Lower Owens River Project
Work Plan, Budget, and Schedule

2023-2024 Fiscal Year

Prepared by
Inyo County Water Department and
Los Angeles Department of Water and Power

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The Inyo County Water Department and the Los Angeles Department of Water and Power jointly prepared this 2023-2024 Fiscal Year Lower Owens River Project Work plan. The Inyo County/Los Angeles Technical Group adopted this work plan on July 5, 2023. The Technical Group recommends that the Inyo County Board of Supervisors and the City of Los Angeles Board of Water and Power Commissioners or their designee approve the 2023-2024 Fiscal Year Lower Owens River Project Work Plan.

Introduction

The Final Environmental Impact Report for the Lower Owens River Project (LORP) Section 2.2.1 provides that the Long-Term Water Agreement (LTWA) Technical Group will develop and adopt an annual work plan for the LORP, which describes LORP work to be performed in the following fiscal year. This work plan identifies who will perform or oversee tasks, a schedule, and a budget. This work plan and budget were prepared according to the Agreement between the County of Inyo and City of Los Angeles Department of Water and Power Concerning Funding of the Lower Owens River Project (Funding Agreement) sections D, E, and F. Following adoption by the Technical Group, the work plan will be submitted to the County and LADWP governing boards for approval. Each governing board must approve the plan before this work plan and budget can be implemented. The Work Plan, Budget, and Schedule are in effect from July 1, 2023 – June 30, 2024.

The objectives of this work plan are to maintain compliance with the July 11, 2007 Superior Court Stipulation and Order in Case No. S1CVCV01-29768, conduct monitoring necessary to achieve the LORP goals described in the 1997 Memorandum of Understanding, maintain infrastructure necessary to the operation of the LORP, and implement adaptive management measures. The following priorities are observed in this work plan:

1. Work and activities required to maintain required flows in the river and required water supplies to other LORP components.
2. Maintenance associated with flow compliance monitoring and reporting associated with the above referenced Stipulation and Order.
3. Habitat and water quality monitoring described in the LORP Final EIR, or required to comply with the requirements of the Lahontan Regional Water Quality Control Board.
4. The preparation of the LORP Annual Report as required by Section 2.10.4 of the LORP Final EIR and by Section L of the above referenced Stipulation and Order.
5. Other work or activities including the implementation of adaptive management measures.

Section 1 of this work plan covers the budget and schedule for operations and maintenance, monitoring, mosquito abatement, noxious species control, saltcedar control, and reporting activities.

Section 2 outlines Adaptive Management activities identified to be conducted in the 2023-2024 fiscal year.

The budget amount reflects the additional costs above equal sharing of work by the parties and does not include the costs of Inyo and LA staff times where they offset.

LORP Operations & Maintenance, Monitoring, and Adaptive Management Budget

Table 1 summarizes the costs of operation, maintenance and monitoring for the fiscal year and specifies the costs incurred for standard operations, maintenance, and monitoring, as well as for Adaptive Management. A summary of these activities follows in Sections 1 and 2 below.

In 2023-2024 a total of 16 people days will be required to complete standard biologic monitoring tasks. Inyo County and LADWP will each contribute 8 days. Maintenance, Operations, and Hydrologic monitoring are tasks solely performed by LADWP, and are shared costs between Inyo County and LADWP. LADWP has allocated 80 days for Range Monitoring, which is a LADWP cost. Inyo County and LADWP will perform additional Adaptive Management tasks over 210 people days (Inyo County and LADWP each 105 days).

Based on this budget, total cost for the fiscal year is $1,051,776.94 with Inyo County contributing $105,875.00 and LADWP contributing $945,901.94. Inyo County's Post Implementation Credit will be decreased by $420,013.47. The credit deduction is calculated by subtracting the dollars LADWP will spend during the fiscal year from the amount spent by Inyo County, and dividing this figure by two.

Table 1. LORP Work Plan Summary Budget, FY 2023-2024

Inyo County	Budgeted Staff Work Days	Value of Additional Staff Time, Materials, and Equipment	Payment/Credit
Biological Monitoring	8	$0.00	
Mosquito Abatement	-	$30,000.00	
Noxious Species Control	-	$50,000.00	
Adaptive Management	105	$25,875.00	
Inyo County Totals	**113**	**$105,875.00**	**($420,013.47)**
LADWP	**Budgeted Staff Work Days**	**Budgeted Value of Additional Staff Time, Materials, and Equipment**	
Hydrologic Monitoring	-	$99,920.00	
Biological Monitoring	8	$0.00	
Operations and Maintenance	-	$792,465.74	
Mosquito Abatement	-	$30,000.00	
Rodent Control	-	$18,000.00	
Adaptive Management	105	$5,516.20	
LADWP Totals	**113**	**$945,901.94**	
Combined Total	**226**	**$1,051,776.94**	
Inyo County Credit Adjustment (1/2 of the Difference in Expenditures between Inyo County and LADWP)		**($420,013.47)**	

Footnote to Table 1. Post Implementation Credit and Trust Accounting

Original Post Implementation Credit		2,253,033.00	2,253,033.00
Increase Post Imp Credit by 2.9% based on the July 2007 price Index	2.9%	65,337.96	2,318,370.96
County's obligation for July 11, 2007 to June 30, 2008 period		243,524.00	2,074,846.96
Increase the remaining balance of the Post Implementation Credit by 5.7% based upon the July 2008 price index	5.7%	118,266.28	2,193,113.23
County's obligation for 2008-2009 fiscal year		243,524.00	1,949,589.23
Reduce the remaining balance of the Post Implementation Credit by 1.3% based upon the April 2009 price index	-1.3%	25,344.66	1,924,244.57
County's share of the costs for the 2009-2010 work plan and budget, including adaptive management.		266,176.00	1,658,068.57
Increase the remaining balance of the Post Implementation Credit by 1.9% based upon the April 2010 price index effective July 10, 2010	1.9%	31,503.30	1,689,571.88
County's share of the costs for the 2010-2011 work plan and budget, including adaptive management effective July 21, 2010.		317,805.00	1,371,766.88
Increase the remaining balance of the Post Implementation Credit by 3.3% based upon the April 2011 price index effective July 10, 2011.	3.3%	45,268.31	1,417,035.18
County's share of the costs for the 2011-2012 work plan and budget, including adaptive management effective July 21, 2011.		48,278.00	1,368,757.18
County's share of the costs for the Amended 2011-2012 work plan and budget, effective July 21, 2011.		57,687.00	1,311,070.18
Increase the remaining balance of the Post Implementation Credit by 1.5% based upon the April 2012 price index effective July 10, 2012.	1.5%	19,666.05	1,330,736.24
County's share of the costs for the 2012-2013 work plan and budget, including adaptive management effective July 23, 2012.		14,084.00	1,344,820.24
Increase the remaining balance of the Post Implementation Credit by 0.9% based upon the April 2013 price index effective July 10, 2013.	0.9%	12,103.38	1,356,923.62
County's share of the costs for the 2013-2014 work plan and budget, including adaptive management effective June 21, 2013.		41,979.00	1,398,902.62
Increase the remaining balance of the Post Implementation Credit by 1.4% based upon the April 2014 price index effective July 10, 2014.	1.4%	19,584.64	1,418,487.25
County's share of the costs for the 2014-2015 work plan and budget, including adaptive management effective June 21, 2014.		78,483.00	1,340,004.25
Increase the remaining balance of the Post Implementation Credit by 0.5% based upon the April 2015 consumer price index.	0.5%	6,700.02	1,346,704.28
County's share of the costs for the 2015-2016 work plan and budget, including adaptive management effective June 21, 2015.		73,755.00	1,272,949.28
Increase the remaining balance of the Post Implementation Credit by 2.0% based upon the April 2016 consumer price index.	2.0%	25,458.99	1,298,408.26
County's share of the costs for the 2016-2017 work plan and budget, including adaptive management effective June 21, 2016.		84,704.00	1,213,704.26
Increase the remaining balance of the Post Implementation Credit by 2.7% based upon the April 2017 consumer price index.	2.7%	32,770.02	1,246,474.28
County's share of the costs for the 2017-2018 work plan and budget, including adaptive management, effective October 31, 2018.		114,857.00	1,131,617.28
Increase the remaining balance of the Post Implementation Credit by 4.0% based upon the April 2018 consumer price index.	4.0%	45,264.69	1,176,881.97
County's share of the costs for the 2018-2019 work plan and budget, including adaptive management, effective October 31, 2019.		139,493.00	1,037,388.97
Increase the remaining balance of the Post Implementation Credit by 3.3% based upon the April 2019 consumer price index.	3.3%	34,233.84	1,071,622.80
County's share of the costs for the 2019-2020 work plan and budget, including adaptive management, effective October 31, 2020.		132,557.50	939,065.30

Increase the remaining balance of the Post Implementation Credit by 0.7% based upon the April 2020 consumer price index.	0.7%	6,573.46	945,638.76
County's share of the costs for the 2020-2021 work plan and budget, including adaptive management, effective October 31, 2021.		252,481.42	693,157.34
Increase the remaining balance of the Post Implementation Credit by 3.6% based upon the April 2021 consumer price index.	3.6%	24,953.66	718,111.01
County's share of the costs for the 2022-2023 work plan and budget, including adaptive management, effective October 31, 2022.		175,435.79	542,675.22
Increase the remaining balance of the Post Implementation Credit by 7.9% based upon the April 2022 consumer price index.	7.9%	42,871.34	585,546.56

The annual CPI adjustment will take place prior to deduction of a credit for County's annual share of the LORP post-implementation costs (PIA 8.4). The LORP Trust Account Balance as of March 2, 2023 was $2,141,726.16.

Section 1. Maintenance and Monitoring Tasks

LORP Tasks

The maintenance and monitoring portion of this work plan consists of four categories of tasks: operations and maintenance, hydrologic monitoring, biological monitoring, and range monitoring.

Operations and Maintenance

Maintenance activities consist of cleaning sediment accumulations and other obstructions from water measurement facilities, cleaning sediment and aquatic vegetation from ditches, mowing ditch margins, adjustments to flow control structures, maintenance/replacement of existing structures, and necessary annual maintenance to spillgates, ditches, dikes, berms, ponds and other features in the BWMA. Operation activities consist of setting and checking flows and ensuring that necessary flows reach the river to maintain mandated base and seasonal habitat flows. Estimates of the level of effort necessary for maintenance are adjusted as required by section II.D of the Funding Agreement, and provides that costs for maintenance above the baseline costs for facilities in the river corridor and the Blackrock Waterfowl Management Area (BWMA) shall be shared.

Budgeted Operations and Maintenance costs and associated material costs for 2023-2024 are included in Table 2. The Eastern Sierra is experiencing unprecedented snowpack and runoff in 2023, including the highest snowpack on record (296% of normal) and runoff forecast to be 233% of normal. LADWP estimated Operations and Maintenance work needed to keep LORP infrastructure functional for continued successful operation of the project, basing 2023-2024 estimates on actual costs incurred in 2016-2017 under similar high runoff conditions (ICWD & LADWP 2017) and using the most recently published costs for labor and equipment. However, reductions were made to the budgeted shared costs to acknowledge potential added work for LADWP's operational needs due to unprecedented flow conditions in 2023. Reductions in shared costs were made at the LORP Intake, Alabama Gates, and Independence Spillgate and Ditch.

With these reductions, the estimated shared costs for River corridor and BWMA facilities are $517,350.98 and $454,896.38 respectively, for an overall 2023-2024 operations and maintenance expenditure of $972,247.36. This figure reduced by the combined CPI-adjusted baseline costs for the river corridor and BWMA facilities is $792,465.74 (Table 2).

Table 2. LORP Operations and Maintenance Budget- 2023-2024 Fiscal Year								
Labor					Equipment			
Location/Activity	**Labor type**	**Hours**	**Labor Rate**	**Total Labor**	**Equipment/Materials**	**Hours**	**Rate**	**Total Equip**
River								
Measuring Station Maintenance								
	Building Repairman	10	$50.93	$509.30	3 axle dump truck	400	$93.59	$37,436.00
	Equipment Operator	10	$55.25	$552.50	3/4 ton 4x4 pick-up	180	$37.61	$6,769.80
	MCH	50	$44.94	$2,247.00	Excavator	120	$129.31	$15,517.20
	Power Shovel Operator	120	$58.26	$6,991.20	Mower	10	$46.72	$467.20
	Truck Driver	400	$47.16	$18,864.00				
Subtotal				**$29,164.00**				**$60,190.20**
Intake Spillgate								
Maintenance	Building Repairman	32	$50.93	$1,629.76	3 axle dump truck	64	$93.59	$5,989.76
	MCH	272	$44.94	$12,223.68	3/4 ton 4x4 pick-up	496	$37.61	$18,654.56
	Equipment Operator	240	$55.25	$13,260.00	Bull Dozer	160	$64.69	$10,350.40
	Power Shovel Operator	320	$58.26	$18,643.20	Excavator	320	$129.31	$41,379.20
	Truck Driver	320	$47.16	$15,091.20	Mower	16	$46.72	$747.52
					Versadredge	80	$212.00	$16,960.00
Subtotal				**$60,847.84**				**$94,081.44**
Thibaut Spillgate and Ditch								
Cleaning	MCH	120	$44.94	$5,392.80	3 axle dump truck	40	$93.59	$3,743.60
	Equipment Operator	80	$55.25	$4,420.00	3/4 ton 4x4 pick-up	200	$37.61	$7,522.00
	Power Shovel Operator	80	$58.26	$4,660.80	Backhoe and trailer	40	$53.61	$2,144.40
	Truck Driver	40	$47.16	$1,886.40	Excavator	80	$129.31	$10,344.80
					Loader	40	$95.90	$3,836.00
Subtotal				**$16,360.00**				**$27,590.80**
Independence Spillgate and Ditch								
Cleaning/Mowing	Power Shovel Operator	160	$58.26	$9,321.60	3 axle dump truck	200	$93.59	$18,718.00
	MCH	80	$44.94	$3,595.20	3/4 ton 4x4 pick-up	80	$37.61	$3,008.80
	Equipment Operator	80	$55.25	$4,420.00	Backhoe and trailer	40	$53.61	$2,144.40
	Truck Driver	240	$47.16	$11,318.40	Excavator	160	$129.31	$20,689.60
					Loader	80	$95.90	$7,672.00
Subtotal				**$28,655.20**				**$52,232.80**
Locust Spillgate and Ditch								
Cleaning	Power Shovel Operator	80	$58.26	$4,660.80	Excavator	80	$129.31	$10,344.80
	Equipment Operator	160	$55.25	$8,840.00	Backhoe and trailer	160	$53.61	$8,577.60
	MCH	100	$44.94	$4,494.00	3/4 ton 4x4 pick-up	180	$37.61	$6,769.80
	Truck Driver	40	$47.16	$1,886.40	3 axle dump truck	40	$93.59	$3,743.60
Subtotal				**$19,881.20**				**$29,435.80**
Georges Ditch								
Cleaning/Mowing	MCH	120	$44.94	$5,392.80	3/4 ton 4x4 pick-up	200	$37.61	$7,522.00
	Equipment Operator	160	$55.25	$8,840.00	Backhoe and trailer	110	$53.61	$5,897.10
	Power Shovel Operator	80	$58.26	$4,660.80	Excavator	80	$129.31	$10,344.80
	Truck Driver	20	$47.16	$943.20	Loader	20	$95.90	$1,918.00
					Mower	30	$46.72	$1,401.60
Subtotal				**$19,836.80**				**$27,083.50**
Alabama Spillgate								
Cleaning	Equipment Operator	40	$55.25	$2,210.00	3 axle dump truck	180	$93.59	$16,846.20
	Power Shovel Operator	60	$58.26	$3,495.60	3/4 ton 4x4 pick-up	100	$37.61	$3,761.00
	Truck Driver	180	$47.16	$8,488.80	Bull Dozer	40	$64.69	$2,587.60
					Excavator	60	$129.31	$7,758.60
Subtotal				**$14,194.40**				**$30,953.40**
Labor					Equipment			
Location/Activity	**Labor type**	**Hours**	**Labor Rate**	**Total Labor**	**Equipment/Materials**	**Hours**	**Rate**	**Total Equip**
Delta Spillgate								
	Building Repairman	40	$50.93	$2,037.20	3/4 ton 4x4 pick-up	40	$37.61	$1,504.40
	MCH	40	$44.94	$1,797.60	3/4 ton 4x4 pick-up	40	$37.61	$1,504.40
Subtotal				**$3,834.80**				**$3,008.80**
River Subtotal				**$192,774.24**				**$324,576.74**

Blackrock Waterfowl Management Area								
Blackrock Ditch								
Maintenance	MCH	520	$44.94	$23,368.80	3 axle dump truck	240	$93.59	$22,461.60
	Equipment Operator	240	$55.25	$13,260.00	3/4 ton 4x4 pick-up	800	$37.61	$30,088.00
	Power Shovel Operator	280	$58.26	$16,312.80	Excavator	280	$129.31	$36,206.80
	Truck Driver	400	$47.16	$18,864.00	Loader	80	$95.90	$7,672.00
					Mower	160	$46.72	$7,475.20
					Low bed/side dump	120	$93.59	$11,230.80
					Water truck	120	$54.71	$6,565.20
Subtotal				**$71,805.60**				**$121,699.60**
Patrol & Flow Changes (River and BWMA)								
A&R data	A&R Keeper (1.5 FTE)	3089	$47.01	$145,213.89	3/4 ton 4x4 pick-up	3089	$37.61	$116,177.29
Subtotal				**$145,213.89**				**$116,177.29**
BWMA Subtotal				**$217,019.49**				**$237,876.89**

TOTALS	
River Total	**$517,350.98**
BWMA Total	**$454,896.38**
Total O and M	**$972,247.36**
CPI Adjusted O & M	**$792,465.74**

Baseline Costs (described in Post -Imp)		River	BWMA	Total CPI adjustment
CPI adjustment		$56,863.00	$62,798.00	$119,661.00
2006-2007	4.5%	$59,421.84	$65,623.91	$125,045.75
2007-2008	3.1%	$61,263.91	$67,658.25	$128,922.16
2008-2009	-1.3%	$60,467.48	$66,778.69	$127,246.17
2009-2010	0.9%	$61,011.69	$67,379.70	$128,391.39
2010-2011	0.7%	$61,438.77	$67,851.36	$129,290.13
2011-2012	3.0%	$63,281.93	$69,886.90	$133,168.83
2012-2013	2.1%	$64,610.85	$71,354.53	$135,965.38
2013-2014	0.4%	$64,869.30	$71,639.94	$136,509.24
2014-2015	1.3%	$65,712.60	$72,571.26	$138,283.86
2015-2016	1.6%	$66,764.00	$73,732.40	$140,496.40
2016-2017	1.8%	$67,965.75	$75,059.59	$143,025.34
2017-2018	3.6%	$70,412.52	$77,761.73	$148,174.25
2018-2019	3.6%	$72,947.37	$80,561.15	$153,508.52
2019-2020	3.2%	$75,281.69	$83,139.11	$158,420.80
2020-2021	1.0%	$76,034.50	$83,970.50	$160,005.00
2021-2022	6.0%	$80,596.57	$89,008.73	$169,605.30
2022-2023	6.0%	$85,432.37	$94,349.26	$179,781.62

Hydrologic Monitoring

Hydrologic monitoring consists of monitoring, analyzing, and reporting river baseflows and seasonal habitat flows, the flooded extent of the Blackrock Waterfowl Management Area (BWMA), the levels of the Off-River Lakes and Ponds, and baseflows, pulse flows, and seasonal habitat flows to the Delta. Budgeted hydrologic monitoring costs for the 2023-2024 fiscal year are $99,920.00 (Table 3).

Table 3. Hydrologic Monitoring Budget, FY 2023-2024

	Person days	Labor Costs	Equipment Cost	Total Predicted Cost July 1, 2023 through June 30, 2024
-	HYDRO OPERATIONS AND MAINTENANCE			
River Stations	60	$33,000.00	$7,200	$40,200
Seasonal Habitat	6	$3,300.00	$240.00	$3,540.00
Off River Lakes & Ponds	7	$3,850.00	$280.00	$4,130.00
Flow to Delta	8	$4,400.00	$3,320.00	$7,720.00
Blackrock Waterfowl	7	$3,850.00	$3,280.00	$7,130.00
Reporting Compliance	5	$2,750.00	$200.00	$2,950.00
-	ENGINEERING			
Reporting Compliance	50	$34,250	$ -	$34,250
			Total Hydro Budget	**$99,920.00**

Biological Monitoring

Biological monitoring, analysis, reporting, and report preparation will be jointly conducted by Inyo and LADWP as to comply with LORP Final EIR and MOU requirements (Table 4). LADWP and Inyo County staff will continue to monitor the flooded extent of the BWMA as described in the BWMA Interim Management and Monitoring Plan. Inyo Staff and LADWP Staff will spend a total of 16 people days on these efforts. There will be no off-setting costs.

Table 4. Biological Monitoring Budget, FY 2023-2024

Biological Monitoring	Days	Inyo Days	LA Days
Blackrock Waterfowl Management Area			
Waterfowl Area Wetted Acreage	16	8	8
Total Person Days on Project	**16**	**8**	**8**

Range Monitoring

Range monitoring is related to the tasks described in the LORP Final EIR. Three types of monitoring will take place that are directly related to the management of livestock grazing: irrigated pasture condition scoring, utilization monitoring, and range trend monitoring. Range monitoring will be conducted by LADWP and is not a shared cost, and therefore is not budgeted for in this work plan (Table 5).

Table 5. Range Monitoring (LADWP only), FY 2023-2024

Task	People Days
Utilization	35
Irrigated Pasture Condition	5
Range Trend	30
Analysis and Reporting	10
Total	**80**

Mosquito Abatement

For fiscal year 2023-2024, the Owens Valley Mosquito Abatement Program (OVMAP) will continue a comprehensive Integrated Mosquito Management Plan (IMMP) when addressing the new and developing sources within the LORP in accordance with its mission of protecting public health. This IMMP consists of an expansion of currently used materials and methods for the surveillance and control of mosquitoes across the OVMAP boundary as well as contingency planning for late season flushing flows. The $60,000 budget anticipates field surveillance of potential larval habitat for mosquito production, larviciding, pupaciding, adult mosquito surveillance with light traps, mosquito borne disease surveillance, and treatment for adult mosquitoes. Additional mosquito treatment, if required, because of high water associated with the 2023 runoff, will be addressed separately.

Noxious Species Control

The Inyo and Mono Counties Agricultural Commissioner's Office conducts operations to control and eradicate several invasive weed species within the LORP boundaries. These invasive weed species include: perennial pepperweed (*Lepidium latifolium*), Russian knapweed (*Acroptilon repens*), Canada thistle (*Cirsium arvense*), yellow star thistle (*Centaurea solstitialis*), spotted knapweed (*Centaurea maculosa*), hairy whitetop (*Carderia pubescens*), and heart podded hoary cress (*Carderia draba*). These populations are managed using integrated pest management methods, including mechanical, chemical, and biological controls.

For fiscal year 2023-2024, Inyo County will be responsible for treating weeds in the LORP. The budget for noxious weed control is $50,000. An increase in perennial pepperweed in the LORP in recent years will require additional funding and efforts to contain the existing population and prevent spread. Additional funding for Inyo County will be sought from outside sources.

Additional weed treatment and surveillance by LADWP and ICWD is described in Section 2. Adaptive Management.

Saltcedar Control

Due to lack of enhanced funding, Inyo County's saltcedar control program has been scaled back. The effort will focus on surveying and treatment of saltcedar resprouts along the Owens River in the LORP. Inyo County's LORP saltcedar control activities are funded through the Inyo/Los Angeles Water Agreement. LADWP and Inyo County programs will work cooperatively to treat saltcedar, which may include areas in the LORP as resources are available.

Adaptive management

Inyo County and LADWP have identified adaptive management and monitoring tasks to complete in the 2023-2024 fiscal year. Refer to Section 2 for more information.

Schedule

Table 6. Schedule of Monitoring and Reporting Activities for FY 2023-2024

Period	Monitoring
August 1 - September 30, 2023	LORP Noxious Species Survey
September 1 – December 1,2023	LADWP/Inyo Prepare Draft LORP Report
October 1 - October 31, 2023	Fiscal Year 2020-2021 Work Plan and Budget Reconciliation
October 1 - November 30, 2023	Collect aerial imagery of River
Tuesday, October 31, 2023	Transmittal of LORP Accounting Report to Governing Boards
November 1-7, 2023	Measure BWMA Flooded Extent
Friday, December 8, 2023	Draft Report transmitted to MOU Parties
Wednesday, January 3, 2024	Public Meeting for Draft LORP Report
Thursday, January 25, 2024	Technical Group Meeting to Adopt LORP Annual Report
March 1-7, 2024	Measure BWMA Flooded Extent
March 1 – April 30, 2024	Fiscal Year 2023-2024 Work Plan and Budget Development
May 1 – May 31, 2024	Transmittal of LORP Work Plan, Budget, and Schedule to governing boards for approval
March 15 - May 1, 2024	Noxious Species Survey

Section 2. Adaptive Management

Implementation costs of both the Interim BWMA Plan and adaptive management for the river are provided below. These costs are to be shared equally between LADWP and Inyo County.

Adaptive Management with Additional Costs

Implementation of the Interim BWMA Management and Monitoring Plan
LADWP and Inyo County have implemented the first two years of the five-year Interim BWMA Management and Monitoring Plan (Interim Plan) in 2021 and 2022. Most maintenance work will be suspended in fiscal year 2023-2024 because of flooded conditions. However, an irrigation diversion on Blackrock Ditch, which diverts water to the Waggoner unit, will be replaced. This work will be conducted by LADWP and is budgeted at $5,516.20 (Table 7). Costs will be shared equally by LADWP and Inyo County.

Table 7. BWMA Adaptive Management Costs

BWMA Adapative Management Costs FY 2023-2024								
Labor					Equipment			
Location/Activity	Labor type	Hours	Labor Rate	Total Labor	Equipment Type	Hours	Rate	Total Equip
Replace Black Rock Ditch-Waggoner Diversion Check Wall								
	Power Shovel Operator	10	$58.26	$582.60	3 axle dump truck	10	$93.59	$935.90
	Truck Driver	20	$47.16	$943.20	3/4 ton 4x4 pick- up	10	$37.61	$376.10
	MCH	10	$44.94	$449.40	Excavator	10	$129.31	$1,293.10
					Low bed/side dump	10	$93.59	$935.90
Subtotal				**$1,975.20**				**$3,541.00**

TOTALS	
Black Rock- Waggoner Diversion Check Wall Replacement	$5,516.20
Proposed Project Total	$5,516.20

Geomorphic Changes along River
Inyo County will purchase orthophotography (and derived 3-D models) of the Owens River, in fall 2023, to assess geomorphic changes along the river following historic high flows. This cost will be equally shared with LADWP. A map of the river-pattern will be produced and compared to 2022 conditions. However, if field observations fail to detect physical changes to the river as flood waters recede, no imagery will be collected. The total cost to collect the imagery is $25,875.00 (see Appendix 1), with Inyo County purchasing the imagery and Inyo and LADWP each covering half the cost.

Adaptive Management without Additional Costs

1. Monitoring Associated with the Interim BWMA Plan
As stated in the Interim BWMA Plan, LADWP and the County will conduct additional monitoring concurrent with its implementation on flooded extent, water depths, as well as both avian and vegetation monitoring to note response to the new flooding regime. However, given the flooded conditions associated with the high 2023 runoff, only two of the monitoring tasks associated with BWMA will occur for the 2023-2024 fiscal year. The other postponed monitoring items will resume in fiscal year 2024-2025. To be monitored:

1. Flooded extent will continue to be measured both to confirm compliance with the Interim Plan and to help describe the effectiveness of seasonal filling and drawdown. Two on-the-ground surveys will be used to map more precisely the extent and location of flooding. Water releases will be monitored and reported annually. Staff time commitment for flooded extent monitoring in BWMA is outlined in Table 4, as this task is required under the LORP Final EIR.
2. Avian monitoring will be conducted to evaluate the use of BWMA by the habitat indicator species during implementation of the 5-year interim program. Eight seasonal surveys will be conducted September-April in each active unit during implementation of the Interim Plan.

It is estimated that monitoring and reporting associated with the Interim Plan will require 40 total people days split between LADWP and ICWD staff in the 2023-2024 fiscal year.

2. Noxious species survey and treatment

Additional noxious weed treatment and surveillance by LADWP and ICWD initiated in 2020-2021 will continue in 2023-2024. ICWD will continue survey work in the LORP (including BWMA) and LADWP will offset survey efforts with treatment of noxious weeds in the LORP area. Estimated staff time includes 20 days from ICWD and 40 days from LADWP.

3. Tree recruitment assessment

The environmental conditions which have permitted historic riparian tree establishment on the LORP during pre-project conditions (pre-watering) as well as conditions which have permitted the limited recruitment since project inception (post watering) will be evaluated. Known locations with mature trees and prior recruitment locations will be assessed as described in the 2021-2022 work plan and the Type D Monitoring Plan (Appendix 1, ICWD 2021). In 2023-2024, these tasks will require 35 field days for sampling, data collection, analysis and reporting. Inyo County will carry out this task.

4. BWMA Infrastructure Inspection

LADWP will inspect infrastructure of BWMA cells, following the high runoff of 2023, to identify and prioritize repairs, if necessary. This work will take two people-days.

5. Water Quality along the River

Inyo County will monitor water quality along the river during the summer months of 2023 and both LADWP and the County will summarize the findings. This will take a total of 20 people days and will be equally split between LADWP and the County.

6. Geomorphic Change along the River

Both Inyo County and LADWP will assess physical changes to the river channel and adjacent floodplain using 3-D aerial imagery following 2023 historic high flows. It will take a total of 53 people-days, with Inyo County contributing 20 days and LADWP contributing 33 days.

Table 8 shows a total of 210 people-days budgeted for six adaptive management tasks, with Inyo County contributing 105 people-days and Los Angeles contributing 105 days.

Table 8. Adaptive Management Monitoring 2023-2024

Task #	Description	Days	Inyo Days	LA Days
1	BWMA Interim Management and Monitoring Plan - Monitoring and Reporting	40	20	20
2	Noxious species survey & treatment	60	20	40
3	Tree recruitment assessment	35	35	0
4	BWMA infrastructure inspection	2	0	2
5	Water Quality Monitoring along River	20	10	10
6	Geomorphic Changes to River	53	20	33
	Total Person Days	**210**	**105**	**105**

References

Inyo County Water Department 2021. Type D Riparian Vegetation Monitoring Annual Status Report 2020. Accessed at: https://www.inyowater.org/wp-content/uploads/2021/08/TypeD_AnnualReport_2020_08242021_FINAL.pdf

Inyo County Water Department and Los Angeles Department of Water & Power 2017. Lower Owens River Project 2016-2017 Work Plan – Annual Accounting Report.

Los Angeles Department of Water and Power and Inyo County Water Department. 2021. Lower Owens River Project Work Plan, Budget, and Schedule 2021-2022 Fiscal Year. Accessed at: https://www.inyowater.org/wp-content/uploads/2021/10/2021-22-LORP-Final-Work-Plan-BudgetSchedule.pdf

Bid for Color Orthophotography Services

Offered by

1217 North Montgomery Street
Ojai, CA 93023
805-630-0065
www.Focalflight.com

Focal Flight is pleased to offer Inyo and Los Angeles Counties our aerial photography and orthophoto production services for mapping of the Owens River in 2023. Focal Flight LLC is owned by Evan and David Byrne and is a family operated company based in Ojai California. Our company owned aircraft are based at Santa Paula Airport in Ventura County California.

Focal Flight has 17 years of aerial photography experience and is not a middle-man or reseller, and we are not establishing a joint venture for this project. We perform every step of the operation in-house; therefore, we do not have to rely on any sub-contractors or partners. With full control of every aspect of the operation, we can deliver in a timely manner and easily have direct contact with Inyo County throughout the project period.

Project Approach

The image processing procedures and techniques used dictate the specifics of every aspect of an orthophoto project from flight planning to final image export. Focal Flight

uses digital image capture and soft-copy orthophoto production. Our processing is an automated system that matches common points in images automatically to create a 3D point cloud of the project area. This model is then projected to the specified map projection and exported as an orthophoto. A DEM (digital elevation model) is created from the from which a surface model is created after removing all non-ground objects from the model.

We use two Hasselblad A6D aerial mapping cameras for image acquisition. Each camera is mounted vertically in the aircraft. One camera captures the red, green and blue (RGB) bands and the other camera captures the near infrared (NIR) band. Post processing the images from the two cameras generates 4 band imagery from which we can create color infrared (CIR) or normalized difference vegetation index (NDVI).

The cameras are accompanied by a GPS system that captures the camera position at the point of shutter release. This GPS system uses real time WAAS (wide area augmentation system), SBAS (satellite based augmentation system) and Atlas augmentation. We can further refine the accuracy of the positioning by applying PPP (precision post processing) using existing NOAA CORS stations which are located in the Owens Valley. We can also use existing ortho imagery and DEMs to match the new data to preexisting datasets.

Even the best metric cameras will experience changes in their interior orientation over time. This is due to temperature changes and the aging of the materials. To mitigate these effects, we perform a camera calibration in-house prior to each project requiring a calibration. This will insure as accurate a calibration as possible. We use calibration software by Photometrix of Melbourne Australia, the same as USGS. This software performs a “Brown Model” calibration, accurately mapping the interior orientation of the camera and lens.

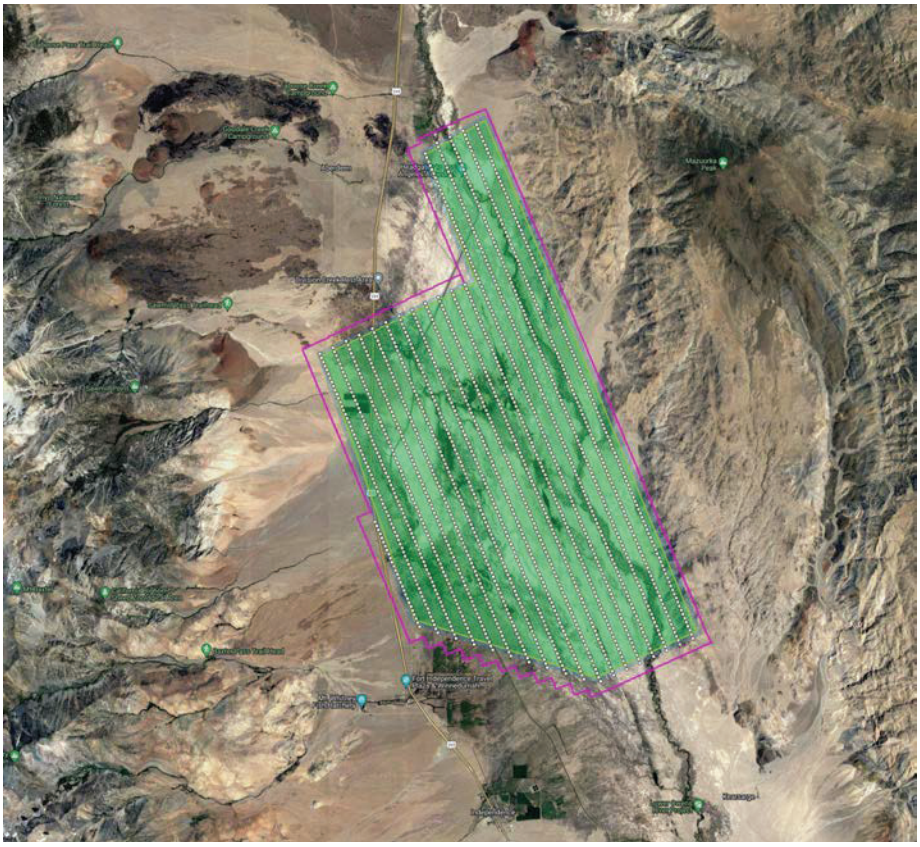
Flight Planning

Since our image processing automatically selects common points in images automatically, it is economical have more images than the traditional 60% overlap used for orthophoto production. “The more images the better”, is the way our system works. Image acquisition along-track is planned and captured at a minimum of 80% overlap. The flight lines are spaced to approximately 50% side overlap.

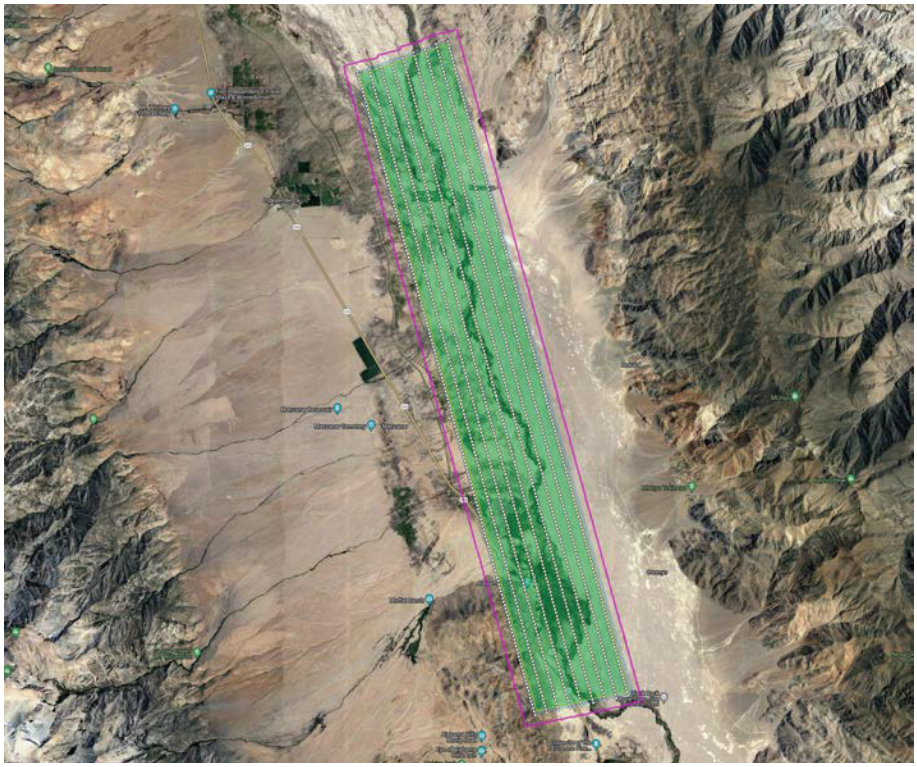
The area to be acquired will be based on the supplied KMZ file titled LORP aerial mapping boundary. The area acquired will include the supplied polygon plus a minimum 500’ buffer on all sides. We will be in touch with Inyo County and remain flexible as to the final area to be acquired in case the conditions of the Owens River change between acceptance of our quote and image acquisition.

LORP aerial mapping boundary over Google Image.

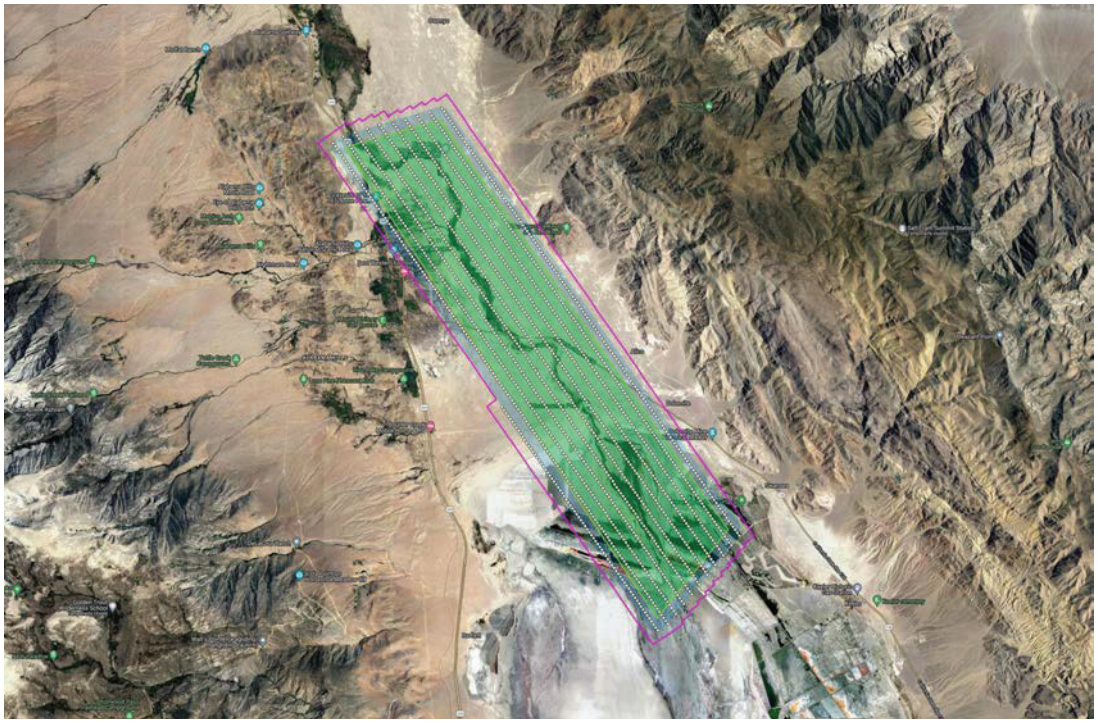
Actual image acquisition will break the area in to three segments, a north area, central area and southern area.



Preliminary flight lines over the Owens north area



Preliminary flight lines over Owens central area



Preliminary flight lines over Owens south area

Flight Operations and Image Acquisition

Flight Safety

Safe operation of the aircraft comes above all other aspects of any photo mission. To ensure the safety of persons and property on the ground as well as the crew and aircraft, Focal Flight always operates with a crew of two, a pilot and a camera operator. Some aerial photo companies operate with only one person on board. We feel that this compromises both safety of flight and the quality of the data. Safety of the flight is compromised when the pilot of the aircraft has to both fly the airplane and operate the camera system. In addition to a crew of two, we use all available traffic avoidance resources available including air traffic control advisories and onboard ADS-B systems to display other air traffic.

Image Acquisition

Image acquisition will be done with an average ground sample distance (pixel size) of 3 inches per pixel. With our mapping camera, that would be done at 4,300’ above ground level (AGL).

Normally vertical aerial images are captured with the highest sun angles possible with a minimum sun angle of 30 degrees. One exception to the practice is when capturing imagery with water in the scene. In this case the water can create a glare that can ruin

the images. To avoid this glare, we will avoid the highest sun angles of each shooting day to capture the imagery of the Owens River capturing the imagery when the sun is between 30 and 70 degrees above the horizon.

Image Processing and Deliverables

Focal Flight will do all of the image processing in Ojai California. The final processed imagery will be delivered in tiled 24-bit, 3 band GeoTIFF, 8 bit GeoJPEG, and/or ECW format.

The digital surface model will be delivered in GeoTiff, XML and/or .LAZ format.

A contour map will be provided in .DWG format.

Final data can be delivered digitally via FTP or shipped on a hard drive.

Project Schedule

Weather Permitting, the initial image capture will be done in the summer of 2023 and will coordinate the specific dates to fly with Inyo County. We will be available to do subsequent image acquisitions as requested by Inyo County later in the year. The final data will be delivered within three weeks of the image acquisition.

Data Licensing

All data and imagery will be provided to Inyo County and Los Angeles County licensed for in house use. Resale of the imagery and data is not permitted.

Pricing

RGB imagery capture and orthophoto production - $14,650
Color infrared orthophoto production - $4,220
Digital elevation model, point classification and digital surface model - $4,600

Total project cost per image acquisition - $23,470

References

Company Name: First American Professional Due-Diligence Services
Company Address: 1700 S. Brodway, Building E, Moore, OK 73160
Company Phone: 405-378-5815, 405-378-5800
Contact Person: Tiffany Grafton

Company Name: BLEW and Associations, Inc
Company Address: 325 North Shiloh Drive, Fayetteville, AR 72703
Company Phone: 479-443-4506
Contact Person: Allison Hackman

Company Name: Cirrus Digital Systems
Company Address: 2077 Centro East, Tiburon, CA 94920
Company Phone: 415-789-9420
Contact Person: John Arvesen

Company Name: Fireball International Services
Company Address: 1240 Fairfield Avenue, Reno NV 89509
Company Phone: 775 848-4462
Contact Person: Tim Ball

CAMERA CALIBRATION REPORT

PROJECT DETAILS

Camera: Hasselblad A6D

Filename: H:\Focal Flight A6D Calib 28AUG20\A6D 28AUG20.cal

Calibration Date: 28/08/2020 19:17pm

METRIC CALIBRATION PARAMETERS

Resolution = 11600 x 8700 pixels

Pixel width = 0.0046mm, Pixel height = 0.0046mm

		VALUE	STANDARD ERROR
Principal distance	c =	82.0507mm	0.004mm
Principal point offset in x-image coordinate	xp =	-0.2038mm	0.003mm
Principal point offset in y-image coordinate	yp =	0.1417mm	0.003mm
3rd-order term of radial distortion correction	K1 =	9.65298e-06	7.3040e-08
5th-order term of radial distortion correction	K2 =	-1.93292e-09	2.3551e-10
7th-order term of radial distortion correction	K3 =	9.73990e-13	2.6061e-13
Coefficient of decentering distortion	P1 =	4.0974e-06	1.037e-07
Coefficient of decentering distortion	P2 =	1.0296e-06	1.032e-07
No significant differential scaling present	B1 =	0.0000e+00	0.000e+00
No significant non-orthogonality present	B2 =	0.0000e+00	0.000e+00
9th-order term of radial distortion correction	K4 =	0.00000e+00	0.0000e+00
11th-order term of radial distortion correction	K5 =	0.00000e+00	0.0000e+00

STANDARD CORRECTION EQUATION

The corrected image coordinates x(corr) & y(corr) can be calculated from the measured coordinates x(meas) & y(meas) by using the formulas:

x = x(meas) - xp

y = y(meas) - yp

x and y are now with respect to the principal point,

r^2 = x^2 + y^2

dr = K1•r^3 + K2•r^5 + K3•r^7 + K4•r^9 + K5•r^11

x(corr) = x(meas) - xp + x•dr/r + P1•(r^2 + 2x^2) + 2•P2•x•y

y(corr) = y(meas) - yp + y•dr/r + P2•(r^2 + 2y^2) + 2•P1•x•y

Camera self-calibration determined in a network of 66 images and 384 points, to an image measurement accuracy (RMS 1-sigma) of 1.49 pixels or 6.84 um, and qf of 1.0.

Focal Flight

1217 N Montgomery St
Ojai, CA 93023 US
focalflight@gmail.com

FOCAL FLIGHT
WWW.FocalFlight.com

Quote

ADDRESS	SHIP TO		
Larry Freilich	Larry Freilich	QUOTE	3336 Owens River
Inyo County Water Department	Inyo County Water Department	DATE	06/29/2023
135 South Jackson Street	135 South Jackson Street	EXPIRATION DATE	08/09/2023
Independence, CA 93526	Independence, CA 93526		

DATE	ACTIVITY	DESCRIPTION	QTY	RATE	AMOUNT
	Digital Elevation Model	Digital elevation model, point classification and digital surface model.	1	4,400.00	4,400.00
	Planimetric Data	CAD drawing of ortho image features to include roads, dirt roads, structures and the Owens River and tributaries.	1	6,100.00	6,100.00
07/19/2023	Ortho-Mosaic and Image Acquisition	Vertical image acquisition and ortho-mosaic of The Owens River as outlined in the LORP KMZ captured at 3 inch resolution. Geo-referencing done using airborne GPS and/or client supplied or publicly available survey data. Delivery in GeoTiff, GeoJPEG or ECW format.	1	12,300.00	12,300.00
08/02/2023	Multi Spectral Imagery	Color infrared ortho imagery of the Owens River LORP portion.	1	3,075.00	3,075.00

TOTAL **$25,875.00**

Accepted By

Accepted Date