

2024-25 Draft LADWP Operations Plan

Inyo County Water Department

Inyo County Water Commission
April 22, 2024





2023-2024 Conditions and Operations



2023-24 Conditions and Operations - Runoff

Runoff

Approximately 878,500 acre-feet or 214% of normal

Runoff forecast was 233% of normal, or 955,600 acre-feet



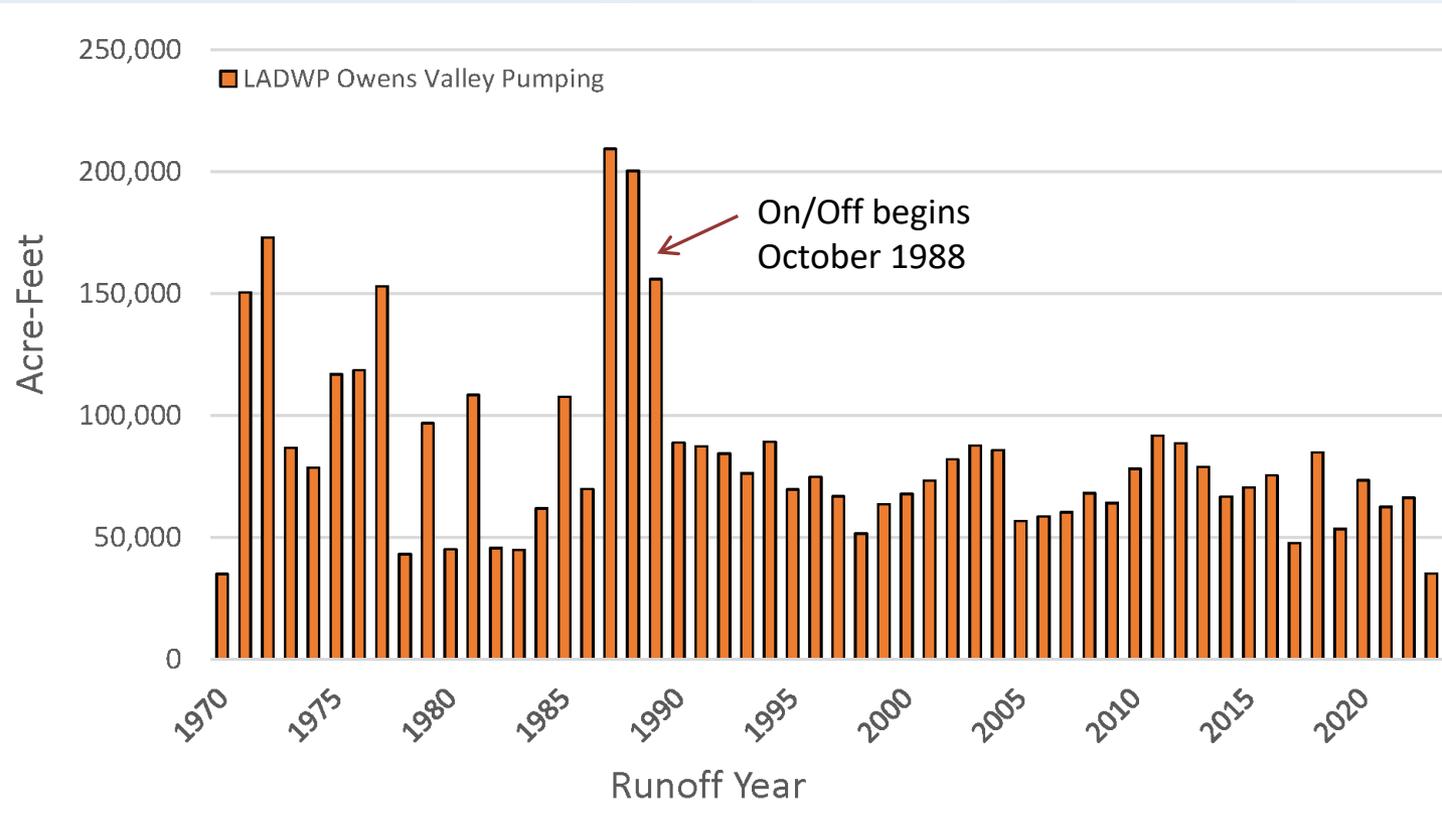
2023-24 Conditions and Operations - Pumping

2023-24 Pumping

Wellfield	Minimum planned 2023-24 pumping (AF)	Maximum planned 2023-24 pumping (AF)	Actual 2023-24 pumping (AF)
Laws	2,550	5,040	1,984
Bishop	3,180	3,990	776
Big Pine	16,200	20,400	13,591
Taboose-Aberdeen	1,200	3,900	4,410
Thibault-Sawmill	8,000	8,000	7,568
Independence-Oak	6,900	7,200	5,359
Symmes-Shepherd	1,200	1,740	623
Bairs-Georges	0	300	0
Lone Pine	900	900	909
Total	40,130	51,470	35,220



Pumping since 1970



Court limits pumping
1973-1984

Inyo Board
approved pumping
plans 1985-89

Agreement signed
Oct 1990,
including DRP

Pumping has
ranged between
35,200 - 91,700 AF

* Pumping from Laws to Lone Pine, does NOT include DH (V404/405)



2023-24 Conditions and Operations – Groundwater Levels

Water Levels

Indicator Wells: At 46 indicator wells the average DTW by wellfield increase was 3.3 ft.

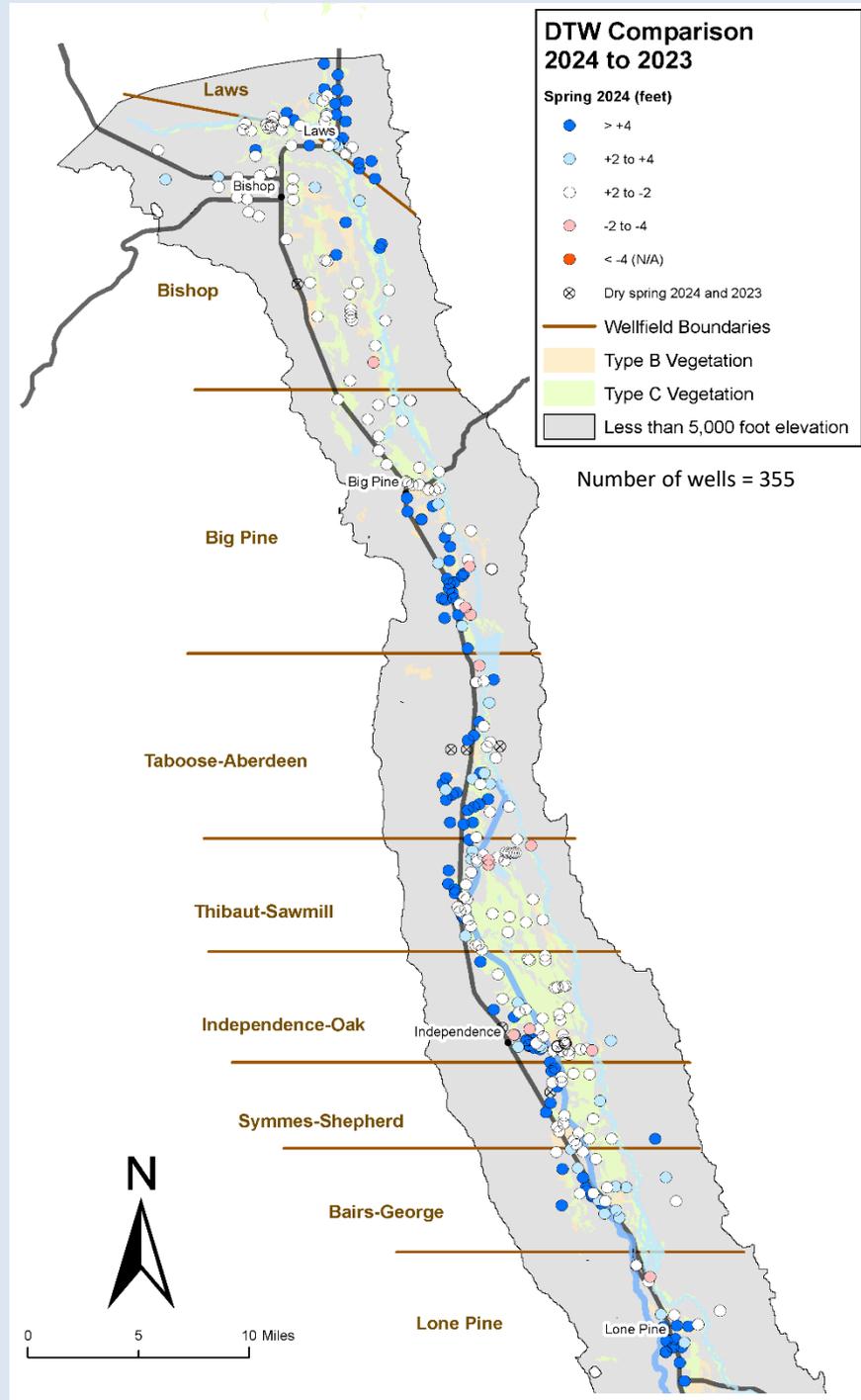
Last year, the average predicted increase was 3.2 ft (LADWP proposed minimum pumping).

Change in DTW 2023-24

Water levels in over 40% of the measured wells **increased** at least two feet from spring last year (including control areas)

Only 12 declined more than 2 ft

Average increase valley wide: 2.8 ft

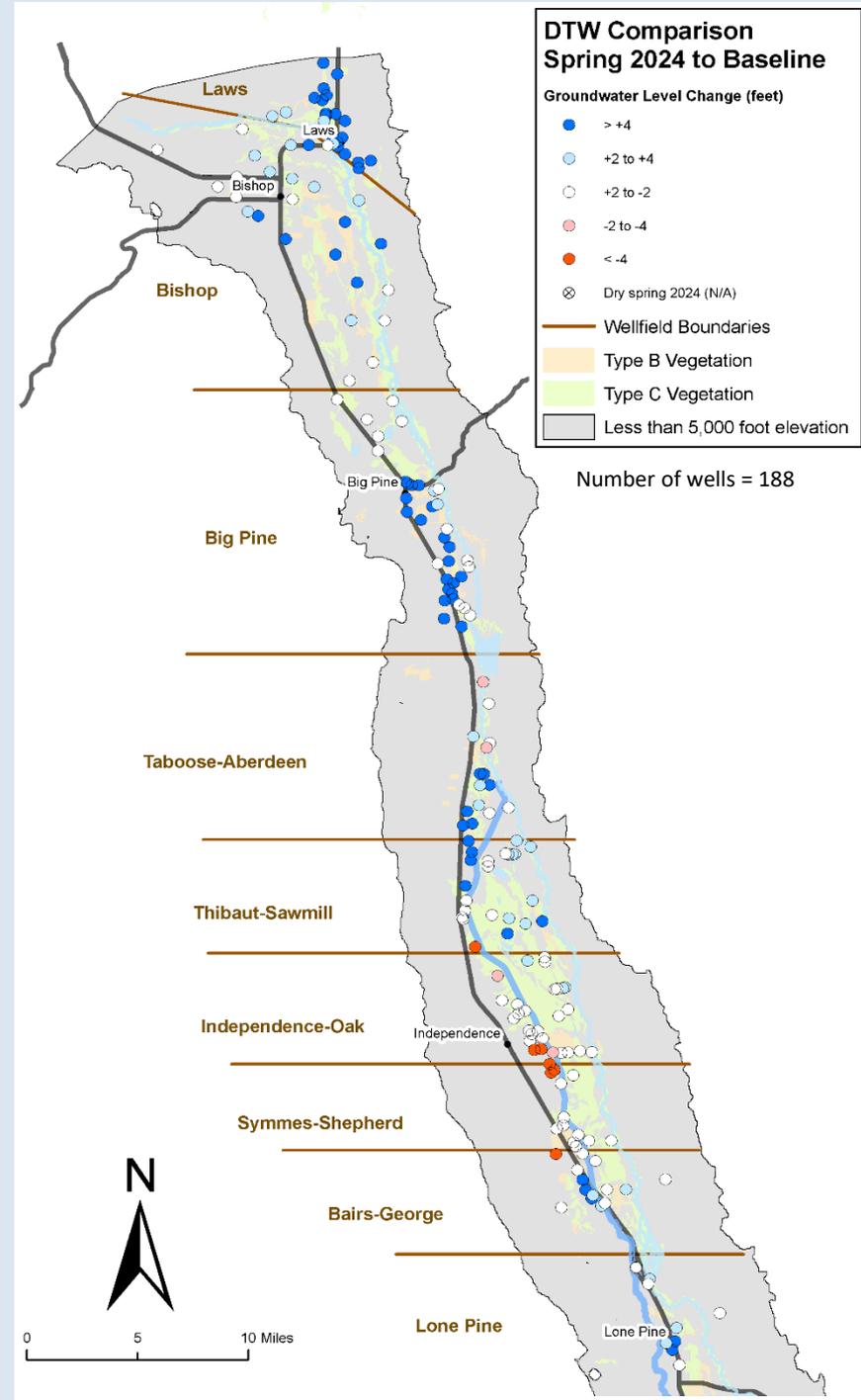


April 2024 DTW Conditions

DTW is *at or above* baseline in much of the wellfields (145 wells).

Exceptions where water levels are below Baseline:

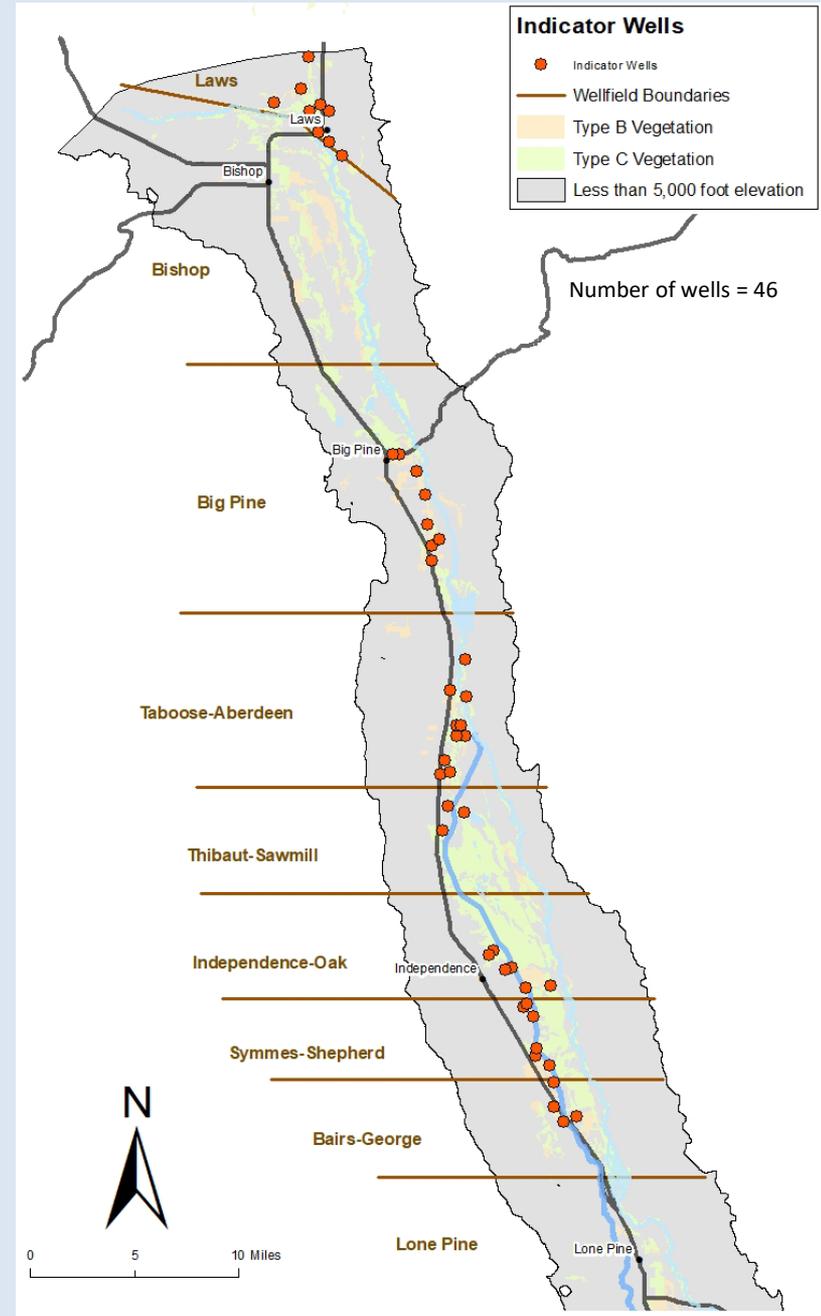
- 7 wells in the southern half of the valley are > 4 feet below baseline (west of the aqueduct).



April 2024 Groundwater Levels at Indicator Wells

Wellfield	2023-2024 change	2024 average from baseline
	ft	ft
Laws	6.1	8.5
Big Pine	4.7	6.6
Taboose-Aberdeen	4.3	3.8
Thibaut-Sawmill	0.9	6.2
Independence-Oak	1.7	-0.4
Symmes-Shepherd	1.8	-2.9
Bairs-George	3.6	3.2
Wellfield Average	+3.3	+3.6

7 wells declined from April 2023 levels
 33 of 46 indicator wells are above baseline in April 2024





2023-2024



- [2023 Vegetation Graphs \(pdf\)](#)
- [2023 Interactive vegetation graphs, maps, depth to water, NDVI and species lists \(R Shiny App\)](#)
- [2023 Vegetation Condition Overview Map \(ArcGIS Dashboard\)](#)

LAW062 (W/C): W | Type: C | Rabbitbrush Meadow
 Entisols Sabies | ESD: Sodic Terrace
 Geomorphic: stream terraces

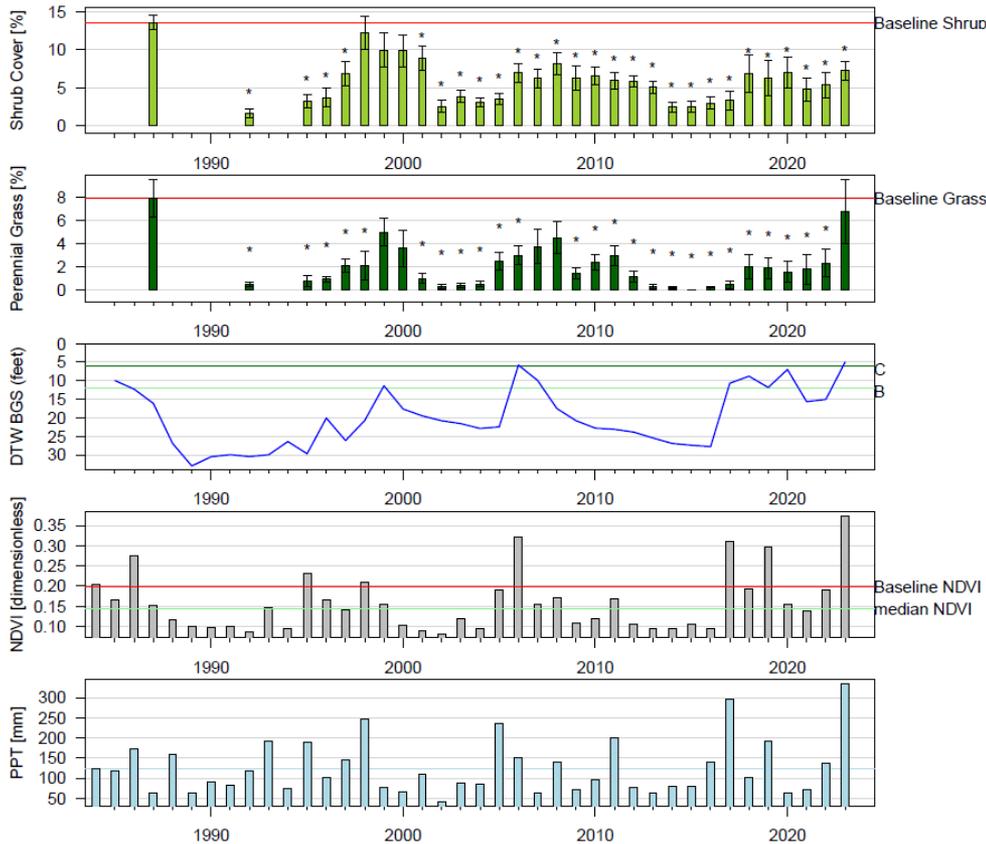


Figure 80: Two-Sample t-Test: Baseline (lpt) vs. reinventory (* $p < 0.05$).
 Baseline sample size (n = 9). Current year sample size (n = 9). Error bars = 95% CI.



<https://inyo.shinyapps.io/OVGDEspatial/>



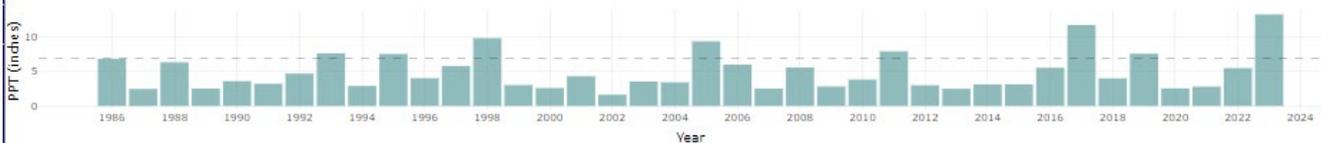
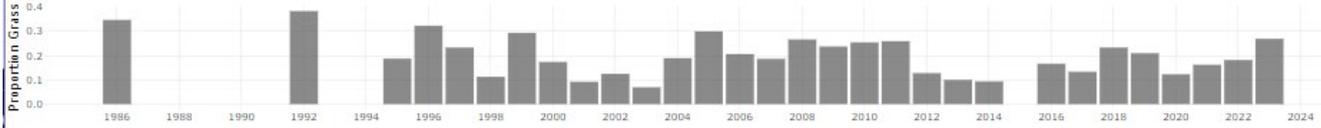
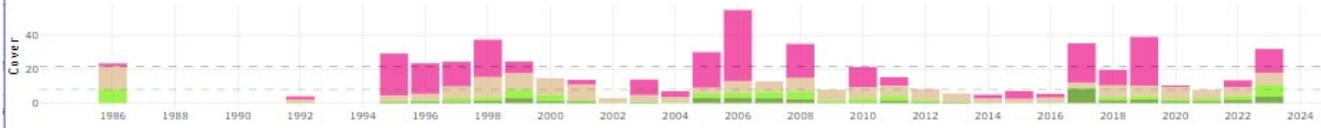
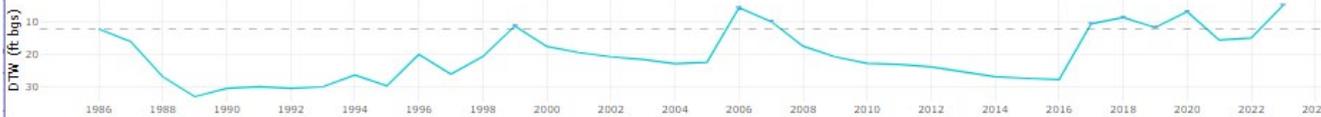
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Green Book Vegetation Monitoring

Choose Parcel

LAW062

Ecological Site: Sodic Terrace Greenbook Type: C
 Holland Type: Rabbitbrush Meadow Soils: Entisols -
 Ashy, calcareous, thermic Vitrandic Torriorthents -
 Wellfield (I=in,O=out): I



2023-2024



<https://inyo.shinyapps.io/OVGDEspatial/>



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Show entries

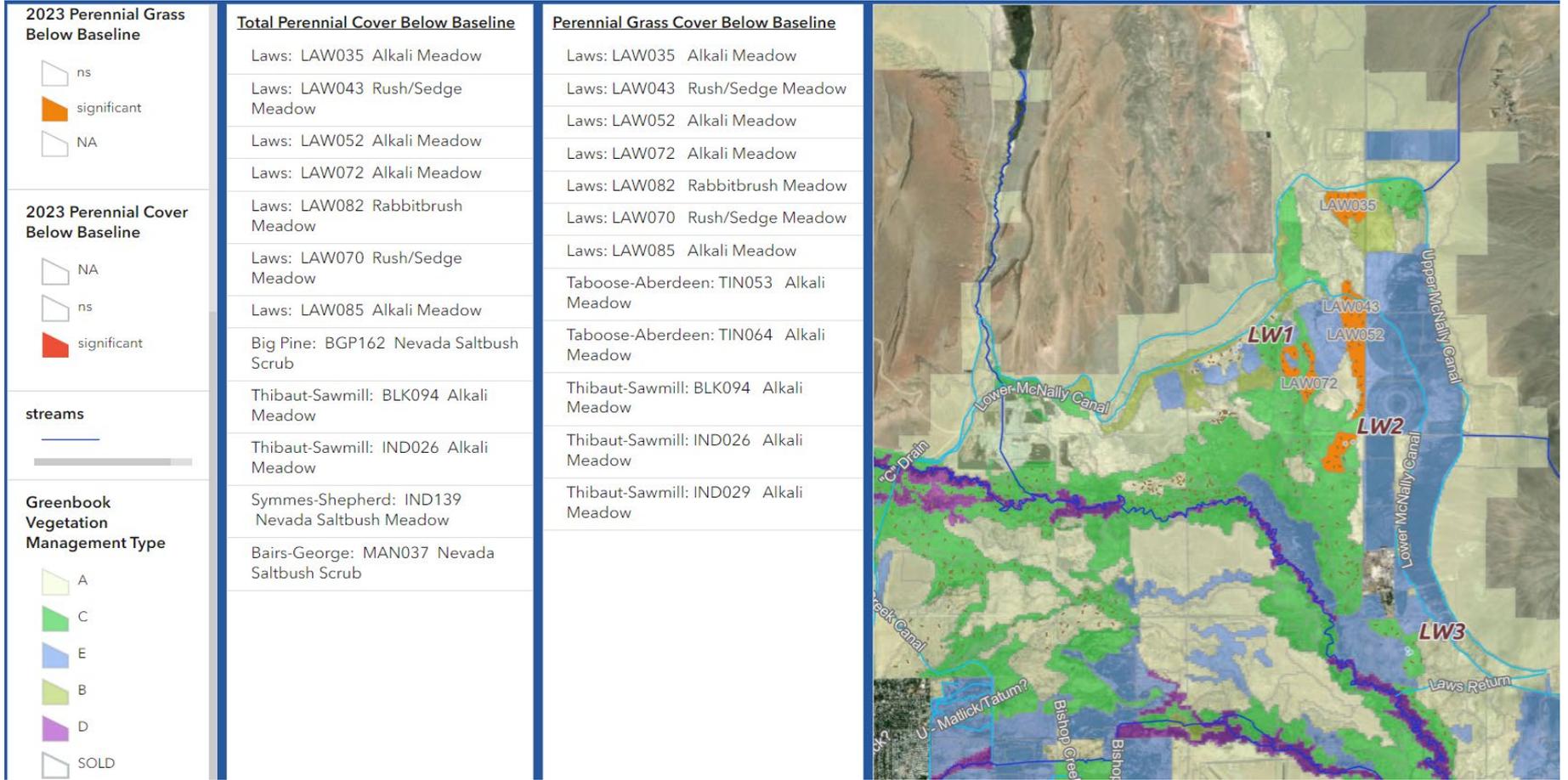
Search:

Parcel	Species	Code	CommonName	1987	1992	2022	2023	
4	LAIW062	Ericameria nauseosa	ERNA10	rabbitbrush, Common	13.56	1.07	2.78	3.56
3	LAIW062	Distichlis spicata	DISP	Saltgrass	7.89	0.21	0.44	2.44
2	LAIW062	Bassia hyssopifolia	BAHY	bassia, Fivehook	1	0.71	0.44	6.78
5	LAIW062	Salsola tragus	SATR12	Tumbleweed /thistle, Russian	0.44	0.79	0.67	2.78
1	LAIW062	Annual Forbs	AAFF	**	0.22			
6	LAIW062	UNK	AAFF	UNK	0.22			
7	LAIW062	Ambrosia acanthicarpa	AMAC2	ragweed, Bur		0.14	0.67	2.33
8	LAIW062	Eriogonum sp.	ERIOG	Buckwheat		0.14		
9	LAIW062	Salix sp.	SALIX	Willow		0.07		
10	LAIW062	Sporobolus airoides	SPAI	sacaton, Alkali		0.14	1.89	3.56
11	LAIW062	Artemisia ludoviciana	ARLU	mugwort, Silver			0.11	
12	LAIW062	Atriplex phyllostegia	ATPH	Arrowscale			0.11	0.11
13	LAIW062	Atriplex torreyi	ATTO	saltbush, Nevada/Torrey's			1.22	2.56
14	LAIW062	Cleomella obtusifolia	CLOB	stinkweed, Mojave			0.56	
15	LAIW062	Eriogonum deflexum	ERDE6	buckwheat, Skeleton			1.56	1.33
16	LAIW062	Heliotropium ourassavicum	HECU3	heliotrope, Salt			0.33	0.67
17	LAIW062	Iva axillaris	IVAX	weed, Poverty			1.33	3.22
18	LAIW062	Sarcobatus vermiculatus	SAVE4	Greasewood			1.33	1.11
19	LAIW062	Carex sp.	CAREX	Sedge/Carex				0.78
20	LAIW062	Cleomella parviflora	CLPA4	cleomella, Slender				0.56
21	LAIW062	Helianthus annuus	HEAN3	sunflower, Annual				0.11



2023-2024

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2024-2025 Annual Operations Plan



Water Agreement Process

Inyo/LA Water Agreement Section IV.D “Annual Operations Plan”

- Draft plan provided by April 20th each year
- County has 10 days to review and provide comments
- Technical Group meets within 10 days to review County’s comments (May 9, 2024)
- LADWP has 10 days to finalize the Operations Plan (May 19)



2024-25 LADWP Operations Plan

Precipitation

April 1, 2024, snowpack: 97% of average

Owens Valley precipitation: 8.9" or 159% of average

	Water Content	April 1 Normal	% of April 1 Normal
Average of all snow courses	18.0 in	18.7 in	97%



2024-25 LADWP Operations Plan

2024 EASTERN SIERRA RUNOFF FORECAST April 1, 2024

APRIL THROUGH SEPTEMBER RUNOFF

	<u>MOST PROBABLE VALUE (Acre-feet)</u>	<u>(% of Avg.)</u>	<u>REASONABLE MAXIMUM (% of Avg.)</u>	<u>REASONABLE MINIMUM (% of Avg.)</u>	<u>LONG-TERM MEAN (1971 - 2020) (Acre-feet)</u>
MONO BASIN:	103,400	103%	116%	91%	100,307
OWENS RIVER BASIN:	303,700	102%	115%	88%	298,780

APRIL THROUGH MARCH RUNOFF

	<u>MOST PROBABLE VALUE (Acre-feet)</u>	<u>(% of Avg.)</u>	<u>REASONABLE MAXIMUM (% of Avg.)</u>	<u>REASONABLE MINIMUM (% of Avg.)</u>	<u>LONG-TERM MEAN (1971 - 2020) (Acre-feet)</u>
MONO BASIN:	122,100	103%	117%	90%	118,156
OWENS RIVER BASIN:	419,300	103%	116%	91%	406,310

Runoff Forecast

Owens River Basin: 103% of average

419,300 acre-feet



2024-25 LADWP Operations Plan

LADWP Proposed Groundwater Pumping

Month	Laws	Bishop	Big Pine	Taboose-Aberdeen	Thibaut-Sawmill	Indep.-Oak	Symmes-Shepherd	Bairs-Georges	Lone Pine	TOTAL
April	300	0	1,000-1,700	100	666	700-950	200	0	120	3,086-4,036
May	300	0	1,000-1,700	100	666	700-950	200	0	120	3,086-4,036
June	300-1,300	530-1,500	1,000-1,700	100	666	700-950	200	0	120	3,616-6,536
July	700-1,300	530-1,500	1,300-1,700	100-1,225	666-850	700-1,200	200-440	100-220	120	4,416-8,555
August	700-1,300	530-1,500	1,300-1,700	100-1,225	667-850	700-1,200	200-440	100-220	140	4,437-8,575
September	700-1,300	530-1,500	1,300-1,700	100-1,225	667-850	700-1,200	200-440	100-220	140	4,437-8,575
October	700	500	1,300-1,700	1,025-1,225	667-850	460-580	240-520	100-220	30	5,022-6,325
November	700	500	1,300-1,700	1,025-1,225	667-850	460-580	240-520	100-220	30	5,022-6,325
December	525-520	500	1,300-1,700	1,025-1,225	667-850	460-580	240-520	100-220	20	4,837-6,135
January	525-520	500	1,300-2,000	1,025-1,225	667-850	460-580	240-520	100-220	20	4,837-6,435
February	25	500	1,300-2,000	1,025-1,225	667-850	460-580	240-520	100-220	20	4,337-5,940
March	25	500	1,300-2,000	1,025-1,225	667-850	460-580	240-520	100-220	20	4,337-5,940
TOTAL	5,500-8,290	5,120-9,000	14,700-21,300	6,750-11,325	8,000-9,648	6,960-9,930	2,640-5,040	900-1,980	900	51,470-77,413

51,470 - 77,413 AF pumping planned for 2024-25



2024-2025 LADWP Operations Plan

ICWD Indicator Well Predictions (number of wells = 46)

Pumping: 51,470 AF (LADWP Proposed Low)

Indicator wells predict an average -1.4 ft decrease in DTW 2024-2025
DTW declines in 37 indicator wells
DTW above baseline in 32 wells
DTW predicted to be 2.2 ft above baseline on average
DTW below baseline in IO and SS Wells

Pumping: 77,413 AF (LADWP Proposed High)

Indicator wells predict an average -2.2 ft increase in DTW 2024-2025
DTW declines in 44 indicator wells
DTW above baseline in 30 wells
DTW predicted to be 1.4 ft above baseline on average
DTW below baseline in IO and SS Wells



Groundwater Levels at Indicator Wells

ICWD Predicted April 2025 average wellfield depth-to-water (DTW) relative to baseline

Wellfield	Baseline – 2025 avg. DTW 51,470 AF	Baseline – 2025 avg. DTW 77,413 AF
	ft	ft
Laws	3.2	2.5
Big Pine	5.6	4.6
Taboose-Aberdeen	2.7	1.7
Thibaut-Sawmill	6.7	6.1
Ind.-Oak	-1.2	-2.1
Symmies-Shepherd	-2.9	-3.6
Bairs-George	1.4	0.4
Owens Valley	+2.2	+1.4



Groundwater Levels at Indicator Wells

Predicted April 2025 average change and depth-to-water

Wellfield	2024-25 avg. change (ft) LADWP (Table 1.7)	2024-25 avg. change (ft) ICWD	2025 avg. depth (ft-bgs) ICWD
Laws	-3.5 to -4.3	-5.4 to -6.0	11.2 to 11.9
Big Pine	+0.2 to -1.7	-1.0 to -1.9	8.9 to 9.9
Taboose-Aberdeen	-0.5 to -1.1	-1.1 to -2.1	10.7 to 11.7
Thibaut-Sawmill	+0.1 to -0.6	+0.5 to -0.1	4.7 to 5.3
Ind.-Oak	-0.8 to -2.2	-0.8 to -1.7	4.1 to 5.0
Symmes-Shepherd	-0.8 to -2.3	0.0 to -0.8	9.8 to 10.6
Bairs-George	-1.6 to -1.9	-1.9 to -2.9	6.1 to 7.1
Owens Valley	-1.0 to -2.0	-1.4 to -2.2	7.9 to 8.8



2024-25 LADWP Operations Plan

Planned Uses in the Owens Valley

In-valley uses: 95,130 AF

 Irrigation: 50,400 AF

 E/M: 9,920 AF

 Stockwater: 10,840 AF

 LORP: 14,910 AF (13,440 AF April – Sept.)

Spreading in Big Pine and Laws: 7,000 AF in the spring

Owens Lake dust mitigation

Owens Valley Export: 136,000 AF

Eastern Sierra Export: 286,000 AF

Eastern Sierra will supply 60% of LA's total supply for the year



2024-25 LADWP Operations

Other possible operations

- W386 pumping test
- W415 6-month test
- W416 initial operation
- Operation of W428
- Pump equip W429

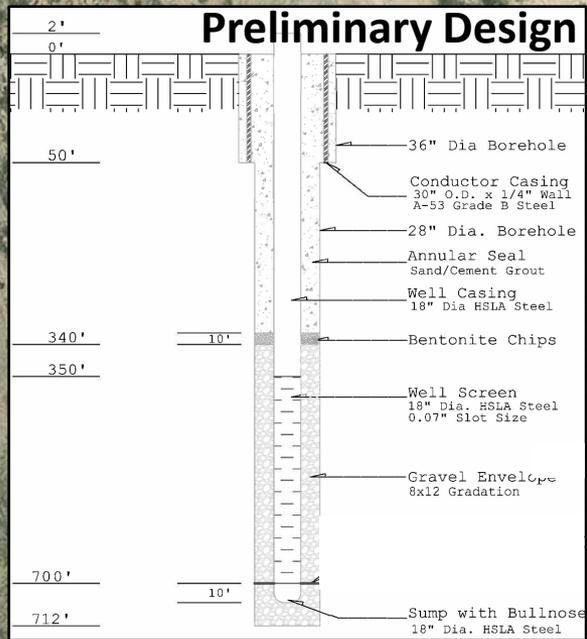


2024-2025 LADWP Operations Plan

Summary

- LADWP pumping between 51,470 and 77,413 AF
 - Water levels predicted to decrease -1.4 to -2.2 ft from 2024
- ICWD recommended pumping ~51,470 AF
 - Minimum pumping approximately for in-valley uses
 - Utilize available surface water supplies in lieu of groundwater pumping where operationally feasible
 - Minimal pumping by LADWP will minimize groundwater decline to promote compatibility with baseline vegetation goals





Laws

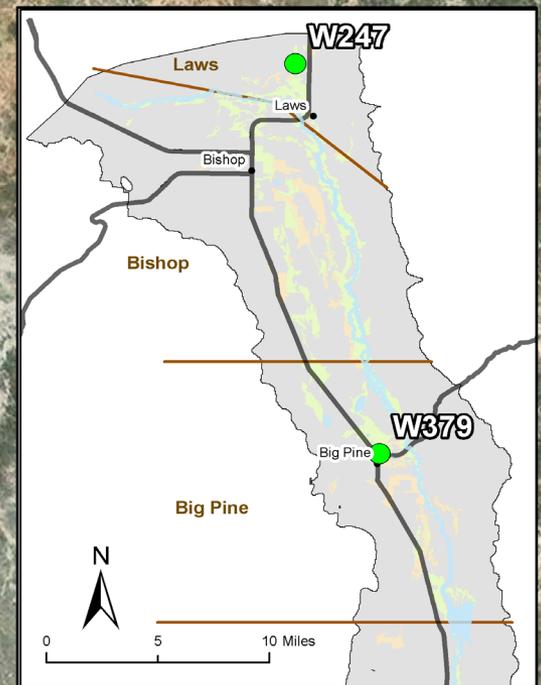
- Existing Well
- Proposed Replacement Well Location
- Canals

Lower McNally Canal

Screen:
28'-470'

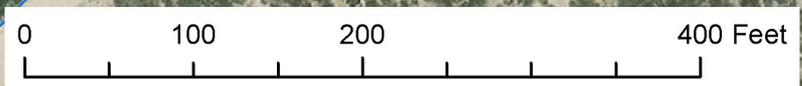
W247
Capacity:
5.3 CFS

W247R
Proposed
Screen:
350'-700'
Capacity:
4.0-5.5 CFS



**ON/OFF
Moni. Site L1**

W247 Replacement Well





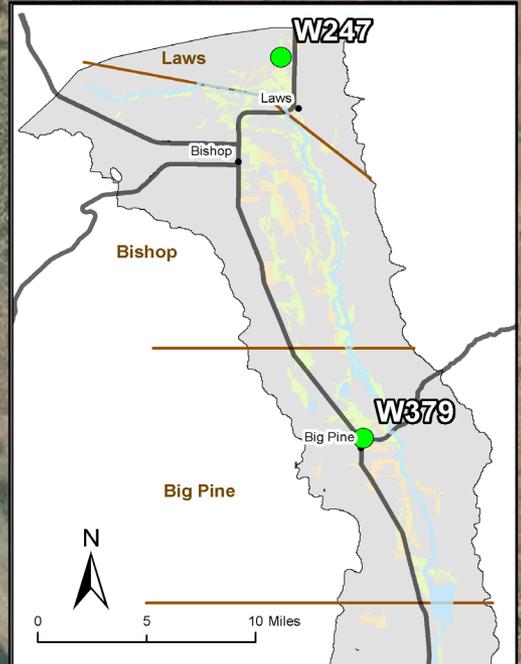
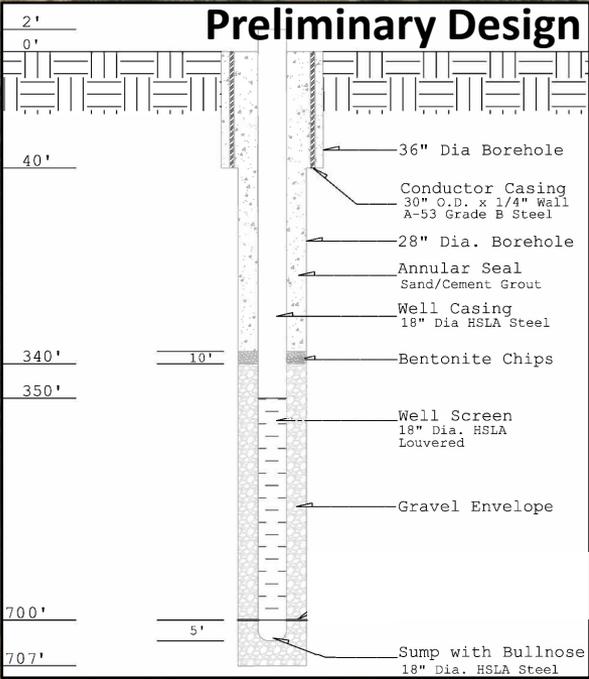
Big Pine Canal

Big Pine

- Existing Well
- Proposed Replacement Well Location
- Canals

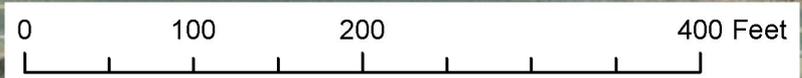
**Proposed Screen:
350'-700'
Capacity:
4.0-5.0 CFS
W379R**

**Screen:
200'-400'
Capacity:
4.3 CFS
W379**



**ON/OFF
Moni. Site BP1**

W379 Replacement Well



Hwy 168

Replacement Well Process



- Exchange technical comments
- Adding monitoring wells for geographic coverage and well depth
- Monitoring potentially affected resources: private wells, flowing wells, vegetation
- Adaptive monitoring approach
 - Initial monitoring plan
 - Revision to monitoring plan
 - Operation plan