

# **PROJECT NARRATIVE**

**City of Berkeley**

**Interstate 80 and Aquatic Park Lagoon  
Subsurface Culvert Resiliency Project**

**FHWA PROTECT Discretionary Grant Program  
August 2023**



## Table of Contents

<b><u>Section I – Basic Project Information</u></b>	<b>3</b>
<b>Project Description</b>	<b>3</b>
Location	
Vulnerability & Risk	6
Disadvantaged Populations	9
Proposed Planning Elements	9
Lead Applicant & Parties	11
<b><u>Section II – Grant Funds, Sources, and Uses of all Project Funding</u></b>	<b>12</b>
<b>Grant Funding Summary</b>	<b>12</b>
<b>Section III – Merit Criteria</b>	<b>12</b>
Criterion #1 – Project Alignment	12
Criterion #2 – Schedule & Budget	13
Criterion #3 – Public Engagement, Partnerships & Collaboration	14
<b><u>Section V – FHWA Priority Considerations</u></b>	<b>14</b>
<b><u>Tables</u></b>	
Table 1: Project Budget and Funding Source Summary	12
<b><u>Figures</u></b>	
Figure 1: Tide Tube Culvert	4
Figure 2: Project Location Map	5
Figure 3: Project Location Map Close Up	5
Figure 4: I-80 & 2 <sup>nd</sup> Street Flooding	7
Figure 5: Flooding East Bolivar Drive	8
Figure 6: Subsurface Culvert Resiliency Improvements	10
Figure 7: Bayside Culvert Outfalls	11

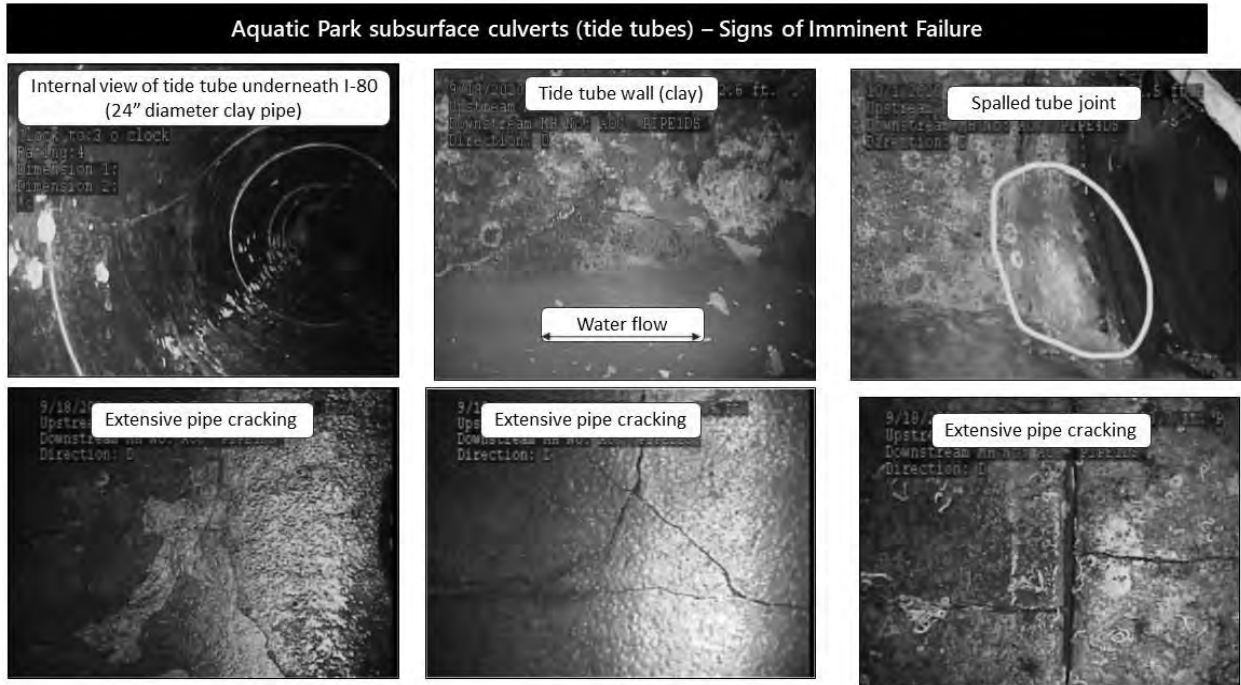
## I. Project Description, Location, and Parties

### Brief Project Description:

The City of Berkeley is pursuing planning funds to support the **Interstate 80 and Aquatic Park Lagoon Subsurface Culvert Resiliency Project** underneath the Bay Area's most congested highway, Interstate 80 (I-80). This planning project will investigate ways to protect critical local and national surface transportation and lagoon habitats from foreseen climate changes by addressing immediate and long-term resilience plans. In Fall of 2020, the City performed a sediment cleanout and condition inspection of the tide tube culverts underneath Interstate 80. Through this inspection, the City discovered urgent structural issues within the tide tube culverts in the form of extensive cracking and deterioration. The tide tubes are anticipated to fail within the next ten years. Once they collapse, the increased storm activity projected by climate change will accelerate the erosion of the roadbed above the culverts, leading to the likely collapse of the asphalt surface on I-80 in Berkeley, severely impacting major traffic patterns throughout the Bay Area.

The City of Berkeley is the 17th-most-dense city in the United States, at 10,470 persons per square mile (higher than Washington, D.C, Seattle, Oakland, and San Jose) and the 3rd most dense in California. Berkeley's economy relies heavily on tourism and traffic that comes in from surrounding areas, with the I-80 providing the main transportation route throughout the Bay Area and the state. According to Caltrans traffic data from the Gilman Interchange Project of 2021, 528,000 trips per day are taken by commuters along I-80 in Berkeley for work, recreation, and tourism amongst other reasons. The upcoming failure of the tide tubes due to age, coupled with the upcoming severity of storms due to climate change will create the perfect storm at the Aquatic Park tide tubes that requires immediate attention. **Figure 1** below displays the current state of the tide tube culverts underneath Interstate 80.

**Figure 1: Tide Tube Culverts – Existing Conditions**



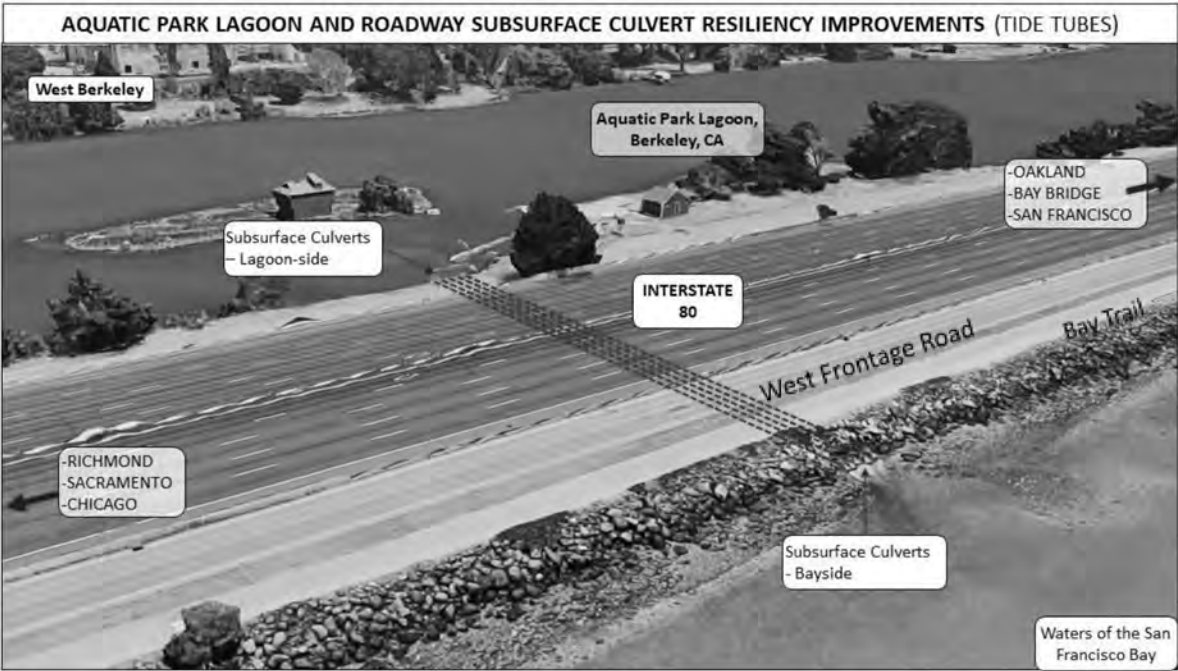
Location:

The tide tube culverts lie underneath the I-80 freeway in West Berkeley and convey water between the Bay and the inland lagoon at Aquatic Park (and the Model Yacht Basin) daily with tidal action and stormwater drainage. Aquatic Park is one of West Berkeley’s largest and most used recreational open spaces, offering a myriad of free activities and resources for the community. The tide tube culverts also lie underneath two pivotal local roadways – West Frontage Road and the Bay Trail. West Frontage Road works as an emergency highway bypass, and the Bay Trail is an essential trail that hundreds of people throughout the Bay area use every day for commuting to work and for recreation. **Figures 2 & 3** show maps of the site location and the surrounding areas.

**Figure 2: Project Location Map**



**Figure 3: Site Location Close Up**



## Background & Current Condition of Tide Tubes:

The tide tubes are segments of vitrified clay pipe (VCP), built in the 1930s, and concrete pipe (CP), built in the 1950s. The tide tubes run at a relatively shallow depth of approximately 8 to 10 feet under the I-80 freeway, approximately 250 feet in total length. VCP extends 150 feet west from the inlet at Aquatic Park, and approximately 100 feet to the Bay are CP. For the last 35 years until a maintenance cleanout project in 2021, the tide tubes were almost completely blocked, allowing less than 5% of their capacity to convey water. Due to this condition, extensive flooding would occur at Aquatic Park and on nearby 2nd Street in West Berkeley during large storm events. Since the tubes were cleaned in 2021, there has been zero flooding, even during the fifty-year storms in the spring of 2023, which indicated that the original design of the hydrologic tube system from 1937 met the needs for proper tidal exchange during both normal and storm conditions.

The maintenance cleanout and inspection project of 2021 found signs of severe cracking and pipe failure throughout all five tide tubes. The cracks can be found at the pipe bells at random locations and many also run longitudinally along the length of the pipe segments. The consultant who performed the video inspection insisted that the tubes be renovated as soon as possible.

## **Vulnerability & Risk:**

### Infrastructure Issues:

Due to the degraded condition of the tide tube culverts under I-80, collapsing of the tubes in the upcoming years is inevitable. The increased storm activity predicted by climate change will greatly accelerate the erosion of the roadbed above the tubes and the failure of the asphalt along I-80, which would significantly impact the City's transportation network, emergency response, utility infrastructure, and economic development.

Interstate 80 is constructed on a sand-based levee and is subject to liquefaction during an earthquake event. The Bay Area currently has a 63% probability for a 6.7 or greater earthquake from 2007 to 2036 (Berkeley Seismology Lab). While the weight of the highway roadbed is the primary factor for the eventual upcoming collapse of the clay tubes, an additional earthquake would greatly accelerate the failure process.

Another area for concern is how greenhouse gas emissions will affect the residential areas of Berkeley if the highway were to collapse. At present, greenhouse gas emissions from vehicles on I-80 dissipate into the long stretch of the coast. If vehicles are forced to use the residential streets of Berkeley for transportation, the traffic congestion and greenhouse gas emissions will create an immense impact on the City's air quality.

### Flooding Issues:

The Bay Area is facing an anticipated 16-inches of sea level rise by the year 2050 (Berkeley Marina Sea Level Rise Study, 2019). During a storm event, storm surge and wave runup could

add 24 to 30 inches to the flood elevation, which would block the tide tubes and cause flooding at Aquatic Park, 2nd Street, and the I-80 Eastbound Off Ramp in West Berkeley. Flooding across this pivotal highway will increase congestion and will enhance the risk of accidents for over 200,000 vehicles traveling throughout the highway daily. This will also cause flooding of the eastbound off ramp to Berkeley. **Figure 4** below shows flooding caused by the culvert system in 2014 when the tide tubes were over 98% clogged with tube worm casings (e.g., barnacles).

**Figure 4: I-80 Offramp and 2<sup>nd</sup> Street Flooding**



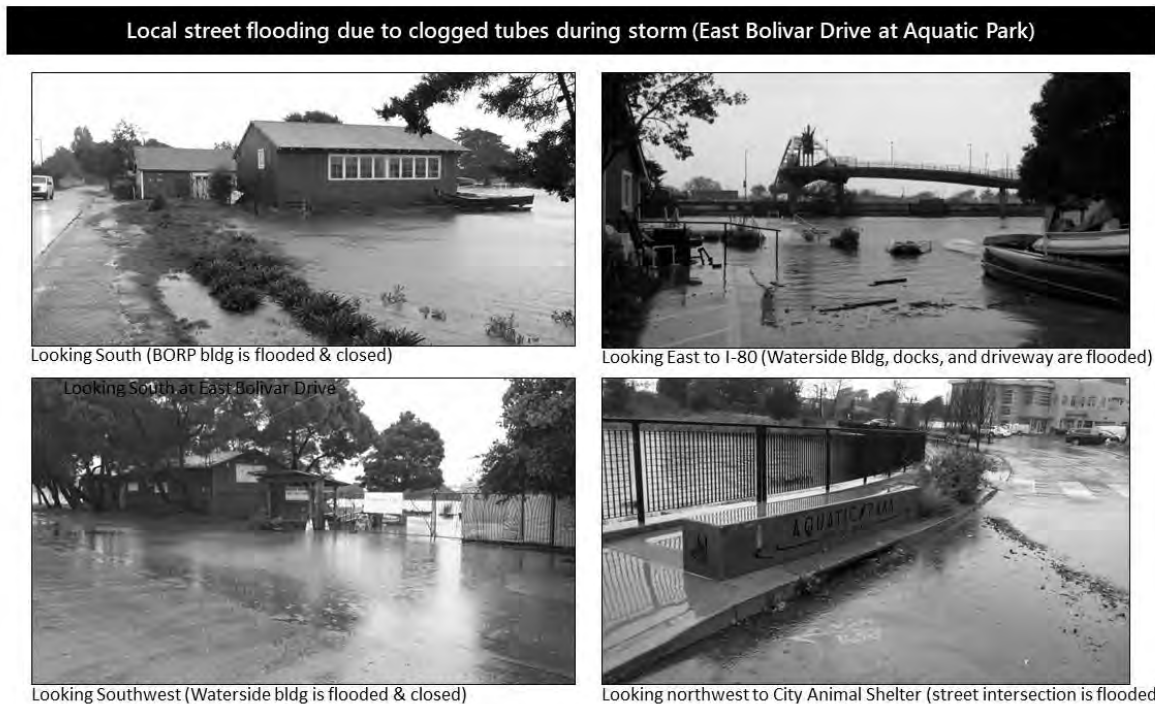
Located adjacent to the highway is Aquatic Park. Aquatic Park is the largest park in West Berkeley and is the main recreational space in that area for children, families, and local community members, making this a pivotal recreational green open space for the community. Flooding of Aquatic Park by freshwater stormwater would make the park and all its resources inaccessible to the community. Additionally, it would severely degrade the habitat value of the brackish lagoon located inside the park. This lagoon contains a habitat that has adapted to brackish Bay waters. If the excess fresh water from storms cannot drain quickly to the bay, the salinity of the brackish lagoon decreases drastically which can significantly impact the living species that inhabit the lagoon.

The brackish lagoon is a man-made inland lagoon located in West Berkeley with a direct connection to the waters of the San Francisco Bay via the tide tube culverts. The eastern shoreline of Aquatic Park is part of the original shoreline of the Bay, one of the last remaining

examples in the East Bay area. The neighborhoods on the north and south end of Aquatic Park have been extremely diverse, with over 50% of West Berkeley consisting of African Americans, peaking in 1970. According to the California FactFinder, there is a significant shortage of parks and open space in these neighborhoods, with approximately 0.90 acres of parkland per 1,000 residents. In these neighborhoods, approximately 18% of residents live in households below the federal Poverty Threshold. This project will preserve an existing valuable subtidal, tidal, and upland aquatic habitat resource that also provides extensive public recreational opportunities in the form of wildlife viewing, walking, cycling, and boating. In addition, Aquatic Park has two nonprofits that provide opportunities for local disadvantaged youth such as the employment and training opportunities created by Waterside Workshops and the adaptive cycling for persons with limited mobility provided by the Bay Area Outreach and Recreation Program. Since 2007, Waterside Workshops has provided job training programs, classes, and outdoor recreation programs for low-income and disconnected youth ages 8-24 from the East Bay. Of the youth they serve, 80 percent are low-income, 60 percent of those youth live below the poverty line and over 80 percent are youth of color.

In the Fall of 2023, a private development on the east side of Aquatic Park will complete the reconstruction of the roadway and multi-modal bike/pedestrian pathway along East Bolivar Drive. This road and pathway will provide enhanced emergency vehicle access adjacent to the highway. The proposed planning project will renovate the tide tubes and prevent the new roadway and pathway from the damaging stormwater flooding that has occurred over the previous decades. **Figure 5** below shows the flooding that has impacted East Bolivar Drive in recent years.

**Figure 5: Flooding at East Bolivar Drive**





### Vulnerability Summary:

If a resilience plan is not developed for these tide tubes, the highway could eventually collapse, and the City of Berkeley will face the following issues:

- The potential closure of a major interstate transportation facility (I-80) with major disruptions to the entire Bay Area
- Flooding of natural habitats recreational activities at Aquatic Park
- Increased congestion, risk of accidents on the I-80 freeway
- Economic stress for the residents and small businesses of Berkeley, as well as throughout the Bay Area

### Disadvantaged Populations

The City of Berkeley is located within Alameda County of which 22% of census tracts are disadvantaged census tracts and a total population of 342,000 living in these underserved tracts, according to the (USDOT Transportation Disadvantaged Census Tract). In the City of Berkeley, 12% of the census tracts are disadvantaged, representing a total of 27,000 residents at the poverty line. Most of these census tract locations are in West Berkeley (USDOT Equitable Transportation Community (ETC) Explorer). Using 2020 census data, over 400,000 people at the federal poverty line live within a five mile drive of Aquatic Park in Berkeley.

This project has a strong equity component in that it ensures access to a major interstate (I-80) and local roads (Aquatic Park and Second Street) by residents of West Berkeley, an area that was heavily impacted by the redline practices of the financial industry from the 1920's through the 1960's. Based on this history, private and public investment in housing, public services, and public transit in West Berkeley has been severely limited until now. The census tracts in West Berkeley have been designated as an Equity Priority Community (EPC) (also known as an Underserved Community) by the Metropolitan Transportation Commission. The project site is also located within a half mile of the West Berkeley University Ave Priority Development Area (PDA) and the San Pablo Ave PDA, which places the area higher on the MTC's priority list for transportation improvement projects. (Priority Development Areas (PDAs) are places near public transit that are planned for new homes, jobs and community amenities.

### Proposed Planning Elements:

To properly protect Interstate 80 from the anticipated climate changes, and to address both immediate and long-term resilience solutions, the City will conduct the following activities:

1. Perform Feasibility Study and Conduct Community Engagement
2. Study Nature Based Solutions
3. Design Development
4. Environmental Clearances (CEQA and NEPA)
5. Obtain aquatic regulatory permits

The feasibility study will develop a preferred conceptual plan, which will become the basis for the Design Development phase. Results from Feasibility Study will be further informed by

Community Engagement to identify the preferred tidal culvert repair plan and to study any potentially suitable nature-based solutions for proposed areas.

The final deliverable from the Design Phase will include design plans, specifications, cost estimates, and the required CEQA and NEPA environmental documents developed by a licensed engineering and design firm contracted via a competitive RFQ process. Aquatic regulatory permits will be obtained from 6 agencies: BCDC (Bay Conservation Development Commission) California Fish and Wildlife, San Francisco Regional Water Quality Control Board, Army Corps of Engineers, East Bay Regional Park District, and the California State Park and Recreation Department. **Figure 6** below displays the proposed resiliency solutions for the culvert.

**Figure 6: Subsurface Culvert Resiliency Improvements**



1. This project will study how to best rehabilitate the existing culvert system so that it functions in accordance with the original design.
2. This project will also study how to best fortify the culverts on the Bay side of the highway and lagoon to withstand the impacts of sea level rise. See **Figure 7** below.
3. This project will also study the need for dredging at the entrances and exits of each culvert system to make the systems more resilient to changing conditions caused by climate change.

**Figure 7: Bayside Culvert Outfalls**

## Bayside Culvert Outfalls (5 tubes)



Broken Culvert Pipe Outfalls underneath I-80 at SF Bay shoreline :  
(Unstable shoreline slope, no wing wall protection, subsurface pipe failure is imminent)

### Lead Applicant & Involved Parties

The City of Berkeley Parks, Recreation, and Waterfront Department (PRW) has a capital projects division of five engineers and a maintenance division of ten staff that oversee the operations, maintenance, and capital repair of all City of Berkeley PRW assets. This includes streets and pathways, parklands, storm systems, landscaping, bioswales, irrigation systems, City buildings, and City parking lots. The annual budget for PRW capital construction projects is \$10 million and the annual budget for PW maintenance is \$1.65 million. The City of Berkeley, as grant applicant and project sponsor, has over one-hundred years of experience in implementing major capital improvement projects throughout the City. The City has extensive experience in partnering with the following regulatory and funding agencies for large capital projects: U.S. EPA; U.S. FEMA, the U.S. Army Corps of Engineers; U.S. Fish and Wildlife Service; California Department of Transportation (Caltrans); California Coastal Conservancy; Alameda County Transportation Commission; Alameda County Stormwater Permit Division; Association of Bay Area Governments; the State Water Board, and the Regional Water Quality Control Board. Over the past twenty years, the City's PRW Department has performed over \$50 million in capital construction upgrades to the City's parks and Waterfront facilities using local, state, and federal funding. The City has a comprehensive electronic financial system and experienced staff (engineering and administrative) to successfully manage the design, bidding, construction, project management, accounting, and auditing of all capital construction projects. In addition, the

City contracts for an independent audit of all federal grants on a yearly basis (known as The Single Audit).

## II. Grant Funds, Sources and Uses of all Project Funding

#	Project Activity and Cost Classification for Berkeley Aquatic Park Lagoon and Roadway Subsurface Culverts Resiliency Improvement	Total Project Activity Cost	Funding Source					
			PROTECT Discretionary Grant Program		Other Federal Grant Program		Non-Federal Local Funds	
			Funding Source Amount	Funding Source %	Funding Source Amount	Funding Source %	Funding Source Amount	Funding Source %
1	Feasibility Study & Community Engagement	\$79,500	\$69,960	88.00%	\$0	0%	\$9,540	12.00%
2	Design Development	\$212,000	\$186,560	88.00%	\$0	0%	\$25,440	12.00%
3	Environmental Clearances	\$106,000	\$93,280	88.00%	\$0	0%	\$12,720	12.00%
4	Regulatory Permitting	\$132,500	\$116,600	88.00%	\$0	0%	\$15,900	12.00%
11	Miscellaneous	\$0	\$0	0.00%	\$0	0%	\$0	12.00%
<b>12</b>	<b>SUBTOTAL</b>	<b>\$530,000</b>	<b>\$466,400</b>	<b>88%</b>	<b>\$0</b>	<b>0%</b>	<b>\$63,600</b>	<b>12%</b>
15	Project (Program) Income	\$0	\$0	N/A	\$0	N/A	\$0	N/A
<b>16</b>	<b>TOTAL PROJECT COSTS</b>	<b>\$530,000</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$0</b>	<b>0.00%</b>	<b>\$0</b>	<b>0.00%</b>

<b>17</b>	<b>Total PROTECT Federal Assistance Requested</b>	<b>\$466,400</b>
-----------	---	------------------

Notes:

- Contingencies adjusted into sections 1-4.

## III. Merit Criteria

### Criterion #1: Program Alignment

Interstate 80 is a vital transportation system that connects the entire Bay area to Berkeley and surrounding areas. Protection of this pivotal transportation system is necessary to the well-being of West Berkeley, and the Bay Area at large. The proposed planning project will create a design solution that will significantly increase the resiliency of Interstate 80, the local roads at Aquatic Park in West Berkeley, and the natural habitat at the lagoon waters and lagoon uplands to the impacts of climate change for the next 100 years. This project will mitigate the anticipated climate changes the City is facing, preserve the City's economy, create resilience for a major county interstate, and improve the safety of the traveling public.

### Alignment with Existing Plans:

The **Interstate 80 and Aquatic Park Lagoon Subsurface Culvert Resiliency Project** is consistent with both the City's 2009 Berkeley Climate Action Plan (BCAP) and the City's Local Hazard Mitigation Plan. BCAP was informed by hundreds of community members, The Berkeley Mayor and City Council, The Mayor's Advisory Group on Climate Protection, ICLEI – Local Governments for Sustainability, The San Francisco Foundation, UC faculty, staff members and student leaders who contributed to the plan through their research, volunteerism, and guidance. Priorities of the action plan include reducing greenhouse gas emissions in Berkeley,

adapting to climate change and creating sustainable transportation and land use. Goal 6 specifically is to “Make Public Transit More Frequent, Reliable, Integrated and Accessible.” The plan to renovate the tide tube culvert system is essential to making I-80 a reliable and integrated transportation system.

Due to the foreseen sea level rise in Berkeley, the BCAP also adopted the Climate Adaptation Strategy (CAS) with the Business Transportation and Housing Agency, and the Department of Health and Human Services amongst others. The proposed project for funding aligns with Goal 1 of the CAS which is “Make Berkeley resilient to the impacts of climate change.” The proposed project aligns with the implementation of this plan that includes increasing the adaptive capacity of the region’s infrastructure and increasing public awareness about the impact of climate change.

In the Local Hazard Mitigation Plan, one of the five objectives that guide the mitigation strategy is to “Reduce the potential for loss of life, injury and economic damage to Berkeley residents and businesses from earthquakes, wildfires, landslides, floods, tsunamis, climate change, extreme heat, and their secondary impacts”. The proposed planning project aligns with this objective as a preventative measure for anticipated economic damage, and injury due to the impacts of climate change on the existing subsurface culvert system. The plan also aligns with the Climate Change Integration Chapter that suggests that cities mitigate climate change impacts by integrating climate change research and adaptation planning into City operations and services.

**Criterion #2: Schedule and Budget**

Each phase of the planning project is detailed below, assuming grant funds will arrive early 2024.

Activities	Milestone		Deliverables
	Start	End	
Feasibility Study	01/24/24	3/1/2025	Draft and final feasibility study reports
Community Engagement	06/24/24	3/1/2025	Public outreach and engagement plan and related meeting/engagement materials
Design Development	09/24/24	9/1/2026	30%, 60%, 90% and 100% Plans, Specifications & Cost Estimates.
Environmental Clearances	09/25/24	9/1/2026	CEQA (CatEx or IS/MND) and NEPA (CatEx or EA) Documents

Regulatory Permitting	12/25/24	9/1/2026	Permit Applications for BCDC, USACE, CDFW, SFRWQCB, EBRPD, Caltrans
-----------------------	----------	----------	---

**Criterion #3: Public Engagement, Partnerships and Collaboration**

The proposed planning project has been directly informed by a wide range of diverse stakeholders that include local community members, council members, state, and federal members. The community of Aquatic Park has held Aquatic Stakeholders Meetings quarterly for the last 30 years. These comprehensive meetings involve the following groups: the Paddling and Rowing Club, The Water Ski Club, Waterside Workshops (job training program for low-income youth), the Bay Area Outreach Program (BORP) (adaptive bicycles and services for the disabled community), Youth Musical Theatre Company, The City of Berkeley Animal Shelter, and a range of environmental and other advocacy groups (Friends of Five Creeks, Audubon Society, Bay Keeper, Commercial Real Estate Developers, City Council Members, and Parks Commission Members. These stakeholders have long advocated for the preservation and upgrading of Aquatic Park for recreation and ecological habitat. Based on input from stakeholders, the City has invested over \$5M on technical studies and parks maintenance projects regarding the hydrology, ecology, recreation, conservation of Aquatic Park since 1986.

**Criterion #4 Innovation**

During the feasibility phase, the project will investigate innovative techniques for renovating existing subsurface culverts under nationally significant transportation corridors (I-80) that may include pipe-bursting, resleeving with smaller diameter pipe with new low-friction surfaces for faster water exchange and easier cleanout maintenance, directional boring for potential new locations for the culverts, among other engineering innovations. The project will also investigate the enhancement of the wetland and upland ecological habitats at the lagoon with the planting of native pollinator species, which the City has pursued with great success in recent years at 10 different gardens at public parks.

**V. FHWA Priority Considerations**

Funding Needs:

The project is ready to complete all project activities and obligate the PROTECT federal funds by September 30, 2026.

Community Engagement:

The **Interstate 80 and Aquatic Park Lagoon Subsurface Culvert Resiliency Project** has been directly informed by diverse local and state stakeholders. The proposed plan is aligned with the City’s Climate Action Plan, and the City’s Local Hazard Mitigation Plan. Over 10 different

nonprofits, and local agencies in Aquatic Park are in support of the proposed improvements that will protect a critical highway and natural habitat (see letters of support in Attachments).

**The following attachment is not included in the view since it is not a read-only PDF file.**

**Upon submission, this file will be transmitted to the Grantor without any data loss.**

**Letters of Support (8) - Berkeley - Aquatic Park Culverts - PROTECT gra**

**nt.pdf**



**Application for Federal Assistance SF-424**

**16. Congressional Districts Of:**

\* a. Applicant

\* b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

**17. Proposed Project:**

\* a. Start Date:

\* b. End Date:

**18. Estimated Funding (\$):**

* a. Federal	<input type="text" value="466,000.00"/>
* b. Applicant	<input type="text" value="0.00"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="64,000.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="530,000.00"/>

**\* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

a. This application was made available to the State under the Executive Order 12372 Process for review on

b. Program is subject to E.O. 12372 but has not been selected by the State for review.

c. Program is not covered by E.O. 12372.

**\* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

Yes  No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

**21. \*By signing this application, I certify (1) to the statements contained in the list of certifications\*\* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances\*\* and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)**

\*\* I AGREE

\*\* The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

**Authorized Representative:**

Prefix:  \* First Name:

Middle Name:

\* Last Name:

Suffix:

\* Title:

\* Telephone Number:  Fax Number:

\* Email:

\* Signature of Authorized Representative:

\* Date Signed:

## BUDGET INFORMATION - Non-Construction Programs

### SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Feasibility Study & Community Engagement		\$ 69,960.00	\$ 9,540.00		\$	\$ 79,500.00
2. Design Development		186,560.00	25,440.00			212,000.00
3. Environmental Clearances		93,280.00	12,720.00			106,000.00
4. Regulatory Permitting		116,600.00	15,900.00			132,500.00
<b>5. Totals</b>		<b>\$ 466,400.00</b>	<b>\$ 63,600.00</b>		<b>\$</b>	<b>\$ 530,000.00</b>

**SECTION B - BUDGET CATEGORIES**

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1) Feasibility Study & Community Engagement	(2) Design Development	(3) Environmental Clearances	(4) Regulatory Permitting	
<b>a. Personnel</b>	\$	\$	\$	\$	\$
<b>b. Fringe Benefits</b>					
<b>c. Travel</b>					
<b>d. Equipment</b>					
<b>e. Supplies</b>					
<b>f. Contractual</b>	79,500.00	212,000.00	106,000.00	132,500.00	530,000.00
<b>g. Construction</b>					
<b>h. Other</b>					
<b>i. Total Direct Charges (sum of 6a-6h)</b>	79,500.00	212,000.00	106,000.00	132,500.00	\$ 530,000.00
<b>j. Indirect Charges</b>					\$
<b>k. TOTALS (sum of 6i and 6j)</b>	\$ 79,500.00	\$ 212,000.00	\$ 106,000.00	\$ 132,500.00	\$ 530,000.00
<b>7. Program Income</b>	\$	\$	\$	\$	\$

Authorized for Local Reproduction

Standard Form 424A (Rev. 7- 97)

Prescribed by OMB (Circular A -102) Page 1A

**SECTION C - NON-FEDERAL RESOURCES**

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8. Feasibility Study & Community Engagement	\$ 9,540.00	\$	\$	\$ 9,540.00
9. Design Development	25,440.00			25,440.00
10. Environmental Clearances	12,720.00			12,720.00
11. Regulatory Permitting	15,900.00			15,900.00
<b>12. TOTAL (sum of lines 8-11)</b>	<b>\$ 63,600.00</b>	<b>\$</b>	<b>\$</b>	<b>\$ 63,600.00</b>

**SECTION D - FORECASTED CASH NEEDS**

	Total for 1st Year			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$	\$	\$	\$
14. Non-Federal	\$	\$	\$	\$
15. TOTAL (sum of lines 13 and 14)	\$	\$	\$	\$

**SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT**

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16. Feasibility Study & Community Engagement	\$ 60,000.00	\$ 9,960.00	\$	\$
17. Design Development	35,000.00	135,000.00	16,560.00	
18. Environmental Clearances		90,000.00	3,280.00	
19. Regulatory Permitting			116,600.00	
<b>20. TOTAL (sum of lines 16 - 19)</b>	<b>\$ 95,000.00</b>	<b>\$ 234,960.00</b>	<b>\$ 136,440.00</b>	<b>\$</b>

**SECTION F - OTHER BUDGET INFORMATION**

21. Direct Charges:		22. Indirect Charges:	
23. Remarks:			