

Blackrock Waterfowl Management Area Interim Management and Monitoring Plan

Introduction

To improve conditions in the Lower Owens River Project (LORP) Blackrock Waterfowl Management Area (BWMA), the Los Angeles Department of Water and Power (LADWP) and Inyo County Water Department (ICWD) have worked cooperatively to develop this Interim Management and Monitoring Plan. This 5-year interim plan will be monitored and assessed both for its capacity to create desired habitat conditions, as well as to determine the suitability and sustainability of the new management approach.

The BWMA is a natural slough that historically received seasonal or periodic inundation primarily during winter and spring. In an attempt to enhance wetland habitat for waterbirds, BWMA basins have been supplied year-round water since 2007. Year-round flooding is a significant deviation from historic conditions, and application of water throughout the growing season has resulted in wetland habitats at BWMA that are often choked with cattails and bulrush at the expense of open water. This condition has been observed in other wetland locations in the Owens Valley that are supplied year-round water. Implementation of the BWMA as prescribed, initially led to increased use by wetland birds as compared to pre-project conditions. However, the value of the created habitats declined in quality over time due to excessive growth of emergent vegetation.

Under this interim plan we hope to test if operational changes improve BWMA productivity and waterbird habitat quality and limit cattail and bulrush growth. The approach to increasing habitat quality and habitat productivity is two-fold, and involves 1) seasonal flooding to control the growth of emergent vegetation thereby increasing open water habitat, and 2) implementing moist soil management techniques to enhance the growth of plant species that provide direct or indirect food resources for migratory waterbirds. At the end of the 5 years, the interim program will be evaluated and future recommendations presented.

Background and Historical Setting

The BWMA is one of four physical features of the large scale river restoration project known as the LORP (LADWP, USEPA, and ICWD 2004). The BWMA encompasses a large natural slough with basins physically connected by channels. The basins are of low relief and punctuated in some areas by high spots that create small islands under periods of flooding. The topography, soil types (USDA-NRCS 2002) and pre-European cultural use adjacent to the current management units indicate that the area functioned as a natural wetland for several millennia. Historically, prominent sources of surface and ground water in the BWMA area included Blackrock and Little Blackrock Springs, seepage along the Owens Valley fault, and seasonal discharge from Sierra creeks

including Sawmill, Thibaut, Oak, and Independence (Whitehorse Associates 2004). Construction of the Los Angeles Aqueduct interrupted flow from these sources to the BWMA (Whitehorse Associates 2004).

The principal sources of water for the BWMA are now the Blackrock Ditch and diversions off of the Los Angeles Aqueduct. In the mid-20th century, prior to the construction of the Blackrock Ditch, aerial photography (Figure 1) indicates that the BWMA continued to function as wetlands with some limited irrigation on the Winterton Unit (LADWP 1944).

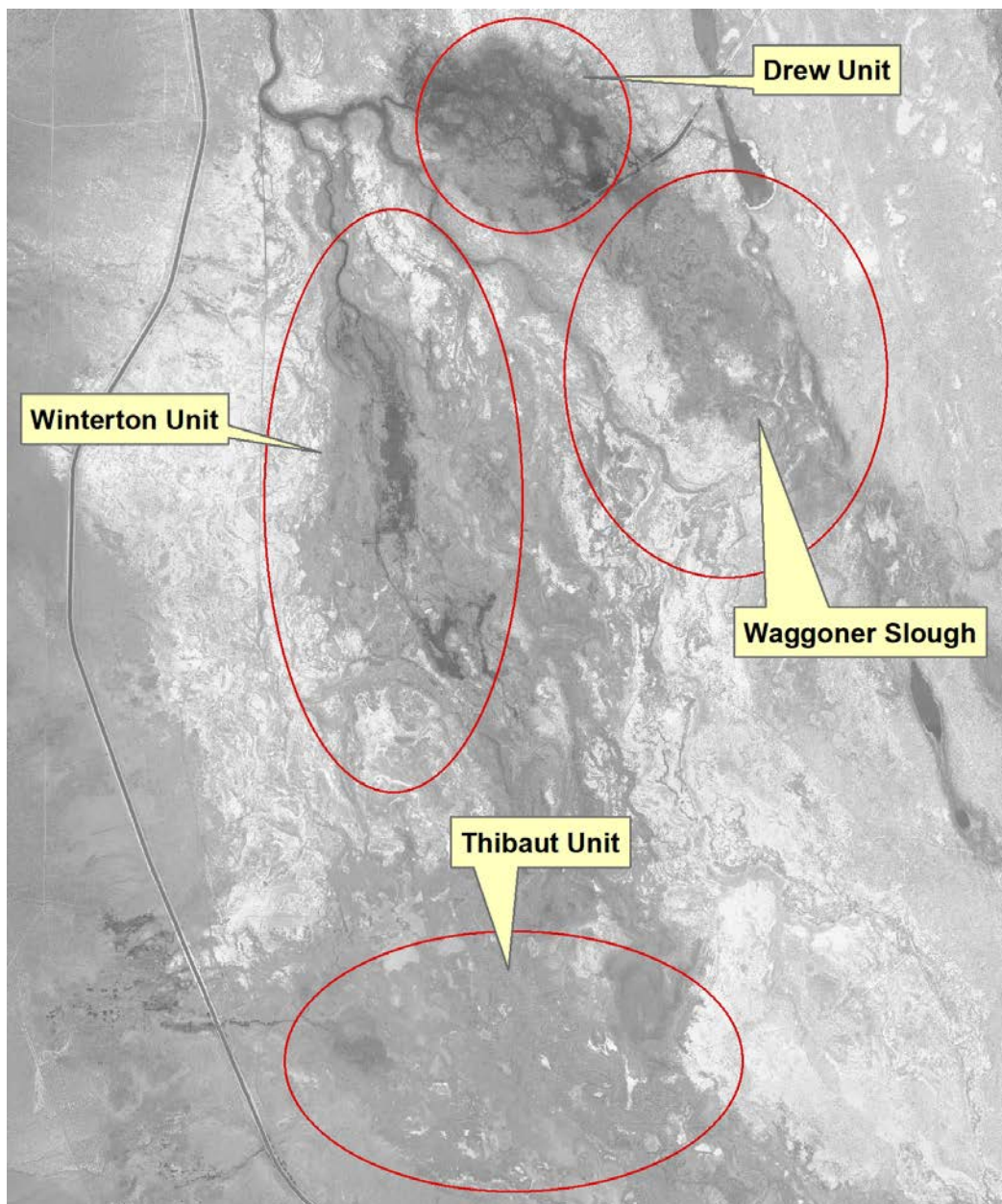


Figure 1. Map depicting approximate locations of BWMA Units on 1944 aerial photo.

Starting in the 1960's, water was spread in the BWMA during high runoff years and when operational needs required, such as during maintenance on the Los Angeles Aqueduct. To accomodate water spreading, LADWP has constructed dikes, levees, ditches, roads, and basins within the BWMA area.

When incorporated into the LORP, the BWMA was divided into four management units: Drew, Waggoner, Winterton, and Thibaut. All these units were mapped as marshlands in 1905 (USGS 1919) (Figure 1). Under the LORP, the primary management objective for these wetland units is to create and maintain diverse natural habitats consistent with the needs of "habitat indicator species" (MOU 1997). These species include waterfowl, wading birds, shorebirds, and marsh-dwelling species such as rails, bitterns, and Marsh Wren.

BWMA Goals and Management Under the LORP

Since 2007, BWMA has been operated following management described in the Final Environmental Impact Report and Environmental Impact Statement - Lower Owens River Project (LORP EIR/EIS; LADWP, USEPA, and ICWD 2004), and the 1997 Memorandum of Understanding (MOU) between LADWP, the County of Inyo (County), California Department of Fish and Wildlife, California State Lands Commission, Sierra Club, and Owens Valley Committee.

The MOU describes goals sought at BWMA:

The goal is to maintain this waterfowl habitat area to provide the opportunity for the establishment of resident and migratory waterfowl populations as described in the EIR and to provide habitat for other native species. Diverse natural habitats will be created and maintained through flow and land management, to the extent feasible, consistent with the needs of the "habitat indicator species" for the Blackrock Waterfowl Habitat Area. These habitats will be as self-sustaining as possible.

The MOU prescribes water management to achieve these goals:

Approximately 500 acres of the habitat area will be flooded at any given time in a year when the runoff to the Owens River watershed is forecasted to be average or above average. In years when the runoff is forecasted to be less than average, the water supply to the area will be reduced in general proportion to the forecasted runoff in the watershed. (The runoff forecast for each year will be DWP's runoff year forecast for the Owens River Basin, which is based upon the results of its annual April 1 snow survey of the watershed.) Even in the driest years, available water will be used in the most efficient manner to maintain the habitat. The Wildlife and Wetlands Management Plan element of the LORP Plan will recommend the water supply to be made available under various runoff conditions and will recommend how to best use the available water in dry years.

The amount of acreage to be flooded in years when the runoff is forecasted to be less than average will be set by the Standing Committee based upon the recommendations of the Wildlife and Wetlands Management Plan and in consultation with DFG.

The LORP EIR/EIS refers to the MOU in describing the BWMA:

The MOU specifies that a 1,500-acre off-river area with a mixture of pasture and wetlands be enhanced through flow and land management to benefit wetlands and waterfowl. Approximately 500 acres of the habitat area are to be flooded at any given time when runoff is forecasted to be average or above average with reductions in water supplies in less than average runoff years. The proposed flooding will increase wetland productivity and diversity, which is consistent with the approach described in the LORP Plan. The management units would be subject to periodic cycles of wetting and drying so that one to three management units would be wholly or partially flooded at any given time. Various physical improvements to existing ditches, berms, and spillgates will be necessary to manage water conveyance and flooding in the management units.

In compliance with these directives, water has been released year-round to flood up to 500 acres of the BWMA at any given time throughout the year when runoff is forecasted to be average or above-average. Reductions in water supplies and concomitant acreages have occurred during less than average runoff years as prescribed (2009-2015, Table 1).

As part of the overall management strategy for the BWMA presented in the LORP EIR/EIS, the flooded cells were intended to be managed to “maintain the ratio of open water wetland to emergent wetland so that emergent wetlands do not exceed about 50 percent of the flooded area of any management unit” (Section 2.5.3). While there was a proposed flooding regime provided in the LORP EIR/EIS (Section 2.5.4), the BWMA has been managed since implementation to achieve required flooded acreage. Units could remain indefinitely active or inactive as long as flooding met the MOU criteria of an annual fixed amount of acreage based on the water year and the active unit remained flooded year-round (LADWP, USEPA, and ICWD 2004).

Over the last 14 years, the Waggoner Unit has been active three years, the Thibaut Unit five years, the Winterton Unit nine years, and the Drew Unit ten years (Table 1). The running average of flooded extent in all years (2007-2020) is 370 acres. Active-status (flooded) units have maintained year-round continuous flooding for a minimum of two years, with the exception of Winterton which was flooded for a single year in 2011-12. The Drew Unit, which has been used more than others, was continually flooded for six straight years. As described in the LORP EIR/EIS (page 2-43), the original intent was to flood the Drew Unit only when needed to create additional acreage to meet the 500-acre MOU requirement or to better meet MOU habitat goals.

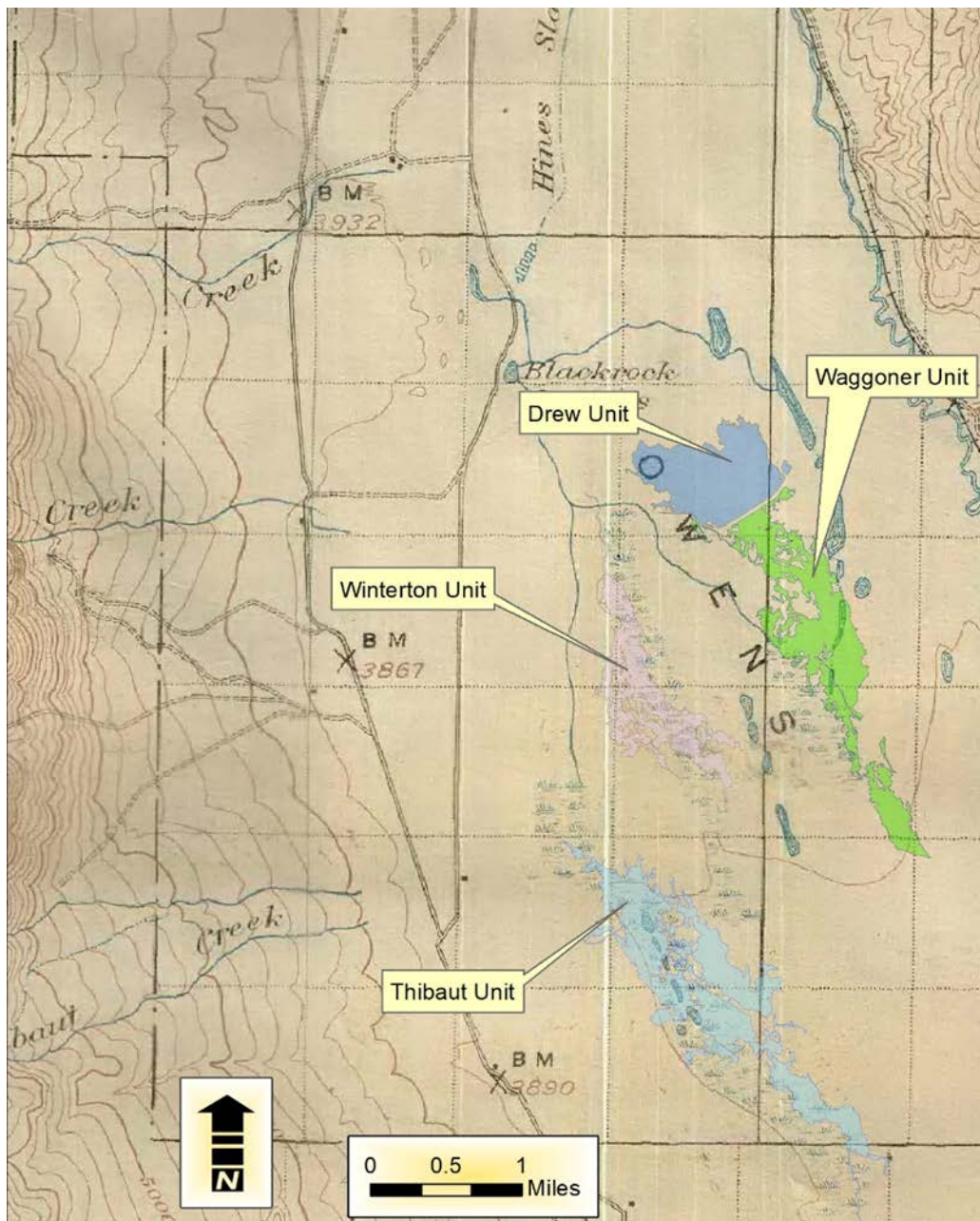


Figure 2. BWMA Units in relation to wetlands mapped by the USGS in 1905 (USGS 1919).

Table 1. BWMA Flooded Acreage by Year since LORP Implementation

Blackrock Waterfowl Management Area				
Runoff Year	Runoff Forecast (% normal)	Flooded Acreage Requirement	Cells Flooded	Average Acreage Flooded
2007-2008	58%	290	Winterton and Thibaut	477
2008-2009	86%	430	Winterton and Thibaut	494
2009-2010	71%	355	Drew and Waggoner	385
2010-2011	95%	475	Drew and Waggoner	669
2011-2012	150%	500	Drew and Winterton	480*
2012-2013	65%	325	Drew	327
2013-2014	54%	270	Drew	308
2014-2015	50%	250	Drew	275
2015-2016	36%	180	Winterton	234
2016-2017	71%	355	Winterton and Thibaut	530
2017-2018	197%	500	Winterton and Thibaut	700+
2018-2019	78%	390	Winterton and Drew	423
2019-2020	137%	500	Winterton, Drew, and Thibaut	500+
2020-2021	74%	370	Winterton and Drew	TBD

*flooded acres ranged between 372-539 acres

2019 Evaluation Report

The LORP EIR/EIS (Section 2.5.4) recommended a review of BWMA flooding cycles 10 to 15 years following LORP implementation. The review is undertaken to determine if modifying the flooding regime can improve the project and bring it closer to achieving MOU goals.

The BWMA was reviewed by LADWP and Inyo County in the LORP 2019 Evaluation Report. The evaluation included a review of the effectiveness of BWMA management that has been conducted according to the year-round flooding regime prescribed in the 1997 MOU and LORP EIR/EIS. The focus of the review was on habitat indicator species use.

The evaluation concluded that continuous year-round flooding resulted in excessive and aggressive growth of emergent vegetation leading to reduced open water habitat, static water conditions, and a decrease in waterbird use. While the evaluation noted that habitat indicator species continue to use BWMA, continuous inundation has resulted in the dominance of late successional wetland vegetation and significantly reduced

suitable habitat for indicator species and migrating waterbirds. Observed ramifications of static, year-round flooding have also been discussed in detail in LORP Annual Reports (LADWP and County of Inyo 2019, 2018, 2017, 2016, 2015). The integration of seasonal flooding at BWMA was first conceptualized at the 2014 LORP River Summit.

Actions Undertaken to Date

LADWP has implemented several approaches to address vegetation encroachment by preparing units prior to flooding. Prescribed burns were conducted in the Drew and Waggoner Units in 2009, in the Winterton Unit in 2010, and most recently in the South Winterton Unit in 2019. In 2012, approximately 100 acres of cattail and bulrush root mats on the Winterton Unit were tractor disced. These aggressive and expensive vegetation management efforts resulted in only very short-term control as subsequent year-round flooding, specifically during the growing season, erased virtually any benefits derived from the site preparation activities.

Interim Management Plan Overview and Habitat Objectives

To address project shortcomings identified in the evaluation, LADWP and ICWD propose a five-year Interim Management and Monitoring Plan. We intend to apply an approach to wetland management used throughout the west, and although used primarily for migratory waterfowl habitat management, will also benefit shorebirds by creating more open water areas and mudflats. This approach involves managing vegetation by providing seasonal rather than year-round flooding and enhancing forage for indicator species through moist soil management. We will monitor progress and use collected data to compare the effectiveness of the new management approach against past practices.

The main components of the plan are to:

- (1) Implement a seasonal flooding regime in which sustained flooding occurs from fall through mid-spring with a drawdown during the summer growing season. Units will be flooded beginning September 15th with a complete drawdown by May 1st. Seasonal flooding will enhance habitat by suppressing the growth of cattails and bulrush, and thus maintaining more open water.
- (2) Discontinue varying annual flooded acreage targets based on the projected runoff, and flood a fixed 500 acres each year with ramping-up to begin September 15th and ramping-down to start after March 1st with complete dry down by May 1st. Wetted acreage measurements will occur on or around November 1 and March 1, with the average of those two measurements being used to determine the flooded acreage number. If the average value is above or below the 500 acre number, releases in subsequent years will be adjusted to more accurately meet the 500 acre

target. The Waggoner and Winterton Units will continue to be supplied from Blackrock Ditch and the Thibaut Unit from the Los Angeles Aqueduct, as has been past practice.

(3) On identified portions of active units and in areas where drawdown has occurred quickly, implement “moist soil management” by providing a rapid early summer ‘irrigation’ pulse of water to increase soil moisture. The objective of this irrigation release is to sustain the growth and seed set of desirable early-seral plant species that directly or indirectly provide food for migrating waterbird populations.

Effectiveness monitoring will include documenting the flooded acreage, vegetation assessments to evaluate moist soil management implementation, and waterbird surveys to determine use by indicator species.

Habitat Objectives of Interim Plan

Create and maintain open water habitat

Waterfowl and shorebirds primarily feed and rest in open water, mudflat, or areas of open vegetation. Wading birds will also feed in meadow, low marsh, or open cattail marsh situations. Dense homogenous stands of vegetation reduce feeding opportunities and restrict movement. Seasonal flooding in fall, winter, and spring rather than year-round is an effective way to control the growth of emergent vegetation in the Owens Valley and improve habitat management efficiency. The LORP FEIR (LADWP, USEPA and ICWD 2004) has as an objective to “maintain a ratio of open water wetlands to emergent wetlands so that emergent wetlands do not exceed 50 percent of the flooded area of any management unit” (Section 2.5.3). A 50:50 ratio of open water to emergent wetlands is consistent with the concept of the “hemi-marsh” (Weller and Spatcher 1965) where species richness and density was found to be greatest compared with other proportions of vegetative cover to open water. Wetland managers often replicate the physical appearance of hemi-marshes by intensely managing vegetation (Euliss, Jr. et al. 2008), however open water alone will not necessarily create productive conditions. Hydrologic processes of wet and dry cycles, or employing moist soil management are also needed to produce food resources for migratory birds.

Increase wetland productivity for migratory waterbirds using moist soil management concepts

Forage availability is as important as the availability of open water to attracting and maintaining waterbird populations. Moist soil management is the management of water drawdown rate and timing in order to promote the growth of desirable plants on mudflats that will be subsequently reflooded (Mississippi River Trust et al. 2007). The ability to manipulate forage composition, production, and open water habitat through seasonal flooding is regarded as the most effective tool available to land managers in California

and elsewhere in the United States for managing migratory waterbird habitats (Fredrickson and Taylor 1982; Smith et al. 1995). Manipulating plant succession and site hydrology are the mechanisms used to reach moist-soil management objectives.

Moist soil management guidelines have been developed and implemented in other parts of the U.S., but there is limited information available for use in the Intermountain West. Plant species often cited as “target” species for waterfowl either do not occur in Owens Valley, or are weedy and undesirable here. Therefore, LADWP and ICWD will work together to experiment with different approaches and develop techniques applicable to the BWMA and develop local information and targets for desirable species. Some general information is available regarding plant foods important to waterfowl, and these accounts will be adapted to the Owens Valley to provide guidance as we evaluate moist soil management effectiveness. Moist-soil plants both occurring in the Owens Valley and reported to be of exceptional value to wildlife by the California Waterfowl Association (2020) include smartweed (*Polygonum* sp.), beggar-ticks (*Bidens* sp.), annual Atriplex (*Atriplex* spp.), and goosefoot (*Chenopodium* spp.). Spikerush (*Eleocharis* spp.), aster, and alkali bulrush (*Bolboschoenus maritimus*) are moist-soil plants that are believed to be only moderately valuable to wildlife, but may be important in localized areas; and sweet clover, river bulrush, tuberous bulrush, bermuda grass, baltic rush, jointgrass, dock, and saltgrass are generally invasive and undesirable wetland plants (California Waterfowl Association 2020). Applying moist soil management techniques to wetland areas to support a diverse array of early seral annual and perennial plant species will also benefit shorebirds and wading birds by supporting aquatic invertebrate populations.

Waterfowl generally forage in wetland habitats, consuming plant parts, aquatic or terrestrial invertebrates, crustaceans, or small fish. Swans and geese are primarily herbivorous, and feed on roots, tubers, stems and leaves of submerged and emergent aquatics. Dabbling ducks consume both animal and plant food materials, however, the diet of many species varies seasonally as animal food sources are favored during the breeding season, and plant food sources (primarily seeds) are typically consumed in greater proportion during non-breeding periods.

Wetland plant communities provide a direct or indirect source of food for waterfowl. These community types include submergent plants (rooted plants whose vegetative material is completely underwater), floating-leaved plants (both rooted and free-floating), and emergent. Submergent plants provide a direct source of food as waterfowl will consume tubers, leafy material, or seeds of some submergent plant species. Submergent plants also support macroinvertebrate production and therefore indirectly affect food resources.

Plant species that are part of the floating-leaved community include rooted species, and free-floating aquatic plants. Free-floating plants can be more accessible to waterfowl

than submergent species, however, there are only a few floating-leaved plant species that produce waterfowl food of much value (Baldasserre and Bolen 1994). Some smartweed species (*Polygonum* spp.) and a few pondweed species (especially *Potamogeton natans*) produce seeds that are of fair to good quality for waterfowl. Despite their vernacular name, free-floating aquatic plants in the family Lemnaceae, known as duckweeds, duckmeats, or bogmats (genera: *Lemna*, *Spirodela*, *Wolffiella*, and *Wolffia*) are not important waterfowl foods. These free-floating aquatic plants do however support aquatic invertebrate production, and therefore may be consumed in small quantities as waterfowl forage for aquatic invertebrates associated with these plants.

Emergent plants primarily provide cover, but some species are key food sources. Bulrushes of the leafy triangular-stemmed type such as alkali bulrush (*Schoenoplectus maritimus*) are key food producers. Other species such as hardstem bulrush (*S. acutus*), softstem bulrush (*S. tabernaemontani*), and California bulrush (*S. californicus*) produce desirable nutlets. Cattails (*Typha* spp.) are important for cover and nesting for some species, but are not a direct food source. Grass and sedges also occur in the emergent zone, and some species are highly valuable as waterfowl foods. Species in this group that occur in this region include sedges (*Cyperus* spp.), and spikerushes (*Eleocharis* spp.). Waterfowl may eat the seeds of rushes (Family Juncaceae) when available, but these species are not considered highly valuable food resources. The seeds of saltgrass (*Distichlis spicata*) may also be consumed.

Differences in soil type between and within individual units combined with variation in annual climate conditions will affect how long it will take for each unit to draw down and may influence plant species compositional differences between units. Because of the presumed variability that may be encountered, flexibility in flooding, drawdowns, and site preparation for each unit will be needed. With close monitoring, more effective management strategies may be discovered such as adjusting the maximum flooded extent further into spring and starting later in the fall, or the reverse with an earlier drawdown in the spring and an earlier maximum flooded extent in the fall. If adjustments are required, 500 acres for four months will still be adhered to.

If needed in order to maintain soil moisture, a short-term irrigation pulse will be implemented. This will be a pulse flow in late spring or early summer for a maximum of two weeks across portions of active units that have shallow water depths and would benefit from a rapid flow. This irrigation set would provide needed moisture for desirable annuals to reach seed production stage.

Maintain Appropriate Water Depths for Waterbirds

Water depth is highly predictive of waterfowl use and is a critical consideration for effective waterfowl habitat management (Isola et al. 2000, Taft et al. 2002). Water

depths greater than 25 cm limit access to food resources for dabbling ducks, shorebirds and wading birds, whereas diving birds require approximately a minimum of 25 cm (Figure 2). Recommended water depths for dabbling ducks, shorebirds and waders in flooded units in central California are between 10 cm- 25 cm (4-10 inches) (Figure 2) (Taft et al. 2002). Managing for shallower water depths such as these will also help to conserve water and ensure better irrigation during times when warranted in the early summer.

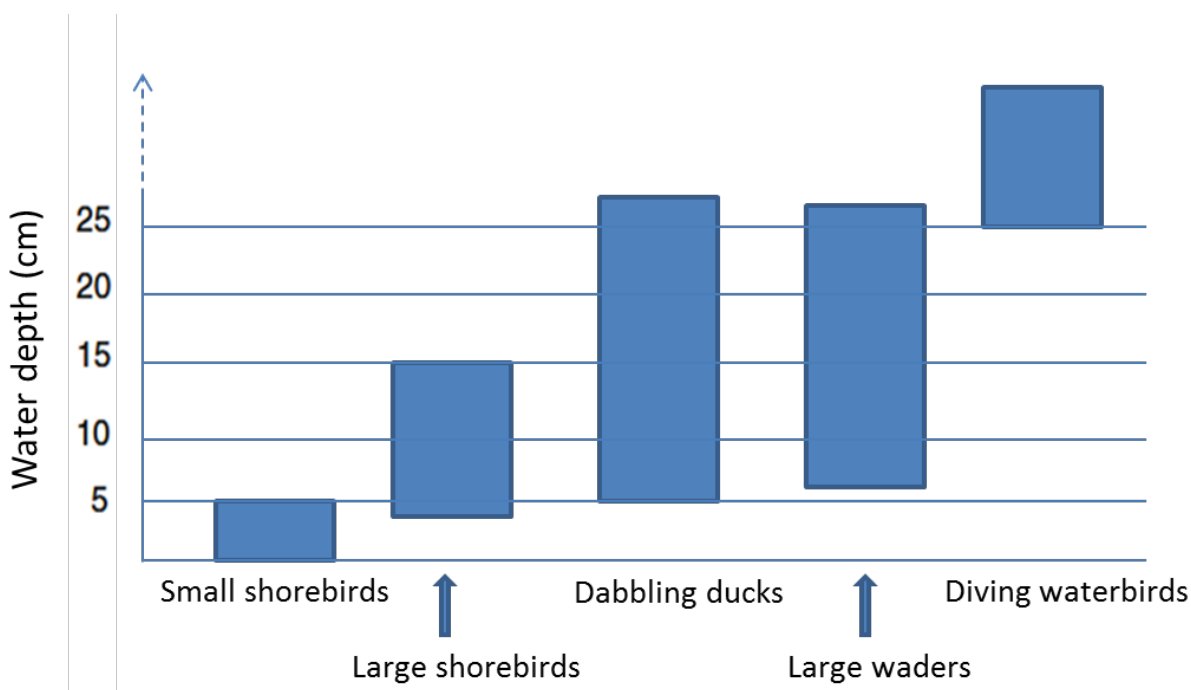


Figure 2. Variation of water depths at foraging sites among waterbird groups Figure adapted from Ma et al (2010). Management proposed for the BWMA will target depths less than 25 cm (10 inches) preferred by shorebirds, dabbling ducks and large waders.

This management technique was tested in the Winterton Unit in 2020. Manipulating water in shallow flooded subunits on the southeastern portion of the Winterton Unit in 2020 produced comparatively large stands of smartweed (*Polygonum sp.*) by June 15th (Figure 3). Smartweed is considered of high nutritional value for waterfowl, and is a species whose growth can be enhanced through effective water management. This water depth should provide satisfactory habitat for dabbling ducks, diving waterbirds, and waders. During the first years of implementation of the Interim Plan, active units should be evaluated to better understand the water depth variation in the units and how water depth is influencing waterbird use. In addition, opportunities to improve conditions for waterbirds by manipulating water levels and therefore depths should be considered and evaluated each August before mid-September shallow flooding.



Figure 3. Smartweed, June 15, 2020, Winterton Unit.

Description of the BWMA units

Drew Unit

The Drew Unit is located north of Blackrock Ditch and receives water from Blackrock Diversion #4. The Drew Unit is entirely within the 2,193 acre Lower Blackrock Field of the Twin Lakes Lease. The lease is typically grazed by livestock from November through mid-May. Livestock arrive in the Lower Blackrock Field in early November and are then moved to the two river pastures on this same lease. During spring, cattle are moved back into the Lower Blackrock Field and then shipped to Long Valley (Mono County) in mid-May.

The Drew Unit was burned in February of 2009 to prepare the unit for flooding. The unit has been flooded 9 out of 14 years. Table 2-14 in the LORP EIR identified 397 acres as the total management unit area for the Drew Unit (2004). The maximum acreage flooded in this unit since implementation was 334 acres in January of 2013 (Figure 4). It would be difficult to further increase acreage in the Drew Unit because additional increases in water would spill over the Blackrock Ditch berm on the south side.

The Drew Unit was dried in May 2015 and experienced extensive salt cedar (*Tamarisk ramosissima*) germination. LADWP mowed the salt cedar in late winter 2018, and the unit was then reactivated with the intent to fully submerge mowed seedlings and

eliminate them. The treatment appears to have been effective. The majority of the unit is now dominated by cattails, however.

Compared to the Waggoner and Winterton Units, colonization by cattails and bulrush tends to occur at a slower rate in the central and southern portion of the unit likely due to greater water depth. The comparatively longer duration of open water has been the primary rationale to flood this unit with greater frequency than the other three units. The northern third of the Drew Unit was originally a xeric shrub upland with aeolian sandy soils. When initially flooded, the northern portion attracted shorebirds due to its gently sloping sandy beaches interspersed with hummocky topography, but continuous flooding resulted in the formation of dense cattail marsh, eliminating shorebird habitat.

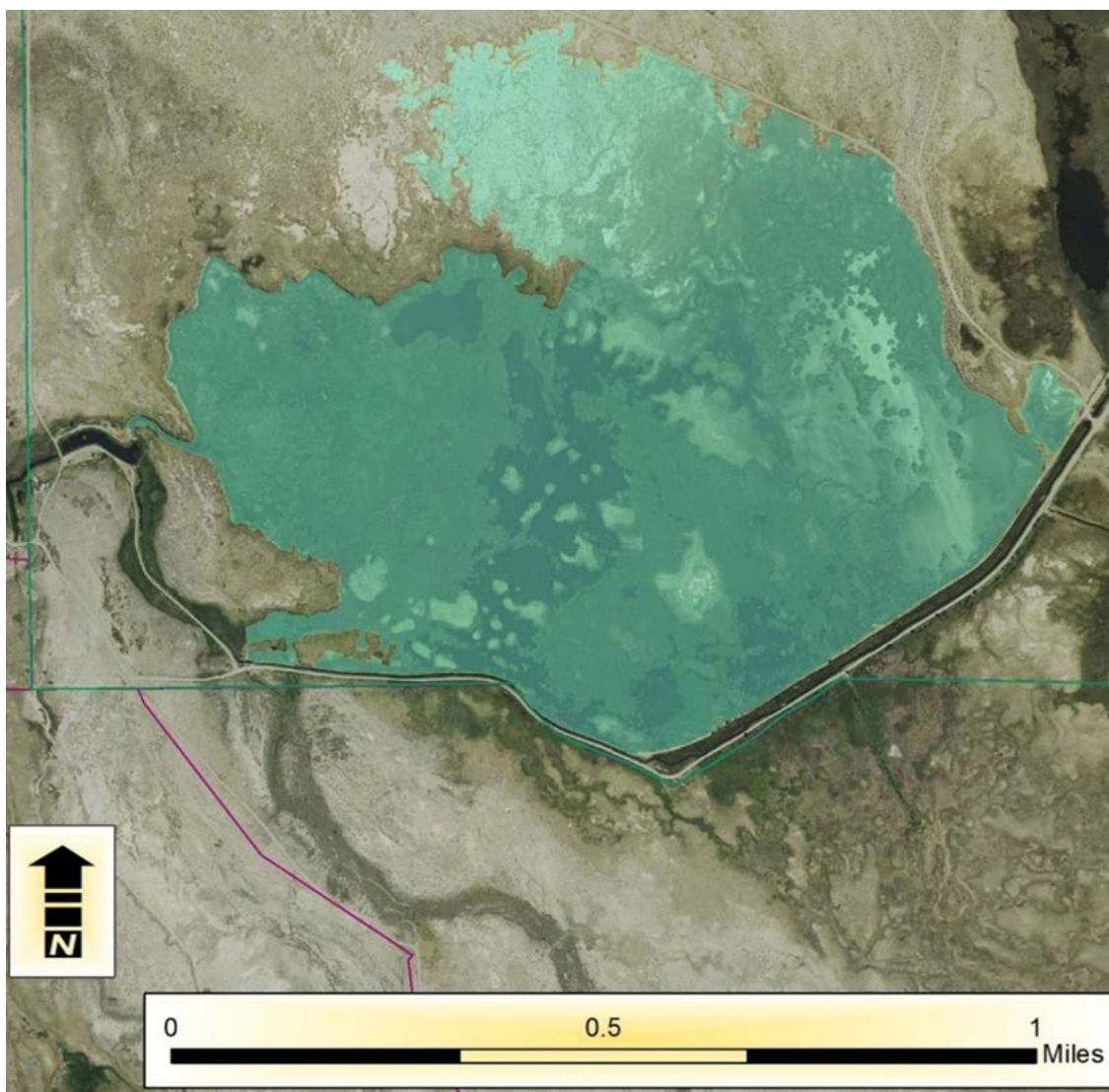


Figure 4. Drew Unit, 330 acres, January 2013.

The Drew Unit offers the greatest variation in water depth of any of the BWMA units, from low gradient sandy shallows in the north, to island features in the middle, to deep water toward the southern end adjoining the Blackrock Ditch.

Because of years of continuous flooding, much of the unit has been encroached upon by now dense stands of emergent vegetation (Figures 5 and 6). The deepest part of the unit, just north of the Blackrock Ditch berm, contains the most open water and is largely free of cattails and bulrush. While this deep water inhibits emergent vegetation growth, maintaining the depth is a water management challenge. The deep-water unit takes several weeks to fill and flood and is slow to dry out because of its concave shape. The Drew Unit's extended drawdown time means that saltcedar seedlings can become established before the unit dries. Therefore, the Drew Unit will not be prioritized for use in the proposed revised flooding regime.



Figure 5. Drew Unit, northeast looking southwest, May 2010



Figure 6. Drew Unit, northeast looking southwest, Winter 2011

Waggoner Unit

The Waggoner unit is part of the 3,749 acre White Meadow Field of the Blackrock Lease. The Waggoner Unit receives water from the Blackrock Ditch. Water can be sent into the southern portion of the unit via Diversions #5, #6, #7, and #8. The LORP EIR (2004) notes 598 acres as the total management unit area for the Waggoner Unit (327 acres potential flooded area, 271 acres adjacent habitat area) (Table 2-14). This has been the least used unit in the BWMA. The unit was flooded for two consecutive years between 2010 and 2011 and flooded extent ranged between 210 and 390 acres during the two years it was active (Figure 7, Table 2). This unit is useful in that additional acreage can be gained if needed. The unit is shallow, interspersed with island features and surrounded by wet saline meadows. In 2009, due to the shallow depths across the majority of the unit, the area was rapidly colonized by cattails and bulrush by the middle of the first summer. The Waggoner Unit was flooded again during the water-spreading activities in the summer of 2017. Despite having been dry for six years, the unit was fully colonized by cattails and bulrush by the end of July in 2017. For this reason, the Waggoner Unit has not been prioritized for any site preparations for subsequent

yearlong flooding. If the unit is not flooded between June-August, it should be prioritized for disking and subsequent winter flooding. The shallow water depth should be ideal for a moist-soil management approach.

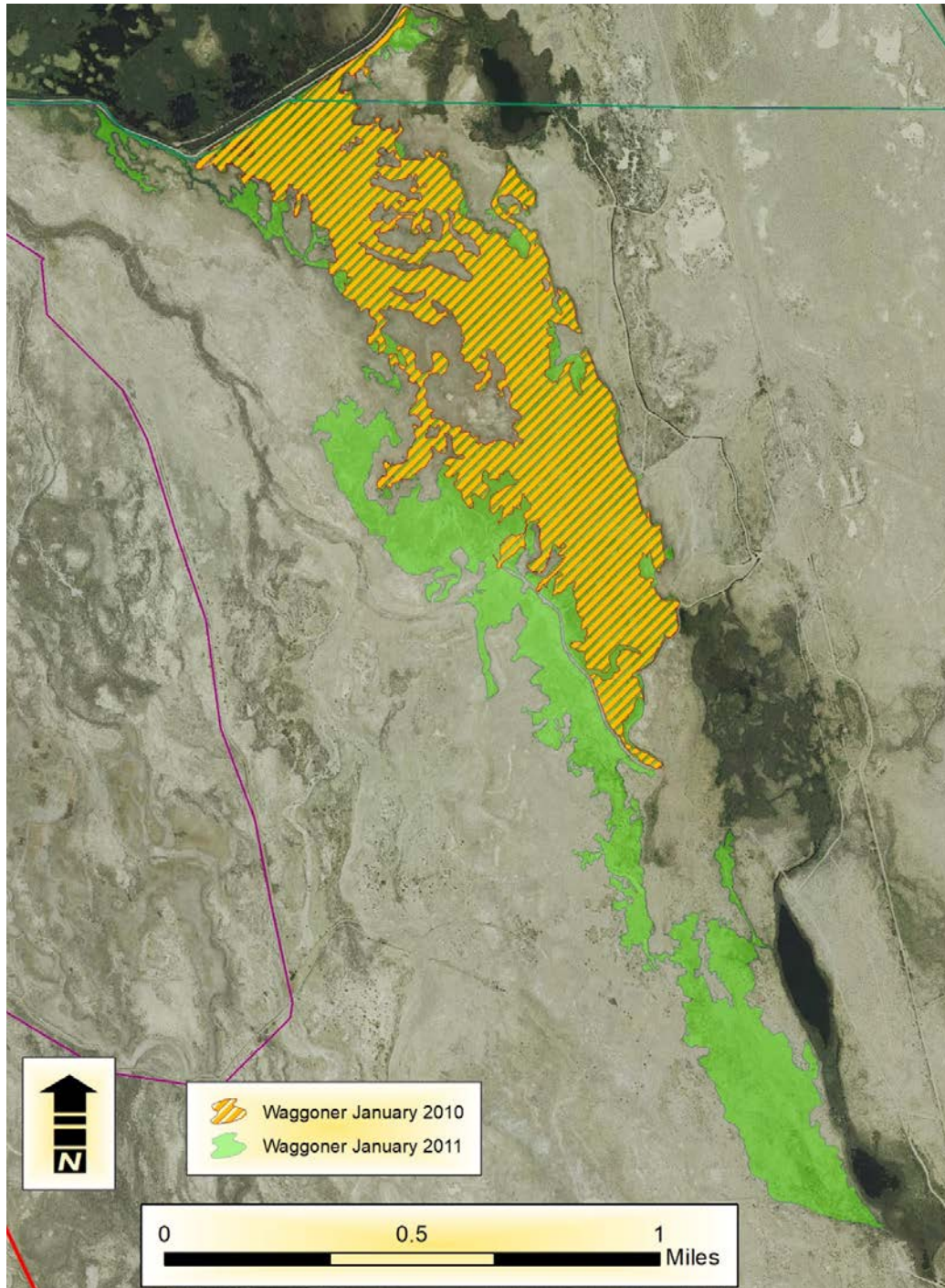


Figure 7. Waggoner Unit flooding in January 2010 (210 acres) and January 2011 (390 acres).

Table 2. Measured acreages taken from active units in January from 2010 to 2020.

	Drew	Winterton	Waggoner	Thibaut
flooded ac in				
LORP EIR	246	164	147	353
Jan-10	333	NA	210	NA
Jan-11	333	NA	390	NA
Jan-12	294	131	NA	NA
Jan-13	334	NA	NA	NA
Jan-14	330	NA	NA	NA
Jan-15	267	NA	NA	NA
Jan-16	NA	178	NA	86
Jan-17	NA	243	NA	494
Jan-18	NA	200	NA	465
Jan-19	285	99	NA	NA
Jan-20	248	233	NA	140

Winterton Unit

The Winterton Unit is located on the Blackrock Lease inside the 1,567 acre Winterton Exclosure Field. Water can be released into the Winterton Unit through Blackrock Diversion #2, Diversion #3, and Diversion #5 (Figure 8). Total management unit area was identified as 525 acres per Table 2-14 in LADWP 2004, (281 acres potential flooded area and 244 acres adjacent habitat area). Based on 13 years of measurements, the unit can flood approximately 200 acres.

The unit has been used 9 out of 14 years and is now being flooded for a sixth consecutive year. Maximum acreage was measured at 243 acres when water was released from Diversion #2 (Table 1). Most of the Winterton Unit is shallow with two deeper ponds at the lower portion of the unit. Depths of these ponds can be manipulated by a series of culverts and head gates.

The northern two thirds of the unit is very shallow and is quickly colonized by cattails and bulrush when flooded. This unit was burned in preparation for flooding in 2011 and cattails promptly recolonized by mid-summer of the first year of flooding. The unit was disced in 2015 and was again rapidly enveloped by cattails and bulrush by July of the same year (Figure 9). Similar to the Waggoner Unit, the upper 125 acres would be an optimal location for shallow flooding if discing prior to flooding, allowed to dry out during the summer, and then flooded again in the fall.



Figure 8. Winterton Unit flooded area in January 2019 (200 acres).



Figure 9. Winterton Unit, September 2016, looking north. Although disced in 2015, the dark green vegetation patch is dense cattails that rapidly colonized the area following one year of continuous water application.

East Winterton Subunit

In January of 2020, Diversion #3 released water for approximately one month into what is called the Winterton East Unit. The flooded extent in this area was approximately 75 acres but continued to expand south after measurements were taken. Total acreage estimated at the time when water was shut off was approximately 80-85 acres. Diversion #3 was then turned off by February 1, 2020 and cattail and bulrush had not occurred in the site when evaluated in May of 2020 (Figure 10).

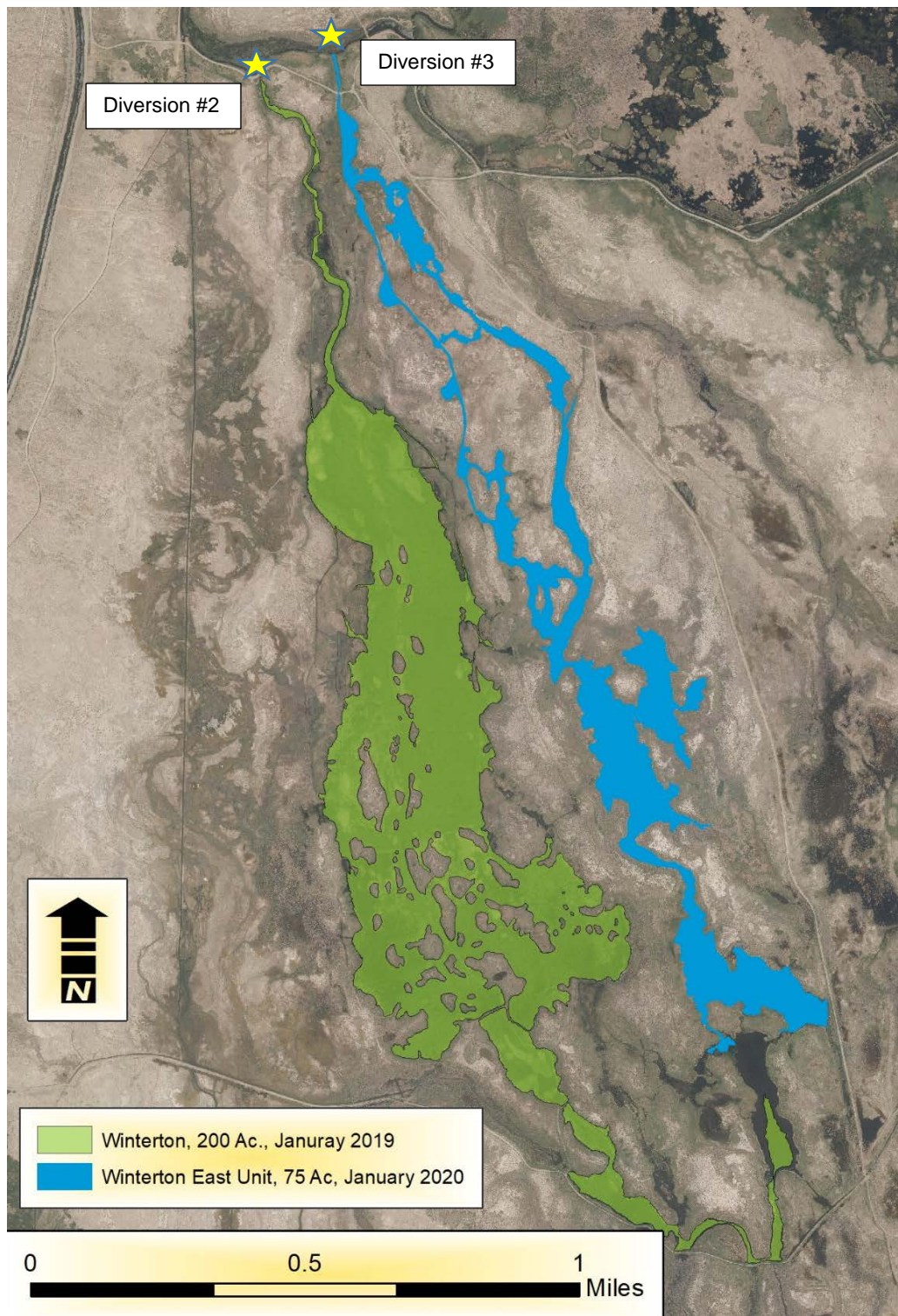


Figure 10. Winterton East unit, January 2019 and 2020.

South Winterton Subunit

Accumulated water at the southern end of the main Winterton Unit can be released further south into the South Winterton Subunit (Figure 11). Flooding this open area would cover approximately 60-75 additional acres. This subunit was burned in December of 2019 in preparation to be flooded. It should not be flooded until there are assurances that the area will not receive water during the summer to prevent cattail and bulrush encroachment.

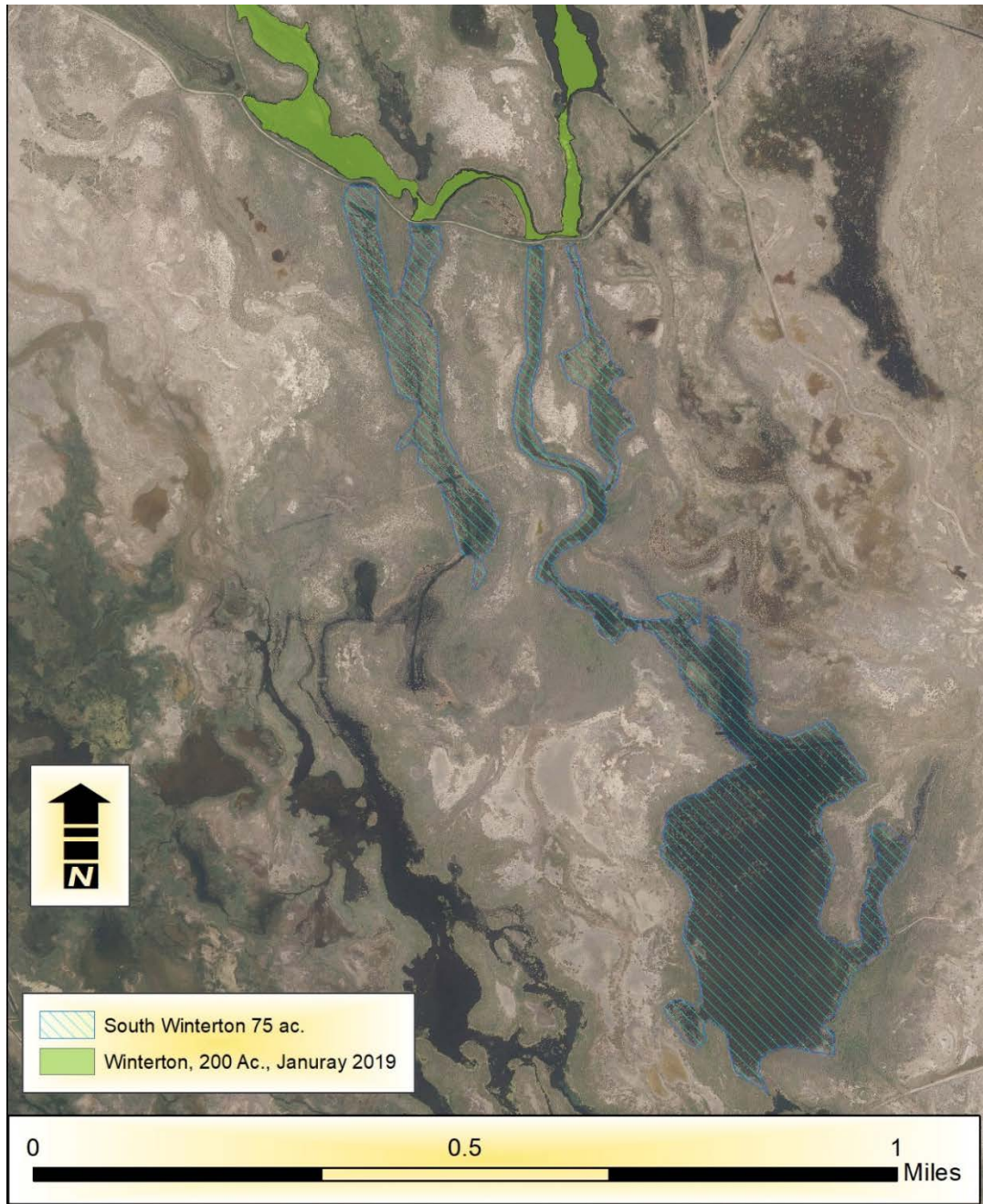


Figure 11. South Winterton Subunit, estimated potential of 75 acres.

The Winterton East and Winterton South Subunits should be incorporated into the future flooding regime. Utilizing these two units will create the flexibility to dry out and disc the main Winterton Unit to the north and west while still maintaining a portion of the entire Winterton Unit as active.

Thibaut Unit

The Thibaut Unit is located on the Thibaut Lease and spans a portion of the 4,030 acre Thibaut Field. Total management unit area is noted as 1,063 acres in Table 2-14 of the LORP EIR (488 acres potential flooded area, 575 adjacent habitat area). The lease is jointly used by three pack stations to overwinter horses and mules. Animals arrive on the lease by October and typically leave in June.

The Thibaut Unit is the southernmost unit in the BWMA and historically was the largest unit with a capacity to flood to nearly 500 acres (Table 1). The unit has been used less than the Drew and the Winterton Units, being flooded 5 out of 14 years. The eastern complex of ponds have maintained open water when the unit is flooded. These ponds are reliably used by both waterfowl and shorebirds throughout the winter. In 2018, a ditch was constructed to direct flows into the aforementioned pond complex and reduce sheet flows across the saltgrass meadows on the western portions of the unit. This ditch has reduced the amount of total flooded acres but has helped maintain the large saline meadows which deteriorated when flooded prior to 2018 (Figure 12). Flows are presently directed to where they are most beneficial for migratory waterbirds.

Livestock Grazing

All four units discussed above are situated within active grazing leases. Grazing management is guided by lease plans developed by LADWP and the lessees as part of the LORP EIR (LADWP 2004). Currently, grazing utilization for all pastures within BWMA is limited to 65%. Utilization monitoring is ongoing in each pasture and has consistently remained well below the 65% limit. Starting in June of each year, units are rested from livestock grazing for a minimum of 120 days during the growing season.

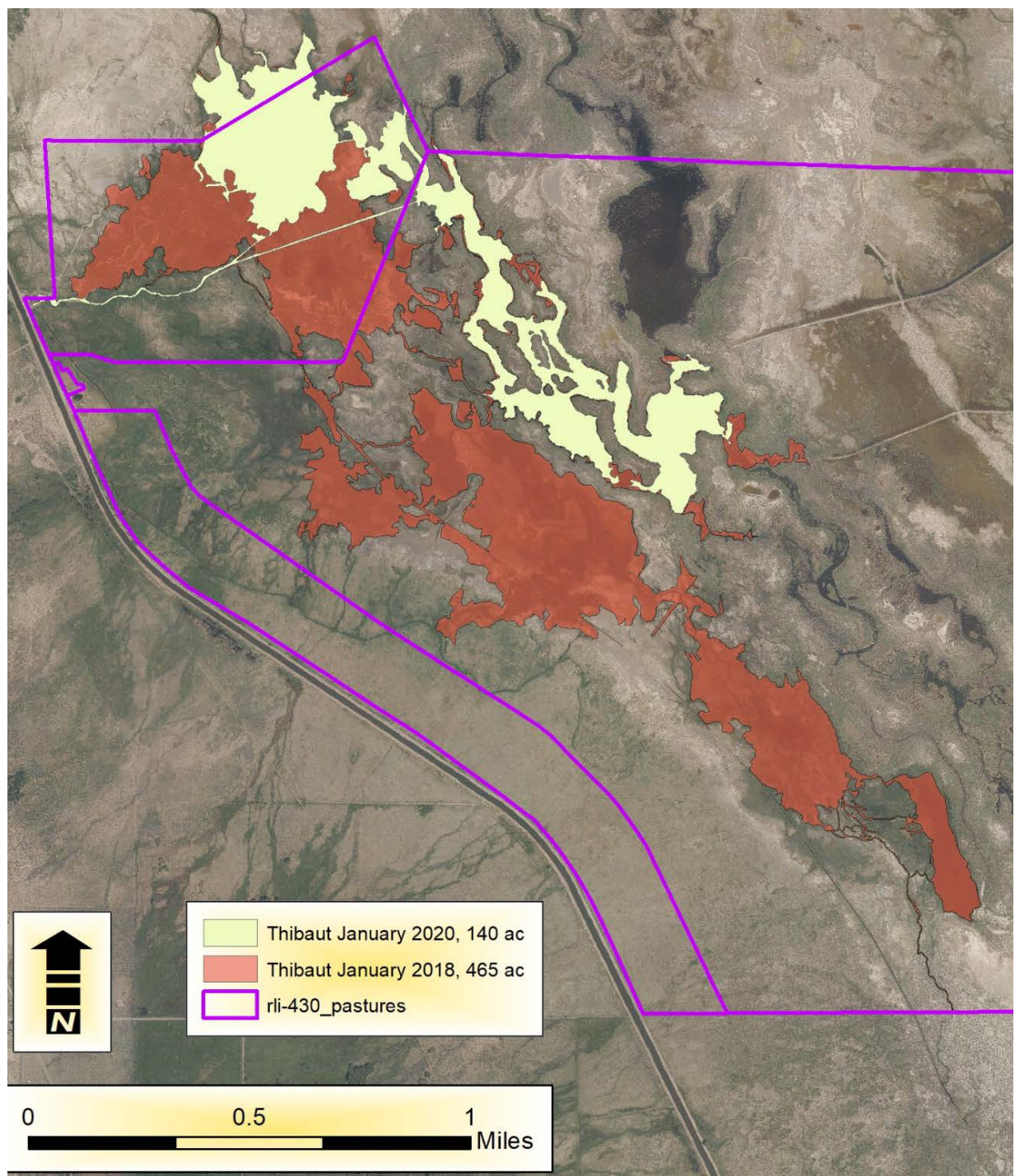


Figure 12. Thibaut Unit, January 2018 and January 2020.

Proposed Interim Management Schedule

Table 3 and Figure 13 present a flooding schedule across the Winterton, Waggoner, and Thibaut Units for the five-year interim project. Acreages for flooding each unit to meet the seasonal 500-acre target during the first years will require a degree of adjustment as LADWP transitions to seasonal wetland management. (The Drew Unit may be used for water spreading in very high runoff years). Following the guidelines of moist soil measurements (Fredrickson and Taylor 1982), units should be prepared prior to initial flooding. In order to provide cover for wildlife and maintain habitat heterogeneity, when possible, portions of units will be disced while other areas containing cattails and bulrush will not be disturbed. Discing should be done to a depth of 60 cm and cattail/bulrush roots should be exposed to sunlight for two months (Gray et al. 1999). Disced units will then be flooded in mid-September and should be seasonally flooded beginning each fall for at least 2-3 years.

Table 3. Five-year interim management flooding schedule for the BWMA. Active units will be flooded seasonally from the fall through the spring.

	Thibaut Unit	Waggoner	Drew	Winterton West	Winterton East	Winterton South
2021-22	Flood	Flood	Inactive	Inactive	Flood	Flood
2022-23	Flood	Flood	Inactive	Inactive	Flood	Flood
2023-24	Inactive	Flood	Inactive	Flood	Flood	Inactive
2024-25	Flood	Flood	Inactive	Flood	Inactive	Inactive
2025-26	Flood	Flood	Inactive	Flood	Inactive	Inactive

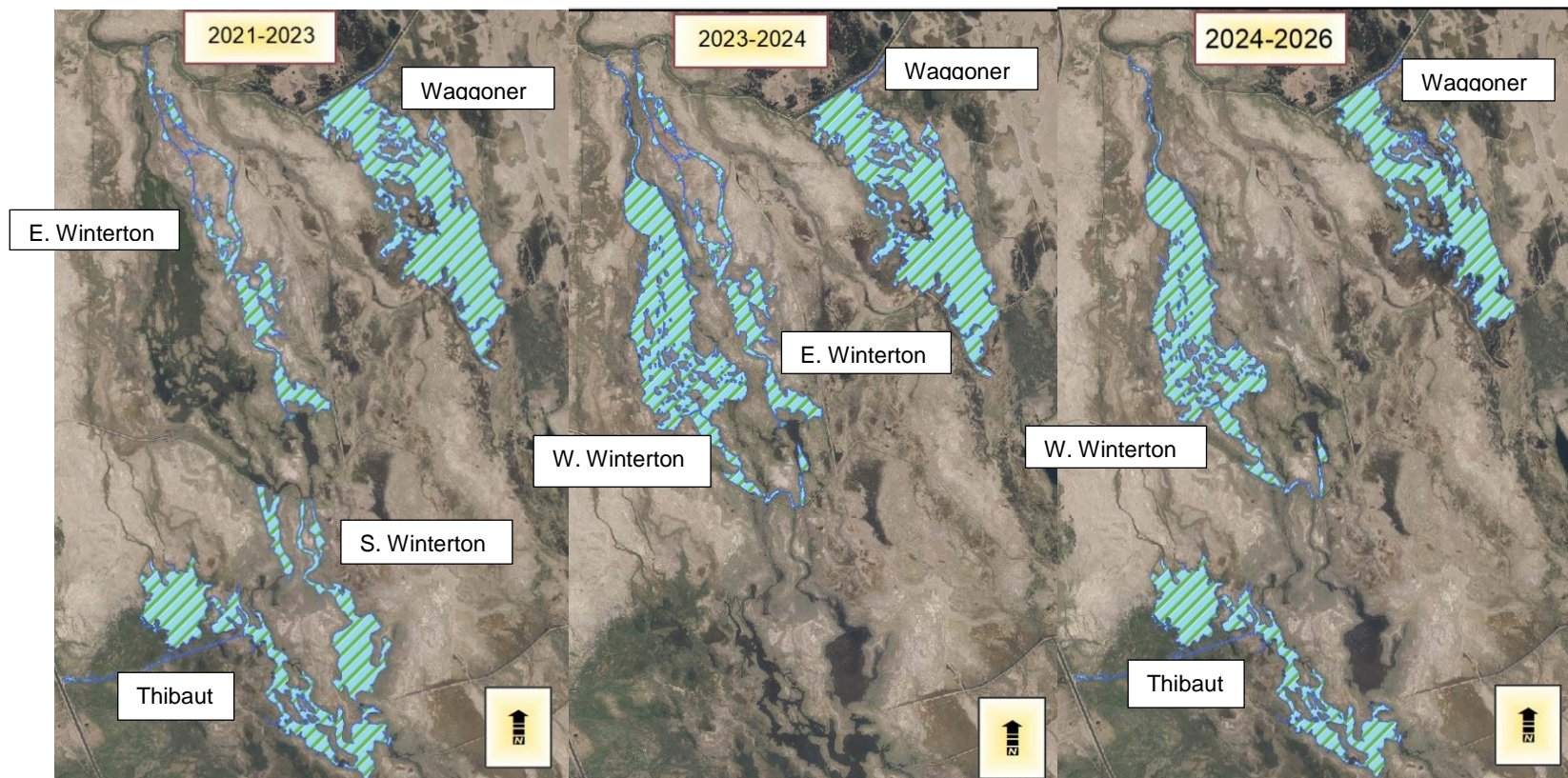


Figure 13. Seasonal flooding schedule. 2021-2026.

The following text and Table 4 identify actions to be implemented each year for site preparation, flooding, and associated maintenance under this Interim Management Plan.

Fall 2021-2022:

Site preparations needed before flows released in Fall 2021:

- Improve Blackrock Ditch by installing a check structure that will raise elevation to ensure that flows can be released from Diversion #5 into Winterton East subunit or into Waggoner.
- Disc 70% of Waggoner Unit in the summer/fall of 2021.
- Disc middle portion of the Winterton East Unit.
- Disc bottom pond in Winterton South.
- Maintenance on Diversion #3 (Four Corners) ditch and reinforce berm on west side to ensure flows into Winterton East subunit.
- Repair berm at bottom of Thibaut Unit.

Initiate water releases on September 15th

- Release water from Thibaut Spillgate East to Thibaut Unit.
- Release water from Blackrock Ditch Diversion #8 to Waggoner Unit.
- Release water from Diversion #3 (Four Corners) and Diversion #5 to Winterton East.
- Release water from Diversion #3 (Four Corners) and Diversion #5, water will then be released from culverts at south berm of Winterton into Winterton South, flooded extent.

October: 2 days to evaluate progress of initial flooding.

November 1-4: Measure flooded extent of units.

Avian Monitoring: From September to April, eight seasonal surveys of each active unit.

Initiate draw-down all units on March 1st by shutting off diversions.

March 1st-3rd: Measure flooded extent of units.

May 1st -2nd evaluate wetted extent of four units to determine if additional irrigation release is needed.

June 15th -18th Establish line point transects in basins on each of the four active units.

July 15th Evaluate outcomes from prior year's flooding and determine if 2022-2023 flooding schedule requires changes.

Fall 2022-2023

Site Prep: Possible mowing/discing in portions of Winterton East

Flood September 15th

- Release water from Thibaut Spillgate East to Thibaut Unit, flooded extent.
- Release water from Blackrock Ditch Diversion #8 to Waggoner Unit, flooded extent.
- Release water from Diversion #3 (Four Corners) and Diversion #5 to Winterton East.

- Release water from Diversion #3 (Four Corners) and Diversion #5, water will then be released from culverts at south berm of Winterton into Winterton South, flooded extent.

November 1-3: Measure flooded extent of units.

Avian Monitoring: From September to April, eight seasonal surveys of each active unit.

Draw down all units March 1st.

March 1st-3rd: Measure flooded extent of units.

May 1st -2nd evaluate wetted extent of four units to determine if additional flow release is needed.

June 15th -18th Reread line point transects in basins on each of the four active units.

July 15th Evaluate outcomes from prior year's flooding and determine if 2023-2024 flooding schedule requires changes.

Fall 2023-2024

Site Prep: Disc 80% Winterton Unit

- Repair berm that bisects Winterton Unit and repair culverts along berm.

Flood September 15th:

- Release water from Blackrock Ditch Diversion #8 to Waggoner Unit, flooded extent.
- Release water from Blackrock Ditch Diversion #2 to Winterton West Unit, flooded extent.
- Release water from Diversion #3 (Four Corners) and Diversion #5 to Winterton East, flooded extent.

November 1-3: Measure flooded extent of units.

Avian Monitoring: One fall, one winter, and one spring survey of each active unit.

Draw down all units March 1st.

March 1st-3rd: Measure flooded extent of units.

May 1st evaluate wetted extent of three units.

June 15th -18th Reread and establish new line point transects in basins on each of the three active units.

July 15th Evaluate outcomes from prior year's flooding and determine if 2023-2024 flooding schedule requires changes.

Fall 2024-2025

Site Prep: Evaluate Thibaut Unit for discing, disc Waggoner Unit

Flood September 15th:

- Release water from Thibaut Spillgate East to Thibaut Unit.
- Release water from Blackrock Ditch Diversion #8 to Waggoner Unit
- Release water from Blackrock Ditch Diversion #2 to Winterton West Unit, flooded extent

November 1-4: Measure flooded extent of units.

Avian Monitoring: One fall, one winter, and one spring survey of each active unit.

Draw down all units March 1st.

March 1st-3rd: Measure flooded extent of units.

May 1st evaluate wetted extent of three units.

June 15th-18th Reread line point transects in basins on each of the three active units.

July 15th Evaluate outcomes from prior year's flooding and determine if 2025-2026 flooding schedule requires changes.

Fall 2025-2026

Site Prep: No prep

Flood September 15th:

- Release water from Thibaut Spillgate East to Thibaut Unit
- Release water from Blackrock Ditch Diversion #8 to Waggoner Unit
- Release water from Blackrock Ditch Diversion #2 to Winterton West Unit, flooded extent

November 1-4: Measure flooded extent of units.

Avian Monitoring: From September to April, eight seasonal surveys of each active unit.

Draw down all units March 1st.

March 1st-3rd: Measure flooded extent of units.

May 1st evaluate wetted extent of three units.

June 15th-18th Reread line point transects in basins on each of the three active units.

September - write up final evaluation of the five-year interim project.

Table 4. Schedule for preparing/maintaining units during the interim period.

	Infrastructure	Discing
Winter 2020-Summer 2021	<ul style="list-style-type: none">• Raise elevation on Blackrock Ditch for Waggoner Diversions• Repair Diversion #3• Repair and install culvert Thibaut Unit	<ul style="list-style-type: none">• Waggoner (approx. 150 ac)• Winterton East (15 ac)• Winterton South (30 ac)
Summer 2022	<ul style="list-style-type: none">• General maintenance of existing infrastructure	<ul style="list-style-type: none">• Possible mowing/discing in portions of Winterton East
Summer 2023	<ul style="list-style-type: none">• Repair center berm & culverts on Winterton Unit	<ul style="list-style-type: none">• Winterton (160 ac)
Summer 2024	<ul style="list-style-type: none">• Maintenance if needed	<ul style="list-style-type: none">• Waggoner Unit (approx. 150 ac)• Thibaut unit 70 ac
Summer 2025	<ul style="list-style-type: none">• Maintenance if needed	<ul style="list-style-type: none">• None

It is expected that seasonal withdrawal of water from the shallow units (Winterton, Waggoner, and Thibaut) will discourage emergent vegetation overgrowth. Treating emergent vegetation through tractor discing and controlled burns is expensive. It is hoped that through seasonal water management, the frequency of vegetation maintenance will be reduced. However, it is also possible that noxious weeds, including

saltcedar, will be encouraged by wet soils during the spring drawdown. Monitoring for noxious species during vegetation surveys described below will help us consider the effects of the new water regime on undesirable vegetation. Minimal to no colonization by noxious plant species has been observed over the past seven years in the 28-acre flooded portion of Thibaut Pond following seasonal draw downs initiated on March 15th.

Effectiveness Monitoring

Flooded Extent Measurements

The extent of flooding has been measured seasonally since the beginning of the project for the purposes of tailoring water releases and to assure the flooded acreage was in compliance with MOU guidelines. Flooded extent will continue to be measured both to confirm compliance with the Interim Plan and to help describe the effectiveness of seasonal filling and drawdown. Remote sensing will be used to take rough area estimates, and two on-the-ground surveys will be used to map more precisely the extent and location of water found above soil. Water releases will be monitored and reported annually.

Vegetation Monitoring

Initial monitoring will consist of line-point vegetation transects and/or plots in areas expected to have the most potential to produce waterfowl foods. A second objective of monitoring is to evaluate the effectiveness of controlling the expansion of cattails and bulrush in active units. This can be mapped and quantified from a combination of satellite imagery, aerial imagery from UAV, and field training data. Seed production will be estimated on sites that are positively responding to moist-soil management following the methods proposed by Naylor et al. (2005). Evaluating the vegetative response following shallow flooding will help managers determine the following year's flooding schedule. Based on results from each summer the flooding schedule may need to be adjusted to improve forage production.

Monitoring for noxious weeds will be conducted by the Inyo Mono Agricultural Commissioner's Office and/or by ICWD or LADWP staff as part of annual LORP Work Plans during the Interim Plan period.

Water Depths in Flooded Units

During the first years of implementation, water depth will be measured, mapped and evaluated in active units coinciding with avian surveys to better understand how water depth influences waterbird habitat use. Patterns of unit drydown will also be monitored to inform whether there are opportunities that could further benefit breeding waterfowl and their broods.

Opportunities to improve conditions for waterbirds by manipulating water levels and therefore depths should be considered each August before mid-September shallow flooding. The effectiveness of this water manipulation will be evaluated based on the spatial extent and configuration of shallow flooding, moist-soil plant production, and results of avian monitoring.

Avian Monitoring

Avian monitoring will be conducted to evaluate the use of BWMA by the habitat indicator species during implementation of the 5-year interim program. Avian data will be collected in a manner that will allow comparison with previous data by replicating the survey periods used to date (Table 5). Eight seasonal surveys will be conducted yearly in each active unit during implementation of the Interim Plan (see Figure 13, Table 6). Adjustments will be made to the bird monitoring schedule if the flooding schedule is revised. Units will not be surveyed when dry, thus there will be fewer surveys conducted per year than current practice.

Waterbird spatial and habitat use patterns, including water depth use will be recorded.

Table 5. Interim Management Plan Avian Seasonal Surveys

Survey Period	Season
End of September	Fall
Mid-October	Fall
End October	Fall
November/December	Winter
January	Winter
Beg of April	Spring
Mid April	Spring
End April	Spring

Table 6. Interim Management Plan Unit Avian Survey Schedule

Unit	Project Year and Survey Schedule				
	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026
East Winterton	X	X	X		
West Winterton			X	X	X
South Winterton	X	X			
Thibaut	X	X		X	X
Waggoner	X	X	X	X	X

Reporting

Analysis of monitoring data collected during the interim period will be provided in the LORP Annual Reports. LADWP and Inyo County will continue to host a public meeting following release of the LORP Annual Report as defined in the Final LORP EIR and the 2007 Stipulation and Order which will allow the MOU Parties and members of the public to provide comments on LORP activities, including implementation of the Interim Plan.

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Appendix 1. Comments from MOU Parties and Response to Comments by LADWP and Inyo County

BWMA Interim Management and Monitoring Plan Questions - Sierra Club

LADWP and Inyo County responses in blue

1. The plan is not clear about this, but we assume that since the new flooding regime is proposed to start in the 2021-2022 runoff year and that you will want to start drying out the units that are usually flooded starting March 1 in order to have a dry period when the proposed discing would be done before flows are released September 15, 2021. *The first units to be flooded under the Interim Plan are East Winterton and Waggoner, which are not currently flooded. However, discing for site preparation should occur as soon as the plan is approved to ensure implementation in Fall 2021. Units that are currently flooded should also be dried down as soon as possible following plan approval to prevent saltcedar encroachment into the units.*
2. Do cattails die in 4 months (May-August) without water? in a year? longer? Or does it take the discing to a depth of 60 cm and cattail/bulrush root exposed to sunlight for two months (pg. 23)? If so, then the plan should say that all discing will be conducted between May 1 and July 15 to give the two months for exposing the roots to sunlight. *Cattails can survive a year without water and then respond to water/moisture during the next growing season, or can continue growing if the area is dry but still has moisture in the soil. The plan allows for most discing to be done for preparation up to 6 months to a year in advance to allow for scheduling and performing the work along with other work required of LADWP's Construction staff. May-July may work but also may be difficult to secure personnel if responding to heavy runoff conditions or other operational needs.*
3. The plan states that there will be 500 acres of wetland/open water at the peak in 3 to 5 of the 6 unit areas (where Winterton=3 units: east, west, south). It has the schedule of which ones will be watered in which year--Table 3. However, it doesn't say how many acres will be in each unit each year, i.e. how is the 500 acres split up across the units? The plan should tell us how many acres you expect to be wetted in each unit. *While flooded acreages can be approximated in each unit, they will likely be variable as the Interim Plan is implemented and we learn what works best in practice. Consequently, LADWP cannot commit to specific acreages by unit, but can commit 500 acres flooded annually between units. Please refer to Figure 13 in the Interim Plan to view the tentative schedule for flooding each year. LADWP presently anticipates being able to flood up to approximately 210 acres in Waggoner, 200 acres in Winterton, 85 acres in East Winterton, 75 acres in South Winterton, and 140 Acres in Thibaut under the Interim Plan.*
4. How many acre-feet of water will be used from September 15 to May 1 and how does that compare to the average acre-feet of water used for flooding the BWMA now? Is there a significant difference? Could the BWMA section of the annual LORP report include a table of the input of water each month for each unit? The plan states that 500 acres would be flooded for only four months as compared to the average of 446 acres that was flooded from 2007 to 2019 runoff years (pg 6, Table 1). It seems that much less water will be used in the proposed interim plan. *We do not know how much water will be used from September 15 to May 1, which is part*

of the reason for this proposal being an interim plan. The change to a seasonal flooding regime will lead to recurring “wetting up” cycles which require more water than maintaining flooded acreage. The change to a seasonal flooding regime means some of the high ET periods will be avoided, which should reduce water use. How it all turns out is an unknown at this time, however the change to a fixed 500 acres every year, even in low runoff years as appears likely in 2021-22, means that water use may be higher in years when supplies are lower. Nine of the runoff years shown on page 6, Table 1 had flooding requirements under 400 acres, and four of the runoff years had flooded acreage requirements under 300 acres. The historical water use to date for the BWMA is approximately 4,000 AF per year, to return an average of about 400 acres. Under this plan, the BWMA section of the annual LORP report will continue to include flow changes and wetted acreage measurements.

5. To maintain 500 acres of wetted land, water will need to be added from November 1 to March 1 depending upon how much evaporation there is. How will you know when to add water and who will keep track of this? LADWP or ICWD? *LADWP will estimate the amount of water to add, and use feedback from LADWP staff and the official wetted acreage measurements on November 1 and March 1 to help calibrate releases in future years. Releasing the appropriate amount of water to return 500 flooded acres will be a learning process, likely requiring adjustments over multiple years, and is another reason for the proposal being a 5-year interim plan.*

6. What impact will 4 dry months in summer have on the year-round waterfowl (mainly ducks/coots?) that may breed here and their fledglings? *Few waterbirds likely remain year-round in Owens Valley, but migrate to, or move to BWMA to breed when conditions are favorable. Over our period of record, 2016 saw the highest summer number of waterfowl and coots at BWMA (potential breeders averaging 350 ducks and 300 coots over the two surveys in June, but only observed fewer than 20 waterfowl broods. Coots were seen nesting but broods were not estimated. Species that breed early in the season (for example Mallard), may actually find improved breeding conditions if productive open water areas persist to early May. Once hatched, upland nesting waterfowl species such as Mallard and their broods can be quite mobile and move their broods in response to changing conditions. Species that breed later (late May, June and July) such as Gadwall and American Coot may not even settle and establish territories as drawdown will be complete by May 1. In short, even under conditions of continuous flooding in summer, while waterbird nesting has occurred, we do not have any evidence that BWMA has been highly productive for breeding waterfowl.*

7. Water depths are discussed at length for the Drew Unit and it has good, varied depths including a deep end. But the other units are not so deep and there is less information about their depths. Since we aren't using the Drew Unit, do we have the depths we need in the other units and if not, will there be any human efforts (dredging/bulldozing?) to create depths? *From previous discing and burning in the Winterton and Waggoner Units we have an understanding of their depths; they are fairly shallow and the <25 cm goal should be achievable in many areas. Thibaut from observation is much the same. At this point, we do not anticipate bulldozing to achieve greater depths in any unit under the Interim Plan.*

8. The Drew Unit

- Why is the Drew Unit, one of the best, being dried out for all 5 years?
Drew is not one of the best units. It was intended under the LORP EIR only to be used as a last resort but a portion of it tends to maintain open water longer than the other units due to its depth. However, this depth is not optimal for target species compared with what is available at the other units. Additionally, this pond becomes stagnant and requires a much longer dry down period than the other units which has encouraged an influx of salt cedar in previous years.
- What will be the stockwater in the Drew? or will the cows just wander over to the other units for their water and be overly concentrated there. *Each of these units are fenced and held by three different lessees who will ensure existing fences are maintained and herds do not intermix. Because each of these units have periodically been dry, stockwater availability has already been addressed. The Blackrock Ditch will supply water for livestock in the Drew area as well as along Upper Twin Lake. The Winterton Unit has stockwater provided for periods when this unit is inactive. Water is available on Lower Twin, Tillemans Ditch, and Goose Lake for Waggoner when the unit is inactive. There is a stockwater well in the Thibaut Unit that has already been the primary water source when this unit is inactive.*
- Any advantage to discing the cattails now or wait until just before it's flooded again in 6 years? And will the cuttings be hauled away or left to decay where they fall? *Discing Drew could help facilitate decomposition, however discing will be prioritized in units that will receive water under the Interim Plan to optimize habitat quality and maximize open water. When units are disc'd, the cut material will be left onsite.*
- What will happen to the non-cattail vegetation in this unit if no water is provided for 5 years? *The only notable non-cattail vegetation in the Drew Unit are willows, Russian olive, and salt cedar. The willows should be able to survive since they are mature trees and will no longer be flooded year round. Will it die off and be a dust bowl? Dust emissions are not anticipated from the proposed change. Waggoner has not been flooded for the past 8 years and has not been emissive. Will weeds move in? The area north of Blackrock Ditch (Drew) in 2008 was a shrub dominant saline meadow that transitioned to a saline bottom site. Some weeds could move in so the area should be monitored and treated as needed to keep invasive populations under control.*
- Is habitat reclamation/mitigation needed? *No.* Will any smartweed come back if the unit is flooded in the 6th year? *We cannot predict this based on current information. Observing the response in the Waggoner Unit (that has not been flooded for many years) during the Interim Plan period will provide useful information regarding smartweed. As mentioned in the plan we have already seen smartweed occupy sites in the southern section of Winterton in response to small scale water management. No direct seeding occurred.*
- Will there be moist-soil management there? Are there any invertebrates in the mud that should be kept alive? I heard at least 3 frogs at the Drew Unit in shallow water. How will they survive? *The amphibians can migrate to Blackrock Ditch or across the dirt road to Upper Twin Lake. There are no plans for moist soil management in Drew unless it becomes active.*

9. Why not disc the Winterton-west Unit now instead of before flooding in 2023? *The Winterton West Unit is presently flooded.*

10. Early Summer, Soil-Moisture Wetting

- Which units will be managed for soil moisture? Will the Drew Unit be one of them? *All units except Drew will be managed for moist soil plants and waterfowl habitat. There are no plans to flood the Drew Unit as part of the Interim Plan.*
- What areas will be wetted within these units? the whole unit area? or selective parts i.e. open mud areas, open vegetation areas? *To meet the 500 flooded acre objective, the units will be wetted based on past operational knowledge of how those units have flooded. Creating a diversity of habitats will be optimal, and mudflats will accompany ramping up and ramping down periods which will also coincide with the migratory season.*
- How will the wetting be done? This looks challenging. Will “wetting” be done in the same way as flooding is done now? Are there irrigation ditches that would be watered to limit flooding, but wet the soil? Will there be any new digging of ditches for the wetting? Will the wetting be selective? i.e. in the areas that don’t have cattails? In looking at the site, there are large, dense areas of cattails, tules, and fragmites especially along the Blackrock Canal/Drain. The goal is to dry those areas out and wet areas that food sources can grow or the open areas. So how do you get water beyond the cattails without wetting them as well? The Blackrock Canal/Drain is a water conveyance, but also wets the soil along it and is part of the cattail problem. *Wetting/flooding the units can be a challenge in some areas. Achieving 500 flooded acres in a short time may require releasing water from multiple diversions into a unit at once. No new ditches are planned, just maintenance of existing ditches and facilities. Additionally, there will not be complete removal of cattails in each unit. Some areas will be left to provide habitat complexity. These will survive the summer if wetted during the winter, but should not expand in the summer if not wetted.*
- What is the optimum soil moisture and timing need for germinating the desirable food species, but suppressing the tamarisk from germinating? *We are unsure of exact requirements but do not want any surface water or soils at field capacity by June 15th. This will be investigated during the Interim Plan period to inform potential long-term management. Observations in the Owens Valley indicate that later flooding and drying promotes different annuals than early season flooding and drying.*
- How will soil moisture be measured? *Response to soil moisture will be measured based on plant vigor, species composition, and abundance.*
- Who will do the monitoring? LADWP or ICWD? *Both LADWP and ICWD will conduct monitoring associated with the Interim Plan.*
- How much water will it take? *The amount of water it will take is an unknown at this time, but is likely to be similar to water use under the original BWMA plan. This will be a learning process to operate the BWMA under the proposals in the Interim Plan.*

How will the vegetation in the soil moisture areas be measured? Is that the area where transects will be established? Will there be a contingency plan e.g. seeding, if natural seeding doesn't work? What are the goals for the wetted area? *Visual estimates of seedling species composition during and after the mid-spring drawdown will be tracked and a later more thorough sampling will occur in summer where a combination of techniques will be evaluated including line intercept techniques, quadrat-based percent cover estimates and species-specific seed production estimates. The goals for the wetted area are to produce a robust annual community of moist soil plants. Ultimately, seed production in units of kg/acre can be estimated, and translated into duck-use-days (DUD), or the number of ducks that could be supported per day by one acre of habitat.*

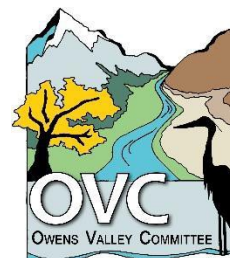
11. At the top of page 28 it states, "Soil moisture monitoring in conjunction with monitoring for noxious species will help us consider the effect of the new water regime on undesirable vegetation." However, such monitoring is not included in the plan. It should be. If noxious species do colonize the units, there should be something in the plan that would deal with it. *Noxious weeds will be mapped and treated and the timing and rate of drawdown will be adaptively managed to favor desirable moist soil plants and minimize the regeneration of undesirable vegetation.*
12. There are trees along the road next to the Blackrock Canal/Drain—are they Elms? Some in the Drew Unit side are dead. Will those remaining survive the flooding? Woody recruitment isn't a goal of the BWMA, but should it be? It's a goal of the riverine part of the LORP. I've seen ravens, raptures, and the big egrets in the trees there. *The trees are Gooding's willow and coyote willow. These trees should not be impacted by the Interim Plan and riparian tree species will be avoided when preparing the sites for flooding. Woody recruitment is not a goal of the BWMA; the goal is to create and maintain habitat that is consistent with the needs of the habitat indicator species. This will be achieved through the Interim Plan.*
13. Do all 5 units that will be flooded in the next 5 years attract birds in all the categories i.e. resident waterfowl, migrating waterfowl, rails, waders, etc. So does the flooding plan provide all the categories of birds across the flooded units each year? *All of these waterbird groups are expected to use the units to varying degrees. The BWMA is a fairly natural slough system and not constructed ponds. We expect an increase in habitat heterogeneity over current conditions, supporting these different waterbird species.*
14. All of the other units will have 8 avian surveys done from September to April two or three years except the Winterton-west unit. The plan has Winterton-west only getting the 8 avian surveys from September to April for one year during the interim period (2025-2026). Why will there be fewer avian surveys at Winterton-west? *Thank you for pointing out this inconsistency. We have revised the Interim Plan and will conduct 8 surveys of each of the 5 units each year they are active.*

Should the new plan state that CWHR will not be used for avian monitoring? It has been mentioned many times in comment letters that it is not the best way to go. *For brevity we don't include methods and models that we don't intend to use. To clarify, CWHR was never used for avian monitoring but rather to quantify potential habitat from a vegetation map. CWHR is a lookup table relating vegetation attributes to a categorical species-specific habitat suitability score, mostly parameterized from expert opinion, and its application was intended for coarse evaluation of potential habitat in areas where wildlife hadn't been inventoried. In this plan, systematic avian surveys will allow habitat quality to be represented by measurements of food resources and waterfowl abundance.*

15. Is there anything in the old plan that should be carried over into the new plan that isn't in the plan so far? I assume the new plan will replace the current one in its entirety. *LADWP and ICWD staff have worked to develop an Interim Plan based on what has been learned from managing the project as required for 14 years since implementation. While goals of providing habitat for indicator species and annual flooded acreage requirements are being met, information gleaned from this period indicates that the project may be better managed through a seasonal flooding regime as presented. Yes, the Interim Plan is intended to supersede the current plan for 5 years while the concepts of the Interim Plan are tested.*
16. There are some misleading statements on page 7 where the main components of the plan are presented:
 - In number 1, it states, "...sustained flooding occurs from fall through spring." However, the plan expects flooded units to be dry by May 1. May 1 is less than half-way through spring, so that sentence should indicate that flooding will be through mid-spring. *Correct. Language in the plan will be amended to reflect "mid-spring."*
 - In number 2, it states that the plan is to, "...flood 500 acres each between September 15 and May 1st." However, it is clear in other parts of the plan that we should expect 500 acres to only be flooded in the four months from November 1 to March 1. The flooding will be ramping up from zero to 500 acres from September 15 to November 1 and ramping down from 500 to zero acres from March 1 to May 1. *Correct. Language in the plan will be amended accordingly.*

LADWP and Inyo County responses in blue

Owens Valley Committee
P. O. Box 77
Bishop, CA 93515



Dear Inyo County Water Department,

The Owens Valley Committee is generally in support of adaptive management at Blackrock Waterfowl Management Area to achieve the full potential of mitigations agreed to by the City of Los Angeles in the Long Term Water Agreement, MOU and other related agreements. We have some specific questions about the proposed changes to the Blackrock Waterfowl Management Area listed below.

We are also concerned about the evaluative process during the lifetime of the proposed adaptive management project. Recognizing that many of the concerns expressed in our questions below may have been resolved if OVC were able to be part of the development process for the BWMA Interim Management and Monitoring Plan, we request that MOU Parties, including Inyo County and LADWP, meet annually to review the data generated during the previous year of activity. This will provide an opportunity to make corrections to the plan if necessary. Secondly, we request that the MOU Parties, Inyo County, and LADWP should convene one year prior to the cessation of this Interim Plan to provide a successor plan or to determine if a return to the previous operational conditions is needed.

In the future, providing an opportunity for MOU Parties to be a part of any plan development has several positive outcomes – incorporating scientific expertise from members of the MOU Parties, streamlining the approval process by ensuring that decisionmakers' concerns are addressed to the extent possible, and providing better plans by a collaborative teamwork approach that will be able to identify problems and unintended consequences prior to plan adoption.

We had hoped to have our questions answered during the Technical Group meeting, originally scheduled ahead of the MOU meeting. Due to the Technical Group meeting being rescheduled, we are hopeful that we can focus our efforts at the MOU meeting scheduled for February 17th at 1:00 pm to better define the process that can lead to a more inclusive, constructive and collaborative adaptive management plan going forward.

Per the 2020 -2021 LORP Workplan,

The basic concept of the adaptive management recommendations involves transitioning from year-round flooding to seasonal flooding to increase the extent of open water and reduce the extent of cattail and bulrush, which is predicted to improve habitat quality for waterfowl and shorebirds. The plan will detail habitat

objectives, the water delivery system and vegetation management. In addition, the current monitoring program will be reevaluated with the following objectives:

1. Incorporate use of satellite imagery to document flooded acreage
2. Assess the productivity of waterfowl food plants in response to management actions
3. Assess habitat quality
4. Improve the efficiency of the avian monitoring

After the fifth year of implementation, the effectiveness of the program will be reevaluated in terms of improvements in habitat quality, ease of implementation, water use, cost, and any other management concerns. Pg 12

1. What is the current extent of cattails and bulrush within the project area? *Unquantified but extensive based on qualitative data and field observation. A rough estimate is that within the typical wetted extent the units, Winterton is >98% emergent vegetation, 2% open water and Drew Slough is at >90% and ~10% open water (JH).*
2. What is the current ratio of open water to wetted acreage? How will this be monitored during the time period established by the interim plan? For how many months will the ratio of 50 percent open water to emergent wetlands be maintained? *See answer to question 1. Open water strongly absorbs photon energy in the near infrared (NIR) wavelengths whereas vegetation strongly reflects NIR, thus open water will be isolated from emergent vegetation using Landsat 8 and Sentinel 2 satellite optical and thermal sensors and a series of maps throughout the annual cycle will be archived to document extent and distribution of open water over the 5-year period. Additionally, the goal is not to maintain a 50 percent open water hemi-marsh, but rather to maximize open water habitat beyond 50% to the extent feasible.*
3. What criteria is being used to determine habitat quality? *Assessing habitat quality will be an iterative process of evaluating waterbird use versus the physical parameters.*
4. In what ways is the current avian monitoring inefficient? What steps are being planned to improve it? *Improvements in avian monitoring will be to delineate "subbasins" in all areas to be flooded such that bird use can be better tied to a physical location. This process was initiated in the BWMA in 2016, but will be used to a greater extent under the Interim Plan. The physical parameters of subbasins will be evaluated in order to tie bird use to conditions, and guide future management. In addition, more detailed behavioral observations will be recorded such as use by water depth category.*
5. If the intent is to establish the benefit of seasonal flooding for the habitat indicator species (specifically, the waterfowl), shouldn't the active and non-active units all be surveyed to establish the benefit of seasonally flooded open water extents on the "hemi-wetlands"? *Surveying non-active units and comparing it to active units would probably tell us that water is good for waterbirds but not be helpful in determining how best to manage water releases to improve waterbird habitats. If, however we look at differences in use within and between the active units, evaluating differences in water depth or vegetation development, we may see patterns that will help guide future*

management.

6. If the effectiveness of the program is being determined based on water use over the five years, what is the current water use for the Blackrock Waterfowl Management Area? Is cost the difference between current operating costs versus those incurred for adaptive management? *The interim program will evaluate changes to BWMA productivity, waterbird habitat quality, limiting cattail and bulrush growth, in addition to the operational complexity and water use required to implement the interim program. The amount of water use in the BWMA now is approximately 4,000 AF a year, to average about 400 flooded acres. The specific cost differences between current operations and maintenance costs and those under the Interim Plan are unknown.*

The value of the LORP as migration stopover habitat has not been explored and may be underappreciated. Point count surveys in 2010 and 2015 that started in mid-May rather than the end of May, detected significant use of the LORP by neotropical songbird migrants. A limited number of surveys during migration (late April-early May 2021) will provide an approximation on the importance of the LORP as stopover habitat for migrants traveling along the Pacific Flyway. Pg 13-14

7. The goals of the adaptive management plan focus on the impact on waterfowl. Are other habitat indicator species for the LORP going to be monitored as well, such as migratory songbirds as mentioned in the 2020-2021 Workplan? How might the planned modifications impact them? *This quote from the 2020-2021 LORP Work Plan applies to the LORP Riverine/Riparian Corridor. LADWP and ICWD will be conducting additional surveys along the river in 2021 to assess the value of the river to migrants. Avian surveys will continue to record all bird species encountered as it functions to provide a more complete picture of birds and habitats of BWMA. Survey protocols for BWMA focus on recording waterbird species use by area, and will not be appropriate to analyze trends in songbirds which are typically surveyed using fixed station point counts. The open water wetlands that will be developed under this interim plan will benefit some species groups other than waterbirds by providing additional open water and wetland/water edge habitats for feeding.*

From the LORP 2020 Annual Report

It {Tamarisk} colonizes moist areas that have been disturbed by land clearing, grading, or other disturbances that removes native plants. Once established, tamarisk is a very hardy plant that can withstand adverse soil and weather conditions. It displaces native plants as it grows in size and reproduces, creating dense stands of tall shrubs. pg 4-1In the Winterton Blackrock Waterfowl Area, LADWP personnel treated pepperweed in the spring and again in late summer of 2020. Water drawdown in this area created moist bare ground favorable to pepperweed colonization in 2019. To control these new recruits from becoming

established crews spent four weeks in the spring strategically targeting the young plants. Crews reentered in late summer for one more week to ensure effective treatment and found their efforts largely successful as locating and treating individuals during the second go around proved more tedious. This area will continue as a treatment priority in 2021. Pg 5-1

8. The most recent annual report (2020 draft) specifically references the impact land clearing, grading and other disturbances have on native plants and the succession of salt cedar. How will LADWP and ICWD ensure that the planned discing on large stretches of the BWMA will not have the same impact? *The referenced salt cedar infestations resulted from an instance where water was flooded from mid-June to mid-August. The primary tool to prevent salt cedar colonization of treated flooded units for this project is to ensure that exposed mineral soils are not wet to field capacity from mid-June to the end of August. Drawdowns and any pulse flooding will be timed to avoid wetted soils after mid-June.*
9. With the intent to dry out the Drew Unit for the lifetime of the Interim Plan, how will LADWP and ICWD ensure that a repeat of the cycle from the 2015 drying and subsequent incursion of salt cedar does not repeat. LADWP took the steps of mowing the salt cedar in 2018, but the following activation has seen the region dominated by cattails. Does mowing increase the roughness of the wetlands and encourage submerged vegetation? *To avoid a repeat scenario, the unit should not be dried out any later than February 1st, or wait until mid-August to begin drying the unit out. In 2018, the unit was mowed with a John Deere tractor and tail dragger as well as an All-Season Vehicle (rubber tracked) and there was minimal roughness generated from the mowing. Subsequent cattail colonization occurred because of flooding during the growing season.*
10. If drawdown has already been correlated with increases in pepperweed within the BWMA, how will LADWP and ICWD monitor the site for new recruits, especially in non-active units where no monitoring needs were specified in the Adaptive Management Plan? *Active units will be heavily monitored and noxious weed locations are reported to a central geodatabase co-managed with Inyo County Ag to ensure treatment prioritization of any new infestations detected. Non-active units can be incorporated into the annual noxious weed survey of the LORP which typically occurs in August.*

From the BWMA Interim Plan

Discontinue varying annual flooded acreage targets based on the projected runoff, and flood a fixed 500 acres each year between September 15th and May 1st. Wetted acreage measurements will occur on or around November 1 and March 1, with the average of those two measurements being used to determine the flooded acreage number. Pg 7

11. Functionally, this means that 500 acres of the BWMA will be flooded between November 1 and March 1 regardless of the projected runoff. Will the water releases be increased mid-cycle if the measured extents do not meet the 500 acre requirement? *Yes, water releases will be increased or decreased as appropriate relative to the 500 flooded acre target, as we see what results turn out to be and learn how to operate in this manner.*
12. Is the intent with a November 1 survey date to ensure that equilibrium has been met within the active unit after the water releases begin on September 15? Approximately, how much time will it take for the released water to propagate across 500 acres? What criteria will be used to evaluate the program of initial flooding in October (referenced in the work plan on pg 25). *The intent of the November 1 survey date is to be one of the two measurement dates, which will be averaged together, to determine the actual flooded acreage for that runoff year. We do not know how much time it will take for 500 acres to propagate, and understand the 5-year Interim Plan will involve an operations learning period. The criteria used to evaluate the initial flooding (wetted extent) will be performed in a similar way that wetted extent has been determined in the past, by walking the perimeter with GPS units.*
13. What is the projected impact to the grazing quality within the BWMA with the switch from year-round to seasonal flooding? *When units are active, there is a buffer around the flooded unit that results in an increase in forage production caused by the lateral movement of moisture. This is particularly observable in the units that have a caliche layer (e.g., Winterton, Thibaut, and the west side of the Waggoner Unit). Because the BWMA will be flooded at a set 500 acres seasonally and the units will be rotated throughout the project area, the quantity of perennial grasses (production) is expected to increase. Forage quality is unlikely to change. The areas are dominated by alkali sacaton and saltgrass, both moderate to poor quality grasses for livestock grazing. Based on vegetation data sets from adjacent areas, shifts in species composition is unlikely to occur.*

On identified portions of active units and in areas where drawdown has occurred quickly, implement “moist soil management” by providing a rapid early summer ‘irrigation’ pulse of water to increase soil moisture. ... Effectiveness monitoring will include documenting the flooded acreage, vegetation assessments to evaluate moist soil management implementation, and waterbird surveys to determine use by indicator species. Pg 8

14. With only two surveys of the wetted extent of the BWMA, how will the drawdown rate of the units accurately be calculated to ensure optimal timing for the growth of desirable plants? *In the plan we have scheduled May 1st to evaluate the wetted extent of the units after water has been turned off March 1st. It may also be beneficial to evaluate the rate of drawdown before May 1st during the first week of April on units that are flooded for the first time.*
15. What criteria will be used to evaluate the wetted areas of the active units at the beginning of May

to determine if additional irrigation release is needed? Is this soil moisture, vegetation health, the wetted extent of the unit, etc.? *Criteria to be assessed includes the presence of desirable annuals, soil moisture, general plant vigor, plant stage in relation to seed set, and the ability to spread water across locations but still ensure that the areas will be dry before conditions become favorable for Tamarix sp. establishment.*

16. How will only the identified portions of the active units receive an “irrigation pulse”? Will additional canals or spillways be necessary? *No additional spillways and canals are planned during implementation of the Interim Plan to facilitate faster water conveyance onto the units. Areas that are slow to dry out or will take a long period of time to receive water will be avoided. These locations are expected to be at the bottom of the units furthest from conveyances.*

Moist soil management guidelines have been developed and implemented in other parts of the U.S., but there is limited information available for use in the Intermountain West. Plant species often cited as “target” species for waterfowl either do not occur in Owens Valley, or are weedy and undesirable here. Therefore, LADWP and ICWD will work together to experiment with different approaches and develop techniques applicable to the BWMA and develop local information and targets for desirable species. Pg 9

17. What criteria have been used to determine the moist soil management is appropriate for the Owens Valley? *The approach we will take for habitat management is two-fold and involves seasonal flooding to control the excessive growth of cattails and moist soil management to increase productivity of the basins. Seasonal flooding has been used effectively to maintain open water habitats at several sites throughout the Owens Valley including Warren Lake, Farmers Pond, and Thibaut Pond. At many locations in the Owens Valley we have observed concentrated feeding flocks of waterfowl and shorebirds in shallow water areas supporting a mix of short-lived perennials or annuals. Our objective during the 5-year interim period is to determine if and how we can replicate these conditions with targeted water application and using the concepts of moist soil management. While the application of moist soil management principles is new to the BWMA, in addition to the local anecdotal evidence, the principles have been used successfully in the West for some time. LADWP and the County will be employing methods that are well understood.*

18. When will the approaches and techniques be determined? If moist soil management techniques are required to determine if the “irrigation pulse” will occur, they must be established prior to May 1st. *Please refer to the response to question 15.*

Because of the presumed variability that may be encountered, flexibility in flooding, drawdowns, and site preparation for each unit will be needed. With close monitoring, more effective management strategies may be discovered such

as adjusting the maximum flooded extent further into spring and starting later in the fall, or the reverse with an earlier drawdown in the spring and an earlier maximum flooded extent in the fall. If adjustments are required, a maximum of 500 acres for four months would still be adhered to. Pg 10

19. Why has the word “maximum” been introduced? *Maximum can be removed. Plan will be revised to read “If adjustments are required, a maximum of 500 acres for four months would will still be adhered to.”*
-

Compared to the Waggoner and Winterton Units, colonization by cattails and bulrush tends to occur at a slower rate in the central and southern portion of the unit likely due to greater water depth. Pg 13

20. If the intent is to increase open water extent within the BWMA, and current data suggests that greater water depth inhibits cattail and bulrush growth, then why are shallow water depths the focus of the adaptive management plan? *The absence of available surface water for cattails and bulrushes during the growing season is also an effective tool for control and is integral for moist soil management. Management proposed for the BWMA will target depths less than 25 cm (10 inches) preferred by shorebirds, dabbling ducks and large waders as discussed on page 11 of the Interim Plan. These same areas will be dry during the summer and are expected to be an effective means to controlling cattails and bulrushes.*

We look forward to your response,

Kammi Foote, President Owens Valley Committee

BWMA Interim Plan Comments from CDFW, received via email Friday, February 19, 2021

LADWP and Inyo County Responses in Purple

Hello Larry and Lori,

As requested by Inyo County (County) and the Los Angeles Department of Water and Power (LADWP) during the February 17, 2021 virtual meeting, the California Department of Fish and Wildlife (CDFW) is providing comments on the Draft Blackrock Waterfowl Management Area Interim Management and Monitoring Plan (Plan) in our roll as Trustee Agency and as a Memorandum of Understanding (MOU) Party member. The Plan was provided on February 5, 2021 to CDFW via email and the Plan was discussed in a virtual meeting with all MOU Parties on February 17, 2021.

Procedural comments:

- The Plan should discuss how, when, why and who will be making adaptive management decision (e.g., summer pulse timing and amount, draw down rate, monitoring schedules, site preparation). The Plan should also detail what method will be used to consult with the MOU Parties (e.g., meetings and reports) and the timing of consulting with the MOU Parties, including the timeline for MOU Parties to respond.

During implementation of the Interim Plan, changes to operations may be determined to be necessary in order to meet the goal of 500 flooded acres for 4 months per year with appropriate wetting and drying periods. A slight shift in timing of flooding may be warranted to better meet habitat objectives but that is unknown at this time. Decisions on pulse flows will be guided by monitoring data collected during the interim period by LADWP and Inyo County. Any implementation practices that vary from those described in the Interim Plan will be discussed in LADWP and Inyo County's LORP Annual Report, along with findings from the plan's annual monitoring efforts. LADWP and Inyo County will continue to host a public meeting following release of the LORP Annual Report as defined in the Final LORP EIR and the 2007 Stipulation and Order. The MOU Parties are welcome to attend the public meeting and provide verbal and/or written comments on the report at that time per guidance in the 2007 Stipulation and Order.

Monitoring schedules and site preparation will be jointly decided upon by both LADWP and Inyo County and incorporated into annual LORP Work Plans and Budgets required under the LORP Post Implementation Agreement, which are taken to the Inyo/Los Angeles Technical Group and approved by LADWP and Inyo County's respective Boards. Under the 1997 MOU and LORP Post Implementation Agreement, LADWP consults with CDFW on recommendations for the BWMA in years that runoff is forecast to be below normal. This occurs following the release of the runoff forecast (April) and before the annual May Standing Committee meeting where the flooded acreage for the BWMA is generally set. LADWP will continue to follow this timeline and describe management recommendations for the upcoming fiscal year per the Interim Plan in their consultation letter to CDFW during the five-year implementation period.

Technical feedback:

- The County and LADWP should identify mechanisms (such as fencing) to exclude cattle or reduce the number of cattle from the units. Cattle can compete with waterfowl for resources, specifically wetland plain foliage and seeds, as well as damage habitat and reduce the ecological value of the restoration efforts.

One of the goals of the LORP is to provide for the continuation of sustainable uses including livestock grazing and agriculture (1997 MOU). The BWMA Units are inside large pastures (Waggoner Unit = 3749 acres, Drew Unit = 2193 acres, Winterton Unit = 1567 acres, and Thibaut Unit = 4584 acres). Excluding livestock from these pastures or even reducing the stocking rate for these pastures conflicts with the goals of the LORP Project. Livestock typically arrive onto these pastures in November and leave by May. The plan calls for full inundation by November 15th; forage grown from moist-soil management will be submerged by that time and will not be targeted by livestock.

- CDFW recommends using LiDAR mapping to generate a fine-scale topographic map of the proposed units. This will allow staff to assess potential flow-paths and identify controls on wetland hydrology in the BWMA units. This will enable managers to limit water loss due to overfilling ponds and ensure timely flood-up and drawdown.

Thank you for the recommendation. We will take this under advisement. A portion of Waggoner has been mapped with LiDAR as part of a fault mapping project and the usefulness of this data for assisting with planning could be evaluated.

- CDFW recommends that small area (s) (totaling between ~10-20 acres) of one unit be kept inundated through July to provide breeding habitat for resident waterfowl. Waterfowl chicks tend to fledge by June and July, and therefore permanent flooding would not be necessary to provide habitat for breeding resident waterfowl.

Few waterbirds likely remain year-round in Owens Valley, but migrate to, or move to BWMA to breed when conditions are favorable. Over our period of record, 2016 saw the highest summer number of waterfowl and coots at BWMA (potential breeders averaging 350 ducks and 300 coots over the two surveys in June, but only observed fewer than 20 waterfowl broods. Coots were seen nesting but broods were not estimated. Species that breed early in the season (for example Mallard), may actually find improved breeding conditions if productive open water areas persist to early May. Once hatched, upland nesting waterfowl species such as Mallard and their broods can be quite mobile and move their broods in response to changing conditions. Species that breed later (late May, June, and July) such as Gadwall and American Coot may not even settle and establish territories as drawdown will be complete by May 1. In short, even under conditions of continuous flooding in summer, while waterbird nesting has occurred, we do not have any evidence that BWMA has been highly productive for breeding waterfowl.

Additionally, the Interim BWMA Plan is placing an emphasis on not facilitating an expansion of saltcedar. Drying up a unit in July will result in salt cedar germination as the wetted area decreases. Flooding the unit into July will also create an expansion of cattails and bulrushes in the pond and may require additional maintenance.

- CDFW recommends that the County and LADWP consider earlier draw-down dates as well as using multiple irrigation pulses to encourage the growth of appropriate wetland plants and maximize seed production. The plan should include an adaptive framework for making the decisions.

LADWP agrees that the date selected for drawdown is tentative and will likely require adjustments after the first year of flooding and drawdown. We also welcome the technical assistance from CDFW in optimizing the timing of flooding and drawdown. However, a late season pulse flow will need to be weighed against the possibility that summer flooding will likely increase saltcedar expansion.

- The County and LADWP should consider petitioning CDFW and the Fish and Game Commission to create a sanctuary unit within BWMA during waterfowl hunting season to provide refuge habitat for overwintering and migratory waterfowl.

This recommendation is beyond the scope of the Interim Plan. However, we will take this comment under advisement if hunting pressure is determined to be problematic as a result of the plan. If CDFW pursues a sanctuary within the BWMA, a separate agreement would be required with CDFW's commitment for enforcement as LADWP and the County are not qualified to enforce CDFW regulations.

Environmental compliance:

- The County and LADWP should identify if activities that impact the bed, bank, or channel (e.g., diking, replacement or installation of structures) of the BWMA units would be covered under an existing Lake and Streambed Alteration Agreement (1600-2008-0146-R6) or if the agreement needs to be amended to incorporate these activities.

LADWP has recently renewed Agreement 1600-2008-0146-R6 for routine maintenance activities within the LORP. Diking of tules falls under provision 14C of the Agreement. This section reads:

"The Applicant may breach tule stands to allow unencumbered flow during initial flow periods and generally to maintain stream flow in-stream, and into wetlands and into off-channel lakes and ponds. Tule stand breaching may be conducted using mechanical equipment."

Most other work necessary for implementing the Interim Plan will be maintenance, repair, or replacement of existing facilities that is covered under the existing agreement. If new structures are constructed, LADWP will apply for a new lake or streambed alteration agreement or consult with CDFW to determine if they can be incorporated into the existing agreement through amendment.

- What has the County and LADWP considered for CEQA compliance, specifically necessary amendments, to the Lower Owens River Project (LORP) 2004 Environmental Impact Report?

The LORP EIR/EIS (Section 2.5.4) recommended a review of BWMA flooding cycles 10 to 15 years following LORP implementation to determine if modifying the flooding regime could improve the project and bring it closer to achieving MOU goals. The BWMA was reviewed by LADWP and Inyo County in the LORP 2019 Evaluation Report; the Interim Plan was generated as a result of the findings in that report. The Interim Plan proposes to test the concepts of seasonal flooding and moist soil management in the BWMA for a period of five years before any permanent change to the project is made. The LORP EIR

does not need to be amended as it considers the need for potential adaptive management with the project.

Per this existing framework established by the LORP documents, CDFW is available and looks forward to future coordination on this Project. In addition, CDFW would like to continue to be consulted regarding Blackrock Waterfowl Management Area (BWMA) annual operation plans and seasonal habitat flows as outlined in the 1997 MOU.

Your comment is noted.

Additional Questions:

- With the new plan framework (i.e., no permanently flooded units), what is the status of the resident breeding waterfowl habitat within the LORP? How much habitat is available for breeding waterfowl and what is the condition of the habitat (e.g., are bass present)? How much benefit is expected to be gained for migratory waterfowl vs. how much we are losing for breeding waterfowl (trade-offs).

Few waterfowl likely remain year-round in Owens Valley, but migrate to, or move to BWMA to breed when conditions are favorable. The current conditions within BWMA of limited open water habitats from yearlong flooding regimes has not resulted in stable conditions for breeding waterfowl. Perhaps the first year of flooding creates open water habitat, but by the second year as cattails fill in, habitat is reduced. Breeding waterfowl exhibit site philopatry, and will return to areas where they bred successfully the year prior, or return to their natal ground to breed. Because the breeding habitat is not stable at BWMA, a stable breeding community has not developed. Creating a small breeding waterfowl pond as you have recommended would certainly provide local benefits by supporting a small number of broods perhaps, but would likely require extensive management to maintain its productivity. We question whether the investment is worth the return as even under the “best” conditions at BWMA, fewer than 20 waterfowl broods have been observed. The most breeding activity we have seen at BWMA was in the summer of 2016, when potential breeder waterfowl averaged 350 ducks over the two surveys in June. In that year we observed fewer than 20 waterfowl broods, which is the highest number we have seen in any one survey year at BWMA. In short, even under conditions of continuous flooding in summer, while waterfowl nesting has occurred, we do not have any evidence that BWMA has been highly productive for breeding waterfowl. From a waterfowl population standpoint, Owens Valley is not a significant contributor to waterfowl reproduction for any species. So 10-20 acres of hemi-marsh in Owens Valley would be insignificant to population trends. We believe the gains we could achieve for our migratory waterfowl populations by providing a stopover location that is more reliable and of higher quality far outweighs gains we could achieve by supporting a small breeding waterfowl population.

- What will the status of the native fish be under the draft Plan’s framework? Owens pupfish and Owens tui chub are listed under the 1997 MOU as indicator species for the BWMA.

Seasonal flooding of wetlands is not conducive to supporting native fish populations. However, year-round flooding defined by the project has also not been conducive to supporting native fish as these ponds quickly become a bass fishery that would outcompete any native fish species. Further, BWMA

management was originally designed to rotate and periodically dry and rest the units which would also not support long term fish populations.

- How will additional hunting pressure be managed? *See comment above.*

If you have any questions about the comments, please reach out to me through email or phone.

Thank you,

Alyssa Marquez

Environmental Scientist

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