2021-2022 STATUS OF MITIGATION PROJECTS

The Los Angeles Department of Water and Power (LADWP) is legally obligated to implement mitigation projects to enhance recreation, diversify land use, improve or create habitat for wildlife and vegetation, and mitigate for a range of impacts in the Owens Valley. A central role of the Inyo County Water Department (ICWD) is to monitor and report on the status of these. More than 64 projects, spread throughout the Valley, mitigate for a range of environmental impacts due to abandonment of formally irrigated agricultural lands and the effects of groundwater pumping in the Owens Valley. These improvements range in size from half-acre park projects to the 78,000-acre Lower Owens River Project (LORP). These projects are described in the Water Agreement and associated 1991 EIR (*Water from the Owens Valley to Supply the Second Los Angeles Aqueduct*), and in the 1997 MOU (Resolving conflicts and concern over the 1991 EIR). These documents can be found on the ICWD website (http://www.inyowater.org/).

ICWD participates in the development of new projects, monitors for compliance with project descriptions, evaluates the effectiveness of prescribed mitigation, and oversees modifications of projects that have been changed by the Inyo/LADWP Standing Committee or the courts.

This report provides background and status on all mitigation projects and other commitments in the Water Agreement. This section of the ICWD Annual Report provides information about the origin of mitigation projects, their intended value, and the status of projects relative to goals and objectives. The report also calls out projects that are currently receiving special attention. These reports are found in the *Projects in Focus* section.

Mitigation Projects--Origins and Background

Descriptions of mitigation projects are found in the collection of documents that govern the activities of the LADWP in the Owens Valley. These documents were developed over time and include the 1991 Long Term Water Agreement and associated EIR, the 1997 MOU, and other court stipulations and orders.

LADWP is legally obligated to implement mitigation projects to enhance recreation, diversify land use, improve or create habitat for wildlife and vegetation, and mitigate for a range of impacts in the Owens Valley. Although the environment of the Owens Valley had begun to suffer the effects of large- scale water diversions to supply water to Los Angeles Aqueduct beginning in 1913, all the mitigation projects described in this report mitigate for impacts after 1970 that resulted from the operation of the second Los Angeles Aqueduct. These mitigation projects will to a certain degree repair, restore and compensate for adverse impacts from the operation of the second aqueduct. Descriptions of mitigation projects are found in the collection of documents that govern the activities of the LADWP in the Owens Valley.

More than 58,000 acres of groundwater dependent vegetation is found in the Owens Valley. Between 1970 and 1990, increased groundwater pumping, and the resulting fluctuations in the water table, has had a significant effect on more than 1,000 acres; 655 acres of groundwater dependent vegetation has entirely died-off. Most of the mitigation projects include goals to improve vegetation in the Owens Valley.

Mitigation Alternatives

With respect to mitigation, the Water Agreement generally follows the framework of the California Environmental Quality Act (CEQA), which allows several alternative forms of mitigation. These are generally considered in sequence (i.e., with preference given to avoidance first and compensation last). These actions include:

- **Avoiding the impact altogether by not taking a certain action or parts of an action.** Local example: Well on/off provisions. When soil water and projected contribution from precipitation is inadequate to maintain vegetation, wells are not operated.
- **Minimizing impact by limiting the degree or magnitude of the action and its implementation.** Local example: Shutting down pumping wells, as was done at Five Bridges when groundwater drawdown degraded nearby vegetation.
- **Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.** Local example: Revegetation and regreening projects, which compensate for the effects of the abandonment of irrigated agriculture leading to areas of blowing dust and dirt.
- **Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.** Local example: Salt cedar control, ongoing irrigation of fields
- **Compensating for the impact by replacing or providing substitute resources or environments** Local example: Lower Owens River Project, civic projects, recreational

Origin of Mitigation Efforts

Mitigation planning, development, and implementation are ongoing activities that are undertaken cooperatively with LADWP; Inyo County and LADWP developed most mitigation projects in the Owens Valley during three discrete periods of time in response to judgments or potential legal and administrative actions:

Environmental Projects (EP), 1970-1984

Between 1970 and 1984, LADWP committed about 10,000 acre-feet of water annually to implement 12 environmental projects (Table 6.1). The primary purpose of these projects was to restore habitat that had been negatively affected or lost due to water gathering. These areas may have exhibited vegetation changes, or reduction in wildlife using a particular habitat. The goal was to provide a regular water supply to habitats such as ponds, lakes, sloughs, springs, and the Lower Owens River (LOR). Objectives differed between the projects, depending on the type of the impact that had occurred, but the overall goal of the environmental projects was to improve wildlife, forage, fisheries, and public recreation facilities.

In many instances it was impractical to mitigate at the original impact site, or the affected area was not well defined, or the impact was sporadic. In these cases, a project was constructed at a site that would best accommodate the goals of the mitigation.

Enhancement/Mitigation Projects 1985-1991

The Enhancement Mitigation (E/M) projects were implemented prior to adoption of the 1991 EIR (Table 6.2). The Water Agreement required that all E/M project continue. Some of these projects were included in the 1991 EIR as mitigation for impacts due to LADWP's water gathering activities.

These projects addressed a few environmental impacts and filled community needs. Projects include the revegetation of abandoned agricultural lands and lands that experienced vegetation loss due to groundwater pumping, delivery of water for public parks, improved wildlife habitat, and a partial rewatering of the lower Owens River. For each project, specific goals and objectives were established and environmental documentation was prepared in accordance with CEQA.

Additional Mitigation Projects, 1997 MOU and 2004 Amended Stipulation and Order
The 1997 MOU identifies Additional Commitments that include studies, evaluations and commitments to specific issues (Section III.A). One of the issues brought forward in the MOU in Section III.A.3. is Additional Mitigation. This requires that LADWP allocate 1,600 acre- feet of water per year to implement on-site mitigation measures at Hines Springs and on-site or off-site mitigation at Fish Springs, Big and Little Seeley Springs and Big and Little Blackrock Springs. Also assigned is a commitment to improve wildlife habitat

- **Yellow-Billed Cuckoo (YBC) Enhancement Mitigation Project:** These projects located near Big Pine on Baker Creek and Hogback Creek near Lone Pine were designed to enhance vegetation conditions and direct land management actions to enlarge and enhance existing YBC habitat
- **1600 acre-feet of water:** Commits 1600 acre-feet of water at seven sites. The initial project recommended by the MOU consultant was replaced by eight identified projects prepared by an Ad Hoc group of Inyo, LADWP, and CFG staff, local lessees, and representatives of the Owens Valley Committee and the Sierra Club. A report describing these projects can be found on the ICWD website.

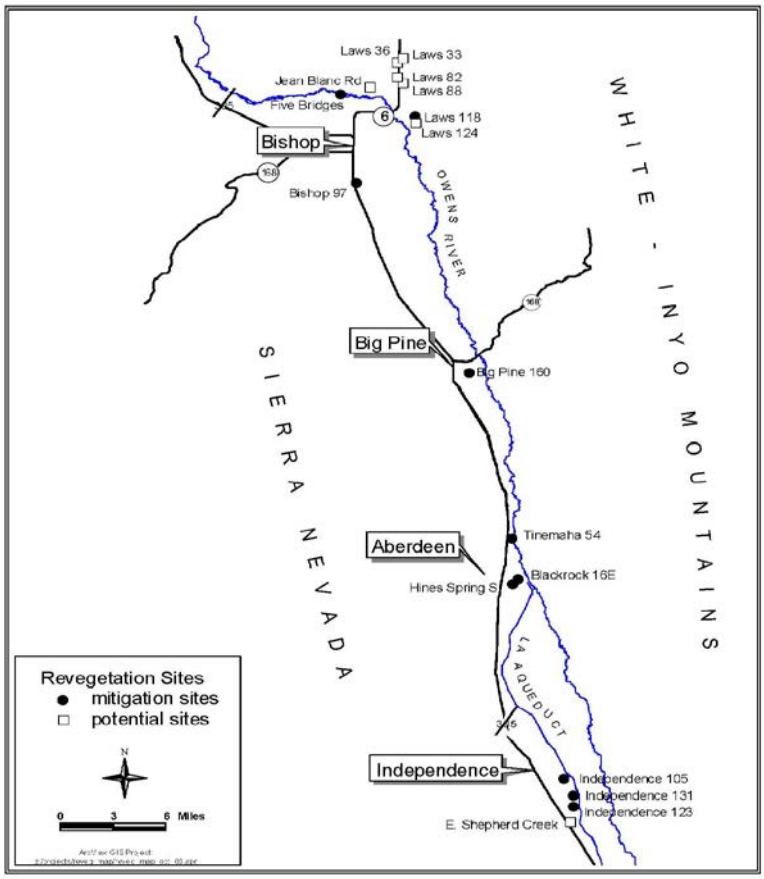
The Additional Mitigation Projects established a five-year monitoring program for the eight projects. These projects were monitored for water deliveries, assessed using pedestrian surveys and photo points, and vegetation and flooded extent was mapped. Data collections, and monitoring, were tasks shared by Inyo County and LADWP. LADWP was required to document the five-year finding in a report. This report is found in their 2017 Annual Owens Valley Report (Section 3.2.1.1).

Revegetation projects in the 1991 EIR (Figure 1)
Revegetation projects mitigate for environmental damages due to groundwater pumping and/or abandonment of agriculture. The 1991 EIR identified land that had become barren due to changes in surface or groundwater management (Figure 9.1). Subsequent to the 91 EIR, the MOU directs that mitigation plans be produced for all on-site mitigation projects, which would include revegetation projects. The Revegetation Plan for Impacts Identified in the LADWP, Inyo County EIR for Groundwater Management (1999 Plan), was prepared by the Inyo/Los Angeles Technical Group and submitted to the Standing Committee in 1999. The plan provides specific guidance as to goals to be reached and sustained. Goals include the attainment of a prescribed percent of reestablished vegetation coverage, the level of species richness (composition), and natural recruitment, which is a measure of sustainability.

In 2016-17, the County and LADWP had disagreed over the authority of the 1999 Plan. Although the MOU required that a revegetation plan be developed by 1999, LADWP claimed that the 1999 Plan was an unapproved draft. This assertion, if accurate, would have relieved LADWP from the requirement that wells W385 and W386, in the Five Bridges area, be permanently shut off. Operation of these wells in the late 1980's led to significant native vegetation decline. The 1999 Plan was inconvenient to LADWP in that it includes prescriptions to reestablish the Five Bridges vegetation, and the plan directs that nearby

well, W385 and W386 be permanently shut off. After further consideration, LADWP agreed with the County that the 1999 Plan was developed by the Technical Group and presented to the Standing Committee.

Figure 1



Locations of revegetation projects in the Owens Valley described in the 1991 EIR and 99 Plan.

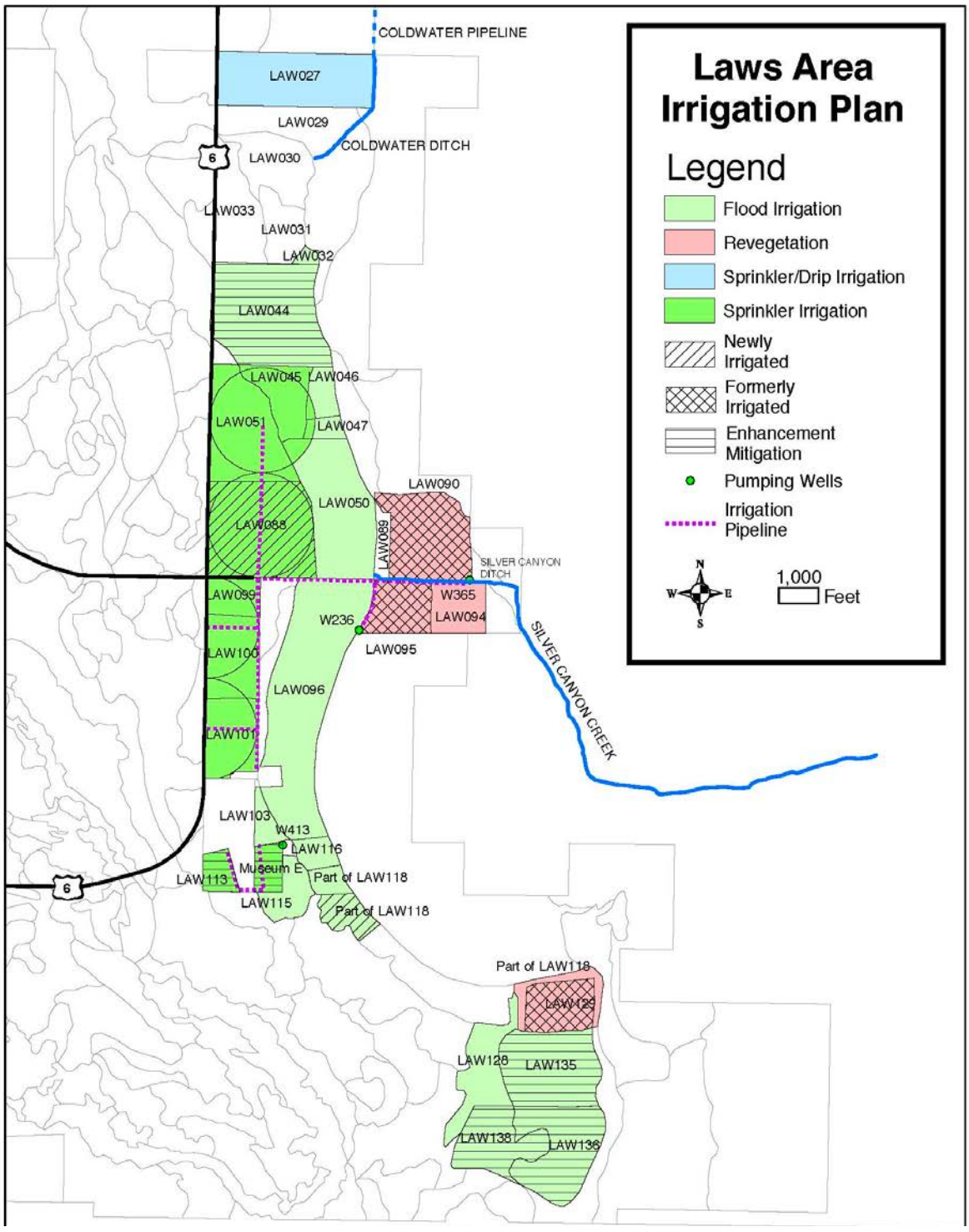
LADWP, in their annual report, has concluded that based on reaching cover and composition goals, four of 13 revegetation projects are complete, including the Five Bridges revegetation project. In 2018, Inyo County made a site assessment of the Five Bridges Impact Area and based on multiple lines of evidence we established that the Five Bridges Impact Area has not achieved 1999 Plan goals. This evidence includes vegetation cover and species composition measurements along field transects, satellite remote sensing of vegetation indices, vegetation community mapping from aerial photography, and by comparing conditions within the impact area to nearby areas of similar, but unimpacted vegetation.

The County will collect data from all the revegetation projects to assess LADWP's claims of having met cover and composition goals. The assessment will also look at year-to-year variability due to water availability and other environmental factors. LADWP has never made a claim that any of the revegetation projects are sustainable—a required measure of success.

Revegetation Plans for Lands Removed from Irrigation in the Laws Area (ILA)

Subsequent to the 1999 Plan, a Mitigated Negative Declaration was prepared in 2003 to address three abandoned agricultural parcels in the Laws area (Parcels 90, 94, 95). The 234-acre revegetation effort also includes parcel 129 and portion of parcel 118 (Figure 2). Like the 1999 Plan, the ILA has specific cover, composition, and sustainability goals. As of 2021, none of these parcels had achieved goals. LADWP has put considerable effort into these projects, but have modified their approach to the point that it is not compliant with the MND mitigation plan. In 2016, LADWP prepared a revise mitigation plan to conform to their new methodology, but the draft plan was not submitted to the Technical Group.

Figure 2


COLDWATER PIPELINE
LAW027
LAW029
COLDWATER DITCH
LAW030
6
LAW033
LAW031
LAW032
LAW044
LAW045
LAW046
LAW051
LAW047
LAW090
LAW050
LAW088
LAW089
SILVER CANYON DITCH
LAW099
W365
LAW094
W236
LAW095
LAW100
LAW096
LAW101
SILVER CANYON CREEK
LAW103
W413
LAW116
LAW113
Museum E
Part of LAW118
LAW115
Part of LAW118
6
Part of LAW118
LAW129
LAW128
LAW135
LAW138
LAW136
Laws Area Irrigation Plan
Legend
Flood Irrigation
Revegetation
Sprinkler/Drip Irrigation
Sprinkler Irrigation
Newly Irrigated
Formerly Irrigated
Enhancement Mitigation
Pumping Wells
Irrigation Pipeline
N
W
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1,000
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MITIGATION PROJECT STATUS

Responsibility and Monitoring

LADWP is solely responsible for implementing and managing mitigation projects on their lands in the Owens Valley.

Inyo County Water Department staff provide project oversight. Seasonal monitoring monitors compliance with orders and assures that the value of these efforts are as intended and prescribed. Mitigation performance is judged against project descriptions and plans that appear in governing documents and environmental reporting by LADWP.

The Water Department looks beyond the very basic mitigation project descriptions. Project goals from 1991 EIR are often vague and many projects are lacking a Mitigation Monitoring Program (MMP). A MMP would specify objective measures needed to assess project conditions by which to judge progress toward meeting and sustaining project environmental goals. Inadequate descriptions, and imprecise measures of goal attainment, allow LADWP freedom to claim having met project goals, while an outside observer viewing environmental conditions would wonder how one could claim success.

The Inyo County Water Department is designing studies to investigate certain projects to better understand how they are performing. The questions are, are projects providing acceptable mitigation. Are they adequately addressing the intended impact. An objective study of the state of many the projects might lead to adaptive management that will improve the intended mitigation.

ICWD engages several methods to assess project conditions and determine project status. Site visits are conducted seasonally. Imagery taken from the ground, air, and satellite, allow visual and spectral band assessment of conditions in the project area over time. Vegetation surveys by ICWD field staff are conducted to determine the status of revegetation projects. Since the majority of mitigation projects are sustained by the application of water, an assessment of the hydrologic record is used to monitor project maintenance.

Projects that are not meeting goals, or are underperforming, may receive focused attention and specific investigations to determine why a project might be failing to provide intended mitigation. These investigations conducted independently or jointly with LADWP, can lead to adaptive management or a full reassessment of the project, including discontinuation of the project in favor of a substitute.

One of the challenges in assessing a measure of “success” for a mitigation project is the lack of clear project descriptions with enough detail to assess if implementation of the measure is providing effective mitigation. Many of the 64 mitigation projects lack formal a MMP. MMP’s provide instruction and guidance for implementing a project and include: 1) a full evaluation of the environmental impact to be mitigated; 2) measures to be carried out by the proponent including monitoring and the timing of implementation activities, and 3) indicators and benchmarks for determining the effectiveness of the mitigation relative to the environmental impact being mitigated. Few of the Enhancement/Mitigation Projects (E/M) developed in the mid 1980’s have written plans that would be considered acceptable MMPs by today’s standards. Subsequent projects have some level of MMP consistent with CEQA requirements compulsory at the time of certification.

- The 1991 EIR identifies impacts to be mitigated but provides little guidance as to how the

projects are to be implemented and maintained aside from basic objectives and modest direction for implementation. Quantifiable goals, performance standards, and a schedule are lacking. There are no penalties or remedies for failure to achieve even the most basic mitigation goals. Lacking clear goals, it's often up to the observer to determine if the effort is truly satisfying even the intent of the project. LADWP will claim a project is implemented and on-going, while an outside observer might look at the same project and find it failing to provide acceptable in-kind or replacement mitigation for an environmental impact or lost resource.

- The 1997 MOU corrects some of the deficiencies of the 1991 EIR by directing the development of MMPs for "on-site" mitigation. The 1999 "Revegetation Plan for Impacts Identified in the LADWP, Inyo County EIR for Groundwater Management (Reveg Plan)," is an example of a MMP that would be acceptable under CEQA in the late 1990's. The Reveg Plan prescribes specific actions, provides a schedule, and sets quantifiable goals. Still, many of the reveg prescriptions are weak and LADWP ignores the objective core of the 1999 Plan, which is to grow an assemblage of plants in denuded fields that resemble surrounding native vegetation. Instead, LADWP selects fast-growing plants that have proven easy to establish by means of drill seeding (mechanically sowing seed) or by transplanting greenhouse-grown plant along drip irrigation lines. As a result, many hundreds of acres of revegetation are simply a monoculture of rabbit brush or other fast-growing native crop that do not resemble surrounding vegetation. While LADWP might have achieved a reduction of dust blowing off barren lands (and thus avoiding air pollution district penalties), the goal of creating diverse native cover appears to have been abandoned. In addition, the Reveg Plan directs that vegetation obtained through mitigation efforts is sustained, but LADWP has chosen not to assess recruitment—an indicator of sustainability—when considering the status of revegetation. LADWP makes claims of revegetation project completion based solely on plant cover and composition while ignoring measures of sustainability.

- Three environmental documents and plans produced after the 1991 EIR include the 2003 Revegetation Plans for Lands Removed from Irrigation in the Laws Area; the 2004 LORP EIR and management plan, and "Ad Hoc" 1600 acre-foot projects, both offspring of the MOU. All these projects include MMPs.

Mitigation project success compared to goals and project conditions in general lie on a spectrum. Mill Pond Recreation Area, Diaz Lake, Lone Pine Sports Complex, all fall into the community benefit category. The County manages these projects under LADWP leases, and they are well kept. Lower Owens River Project management is tightly prescribed and adaptively managed and the project receives considerable attention. The trees in the tree lots in Lone Pine and Independence, meant to provide wood to heat the homes of the disadvantaged, are managed by LADWP and community groups and receive periodic attention. Most of the trees in the lots were planted in 1987 and are still standing. The greatest value of the lots might be as wildlife habitat. Many habitat related E/M projects have only the vaguest of goals and likely few are offering the ecological value they could if they were studied and adaptively managed. Habitat project success is often judged simply on the basis of having providing water.

Water Delivery to Projects

LADWP, in their annual Owens Valley Report, provides an accounting of water delivered to each of the E/M projects. Table 4 depicts the amount of project water delivered annually since 2002.

Resources

The archives of background and information associated with mitigation projects are considerable, and include project scope, establishing and guiding documents, legal orders, project proposals, environmental studies, condition reports, and reports. The most relevant and recent of these, including the Lower Owens River Project Annual Report are posted on the ICWD website www.inyowater.org.

Mitigation Projects Map (https://tinyurl.com/ymfm6cdf)

Scan with phone camera to open map.

New in 2022 is the availability of an online, interactive Mitigation Projects Map. The map created by intern Eileen Casey, Mitigation Manager, Larry Freilich, and Scientist, Zach Nelson, is rich in information and offers an accessible portal into the full portfolio of projects. Combined with the project status tables, Projects in Focus in the annual report, highlighted information and materials on the inyowater.org website homepage, mitigation page, LORP page, and the narrative in this Annual Report, the map completes the array of all available information about all required mitigation projects in the Owens Valley related to the Long-term Water Agreement, and Stipulations and Orders.

The map serves as an excellent first introduction to those just learning about the projects, and for the more familiar this interactive reference offers a storehouse of information useful for research and monitoring. Users can view the geographic spread of the projects, see photos of the project sites, and use the search function to zoom directly to a specific project or project type. A set of filters allows the user to find projects of interest based on goals, legal origin, status relative to goals, and water delivery. Clicking on the centroid point of any project on the map pops up information about the origin and impact of the project, its status and a description, and water delivery when available. Deeper into the pop-up, users can access an *Additional Information* library of photos and files related to the project. Project origins, scientific studies, project modifications, can all be found in library and downloaded for offline use. Future map updates will include benchmark status updates and the addition of new files in the library.

One caveat when using the map is that project boundaries depicted are close approximations and not legal descriptions—most project boundaries were not well depicted in their originating governing document.

Mitigation Projects Table

For an at-a-glance mitigation status report, the County and LADWP maintain a Mitigation Table (Table 5). This chart lists all 64 mitigation projects and 49 other obligations required under the various agreements that address environmental, economic, and social impacts associated with the water-gathering activities by the City of Los Angeles Department of Water and Power in the Owens Valley. The

table, ordered alphabetically, provides information about the origin and current status of each of the projects. LADWP and the County largely agree on project status, but text in red calls out that there is a difference of opinion as to how the project is performing, or that ICWD needs more information to make an assessment. The table is dynamic, reflecting that project status might change over the years as new studies are undertaken, projects discontinued or transformed, or new mitigation projects added. All these changes are noted in the Mitigation Table.

Additional relevant information about the Environmental and Enhancement/Mitigation projects can be found in the narrative tables (Table 3) in this report. These tables include a project Description, identify the Impact being mitigated, and provide a short, updated overview of the project's status.

2021-2022 Projects in Focus

Each annual mitigation report attempts to highlight a few projects that are under new management or being actively reviewed. In 2021-2022 the projects receiving special attention included the Blackrock Waterfowl Management Area (BWMA), a component of the Lower Owens River Project, the ponds component of the McNally Ponds and Native Pasture project in the Laws area, as well as Freeman Creek, Hines Spring Well 355 and Hines Spring Aberdeen Ditch--the last three associated with the Additional Mitigation Projects Developed by the MOU Ad Hoc Group. The statuses of revegetation efforts that are not complete are also covered in this section.

BWMA Interim Management and Monitoring Plan

Initial treatments involve drying and discing of the wetland basins to reduce stands of emergent vegetation to prepare for flooding have been completed, and on September 15, 2021, water was released into the designated water basins under the interim plan.

Under the LORP, the primary management objective for the BWMA is to create and maintain diverse natural habitats consistent with the needs of "habitat indicator species" (Section II.C.4 of the MOU). This was to be achieved by maintaining up to 500 acres of wetland in four shallow basins flooded year-round. The size of flooded acreage varied year-to-year depending on predicted runoff from the Sierra that feeds the Owens River watershed. In average or above average years 500 areas would be flooded. In below normal years, flooded acreage was decreased proportional to predicted runoff.

BWMA Drew Unit, showing infilling by emergent vegetation. January 21, 2021

By the 2014 LORP MOU Party Summit—a discussion of the status of the LORP—it was becoming clear that under year-round water management prescribed by the MOU the BWMA habitat goals were not

being realized. Although a seasonal ground survey of flooded acreage showed that water management was successful at maintaining prescribed wetland acreage, aerial imagery depicted ponds that were choked with Cattail and Bulrush to the extent that open-water was becoming limited—greatly exceeding the 50% goal of open-water to marsh that would be considered ideal habitat for water birds. Evidence of habitat loss was strengthened by avian surveys conducted by LADWP and ICWD staff, which revealed that waterfowl use at BWMA had greatly declined.

LADWP indicated at the 2014 LORP Summit they would begin a process of evaluating BWMA management and recommend actions that could improve the project, but it wasn't until 2020 that LADWP, moved by a 2019 LORP evaluation (2019 LORP Annual Report) that documented further decline of waterfowl numbers, prepared an adaptive management plan for consideration by parties to the MOU (CA Department of Fish and Wildlife, CA State Lands Commission, Inyo County, Owens Valley Committee, Sierra Club). The plan (found on the Inyo County Water Department website) was developed collaboratively with the County and was responsive to MOU Party comments.

The 5-year BWMA Interim Management and Monitoring Plan—an adaptive management experiment—was released February 5, 2021. The plan calls for seasonal, rather than permanent, flooding of 500 acres in the fall, winter, and early spring that is rotated among five units, irrespective of runoff forecasts. To limit emergent vegetation growth, the ponds are drained during the spring/summer growing season. At the same time, growing season irrigation pulses could be provided to maintain moist soils conducive to developing a forage crop for waterfowl.

Robust monitoring conducted by LADWP an ICWD and resulting documentation and reports will help assess the effects of this adaptive management on habitat objectives and provide feedback that can lead to adjustments to refine the following year's management. Monitoring includes avian surveys, vegetation monitoring, flooded acreage measurements, water depth readings, and other hydrologic investigations. The results of the monitoring will be included in the LORP Annual Report, which is released to the public in December. The overall success of the 5-year experiment (ending May 19, 2026) will be assessed and future management determined.

The Standing Committee, at their May 26, 2021, meeting, set the BWMA flooded acreage at a seasonally flooded 500 acres as recommended in the interim plan.

Potential transfer of the ponds component of the McNally Ponds and Native Pasture

The McNally Ponds and Native Pasture project in the Laws area north of Bishop was implemented in 1986. The project has three units: two distinct native grass pastures and a series of seasonally supplied shallow ponds totaling 60 acres.

The two native pastures are a distance apart. One located along the Lower McNally canal, just west of US Highway 6 and adjacent the McNally ponds. The other pasture is located 4 miles to the south-southeast off the Laws Poleta Road and against the base of the White Mountains.

The pond component is just south of the Lower McNally Canal. Owens River water or pumped water is to be supplied in September and is meant to fill 60 acres of shallow basins to provide rest and foraging opportunities for fall migrating waterfowl, and to provide stock for duck hunting.

The southern pasture is well irrigated and maintains healthy forage. The northern pasture has proven challenging to irrigate due to undulating topography and problems with the W247 supply well. A series of dikes had been constructed in the northern pasture to create pockets of meadow.

The 60 acres of ponds prescribed in the EIR are seldom fully filled. Water has not been unavailable due to several factors. These include water cutbacks in the Mono Basin that limit the ability to supply fall water to the McNally Canal. LADWP also resists supplying river water over concerns about canal conveyance losses. The other irrigation source, well water, is constrained due to vegetation impacts caused by pumping. Groundwater in the Laws area is cyclically depressed, and any additional pumping could adversely impact vegetation in the area. For these reasons the ponds have not received a full allocation of water in most years. The exception is during high run-off years when water is delivered to the ponds for operational needs. Water spreading due to excess runoff is typically available in the spring only and does satisfy the objective of fall and winter flooding. Due to these challenges, LADWP regularly requests that the County relieve them of the mitigation obligation and not supply water to the ponds.

McNally Ponds and Native Pasture. The pond basins are in the middle of the photo, 2021.

McNally Ponds and Native Pasture. The flooded basin in the foreground and dry basin in the distant are the two primary ponds. November 10, 2020

The ponds portion of the project cannot be not fully implemented most years so the mitigation obligation cannot be fulfilled.

In 2018 Inyo County presented a proposal to LADWP to fill basins below the Farmers Pond mitigation site, 1.7 miles to the south, as a substitute for the ponds identified in the CEQA document. These basins below Farmers Ponds can be provided a regular supply of water. The Farmers Pond subbasins appear to be surrounded by richer habitat and are topographically more varying, which might attract waterfowl.

As an alternative to the existing McNally ponds, basins below Farmers Pond might be flooded to provide fall waterfowl habitat.

For the pond swap to be practical the substitute would need to provide greater or equal mitigation value from that described in the 1991 EIR. Preliminary field studies were undertaken in 2020-21 to assess area vegetation, and to investigate possible water supplies and routes of conveyance. If water delivery is found to be feasible, additional studies will be conducted and a CEQA document prepared.

In 2022 this proposal was put on hold as LADWP and the County discussed a water supply.

Ad Hoc Projects: Freeman Creek, Hines Spring Well 355 and Aberdeen Ditch

The 97 MOU identified additional mitigation commitments including a provision to provide 1,600 acre-feet of water per year on-site at Hines Spring or off-site in other parts of the south valley. An Ad Hoc group of MOU Party representatives and ranchers was assigned to come up with a group of projects to fulfill this commitment, after a consultant failed to develop feasible project plans. Eight projects were developed. These are presented in Exhibit A, Additional Mitigation Projects Developed by the MOU Ad Hoc Group. This document is found on the ICWD website (www.inyowater.org).

These projects were initiated in 2011-12 and monitored for five years. According to LADWP the 1,600 acre-feet of water has been supplied every year, although key components of the project are undersupplied or not receiving water potentially due to lack of runoff or other hydrogeological constraints. As a result, two of the projects are underperforming and another is failing to perform. The County has undertaken preliminary investigations and LADWP has been made aware that adaptive management, or project substitution might be required to satisfy the Ad Hoc project objectives.

Freeman Creek in the distance. Trees in the Freeman Creek drainage are in decline or dead (5/2/2022).

Freeman Creek

Freeman Creek is an intermittent watercourse fed by a small watershed on the east slope of the Coyote Plateau. The project includes conveyance improvements that route water back into ancestral washes.

The goal is to reestablish riparian vegetation along the watercourse. Other benefits include providing downstream irrigation to a pasture and enhancement of a shallow marsh.

Freeman Creek as a water supply, has proven to be unreliable and incapable of provide flows needed to sustain the project's environmental goals. As of 2021, much of the riparian vegetation that had established in wet years was found to be in decline or had died off.

It's unclear why the flow has ebbed, but there is surface evidence of a shift in the Freeman Creek's hydrology. About a half-mile upstream from where Freeman Creek crosses Keough Hot Spring Road surface flow ends abruptly. Below this point, whatever groundwater is available is unable to support riparian vegetation.

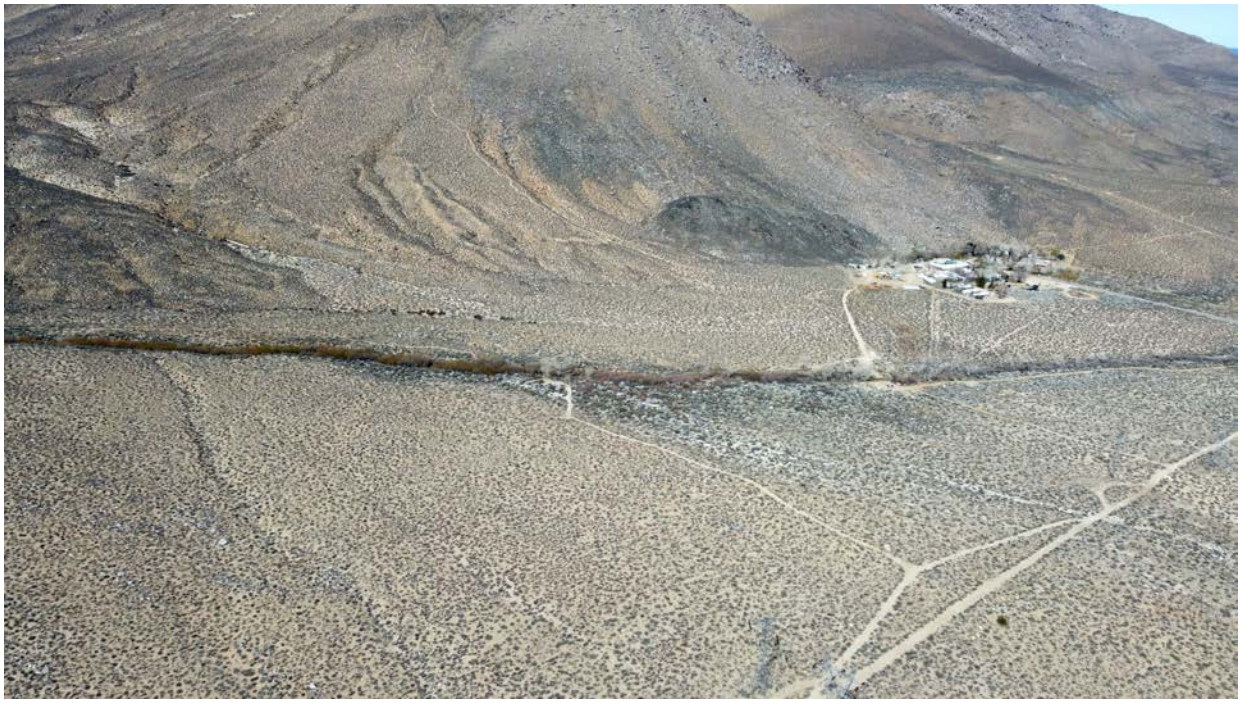
It is also possible that climate change is affecting the watershed and that the creek's output is transitioning to drier mean flow. Freeman Creek project goals of developing a river-riparian, meadow, and forest-riparian habitats may not be obtainable or sustainable if this is the case.

There are signs of limited recovery. In the spring of 2022, some new riparian growth was observed to redevelop along the creek margins above Keough Hot Springs Road, with some of the dead-appearing trees and shrubs having sprouted adventitious growth. However, north of the road, in the project area, little regrowth has been observed.

The project proponents recognized that Freeman Creek is an intermittent stream that is known to have a variable and unpredictable flow (Table 1). To account for the variability, the water accounting was fixed to the mean discharge, which at that time was 215 acre-feet. For accounting purposes, the 215 acre-feet average was a fixed allotment regardless of the flow measured. That figure turned out to be an overestimate. Since the project was initiated, Freeman Creek flow has averaged 123 acre-feet per year. Regardless, LADWP is receiving a 215 acre-foot credit for a project that is not meeting goals.

Table 1

Year range	Average annual water delivery (af)	10-year total water delivery (af)
1992-2001	185	1984
2002-2011	286	2835
2012-2021	123	1226



Freeman Creek. Surface flows end approximately where the road leading to the west crosses the river.

1600 Acre-Foot Hines Spring Projects

At the former Hine Spring site, water is delivered to two ancestral spring channels. Hine Spring W355 is supplied by its namesake groundwater supply well. Hines Aberdeen is supplied off water diverted from the Aberdeen Ditch. These side-by-side projects have independent water supplies, but similar goals. Both appear to not be meeting project goals as of the summer of 2022.

Hines Spring Well 355

The 1991 EIR prescribes on site mitigation at Hines Springs supported by well 355 as, "…approximately one to two acres will either have ponded water or riparian vegetation. Riparian trees and a selection of riparian herbaceous species will be planted on the banks. The area will be fenced." The Ad Hoc Plan, Exhibit A, states that, "The project will create and enhance riparian, aquatic and spring habitat types. In addition, subirrigation of pasture/meadow will enhance livestock grazing opportunities."

Initial attempts to supply the project as had been scoped failed. Pumped water released at the original spring vent seeped into the porous fractured basalt and disappeared, providing little habitat value.

An Ad Hoc group was formed to propose an alternative to supplying the relic spring vent. The group decided on two parallel on-site mitigation projects at the spring site. Water was to be supplied from two sources, Well 355 located close to the exhausted natural spring, and Aberdeen ditch with water from Goodale Creek. The goals for the two projects are like the original prescription to create and enhance aquatic, riparian, and mimic spring habitat. It was expected that one to two acres of ponded water or riparian vegetation would be established. The plan calls for, "Plantings of riparian trees and a selection of riparian herbaceous species will be conducted along the channel using utilizing seeds from nearby sources hand collected and distributed." No planting has occurred.

The plan calls for, “Upland areas disturbed during infiltration testing and implementation of this project will be mitigated as a final phase of the project.” This maintenance has not occurred. Supply line cover is largely weedy. Other required maintenance includes early detection and treatment of noxious weeds, but Lepidium Latifolia is present and appears untreated in 2022.

Open water for aquatic species is minimally available, and surface flow terminated approximately 700 feet from the discharge pond. As of the summer 2022 the project has developed only the narrowest strip of riparian vegetation, in most places 5-10 feet wide. Aerial mapping indicates riparian development to be short of 1 acre total. Although substantial pasture meadow has developed at the tail of the wash this seems correlated to recently elevated groundwater, rather than from irrigation from the project.

Additional monitoring will be needed, but the project appears not to be meeting goals. Likely, adaptive management will be required.

Well 355. The former spring vent is outlined by grasses and weeds. The riparian strip developed is in the upper left.

Hines Spring Aberdeen Ditch

Hines Spring Aberdeen Ditch is just west of, and runs parallel to, the Hines Well 355 project. Water is supplied off the Aberdeen Ditch. Like the Well 355 project, water is discharged in an ancestral spring vent wash. And like the Well 355 project, the water fails to travel far from the outlet pipe. In this case, above ground water extends 500 to 800 feet below the outlet before disappearing into the fractured basalt basement rock. As a partial fix, PVC irrigation pipe was installed to route the water past the most permeable section of the wash, which allow water to flow in a section of the wash.

Like Well 355, the project is to create and enhance aquatic, riparian, and spring habitat, and enhance livestock grazing opportunities through sub-irrigation. Creeping Wild Rye, a valuable pasture grass has developed in the sloughs at the tail end of the channel and satisfies the enhanced grazing goals. Elk have

been seen grazing the ditch. Riparian vegetation has established over an area of approximately 0.70 acres near the termination of wetted section of channel. This includes a grove of cottonwood and willow that have established near the termination of the drainage. It is likely riparian development in this area is related to a recent rise in the water table, rather than as the result of subirrigation from the minimal ditch discharge.

PVC pipe is used to move water past permeable soils overlying fractured basalt at the Hines Spring Aberdeen Ditch, 5/27/2021.

Although both the Well 355 and the Aberdeen Ditch projects have created a brief strips of riparian vegetation, it is likely that additional engineering and active revegetation may be needed to meet project goals. The Hines projects are being assessed and are under discussion.

Hines Spring Aberdeen ditch, 5/27/2021.

Revegetation Status Table

Table 2 lists the status of revegetation projects relative to prescriptions found in the 1999 *Revegetation Plan for Impacts Identified in the LADWP, Inyo County EIR for Groundwater Management (99 Plan)*, as well as projects related to the 2003 *Irrigation in the Laws Area* MND (ILA).

Table 2

					Percent Live Native Cover		Number of Species Composition		Recruitment Success
Guidance	**Project name**	**Acres**	**Impact[2]**	**Met goal**	**Goal % (90%)**	**Reported % (survey year)**	**Goal (75%)**	**Reported**	**Goal 25% of surveyed hits**
EIR, 99 MP	LAWS 118	120[3]	ABAG	NO	11.5 (10.4)	5.5 (2019)	11 (8.25)	15	Unreported
EIR, 99 MP	BISHOP AREA REVEGETATION	124	ABAG	NO	15 (13.5)	14.3 (2019)	12 (9)	4	Unreported
EIR, 99 MP	FIVE BRIDGES	300	GP	NO[1]	60 (54)	7/35 at 2 sites (2016)	4 (3)	2/6 at 2 sites	Unreported
EIR, 99 MP	BIG PINE AREA REVEGETATION	20	ABAG	NO	17.7 (15.9)	2.4 (2019)	10 (7.5)	3	Unreported
EIR, 99 MP	BIG PINE AREA REVEGETATION	211	ABAG	NO	17.7 (15.9)	10 (2019)	10 (7.5)	11	Unreported
EIR, 99 MP	TINEMAHA 54	0.4	GP	NO	33 (29.7)	5 (2016)	3 (2.3)	4	Unreported
EIR, 99 MP	BLACKROCK 16E	7.5	GP	NO	34 (31.5)	31 (2010)	6 (4.5)	5	Unreported
EIR, 99 MP	HINES SPRING SOUTH	9	GP	NO	35 (31.5)	10.2 (2019)	4 (3)	5	Unreported
EIR/99 MP	INDEPENDENCE 105	13.4	GP	UNK[1]	17 (15.3)	23 (2017)	4 (3)	12	Unreported
EIR, 99 MP	INDEPENDENCE 123	42	GP	UNK[1]	17 (15.3)	17 (2006)	4 (3)	4	Unreported
EIR, 99 MP	INDEPENDENCE 131 N	23	GP	UNK[1]	17 (15.3)	15 (2012)	4 (3)	5	Unreported
EIR, 99 MP	INDEPENDENCE 131 S	50	GP	NO	17 (15.3)	10 (2017)	4 (3)	6	Unreported
ILA	LAWS 90	101	ABAG	NO	10 (9)	Not surveyed	10 (7.5)	Not surveyed	Unreported
ILA	LAWS 94	40	ABAG	NO	10 (9)	Not surveyed	10 (7.5)	Not surveyed	Unreported
ILA	LAWS 95	46	ABAG	NO	10 (9)	Not surveyed	10 (7.5)	Not surveyed	Unreported
ILA	LAWS 118/129	65	ABAG	NO	10 (9)	3 (2016)	8 (6)	Not reported	Unreported
ILA	LAWS 27 (SEED FARM)	118	ABAG	NO	10 (9)	Not surveyed	8 (6)	Not surveyed	Unreported

[1]LADWP claims Five Bridges, claims Independence 105, 123, and 131N are complete based on attaining cover and composition goals as measured from a single survey. Sustainability per the 1999 Revegetation Plan has not been established for any of the revegetation mitigation.

[2]Impacts include abandoned agriculture land (ABAG) and groundwater pumping (GP)

[3] A 19-acre portion of Laws 118 surrounding Laws 129 was subsumed by the 2003 ILA project.

Table 3. Status of Environmental Projects

Description	Impact	Status
Farmers Ponds: Water is provided each fall of each year to offer habitat for migrating waterfowl. The Project is two miles north of Bishop just off Highway 6.	The Laws area has lost all or part of its vegetation cover due to increased groundwater pumping, abandonment of irrigated agriculture to supply water to the second aqueduct, livestock grazing and drought.	East of the main Farmers Pond are a series of four cascading spreading basins that drain overflow from the main Farmers Pond. These additional basins, which are typically dry, might be used as replacement or substitute mitigation for the McNally ponds. It is expected these additional ponds could be supplied annually, as opposed to the existing McNally Pond, which now receives water only when providing water would satisfy LADWP's operational needs, or when Laws 1 linked supply wells are in On Status. A formal mitigation substitute proposal will be developed and presented to the Technical Group. A substitute or replacement project would need to provide equal or greater mitigation value.
Buckley Ponds: Water is provided for a warm-water fishery and waterfowl area, which is located three miles southeast of Bishop.	Non-specific compensation.	This main pond and string of other ponds were created in the 1950's. In 1976 LADWP and CDFW created a Habitat Management Plan. The string of ponds were treated and excavated in 2012-14 to remove emergent vegetation.
Saunders Pond: Water is provided to a warm-water fishery and waterfowl area, which is located five miles southeast of Bishop.	Non-specific compensation.	Implemented and ongoing. The project has developed a healthy hemi-marsh (emergent vegetation open-water mix).
Millpond Recreation Area: Water is provided either by creek flow or a well at the site. The project is located five miles northwest of Bishop.	Non-specific compensation.	Implemented and ongoing.
Klondike Lake: Improve waterfowl habitat and provide recreation in the Big Pine area. The project is located 2 mile north of Big Pine.	Non-specific compensation.	Motorized recreation on the lake has been limited to prevent the introduction of the freshwater Quagga Mussel. In 2004 the water supply allocated the lake was reduced from 2,500 to 1,700 af, while still requiring that LADWP maintain a described lake level, and also assure that native pasture and wetland habitats adjacent to Lyman ditch, which feeds the lake, were preserved. The 800 af difference was made up by providing water to seasonally fill the Big Pine Ditch, and by providing 200 af of water for flood irrigation immediately south of the Lake to attract shore birds and waterfowl.

Description	Impact	Status
Klondike South Shore Waterfowl Management Area (160 acres):	Compensation for the inability to supply a full allocation of water to the Klondike Lake Project.	The County has requested that LADWP prepare a habitat management plan prepared for the project. The elevation between the Lake and the Project is minimal and sediment in the water conveyance limited flow to the project. A new water gate was installed and from the 2011-12 runoff year to present, a full 200 af allocation was supplied. With the use of the new water gate new habitat has been created and is being used by desired species; however the original project area receives little water and is almost completely tule chocked. It has been the practice of LADWP to release water to the project area during waterfowl migration season, usually beginning releases in late winter. In 2015 the area was disked to cut down emergent vegetation. 32 af was supplied the project in 2020 (April-May; Oct.).
Tule Elk Field: Provides water in summer to field used by Tule Elk. Located between Fish Springs Road and Tinemaha Reservoir.	Non-specific compensation.	The water supply to this project has been reduced since 2002. ICWD does not believe the project water provided is sufficient in all years to meet project goals, especially in the area east of highway 395. In 2016-17 high runoff allowed flooding of the fields east of cultivated fields east of Highway 395.
Big and Little Seely Spring: Two miles south of Tinemaha Reservoir LADWP well 349 near the Owens River discharges water into a pond approximately one acre in size. This pond provides a temporary resting place for waterfowl and shorebirds when the pumps are operating or Big Seely Spring is flowing.	Non-specific compensation.	The pond consists of a basin that serves as a conduit for water from production well W349. The distance from the well discharge point, through the pond, into the Owens River is 390'. Riparian vegetation, consisting mostly of a fringe of emergent vegetation has established around the Little Seely pond. Big Seely Spring channel is located approximately 0.25 miles north of the Little Seeley pond. Big Seely flows from the natural spring vent when groundwater is high. The flow is directed into the Owens River via a ditch.

Description	Impact	Status
Calvert Slough: Water is provided to maintain habitat in a small pond and marsh area near LADWP Aqueduct Intake.	Non-specific compensation.	LADWP has regularly reported that low flows in the creek do not allow supplying the project because of high ditch losses and the off status of the two wells upstream of the project. No water was supplied to this project for seven years (1998- 2004). The enhancement of the Calvert Slough wetland was a possible Additional Mitigation measure, but was not selected as one of the final 1600 acre-foot projects. The area was burned in 2021 to improve vegetation.
Little Blackrock Spring: Water is diverted from ditch to maintain wetland area at original spring site; west of the aqueduct intake.	Ground water pumping has lowered depth to water to a level where springs and seeps no longer flow. Associated riparian and wetland vegetation is lost.	The Technical Group does not have a plan for monitoring flows or vegetation at springs and seeps. Ecosystem Sciences had developed an inventory of springs and seeps. According to the MOU, the inventory should provide baseline data adequate for monitoring change.
Lone Pine Pond: Water is provided by natural seep or spring flow in river with supplemental releases from Alabama Gates (now incorporated in the Lower Owens River E/M Project). The project is located just north of Lone Pine Narrow Gauge Road.	Non-specific compensation.	Included in the LORP. The Lone Pine Ponds are managed under the LORP Monitoring, Adaptive Management, and Reporting Plan as a component of the River-Riverine system. With the 40 cfs maintained flow, the ponds have largely converted to marsh.
Lower Owens River Rewatering Project: Water releases began in 1975 to provide year-long minimal flows along the lower Owens River, as well as releases to Twin Lakes, Billy Lake, and Thibaut Ponds. The goal is to maintain waterfowl, marsh, shorebird, and upland game bird habitat, as well as provide for a warm-water fishery. The project has now been replaced by the Lower Owens River E/M Project, which provides water to all of the formerly dry stretch of the Owens River. The 78,000-acre project site is located east of the towns of Aberdeen, Independence, and Lone Pine.	The Lower Owens Rewatering Project was initiated in 1986 by the LADWP and Inyo County to improve habitat for shorebirds, waterfowl, and fish in the river corridor and at the Delta. The project was one of 25 E/M Projects jointly implemented between 1985 and 1990.	Superseded by the Lower Owens River Project. Billy lake is managed under the LORP Monitoring, Adaptive Management, and Reporting Plan as an Off River Lake.

Description	Impact	Status
Diaz Lake: A supplemental water supply is provided to Diaz Lake recreational area. The accounting of water supplied to this project has been revised as part of the MOU 1600 ac-ft. projects described below. The lake is three miles south of Lone Pine.	Non-specific compensation	Under the Additional Mitigation project description (2012), Diaz Lake will be supplied a secure source of water, which reduces dependence on water pumped by Inyo County up to 250 afy. LADWP's lease with Inyo County (Lease No. 1494, in effect until June 30, 2015) has been updated to reflect these additional water supply commitments and accounting requirements of this project agreed to by LADWP.
Millpond Recreation Area Project: Located west of Bishop, was the first E/M measure to be completed. Since October 1985, funds have been provided to operate the recreation area's sprinkler irrigation system that waters 18 acres of the community park, including two softball fields.	Non-specific compensation	Implemented and ongoing.
Shepherd Creek Alfalfa Lands Project: Revegetated 198 acres of abandoned cropland adjacent to U.S. Highway 395 with sprinkler-irrigated alfalfa and windbreak trees. The property between Lone Pine and Independence had only sparse annual vegetation since 1976, and was a source of blowing dust creating a traffic hazard.	Primarily Dust mitigation	Alfalfa planted and maintained on approx. 185 acres. The project was supplied 918 acre-feet of water in 2020-21.
Klondike Lake Project: Previously, the 160-acre lake located north of Big Pine had been filled only during above-normal runoff years. Less than 1,700 af of water maintains the lake. Benefits include nesting and feeding areas for waterfowl, and recreation including skiing, windsurfing, and other water sports in summer months. Due to the shape and size of the Klondike lakebed, the full 2,200 af allocated to the project was more than the lake required, so the project was modified to permanently reduce the water allotment. The balance of this unused water allocation was apportioned the Big Pine Ditch System and the Klondike South Shore Habitat Area.	Non-specific compensation	Due to the shape and size of the Klondike lakebed, the full volume of water (2,200 af) allocated to the project was more than the lake required, so the project was modified to permanently reduce the water allotment. The balance of this unused water allocation was apportioned the Big Pine Ditch System and the Klondike South Shore Habitat Area.

Description	Impact	Status
Laws Historical Museum Project: Provides a regular water supply to improve the native vegetation on a 21-acre parcel, provide for irrigated pasture on 15 acres, and establish windbreak trees, all adjacent to the museum.	Non-specific compensation.	Implemented and ongoing.
640 acres near Laws: Revegetate with non-groundwater dependent native plants (potential project that would require Standing Committee approval to implement).	Between 1987 and 1988, two wells in the Five Bridges area that were pumped to supply water to enhancement mitigation projects contributed to a lowering of the water table under riparian and meadow areas along Owens River. Approximately 300 acres of vegetation were affected, and within this area, approximately 36 acres lost all vegetation due to a wildfire. EIR v1 (10-58).	The Standing Committee has not evaluated the need for mitigation of this area. Desert Aggregates expanded gravel mine operations have subsumed about 174 acres of the assigned acreage in the western part this potential mitigation.
Laws-Poleta Native Pasture Project: Provides water for irrigation of approximately 216 acres of sparsely vegetated land to reestablish native vegetation on abandoned pasturelands and increase livestock grazing capabilities.	The Laws area has lost all or part of its vegetation cover due to increased groundwater pumping, abandonment of irrigated agriculture to supply water to the second aqueduct, livestock grazing and drought.	One pasture, 2.5 miles north of Laws and just east of Hwy. 6 (160 acres, parcel 44) has achieved good pasture cover on 65-70% of the eastern half of the parcel. The other 60-acre pasture two miles southeast of Laws (parcel 138) adjoins the McNally Ponds and Pasture project. Due to the configuration of release points and topography, not all of this pasture can be effectively irrigated. LADWP has reported that they couldn't separate this project's water accounting from adjacent irrigated parcels. McNally/Laws/Poleta Native Pasture Lands were supplied 1,470 acre-feet of water in 2020-21.
McNally Ponds and Pasture: To provide a regular water supply to existing ephemeral ponds (60 acres) in the Laws area to create waterfowl habitat, and to provide spring and summer irrigation to enhance and maintain existing vegetation on 300 acres of pastureland.	The Laws area has lost all or part of its vegetation cover due to increased groundwater pumping, abandonment of irrigated agriculture to supply water to the second aqueduct, livestock grazing, and drought.	The ponds and adjoining basins are used for water spreading. The ponds portion of the project has been supplied water approximately one-third of the time since its inception. The ponds portion of the project is under review and alternatives are being considered. Water for the pasture, east of the ponds, is provided when the Lower McNally Canal is run or when W247 is in On Status. Inconsistent water, uneven topography, and constructed berms have produced areas of patchy forage. McNally/Laws/Poleta Native Pasture Lands were supplied 1,470 acre-feet of water in 2020-21. The ponds were supplied 664 acre-feet of water in 2020-21.

Description	Impact	Status
Independence Pasture Lands/and Spring Field Projects: Provides approximately 910 acres of abandoned croplands and sparsely vegetated land with irrigation to create native pasturelands and provide water to native vegetation. Flood irrigation converted sparsely vegetated land east of Independence into productive native pasture. The project mitigated a source of blowing dust and stabilized soil previously affected by severe wind erosion.	Revegetation project to mitigate for impacts including dust in town caused by groundwater pumping and surface water diversions. Provides irrigation for pasture or alfalfa.	Site topography prevents flood irrigation from reaching some portions of the project. Independence Pasture Lands were supplied 1,470 acre-feet of water in 2020-21. Independence Springfield was supplied 1,288 acre-feet of water in 2020-21.
Lone Pine Riparian Park/Richards Field: Provides a continuous water supply to a ditch running through Russell Spainhower Park then east under the highway to supply water to Lone Pine Woodlot and Richards and Van Norman Fields projects.	Water conveyed through the park provides irrigation to lands formerly removed from irrigation.	LADWP, in their annual Owens Valley Report, lists water use for this project and Richards Field together. Water use records for these projects include conveyance losses.
Van Norman Field (170 acres) and Richards Field (160 acres): Provides surface and pumped water to establish pastureland and increase livestock grazing capabilities on abandoned agricultural land.	Regreening project implemented to enhance the aesthetics of abandoned agricultural or pasture lands in areas around the town. Water is supplied from LADWP to promote and maintain vegetation.	A replacement well was drilled in the fall of 2012 and began production in April 2014. The new well is located in a position that should allow the establishment of additional acres of pasture. In 2013, as part of an E/M evaluation, Inyo County and LADWP agreed to expand the project to include irrigating an adjacent 10-acre parcel operated as a school farm by Lone Pine High School. On April 29, 2014 the Standing Committee agreed to modify the Van Norman Field Enhancement/Mitigation (E/M) Project by adding approximately ten acres of the Lone Pine High School Farm on to the Van Norman Field E/M Project. The total acreage of the modified Van Norman Field E/M Project is now 170 acres. The additional acres will be irrigated pasture. The total annual water supply for the project will remain 480 acre-feet, which will result in an annual water distribution within the project boundaries of approximately 2.8 acre-feet per acre. The project was supplied 478 acre-feet of water in 2020-21.
Lone Pine Sports Complex: At the request of the community, portions of the Lo-Inyo Elementary School and vacant LADWP property were converted to an outdoor sports complex consisting of baseball fields, soccer fields, and related parking, picnic and park areas.	Community enhancement project.	Includes 3 irrigated ball fields and two multipurpose fields, with an irrigated area totaling 12.5 acres. Asphalt replaced the former dirt parking area in 2013 and 139 parking spaces were outlined

Description	Impact	Status
Independence and Lone Pine Woodlots: Two irrigated projects in Lone Pine and Independence provide a greenbelt and are harvested as sustainable source of firewood for those in need.	Regreening project implemented to enhance the aesthetics of abandoned agricultural or pasture lands in areas around the town. Water is supplied from LADWP to promote and maintain vegetation.	Lone Pine FFA is managing both woodlot projects, with some wood going to Independence residents and other wood being sold in Lone Pine to support FFA activities. An operations plan is needed based on management guidelines agreed to by Inyo Co. and LADWP. Drought stress resulted in dieback of cottonwood in both lots. Many of the larger trees show dieback. LADWP thinned the trees in 2016-17. Independence Woodlot was supplied 95 acre-feet of water in 2020-21.
Independence Roadside Rest: This project consisted of planting and maintaining shade and windbreak trees and grass, installation of an irrigation system, and placement of picnic table on a 1/2-acre site south of the town of Independence. The project improves a previously barren parcel at the entrance to town.	Enhancement project to improve aesthetics on LADWP lands near towns.	Implemented and ongoing.
Eastern California Museum: This project enhanced the appearance of the Eastern California Museum grounds in Independence. It consisted of a small pond, trees, expanded lawn areas, and installation of an irrigation system.	Community project.	Implemented and ongoing. Flooding in 2017 resulted in natural stream alteration.
Town Regreening Projects: Three projects designed to enhance the aesthetics of abandoned agricultural or pasture lands in areas around the towns of Big Pine, Independence, and Lone Pine. Lone Pine has been implemented; Big Pine and Independence came into operation in 2014.	These projects were implemented to enhance the aesthetics of abandoned agricultural or pasture lands in areas around the towns of Big Pine, Independence, and Lone Pine. Water was supplied from LADWP facilities to promote and maintain vegetation.	In 2015-2016 it was evident that many trees have died in Lone Pine, Big Pine, Independence, and Bishop due to reductions or elimination of irrigation during recent years of drought. Independence Regreening was supplied 66 acre-feet of water in 2020-21, was supplied 66 acre-feet of water in 2020-21. Lone Pine Regreening was supplied 249 acre-feet of water in 2020-21. Big Pine Regreening was supplied 109 acre-feet of water in 2020-21.

Description	Impact	Status
Lower Owens River Rewatering E/M Project: This project provided up to 18,000 AFY of continuous flow of water in the previously dry (1913-1986) portion of the river channel, creating a warm water fishery and wildlife habitat in the southern Owens Valley. The project also supplies water to five small lakes along the river route providing improved waterfowl habitat in the region. This project has been superseded by the Lower Owens River Project, which was fully implemented in December 2006.	The Lower Owens Rewatering Project was initiated in 1986 by the LADWP and Inyo County to improve habitat for shorebirds, waterfowl, and fish in the river corridor and at the Delta. The project was one of 25 Enhancement/ Mitigation Projects jointly implemented between 1985 and 1990.	Superseded by the Lower Owens River Project. Billy lake is managed under the LORP Monitoring, Adaptive Management, and Reporting Plan as an Off River Lake.
Hines Springs: Create 1-2 acres of aquatic, riparian, and marshland habitats. Project will serve as a research project on how to reestablish a damaged aquatic habitat.	Ground water pumping has lowered depth to water to a level where springs and seeps no longer flow. Associated riparian and wetland vegetation is lost.	The initial concept, to provide water at the spring vent, proved impractical. MOU Parties entered into an ad hoc process and agreed to build two projects at the spring site; 1) water from Well 355 now supplies water to a small pond used by livestock. The solar power source designed to power Well 355 would be insufficient, so the project was modified to include a new above-ground power line to the project; 2) Aberdeen Ditch. A 2700' pipeline now supplies water to a ditch just southeast of the former spring to be used by livestock. The ground in the area is highly permeable so conveyance of the water along natural contours has proven challenging. To overcome the losses LADWP installed PVC pipe to extend the flow, but even this has proven ineffective. ICWD has suggested installing T-valves along the length of the extension pipe to better direct water. This was rejected by LA.
Big Pine Ditch System: LADWP agreed to provide up to $100,00 to reconstruct and upgrade existing residential ditches in the community of Big Pine. A flow of up to 6 cfs is to be established.	Water management practices in a portion of the Big Pine Well Field have resulted in significant adverse change and decrease of plant cover.	An Initial Study and Mitigated Negative Declaration for the Big Pine Ditch System and Modification to the Klondike Lake Project in the Big Pine Area of Inyo County was circulated in 2003 and was approved by the Board of Water and Power Commissioners on November 12, 2003. The Water Agreement was also amended at this time, changing the project as originally described. Well 415, west of town, may provide make-up water. Testing of this well is expected to in 2021. Impacts to vegetation in the vicinity of the well will be monitored.

Description	**Impact**	**Status**
Blackrock Hatchery: Increased groundwater pumping has reduced or eliminated spring flows from Fish Springs. No onsite mitigation is specified. The hatchery provides compensatory mitigation by producing fish that are stocked throughout the region.	Increased groundwater pumping has reduced flows at Big Blackrock Spring leading to vegetation decline.	The hatchery, operated since 1952 by the California Department of Fish and Wildlife provides stock trout to water bodies in Inyo and Mono Counties. Efforts are underway to assess water needs at the hatcheries to determine if water supply reductions can be made to conserve groundwater and still effectively run the fisheries operation.
Fish Springs Hatchery: Increased groundwater pumping has reduced or eliminated spring flows from Fish Springs. No onsite mitigation is specified. The hatchery provides compensatory mitigation by producing fish that are stocked throughout the region.	Increased groundwater pumping has reduced flows at Reinhackle Spring leading to vegetation decline.	The hatchery, operated since 1941 by the California Department of Fish and Wildlife provides stock trout to water bodies in Inyo and Mono Counties. Efforts are underway to assess water needs at the hatcheries to determine if water supply reductions can be made to conserve groundwater and still effectively run the fisheries operation.
Haiwee Reservoir: Described in Water Agreement Section XIII, the project is a legal commitment. The Reservoir lakes (north and south), are located south of Owens Lake, and have long been a popular recreational resource and prized fishery. In 2005 LADWP shutdown public access over security concerns.	Recreation	A recreation plan to be developed by LADWP and Inyo County was put on hold after LADWP conducted a security audit. The audit was not shared with Inyo County, but according to LADWP the report concluded that the reservoir should be closed to the public. LADWP prepared a Negative Declaration to close the water body to the public on December 16, 2004. According to LADWP, the reservoir was officially closed in 2005. There is strong interest, and push by the public to return access to the site. Inyo County has proposed reassessing the closure or providing substitute mitigation at Tinemaha Reservoir.
Reinhackle Springs: Increase groundwater pumping has reduced flows from this natural spring.	Increased groundwater pumping has reduced flows at Reinhackle Spring leading to vegetation decline.	This spring supports a large pasture and many large tree willows. When it was determined in the late 1980s that groundwater pumping in the Bairs Georges wellfield was affecting the flow from Reinhackle Spring (north of the Alabama Hills), pumping from certain wells in the area was discontinued and the spring flow increased. No significant adverse impacts on vegetation in this area have resulted from the reduced flow. In the future, either groundwater pumping in the area will be managed to avoid causing such a reduction in flow from this spring to the degree that decreases or changes in native riparian vegetation will result, or LADWP will supply surface water to the native riparian vegetation supplied by the spring to avoid any such decreases or changes due to reduced flow caused by groundwater pumping. A 2004 groundwater geochemical study found that Reinhackle Spring discharge is more chemically similar to aqueduct water then it is to local well water.

Table 4. Water Supplied to Enhancement/Mitigation Projects 2004-2021 in acre-feet (source LADWP Annual Owens Valley Reports)

Project	Normal Year Allocation (EIR)	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
McNallyLaws/Poleta Native Pasture Lands	660	1,682	1,269	1,241	1,396	1,320	1,764	1,267	2,306	1,460	1,149	1,376	1,259	1,530	1,573	1,364	1,200	1,470
McNally Ponds	4,000	0	1,522	1,491	0	0	0	368	857	0	0	0	0	1,500	753	1,096	1,082	664
Laws Historical Museum	150	32	59	99	147	63	131	152	105	138	112	119	101	113	105	94	110	94
Klondike Lake	1,700	1,278	1,203	314	1,201	1,195	1,169	1,195	1,086	1,144	1,515	1,600	1,411	1,496	1,552	1,457	1,412	1,649
Big Pine NE Regreening	150	0	0	0	0	0	0	0	0	0	0	103	75	110	102	84	94	109
Independence Pasture Land	2,350	2,489	3,330	2,785	3,272	2,588	1,962	2,397	2,545	2,324	1,852	1,932	1,731	1,900	1,931	1,677	1,526	1,327
Independence Springfield	1,500	280	519	1,850	1,962	1,554	1,530	1,356	1,136	1,188	958	1,427	1,569	1,476	1,196	1,208	1,742	1,288
Independence Ditch System	725	451	356	359	380	515	446	497	496	165	129	343	65	260	577	334	530	272
Independence Woodlot	120	276	190	226	237	335	220	569	175	334	150	186	64	110	92	96	114	95
Independence East Regreening	150	0	0	0	0	0	0	0	0	0	0	63	71	70	73	69	70	66
Shepherd Creek Alfalfa Lands	990	1,072	1,152	1,206	1,100	1,183	1,166	1,212	1,073	1,019	884	980	872	920	926	992	874	918
Lone Pine Park/Richards Field	1,230	916	1,085	870	570	1,012	1,037	1,037	1,194	481	416	429	344	644	450	352	410	348
Lone Pine Woodlot	120	76	100	120	78	51	58	123	120	156	70	74	55	60	61	60	78	67
Lone Pine Van Norman Field	480	337	474	512	306	28	147	102	116	97	79	343	426	481	453	409	454	478
Lone Pine Regreening	95	238	180	107	232	228	283	257	298	223	216	233	211	230	107	242	307	249
Total	14,420	9,127	11,439	11,180	10,881	10,072	9,913	10,532	11,507	8,729	7,530	9,208	8,254	10,900	9,951	9,534	10,003	9,094

[1] Scoped at 2,200, but in 2004 reduced to 1,500 af

Table 5. Inyo and LADWP Table, with Commitment Origin and Status

1991 EIR Mitigation	1991 EIR Environmental Projects	1991 EIR E/M Project	Revised Project	1997 MOU	LADWP MITIGATION PROJECT COMMITMENTS	Completed	Implemented as Required[2]	Implemented and Ongoing[3]	Fully Implemented Not Met Goals[4]	Not Fully Implemented[5]
X	X				Big and Little Seely Springs a 1-acre pond near Well W349. (EIR Impact 10-14, EIR Table 5-2)			X		
X			X		Big Pine Area 160 Revegetation (160 acres; EIR Impact 10-19)				X	
X			X		Big Pine Area 20 Revegetation (20 acres; EIR Impact 10-19)				X	
X					Big Pine Ditch System (EIR Impact 10-19)			X		
X		X	X		Big Pine Northeast Regreening (30 acres; EIR Impact 10-11, EIR Table 5-3)			X		
X			X		Bishop Area Revegetation (124 acres; EIR Impact 10-16)				X	
X			X		Blackrock 16E Revegetation (EIR Impact 10-11)	LA		IC[7]		
X	X				Blackrock Hatchery (EIR Impact 10-14)			X		
X	X				Buckley Ponds (EIR Impact 10-5 and 11-1, EIR Table 5-2)			X		
X	X				Calvert Slough (EIR Impact 10-5, EIR Table 5-2)			X		
X					Olancha-Cartago Irrigated Fields			X		
X	X			X	Diaz Lake (EIR Table 5-2, Additional Mitigation Projects Developed by the MOU Ad Hoc Group (MOU Section III.A.3))			X		
X		X			Eastern California Museum (EIR Tables 4-3 and 5-3)			X		
X	X				Farmers Pond (EIR Impact 10-5, 10-18, 11-1, EIR Table 5-2)			X		
X	X				Fish Springs Hatchery (EIR Impact 10-14)			X		
X			X		Five Bridges Area Revegetation Project (300 acres; EIR Impact 10-12)	LA			IC	
				X	Freeman Creek Project (Additional Mitigation Projects Developed by the MOU Ad Hoc Group (MOU Section III.A.3))			LA	IC[7]	
X				X	Hines Spring Aberdeen (1 to 2 acres, EIR Impact 10-14), implemented as the Additional Mitigation Projects/ MOU Ad Hoc Group (MOU Section III.A.3)			LA	IC[7]	
X			X		Hines Spring South Revegetation (EIR Impact 10-11)				X	
				X	Hines Spring Well 355 Project (Additional Mitigation Projects Developed by the MOU Ad Hoc Group (MOU Section III.A.3))			LA	IC[7]	
				X	Homestead Project (Additional Mitigation Projects Developed by the MOU Ad Hoc Group (MOU Section III.A.3))			X		
X			X		Independence 105 Revegetation (EIR Impact 10-13)	LA		IC[7]		
X			X		Independence 123 Revegetation (EIR Impact 10-13)	LA		IC[7]		
X			X		Independence 131 Revegetation North and South (EIR Impact 10-13)			X		
X		X			Independence Ditch System (EIR Table 4-3)			X		
X		X			Independence East Side Regreening Project (23 acres; EIR Impact 10-11, EIR Table 5-3)			X		
X		X			Independence Pasturelands and Native Pasturelands (610 acres; EIR Impact 12-1, EIR Tables 4-3 and 5-3)			X		

1991 EIR Mitigation	1991 EIR Environmental Projects	1991 EIR E/M Project	Revised Project	1997 MOU	LADWP MITIGATION PROJECT COMMITMENTS	Completed	Implemented as Required[2]	Implemented and Ongoing[3]	Fully Implemented Not Met Goals[4]	Not Fully Implemented[5]
X		X			Independence Roadside Rest Area (0.5 acres; EIR Tables 4-3 and 5-3)			X		
X		X			Independence Springfield (286 acres; EIR Impact 12-1, EIR Tables 4-3 and 5-3)			X		
X		X			Independence Woodlot (20 acres; EIR Impact 10-11, EIR Table 4-3)			X		
X	X	X			Klondike Lake Aquatic Habitat (160 acres; EIR Impact 10-5 and 11-1, EIR Tables 4-3, 5-2, and 5-3)			X		
					Klondike SSHA (Big Pine Ditch System MND)			X[7]		
			X		LAWS 118 Revegetation (19-acre portion) (Laws Type E Transfer MND)				X	
			X		LAWS 129 Revegetation (Laws Type E Transfer MND)				X	
			X		LAWS 27 Revegetation (Native Seed Farm) (Laws Type E Transfer MND)				X	
			X		LAWS 90 Revegetation (Laws Type E Transfer MND)				X	
			X		LAWS 94 Revegetation (Laws Type E Transfer MND)				X	
			X		LAWS 95 Revegetation (Laws Type E Transfer MND)				X	
X			X		Laws Area Revegetation Project (140 acres; EIR Impact 10-18)				X	
X		X			Laws Historical Museum Pasturelands (21+15 acres; EIR Impact 10-18, EIR Table 5-3)			X		
X		X			Laws/Poleta Native Pasture (216 acres; EIR Impact 10-16, EIR Tables 4-3 and 5-3)			X		
X	X				Little Blackrock Springs (EIR Impact 10-14, EIR Table 5-2)			X		
X		X			Lone Pine East Side Regreening (11 acres; EIR Impact 10-16, EIR Table 5-3)			X		
X		X			Lone Pine-North Lone Pine Clean Up (EIR Table 4-3)	X				
X		X			Lone Pine Riparian Park (320 acres, EIR Tables 4-3 and 5-3)			X		
X		X			Lone Pine Sports Complex (EIR Table 5-3)	X				
X		X			Lone Pine West Side Regreening (8 acres; EIR Impact 10-16, EIR Tables 4-3 and 5-3)			X		
X		X			Lone Pine Woodlot (12 acres; EIR Impact 10-11, EIR Table 4-3)			X		
X	X	X		X	Lower Owens River Project (LORP) (Formally named Lower Owens Rewatering Project)			LA	IC[4]	
X		X			McNally Ponds and Native Pasturelands (300 acres pasture, 60 acres ponds; EIR Impact 10-5 and 10-18, EIR Tables 4-3 and 5-3)			X[7]		
X	X	X			Millpond Recreation Area (EIR Impact 10-5, EIR Table 5-2 and 5-3)			X		
				X	North of Mazourka Canyon Road Project (Additional Mitigation Projects Developed by the MOU Ad Hoc Group (MOU Section III.A.3))			X		
X					Reinhackle Spring (EIR Impact 10-14)			X		
X		X			Richards Fields (160 acres; EIR Impact 10-16, EIR Table 4-3)			X		
X	X				Saunders Pond (EIR Impact 10-5, EIR Table 5-2)			X		
X		X			Shepherd Creek Alfalfa Field (198 acres; EIR Impact 10-11, EIR Tables 4-3 and 5-3)			X		
X		X			Shepherd Creek Potential (60 acres; EIR Impact 10-11, EIR Table 5-3)	X				
X					Steward Ranch (EIR Impact 9-14)	X				
X			X		Tinemaha 54 Revegetation (EIR Impact 10-11)				X	
X		X			Tree Planting along Roadways (EIR Table 4-3)			X		
X	X				Tule Elk Field (EIR Table 5-2)			X		

1991 EIR Mitigation	1991 EIR Environmental Projects	1991 EIR E/M Project	Revised Project	1997 MOU	LADWP MITIGATION PROJECT COMMITMENTS	Completed	Implemented as Required[2]	Implemented and Ongoing[3]	Fully Implemented Not Met Goals[4]	Not Fully Implemented[5]
X		X			Van Norman Fields (170 acres; EIR Impact 10-16, EIR Table 4-3)			X		
				X	Warren Lake Project (Additional Mitigation Projects Developed by the MOU Ad Hoc Group (MOU Section III.A.3))			X		
				X	Well 368 Project (Additional Mitigation Projects Developed by the MOU Ad Hoc Group (MOU Section III.A.3))			X		

[1]Project has no additional commitments required (no water allotment or other financial or environmental mitigation; no continual monitoring and reporting)

[2]These measures are only applied when necessary (monitoring and reporting for mitigation measures for new projects, construction, etc.)

[3]Project is fully implemented and is currently meeting goals; however, there may be ongoing water or financial commitments or monitoring and reporting requirements

[4]Project is fully implemented but has not yet met prescribed goals or success criteria

[5]Project under development, or under construction, but not fully implemented

[6]Inyo County Commitment

[7]Project status under discussion

Water Agreement	91 EIR	91E EIR Environmental Project	91 EIR E/M Project	Revegetation Project Other Agreement	97 MOU	LADWP OTHER OBLIGATIONS	Completed [1]	Ongoing as Necessary and Required [2]	Implemented and Ongoing [3]	Fully Implemented but Not Meeting Goals[4]	Not Fully Implemented[5]
					x	Aerial Photo Analysis (MOU Section III.E)	x				
					x	Annual Report on the Owens Valley (MOU Section III.H)			x		
				x		Blackrock 94 (EIR Impact 10-14)			x		
x						Cooperative Studies (Water Agreement Section IX)			x		
x						Dispute Resolution (Water Agreement Section XXVI)		x			
					x	Dispute Resolution and Litigation (MOU Section VI)		x			
x						Enhancement/ Mitigation Projects (Water Agreement Section X)			x		
x						Exchange of Information and Access (Water Agreement Section XVII)			x		
x						Financial Assistance- Big Pine Ditch System (Water Agreement Section XIV.E)			x		
x						Financial Assistance- General Financial Assistance to the County (Water Agreement Section XIV.D)			x		
x						Financial Assistance- Park & Environmental Assistance to City of Bishop (Water Agreement Section XIV.F)			x		
x						Financial Assistance- Park Rehabilitation, Development, & Maintenance (Water Agreement Section XIV.B)			x		
x						Financial Assistance- Salt Cedar Control (Water Agreement Section XIV.A)			x		
x						Financial Assistance- Water and Environmental Activities (Water Agreement Section XIV)			x		
					x	Financial Provisions (MOU Section IX)	x				
					x	Fish Slough (MOU Section IV)			x		
x						Groundwater Management (Water Agreement Section II)			x		
x						Groundwater Pumping on the Bishop Cone (Water Agreement Section VII)			x		
x						Groundwater Recharge Facilities (Water Agreement Section VIII)		x			
					x	Habitat Conservation Plan (MOU Section III.B)	x				
x						Haiwee Reservoir (Water Agreement Section XIII)	LA				IC

Water Agreement	91 EIR	91E EIR Environmental Project	91 EIR E/M Project	Revegetation Project Other Agreement	97 MOU	LADWP OTHER OBLIGATIONS	Completed [1]	Ongoing as Necessary and Required [2]	Implemented and Ongoing [3]	Fully Implemented but Not Meeting Goals[4]	Not Fully Implemented[5]
					X	Inventory of Plants and Animals at Spring and Seeps (outside LORP Planning Area) (MOU Section III.C)	X				
	X					Laws Area Potential Mitigation-Consideration by Standing Committee (640 acres; EIR Impact 10-18)		X			
X						Legislative Coordination (Water Agreement Section XVI)			X		
					X	LORP Agency Consultation and Public Involvement (MOU Section II.D)	X				
					X	LORP EIR (MOU Section II.F)	X				
					X	LORP Implementation (MOU Section II.H)	X				
					X	LORP Monitoring and Adaptive Management Plan (MOU Section II.E)			X		
					X	LORP Permits Approvals and Licenses (MOU Section II.I)	X				
					X	LORP Plan (MOU Section II.A)	X				
					X	LORP Planning Area- Inventory of Plants and Animals at Spring and Seeps (MOU Section III.A.2)	X				
					X	LORP Pumpback System (MOU Section II.G)	X				
					X	Lower Owens Off River Lakes and Ponds (MOU Section II.C.3)			X		
X						Lower Owens River (financial commitment) (Water Agreement Section XII)			X		
					X	Lower Owens River Delta Habitat Area (MOU Section II.C.2)			X		
					X	Lower Owens River Project 1500-Acre Blackrock Waterfowl Habitat Area (MOU Section II.C.4)			LA	IC[4]	
					X	Lower Owens River Riverine- Riparian System (MOU Section II.C.1)			LA	IC[4]	
					X	Mitigation Plans for Impacts Identified in the 1991 EIR and the Water Agreement (MOU Section III.F)					X
X						New Wells & Production Capacity (Water Agreement Section VI)					X
X						Owens River Recreational Use Plan (Water Agreement XV.B)					X[6]
					X	Owens Valley Land Management Plans (MOU Section III.B)			X		
X						Release of City Owned Lands - Lands for Public Purposes (Water Agreement Section XV.D)		X			

Water Agreement	91 EIR	91E EIR Environmental Project	91 EIR E/M Project	Revegetation Project Other Agreement	97 MOU	LADWP OTHER OBLIGATIONS	Completed [1]	Ongoing as Necessary and Required [2]	Implemented and Ongoing [3]	Fully Implemented but Not Meeting Goals[4]	Not Fully Implemented[5]
X						Release of City Owned Lands- Bishop (Water Agreement Section XV.B)	X				
X						Release of City Owned Lands- Inyo County (Water Agreement Section XV.A)	X				
X						Release of City-owned lands- Additional Sales (Water Agreement Section XV.C)	X				
					X	Technical Group Meetings (MOU Section III.G)		X			
X						Town Water Systems (Water Agreement Section XI)	X				
					X	Type E Vegetation Inventory (MOU Section III.D)	X				
					X	Yellow-billed Cuckoo Habitat (MOU Section III.A.1)			X[7]		

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