

CARMEL AREA WASTEWATER DISTRICT

**Wastewater Treatment Plant Climate
Adaptation-in-Place Alternatives Analysis
and Strategy Development. Proposal for
Environmental and Engineering Services**

PREPARED BY: GEI CONSULTANTS, INC.

AUGUST 6, 2026



COVER LETTER



August 6, 2026

Alex Henson, PE, Associate Engineer
Carmel Area Wastewater District
3945 Rio Road
Carmel-By-The Sea
CA 93923

Via email at henson@cawd.org

Subject: CAWD WWTP Climate Adaptation-in-Place: Alternatives Analysis and Strategy Development. Proposal for Environmental and Engineering Services

Dear Alex,

Following our recent meeting with you, Patrick, and Jeff; the site visit to your wastewater treatment plant (WWTP); and subsequent discussions, we have pleasure in enclosing our proposal to provide environmental and engineering services to develop alternatives and strategies for the climate adaptation-in-place option for the WWTP.

In addition to the scope of services we have already completed with your input, this proposal includes, at your request:

- **Section 1 - GEI Qualifications.** This section includes an overview of GEI Consultants, Inc., a description of the key services we provide that are relevant to this project, and some representative project experience.
- **Section 2 - Project Team Organization.** Our project team is presented in this section on a detailed Organization Chart that includes each team member's role and responsibilities. The chart highlights key personnel whose short biographies are included in the next section.
- **Section 3 – Key Personnel Qualifications.** The short bios presented here are for our key personnel and include their proposed role and responsibilities on the project, their relevant experience, education, and professional credentials.
- **Section 4 – Scope of Services.** As referenced above, the scope of services has been finalized with your assistance and has been split into two parts.
- **Section 5 – Fee Proposal.** Section 5 includes a detailed fee spreadsheet showing the inputs of our team members and expenses associated with the tasks and sub-tasks described in the scope of services. This is detailed as requested for Part 1 (Tasks 1 -3) only. Part 1 is assumed to be completed within six months of the District's approval and notice-to-proceed.

Our proposed fee for Part 1 is \$231,762, based on a time-and-expenses, not-to-exceed-ceiling basis. Once Part 1 is complete, the scope of services for Part 2 (Tasks 4 - 6) will be reviewed and modified as needed and a detailed fee spreadsheet completed for the District's approval. Services to be provided under Part 2 will be subject to an Agreement separate from Part 1.

We anticipate, based on our current understanding of the likely scope, that Part 2 would be completed within a further eight months. We are currently developing an approximate estimate for Part 2 and will advise under a separate cover. As we discussed, this estimate will be very much dependent on the level of hydrological and hydraulic modeling that may be needed to update your 2018 CAWD WWTP Sea Level Rise Study, based on the modeling and findings of our ongoing climate change studies for the California State Department of Water Resources.

Our GEI Team is very excited to work with you on Part 1 of this important project. We are available to meet with you to discuss our proposal and to answer any questions you may have. We can be reached at rverity@geiconsultants.com (tel. 619-307-0165) and sgray@geiconsultants.com (tel. 209-419-3012).

Sincerely,

GEI Consultants, Inc.

A blue ink signature of Rebecca Verity, written in a cursive style.

Rebecca Verity
Principal-in-Charge / Climate Program Manager

A blue ink signature of Simon Gray, written in a cursive style.

Simon Gray, PE, CEng, FICE
Project Manager / Vice President

SECTION 1 - GEI QUALIFICATIONS

Overview

GEI Consultants, Inc.



Founded in 1970, GEI is an employee-owned, full-service planning, engineering, environmental, construction management, and program management

firm with over 1,800 employees across 60+ offices throughout the U.S. and Canada. In more than 55 years, GEI has earned widespread recognition for its high-quality, innovative, and practical solutions to challenging projects.

In California, GEI specializes in water and wastewater infrastructure and is supported by more than 300 staff in six offices: Sacramento, Oakland, Davis, Bakersfield, Pasadena, and San Diego.

Key Services Relevant to this Project

Climate Adaptation Planning & Alternatives Analysis

Nationally recognized leaders in climate risk and adaptation. We define future hazards, assess vulnerability and risk, and develop and prioritize adaptation strategies to support clear, defensible decision-making.

Coastal & Fluvial Flood Management

Deep experience delivering flood management solutions across California and the U.S. We help protect critical infrastructure through elevation, floodproofing, and system-wide resilience strategies.

Wastewater & Water Infrastructure Engineering

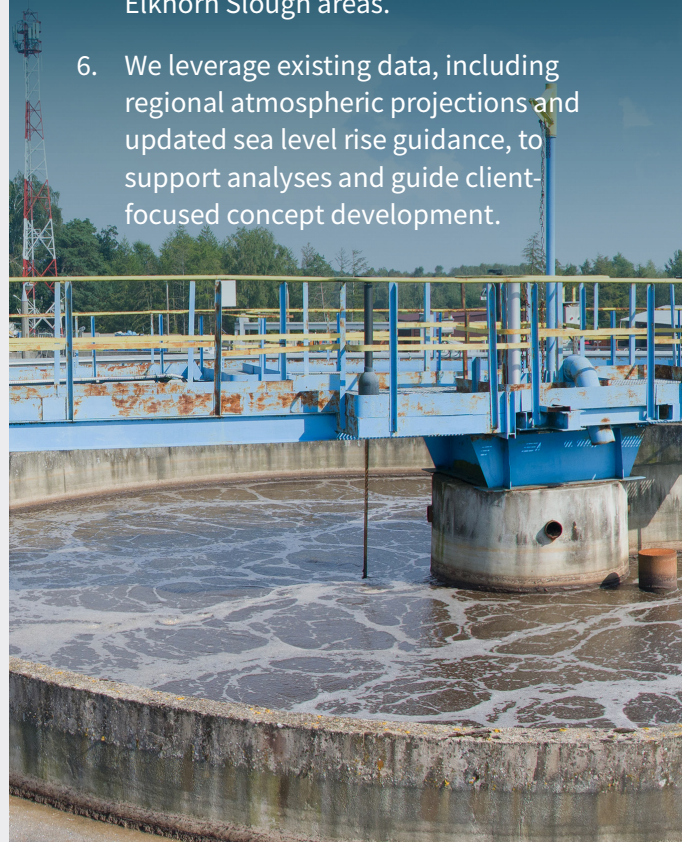
Full-service expertise across the asset lifecycle—from planning and design to construction. We deliver treatment facilities, conveyance systems, and outfall solutions that perform under current and future conditions.

Nature-Based Solutions

Proven delivery of multi-benefit projects, with over 2,500 acres restored. We design and implement riparian habitat, living shorelines, horizontal levees, and other nature-based systems that enhance resilience and ecological value.

What Makes GEI Different for This Project

1. Our multi-disciplinary teams integrate climate science, engineering, and permitting from the start.
2. We focus on implementable solutions, not just studies.
3. We bring experience at both the coastal system level and facility level.
4. We understand California regulatory constraints and how to navigate them.
5. We bring local and regional familiarity, including work in the Monterey Bay and Elkhorn Slough areas.
6. We leverage existing data, including regional atmospheric projections and updated sea level rise guidance, to support analyses and guide client-focused concept development.



Relevant and Representative Project Experience



Highway 1 Elkhorn Slough Corridor Climate Resiliency Project – Transportation Agency of Monterey County

Lead for climate adaptation planning for a critical Monterey Bay corridor vulnerable to sea level rise, storm surge, and watershed-driven flooding. GEI evaluated combined risk and are developing adaptation strategies that included both nature-based and structural resilience measures.

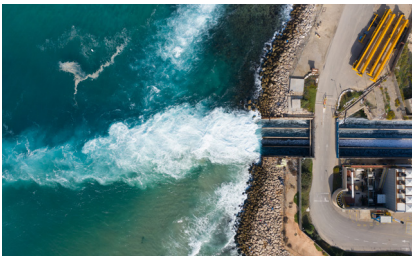
Relevance: Monterey Bay regional experience | Compound flooding analysis | Nature-based and structural strategies



Wastewater Treatment Plant Expansions - Region of Peel, ON

Supported the expansion planning for two wastewater treatment plants by integrating climate resilience into the environmental assessment process. Work included analyzing historical and projected climate data, identifying risks to plant operations and infrastructure, and developing short- and long-term adaptation strategies.

Relevance: Wastewater treatment planning | Climate resilience integration | Phased adaptation strategies



Seawater Desalination Feasibility Study - Santa Clara Valley Water District

Evaluated 13 alternatives for a 10 MGD coastal desalination facility in South San Francisco Bay, including treatment siting, intake and outfall options, brine management strategies, and conveyance alignments. GEI led alternative development, scoring, environmental constraints analysis, climate vulnerability assessment, and CEQA/NEPA and permitting strategy.

Relevance: Coastal facility planning | Alternatives analysis and ranking | Permitting and climate constraints



Climate Vulnerability Assessment of the Harmony Creek Water Pollution Control Plant - Regional Municipality of Durham, ON

Conducted a climate vulnerability assessment for an existing wastewater treatment plant using the PIEVC Protocol. GEI identified and prioritized infrastructure components most at risk and developed targeted adaptation strategies to improve long-term system resilience.

Relevance: Facility-level vulnerability assessment | Risk prioritization | Actionable adaptation measures



Sanitary Master Plan - City of Peterborough

Completed a long-term sanitary master plan to guide wastewater system improvements through 2051, including treatment, conveyance, and system capacity needs. GEI developed and evaluated servicing strategies using hydraulic modeling and a multi-criteria framework, while also assessing climate change impacts and system vulnerabilities.

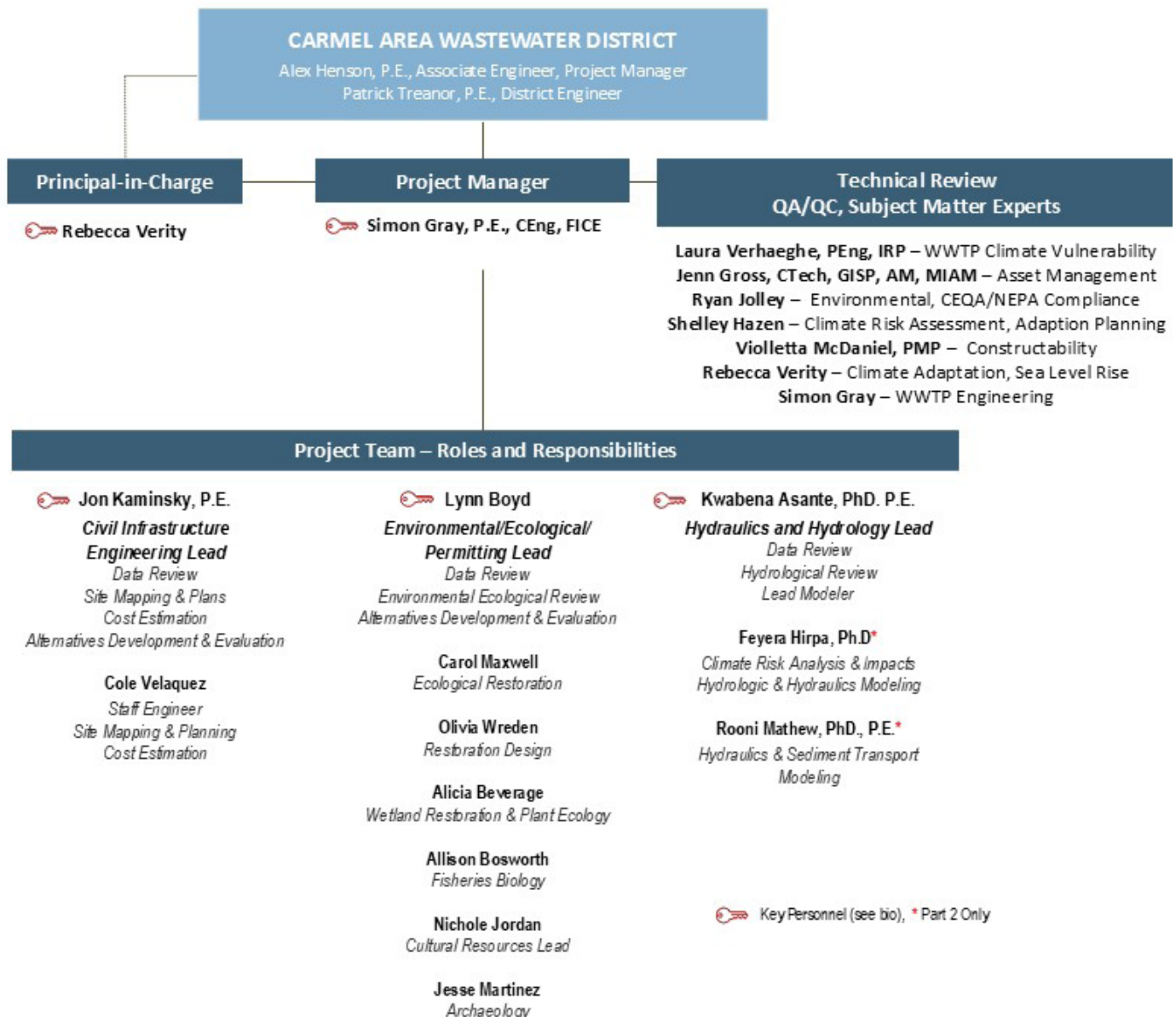
Relevance: Multi-criteria alternatives analysis | Climate and storm impacts | Wastewater system planning

SECTION 2 - PROJECT TEAM ORGANIZATION

Overview

GEI has assembled a highly qualified, multidisciplinary team with the technical expertise, project management experience, and local knowledge necessary to successfully deliver the requested services. Our team structure is designed to promote clear communication, efficient decision-making, and seamless coordination among staff, subconsultants, and stakeholders. Key personnel have been assigned roles that align with their areas of expertise and responsibilities, ensuring responsive service and consistent project execution throughout the contract term. The organizational structure and reporting relationships for the project team are illustrated in **Figure 1**.

FIGURE 1. PROJECT TEAM ORGANIZATIONAL CHART



SECTION 3 - KEY PERSONNEL QUALIFICATIONS

GEI Key Team Personnel



Simon Gray, PE CEng, FICE – *Project Manager*

Simon has over 40 years of extensive national and international design, program, and construction management experience primarily centered on water and wastewater conveyance and treatment facilities. His design specialties include hydraulic and civil design of pump stations, pipelines (including sediment transport), storage tanks and water and wastewater treatment plants.

EDUCATION

BSc (Eng) (Hons), Civil Engineering,
Imperial College of Science and
Technology, University of London,
United Kingdom

Certificate in Business
Administration, Hong Kong
Management Association / Wolsey
Hall, Oxford, United Kingdom

INDUSTRY EXPERIENCE

43 Years

REGISTRATIONS & LICENSES

PE, CA No. 60311
PE, WA No. 51959
PE, OR No. 101172PE
Chartered Engineer, UK No.
45101217

Simon was the Senior Construction Manager for the \$120M, 30 mgd Point Lisas Sea Water Reverse Osmosis (SWRO) Desalination Plant in Trinidad and Tobago (the largest SWRO desalination plant in the Western Hemisphere when completed), and Construction Manager / Resident Engineer for the South East Dorset Wastewater Treatment Plants Program in the UK that included major upgrades to five wastewater treatment plants. His other wastewater treatment plant experience also includes facilities in Oroville, Windsor and Calistoga in California; Egypt; Hong Kong; Malaysia; Indonesia and the UK.

On the wastewater conveyance side, he was Construction Manager for Sacramento Regional County Sanitation District's 40 mgd Van Maren Pump Station and their Bradshaw Interceptor Section 7A contract that included 13,700 LF of 84- and 96-inch diameter pipeline. Simon's project experience also includes water and wastewater design build projects where he led the design teams that were an integral part of contractor-led teams. Simon has also played a key role in securing SWRCB grants and monitoring compliance during construction, and in managing environmental review and mitigation compliance processes for multiple projects.



Rebecca Verity – *Principal-in-Charge / Technical Advisor*

Rebecca leads the Climate Adaption Practice for GEI's Western U.S. offices. Rebecca has over 20 years of expertise in climate change and infrastructure includes the preparation and management of sea level rise and climate adaptation plans to safeguard cities, counties, and infrastructure against wildfire, sea level rise, floods, and extreme heat, with a focus on prioritizing the assets that matter most.

EDUCATION

MS, Biological Oceanography,
Scripps Institute of Oceanography
MS, Environmental Microbiology,
Cornell University

BS, Marine Biology, Humboldt State
University

INDUSTRY EXPERIENCE

25 Years

Rebecca has managed environmental compliance for large infrastructure projects, including multiple Valley Water reservoir seismic upgrades. Concurrent to consulting work, Rebecca volunteers as Wildfire Safety Ambassador and is fluent in communicating how our changing climate will impact aging infrastructure, vulnerable ecosystems, and at-risk populations. Clients include local, county, state and federal agencies, transportation agencies and water districts; and power utilities.

Rebecca has written national guidance on climate risks to flood infrastructure, op-eds on surviving a more combustible California, and briefs on climate adaptation needs at local, regional, and state levels.



Jon Kaminsky, PE – Civil / Infrastructure Engineering Lead

Jon has over 15 years of experience in planning, design, and construction services for water and wastewater systems in California and Idaho. His technical specialization is in pump stations, groundwater resources, and conveyance systems. He is a proven project manager for multi-disciplinary projects ranging from small scale to multi-million-dollar projects. Additional experience includes engineering design and construction services for drinking water, groundwater, storm water, and wastewater systems; groundwater investigations, modelling, and analysis; pump stations; pipelines; and coordination with government regulatory and funding agencies.

EDUCATION

MS, Civil and Environmental Engineering, University of California, Davis

BS, Civil Engineering, University of California, Davis

INDUSTRY EXPERIENCE

16 Years

REGISTRATIONS & LICENSES

PE, CA No. C82004

PE, ID No. 17460

PE, WA No. 55136



Lynn Boyd – Environmental / Ecological / Permitting Lead

Lynn is a senior restoration ecologist and project manager with 26 years of field and consulting experience focused on wetland, wildlife, and plant ecology. Her comprehensive knowledge enhances her abilities to look at resource issues holistically and identify technically defensible restoration approaches. Her approach to restoration design is process-driven, combining a comprehensive watershed evaluation (hydrology, biology and physical constraints) with regional conservation goals, and climate change resilience to integrate ecology and engineering.

EDUCATION

MS, Wildlife, Fisheries and Conservation Biology, University of Massachusetts, Amherst

BS, Wildlife and Fisheries Biology, University of California, Davis

INDUSTRY EXPERIENCE

26 Years



Kwabena Asante, PhD, PE – Hydraulics and Hydrology Lead

Kwabena is an engineering hydrologist and climate resilience planner with over two decades of experience in enhancing water systems, infrastructure, and natural ecosystems. He has worked with dozens of regional, state, and national agencies to conduct climate studies, develop integrated plans, and implement infrastructure projects. Kwabena has managed modeling, planning, application development, and data services for multi-year planning initiatives including the Central Valley Flood Protection Plan, Flood Emergency Response Programs, and the Sustainable Groundwater Management Program. He has supported the development of several regional water management and climate resilience plans. He has also served on technical review panels which reviewed grant proposals, project alternatives, and policy recommendations. Kwabena is currently serving as Co-Chair of the Climate Working Group of the NOAA Science Advisory Board. He also serves on the Board of Certified Climate Science Professionals of the American Meteorological Society.

EDUCATION

PhD, Environmental and Water Resources Engineering, University of Texas at Austin

MS, Construction Engineering and Project Management, University of Texas at Austin

BS, Civil Engineering, University of Nairobi, Kenya

INDUSTRY EXPERIENCE

27 Years

REGISTRATIONS & LICENSES

PE, CA No. C80880

SECTION
4
SCOPE OF SERVICES

**CARMEL AREA WASTEWATER DISTRICT - WWTP CLIMATE ADAPTATION-IN-PLACE
ALTERNATIVES ANALYSIS AND STRATEGY DEVELOPMENT**

Scope of Services

Client: Carmel Area Wastewater District
Consultant: GEI Consultants, Inc.
Project: Wastewater Treatment Plant Climate Adaptation-in-Place
Project Location: Carmel-by-the-Sea, Monterey County, CA
Summary of Services: WWTP Adaptation-in-Place Alternatives Identification,
Evaluation and Reporting
Utility System: Wastewater

1. Project Foundation & Environmental Context

1.1 Purpose

The purpose of this study is to identify conceptual-level adaptation-in-place strategies and perform an engineering and environmental feasibility assessment for adaptation-in-place for the existing Carmel Area Wastewater District (CAWD, District) Wastewater Treatment Plant (WWTP). The study is intended to inform sea level rise planning and adaptation-in-place strategy prioritization by identifying feasible adaptation concept strategies; characterizing their relative strengths, constraints, and implementation considerations; and provide the technical basis for comparative evaluations of combined alternatives to identify a preferred strategy or suite of strategies.

Consistent with the California Coastal Commission's (CCC) adaptation planning framework, adaptation strategies shall be organized within the general categories of Protect, Accommodate, and Retreat. Because full plant relocation was evaluated separately as part of the District's 2023 WWTP Relocation Study, this effort will focus on adaptation-in-place strategies within the existing WWTP site and surrounding environment.

1.2 Project Study Area

The study area is centered on CAWD's WWTP and the surrounding Carmel River and Carmel River Lagoon ecosystem. The facility is located within a dynamic coastal environment where the combined effects of sea level rise, coastal storm surge, lagoon backwater effects, and riverine flooding create an increasingly complex and evolving risk to the continued operation of the WWTP.

The study area supports a diverse mosaic of habitat types including riparian, marsh, sandbar, and aquatic habitats. These habitats include environmentally sensitive and native natural communities, together with developed and previously disturbed areas, that support a variety of special-status plant and wildlife species.

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The Carmel River and Lagoon provide important ecological functions, including juvenile rearing and migration habitat for the federally threatened South-Central California Coast (SCCC) steelhead (*Oncorhynchus mykiss*), as well as habitat for the federally threatened California red-legged frog (*Rana draytonii*). The lagoon and associated wetlands also support a diverse assemblage of native fish, migratory shorebirds, wading birds, and waterfowl, contributing to the area's high ecological value and environmental sensitivity.

The study will evaluate adaptation-in-place strategies within the context of the surrounding coastal and estuarine environment, recognizing that ecological resources can be both constraints and opportunities. Where feasible, adaptation strategies should strive to enhance natural habitats and ecosystem functions while simultaneously improving the long-term resilience of the WWTP.

1.3 Background and Existing Knowledge

The CAWD WWTP is located within the California Coastal Zone adjacent to the Carmel River and Carmel River Lagoon in Monterey County. The proximity of these sensitive coastal resources, combined with projected sea level rise, coastal storm surge, lagoon backwater effects, and riverine flooding, presents long-term challenges to continued operation of the existing WWTP.

During development of the CCC Coastal Development Permit (CDP) No. 3-82-199-A8, CAWD and CCC staff recognized the need for a comprehensive, long-term evaluation of coastal hazards affecting the WWTP. As part of that planning and permitting process, the District initiated the 2018 CAWD WWTP Sea Level Rise Study, which evaluated projected sea level rise, lagoon backwater inundation, and riverine flooding using hydraulic modeling. The study concluded that significant impacts to WWTP operations could occur within long-term planning horizons and established the technical foundation for the District's subsequent coastal hazards planning efforts. Following completion of the 2018 study, the District prepared the 2020 CAWD WWTP Coastal Hazards Monitoring Plan to establish a long-term monitoring program for coastal hazards affecting the facility.

The findings of these studies were ultimately incorporated into CDP No. 3-82-199-A8, which requires the District, under Special Condition 9, to implement a long-term coastal hazards planning process addressing flooding and other climate-related hazards while minimizing impacts to coastal resources. In response, the District prepared the 2022 CAWD Long-Term Coastal Hazards Planning Roadmap, establishing a phased framework for evaluating, planning, and implementing long-term adaptation strategies for the WWTP. The Roadmap spans approximately 40 years, with an initial planning horizon of approximately 20 years, and is organized into three general phases:

- Phase 1 – Alternatives Analysis
- Phase 2 – Detailed Analysis
- Phase 3 – Implementation

Consistent with the Roadmap, the District identified three broad adaptation approaches for future evaluation:

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- Adaptation-in-Place ("Protect" and "Accommodate")
- Construction of a Replacement WWTP Outside the Coastal Hazard Zone ("Retreat")
- Regional Consolidation with Monterey One Water ("Retreat")

To implement the Roadmap, the District completed the 2023 CAWD WWTP Relocation Alternatives Analysis, which evaluated retreat alternatives through both centralized and decentralized treatment approaches. The study included planning-level evaluations of potential sites, treatment process requirements, conceptual facility layouts, land requirements, and conceptual construction costs. The District subsequently completed the 2025 CAWD Five-Year Coastal Hazards and Local Projects Update, documenting progress under the Roadmap, evaluating new information, and reaffirming the long-term planning framework established under the CDP.

Consistent with the Long-Term Coastal Hazards Planning Roadmap, the next phase of work is to identify and evaluate feasible adaptation-in-place strategies for the existing WWTP. Consistent with the CCC's adaptation framework, this study will focus on adaptation concepts within the Protect and Accommodate categories because Retreat alternatives were previously evaluated by the District.

1.4 Adaptation-In-Place Strategies to be Evaluated

The following adaptation concepts represent CAWD's current planning-level framework for adaptation-in-place. The Consultant may recommend refinement, consolidation, or addition of concepts through coordination with CAWD, where supported by engineering judgment and consistency with CCC guidance.

Protect

Hard Protection

- Hard shoreline protection measures (e.g., seawalls, revetments, bulkheads, and similar shoreline armoring) **will not be evaluated** as part of this study to align with CCC policy guidance and CAWD CDP No. 3-82-199-A8 which requires avoidance of new shoreline armoring.

Soft / Nature-Based Protection

- Living shoreline / horizontal levee / expanded transition zone
- Floodplain restoration / overflow channel improvements
- Adaptive lagoon and sandbar management

Other Protection Measures

- Localized internal site grade raising ("raising the ground level elevation in low lying areas")

Accommodate

- Raising or floodproofing buildings and critical infrastructure
- Improvements to drainage collection and surface water management
- Relocation of facilities to increase setbacks within the existing WWTP site

CARMEL AREA WASTEWATER DISTRICT - WWTP CLIMATE ADAPTATION-IN-PLACE ALTERNATIVES ANALYSIS AND STRATEGY DEVELOPMENT

Retreat

While retreat strategies of specific buildings internal to the existing site will be contemplated in this study, alternatives involving complete relocation of wastewater treatment outside the existing WWTP site **are not included** within this study as they were previously evaluated by the District in the 2023 WWTP Relocation Alternatives Analysis.

2. Scope of Services

2.1 Overview

This Scope of Services to be provided by GEI Consultants, Inc. (“GEI”, “GEI Team”, “Consultant”) to the Carmel Area Wastewater District (“Client”, “District”, “CAWD”) are organized under the following six tasks in two Parts:

Part 1

- **Task 1 – Part 1 Project Management and Coordination**
- **Task 2 – Data Collection and Hydrological / Ecological Review.**
- **Task 3 – Site Plan, Existing Conditions (Hydrological, Ecological, and Current Infrastructure), and Elevation Map Development.**

Part 2

- **Task 4 – Part 2 Project Management and Coordination**
- **Task 5 – Adaptation-in-Place Alternatives Evaluation.**
- **Task 6 – Draft and Final CAWD WWTP Comprehensive Adaptation-In-Place Reports.**
 - *Deliverables – Draft and Final Reports.*

Part 2 would commence after completion of Task 3 following an instruction-to-proceed issued by the District.

2.2 Detailed Scope of Services

PART 1

TASK 1 – Part 1 Project Management and Coordination

Under Task 1, the Consultant will manage the project team and interface with the District for Part 1. Task 1 includes three sub-tasks:

1.1 - Project Administration and Management. This sub-task includes administration and management of the project team, and maintenance and update of the project schedule and budget.

1.2 - Monthly Progress Reports and Invoices. The Consultant will prepare and circulate a monthly progress report with the monthly invoice. It will summarize the status and progress against schedule and budget and highlight any key issues to be addressed.

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1.3 - Progress Calls and Meetings. Included under this sub-task are 6 monthly progress meetings of one-hour duration to be held with the District during the project. It is assumed that 2 will be in-person (at CAWD Offices or at the WWTP) and may be coincident with other technical meetings and workshops, and 4 will be virtual via Zoom or Microsoft Teams conference call. The in-person meetings will include a kick-off meeting. The Consultant will prepare an agenda for each of the meetings and action item follow-up summaries. Workshops to discuss deliverables are included in relevant tasks and sub-tasks below.

Task 1 Deliverables:

- Meeting agendas, notes, and action item summaries.
- Project schedule updates.
- Monthly invoices with progress reports.

TASK 2 – Data Collection and Hydrological / Ecological Review

2.1 – Infrastructure Data Collection and Review. The Consultant will review relevant data and information provided by the District under this subtask. This is assumed to include all other data and information beyond that which is currently available on the District website, and will be provided on or before the kick-off meeting. The Consultant anticipates that this will include previous design documents and topographical mapping and survey, geotechnical reports, and ‘as-built’/ record drawings for the WWTP site in AutoCAD format, including general site layouts; yard piping and utilities; structures, chambers, vaults, pads, tanks and buildings; mechanical and electrical equipment, and other miscellaneous facilities. The information will also include details of property boundaries, and any easements and right-of-way constraints.

2.2 – Ecological Baseline and Context Review. Concurrently with the infrastructure data review, the Consultant will compile and review existing, readily available biological and cultural resources studies, regulatory documents, and historical data regarding the Carmel River Lagoon and Estuary ecosystem. This subtask is strictly limited to a desktop review of existing documentation to contextualize nature-based adaptation strategies. No original field data collection, biological surveys, or habitat assessments are authorized under this scope. We have budgeted 40 labor hours for this review.

2.3 – Hydrological and Geotechnical Desktop Review. The Consultant will review available hydrological, hydraulic, and geotechnical information relevant to the WWTP site, including previous flood modeling studies, groundwater information, soil and infiltration characteristics, and other readily available technical data that may influence adaptation-in-place strategies. This task is limited to review and synthesis of existing information and does not include development of new hydraulic or hydrologic models, geotechnical investigations, nor field data collection. We have budgeted 40 labor hours for this review. The findings of this review will be used to inform conceptual strategies development under Task 3 and subsequent evaluation tasks.

2.4 – Baseline Coordination Checkpoint. Upon completing the data review and gap analysis, the Consultant will conduct a virtual coordination call with District staff during one of the scheduled progress calls (Task 1.3). The Consultant will verbally summarize the existing data, identify any missing information gaps, and secure District alignment before proceeding to Task 3. No formal report, technical memorandum, nor standalone presentation deck is required for this task. All data compiled and verified

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under this task will be formally documented within the introductory sections of the Report prepared under Task 6.

Task 2 Deliverables:

- Review documents for use in future tasks.

TASK 3 – Site Plan, Existing Conditions (Hydrological, Ecological, and Current Infrastructure), and Elevation Map Development.

3.1 – LiDAR Site Mapping. The District has advised that it has detailed LiDAR survey plan and elevation data for the WWTP site and surrounding areas. It is assumed that the District will provide this survey data either as point cloud data or in AutoCAD format. The Consultant will use this data with the associated ‘as-built’ / record drawings to create site elevation base maps and figures for strategy development and evaluation and for future project deliverables. The Consultant will not perform any survey mapping as part of the project or obtain data from sources other than CAWD.

3.2 – Existing Biological and Cultural Resources Conditions Overlay. In developing these maps, the Consultant will overlay the infrastructure, biological and cultural resources data collected under Task 2. GIS work under this subtask is strictly limited to digitizing or importing readily available GIS data for existing landcover, vegetation, wetland, sensitive habitat and sensitive cultural resources boundaries available in existing regional planning documents, public agency databases, or prior environmental reports collected under Task 2. No complex spatial modeling, habitat suitability analysis, or GIS data generation will be performed. These integrated figures will serve as a basic baseline so that both engineering and nature-based solutions are evaluated against known spatial and environmental constraints.

3.3 – Initial Strategy Layout and Conceptual Drawings. The Consultant will develop initial conceptual layouts for the adaptation-in-place strategies identified by the District within the context of the site's engineering, biological and cultural constraints. The drawings identified below represent the District's current expectation for communicating the strategies. The Consultant may recommend an alternative presentation format that provides an equivalent or greater level of technical communication, subject to District approval. The technical visualization deliverables for these options are categorized as follows:

- **Structural and Spatial Strategies (12 Drawings Total):** For six physical infrastructure, grading, and nature-based earthwork strategies, the Consultant will deliver up to twelve (12) distinct conceptual-level drawings (one plan view and one section view per strategy):
 - *Soft / Nature-Based Protection:*
 1. Living shoreline / horizontal levee / expanded transition zone;
 2. Floodplain restoration. The plan view may include different options/configurations for each of these proposed categories.
 - *Other Protection Measures:*
 3. Localized site grade raising ("raising the floor").
 - *Accommodate:*
 4. Raising or floodproofing buildings and critical infrastructure;
 5. Improvements to drainage collection and surface water management that may include nature-based solutions;

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6. Relocation of facilities and increased setbacks within the existing WWTP site that may include nature-based solutions.
 - *Drawing Specifications:* Plan view drawings will map the strategy and site footprints and facility/habitat interfaces. Section views for infrastructure will illustrate elevations and grading profiles relative to projected flood levels and sea-level rise elevations.
- **Operational and Ecological Strategy (1 Schematic):** For a seventh strategy - adaptive lagoon and sandbar management - traditional plan and section drawings are not required. Instead, the Consultant will deliver an operational schematic or process flowchart. This layout will visually map the operational triggers, lagoon water-surface elevation thresholds, breaching protocols, and seasonal ecological constraints (e.g., steelhead migration windows) defining the strategy.

The initial strategy and conceptual drawings included in this task will be further refined in Task 5.

3.4 - Alignment Checkpoint. The Consultant will conduct an alignment call with District staff during a scheduled progress call (Task 1.3). The purpose of this call is to review technical or ecological insights discovered during Tasks 2 and 3, confirm the baseline evaluation framework, and mutually agree on the seven defined strategies. If data discovery reveals a compelling technical reason to modify or add a strategy, it will be discussed and mutually agreed upon during this call.

Task 3 Deliverables:

- Portfolio of Conceptual Strategy Layouts (Provided in a single PDF packet and native AutoCAD/GIS formats, consisting of twelve (12) drawings and one (1) operational schematic for District review prior to their incorporation into the Part 2 deliverables.

FUTURE WORK (PART 2) NOT INCLUDED IN THIS SCOPE

The following activities are anticipated to be completed under a future, separately authorized contract following completion of Part 1. The scope of Part 2 will be refined based on the findings and recommendations developed during Part 1.

TASK 4 – Part 2 Project Management and Coordination

Under Task 4, the Consultant will manage the project team and interface with the District for Part 2. Task 4 includes three sub-tasks:

4.1 - Project Administration and Management. This sub-task includes administration and management of the project team, and maintenance and update of the project schedule and budget.

4.2 - Monthly Progress Reports and Invoices. The Consultant will prepare and circulate a monthly progress report with the monthly invoice. It will summarize the status and progress against schedule and budget and highlight any key issues to be addressed.

4.3 - Progress Calls and Meetings. Included under this sub-task are 8 monthly progress meetings of one-hour duration to be held with the District during the project. It is assumed that 3 will be in-person (at CAWD Offices or at the WWTP) and may be coincidence with other technical meetings and workshops,

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and 5 will be virtual via Zoom or Microsoft Teams conference call. The in-person meetings will include a kick-off meeting. The Consultant will prepare an agenda for each of the meetings and action item follow-up summaries. Workshops to discuss deliverables are included in relevant tasks and sub-tasks below.

Task 4 Deliverables:

- Meeting agendas, notes, and action item summaries.
- Project schedule updates.
- Monthly invoices with progress reports.

TASK 5 – Adaptation-in-Place Strategy Evaluation and Alternatives Development

Under Task 5, the Consultant will execute an evaluation of the adaptation-in-place strategies provided by the District and visualized under Task 3. The GEI Team’s approach is grounded in integrated, multi-disciplinary planning that considers infrastructure, hydrology, and ecological function as interconnected systems. Wherever feasible, the Consultant will evaluate alternatives through a multi-benefit outcome lens to improve system performance while also enhancing habitat value and climate resilience, explicitly utilizing the existing conditions baseline and ecological overlays established in Tasks 2 and 3.

Each defined strategy will be evaluated for baseline viability based on such factors as adverse environmental impacts, significant operational impacts, constructability and access concerns, practicality, cost effectiveness, need for land/easement acquisition, ease of permitting, and compatibility with CCC mandates. Hard armoring protection structures and managed retreat options are outside the scope of this study and **will not be evaluated**.

The evaluation process will determine how feasible the alternative is to construct, and whether it provides an adequate level of flood protection. It may be necessary to combine multiple alternative strategies together to achieve the objective of adequate flood protection. Single alternatives in isolation may not be solely adequate.

5.1 – Strategy and Alternatives Evaluation Criteria and Methodology Development. The Consultant will develop proposed evaluation criteria and methodology to be applied to the alternatives provided by the District. It is anticipated that the evaluation will include at least the following factors:

- Relative capital costs and life cycle costs;
- Level of flood protection,
- Necessity to acquire land / easements / right-of-way;
- High-level environmental benefits and impacts, including biological and cultural resources;
- Constructability.

5.2 – Hydrological & Ecological Model Application. The intent of this task is to refine the desktop-level hydrological and ecological evaluations using revised climate change inputs and HEC-RAS hydraulic models. This modeling will simulate updated sea-level rise estimates using the latest available California Sea Level Rise guidance, riverine/tidal flood boundaries, and Carmel River Lagoon sandbar dynamics.

CARMEL AREA WASTEWATER DISTRICT - WWTP CLIMATE ADAPTATION-IN-PLACE ALTERNATIVES ANALYSIS AND STRATEGY DEVELOPMENT

The Consultant will explicitly analyze how the updated model outputs alter, invalidate, or validate the technical assumptions of the work conducted under Tasks 2 through 3.

5.3 – Adaptation-in-Place Strategy Evaluation. The Consultant will evaluate the seven (7) defined separate adaptation strategies developed in Task 3.3 and further refine them if necessary to maximize the strategy's prospect for feasibility and/or adequate flood hazards protection. Combining strategies into alternatives is anticipated to be necessary to achieve adequate levels of hazards protection balanced with protecting sensitive biological and cultural resources and enhancing/improving ecological functions and values. Individual facilities or equipment inside of buildings will not be evaluated in detail. The adaptation-in-place alternatives are categorized under the following two strategies:

- **Protect**
 - **Soft / Nature-Based Protection:**
 - Living shoreline / horizontal levee / expanded transition zone
 - Floodplain restoration / overflow channel improvements
 - Adaptive lagoon and sandbar management
 - **Other Protection Measures:**
 - Localized site grade raising ("raising the ground level elevation in low lying areas")
- **Accommodate:**
 - Raising or floodproofing buildings and critical infrastructure
 - Improvements to drainage collection and surface water management
 - Relocation of facilities and increased setbacks within the existing WWTP site

5.4 – Develop of Adaptation Alternatives. Based on the evaluation of the strategies, GEI will develop up to three alternatives that will comprise a single adaptation strategy, combinations of the adaptation strategies identified in Task 3, or another District-approved suite of combinations supported by engineering and ecological judgment. The three alternatives will be presented conceptually to the District for comment and feedback prior to formalizing and final evaluation. Work under this subtask is strictly limited to planning-level evaluations. Consultant shall deliver up to six (6) distinct drawings (one plan view and one section view per adaptation alternative).

5.5 – Selection of Preferred Alternative / Portfolio. The Consultant will execute a final weighted evaluation matrix which incorporates the revised modeling of the three alternatives. Based on this matrix, the Consultant will work with the District to identify either a single Preferred Alternative, an optimal Preferred Combination Portfolio, or a short-list of two-to-three (2-3) strategies optimized for successful CCC permitting and District operations. The resultant matrix will be incorporated into the Report developed under Task 6.

Task 5 Deliverables:

- Portfolio of updated Strategy Layouts.
- Matrix evaluating adaptation-in-place strategies using the methods/criteria established in Task 5.1.

CARMEL AREA WASTEWATER DISTRICT - WWTP CLIMATE ADAPTATION-IN-PLACE ALTERNATIVES ANALYSIS AND STRATEGY DEVELOPMENT

TASK 6 – Draft And Final CAWD WWTP Comprehensive Adaptation-in-Place Reports

Under Task 6, the Consultant will compile the final comprehensive report for the District. This task serves as synthesis and final presentation of the preceding effort in Tasks 2 through 5 to create a seamless, cohesive public record for the CAWD Board, stakeholders, and regulatory agencies.

6.1 – Draft Comprehensive Report Assembly. The Consultant will compile the results of work completed under Tasks 2 through 3 with the description of modeling efforts and their results, drawings, evaluation matrix, cost profiles, and preferred portfolios generated in Task 5.

6.2 – Final Report and Project Archive. Following a comprehensive review of the draft document by District staff, the Consultant will address and incorporate all agreed administrative and technical comments and issue the Final CAWD WWTP Adaptation-in-Place Report.

Task 6 Deliverables:

- Draft CAWD WWTP Comprehensive Adaptation-in-Place Report (submitted electronically for District review).
- Consolidated Draft Report comments and responses document.
- Final CAWD WWTP Comprehensive Adaptation-in-Place Report (submitted as printable PDFs and hard copies as requested by the District).
- Project Digital Archive: A complete digital hand-off consisting of all native AutoCAD files, native GIS shapefiles/geodatabases compiled in Task 3, Excel cost spreadsheets, and raw output files from the updated hydrological modeling executed in Task 5.

SCHEDULE

- Part 1 (Tasks 1 -3) will be completed within six months from the District's notice-to-proceed with Part 1.
- Subject to any scope of services revisions or other agreement between the parties, Part 2 will be completed within 8 months following the District's notice-to-proceed with Part 2.

SECTION
5
FEE PROPOSAL

Carmel Area Wastewater District
WWTP Climate Adaptation-in-Place - Alternatives Analysis

Task Number	Task	Man Hour Estimate																	Labor Sub-Totals	Sub Consultant	Expense Costs	Total Budget per Sub-Task	Task Sub-Totals	Total Budget Hours	Total Budget Days
		Rebecca Verity PIC & Technical Advisor	Simon Gray PM	Technical Review / QA QC Team	Jon Kaminsky Project Engineer	Cole Velasquez Staff Engineer	Lynn Boyd Environmental Lead	Nichole Jordan Cultural Resources	Carol Maxwell Ecology	Alicia Beverage Wetlands	Ally Bosworth Fisheries	Olivia Wreden Landscape Design	Jesse Martinez Archaeology	Kwabena Asante, H&H Lead	Feyera Hirpa Risk Analysis	Rooni Mathew H&H Modeling	CAD / GIS	Project Assistant							
Current Fee Rates		\$328.00	\$383.00	\$383.00	\$288.00	\$190.00	\$285.00	\$285.00	\$204.00	\$172.00	\$204.00	\$131.00	\$285.00	\$343.00	\$288.00	\$343.00	\$190.00	\$142.00							
PART 1																									
1.0	Part 1 Project Management and Coordination																								
1.1	Project Administration and Management		8														16	\$5,336		\$5,336		24	3.0		
1.2	Monthly Progress Reports and Invoices		6														6	\$3,150		\$3,150		12	1.5		
1.3	Progress Calls and Meetings	6	12				2		2	2	2						6	\$9,146	\$1,000	\$10,146		32	4.0		
2.0	Data Collection and Hydrological / Ecological Review																								
2.1	Infrastructure Data Collection and Review	16	2		16	40	18		16	8		4				14	4	\$31,744	\$2,500	\$34,244		138	17.3		
2.2	Ecological Baseline and Context Review		2	4	4		6		6	8	4	4						\$9,100		\$9,100		38	4.8		
2.3	Hydrological and Geotechnical Desktop Review	6	2	4	16	40												\$16,474		\$16,474		68	8.5		
2.4	Baseline Coordination Checkpoint	4	2				4			4								\$3,906		\$3,906		14	1.8		
3.0	Site Plan, Existing Conditions (Hydrological, Ecological, and Current Infrastructure), and Elevation Map Development																								
3.1	LIDAR Site Mapping		4		16	32										56		\$22,860		\$22,860		108	13.5		
3.2	Existing Biological and Cultural Resources Overlay	4	2	2	4	4	4	10		8	4	8	10			32		\$20,916	\$500	\$21,416		92	11.5		
3.3	Initial Strategy Layout and Conceptual Drawings	24	16	4	32	60	32		48	40	28	64				80		\$91,236	\$500	\$91,736		428	53.5		
3.4	Alignment Checkpoint	8	8	2	8	2	8		8	2								\$13,394		\$13,394		46	5.8		
PART 1 BUDGET TOTALS																									
Total Budget Hours		68	64	16	96	178	74	10	80	72	38	80	10	0	0	0	182	32					1000		
Total Budget Days		8.5	8.0	2.0	12.0	22.3	9.3	1.3	10.0	9.0	4.8	10.0	1.3	0.0	0.0	0.0	22.8	4.0						125.0	
Total Budget Dollars		\$22,304	\$24,512	\$6,128	\$27,648	\$33,820	\$21,090	\$2,850	\$16,320	\$12,384	\$7,752	\$10,480	\$2,850	\$0	\$0	\$0	\$34,580	\$4,544	\$227,262	\$0	\$4,500	\$231,762	\$231,762		
PART 2																									
4.0	Part 2 Project Management and Coordination																								
4.1	Project Administration and Management																	\$0		\$0		0	0.0		
4.2	Monthly Progress Reports and Invoices																	\$0		\$0		0	0.0		
4.3	Progress Calls and Meetings																	\$0		\$0	\$0	0	0.0		
5.0	Adaptation-in-Place Strategy Evaluation and Alternatives Development																								
5.1	Strategy and Alternatives Evaluation Criteria and Methodology Development																	\$0		\$0		0	0.0		
5.2	Hydrological & Ecological Model Application																	\$0		\$0		0	0.0		
5.3	Adaptation-in-Place Strategy Evaluation																	\$0		\$0		0	0.0		
5.4	Development of Adaptation Alternatives																	\$0		\$0		0	0.0		
5.5	Selection of Preferred Alternative / Portfolio																	\$0		\$0		0	0.0		
6.0	Draft and Final CAWD WWTP Comprehensive Adaptation-in-Place Reports																								
6.1	Draft Comprehensive Report Assembly																	\$0		\$0		0	0.0		
6.2	Final Report and Project Archive																	\$0		\$0		0	0.0		
PART 2 BUDGET TOTALS																									
Total Budget Hours		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0		
Total Budget Days		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0	
Total Budget Dollars		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
BUDGET TOTALS																									
Total Budget Hours		68	64	16	96	178	74	10	80	72	38	80	10	0	0	0	182	32					1,000		
Total Budget Days		8.5	8.0	2.0	12.0	22.3	9.3	1.3	10.0	9.0	4.8	10.0	1.3	0.0	0.0	0.0	22.8	4.0						125	
Total Budget Dollars		\$22,304	\$24,512	\$6,128	\$27,648	\$33,820	\$21,090	\$2,850	\$16,320	\$12,384	\$7,752	\$10,480	\$2,850	\$0	\$0	\$0	\$34,580	\$4,544	\$227,262	\$0	\$4,500	\$231,762	\$231,762		