MEMORANDUM

EL Montgomery
Salinas Valley GSP

WG Project No. 1447-0002-0100

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WATER RESOURCES

Date: December 9, 2020

To: Derrik Williams, PE
Abby Ostovar, PhD

From: Wallace Group

Subject: Gabilan Creek Diversion

Introduction

This memorandum provides a summary of the assumptions used to develop the engineer's opinion of probable cost for the conceptual Gabilan Creek Diversion project.

The headwaters of Gabilan Creek originate in the hills of Fremont Peak State Park from which it flows south through flat, agricultural lands north of Salinas until joining with Natividad and Alisal Creeks in the Carr Lake floodplain. From Carr Lake, flows continue west toward Moss Landing through the Reclamation Ditch. Upon entering the flat agricultural lands, the creek is largely channelized as an earthen agricultural ditch and is characterized by seasonal flows in the wet weather season and long periods with little to no flow or intermittent flows attributable to agricultural runoff.

A USGS Gage Station (No. 11152600) is located approximately 6 miles north of Salinas on the downstream side of the bridge at Hebert Road and was in operation from 1970 to 2014. Based on evaluation by E.L. Montgomery & Associates, flows in Gabilan Creek from 1971 to 2014 average 20 cfs. Under the current State permitting process, SVBGSA would likely be able to divert flood flows that are over the 90th percentile on any given day; E.L. Montgomery assumes diversion would be limited to no more than 20% of the total flow for such days making water available for diversion and recharge highly variable. Based on their analysis, the mean annual diversion would be about 450 acre-feet, but with a standard deviation of more than 1,000 acre-feet and the median would be 200 acre-feet per year. A diversion capacity of 20 cfs would be expected to potentially capture a mean of 350 acre-feet per year. This diversion capacity was adopted for use in preparing the opinion of probable cost.

Conceptual Project

The project assumes diversion of high flows from Gabilan Creek and gravity conveyance to an unlined stormwater retention basin located 1,000 LF from the diversion for storage before ultimate groundwater recharge via injection wells. The diversion site was assumed to be located just downstream of the gage station at Hebert Road since this location is upstream of high intensity agricultural operations where comparatively higher impacts to water quality would be expected. The diversion structure would consist of a concrete headwall with a forebay, debris rack, weir, and sluice gate which would control flow into an adjoining concrete vault. From the vault, flow would continue into a 36" diameter reinforced concrete pipeline, with manholes spaced a maximum distance of 500 feet, until daylighting in the retention

WALLACE GROUP
A California Corporation

612 CLARION CT
SAN LUIS OBISPO
CALIFORNIA 93401

T 805 544-4011
F 805 544-4294

www.wallacegroup.us

basin. The maximum flow rate would be limited to 20 cfs. In addition to the diversion structure, the creek channel in the immediate vicinity would be improved and reinforced with vegetated rock slope protection.

The retention basin is assumed to provide 10 AF of storage and allow for infiltration into underlying soils. Adjacent to the retention basin would be a pair of injection wells for groundwater recharge in deeper aquifers. A pump station with an intake in the basin would transfer the water from the basin into the injection wells relying on two 15 HP pumps rated for 1,000 gpm. Two monitoring wells are assumed downgradient of the injection wells to monitor any potential groundwater quality impacts. Cost estimation did not include treatment of diverted water.

A small building housing electrical and controls equipment was included in the evaluation. The concept project assumes acquiring four acres of land for construction of the diversion structure and the retention basin and injection well facilities.

Opinion of Probable Cost

Attachment 1 provides a summary of the opinion of probable costs for this conceptualized Gabilan Creek Diversion project. Capital costs were estimated at $10,074,000. On an annualized basis, assuming a 6% discount rate, and 25-year term, this amounts to $788,100. Including an annual operations and maintenance cost of $34,000 generates a total annualized cost of $822,100. Assuming a yield of 350 AFY, the unit cost for water stored is estimated at $2,350/AFY.

Permitting and Agency Stakeholders

The following table provides a list of potential permits required for the project and the applicable permitting agencies.

Table 1. Permitting and Agency Stakeholders

Agency	**Permit or Approval**
Federal Agencies	
Monterey Bay National Marine Sanctuary	Review and coordination of all RWQCB 404, Section 10, and NPDES permits
US Fish and Wildlife Service	Endangered Species Act compliance (ESA Section 7 consultation)
	Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; the Act of March 10, 1934; ch. 55; 48 stat. 401)
National Oceanic & Atmospheric Administration (NOAA) – Fisheries	Endangered Species Act compliance (ESA Section 7 consultation)
Army Corps of Engineers (Corps)	Nationwide Section 404 Permit (CWA, 33 USC 1341)
	Section 10, Rivers and Harbors Act Permit (33 U.S.C. 403)

State Agencies	
State Water Resources Control Board, Regional Water Quality Control Board	401 Water Quality Certification (CWA Section 401)
	Class V Injection Well permitting
	General Construction Activity Storm Water Permit (WQO 2009-0009-DWQ)
SWRCB Division of Water Rights	Diversion and use require an appropriative water right permit per Water Code Section 1200 et seq.
SWRCB Department of Drinking Water	Permit to Operate a Public Water System (California Health and Safety Code Section 116525)
CA Department of Fish and Wildlife	Incidental Take Permits (CESA Title 14, Section 783.2)
	Streambed Alteration Agreement (California Fish and Game Code Section 1602)
California State Historic Preservation Officer (SHPO)	Section 106 Consultation, National Historic Preservation Act (16 USC 470)
Local Agencies	
Monterey County Public Works Department	Encroachment Permit (Monterey County Code (MCC) Title 14 Chapter 14.040)
Monterey County Health Department, Environmental Health Division	Hazardous Materials Business Plan (Health and Safety Code Chapter 6.95)
	Hazardous Materials Inventory (Health and Safety Code Chapter 6.95)
	Variation on Monterey County Noise Ordinance (MCC 10.60.030)
	Well Drilling Permits (MCC Chapter 15.08)
Monterey County Planning and Building Inspection Department	Use Permit (MCC Chapter 21.72 Title 21)

	Grading Permit (M.C.C., Grading and Erosion Control Ordinance, Chapter 16.08 – 16.12)
	Erosion Control Permit (MCC, Grading and Erosion Control Ordinance, Chapter 16.08 – 16.12)
Monterey 1 Water (formerly Monterey Regional Water Pollution Control Agency)	Participation agreements / Sewer Connection Permit
Monterey Bay Unified Air Pollution Control District (MBUAPCD)	Authority To Construct. (Local district rules, per Health and Safety Code 42300 et seq.)
	Permit To Operate. (Local district rules)
Monterey County Water Resources Agency	Participation/easements/purchase agreements
Transportation Agency of Monterey County	Easement
Private Entities	
Landowners	Land lease/sale; easements and encroachment agreements

Attachments

1. Engineer's Opinion of Probable Cost

Capital and Annualized Costs
Gabilan Creek Diversion and Groundwater Recharge
(Preliminary Opinion of Probable Cost)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		350
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$10,074,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$788,100
7	Annual O&M Cost		$		$34,000
8	Total Annualized Cost		$		$822,100
9	**Unit Cost**		$/AFY		**$2,350**

CAPITAL COSTS

Line No.	Capital	Quantity	Unit	Unit Cost	Total Cost
10	Mobilization/Demobilization	1	LS	$258,000	$258,000
11	Environmental and Stormwater	1	LS	$749,000	$749,000
11	Earthwork/Site Preparation	1	LS	$148,000	$148,000
12	Diversion Structure	1	LS	$172,000	$172,000
13	Pipeline	1000	LF	$550	$550,000
14	Storage Basin (10 AF)	1	LS	$177,000	$177,000
15	Pump Station	1	LS	$500,000	$500,000
16	Equipment and Control Building	900	SF	$150	$135,000
17	Injection and Monitoring Wells	1	LS	$2,051,000	$2,051,000
18	Electrical, I&C	1	LS	$672,000	$672,000
19	Land Acquisiton	4	AC	$45,000	$180,000
20	*Subtotal*				$5,592,000

Line No.	Markups	Quantity	Unit	Unit Cost	Total Cost
21	Plumbing Appurtenance Contingency			30%	$971,000
22	General Conditions			15%	$839,000
23	Contractor Overhead and Profit			15%	$839,000
24	Sales Tax			9.25%	$155,200
25	Engineering, Legal, Admininstrative, Contingencies			30%	$1,678,000
26	***Total Capital Cost***				$10,074,000

OPERATIONS AND MAINTENANCE

Line No.	Description	Quantity	Unit	Unit Cost	Total Cost
27	Power	1	LS	$2,900	$2,900
28	Labor (Diversion Facilities, Basin)	1	LS	$19,700	$19,700
29	Equipment Repair & Replacement	1	LS	$2,500	$2,500
30	Miscellaneous Allowance	1	LS	$1,100	$1,100
31	Contingency			30%	$7,900
32	***Total O&M Cost***				$34,000

NOTES:
1. "Project Yield" based on: 20 CFS max diversion producing a mean of 350 AFY.
2. "Facility Life" selected based on 25-yr anticipated life of facilities.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" excludes additional treatment costs.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on facility life and interest rate.
7. "Unit Cost" estimate includes unit cost for treatment components of project.