



Climate Resiliency Action Plan

Chignik Regional Climate Resiliency Symposium
Chignik Bay, Alaska
June 4-5, 2023

Bristol Engineering Services Company, LLC

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Overview

- ▶ Report Information & Status
- ▶ Project Objectives
- ▶ Project Methodology
- ▶ Summary of Previous Presentations
- ▶ Risk Mitigation & Community Goals
- ▶ Priority Projects
- ▶ Data Gap Analysis
- ▶ Closing

Report Information & Status

- ▶ Project Sponsor / Owner: Chignik Bay Tribal Council
- ▶ Project funding: BIA Tribal Resiliency grant award
- ▶ Contractor: Bristol Engineering Services Company, LLC

- ▶ Report Status
 - Final Draft Report issued on May 30, 2023
 - Next step, receive final comments Sponsor
 - Final reporting, two weeks after receipt of final comments

Project Objectives

- ▶ Community engagement
- ▶ Understand past and ongoing studies
- ▶ Identify data gaps
- ▶ Identify at-risk infrastructure
- ▶ Identify mitigation strategies
- ▶ Develop tools to implement mitigation strategies
- ▶ Compile reporting to present the findings of the project

Project Methodology

- ▶ Project kick-off meeting
 - w/ Traditional Ecological Knowledge (TEK) discussion
- ▶ Climate hazard summary / gap analysis
 - Hazard summary presented in previous presentations
 - Gap analysis discussed later
- ▶ Site visit(s) / community meeting
 - May 25-29, 2022: Site investigation & CRCRS 2022
 - November 2022: AFE 2022
 - Today!
- ▶ At-risk infrastructure identification
 - Data analysis, TEK, and visual inspection
 - Outcome summarized in previous presentations

Project Methodology (cont.)

- ▶ Risk mitigation strategies and implementation
 - Strategies identified and discussed in previous presentations
 - Cost evaluation of all strategies to be provided in final reporting
- ▶ Project sponsor selected three (3) priority projects
 - Additional details discussed later
- ▶ Project Reporting
 - Developed in draft, final draft, and final reporting

Summary of Previous Presentations

- ▶ May 25-29 2022: Site investigation & CRCRS 2022
- ▶ November 2022: AFE 2022
 - Included in handout for additional participant information
 - Project Description
 - Climate Resiliency
 - Action Plan Development
 - Climate Hazards
 - Past, Concurrent, & Future Studies
 - At-Risk Infrastructure
 - Risk Mitigation Strategies
 - Future Project Ideas
 - Community Goals

Risk Mitigation & Community Goals

- ▶ Risk Mitigation
 - Focus on public infrastructure
 - General strategies
 - Defend in place
 - Facility improvements
 - Relocation
- ▶ Community goals
 - Improve emergency response preparedness
 - Grow community
 - Elder support
 - Preserve subsistence cultural way of life (specifically the fishery)
 - Improve economy by diversifying resources and providing more jobs to locals in the Community

Priority Projects

- ▶ Priority Projects
 - Align with risk mitigation and community goals
 - Focused on public infrastructure
 - Brainstorming list developed during workshops guided by Bristol
 - Three priority projects selected by Sponsor
 - Indian Creek Bridge and Road Rehabilitation Preliminary Engineering Report (PER)
 - Design & Construction of Two Tsunami Shelters PER
 - East Side Electric Distribution Upgrades PER

Priority Projects (cont.)

- ▶ Capital assets
 - What are they
 - Public infrastructure owned by public entity
 - How are they developed (project life cycle)
 - Planning
 - Preliminary engineering
 - Engineering design
 - Construction
 - Operations and maintenance
 - Decommissioning

Priority Projects – Project #1

Indian Creek Bridge and Road Rehabilitation PER

- ▶ Community goal
 - emergency preparedness
- ▶ Mitigation strategy
 - Defend in place & facility improvements
- ▶ Background
 - Critical infrastructure for community evacuation routes
 - Bridge constructed in 1985 (38 years)
 - Vulnerable to erosion
 - Deteriorating structural systems
 - Landfill Road
 - Vulnerable to erosion





Priority Projects – Project #1 (cont.)

► Objectives

- Collect data required for analysis of preliminary design alternatives, including a geotechnical investigation, infrastructure inspection, and survey.
- Identify design alternatives of bridge and road upgrades necessary to stabilize the existing impacted structures and their associated construction cost estimates.
- Develop PER, that includes preliminary drawings and construction cost estimates for the alternatives. The PER will evaluate design alternatives, recommend a preferred solution, and discuss construction needs for the road and bridge improvements.

Priority Projects – Project #1 (cont.)

▶ Scope

- Task 1: Project management
 - Subtask 1.1: General Project Management
 - Subtask 1.2: Project Kick-Off Meeting
 - Subtask 1.3: Design Review Meetings
 - Alternative meeting
 - Draft PER
 - Subtask 1.4: Project Closeout
 - Deliverables: monthly reporting / invoicing, meeting minutes, final reporting
- Task 2: Data Collection and Site Investigations
 - Subtask 2.1: Desktop and Background Data Collection
 - Subtask 2.2: Site Investigation w/ Trip Report
 - Subtask 2.3: Surveying and Base Mapping Desktop Study
 - Subtask 2.4: Geotechnical Desktop Study
 - Deliverables: Trip report, others in PER

Priority Projects – Project #1 (cont.)

► Scope

- Task 3: Design Alternatives Analysis
 - Subtask 3.1 – 3.2 Design Bridge and Road Alternatives
 - plan details
 - material quantity estimates
 - estimated construction costs
 - estimated construction schedule
 - Deliverable: Alternative Memo
 - draft w/ sponsor review
 - Final will be in PER
- Task 4: Preliminary Engineering
 - Subtask 4.1 – 4.2: Develop PER in US Department of Transportation Federal Highway Administration (FHWA) format
 - Deliverable: Preliminary Engineering Report (PER)
 - Draft w/ sponsor review
 - Final

Priority Projects – Project #1 (cont.)

Schedule

Task No.	Task	Timeline
-	Funding Obtained / NTP	To be determined
1.2	Project Kick-Off Meeting	1 month after NTP
2.1	Desktop Background Data Collection	2 months after Kick-Off Meeting
2.2	Site Investigation w/ Trip Report	1 month after Desktop Background Data Collection
2.3	Surveying and Base Mapping Desktop Study	1 month after Site Investigation
2.4	Geotechnical Desktop Study	1 month after Site Investigation
3.1	Bridge Design Alternatives	2 months after Desktop Studies
3.2	Road Design Alternatives	2 months after Desktop Studies
1.3	Design Alternatives Review Meeting	1 month after Design Alternatives
4.1	Draft PER	3 months after Design Alternative Review Meeting
1.3	Draft PER Review Meeting	1 month after Draft PER
4.2	Final PER	2 months after Draft PER Review Meeting
1.4	Project Closeout	1 month after Final PER
Total = 15 months		

Priority Projects – Project #1 (cont.)

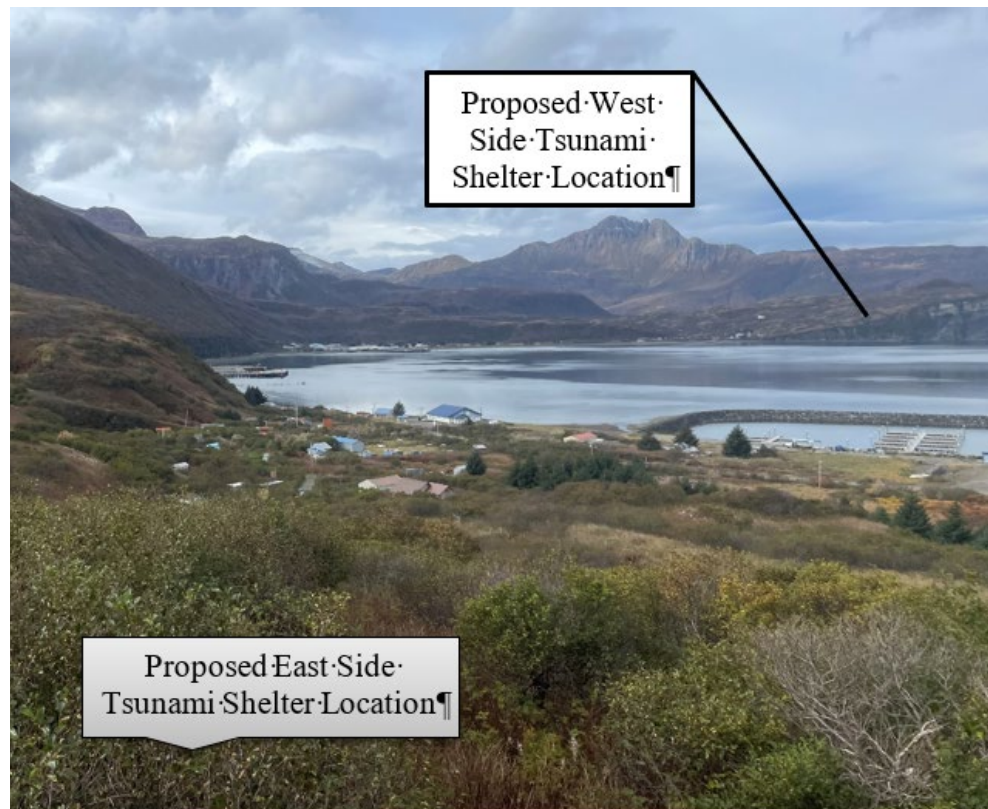
► Budget

Task No.	Task	Budget
1.1	General Project Management	\$ 3,500
1.2	Project Kick-Off Meeting	\$ 2,500
1.3	Design Review Meetings	\$ 5,000
1.4	Project Closeout	\$ 5,000
2.1	Desktop Background Data Collection	\$ 30,000
2.2	Site Investigation w/ Trip Report	\$ 20,000
2.3	Surveying and Base Mapping Desktop Study	\$ 20,000
2.4	Geotechnical Desktop Study	\$ 30,000
3.1	Design Bridge Alternatives	\$ 35,000
3.2	Design Road Alternatives	\$ 30,000
4.2	Final PER	\$ 75,000
Subtotal		\$ 256,000
Tribal Administration (10%)		\$ 25,600
Total Budget		\$ 281,600

Priority Projects – Project #2

Design & Construction of Two Tsunami Shelters PER

- ▶ Community goal
 - emergency preparedness
- ▶ Mitigation strategy
 - New facility
- ▶ Background
 - Critical shelter(s) needed during emergency event
 - None currently exist



View from Old East Side Water Storage Tank



Priority Projects – Project #2 (cont.)

► Objectives

- Collect data required for analysis of preliminary design alternatives, including a geotechnical investigation, infrastructure inspection, and surveying.
- Identify design alternatives for the two tsunami shelters and associated construction cost estimates.
- Develop a preliminary engineering report (PER) that includes preliminary drawings and construction cost estimates for the alternatives.

Priority Projects – Project #2 (cont.)

▶ Scope

- Task 1: Project management
 - Subtask 1.1: General Project Management
 - Subtask 1.2: Project Kick-Off Meeting
 - Subtask 1.3: Design Review Meetings
 - Alternative meeting
 - Draft PER
 - Subtask 1.4: Project Closeout
 - Deliverables: monthly reporting / invoicing, meeting minutes, final reporting
- Task 2: Data Collection and Site Investigations
 - Subtask 2.1: Desktop and Background Data Collection
 - Subtask 2.2: Site Investigation w/ Trip Report
 - Subtask 2.3: Surveying and Base Mapping Desktop Study
 - Subtask 2.4: Geotechnical Desktop Study
 - Deliverables: Trip report, others in PER

Priority Projects – Project #2 (cont.)

► Scope

- Task 3: Design Alternatives Analysis
 - Subtask 3.1 – 3.2 East side and West side Alternatives
 - plan details
 - material quantity estimates
 - estimated construction costs
 - estimated construction schedule
 - Deliverable: Alternative Memo
 - draft w/ sponsor review
 - Final will be in PER
- Task 4: Preliminary Engineering
 - Subtask 4.1 – 4.2: Develop PER in standard format
 - Deliverable: Preliminary Engineering Report (PER)
 - Draft w/ sponsor review
 - Final

Priority Projects – Project #2 (cont.)

► Schedule

Task No.	Task	Timeline
-	Funding Obtained / NTP	To be determined
1.2	Project Kick-Off Meeting	1 month after NTP
2.1	Desktop Background Data Collection	2 months after Kick-Off Meeting
2.2	Site Investigation w/ Trip Report	1 month after Desktop Background Data Collection
2.3	Surveying and Base Mapping Desktop Study	1 month after Site Investigation
2.4	Geotechnical Desktop Study	1 month after Site Investigation
3.1	East Side Tsunami Shelter Design Alternatives	2 months after Desktop Studies
3.2	West Side Tsunami Shelter Design Alternatives	2 months after Desktop Studies
1.3	Design Alternatives Review Meeting	1 month after Design Alternatives
4.1	Draft PER	3 months after Design Alternative Review Meeting
1.3	Draft PER Review Meeting	1 month after Draft PER
4.2	Final PER	1 month after Draft PER Review Meeting
1.4	Project Closeout	1 month after Final PER
Total = 14 months		

Priority Projects – Project #2 (cont.)

► Budget

Task No.	Task	Budget
1.1	General Project Management	\$ 3,500
1.2	Project Kick-Off Meeting	\$ 2,500
1.3	Design Review Meetings	\$ 5,000
1.4	Project Closeout	\$ 5,000
2.1	Desktop Background Data Collection	\$ 30,000
2.2	Site Investigation w/ Trip Report	\$ 20,000
2.3	Surveying and Base Mapping Desktop Study	\$ 20,000
2.4	Geotechnical Desktop Study	\$ 30,000
3.1	East Side Tsunami Shelter Design Alternatives	\$ 30,000
3.2	West Side Tsunami Shelter Design Alternatives	\$ 30,000
4.2	Final PER	\$ 75,000
Subtotal		\$ 251,000
Tribal Administration (10%)		\$ 25,100
Total Budget		\$ 276,100

Priority Projects – Project #3

East Side Electric Distribution Upgrades PER

- ▶ Community goal
 - emergency preparedness
- ▶ Mitigation strategy
 - facility improvements
- ▶ Background
 - Critical infrastructure
 - Power grid improvements required
 - Distribution system
 - Power plants (engines / generators) 3each.

Priority Projects – Project #3 (cont.)

► Objectives

- Collect data required for analysis of preliminary design alternatives, including geotechnical investigation, infrastructure inspection, and survey as warranted.
- Complete preliminary design alternatives for the electrical upgrades, to include estimates of construction cost.
- Develop a preliminary engineering report (PER), with preliminary drawings, construction cost estimates, and recommendations. The PER will evaluate design alternatives, select a preferred solution, and discuss construction needs.

Priority Projects – Project #3 (cont.)

► Scope

- Task 1: Project management
 - Subtask 1.1: General Project Management
 - Subtask 1.2: Project Kick-Off Meeting
 - Subtask 1.3: Design Review Meetings
 - Alternative meeting
 - Draft PER
 - Subtask 1.4: Project Closeout
 - Deliverables: monthly reporting / invoicing, meeting minutes, final reporting
- Task 2: Data Collection and Site Investigations
 - Subtask 2.1: Desktop and Background Data Collection
 - Subtask 2.2: Site Investigation w/ Trip Report
 - Subtask 2.3: Surveying and Base Mapping Desktop Study
 - Subtask 2.4: Geotechnical Desktop Study
 - Deliverables: Trip report, others in PER

Priority Projects – Project #3 (cont.)

- ▶ Scope
 - Task 3: Design Alternatives Analysis
 - Subtask 3.1: East Side Electric Distribution System Design Alternatives
 - Considering: bulk fuel, power generation, bulk fuel, and utility equipment
 - plan details
 - material quantity estimates
 - estimated construction costs
 - estimated construction schedule
 - Deliverable: Alternative Memo
 - draft w/ sponsor review
 - Final will be in PER
 - Task 4: Preliminary Engineering
 - Subtask 4.1 – 4.2: Develop PER in standard format
 - Deliverable: Preliminary Engineering Report (PER)
 - Draft w/ sponsor review
 - Final

Priority Projects – Project #3 (cont.)

► Schedule

Task No.	Task	Timeline
-	Funding Obtained / NTP	To be determined
1.2	Project Kick-Off Meeting	1 month after NTP
2.1	Desktop Background Data Collection	2 months after Kick-Off Meeting
2.2	Site Investigation w/ Trip Report	1 month after Desktop Background Data Collection
2.3	Surveying and Base Mapping Desktop Study	1 month after Site Investigation
2.4	Geotechnical Desktop Study	1 month after Site Investigation
3.1	East Side Electrical Distribution Upgrades Design Alternatives	2 months after Desktop Studies
1.3	Design Alternatives Review Meeting	1 month after Design Alternatives
4.1	Draft PER	3 months after Design Alternative Review Meeting
1.3	Draft PER Review Meeting	1 month after Draft PER
4.2	Final PER	1 month after Draft PER Review Meeting
1.4	Project Closeout	1 month after Final PER
Total = 14 months		

Priority Projects – Project #3 (cont.)

► Budget

Task No.	Task	Budget
1.1	General Project Management	\$ 3,500
1.2	Project Kick-Off Meeting	\$ 3,500
1.3	Design Review Meetings	\$ 5,000
1.4	Project Closeout	\$ 5,000
2.1	Desktop Background Data Collection	\$ 30,000
2.2	Site Investigation w/ Trip Report	\$ 20,000
2.3	Surveying and Base Mapping Desktop Study	\$ 20,000
2.4	Geotechnical Desktop Study	\$ 30,000
3.1	East Side Electric Distribution Design Alternatives	\$ 30,000
4.2	Final PER	\$ 75,000
Subtotal		\$ 222,000
Tribal Administration (10%)		\$ 22,200
Total Budget		\$ 244,200

Data Gap Analysis

- ▶ Root cause of low salmon returns
- ▶ More accurate weather data specific to Chignik Bay
- ▶ Bathymetry of river, lakes, and bay
- ▶ Water level monitoring
- ▶ Centralized historical flood database
- ▶ Sediment transport model
- ▶ Updated land ownership maps
- ▶ Updated aerial imagery
- ▶ Inner transit system feasibility study specific to Chignik region
- ▶ Discuss in breakout session or now?
 - Priorities, dependencies, resources, timelines, costs, funding opportunities, and other?



Closing

- ▶ Questions / Comments?

Thank you!

