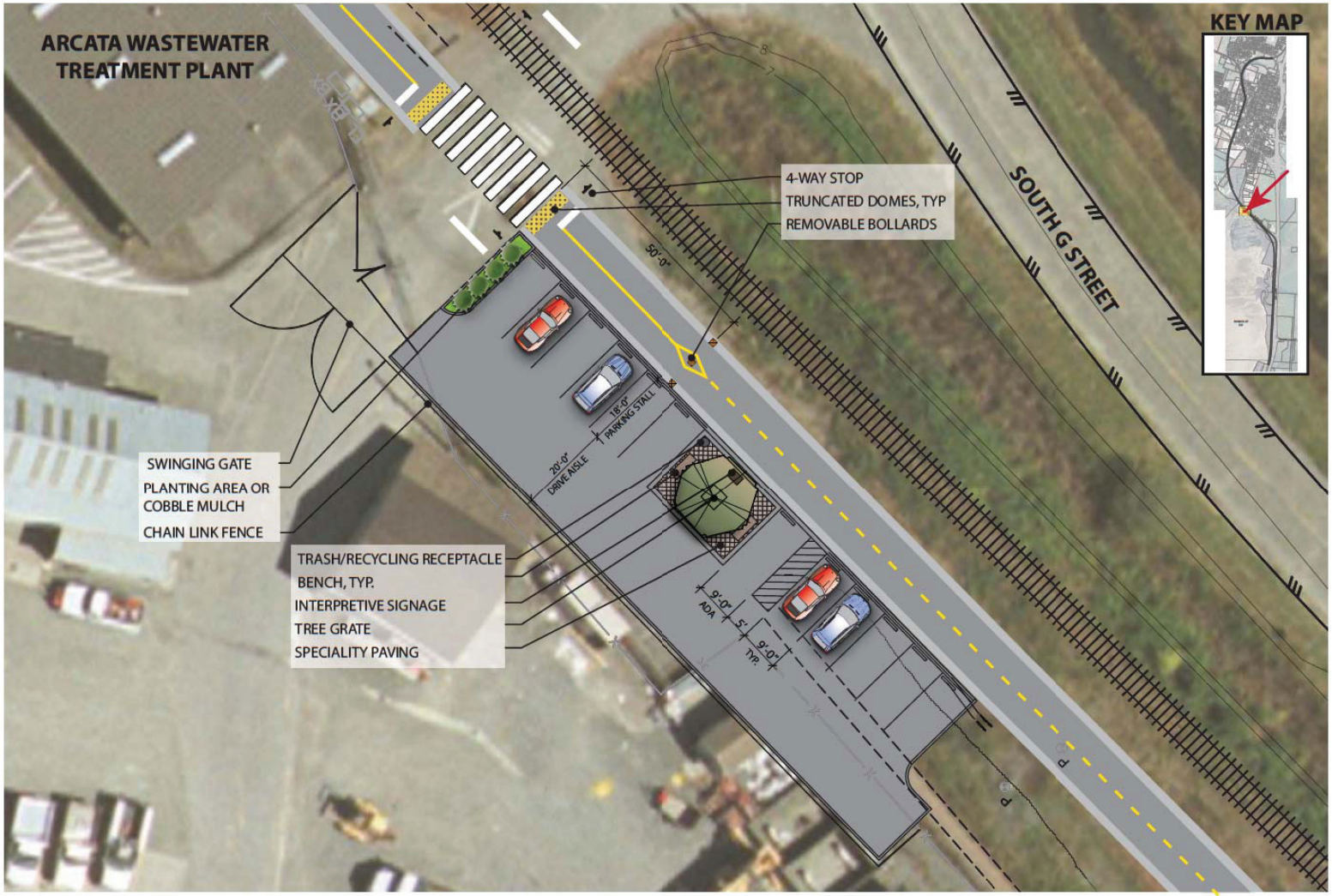
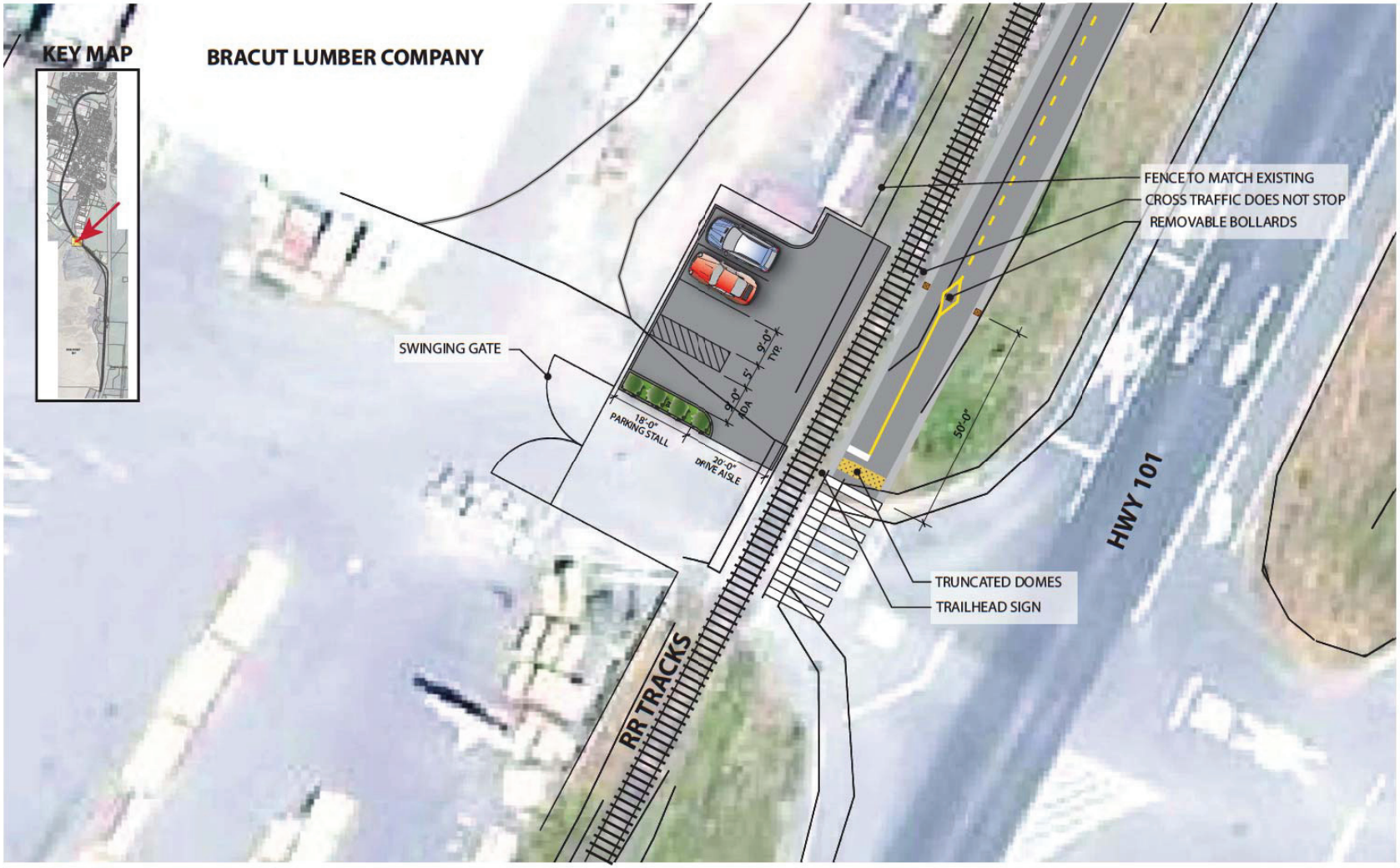


Arcata Wastewater Treatment Plant Trailhead

Arcata Rail With Trail
Date: 6/28/10

0 20' 40'



Bracut Trailhead

Arcata Rail With Trail

Date: 6/28/10

0 20' 40'

INTERPRETIVE SIGNAGE

Humboldt Bay is ripe with opportunities for ecological and historical interpretation. Key locations near trailheads and other high use areas are the targets for developed interpretive signage. For example, the areas near the Arcata Wastewater Treatment Plant and Wildlife Sanctuary are prime locations for interpretive ecological signage providing trail users with education about waste water reclamation and sensitive species in the area. Other interpretive signage might focus on historic and cultural themes – specifically indigenous people, the timber industry and railroad history.

Breathtaking views of Arcata Bay (Photo by A.Laird, 2009)

Interpretive Signage Themes

Humboldt Bay Ecology

Humboldt Bay is an ecologically rich area under considerable stress from human activities. Key physical factors in the Humboldt Bay ecology include the watershed and geology and marine, riparian, salt and freshwater marsh habitats and associated sensitive species.

Root system of wetland marsh plants.

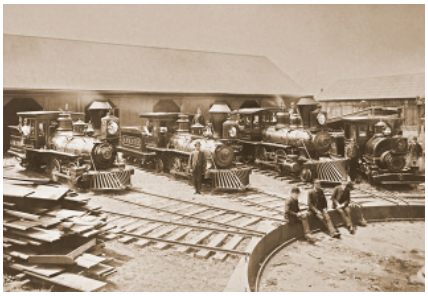
Concept:

The Humboldt Bay attracts an incredibly diverse collection of species. The mixture of fresh and salt waters in this area near the trail creates a valuable habitat and provides numerous opportunities for wildlife viewing. This interpretive sign should illustrate the habitat and provide examples of types of species to be expected.

Location: Arcata Marsh and Wildlife Sanctuary (S3)

Wastewater Reclamation

The Arcata Wastewater Treatment Plant and Wildlife Sanctuary are recognized as a progressive and innovative way to treat wastewater. The secondary treated water now flows through the chain of constructed treatment wetlands and enhancement marshes, and after two months it is piped into the bay, often cleaner and clearer than the bay water itself (Eisenberg 1990). Since the creation of the Arcata Marsh and



Arcata & Mad River Railroad Engine House Circa 1893 (Photographer unknown)

Wildlife Sanctuary, the landscape has changed. Plants have reclaimed the previous dumping sites, and prior "wildlife" that consisted of rats, house cats, and seagulls has been adopted by close to 200 species of birds, as well as many other animals.

Concept:

The oxidation ponds, treatment wetland and enhancement marshes that make up the Arcata Wastewater Treatment Plant hide an amazing process below the surface. What is going on under the water? The sign panels for this site should illustrate these subsurface processes to educate the public as to nature's scrubbing microorganisms that live on the roots of the plants and how they breakdown pollutants in wastewater.

Location: Arcata Wastewater Treatment Plant trailhead (S4)

Arcata and Mad River Railroad History

While the timber industry dominated Arcata's economy, the need for railroads boomed. The Arcata & Mad River Railroad began as the Union Wharf and Plank Walk Company. Some historians call it the first operating railroad in California. In 1860 Union became the city of Arcata and the railroad in time became the Arcata & Mad River Railroad.

Concept:

One of the highlights of the Arcata Rail with Trail is the historic railroad alignment that it follows. The northern gateway to L Street is the ideal location to celebrate the history of the railroad in Arcata. Just north of 12th the area opens up before narrowing down directly adjacent to the train tracks. In this space we envision a small plaza with paving replicating the pattern of rails and ties at a roundhouse station. A faux façade could be constructed to one side with open archways. A historic train engine or train car would ideally sit on the plaza.

Location: Northern Gateway to L Street (S2)

Giant Redwood
(Photo by Augustus William Ericson)

Seven-foot diameter California Redwood cross-section with historic events marked on the rings

Arcata Timber Industry History

For many years the timber industry dominated Arcata's economy. As the European settlers' population grew they began expanding and developing around Humboldt Bay. Initially drawn to the region by the gold rush, European settlers began utilize other resources. By 1870, most of the wetlands were diked and drained for agricultural purposes (City of Arcata, 2006). Settlers began to realize the value and abundance of timber and as such it became the new popular resource for harvesting.

Many photographs at the time captured the enormous quantity of lumber produced throughout the region. One photographer, Augustus William Ericson (1848 - 1927), an Arcata resident, documented incredible images that would be ideal for the Arcata Rail with Trail interpretive signage.

Concept:

The Larson Park site was chosen as an interpretive location because it was the site of a lumber mill. The interpretive panels at this location should illustrate past timber

industry practices and how and why they have evolved to be more sustainable.

Location: Larson Park (S1)

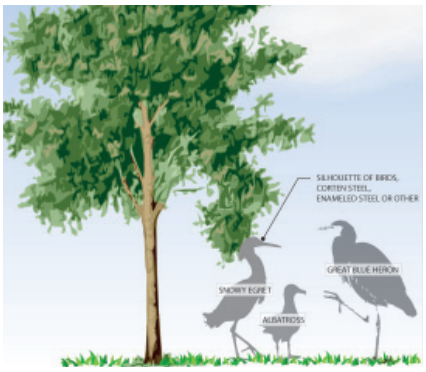
Migratory Birds

Historically surrounded by towering redwood forests, Humboldt Bay still provides invaluable habitat for over 230 bird species, many of which are migratory. Over 100,000 migratory birds stop at the bay on their way up and down the Pacific flyway.

Concept:

The interpretive sign panels at the Gannon Slough Overlook offer a unique opportunity to highlight the variety of species and to educate the public. Sign panel silhouettes in the shape of birds common to the area could be placed in the landscape near the overlook. Each panel could include the name and brief description of habitat, nesting habits and migration routes of each species.

Location: Gannon Slough Overlook (S5)



Arcata Marsh Birds (Photo by Jack Hopkins, courtesy Humboldt County RVB, redwoods.info)

Wiyot Village

The Wiyot people were the original inhabitants of Humboldt Bay and the surrounding areas. The Wiyot lived off the land for generations practicing ancestral traditions such as basket weaving, hunting, fishing, and gathering for food and medicine. Prior to contact with European settlers there were roughly 2,000 Wiyot in the area (Wiyot, 2004). On the morning of February 26, 1860, European settlers massacred Wiyot men, women, and children, only about 200 Wiyot people were left. Wiyot now live on the Table Bluff Reservation with 550 native members (Wiyot, 2004).

Concept:

The Wiyot tribe has requested that no historic sites be revealed to the public. The City of Arcata should continue to work with the Wiyot tribe to further develop the following concept. The Wiyot are well known for intricate basket weaving. They used baskets for both practical uses (acorn mush, and carrying water) to ornamental uses (hats). At an interpretive site (location to be determined) a large replica basket in bronze could accompany a sign panel detailing the daily life of Wiyot and emphasizing the basket uses and their diet.

Location: tbd

Wiyot Woman and Child, circa 1800s, Smithsonian Collection (Wiyot, 2008)

Arcata Rail with Trail: Interpretive Signage Plan

S Interpretive Signage Opportunity

- S1 Interpretive information about Arcata timber industry History.
- S2 Entry monument and interpretive information about Arcata railroad history and bicycle safety.
- S3 Interpretive information about Humboldt Bay, freshwater marshes and associated sensitive species.

Interpretive Sign Styles

Artistic freestanding sign with corten steel frame

Sign with corten steel frame and post mount

Arcata Rail with Trail: Interpretive Signage Plan

S Interpretive Signage Opportunity

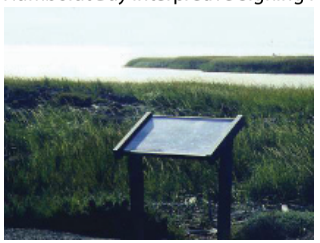
S4 Interpretive information about waste water reclamation.

S5 Interpretive information about the mingling of fresh and salt waters, species diversity and migratory birds.

Humboldt Bay Interpretive Signing Program Themes

Agriculture & Geese	Eelgrass	Marine	Slough
Beach & Plover	Fishing	Riparian	Watershed
Drains to Bay	Freshwater Marsh	Salt Marsh	Water Trails
Dunes	Geology	Ship & Rail	Wiyot Village

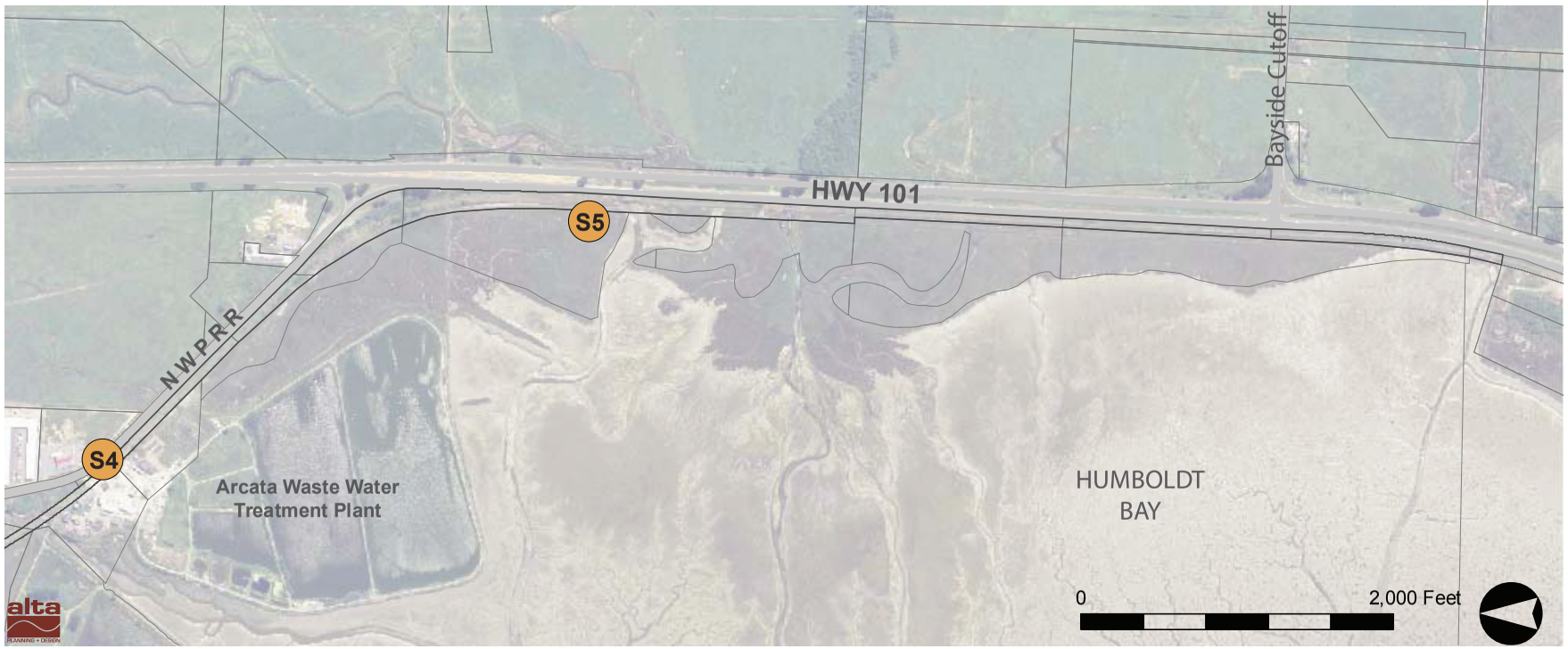
Humboldt Bay Interpretive Signing Program Examples



Standard NPS-style framed straight-edged sign panel

Unframed straight-edged sign panel

Photos from Redwood Community Action Agency



CORRIDOR MANAGEMENT PLAN

The Arcata Rail-with-Trail Corridor Management Plan addresses management issues throughout the study area relating to use and design of the facility. Given the potential future active status of the NCRA railroad, the path will be considered a rail-with-trail (RWT), defined as a multi-use trail located on or directly adjacent to an active railroad line (as opposed to a rail-to-trail, located on an abandoned rail line). For most such facilities, the development of a management plan represents a substantial commitment not only to the public, but also to the owner and/or operator of the rail line. Trail Safety and Trail Maintenance Plans are included as part of the overall Corridor Management Plan. These describe the safety, security and maintenance activities in greater detail.

The following guiding principles shape the Arcata RWT Corridor Management Plan:

1. Provide an accessible trail
2. Provide an enhanced outdoor recreation opportunity including high-quality construction and maintenance
3. Design to minimize user conflicts
4. Engage active volunteer patrol and community input
5. Provide interpretive opportunities, especially opportunities relating to historical and natural resources

1.1 User Groups

A Trail management plan must consider needs of the users of the facility and the context in which it will be built, as discussed in Chapters 1, 2, and 3.

1.2 Managing Trail User Conflicts

Though most multi-use trail experiences are pleasing and enjoyable, conflicts between trail users may occur that can have serious consequences. In these cases, the challenges usually relate to a trail user's style of activity (mode of travel, level of experience, etc.), trip focus, expectations, attitudes toward and perceptions of the environment, and level of tolerance for other activities. Designed into the Arcata Rail-with-Trail are a number of techniques for minimizing potential conflicts. These design techniques include adequate trail width to accommodate multiple users, adequate mileage to allow for a varied experience, clear and consistent signage and establishment of multiple access points.

In order to manage multiple user groups with potential conflicts, the City will address user conflicts as they arise, based on patterns of usage and recorded incidents. The City will also review complaints and accident reports on an on-going basis to determine if there is a pattern of user conflicts that needs to be enforced. The City will take additional measures to address the challenges of shared use, as necessary, such as:

- User involvement and outreach. Build understanding and good will by finding mutually agreeable solutions, and then inform the community (through signs, maps, brochures, Internet, media campaigns, sponsorship of "user swap" activity days, joint trail building days, etc.) to actively and aggressively promote responsible behavior.

- Uniformed presence on the trail. This can be in the form of police or ranger patrols, maintenance staff, volunteer trail patrols, work crews, etc.
- An efficient and appropriate maintenance program that addresses signs, sight distances, vertical and lateral clearances and surface maintenance.
- Regulations and enforcement. For those not influenced by outreach and education, employees and volunteers must have the authority to enforce safe and courteous behavior, with regulations posted prominently at trailheads and other appropriate locations. The four broad areas of regulations include:
- Acceptable uses and right-of-way (ROW) (who must yield to whom) (ex: Motor vehicles, other than power assisted wheelchairs, are prohibited; Stay on the trail; No loitering; no vandalism; no dumping; Keep to the right except when passing; Yield to on-coming traffic when passing; Bicycles always yield to pedestrians; Give a vocal warning when passing; Pets must always be on short leashes; Travel no more than two abreast; Alcoholic beverages are not permitted on the trail; Bicyclists and pedestrians yield to maintenance vehicles)
    - Speed limits (ex: 15 mph speed limit)
    - Hours of use
    - Objectives of resource protection (e.g., protect waterways by minimizing erosion and sedimentation, enhance native vegetation by preventing the spread of invasive species and minimizing disturbances to vegetation)
- Monitoring progress. The ongoing effectiveness of decisions made and programs implemented – in the context of clearly understood and agreed-upon objectives – must be monitored for each trail area, with flexibility and willingness to adapt strategies for individual situations.

Dog Use Management

Dog handlers and their pets enjoy trails for a number of reasons – mobility assistance, personal security for handlers, and for the pleasure and fitness of animals. However, dogs can frighten or chase people and wildlife, and, adding dogs to the mix of walkers and cyclists may create conflicts. Within Arcata, dogs are not allowed to run at large. Arcata Municipal Code §5207 requires dogs be either secured within an enclosure or on a leash at all times. Limiting negative impacts on the environment and ensuring a good experience for all visitors requires effective dog management. Techniques to help manage dog use on the trail include:

- Installing signs at trailheads and along trails, pertaining specifically to dog handlers, stating the importance of compliance with regulations including:
    - Staying within the trail corridor.
    - Employing a greet-before-you-meet etiquette to interactions with people and other dogs on the trail.
    - Picking up waste as a courtesy to others and to minimize the spread of disease.
- Providing a dispenser filled with disposal plastic bags for waste pickup and providing trash receptacles for deposit at trail entrances.
- Providing water, where possible, reminding handlers that water is vital and dog handlers should carry a supply.

- Posting notices recommending dog handlers never leave dogs tethered along the trail or locked in a car, even for a short time, during warm weather.
- Reminding handlers to check for and remove ticks, prickly seed heads, and burrs that can cause harm to the dogs.
- Limiting the number of dogs per handler (maximum of three per handler, one leash and collar per dog, etc.).
- Requiring a City permit for Commercial Dog Walkers.
- Providing an education program that includes the use of "dog patrollers" as part of an overall volunteer program and shared-use training days where dogs can become accustomed to other users (bicyclists, skaters, etc.).
- Posting classes about training and obedience classes.
- Incorporating tiered enforcement to include verbal warnings (providing leashes to handlers whose dogs are unleashed); fines; and prohibition of handlers found to be routinely noncompliant with the rules.

Additionally, in any areas where off-leash "Voice and Sight Control" is permitted, require that dog handlers:

- Respect "on leash" and "no dog" trail designations.
- Keep dogs within sight and under verbal control at all times, regardless of distractions.
- Keep dogs on a short leash in staging areas – and leash within 100 feet (30m) of entrances and other constructed trail areas or destinations that receive heavy, concentrated use – to minimize disturbances and interaction, and to protect dogs from vehicles that are backing up and other hazards.
- Leash dogs 6 feet (10m) from stream crossings and prohibit entry into streams.
- Initiate a Voice and Sight Dog Tag Program, similar to the City of Boulder, Colorado dog management program. This program requires handlers to watch a video on voice and sight control, register in the program, and display a special tag on all dogs under voice and sight control[1].

Directing and Managing Trail Use

The Arcata Rail-with-Trail will be available to a variety of uses and managers should expect that the public will practice proper etiquette to control speed, direction, and position. In areas with high user volumes, physical elements to separate users by direction or mode of travel may be desirable. For instance, a center stripe painted on the trail can separate users by direction, or an adjacent trail with a different surface material may be created for runners. In other cases, signs may suffice.

1.3 Signage Plan

Uncertainty about direction or appropriate etiquette can create user conflicts or lead people to misuse facilities or resources. However, signage can help define trail use and enhance users' experiences. Signs generally fall within one of three categories depending on their intent: directional, warning or informational.

Directional

1 *City of Boulder, Colorado dog management program, www.bouldercolorado.gov.*

Directional signing may be useful for trail users and motorists alike. For motorists, a sign reading "Bicycle Trail Xing" along with an emblem or logo specific to the trail helps both warn and promote use of the trail. For trail users, directional signs and street names at crossings help direct people to destinations.

The directional signing should impart a unique theme so trail users know the name of the trail and the destination. The theme can be conveyed in a variety of ways: engraved stone, medallions, bollards, and mile markers. At major crossroads and access points, signage helps users find their way and acknowledge the rules of the trail. They are also useful for interpretive education about local culture and history.

Signs like this one encourage pedestrians and slower users to stay to the right, allowing faster users to pass safely on the left. Source: www.tfhrc.gov

Warning

Warning signs alert trail users of obstructions or potential changes (such as an upcoming roadway or railroad intersection, tunnel, reduced sight lines, etc.) that require forewarning. Crossing features for all roadways and railroad tracks include warning signs for both vehicles and trail users. The type, location, and other criteria are in the California Manual on Uniform Traffic Control Devices (CAMUTCD). Adequate warning distance is based on vehicle speeds and line of sight. Signage should be highly visible; catching the attention of motorists accustomed to roadway signs and may require additional alerting devices such as a flashing light or roadway striping. Signing for trail users must include a standard stop sign and pavement marking, sometimes combined with other features such as bollards or a change in trail geometry to slow bicyclists. Care must be taken not to place too many signs at crossings lest they overwhelm the user and lose their impact. According to the CAMUTCD, the bottom of the sign must be at least five feet off of the ground.

Informational

Informational signs can alert trail users to a variety of information, such as permitted uses, hours and seasons uses are allowed, the names of and distances to different points of interest and appropriate trail etiquette. Placement of informational signage is typically at trail entrances and near natural, cultural, or historical resources.

Trail Entrance Signs

Trail entrance signs can range in size from relatively small to large sign boards carrying many messages. Trail entrance signs announce the trail and are visible from nearby parking/staging areas or the local road system. Information presented on trail entrance signs can include:

- Applicable use and management regulations with references to appropriate governing ordinances. Installation of key regulatory signs at regular intervals along the bikeway will help users internalize the rules. This includes "Stay on the Trail," "Cross RR Tracks at Designated Crossings Only," "Bicyclists Yield to Pedestrians," "Pass on the Left," "Slower Traffic Stay Right" and speed limits (if applicable).
- Hours of Operation
- Location maps, trail sponsor recognition
- Accessibility conditions and other ADA-related information (e.g., identify locations of hazards and obstructions)
- Water availability along the trail

- Litter control and dog clean-up responsibilities
- The presence of private property along the trail route and/or any special land use considerations
- Restrictions on smoking and/or the use of matches or lighters during high fire season
- Other rules or regulations

In addition, a wide variety of signs are somewhat specific to trails. These generally deal with trail use, trail behavior, access control relative to adjacent land uses, and direction/location messaging. There are different management philosophies about posting exclusionary sign messages (e.g., no skateboard use) along trails. From trail user and maintenance perspectives, the fewer signs along trails, the higher the aesthetic quality and less maintenance over time. Therefore, exclusionary signs are typically installed only when the situation warrants.

Wayfinding signage in Portland, Oregon directs trail users to various points of interest

Trail Use Signs

Trail use signs indicate the permitted or prohibited type of trail use. Trail use signs are most often located at each trail entrance. Trail use signs are generally within 25 feet of a trail intersection with another trail, intersections with roads and sidewalk access points, or near parking areas. Other signs that sometimes are included near trail entrances include information about neighborhood programs that are working to discourage criminal behavior and promote a well-managed trail such as "Neighborhood Watch" and "Adopt-a-Trail" signs.

Interpretative Signs

Interpretive signs indicate natural resource, cultural, or historical information of interest along the trail. The design of these signs may act as educational tools by briefly describing the characteristics of the resources. Siting of these signs should be so the stationary reader does not present a hazard to movement along the trail. The interpretive sign plan can be found in Chapter 10.

1.4 Risk Management

This section discusses security and public safety on the Arcata Rail-with-Trail. The Arcata Rail-with-Trail Safety Plan addresses additional management issues, including crime prevention, emergency response procedures, fencing and liability.

Security and Public Safety

Properly designed and managed, the Arcata Rail-with-Trail will provide a reasonable level of safety and security. Studies by the Rails-to-Trails Conservancy indicate that crime and other problems on trails are generally the same as the adjoining communities. These studies have also shown that high use is the best and most effective method of enhancing safety and security. While the rural aspect of this project is somewhat unique, trails in isolated locations exist throughout California have generally not experienced significant safety problems. The approach to safety and security outlined in the Trail Safety Plan details proactive safety and security for trespassing and crime prevention, emergency response, security and patrols and fencing. Safety and security measures involving signage (ex: posting management regulations) are addressed in **Section 1.3** of this document.

In order to maximize safety and functionality for users, and to minimize liability exposure for the City of Arcata, the NCRA and other property owners, the trail design will meet all mandatory and advisory standards as identified by Caltrans in the Highway Design Manual, CAMUTCD and the Americans with Disabilities Act (ADA).

Safety and Liability Issues

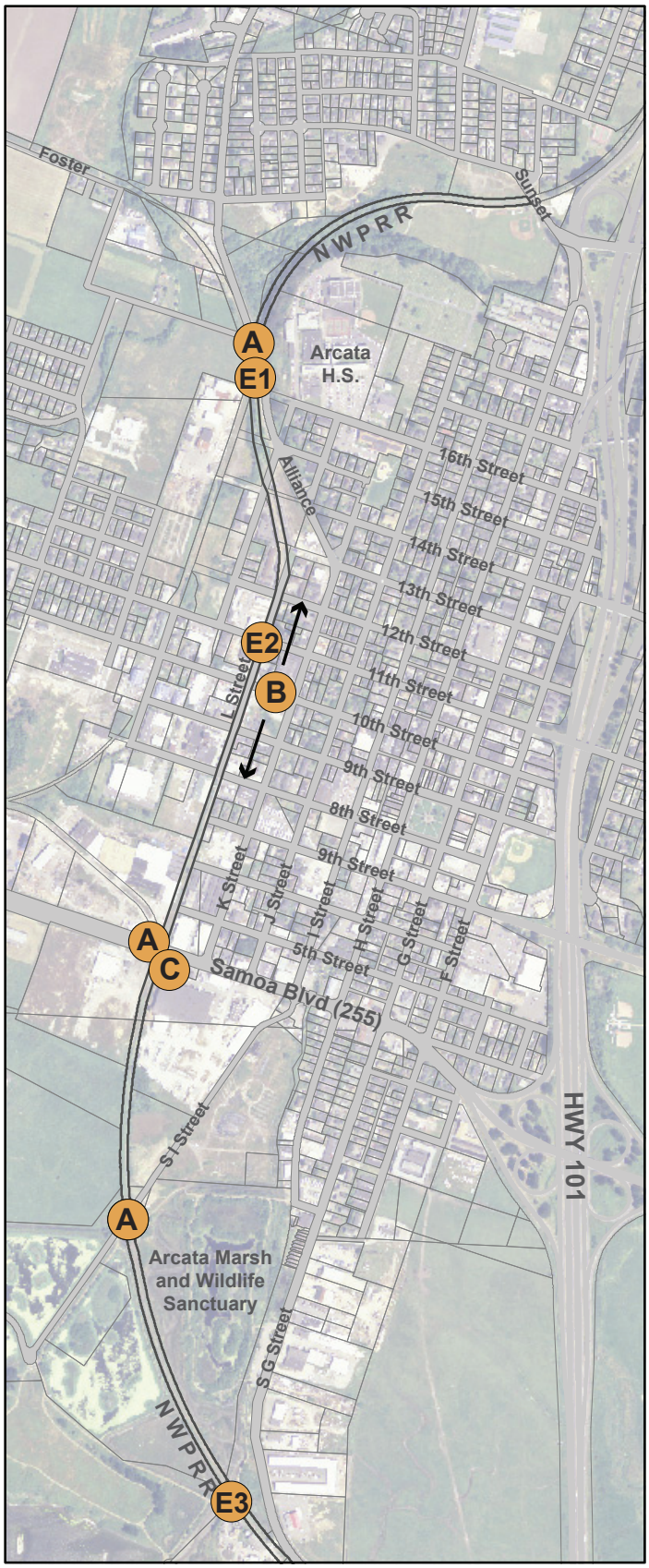
The trail may experience legal costs in the form of insurance premiums, litigation, and settlements. The City of Arcata, the NCRA and other property owners should develop a Memorandum of Understanding (MOU) to address legal, maintenance, and emergency services costs and protocols. With proper design and management, the trail should not represent a significant increase in liability costs for the City, however, the City may wish to include a cost factor for this based on the cost of an insurance policy.

Liability is an important area of concern in virtually all rail-with-trail projects. In the context of the Arcata Rail-with-Trail, liability refers to the obligation of the trail operator or owner to pay or otherwise compensate a person who is harmed through some fault of the trail operator or railroad. A recent nationwide study of rail-with-trails, Rails-with-Trails: Lessons Learned (2002) provides substantial guidance concerning the limits of liability and ensuring user safety.

The Arcata Rail-with-Trail will be considered a shared-use corridor, and the relationship of the parties in a shared-use corridor will be influenced by which entity holds the dominant property interest. For many shared-use corridors, it is the trail that is the incidental use and must take into consideration the interests of the primary user. This is true of the Arcata Rail-with-Trail, as the primary user of the rail corridor is the NCRA.

In addition to the NCRA, other landholders include the City of Arcata, Caltrans, U.S. Fish and Wildlife Service and two private property owners. This is an atypical situation, as most rail-with-trails are owned by one property owner, such as a railroad or a state agency. For the Arcata Rail-with-Trail, the question of ownership transfer or acquisition of an easement with all the property owners presents a

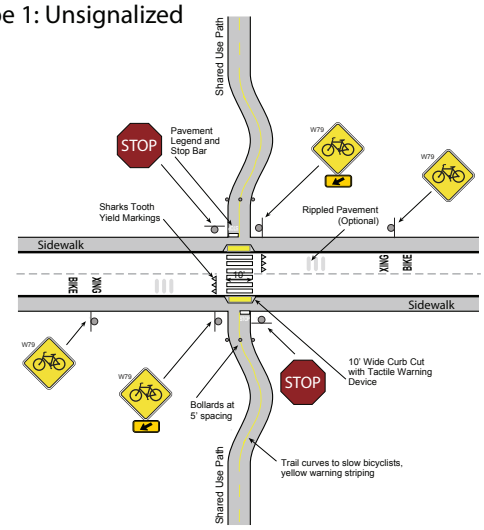
Arcata Rail with Trail: Sign Plan - North



alta PLANNING + DESIGN

0 2,000 Feet

A Type 1: Unsignalized

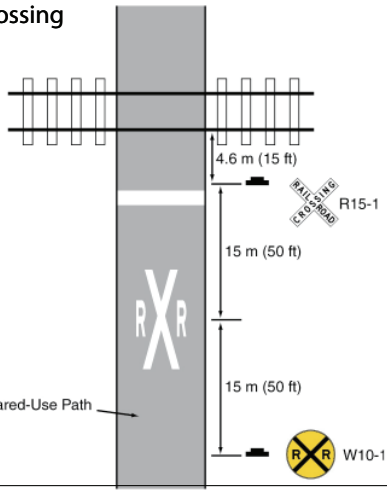


Type 1 crossing improvements are recommended at Samoa Boulevard. Passive warning devices include: bike crossing warning signs, stop signs and stop bars for trail users, trail curvature for slowing, ladder style crosswalk, curb cuts, tactile warning devices and bollards.

B Bicycle Boulevard

Install traffic calming measures for vehicles including round abouts, speed humps, chokers, landscaped medians and stop signs. Use bicycle route signs and pavement markings to enhance way-finding for cyclists. Include loop detectors or push button activaated signals at major cross roads.

C Railroad Crossing



D Driveway Treatment

E Way-finding Element
(Details next page)

alta PLANNING + DESIGN

0 2,000 Feet

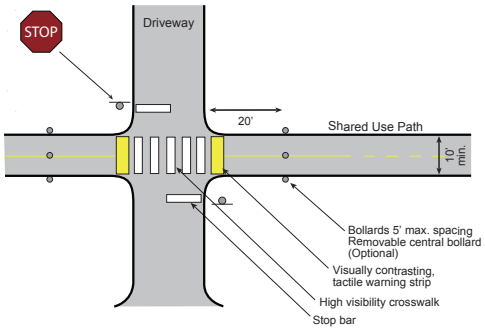
Arcata Rail with Trail: Sign Plan - South

A Type 1: Unsignalized

B Bicycle Boulevard

C Railroad Crossing

D Driveway Treatment



Driveways are encountered throughout the project area. Warning signs and striping should alert both vehicles and pathway users of the intersection. Improvements include: ladder style striping, tactile warning strips, stop bars, stop signs and bollards.

E Way-finding Element

Way-finding signs should be included at kay decision points. Signs should include information with distance to area destinations.

E1 Include: direction and distance to downtown, Arcata Marsh and Bracut Marsh.

E2 Include: direction and distance to downtown, Arcata Marsh and City of Eureka.

E3 Include: direction and distance to downtown, Arcata Marsh and Pacific Coast.

E4 Include: direction and distance to downtown, Bracut Marsh and City of Eureka.

distinct challenge. To maintain greater control on use and operation of shared physical space, typically a license or lease agreement is negotiated detailing the development and operation of the trail. This is discussed in greater detail later in this chapter.

It is important to recognize the potential risks associated with human activity near moving trains. Given the possibility of an accident, however remote, it is understandable that primary property owners will want to shield themselves as best as possible from potential lawsuits.

Overview of Concerns

There are several liability concerns associated with the location of a trail adjacent to a railroad corridor. These consist of the concern that:

- The trail users might not be considered trespassers if the NCRA invites and permits trail use within a portion of its ROW, and if that were the case, the concern that the railroad might therefore incur a higher duty of care to trail users than they would otherwise owe to persons trespassing in the corridor.
- Incidents of trespassing might occur with greater frequency due to the proximity of a trail.
- Trail users might be injured by railroad activities, such as an object falling or protruding from a train or from accidental exposure to hazardous materials.
- Injured trail users might sue the NCRA even if the injury is unrelated to railroad operations.

Definitions and Laws

As the owners and occupiers of the rights-of-way, railroads and property owners have legal duties and responsibilities to persons both on and off their premises. Property owners have a duty to exercise reasonable care on their premises to avoid unreasonable risk of harm to others on adjacent properties. Potentially, railroads may be found liable if the use of their ROW creates an unreasonable risk to persons on an adjacent property such as through derailments or objects falling off the trains.

In most states, the duty of care owed to persons who enter another's property depends on whether the injured person is considered a trespasser, a licensee, or an invitee. A trespasser is a person who enters or remains upon land in possession of another without a privilege to do so, created by the possessor's consent or otherwise. A licensee or invitee is a person on the owner's land with the owner's permission, express or implied. Trespassers are due a lesser duty of care than invitees and licensees.

Unique characteristics of the Arcata Rail-with-Trail that may affect the extent to which liability is potentially enlarged include:

- Ownership of land by multiple parties
- The narrow ROW of the corridor in certain segments
- The possible need to cross the railroad tracks in one or more places

Available Legal Protections

Potentially offsetting some or all of a railroad's increased liability attributable to a rail-with-trail are the State-enacted Recreational Use Statutes (RUSs). All 50 states have RUSs, which provide protection to landowners who allow the public to use their land for recreational purposes. A person injured on land made available to the public for recreational use must prove that the landowner deliberately intended to harm him or her. States created RUSs to encourage landowners to make their land available for public recreation by limiting their liability provided they do not charge a fee. Railroad companies and institutions that agree to a rail-with-trail on their property would have limited liability due to these statutes. In California, the following laws and statutes apply:

Table 1-1: California Applicable Laws and Statutes

Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
Cal.Civ.Code § 846 (West 2000.)	Cal.Pub.Res.Code § 5070 et seq. (Deering 2000.) Recreational Trails Act Limits liability for adjacent property owners	Cal.Gov't Code §810-996.6 et seq. (West 2000.)	Cal. Pub. Util. Code § 7626 et seq. (West 2000.) RR liable for injury to live-stock, domestic animals injured due to unfenced right-of-way

The California Recreational Use Statute (Civil Code Section 846) covers: public use of land for recreational, sightseeing, and other purposes; landowner's liability limited; and exceptions. The Statute encourages landowners to open up with land for recreational use by the public and provides private landowners with immunity from liability for injuries sustained by persons using their property for recreational use. This protection extends not only to landowners but to others with an 'interest in the land' such as holders of leasehold estates.

As specified in the Statute, a recreational purpose includes such activities as fishing, hunting, camping, water sports, hiking, spelunking, sport parachuting, riding, including animal riding, snowmobiling, and all other types of vehicular riding, rock collecting, sightseeing, picnicking, nature study, nature contacting, recreational gardening, gleaning, hang gliding, winter sports, and viewing or enjoying historical, archaeological, scenic, natural, or scientific sites. Although the statute lists recreational uses to which it extends, the California courts have found that the list is not exhaustive and protection extends to other recreational activities not specifically mentioned by the statute. For statutory protection to apply, the injured party must have entered the land for recreational purposes; if the party who was injured entered the land for purposes other than recreational, the statute's protection will not apply.

A landowner who gives permission to another to enter or use their land for recreational purposes does not thereby extend any assurance that the premises are safe for such purpose nor constitute the person to whom permission has been granted the legal status of an invitee or licensee to whom the landowner owes a duty of care. The statute specifically carves out the following three circumstances in which statutory immunity will not apply: where the landowner has committed a willful or malicious failure to warn or guard against a peril, granted permission in exchange for consideration, or extended an express invitation to the injured party.

Finally, the statute allows landowners or others with an interest in real property to present a claim for reasonable attorney's fees (within limits) in certain circumstances. Landowners who have given permission to the public to enter upon or use their land pursuant to an agreement with a public or nonprofit agency for purposes of recreational trail use may present a claim for reasonable attorney's fees when a civil action is brought against them by a person who is alleged to have suffered an injury or sustained damage on their land.

Liability Exposure Reduction Options

Besides the federally mandated RUSs, there are additional available legal protections that reduce risk for adjacent property owners on rail-with-trail projects. **Table 1-2** lists the options for additional measures.

Table 1-2: Liability Protections

Options	Intent
Trail or rail-with-trail state statute	Create state legislation that limits liability
Trespassing legislation	Create state legislation that specifically prohibits trail users from going onto railroad property outside of the trail
Insurance	Purchase or provide liability insurance in an amount sufficient to cover foreseeable liability costs
Transfer of ownership	The City enjoys additional limitations of liability for injuries occurring on City-owned property

Property Control

As noted earlier, the relationship of the parties in a shared-use corridor will be driven to a great extent by which entity holds the dominant property interest. The type of property control influences both the ease of implementing the project and the liability burden. There are three types of property arrangement: acquisitions, easements, and licenses.

ACQUISITIONS

To accommodate the concerns of property owners with respect to the location of a trail in an active ROW, the City of Arcata could look to own the rail corridor itself. This internalizes the liability and coordination efforts. The City of Arcata is treated differently from either NCRA or other property owners due to its unique status as a sovereign entity. This option transfers basic liability to the City and would give the City the authority to locate the trail in the corridor. This was a successful strategy for the City of Portland's Springwater on the Willamette Trail, for which the regional government, Metro, purchased the railroad corridor from a utility. Trail development agencies interested in pursuing a rail-with-trail should acquire the affected railroad property for public ownership whenever feasible.

EASEMENTS

In most instances, full ownership acquisition is not necessary for trail development, and, in many cases, is not an option. Easements, which come in many forms, typically are acquired when the landowner is willing to forego use of the property and development rights (or, if zoning permits, transfer the development rights) for an extended period. The landowner retains title to the land while relinquishing most of the day-to-day management of the property. The trail manager gets sufficient

Operation Lifesaver uses posters like this one to educate the public on railroad safety and trespass prevention

control for trail purposes. The easement is attached to the property title, so the easement survives property transfer. **Table 1-3** provides an overview of easement agreement issues.

Table 1-3: Easement Agreement
A Model Easement Agreement Should:
Guarantee exclusive use or uses compatible with rail-with-trail's activities.
Be granted in perpetuity.
Include air rights if there is any possible need for a structure.
Broadly define purpose of the easement and identify all conceivable activities, uses, invitees, and vehicular types allowed to avoid any need to renegotiate with fee interest owner in future.
State that all structures and fixtures installed as part of a trail are property of grantee.
Include subsurface rights for use by utility franchises.

It is also understood that the major landowner – in this case, the NCRA – would want an easement agreement to address issues on their side. Through cooperative negotiation, the following issues should be addressed in an easement agreement:

- Access needs related to maintenance, etc.
- Trail management plan.
- Future improvements or modifications to the trail.

LICENSES

A license is usually a fixed-term agreement that provides limited rights to the licensee for use of the property. Typically, these are employed in situations when the property cannot be sold (e.g. a publicly-owned, active electrical utility corridor), or the owner wants to retain use of and everyday control over the property. The trail management authority obtains permission to build and operate a trail. But it will have little control over the property, and may be subject to some stringent requirements that complicate trail development and operation. **Table 1-4** provides an example of model license agreement language.

Table 1-4: License Agreement
A Model License Agreement Should:
Provide an acceptable term length with an option to renew.
Identify all conceivable activities, uses, invitees and vehicular types.
Provide clarity on maintenance responsibilities.
Specify limits on other uses of license property.

As with easement agreements, property owners would want a license agreement to address issues on their side. Through cooperative negotiation, the following issues should be addressed in a license agreement:

- Access needs related to maintenance, etc.
- Trail management plan.
- Future improvements or modifications to the trail.

Risk Reduction

Visible signage, the use of physical barriers (such as fences, walls, vegetation, grade differences, and ditches) and good design are prudent liability protection strategies. Trail users should be warned at the trailhead and at any other entrances to stay

off the railroad tracks, particularly if there are no physical barriers between the trail and the rail corridor at that location. If the rail-with-trail is clearly designed to indicate that the railroad corridor is separate from the trail, trail users injured while within the railroad corridor or on the railroad tracks should be considered trespassers to which no special duty of care is owed. A well-designed rail-with-trail can actually reduce trespassing by channelizing pedestrian crossings to safe locations or by providing separation or security. A well-designed rail-with-trail should have the effect of reducing both trespassing, as well as risk of being held responsible for injuries sustained by trespassers.

In addition to physical barriers and trail design, railroad safety education and outreach is an important means of reducing liability exposure and encouraging safe behavior along rail-with-trail facilities.

RAILROAD SAFETY EDUCATION AND OUTREACH

Many railroad companies participate in some kind of active outreach, including posting signs at trailheads and crossings, attending community events, regular monitoring of tracks, and penalties for trespassers. The City of Arcata should work with the local school district to run education programs on rail-with-trail safety. Education programs should target elementary and teen youth. In addition to locally-run programs, most cities also support and participate in Operation Lifesaver.

Operation Lifesaver is a nationally recognized nonprofit organization dedicated to educating the public about the dangers associated with rail grade crossings and railroad rights-of-way. The program works to end collisions, deaths, and injuries at rail grade intersections and on railroad property. It is sponsored cooperatively by a wide variety of partners, including Federal, State, and local government agencies, highway safety and transportation organizations, and the railroad companies. Trail managers are encouraged to contact their State's Operation Lifesaver Coordinator to arrange for presentations about pedestrian safety and railroad trespass prevention for trail clubs and other trail users[2].

Operation Lifesaver can be an extremely valuable resource for both rail-with-trail managers and railroad companies. Its award-winning safety materials include videos and brochures about the dangers of rail trespassing, as well as information for pedestrian and bicycle safety at crossings (see **Figure 1-1**). As part of a new rail-with-trail, railroad companies should encourage the State Operation Lifesaver coordinator to arrange safety presentations and other education events for trail users; identify where safety information materials might be made available on a regular basis (e.g., at a trailhead information kiosk); consider whether local bicycle sales or rental shops will distribute safety information; and consider other means for encouraging safe use of approved trails.

Insurance

To the extent practical and reasonable, trail management organizations should purchase or provide liability insurance in an amount sufficient to cover foreseeable liability costs and pay the costs for railroad company insurance for defense of claims. The City should provide liability insurance such as contained in **Table 1-5**. A policy amount of $10 million is consistent with insurance policies carried by other Cities managing similar facilities. Class I railroads often require $5 million to $10 million

2 *See Operation Lifesaver's website: www.oli.org.*

insurance policies for other activities permitted on their rights-of-way.

Table 1-5: Sample Insurance Agreement

Insurance Agreement
At all times while this Agreement is in effect, the CITY shall, at its sole expense, maintain commercial general liability insurance written through an insurance company having a Best's rating of B+13 or better and licensed to do business in the State of California, meeting the requirements stated in this Article 13 in a form satisfactory to NCRA for a policy amount of not less than Ten Million Dollars ($10,000,000) (stated on a per occurrence basis). The policy of commercial general liability insurance shall include the following provisions: (a) The insurance shall not be modifiable or cancelable or non-renewable without 30 days' prior written notice to NCRA (except in the case of cancellation for non-payment of premium in which case cancellation shall not take effect until at least 10 days notice has been given to NCRA). This provision is hereinafter referred to as "Notice of Modification or Cancellation." (b) All policy or endorsement limitations relating specifically to operations on or near railroad property or track(s) shall be eliminated to the extent that they conflict with the obligations set forth in this Agreement. (c) A properly completed certificate of insurance executed by an authorized representative of the insurer or insurers shall be furnished to the other Party prior to the Commencement Date and upon each renewal. (d) The requirements regarding the types and limits of insurance coverage to be maintained as required by this Agreement, and any approval of said insurance by the other Party and/or its agents, are not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by either Party pursuant to this Agreement, including but not limited to, the provisions concerning indemnification contained in this Agreement. (e) CITY shall upon knowledge notify NCRA within twenty-four (24) hours after the occurrence of any accident or incident on the PATH or adjacent property which could give rise to a claim under any of the insurance policies required hereunder. (f) Notwithstanding any other provision of this Agreement, the CITY may self-insure for any risk set forth in this Agreement in the manner and to the extent that the CITY self-insures for similar risks with respect to its operations, equipment and property. To the extent the Certificates of Insurance provided pursuant to this Legal Responsibilities Section do not describe the self-insurance, the manner in which such self-insurance is provided and the extent of such self-insurance shall be set forth in a Certificate of Self Insurance, delivered to NCRA and signed by an authorized representative of the self-insured Party, which fully describes the self-insurance program and how the program covers the risks set forth in this section. Insurance provided by a joint powers agency insurance pool shall be considered self-insurance for the purposes of this paragraph. If at any time during the term of this Agreement the CITY elects to not self-insure, CITY shall comply with all applicable provisions of this section to the extent it does not so self-insure. (g) Workers' Compensation and Employer Liability. CITY and its contractors shall cover or insure under the applicable laws relating to workers' compensation insurance, all of their employees working on or about the Improvements, and CITY shall defend, protect and save harmless NCRA, its directors, officers, employees, agents and volunteers from and against all claims, suits, and actions arising from any failure of the CITY or any of CITY's contractors or assigns to maintain such insurance. Evidence of such insurance satisfactory to the NCRA will be delivered to NCRA concurrent with execution of this Agreement or within ten (10) days thereafter or on such other date agreed to by NCRA in writing.

1.4 Environmental Protection Strategies

Trails are often located in areas with legally protected species or in biologically diverse areas with plant materials having high habitat value. Portions of the Arcata Rail-with-Trail will traverse sensitive resources including wetlands, a slough, and riparian corridors, requiring protective measures. The trail design and placement include environmental protection measures identified through consultation with the California Department of Fish and Game. Additional measures will ensure that trail use and maintenance will have a minimal impact on sensitive animal and plant species. Such measures may include:

- No dumping of yard debris or trash.
- No temporary or permanent structures or excavations.
- No vegetation removal except where permitted or supervised by City staff.
- No fires or fireworks.
- Dogs must be on a leash in natural areas unless it is posted that dogs are not allowed.
- Dogs are not allowed in streams or wetland areas.
- Dogs are only allowed on the trail.
- Dog waste must be picked up and disposed of in a trash receptacle.
- No fishing, wading or swimming except in designated areas.

To protect sensitive habitat, weed abatement and pruning activities in natural areas should not occur without a pre-maintenance biotic survey. A pre-maintenance biotic survey determines if any federal or state listed endangered or threatened animal or plant species, or any other sensitive habitat – such as, plants identified by the California Native Plant Society – are in the proposed work area. Rare or sensitive plant species identified should be flagged and, where necessary, fenced prior to initiating any activities to protect them from impact during maintenance. If any sensitive wildlife species are found during the survey and the maintenance work may harass nesting animals, timing for the proposed work in this area will need to be revised to avoid the nesting period. If an occupied bird nest is identified adjacent to the trail of in a tree or shrub that must be trimmed or removed (including poison oak), maintenance should be deferred until the nestlings have fledged (typically April 1 to July, depending on the species). Protecting and promoting the growth of native trees and shrubs – and planting and seeding native groundcovers – can enhance habitat along trails. Planting other vegetation can also enhance habitats. These techniques can improve the aesthetics of the trail, minimize erosion, and provide for wildlife travelways.

1.6 Education Plan

Trail Safety Education and Outreach

On-going safety education is an important means of reducing liability exposure and encouraging safe behavior. Trail managers need to ensure that warning signs explaining the importance of staying on the authorized trail only and off private railroad property, are prominently displayed and regularly maintained. Additionally, the City could create trail brochures or initiate more formal education programs. See Section 1.4 for railroad safety education and outreach programs offered by Operation Lifesaver.

Trail Brochures

The City may consider developing, printing, and distributing new brochures with safety information and maps of existing and potential trails, walkways, stairs, bikeways, and other facilities connecting with the Arcata Rail-with-Trail, aimed at encouraging more local trips by foot or bicycle. These maps can include transit stops to show how people can walk or bicycle to transit. Brochures should be available at trail heads, City Hall and local bicycle shops.

Trail Patrols

Volunteer or professional trail patrols are also beneficial in improving trail safety. Patrols range from informal monthly clean-up and maintenance crews to daily patrols that provide maps, information and emergency assistance. The primary function of these patrols should be to educate trail users and to provide assistance when necessary. Patrols should also be equipped to alert emergency services quickly if needed (see the Trail Safety Plan for more information). Above all, the presence of a patrol deters crime and improves users' enjoyment of the trail. Trail managers should be creative in using "friends of the trail" groups, local community organizations and law enforcement to maintain and monitor the trail.

TRAIL SAFETY PLAN

This Safety Plan has been prepared to satisfy the 2009 NCRA Policy and Procedures Manual requirements for a public agency proposing a rail-with-trail facility. As specified in the NCRA Policy and Procedures Manual, the public agency shall prepare a Safety Plan including certain design, maintenance and operations measures. Each required topic is discussed in this plan as follows:

- Section 2.1 Safety Considerations. Topics include trail setback requirements and dangers to trail users from passing trains.
- Section 2.2: Trespassing and Crime Prevention. Topics include trespassing reduction and crime prevention strategies, such as regulatory signage, emergency access and identification of a Trail Manager within the City of Arcata.
- Section 2.3: Emergency Response. Topics include emergency response procedures and responsibilities.
- Section 2.4: Security and Patrols. Topics include signage, establishment of a coordinated and responsive patrol service and other security measures.
- Section 2.5: Trail Barrier Design Standards. Topics include recommended barrier systems and railroad right-of-way access.

The Trail Feasibility Study contains information on engineering standards, damage-resistance construction materials, landscaping, educational and informal signage and project implementation.

As proposed, the Arcata Rail-with-Trail complies with the current editions of the California Department of Transportation Highway Design Manual, Chapter 1000 "Multi-use path Planning and Design", the U.S. Department of Transportation, Federal Highway Administration "Manual on Uniform Traffic Control Devices – California Supplement (CAMUTCD)" and the American Association of State Highway and Transportation Officials' (AASHTO) "Guide for Development of Bicycle Facilities." Additional guidance concerning the design of rails-with-trails facilities was considered, including the U.S. Department of Transportations' "Rails-with-Trails: Lessons Learned."

2.1 Safety Considerations

In May 2009, the NCRA Board of Directors adopted a set of guidelines that allows for a case-by-case analysis of trail proposals submitted by public agencies. The case-by-case analysis of individual trail proposals provides the opportunity to incorporate best practices from existing rail-with-trail projects, as public agencies

design and submit trail projects to the NCRA.

The NCRA does not have a specific minimum setback for a trail from the track, but the trail will meet California Public Utilities Commission (CPUC) minimum requirements. The CPUC requires minimum clearance envelopes (8 feet and 6 inches on either side of the track centerline on tangent track and 9 feet 6 inches on either side of the track centerline around curves).

Other safety concerns include the following:

- Dragging or loose equipment, tiedowns or shifted loads on freight trains.
- Objects on or near the rails can be thrown by the passing wheels of the train, including rocks, sticks or other debris. Such objects can arrive on the track as a result of natural causes (storms or slides), vandalism, maintenance activities or other causes.

2.2 Trespassing and Crime Prevention

Fencing is proposed throughout the corridor where the trail is adjacent to the railroad line. The City of Arcata will maintain the fencing and immediately repair any broken sections. In areas where there is a history of trespassing across the tracks, the City will consider installing a higher security type of fencing. This may include chain linked with hardened steel.

A summary of recommended security and safety measures is presented below.

1. The railroad right-of-way will be posted "No Trespassing" to keep path users out of railroad restricted areas. No Trespassing signs will be posted with maximum fines of up to $200 cited and supported by local ordinance.
2. All segments of the multi-use path will be accessible to within 500 feet by emergency vehicles.
3. The City of Arcata will identify a key management staff person that will be designated to serve as the "trail manager." The following list represents the major safety-related tasks of the designated Trail Manager at the City:
    - Coordinate future development of trail.
    - Implement the Corridor Management Plan.
    - Implement the Trail Maintenance Plan and ensure adequate funding.
    - Obtain bids and manage contracts for maintenance and improvements.
    - Oversee monitoring the security/safety of the trail through routine inspections as outlined in this Trail Safety Plan. Enforce rules of the road and other standard recreational guidelines.
    - Oversee maintenance and rehabilitation efforts.
    - Manage and respond to issues and incidents along the trail.
    - Maintain adequate recording and response mechanisms for reported safety and maintenance problems. Research the causes of each reported accident on the trail and respond to accident investigations with appropriate design or operational improvements.
    - Coordinate routine law enforcement needs.
    - Act as the local trail spokesperson with the public and elected officials, and respond to the issues and concerns raised by trail users.

- Provide NCRA and fire and police departments with a map of the system, along with access points and keys/combinations to gates/bollards.

2.3 Emergency Response

Emergency access for safety, security, and maintenance purposes will be based on established protocol between the Arcata Fire Protection District, the Police Department and the NCRA. The City of Arcata will provide the NCRA and the Arcata Volunteer Fire Department with a map of the system, along with access points and keys/combinations to gates/bollards. The initial responding party will notify the other departments as soon as possible. The City will take primary responsibility for all incidents on the trail, and will immediately contact the NCRA and other local agencies as needed and appropriate. The trail is designed to allow emergency vehicles full access to the facility, although vehicles should proceed cautiously.

2.4 Security and Patrols

Properly designed and managed, the Arcata Rail-with-Trail will provide a reasonable level of safety and security. Studies by the Rails-to-Trails Conservancy indicate that crime and other problems on multi-use paths is generally the same as the adjoining communities. These studies have also shown that the best and most effective method of enhancing safety and security is to design a functional facility that is well used by the general public. While the rural aspect of this project is somewhat unique, multi-use paths in isolated locations exist around California and have generally not experienced significant safety problems. The approach to safety and security outlined in this plan is to provide reasonable security features and be prepared to enhance those efforts in the future if safety and security prove to be problems.

Regular inspection of the trail and associated amenities is a key factor to trail safety. Regular visual inspections will be conducted by the City of Arcata and can help identify and correct problems before they become an issue. For example, a fallen tree limb can be readily removed from the trail or coned off to divert trail users away from the hazard until such time as maintenance crews address the problem. The City will establish a City trails webpage detailing the status of any closed trails.

The City will maintain a written record of inspections and will help create a database of information. Written records can reveal safety trends and use patterns that can assist the City with prioritizing maintenance dollars. Written records also can help protect the City from potential liability, providing documentation of diligent maintenance practices targeted towards protection of the public. A typical inspection record includes:

- Regular inspection reports noting any hazards that have been found along the trail along with remedial action. This will note basic items such as debris found on the trail or other trail obstructions.
- Monthly inspection reports documenting the condition of the entire trail and noting any potential hazards on the trail (cracks, erosion, overhead vegetation, etc.). Corrective actions will be integrated into the next 30-day work plan.
- Quarterly visual and operational inspection reports of all of the Arcata

Rail-with-Trail amenities such as benches, signage, drinking fountains, bike racks and signals. Recommended corrective actions will be made and integrated into a 3-month maintenance work plan.

Signage

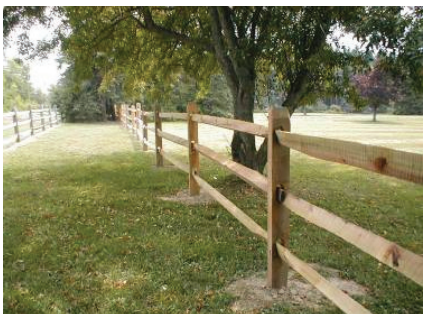
Installation of key regulatory signs at regular intervals along the multi-use path will help users internalize the rules. This includes "Bicyclists Yield to Pedestrians," "Pass on the Left," "Slower Traffic Stay Right" and speed limits (if applicable). Repetition is the least expensive and most effective enforcement. The following signs will be placed on the trail to enhance security and safety:

- Arcata Rail-with-Trail
- Trail users must stay on the path
- No vandalism
- No motorized vehicles

Appropriate civil penalties will be posted as well.

Patrols and Enforcement

Generally, the trail is expected to be self-enforcing by the general public. For the first three (3) months after opening, the City of Arcata will patrol the trail with ranger trucks multiple times each week. After the first three months, the City of Arcata will patrol on an intermittent basis. The level of patrols will be based on reported incidents and problems.



Split rail fencing is proposed along the rail-with-trail corridor

Security Features

Below is a summary of key security features the City will undertake:

- Provide the Arcata Fire Protection District and Arcata Police Department with a map of the trail, along with access points and keys/combinations to gates/bollards.
- Make all segments of the trail are accessible to emergency vehicles.
- Locate mileposts every tenth of a mile; identify markers on maps.
- Trim all vegetation at least 10 feet from the path where possible to maximize visibility and to minimize thick undergrowth.
- Enforce speed limits and other rules of the trail.

2.5 Trail Barrier Design Standard

Given that Humboldt Bay is a scenic area, the use of fencing may be considered an impairment to the scenic resource. However, given the narrow nature of the corridor and minimal separation from the railroad track, some type of acceptable fencing barrier design will need to be developed. A wide variety of physical barriers are used in rail-with-trail corridors. More than 70 percent of existing rail-with-trails have some type of physical barrier between the trail and tracks. The types of barriers in use include fences, walls, vegetation, grade differences and ditches[3].

Fences are the most common type of physical barrier used in rail-with-trail corridors. A number of fencing types are available, ranging from simple low wood

3 *U.S. Department of Transportation. (August 2002). Rails-with-Trails: Lessons Learned.*

rail fences to tall, heavy-duty steel fences. Selection of a fencing type, height, and location depends on the frequency and speed of trains, number of trail users, amount of trespassing anticipated along a given segment of the rail-with-trail, concern for entrapment on the wrong side of the fence, and the aesthetic qualities desired.

Need for Fencing

The City considered a number of factors when deciding on fencing necessity and styles, including:

- Safety: Fencing can be used as an indicator to alert trail users to a hazard and to reduce inadvertent trespassing.
- Security: Fencing between the trail and adjacent land uses can protect the privacy and security of the property owners. While crime or vandalism have not proven to be a common problem along most multi-use trails, fencing is still considered a prudent feature. The type, height, and responsibility of the fencing is dependent on local policies.
- Cost: Fencing and other barriers, depending on the type of materials used and the length, can be costly, so options should be considered carefully.
- Fencing height and design: The height and design of a fence influences whether lateral movement will be inhibited. Few fences are successful at preventing people from continuing to cross at historic illegal crossing locations. Fencing that cannot be climbed will typically be cut or otherwise vandalized. Heavy-duty fencing such as wrought iron or other styles of fencing that are difficult to climb are often more expensive.
- Openings: Fencing and fence posts, especially end posts, can become collision hazards. The number of openings should be minimized, trail setbacks should be observed, and the design should not present sharp or dangerous protrusions.
- Noise, dust and debris: Trains generate noise, dust, and vibration, which may been seen as a nuisance to adjacent trail users. Methods of reducing this impact include the addition of vegetation or baffles to fencing barriers. This can increase the costs for a relatively low impact.

Fencing Placement, Type and Height

Where fencing is installed along the corridor, it will be located a minimum of 6.5 feet (7.5 feet on curves) from the nearest track centerline and 2 feet from the edge of the trail. Where the fence is located within 15 feet of the centerline of the nearest track, it will be designed to be removed as needed for rail maintenance work, unless adequate access can be provided on the opposite side of the tracks. All fencing will provide breaks or openings at least 5 feet wide every 500 feet to allow emergency access. Proposed fencing locations are shown in the Arcata Rail-with-Trail Sign Plan. With normal setback, fencing height will range between 36 inches and 48 inches, with 42 inches standard.

The City will use a split rail fence for the Arcata Rail-with-Trail, consistent with NCRA guidelines. This barrier style maximizes the pathway user experience and visibility, along with wildlife movement.

Fence Maintenance

Split rail fences have relatively low maintenance requirements. The City of Arcata will need to receive approval from NCRA for installation of any safety structures and be responsible for maintenance costs. See the Trail Maintenance Plan for additional information.

Railroad Right-of-Way Access

NCRA will identify where gates are needed for access to the right-of-way, and the type and width of gates needed. Local emergency departments along with NCRA maintenance personnel will have keys to all locked gates. Where the safety structure is located closer than 25 feet from the track centerline, the safety structure may need to be designed to be moved for railroad maintenance activities such as tie replacement. Any fixed panel barrier may need to be installed with the posts in sleeves that allow panels to be lifted and set down.

2.6 Community Involvement with Trail Safety

Creating a safe trail environment goes beyond law enforcement officers and should involve the entire community. The most effective and most visible deterrent to illegal activity on the Arcata Rail-with-Trail is the presence of legitimate trail users. As a general pattern, introducing legitimate use on the trail right-of-way will drive out illegitimate use. Getting as many "eyes on the corridor" as possible is a key deterrent to undesirable activity on the trail. There are several components to accomplishing this as outlined in this section.

Provide Access to the Trail

Wherever feasible, public access to the trail will be provided. Access points will be inviting and signed to welcome the public onto the trail. This includes on the southern section of the trail as well as where there are adjacent roadways.

Good Visibility from Adjacent Neighbors

Neighbors adjacent to the trail potentially provide 24-hour surveillance of the trail and can become the city's ally. Though some screening and setback of the trail is needed for privacy of adjacent neighbors, complete blocking out of the trail from neighborhood view is discouraged. This eliminates the potential of neighbor's "eyes on the trail," and could result in a "tunnel effect" on the trail.

High Level of Maintenance

A well maintained trail sends a message to the public that the community cares about the trail. This message discourages undesirable activity along the trail. Maintenance activities are discussed in the Arcata Rail-with-Trail Trail Maintenance Plan.

Programmed Events

Events along the trail will help increase public awareness of the Arcata Rail-with-Trail and thereby bring more people to the trail. The City will aim to raise public awareness and increase support for the trail. Events may include a daylong trail clean up or a series of short walks led by long time residents or local politicians.

Community Projects

Community projects are the strongest means of creating a sense of ownership along the trail and they are perhaps the strongest deterrent to undesirable activity along the trail. Ideas for community projects include volunteer planting events and art projects.

Adopt-a-Trail Program

Businesses and residential communities will abut the Arcata Rail-with-Trail. As neighbors to the trail, they often see the benefit of their involvement in the trail development and maintenance. Businesses and developers may view the trail as an integral piece of site planning and be willing to take on some level of responsibility for the trail. To embrace this opportunity, the City of Arcata's existing Adopt-a-Park and Adopt-a-Trail programs will be expanded to encompass the Arcata Rail-with-Trail.

TRAIL MAINTENANCE PLAN

A multi-use trail is a unique public facility that blends two distinct purposes. It is a non-motorized transportation corridor that in many respects must be managed like a street to assure user safety; it is also a greenway serving a variety of recreational user groups and wildlife. Multi-use trail users must also co-exist with property owners adjacent to the corridor, whose interests can be different from that of the trail users. For trails that cross or are adjacent to active rail lines specific maintenence techniques should be identified.

The Arcata Rail-with-Trail will be considered a joint or "shared use" facility, defined as a paved trail open to the general public for recreation and non-motorized transportation purposes in a corridor that serves other transportation functions. Virtually all paved multi-use trails in the United States are shared use facilities between the general public and maintenance vehicles. Trails require their own maintenance, emergency access, and security vehicles. Although the NCRA is the most obvious shared use within the corridor, the trail would also be shared with existing utilities, city roads and with maintenance vehicles. The future presence of the rail line will be a dominant factor in the management and maintenance of the Arcata Rail-with-Trail. A rail-with-trail must be managed, operated, and maintained in a way that will: a) protect the adjacent railroad infrastructure and operators; b) minimize costs to the railroad and to the trail managing entity; and c) maximize public enjoyment and safety.

3.1 Management Responsibilities

The City of Arcata will manage the Arcata Rail-with-Trail. The City of Arcata has a full service Parks and Recreation System and is experienced in managing public parks, trails and facilities. Established management practices will apply to the proposed trail. The following represents the major maintenance-related responsibilities of the trail management agency:

- Update and implement this maintenance plan and assure adequate funding.
- Monitor security/safety of the trail through routine inspections.
- Complete/oversee major maintenance and rehabilitation efforts.

- Manage issues that may arise with properties abutting the trail corridor.
- Preserve the linear integrity of the corridor and set the policy on non-trail uses of the corridor.

The following routine and long-term recommendations pertain to an asphalt trail surface with crusher fine shoulders.

3.2 Trail Maintenance

Routine Trail Maintenance

Effective trail maintenance is critical to the overall success and safety of any trail system. Maintenance activities typically include pavement stabilization, landscape maintenance, facility upkeep, sign replacement, mowing, and litter removal. A successful maintenance program requires continuity and often involves a high level of citizen participation. Routine maintenance on a year-round basis will not only improve trail safety, but will also prolong the life of the trail. The benefits of a good maintenance program are far-reaching and may include:

- A high standard of maintenance is an effective advertisement to promote the trail as a local and regional recreational resource.
- Good maintenance can be an effective deterrent to vandalism, litter and encroachments.
- A regular maintenance routine is necessary to preserve positive public relations between the adjacent land owners and managing agency.
- Good maintenance can make enforcement of regulations on the trail more efficient. Local clubs and interest groups will take pride in "their" trail and will be more apt to assist in protection of the trail.
- A proactive maintenance policy will help improve safety along the trail.

The Arcata Rail-with-Trail will be constructed on NCRA, City of Arcata, Caltrans, U.S. Fish and Wildlife Service and private property. The City of Arcata will notify the property owner of a given trail segment a minimum of five (5) working days in advance of any construction or maintenance activity, beyond inspections and routine maintenence, that will occur on their property or within the NCRA right-of-way.

Vegetation Management

In general, visibility between trailside plantings should be maintained to avoid creating a feeling of enclosure. This will also give trail users, clear views of their surroundings, encoraging safety and enhancing the aesthetic experience. Under-story vegetation near the trail should not be allowed to grow higher than 36 inches. Selection and placement of trees should minimize vegetative litter on the trail as well as root uplifting of pavement. Vertical clearance along the trail should be periodically checked, and any overhanging branches should be pruned to a minimum vertical clearance of 10 feet.

Measures will be taken to protect the trail, including bi-annually (or as needed) mowing along both sides of the trail to prevent invasion of plants into the pavement and shoulder areas. The recommended time of year for mowing is fall and/or spring. Wherever possible, vegetation management will be accomplished by mechanical means or hand labor.

Surface Repair and Sweeping

The trail surface will be kept free of debris, especially broken glass and other sharp objects, loose gravel, leaves and stray branches. Trail surfaces should be swept monthly, or as needed based on inspection. Soft shoulders should be well maintained to maximize usability. Cracks, ruts and water damage will need repair periodically. Where drainage problems exist along the trail, ditches and drainage structures will need to be kept clear of debris to prevent wash-outs along the trail and maintain positive drainage flow. Checks for erosion along the trail should be made during the wet season, and immediately after any storm that brings flooding to the area.

Fence Repair

The City of Arcata will be responsible for maintaining fences along the trail. Fencing will be well maintained and any damage immediately repaired.

Removal of Litter and Dumped Materials

Staff or volunteers will remove litter along the trail. Litter receptacles should be placed at primary access points such as trailheads. Dumping will be controlled by vehicle barriers, regulatory signage and enforcement of fines as much as possible. When dumping does occur, it will be removed as soon as possible in order to prevent further occurrences. Neighborhood volunteers, friends groups, alternative community service crews or inmate labor crews will be considered in addition to maintenance staff.

Signage Repair

Signs should be replaced along the trail on an as-needed basis.

Removal of Debris after Storm Events

Portions of the trail may be subjected to periodic flooding. When flood waters recede, deposits of debris such as tree branches, leaves, mud and trash may remain on the trail. Debris accumulated on the trail surface will be removed after each recession of water. Debris will be periodically removed from the waterway under any bridge structure.

Routine Trail Maintenance Frequencies

Table 3-1 summarizes the maintenance recommendations. Typical maintenance vehicles for the trail will likely be alternative fuel service vehicles/trucks. A mechanical sweeper is recommended to keep the trail clear of loose gravel and other debris. Care should be taken when operating heavier equipment on the trail to warn trail users and to avoid breaking the edge of the trail surface.

Table 3-1: Routine Trail Maintenance Frequencies

Item	Suggested Frequency
Fence/barrier repair and replacement	Immediate
Lighting replacement/repair	As needed
Remove fallen trees	As needed
Water plants	As needed
Bollard replacement	As needed
Sign replacement/repair	As needed

Trash disposal	As needed, twice a week
Graffiti removal	Weekly/or as reported
Weed control	Monthly
Pavement sweeping	Monthly
Planted Tree, Shrub, trimming/fertilization	6 months- 1 year
Debris removal	Bi-annually or as needed
Shoulder pruning*	Bi-Annual – Fall/Spring
Clean drainage system	Annual
Maintain benches, site amenities	1 year
Maintain irrigation lines/replace sprinklers	1 year/as needed
Pavement marking replacement	1-3 years
Pruning to maintain vertical clearance	1-4 years
Pavement sealing	5-8 years
* Additional maintenance may be required.	

Long-Term Trail Maintenance

Based on observations and analysis of similar existing asphalt trails, the pavement surfacing will need an overlay or extensive replacement and renovation every 25 to 30 years. However, this extensive replacement could be mitigated and the expense reduced with preventative maintenance measures such as slurry sealing every five to eight years to prevent surface raveling.

Deferred maintenance projects traditionally become capital projects. These are usually eligible projects for grant funding. State and federal grant funding agencies tend not to pay for such preventative maintenance activities such as slurry sealing asphalt pathways to extend their useful life, but these same agencies will pay for reconstruction of the pathway or road when it becomes unusable.

The cost of extending the life of existing asphalt by crack repair and slurry sealing are relatively small compared with reconstruction or overlay. Slurry sealing is estimated at $5,000 to $10,000 per mile. The cost of reconstructing an asphalt trail if the condition has become deteriorated would cost approximately $350,000 to $1,000,000 per mile.

3.3 Rail Maintenance

Routine railroad activities are expected to include daily inspections, signal maintenance, tie replacement, rail replacement, drainage culvert cleaning, bridge and trestle inspection and repairs, switching and communication equipment access and maintenance, and crossing equipment servicing and repairs. These activities are typically accomplished by having trucks drive alongside the tracks on dedicated maintenance roads or, in some cases, on the side of the ballast near the rails themselves.

The Arcata Rail-with-Trail may serve as the NCRA maintenance and emergency access route. The trail may be closed if any heavy rail equipment is expected to use the trail, or when any maintenance activities are occurring that could be injurious to the general public. NCRA is responsible for advising the City of Arcata Public Works Department at least five (5) working days in advance of any work potentially impacting trail access so that appropriate measures to close the trail, arrange detours, and notify the public can be taken. NCRA should schedule maintenance activities during times when expected trail use is low (i.e., mid-week days). Trail users should be advised that NCRA vehicles use the trail, and to expect vehicles on the paved surface by posted warning signs at agreed upon intervals.

Any fence or barrier between the tracks and trail will be designed to be removed by NCRA. The fence, barrier, pathway surface, landscaping and other items may be damaged or destroyed by activities of the railroad to maintain or re-open the tracks. NCRA will make all efforts to minimize damage to the trail, fencing and other support facilities, and will allow the local agencies the opportunity to remove or otherwise minimize that damage with advance notice. NCRA will be responsible for restoring fencing, barriers, pathway surfaces, landscaping and all other items disturbed by railway maintenance or construction projects.

3.4 Temporary Trail Closures

The trail, or sections of the trail, may be closed from time to time during periodic maintenance of the facility or future rail. Trail users will need to be managed during these closures. The procedural policies that will be followed prior to the trail closing, including a variety of means to inform the public are listed below.

- The City of Arcata will post signs at all trail entrances on the impacted segments to be closed indicating the duration of the closure. The City will do everything reasonably possible to keep the public informed and make every effort to keep the closure period as short as possible. The 48-hour notice will be waived in the case of emergencies.
- The City of Arcata will physically block the trail that is being closed with barriers and post “Trail Closed” signs.
- The City of Arcata will provide “Detour” signs describing any alternate routes.

The City of Arcata will not re-open the trail until it has been inspected to ensure that the trail is in usable condition. Where obstructions remain, the City will provide warning signs for trail users to slow down or dismount where needed.

SAMPLE AGREEMENT BETWEEN PUBLIC AGENCY AND PRIVATE CONTRACTING FIRM FOR LANDSCAPING AND MAINTENANCE OF THE INLAND RAIL BIKEWAY.

AGREEMENT

THIS AGREEMENT is made and entered into as of the _____ day of _____, 20___, by and between the CITY OF _____, a municipal corporation, hereinafter referred to as "City", and _____, a corporation, hereinafter referred to as "Contractor."

RECITALS

City requires the services of a landscape maintenance Contractor to provide necessary landscape maintenance services; and Contractor possesses the necessary skills and qualifications to provide the services required by the City;

NOW, THEREFORE, in consideration of these recitals and the mutual covenants contained herein, City and Contractor agree as follows:

A. CONTRACTOR'S OBLIGATIONS

The Contractor will:

1. Take responsibility for the performance of all work described in this agreement.
2. Provide all labor and materials, except where otherwise indicated in this agreement, and supervise the performance of the work.
3. Furnish a Supervisor and make every effort to keep him on the job at all times.
4. Perform all work necessary and incidental to the orderly performance of the work.

B. Time of Commencement. Contractor shall commence performance of work within fifteen (15) working days after the agreement is signed by the Mayor.

C. Work Schedule. Regularly scheduled work is outlined in this agreement. Work hours shall be between 7:30 AM and 4:30 PM, Monday through Friday, except holidays. Contractor agrees to perform additional unscheduled maintenance work not mentioned in specifications as necessary to maintain the grounds in the standard desired by the City, not to exceed five (5) work hours per week, including emergency call-outs.

D. Scheduling and Inspection

1. Scheduling. Contractor's supervisor shall prepare monthly work schedules and review them with the Director of Public Works or his/her designated representative.
2. Communications. Contractor's supervisor shall visit the Public Works Department twice per week to obtain messages or instructions from the Director of Public Works or his/her designated representative. Contractor shall supply, and City shall use, a work request form to insure proper documentation of

requests.

3. Inspections. A general inspection each month including a written evaluation of each specific area with the Director of Public Works or his/her designated representative and the contractor's supervisor shall be made during the first week of every month.

E. Contractor's Local Headquarters. Contractor shall maintain adequate office and storage facilities for the performance of the agreement. Such facilities shall be located within the North County area. Failure to do so may result in termination of contract.

F. Emergency Call Out Procedures. Within fifteen (15) working days after the date of this agreement, Contractor shall submit to Director of Public Works or his/her designated representative for approval, a procedure to provide for emergency response on nights, weekends, and holidays.

G. Acceptance of Public Facilities "As Is". Contractor acknowledges having examined the public facilities to be maintained pursuant to this agreement and accepts them "as is". No changes in the accepted conditions of the facilities shall be made by contractor without prior approval of the Director of Public Works.

H. City Permits. The contractor must have a current City business license. Bidders are advised to consult the Business License Supervisor as to the exact cost of such license if not currently licensed.

I. Contractor Certification Requirements

1. The Contractor must have the following licensed staff working on the job:

a. Certified Landscape Technician – at all times

b. State of California Pesticide Qualified Applicator Certificate for crew leader

c. State of California Pesticide Qualified Applicator License for supervisor

d. State of California Pest Control Advisor License on staff

J. Regularly Scheduled Work

1. Irrigation. All plants and turf shall be provided with sufficient irrigation water to maintain a healthy appearance and condition. Water and irrigation system will be provided by city. Contractor shall control clock programming and hand watering schedule in a manner that will not cause unnecessary water run-off or ponding. Schedules will be prudently adjusted so as to not waste water. Irrigation will not normally be performed during daylight hours on areas where the systems are automatically controlled. Any exceptions shall be approved by the Director of Public Works or his/her designated representative, prior to watering. During rainy periods, it shall be the Contractor's responsibility to secure irrigation systems. City will notify Contractor of any special events to take place

on park areas and Contractor shall adjust irrigation schedule so as to not disrupt events. Newly planted trees should be manually watered as necessary.

2. Irrigation Systems Maintenance. Contractor shall trim around, clean and adjust all sprinkler heads as necessary to ensure proper performance. Contractor is also responsible for maintenance of automatic sprinkler systems, including a monthly test activation of the system.

3. Irrigation Systems Repair. Contractor is responsible for making repairs to the irrigation system as follows:

    a. All minor repair labor.

    b. Up to $50.00 per month of repair parts, with parts valued at Contractor's actual cost.

    c. Major repairs if Contractor submits an estimate to City within five (5) working days and City agrees to the cost of repair. The city reserves the right to make major repairs in any manner it chooses if City does not accept the cost estimate, or Contractor does not submit an estimate, or Contractor does not submit an estimate within five (5) working days.

    d. All repairs to the system shall be made according to the original detail.

4. Turf Mowing, Edging, and Trimming. All turf areas shall be mowed, edged, and trimmed at least weekly during the months of March through November, and bi-weekly during the months of December through February, weather permitting. The height of the grass shall be maintained at a height one inch (1") to two inches (2"), depending on the type of grass and the mowing seasons. During heavy growth seasons or for special events, extra mowing may be ordered by the Director of Public Works or his/her designated representative, and performed by Contractor at no additional cost to City. Turf shall be swept, vacuumed or otherwise cleaned to maintain a neat appearance at all times.

5. Walks, Curbs, and Hardscape. All sidewalks, curbs, hardscape, and miscellaneous asphalt and concrete surfaces shall be washed, swept or blown off once a week. Any debris that is caused by the Contractor shall be thoroughly cleaned at once.

6. Planters and Ground Covers. All planters and ground cover areas shall be kept free from debris and weeds at all times. These areas shall be cultivated and weeded at not more than ten (10) working day intervals. These areas shall also be edged weekly and any debris generated by this operation shall be removed immediately.

7. Trimming and Pruning. All shrubs, plants and trees shall be kept pruned and trimmed in accordance with good

horticultural practices. Shrubs shall be maintained at 12" from roadway and trimmed in a manner that provides safe traffic flow. All trees shall be pruned in accordance with good horticultural practices and be kept clear of sidewalks, paths and roadways through annual and biannual trimming.

8. Fertilizing. All turf areas shall be fertilized a minimum of four (4) times a year or as is necessary to maintain a healthy appearance and condition. Fertilizer material tags shall be submitted to the Director of Public Works or his/her designated representative for approval before application. All plants and trees shall be fertilized twice annually (in the spring and in the fall) with a balanced fertilizer (10-10-10) and treated as necessary to maintain a healthy condition and appearance. Fertilizer shall be provided by Contractor.

9. Weed, Pest, and Disease Control. All turf areas, planters, beds, trees, and tree wells shall be kept clear and free of all weeds, pests, and diseases at all times. Methods and materials used to accomplish this objective are subject to approval by the Director of Public Works or his/her designated representative but are supplied by Contractor.

10. Re-seeding. Any turf area shall be re-seeded as required by the Director of Public Works or his/her designated representative, at Contractor's expense, if the Director determines that it is necessary due to negligence by contractor. When re-seeding, materials and horticultural practices used are subject to inspection and approval by Director of Public Works or his/her designated representative.

11. Tree and Shrub Replacement. Contractor shall replace, at his expense any trees, shrubs, turf, or ground cover, which die as a result of Contractor's negligence. City shall replace any trees, shrubs, turf, or ground cover, which die for reasons other than Contractor's negligence. Size of trees and shrubs shall be determined by Director of Public Works or his/her designated representative; ground cover shall be from flats.

12. Traffic Controls. Contractor shall provide and display all safety devices and traffic controls in accordance with City standards at all times when working in the public right-of-way. All contractors employees shall be attired in approved safety gear at all times and traffic control shall be as outlined by the Director of Public Works. Failure to do so will result in an immediate shutdown of activity by the City. Any work not accomplished as a result of this shutdown shall be performed at another time with proper safety devices at no additional expense to the City.

13. Safety. All equipment and machinery utilized by the Contractor while performing work for the City shall be equipped and operated in such a manner so as to conform to all applicable laws and regulations, including, but not limited to

Cal-OSHA, concerning safety and operations.

14. Turf Aeration and Thatching. Turf area shall be aerated and thatched in accordance with good horticulture practices. If the Contractor feels that a major renovation is needed, he shall notify the Director of Public Works or his/her designated representative prior to proceedings.

K. Miscellaneous Items.

1. All grass and shrub clippings and any other debris generated by the Contractor's activities shall be removed and properly disposed of by the contractor at his expense.

2. Dust or nuisance conditions occasioned by Contractors work shall be alleviated immediately.

3. Each of Contractor's working crews shall have a responsible lead person who may represent Contractor to discuss work results with the Director of Public Works or his/her designated representative.

4. Contractor shall be responsible for keeping curb, gutter, and hardscape areas free of weeds and debris, at all times.

5. All of Contractor's personnel performing the work of this contract shall maintain appearance and uniforms in a manner acceptable to City standards.

6. Large trash items shall be picked up by Contractor prior to moving.

7. Contractor shall review Table 1 "Bikeway Maintenance Activities and Frequencies" and other maintenance-related portions of the Inland Rail Bikeway Management Plan and conduct all activities at the minimum frequencies cited unless otherwise specified in this Agreement.

L. Progress and Completion

The work under this contract will begin within fifteen (15) days after receipt of notification to proceed by the City.

M. Fees to be Paid to Contractor

The total fee payable for the services to be performed shall be _____ per month. No other compensation for services will be allowed except those items covered by supplemental agreements "Changes in Work."

APPENDIX

Public, Stakeholder and Steering Team Meetings

Arcata Rail with Trail Connectivity Project

Stakeholder Meeting Notes
December 10, 2009

The following notes are from the Arcata Rail with Trail Stakeholder meeting held on December 10, 2009. The purpose of the meeting was to get Stakeholder Group input on the project. The meeting consisted of: project overview including rail with trail standards, project design and engineering; scope of environmental analysis; regulatory review; project schedule; preferred route determination criteria; review of the seven trail segments; connectivity to other trails; and project next steps. Below is a summary of comments received at the meeting by segment. Stakeholders were also provided with a comment form to fill out and return with any additional comments.

Segment 1 - Sunset Ave. to Foster Ave.

- What is NCRA Right of Way (ROW) width through this segment, 50' - 60'?
- Is RR alignment less expensive?
- Shay Park Alignment - Foster Ave Extension
- 1B - Follows Along NCRA ROW
- 1C - Has a steeper Grade
- 1A - Along Road, 1C more scenic

Segment 2 - Foster Ave. to RR @ Alliance Rd.
No comments recorded.

Segment 3 - RR @ Alliance, along L Street through Samoa Blvd. Intersection

- L Street alignment contingent on "Y" rail access and "M" Street for ROW
- Public access already established along this segment
- L Street - Close alignments consider "woonerf" style design (a street where bicyclists and pedestrians have priority over motorists)
- Detours (at Samoa Blvd.) could be a deterrent to bike commuters. Samoa Blvd. Gateway project could narrow street and facilitate crossing.
- Along RR on L Street alignment - If ROW given up can it be replaced elsewhere? What is extent?
- Risk issue - crossing design, potential liability issues.

Segment 4 - Samoa Blvd. to South end of Slack Property

- Private property owner consultations are being conducted by the City.

- Are cost implications of staying on levee being considered?

Segment 5 - South end of Slack property through Arcata Marsh to Jolly Giant Creek Bridge @ WWTP

- Users in Marsh - birders vs. bike commuters - different uses and potential conflicts.
- User interface - differences in user groups - speed considerations - birders, walkers, cyclists, this needs to be considered.
- The rail with trail will be one of many trails through Marsh
- Weather determines use - wind is significant factor in trail use - consider wind protections along alignments.

Segment 6 - Jolly Giant Creek Bridge @ WWTP to G St. HWY 101 On-ramp

- Would RR track realignment be considered?
- There is a 100' wide NCRA ROW in this segment
- Alignment decision point: east or west, will depend on many factors

Segment 7 - G St. HWY 101 On-ramp to Bracut

- NCRA has sidings in addition to main tracks - can sidings be moved?
- Prior alignments - will they be elevated for east side options.
- Life cycle costs are a concern
- Short term vs. long term options should be considered in preferred alignment
- West side - lower elevation, wetland issues, constrained areas must get agency approval
- Hydrology could be impacted by trail design
- Noise impacts from HWY 101 could be considerable - detracts from use. More separation from HWY 101 could reduce noise impacts.
- Wildlife refuge land availability?
- Remnant at grade rail crossing at shack?
- End point - Bracut Marsh, west side of RR, other options?
- Commuters need a connection at south end of trail.
- Caltrans Jacoby Creek Bridge timing - 2013.

Arcata Rail-with-Trail Connectivity Project

Segment Key and Comment Sheet

Alignment Description Abbreviation Key

RR = Railroad
RR ROW = Rail Road Right of Way
CT ROW = CalTrans Right of Way
N., S., E., W. = North, South, East, West
Nt, St, Et, Wt = North, South, East, or West of tracks
RwT = Rail with Trail (off-set from tracks according to standards)
RtT = Rail to Trail (rail tracks converted to trail)
(E) = Existing

Name: John H. Williams

Agency/Organization: NWP Co./NCRA

Contact Information: jhw@woodsideconsulting.com
(650) 289-9850 Ext. 11

SEGMENT	SUBSEGMENT	ALIGNMENT	DESCRIPTION OF ALIGNMENT	Connections that can occur with next subsegment (to the south)	COMMENTS	Preferred	Not Preferred
1			**Sunset Ave to End of (E) Foster Ave**				
		a	Foster Ave Extension Project	2a, 2b	Off RR ROW improves trail safety.	X	
		b	RR ROW; RwT; Nt	2a, 2b	On RR ROW location requires track and Sunset Ave. rehabilitation, no imposed RR speed restriction, lease of RR land.		
		c	Arcata High Access Rd	2c	Off RR ROW improves trail safety.		
2			**End of (E) Foster Ave to RR @ Alliance Rd**				
		a	(E) Foster Ave and Alliance Rd	3.1a, 3.1b	Off RR ROW improves trail safety.	X	
		b	RR ROW; RwT; Nt	3.1a, 3.1b	On RR ROW location requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		
		c	Arcata High Access Rd extension	3.1a, 3.1b			
3			**RR @ Alliance Rd to 15th & M Sts**				
	3.1	a	RtT	3.2a, 3.2b, 3.2c	On RR ROW location requires track and Alliance Rd. rehabilitation, no imposed RR speed restriction, lease of RR land.		
		b	Bridge from 3.1b to RtT & RtT	3.2a, 3.2b, 3.2c	Safest crossing of Alliance Road. On RR ROW location requires track and Alliance Rd. rehabilitation, no imposed RR speed restriction, lease of RR land.	X	
		c	W. side of Alliance Rd to 15th & M Sts	3.2a, 3.2b, 3.2c			
		d	E. side of Alliance Rd to 15th & M Sts	3.2a, 3.2b, 3.2c			
	3.2		**15th St to L St at 12th St**				
		a	RtT	3.3, 3.3b, 3.3c	Requires lease or trade of NCRA property, rehabilitation of N St. Corridor rail track, and construction of new connecting track at Samoa Blvd. Closes 2 rail-street crossings.	X	
		b	M St to tracks & RtT	3.3a, 3.3b, 3.3c			
		c	Alliance Rd to extension of L St	3.3a, 3.3b, 3.3c			
	3.3		**L St at 12th St to Samoa Blvd**				
		a	RwT; Wt	3.4a, 3.4b			
		b	RtT	3.4a, 3.4b	Requires lease or trade of NCRA property, rehabilitation of N St. Corridor rail track, and construction of new connecting track at Samoa Blvd. Closes 5 rail-street crossings.	X	
		c	RwT; Et				
	3.4		**Samoa Blvd Intersection**				
		a	RR ROW; RwT; Wt	4a, 4b	Easterly rail track would be gone if 3.3b is adopted. Requires rehabilitation of Samoa Blvd. RR Crossing.	X	
		b	K St Intersection	4a, 4b			
4			**Samoa Blvd to S. end of Slack Property**				
		a	East edge of Slack Winzler Property	5.1a, 5.1b	Off RR ROW improves trail safety.	X	
		b	RR ROW; RwT; Wt	5.1a, 5.1b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		
5	5.1		**S. end of Slack Property to N. end of Levee**				
		a	Structure from Slack Property to Levee	5.2a	Off RR ROW improves trail safety.	X	
		b	RR ROW; RwT; Wt	5.2b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		X
	5.2		**N. end of Levee to I St.**				
		a	On Levee	5.3a, 5.3b, 5.3c	Off RR ROW improves trail safety.		
		b	Bridge from 5.2b to Levee and On Levee	5.3a, 5.3b, 5.3c	Off RR ROW improves trail safety.		

SEGMENT	SUBSEGMENT	ALIGNMENT	DESCRIPTION OF ALIGNMENT	Connections that can occur with next subsegment (to the south)	COMMENTS	Preferred	Not Preferred
5		c	RR ROW; RwT; Wt	5.3a, 5.3b, 5.3c	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		X
		I St. to end of I St					
	5.3	a	Between I St and (E) Gravel Path	5.4a	Off RR ROW improves trail safety.		
		b	(E) Gravel Path through Arcata Marsh	5.4a	Off RR ROW and away from I Street improves trail safety.	X	
		c	RR ROW; RwT; Wt	5.4c	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		X
		I St. to Jolly Giant Creek Bridge @ WWTP					
	5.4	a	(E) Gravel Path through Arcata Marsh	6.1a	Off RR ROW improves trail safety.	X	
		b	RR ROW; RwT; Wt	6.1b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		X

SEGMENT	SUBSEGMENT	ALIGNMENT	DESCRIPTION OF ALIGNMENT	Connections that can occur with next subsegment (to the south)	COMMENTS	Preferred	Not Preferred
6	6.1		**Jolly Giant Creek Bridge @ WWTP**				
		a	(E) Bridge at (E) Path through Marsh	6.2a	Off RR ROW improves trail safety.	X	
		b	RR ROW; (E) Bridge at RR	6.2b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		X
	6.2		**Jolly Giant Creek Bridge to WWTP driveway**				
		a	(E) Gravel Path through Arcata Marsh	6.3a, 6.3b	Off RR ROW improves trail safety.	X	
		b	RR ROW; RwT; Wt	6.3a, 6.3b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		X
	6.3		**WWTP driveway to G St. 101 On-ramp**				
		a	RR ROW; RwT; Wt	7.1a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Trail should be located at extreme west edge of 101 ft. wide RR ROW leaving room for RR Main Track and 2 sidings, with improved trail safety.	X	
		b	RR ROW; RwT; Et	7.1b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		
7	7.1		**G St. 101 On-ramp to Gannon Slough**				
		a	RR ROW; RwT; Wt	7.2a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Trail should be located at extreme west edge of 101 ft. wide RR ROW leaving room for RR Main Track and 2 sidings, with improved trail safety.	X	
		b	CT ROW; RwT; Et	7.2b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		
	7.2		**Gannon Slough Bridge**				
		a	West side of Bridge	7.3a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.	X	
		b	East side of Bridge	7.3b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		
	7.3		**Gannon Slough to Jacoby Creek Bridge**				
		a	RR ROW; RwT; Wt	7.4a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Main Track could be shifted easterly toward U S 101 to accommodate trail.	X	
		b	CT ROW; RwT; Et	7.4b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Cross section shows RR ROW, not CT ROW.		
	7.4		**Jacoby Creek Bridge**				
		a	West side of Bridge	7.5a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.	X	
		b	East side of Bridge	7.5b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land.		
	7.5		**Jacoby Creek Bridge to Jacoby Creek Culvert**				
		a	RR ROW; RwT; Wt	7.6a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Main Track could be shifted easterly toward U S 101 to accommodate trail.	X	
		b	CT ROW; RwT; Et	7.6b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Cross section shows RR ROW, not CT ROW.		
	7.6		**Jacoby Creek Drainage Culvert**				
		a	RR ROW; RwT; Wt	7.7a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Main Track could be shifted easterly toward U S 101 to accommodate trail.	X	
		b	CT ROW; RwT; Et	7.7b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Cross section shows RR ROW, not CT ROW.		
	7.7		**Coastal Salt Marsh**				
		a	RR ROW; RwT; Wt	7.8a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Main Track could be shifted easterly toward U S 101 to accommodate trail.	X	
		b	CT ROW; RwT; Et	7.8b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Cross section shows RR ROW, not CT ROW.		
	7.8		**Adjacent to Humboldt Bay**				
		a	RR ROW; RwT; Wt	7.9a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Main Track could be shifted easterly toward U S 101 to accommodate trail.	X	

SEGMENT	SUBSEGMENT	ALIGNMENT	DESCRIPTION OF ALIGNMENT	Connections that can occur with next subsegment (to the south)	COMMENTS	Preferred	Not Preferred
		b	CT ROW; RwT; Et	7.9b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Cross section shows RR ROW, not CT ROW.		
	7.9		**Drainage Culvert @ RRMP 289.6 to Bracut**				
		a	RR ROW; RwT; Wt	7.10a	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Main Track could be shifted easterly toward U S 101 to accommodate trail.	**X**	
		b	CT ROW; RwT; Et	7.10b	On RR ROW requires track rehabilitation, no imposed RR speed restriction, lease of RR land. Cross section shows RR ROW, not CT ROW.		

Arcata Rail with Trail Stakeholder, Steering Team & Public Meetings Summary

Steering Team Meetings

- November 5, 2009
  - TOPICS COVERED: Project overview including route determination, trail and corridor planning documents, trail engineering and design, environmental and regulatory review, schedule, discussion of preliminary alignments, agency guidelines and standards, and future meetings.
- December 10, 2009
  - TOPICS COVERED: Recap of November 5 meeting, project update, rail with trail standards, trail design and engineering update, regulatory review and permitting update, environmental review, schedule and deliverables, criteria used for preferred route determination, discussion of trail segments and connectivity, and next steps.

STEERING TEAM Members

Name	Affiliation
Mitch Stogner	NRCA*
John Williams	NCRA-Operator
Dave Stewart	CPUC*
Eric Nelson	USFWS*
Rex Jackman	Caltrans*
Cheryl Willis	Caltrans*
Ralph Martinelli	Caltrans
Alyson Hunter	Caltrans
Jen Rice	RCAA
Marcella Clem	HCAOG
Ray Bosch	USFWS*
Michael van Hattem	CA DFG
Kelley Reid	USACOE

*Did not attend December 10 meeting.

Stakeholder Meeting

- December 10, 2009
  - TOPICS COVERED: Project overview, rail with trail standards, trail design and engineering, regulatory review and permitting, environmental review, schedule and deliverables, criteria used for preferred route determination, discussion of trail segments and connectivity, and next steps.

STAKEHOLDERS

Agency/Organization	Representative
Humboldt Bay Harbor District	Dave Hull*
	Adam Wagschal
	Mike Wilson
Local Birding Groups / Audubon	Chet Ogen*
Local Waterfowl Hunters	Ted Romo
PG&E	Allison Talbott*
County of Humboldt Public Works	Tom Mattson*
	Hank Seemann
	Chris Whitworth
Friends of the Arcata Marsh	Sue Leskiw*
	Katie
Green Wheels	Ashley Hanson
Humboldt Baykeeper	Pete Nichols*
Coastwalk	Mike Lee*
Humboldt Bay Bicycle Commuter's Association	Rick Knapp*
	Brett Gronemeyer
Humboldt State University - shorebirds	Mark Coldwell*
Trails Trust of Humboldt Bay	Karen Brooks
Corridor Access Project	Marty McClelland *
	Tim Shreeve
	Doc Johnson
Pacific Coast Joint Venture	Sharon Kahara
Arcata Chamber of Commerce	Brenda Bishop*
Eureka Chamber of Commerce	Warren Hockaday*
Humboldt County Convention & Visitors Bureau	Tony Smithers*
Timber Heritage Association	Marcus Brown
	Dan Hauser
Bracut 101	Dave Wells
	Dave Meserve*

*Did not attend December 10 meeting.

Public Meeting

- February 4, 2010

- TOPICS COVERED: Review of past City planning efforts, project overview, selected alignment determination criteria and the selected alignment review. Presentation materials developed for the meeting included a video of the trail corridor and a review of large format aerial maps. Members of the public were encouraged to make written comments directly on the maps.