Navigating Dynamic Stakeholder, Contractor and Regulatory Landscape to Improve Urban Streams: A Case Study of the City of Fortuna’s Rohner Creek Flood Control, Seismic and Habitat Improvements Project

Presented To: Floodplain Management Association
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Presented By: Brett Vivyan (GHD)
Presentation
Project Background & Development

Process and Lessons Learned:

• Funding
• Property Owner Outreach
• Permitting
• Construction
Project Background and Development
Timeline of Rohner Creek

- Storm Drain Master Plan
  Identified Need to Reduce Rohner Creek Flooding (1982)
- Storm Drain Master Plan Update (2005)
- City of Fortuna
  Hydrology and Hydraulic Analysis (2009)
- Grant Funding (2012)
  Alternatives Analysis, Design, Permitting, Outreach
- Construction (2016)


City of Fortuna Rohner Creek Flood Control, Habitat and Seismic Improvements Project:
Floodplain Management Association
Project Goals

1. Reduce Flooding of Rohner Creek and Hillside Creek;

   Convey a minimum 10% Annual Chance Storm (10-year storm) and as funding becomes available implement additional phases that convey 1% Annual Chance Storm (100-year storm)
Project Goals, Con’t

2. Implement seismic improvements through new infrastructure and retrofits;

3. Integrate, where practical, stream habitat enhancements that improve salmonid access, habitat and stream function

4. Initiate a long-term corridor monitoring and maintenance process
2012 Existing Conditions 2D Model
1% Chance Annual Storm
Existing Conditions
1% Chance Annual Storm

100-year Flood Depth

- <3"  12-24"
- 3-6"  >24"
- 6-12"

Flood Recurrence Capacity

- 100 year
- 5-10 year
- 25-50 year
- 2-10 year
- 25 year
- 1-2 year

Culvert
Stormdrain Pipe
Drainage Ditch
Creek
Existing Conditions
1% Chance Annual Storm
Existing Conditions
1% Chance Annual Storm

MODELED 1% CHANCE ANNUAL STORM INUNDATION

- <3" 12-24"
- 3-6" >24"
- 6-12" 100yr Eel at Strongs Creek (45.77ft NAVD88)

CREEK FLOW
Phase 1
Rohner Creek & Floodplain Swale

Phase 2
Swale and Floodplain Extension

Phase 3
Hillside Creek

Phase 4
12th Street

PROJECT

MODELED 1% CHANCE ANNUAL STORM INUNDATION

- PHASE 1
- <3"
- 3-6"
- 6-12"
- 12-24"
- >24"
- EXISTING CONDITIONS FLOODING EXTENT
- 100yr Eel at Strong Creek (45.77ft NAVD88)
- CREEK
- FLOW
Phase 1
Rohner Creek & Floodplain Swale

Phase 2
Swale and Floodplain Extension

Phase 3
Hillside Creek

Phase 4
12th Street
Phase 1
Rohner Creek & Floodplain Swale

Phase 2
Swale and Floodplain Extension

Phase 3
Hillside Creek

Phase 4
12th Street
Phase 1
Rohner Creek & Floodplain Swale

Phase 2
Swale and Floodplain Extension

Phase 3
Hillside Creek

Phase 4
12th Street
Outcome and Community Benefits

1. Removes 150 Parcels from the FEMA 1% Annual Chance (100-year) Revised Effective Floodplain

2. Avoided Cost Benefit
   A. Flood Reduction* $15.5 Million
   B. Flood Insurance* $3.5 Million

3. Ability for City to Monitor and Maintain Rohner Creek

4. State and Federal Grant Funds Leveraged to Reduce City Cost

*Based on F-RAM model 50 year Project Life and 6% discount rate
Other Benefits

- Mitigation on Site
- Increased in Developable Land on Private Property
- Reduced City Creek Maintenance
- Reduce Seismic Hazard
- Reduced Streambank Erosion
- Improved Ecological and Aquatic Habitat
- Improved Water Quality
Timeline of Rohner Creek Funding

- Storm Drain Master Plan Identified Need to Reduce Rohner Creek Flooding (1982)
- Storm Drain Master Plan Update (2005)
- City of Fortuna Hydrology and Hydraulic Analysis (2009)
- DWR, Prop 1E Grant Award (2012)
- DWR, Urban Stream Restoration Program (2015)
- CDFW, FRGP (2016)
- FEMA, HMGP (2017)

City of Fortuna

Rohner Creek Flood Control, Habitat and Seismic Improvements Project:

Floodplain Management Association

- Channel Widening and Stabilization Main St. to 12th St.
- Bridge Replacements
- Channel Improvements Rohnerville Rd. to Fortuna Blvd.
- Floodplain Swale
- Culvert Replacements
- Channel Widening and Stabilization Main St. to 12th St.
- Floodplain Improvements Continuation
- Flood Control & Fish Passage Improvements
Outreach & Permitting: All Phases
Final Design: Phase 1 and 2
Construction: Phase 1

$3.4 Million

Proposition 1E
Disaster Preparedness and Flood Prevention Bond Act of 2006 administered by the California Department of Water Resources

$3.5 Million

Redevelopment Agency/ Drainage Funds
Construction- Phase 2

$400 Thousand

Urban Streams Restoration Grant Program
Design & Construction- Phase 3 & 4 Flood Control

$1.9 Million

$0.6 Million
Design- Phase 4 Fish Passage

Fisheries Restoration Grant Program

$60 Thousand  $40 Thousand
Lessons Learned

• Did You Ask for Enough Funding?

• Stand Alone Project Phases and Target Funding without Increased Flood Risk

• Permit All Phases of the Project

• If at First You Don’t Succeed….
Property Owner Outreach
City of Fortuna Rohner Creek Flood Control, Habitat and Seismic Improvements Project:
Floodplain Management Association

~200 Properties

Legend
- Project Study Area
- FEMA 100 Year Flood Zone
- 100yr Eel at 12th Street (45.77 ft)
- Updated Model Flooding
- Creeks
- Parcel Boundaries

Feet
FEMA LOMR
Public Meeting
City of Fortuna Rohner Creek Flood Control, Habitat and Seismic Improvements Project:
Floodplain Management Association
**Project Overview**

**Overview of Alternatives**

The alternatives being considered are outlined below and illustrated on the map to the right.

**Alternative 1: Channel Improvements**
- Orange line on map
- Alternative 1 consists of modifying, widening, and improving a segment of the existing Rohner Creek from approximately Main Street to Smith Lane, where the capacity of the creek is currently the most constrained.

**Alternative 2: Fortuna Boulevard Pipeline Bypass**
- Yellow line on map
- Alternative 2 consists of constructing a storm water bypass pipeline under Fortuna Boulevard. During high flows, the pipe would convey excess storm water from the creek north of Main Street, divert these high flows away from the creek channel, and then reinsert the flow back into the creek south of Alder Drive.

**Alternative 3a: Western Field Pipeline Bypass**
- Same location as Alternative 3b, green line on map
- Alternative 3a consists of constructing a storm water pipeline under several properties west of Rohner Creek. Exact locations of this alignment are yet to be determined. During high flows, the pipe would convey excess water from the creek south of Main Street, divert these high flows away from the creek channel, and then reinsert the flow back into the creek east of 12th Street. The dashed lines indicate some of the alignments that are being considered.

**Alternative 3b: Western Field Pipeline Bypass**
- Same location as Alternative 3a, green line on map
- Alternative 3b would be located in approximately the same location as Alternative 3a, but would consist of an aboveground channel instead of an underground pipeline. Exact locations of this alignment are yet to be determined. The aboveground channel would be able to carry more water than the underground pipeline.

**Overall Project Benefits**
- Floodplain inundation in the study area (amount of reduction depends on alternative selected)
- Reduce need for creek maintenance, including debris removal and train cleanup
- Improve health of stream, fisheries, and overall habitat (degree depends on alternative selected)
- Reduce property damage to homes and businesses due to flooding (degree depends on alternative selected)
- Replace and seismically upgrade existing bridges

**Private Property Considerations**
- Feedback from property owners is important and will be sought throughout the project
- The City is attempting to develop alternatives that minimize private property encroachments
- It is likely that each alternative will require some easements and/or construction access on private property
- Actual implementation of any of the alternatives will be based on landowner input

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City of Fortuna Rohner Creek Flood Control, Habitat and Seismic Improvements Project:
Floodplain Management Association
>33% response rate

Dozens of additional emails, phone calls, and meetings
Alternatives Analysis: Lessons Learned

Identify Key Property Owners

• Themes

• Who is impacted? Extent and Resources

• Who lives on the Property? Owner vs. Renter

• Level of Involvement/Support? Carte Blanche vs. Designer

• Preferred Alternative? Concerns and Impacts

• Who’s not here?
Design Outreach

• 50 Properties
• Limits of Grading
• Easements
• Special Considerations
Design: Lessons Learned

• Identify Existing Easements & Boundaries Early

• Establish a Communication Hierarchy

• Provide Examples and Visual Markers

• Incorporate Accepted Requests into Design Plans and Specifications

• Pay Attention to Detail

• It’s a Long-Term Relationship
Permitting
Regulatory Agencies

401 Water Quality Certification

1600 Lake and Streambed Alteration Agreement, ITP, Consistency Determination

404 Clean Water Act Section 7 Endangered Species (Biological Opinion)

City of Fortuna Rohner Creek Flood Control, Habitat and Seismic Improvements Project:
Floodplain Management Association
Regulatory Agencies

Letter of Map Revision (LOMR)
Update to Existing Conditions

Conditional Letter of Map Revision (CLOMR)
Agency Meetings

1. Project Need
2. Public Outreach
3. Alternatives/Design
4. Environmental Benefits & Impacts
5. Site Tours
Agency Feedback

• Preferred Alternative
• Development vs. Restoration
• Mitigation Ratios
• Post Construction Monitoring & Maintenance Structure
Stream Corridor Management Plan (SCMP)

• Post Construction Monitoring & Maintenance Structure
• Meet Long-Term Project Goals/Objectives
• Identify Monitoring Components, Triggers and Actions
• Suite of Actions Approved by Regulatory Agencies
• Template for other Creeks within the City
Permitting: Lessons Learned

• Call your regulator/permit agency and meet/provide updates

• Know the timeframe: submittal, review for completeness, complete submittal, review, issue

• Coordinate, communicate and organize environmental and engineering staff

• It’s a long-term relationship
Construction
Property Owner Outreach, Permitting and Implementation
City of Fortuna  Rohner Creek Flood Control, Habitat and Seismic Improvements Project:
Floodplain Management Association
Construction: Lessons Learned

Establish Lines of Communication:
• Property Owners
• Contractor & Sub-Contractors
• Inspector/Engineer
• City
Construction: Lessons Learned

Know your Contractor’s Strengths and Weaknesses:
• Low-Bid
• Property Owners
• Sub-Contractors
Construction: Lessons Learned

Property Owner Management:
• Check-ins
• Expectations
• Schedule
Construction: Lessons Learned

Empathize (Disturbance and Powerlessness)
Construction: Lessons Learned

Provide Updates to Permitting Agencies
Construction: Lessons Learned

Adapt to the Changing Landscape
End