Routine O&M [Maintenance, Management, Repair, and Operating Crews]

Routine maintenance that would occur daily (if applicable)

<u>Trip type</u> <u>Number per day</u> <u>Trips per day</u>

Employee

Crew, Foreman, Supervisor Trucks

5 1

Dump Truck
4WD Vehicle
Pump Turck
Water Truck
Flat/Boom Truck

ATV

Sedans/Pickups

Equipment type Number per day Hours per day per equip

Backhoe Bobcat Bulldozer Exacavator

Portable Generator

Grader

Tractor Mower

Forklift

Front End Loader Air Compressor Portable Welders Scissor Lift

Annual O&M

Annual Inspections

Annual Inspections would occur throughout the entire project area.

Reservoirs, Recreation, Facilities, Dams, Roads, Bridges

<u>Diversion at RBPP pump station</u> <u>Trip type</u> <u>Number per day</u>

Employee Dump Truck

<u>Equipment type</u> <u>Number per day</u>

Crane

Marine Vessel Number per day Boat (to operate dredge) **Diversion at Hamilton City Main Pump Station** Trip type Number per day **Employee Dump Truck** Equipment type Number per day Crane **Marine Vessel** Number per day Boat (to operate dredge) Number per day **Diversion Tunnel in Sites Dam - Stone** Trip type **Corral Creek Employee Dump Truck** Number per day **Equipment type** Crane **Marine Vessel** Number per day Boat (to operate dredge) Number per day **Debris removal** Trip type **Employee Dump Truck** 1 **Equipment type** Number per day Crane **Marine Vessel** Number per day Boat (to operate dredge) **Dredging** Number per day Trip type **Employee Dump Truck Equipment type** Number per day Crane

TRR Vegetation Control <u>Trip type</u> <u>Number per day</u>

Employee Dump Truck

Marine Vessel

Boat (to operate dredge)

Number per day

Pickup 1

<u>Equipment type</u> <u>Number per day</u>

Crane

<u>Marine Vessel</u> <u>Number per day</u>

Boat (to operate dredge)

TRR Rodent Control Trip type Number per day

Employee Dump Truck

Pickup 1

Equipment type Number per day

Crane

Marine Vessel <u>Number per day</u>

Boat (to operate dredge)

Erosion Control and Protection <u>Trip type</u> <u>Number per day</u>

Employee Dump Truck

<u>Equipment type</u> <u>Number per day</u>

Crane

<u>Marine Vessel</u> <u>Number per day</u>

Boat (to operate dredge)

Painting Trip type Number per day

Employee Dump Truck

<u>Equipment type</u> <u>Number per day</u>

Crane

Marine Vessel <u>Number per day</u>

Boat (to operate dredge)

Cleaning Trip type Number per day

Employee Dump Truck

Equipment type Number per day

Crane

Marine Vessel <u>Number per day</u>

Boat (to operate dredge)

Repairs Trip type Number per day

Employee Dump Truck

Equipment type <u>Number per day</u>

Crane

Marine Vessel <u>Number per day</u>

Boat (to operate dredge)

Dredging Trip type Number per day

Employee Dump Truck

<u>Equipment type</u> <u>Number per day</u>

Crane

<u>Marine Vessel</u> <u>Number per day</u>

Boat (to operate dredge)

Routing of water released in an emergency Trip type Number per day

Employee Dump Truck

<u>Equipment type</u> <u>Number per day</u>

Crane

<u>Marine Vessel</u> <u>Number per day</u>

Boat (to operate dredge)

Maintenance on Sites Reservoir Bridge Trip type Number per day

Employee Dump Truck

Equipment type Number per day

Crane

Marine Vessel Number per day

Boat (to operate dredge)

Pumping Plants, Intake and Outlet Facilities, Pumping and Generating Plants

*Unique to alternative 1

Power to run facilities, pump, and <u>Trip type</u> <u>Number per day</u>

generate incidental power - Funks Employee

Dump Truck 1

<u>Equipment type</u> <u>MegaWatts per day</u>

Pump 70 Generator

	Equipment type	Number per day
	Backhoe	1
	Grader	1
	Forklift	1
	Marine Vessel Boat (to operate dredge)	Number per day
Power to run facilities, pump, and generate incidental power - TRR	<u>Trip type</u> Employee	Number per day
generate meldental power Trik	Dump Truck	1
	Equipment type Pump Generator	MegaWatts per day 75
	Equipment type Backhoe	MegaWatts per day Number per day 1
	Grader	1
	Forklift	1
	Marine Vessel Boat (to operate dredge)	Number per day
Maintenance and operation of additional 2 pumps installed at RBPP	2	
	Trip type Employee Dump Truck	<u>Number per day</u>
	Equipment type Crane	Number per day
	Marine Vessel Boat (to operate dredge)	Number per day
I/O Works Inspection and Maintenance	Trip type Employee Dump Truck	Number per day
	Equipment type Crane	Number per day
	Marine Vessel Boat (to operate dredge)	Number per day

Electrical Substantion and Transmission Lines

Transmission Lines	<u>Trip type</u> Employee Dump Truck	<u>Number per day</u>
	Pickup Truck	1
	Pickup Truck	1
	Pickup Truck	3
	Equipment type	Number per day
	Crane	1
	Helicopter	1
	Marine Vessel Boat (to operate dredge)	<u>Number per day</u>
Funks Reservoir Substation	<u>Trip type</u> Employee Dump Truck	Number per day
	Pickup	1
	Equipment type Crane	Number per day
	Marine Vessel Boat (to operate dredge)	Number per day
TRR Substation	<u>Trip type</u> Employee Dump Truck	<u>Number per day</u>
	Pickup	1
	Equipment type Crane	<u>Number per day</u>
	Marine Vessel Boat (to operate dredge)	Number per day

Tunnels, Pipes, and Canals

PGPs connected to I/O works operated together	Trip type Employee Dump Truck	Number per day 1
	Pickup Truck	1
	Pickup Truck	1
	Equipment type Crane	<u>Number per day</u>
	Marine Vessel Boat (to operate dredge)	Number per day
TRR	<u>Trip type</u> Employee Dump Truck	<u>Number per day</u>
	Pickup Truck	1
	Pickup Truck	5
	Pickup Truck	2
	Pickup Truck	1
	Equipment type	Number per day
	Crane	1
	Marine Vessel Boat (to operate dredge)	Number per day
TRR PGP	<u>Trip type</u> Employee	Number per day

Dump Truck

	Semi Truck	1
	Equipment type	Number per day
	Crane	1
	Marine Vessel Boat (to operate dredge)	Number per day
Funks PGP	Trip type Employee Dump Truck	Number per day 0 0
	Semi Truck	1
	Equipment type	Number per day
	Crane	1
	Marine Vessel Boat (to operate dredge)	<u>Number per day</u>
Dunnigan Pipeline Alt 1/Alt 2	<u>Trip type</u> Employee Dump Truck	Number per day
	Pickup Truck	1
	Pickup Truck	1
	Pickup Truck	1
	Equipment type Crane	Number per day
	Marine Vessel	Number per day

Boat (to operate dredge)

Pipeline appurtances test and inspection

Trip type

Employee Dump Truck

<u>Equipment type</u> <u>Number per day</u>

Number per day

Crane

Marine Vessel <u>Number per day</u>

Boat (to operate dredge)

Tunnel inpections and maintenance Trip type Number per day

Employee Dump Truck

<u>Equipment type</u> <u>Number per day</u>

Crane

Marine Vessel Number per day

Boat (to operate dredge)

GCID maintenance (annual 2-week

shutdown) <u>Trip type</u> <u>Number per day</u>

Employee Dump Truck

Equipment type Number per day

Crane

Marine Vessel <u>Number per day</u>

Boat (to operate dredge)

Recreational Visitors

Peninsula Hills Recreation Area <u>Trip Type</u> <u>Number per day</u>

Employee Visitor Dump Truck

Stone Corral Creek Recreation Area Trip Type Number per day

Employee Visitor Dump Truck

Roads

South Road <u>Trip type</u> <u>Number per day</u>

Employee Dump Truck

	Equipment type Crane	Number per day
North Road	<u>Trip type</u> <u>Employee</u> <u>Dump Truck</u>	Number per day
	Equipment type Crane	Number per day
Saddle Dam Road	<u>Trip type</u> Employee Dump Truck	Number per day
	Equipment type Crane	Number per day
Eastside Road	Trip type Employee Dump Truck	Number per day
	Equipment type Crane	Number per day
Stone Corral Road	<u>Trip type</u> <u>Employee</u> <u>Dump Truck</u>	Number per day
	Equipment type Crane	Number per day
Peninsula Road	<u>Trip type</u> <u>Employee</u> <u>Dump Truck</u>	Number per day
	Equipment type Crane	Number per day
Sulphur Gap Road	Trip type Employee Dump Truck	Number per day
	Equipment type Crane	Number per day
Com Road	Trip type Employee Dump Truck	Number per day
	Equipment type Crane	Number per day

Miles per trip

60

<u>Trips per day</u> <u>Miles per trip</u> <u>Weeks/year</u> <u>Days/year</u> <u>Seasonal?</u>

Hours per day per equip Weeks/year Days/year Seasonal?

Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
<u>Hours per day</u>	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
<u>Trips per day</u>	Miles per trip	Weeks/year	<u>Days/year</u>	<u>Seasonal?</u>
1	40	-	1	once a year
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	<u>Days/year</u>	<u>Seasonal?</u>

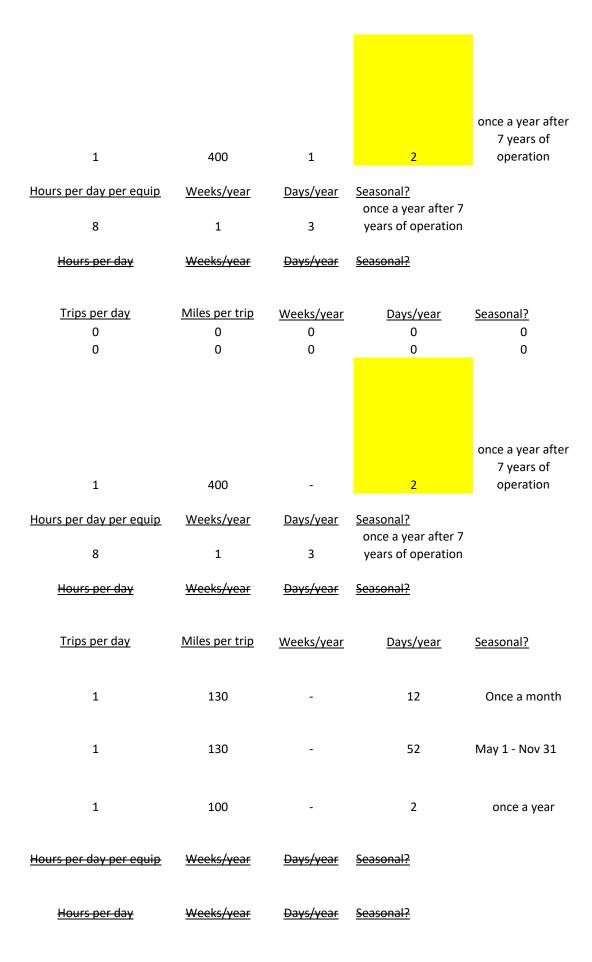
1	40	-	1	quarterly
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	<u>Days/year</u>	Seasonal?
1	40	-	1	quarterly
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	Seasonal?
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	

Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	Seasonal?
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
<u>Trips per day</u> 1	Miles per trip 10	<u>Weeks/year</u> -	<u>Days/year</u> 20	<u>Seasonal?</u>
Hours per day per equip 24	<u>Weeks/year</u> -	<u>Days/year</u> 60	Seasonal? from December thro	ough April

Hours per day per equip 8	<u>Weeks/year</u> -	<u>Days/year</u> 20	Seasonal? Seasonal and as needed. Not all at	
8	-	10	same time, but	
8	-	10	different times	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	<u>Days/year</u>	Seasonal?
1	10	-	20	
Hours per day per equip 24	<u>Weeks/year</u> -	<u>Days/year</u> 60	Seasonal? from December throu	igh April
Hours per day per equip 8	<u>Weeks/year</u> -	<u>Days/year</u> 20	Seasonal?	
8 8	-	10 10		
Hours per day	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Hours per day	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	Days/year	Seasonal?
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	

<u>Trips per day</u>	Miles per trip	Weeks/year	Days/year	Seasonal?
1	230	-	2	per year
1	230	-	2	every 5 years
1	230	-	20	every 20 years
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
8	-	20	every 20 years	
8	-	1	per year	
Hours per day	Weeks/year	<u>Days/year</u>	Seasonal?	
Trips per day	Miles per trip	Weeks/year	<u>Days/year</u>	<u>Seasonal?</u>
1	230	-	2	once a year
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	<u>Days/year</u>	Seasonal?
1	230	-	2	once a year
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
<u>Hours per day</u>	Weeks/year	Days/year	Seasonal?	

Trips per day	Miles per trip	Weeks/year	<u>Days/year</u>	Seasonal?
1	10	12	12	Once a month
1	150	1	2	once a year
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Hours per day	Weeks/year	Days/year	<u>Seasonal?</u>	
<u>Trips per day</u>	Miles per trip	Weeks/year	<u>Days/year</u>	<u>Seasonal?</u>
1	100	-	1	once a year
1	200	-	1	every 5 years
1	230	-	1	once a year
1	100	-	1	Bi-monthly
Hours per day per equip	<u>Weeks/year</u>	Days/year	Seasonal?	
8 Hours per day	1 Weeks/year	3 Days/year	once a year after 7 years of operation Seasonal?	
<u>Trips per day</u>	Miles per trip	Weeks/year	<u>Days/year</u>	Seasonal?



Trips per day	Miles per trip	Weeks/year	Days/year	Seasonal?
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	Seasonal?
Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Hours per day	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per Trip	Weeks/year	Days/year	Seasonal?
<u>Trips per day</u>	Miles per Trip	Weeks/year	Days/year	<u>Seasonal?</u>
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>

Hours per day per equip	Weeks/year	Days/year	Seasonal?	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	<u>Weeks/year</u>	<u>Days/year</u>	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	Days/year	Seasonal?
Hours per day per equip	Weeks/year	<u>Days/year</u>	<u>Seasonal?</u>	
Trips per day	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	
<u>Trips per day</u>	Miles per trip	Weeks/year	Days/year	<u>Seasonal?</u>
Hours per day per equip	Weeks/year	Days/year	<u>Seasonal?</u>	

Jacobs Assumptions/Comments (In Blue) for HC - Conveyance Facilities

Overall there would be 5 people to run the Sites HC conveyance system — they would commute from Willows or Williams to the Admin Building at Funks Reservoir. Each of the 5 people would have a truck — each would use 5 days/week for the year. Once they arrived on site for the day- they would go 20 miles/day.

(trip distance include roundtrip plus 20 miles onsite)

There is no O & M activities at Red Bluff Pumping Plant - as they are just adding two pumps to the existing 9 pumps

There is no O& M activities at GCID – as they are just conveying water like they always do down their Main Canal.	
TRR Annual debris removal at spillway outfall for TRR spillway that is part of the spillway before it connects to Funks creek – debris typically collects in these areas – 2 trucks from Willows or Williams to/from site each time	TRR West would be same as TRR

Quarterly vegetation/weed abatement (e.g. hydrophilic plant control) and rodent control activities along perimeter length of embankment – 1 truck TRR West would be from Willows or Williams to/from site each time same as TRR

Quarterly vegetation/weed abatement (e.g. hydrophilic plant control) and rodent control activities along perimeter length of embankment – 1 truck TRR West would be from Willows or Williams to/from site each time

same as TRR



Jacobs added equipment: split between Funks/TRR

One medium size backhoe with front bucket – Use 40 days per year One road grader to maintain the gravel access/ O & M roads around Funks Reservoir and TRR – use 20 days per year One forklift – use 20 days per year

(number of trips include commute trips (10) and onsite trips (1)

One dump truck – use 40 days per year (20 days each for Funks and TRR)

Data provided is MW of the equipment. MWh = MW X hours

Jacobs added equipment: split between Funks/TRR

One medium size backhoe with front bucket – Use 40 days per year One road grader to maintain the gravel access/ O & M roads around Funks Reservoir and TRR – use 20 days per year One forklift – use 20 days per year

There is no O & M activities at Red Bluff Pumping Plant – as TCCA will do that effort – very minor looking at 2 pumps when they currently have 9 pumps.

Infrared inspection – 2 per year to identify hot spots on splices and at conductor attachment hardware from bay area
Foot patrol inspection – every 5 years to identify issues not captured by aerial patrols (2 days pickup from bay area)
Tower inspection/tower footer repair – every 20 years, including pole painting for galvanized poles (3 trucks from bay area, 20 days. 1 crane for 20 days)

Tower inspection/tower footer repair – every 20 years, including pole painting for galvanized poles (3 trucks from bay area, 20 days. 1 crane for 20 days)

Aerial patrols – 2 per year - using helicopter or drones to identify hardware, insulator, conductor, and structure issues. Basic helicopter that holds two people—small is fine

For the Switchyards, conducted by a Bay Area specialty firm to check the switchyard equipment for two days once a year.

For the Switchyards, conducted by a Bay Area specialty firm to check the switchyard equipment for two days once a year. 1 person in a truck – visits all the pipelines one day a month

1 person in a truck from Sacramento specialty firm — check/test the cathodic protection system along the pipelines for two days once a year.

Jacobs added TRR Jacobs added for TRR West

Annual dam safety inspection – one truck from Sacramento area to/from the site from a specialty firm – some driving around on site but mostly walking

Five-year dam safety inspection (i.e. every five years) – 3 vehicles from the Bay Area and 2 vehicles from Sacramento to/from site from a dam safety inspection team of experienced consultants from various firms appointed by DSOD – some driving around site, mostly walking

Annual preventative leak location survey of the reservoir liner – 2 trucks from Bay Area to/from site from a specialty firm – some driving around, mostly walking

Bi-monthly instrumentation monitoring and maintenance $-\,1$ truck from Sacramento area from a specialty firm - some driving around site, some walking

No Annual dam safely inspeciton is required

No 5-year dam safely inspeciton is required

Same at TRR

Same at TRR

After 7 years of operation, once a year, pull three motors from the PGP's and send to specialty firm in Portland, OR for bearing replacement and motor testing. So a total of 3 motors per year get hauled up to Portland, OR.

After 7 years of operation, once a year, pull three motors from the PGP's and send to specialty firm in Portland, OR for bearing replacement and motor testing. So a total of 3 motors per year get hauled up to Portland, OR. One way trip of 400 miles to Portland. They would charter a truck near Sites to pick-up and take to Portland and same coming back. Total of two one-way trips per year

Jacobs added Funks PGP

After 7 years of operation, once a year, pull three motors from the PGP's and send to specialty firm in Portland, OR for bearing replacement and motor testing. So a total of 3 motors per year get hauled up to Portland, OR. One way trip of 400 miles to Portland. They would charter a truck near Sites to pick-up and take to Portland and same coming back. Total of two one-way trips per year

Jacobs added Dunnigan Pipeline

- 1 person in a truck visits all the pipelines one day a month
- 1 person in a truck during discharge to CBD or Sacramento River (May
- 1- Nov 31) visit the Dunnigan pipeline and structure one day a week.
- 1 person in a truck from Sacramento specialty firm check/test the cathodic protection system along the pipelines for two days once a year.

		ey are just conveying w	rater like
they always do down	their Main Canal.		